2021 - 2022
General Catalog for North America

SUMITOMO

CARBIDE - CBN - DIAMOND

PERFORMANCE CUTTING TOOLS



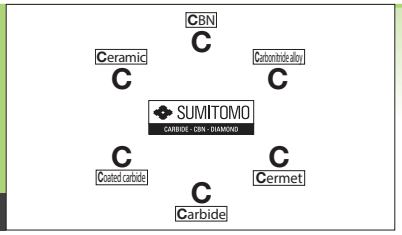
SUMITOMO ELECTRIC

SUMITOMO ELECTRIC GROUP

A Grades
B Inserts
C Toolholders
D Small Parts Machining
E Boring Bars
F Grooving Cut-Off Threading
G Tooling Systems Polygon Shank Cartridges
H Milling Cutters Modular Tools
I Endmills
J Drills Reamers
K Carbide Materials
L CBN - SUMIBORON
M PCD - SUMIDIA Binderless PCD SUMICRYSTAL
N Spare Parts Technical Guidance References
O Index
A.L.M.T.

CONTENTS

A Grades
A1 to A37



- Grades for Turning
- Grades for Milling
- Grade Comparison Chart
- Turning Chipbreaker and Grade Selection Guide
  - For Steel Turning
  - Stainless Steel Turning
  - For Cast Iron Turning
  - For Exotic Alloy Turning
  - For Non-Ferrous Metal Turning
  - For Hardened Steel Turning
  - For Small Lathes
- Coating (CVD/PVD)
- Cermet
- Cemented Carbide
- CBN
- Polycrystalline Diamond
- Ceramics
- Material Properties

B Inserts
B1 to B135



- Indexable Insert Identification Table
- Grade Comparison Chart
  - Coating, Cermet
  - Cemented Carbide, Ceramics
  - CBN, Polycrystalline Diamond
- Chipbreaker Comparison Chart
- Chipbreaker Selection
- Negative Inserts
- Positive Inserts
- Ceramic Negative Inserts (With Hole/Without Hole)
- Ceramic Positive Inserts (Without Hole)
- Solid CBN
- Precautions when Using Wiper Inserts

C Toolholders
C1 to C63



- External Toolholder Series
- Toolholder Identification and Cutting Edge Position Dimension
- Negative Insert Applicable Holders
- Positive Insert Applicable Holders
- T-REX Tool Holders
- Tool Holders for Aluminum Wheel Turning
- Double Clamp Tool Holders

D Small Parts Machining
D1 to D30



- Small Lathe Selection
- General Features of Small Lathes
- Insert Grade Selection
- Chipbreaker Selection
- External Holders
  (Refer to Chapters E / F for Boring Bars / Grooving Tools / Cut-Off Tools)

E Boring Bars
E1 to E75



- Selection Guide for Boring Tools
- Boring Tools Identification Table
- Selection Guide for Boring Tools
- Boring Tools Series
- Multi-functional Small Lathe Tools
  Twin Head Holder
- For Bottom Facing
- For Profiling
- For Through Boring
- For Shoulder Milling
- For Very Small Diameter / Small Diameter Turning

F Grooving / Cut-off Threading
F1 to F76



- Grooving Tool Series Selection Guide
- Grooving Tools
  - Triangular Type Insert for Shallow Grooves (External/Internal)
  - For External/Internal and Facing
  - For Hardened Steel
- Cut-off Toolholder Series Selection Guide
- Cut-Off Tools
  - SumiGrip Jr. / SumiGrip
  - Small Diameter Cut-Off Tool Holders
- Threading Tool Series Selection Guide
- Basics of Threading
- Threading Tools
  - SSTE Type / SSTI Type
  - For External/Internal Diameters

G Tooling Systems / Polygon Shank / Cartridges
G1 to G24



- General Features of Tooling Systems
- ICTM HSK Tooling Systems
- Polygonal Taper Shank SumiPolygon
- Modular Taper Shank Supported by 2 Faces
- HSK Tooling Systems Supported by 2 Faces
- Smart Damper
- IGETALLOY ABS System
- Micro Units
- Cartridge Units
- Boring Quills / Carbide Line Boring Bars

- Milling Cutter Selection Guide
- Grades for Milling
- Cutter Identification Table
- Insert Catalog No. Nominal
- Face Milling
- Shoulder Milling
- High Feed Milling
- Multi-purpose (WMM)
- Radius Milling
- R/3D Profiling
- Groove / T-Slot
- Chamfering
- Non-ferrous Metal Milling
- High-speed Cast Iron Milling
- Modular Tools
- Special Purpose Cutters
  - Goalmill Series
- Discontinued Milling Cutters



H Milling Cutters / Modular Tools — H1 to H243

- Selection Guide
- Cutting Edge Length List by Diameter
- Endmill Coating Grades
- Square / Radius Endmills (Coated)
- Ballnose Endmills (Coated)
- AURORA Coat Endmills
- SUMIDIA Coated Endmills
- Non-ferrous Metal Milling
- Milling of Exotic Alloys
- Milling of CFRP
- Cemented Carbide and Hard Brittle Material
- Binderless PCD Endmills
- CBN Endmills for Hardened Steel
- PCD Endmills for Non-Ferrous Metals



I Endmills — I1 to I122

- Drill Selection Guide
- Application Range of Major Drills
- Drill Coating
- General-purpose
- For Spot Facing
- For Deep Hole Drilling
- For Extra Small Hole Drilling
- For Deep Drilling/Pocketing
- For Medium to Large
- Diameter Drilling
- For Non-ferrous Metal Milling
- For Drilling of Heat-Resistant Alloys
- For Milling of CFRP
- For Drilling of Thin Sheets
- Indexable Insert/Head Type
- Reamers
- HSS



J Drills Reamers — J1 to J148

- Carbide Material Features and Applications
  - Plate Blanks
  - Rod Blanks
  - Special Rod Blanks
- JIS Type Inserts for Carbide Tool Holders
- JIS Type Carbide Tool Holders
- Jig Boring Tools IJB Type



K Carbide Materials — K1 to K12

- CBN - SUMIBORON Series
- Coated CBN - SUMIBORON Series
- Guidance for CBN - SUMIBORON Grades
  - Hardened Steel Cutting
  - Cast Iron Cutting
  - Sintered Component Machining
  - Machining of Rolls / Hard Facing Alloys / Heat-Resistant Alloys
  - Titanium Alloy Cutting
- Inserts
  - CBN - SUMIBORON Insert Series
  - Stock Table for CBN - SUMIBORON Indexable Inserts
- Holders
  - CBN - SUMIBORON Toolholder Series
- Cutters / Endmills
  - CBN - SUMIBORON Mill Series
  - CBN - SUMIBORON Endmill Series



L CBN - SUMIBORON — L1 to L132

- PCD - SUMIDIA Series
- SUMIDIA Binderless Series
- Inserts
  - SUMIDIA Insert Identification Table
  - Stock Table for SUMIDIA Indexable Inserts
  - Stock Table for SUMIDIA Binderless Indexable Inserts
- Holders
  - SUMIDIA Tool Holder Series
- Cutters / Endmills
  - SUMIDIA Cutter Series
  - SUMIDIA Endmills
- Drills
  - SUMIDIA Drills
- SUMICRYSTAL



M PCD - SUMIDIA / Binderless PCD / SUMICRYSTAL — M1 to M36

- Spare Parts
  - Screws, Eccentric Pins, and Lever Pins
  - Shims, Clamps, Rings and Pins
  - Drawing Pins, Nuts, and Wrenches
- Technical Guidance
  - Turning Edition
  - Milling Edition
  - Endmilling Edition
  - Drilling Edition
  - SUMIBORON Edition
- References
  - SI Unit Conversion List
  - Metals Symbols Chart (Excerpt)
  - Steel and Non-Ferrous Metal Symbols Chart (Excerpt)
  - Hardness Scale Comparison Chart
  - Standard of Tapers
  - Fitting Tolerances
  - Surface Roughness



N Spare Parts / Technical Guidance / References — N1 to N78

- A.L.M.T. Diamond Cutting Tools
  - Ultra-Precision Cutting Tool UPC Series
  - New D Tool Series
  - PCD Reamer Rotating Tools



A.L.M.T. Diamond Cutting Tools — AL1 to AL12

O Index — O1 to O6

Z — Z1 to Z5

Tool Engineering Service Introduction

Contact us at training@sumicarbide.com for more information.

THE TEC
TOOL ENGINEERING CENTER



USA Office	▶Americas Tool Engineering Center (A-TEC)
Japan Offices	▶ Itami Tool Engineering Center (I-TEC) ▶ Yokohama Tool Engineering Center (Y-TEC) ▶ Hokkaido Tool Engineering Center (Hi-TEC) ▶Tohoku Tool Engineering Center (My-TEC) ▶Tokai Tool Engineering Center (T-TEC) ▶Kyushu Tool Engineering Center (K-TEC)
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Online TEC

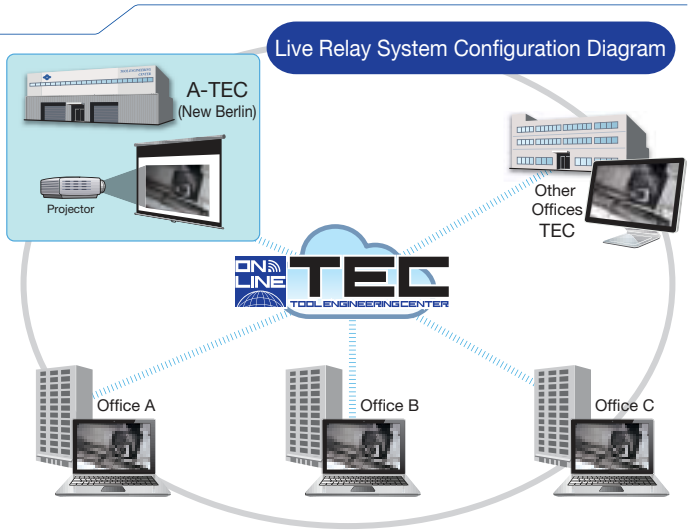


Live Relay Example (1) (Lecture)



Live Relay Example (2)
(Technical Consultation)

Live Relay System Configuration Diagram



Live relays in which cutting videos can be viewed from remote locations in real time with two-way communication are possible. When time or distance makes a visit to a Tool Engineering Center difficult, customers can view live relays at their own sites and receive evaluations as requested.

Seminars





Test Cutting



We have a range of machine tools and measurement instruments available to conduct various test cutting in order to support the requirements of our various customers.

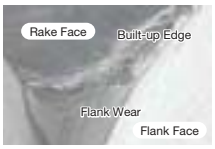
■ Machining Failure Examples



Non-smooth Machined Surface



Tool Breakage



Tool Wear and Cutting Edge Structure

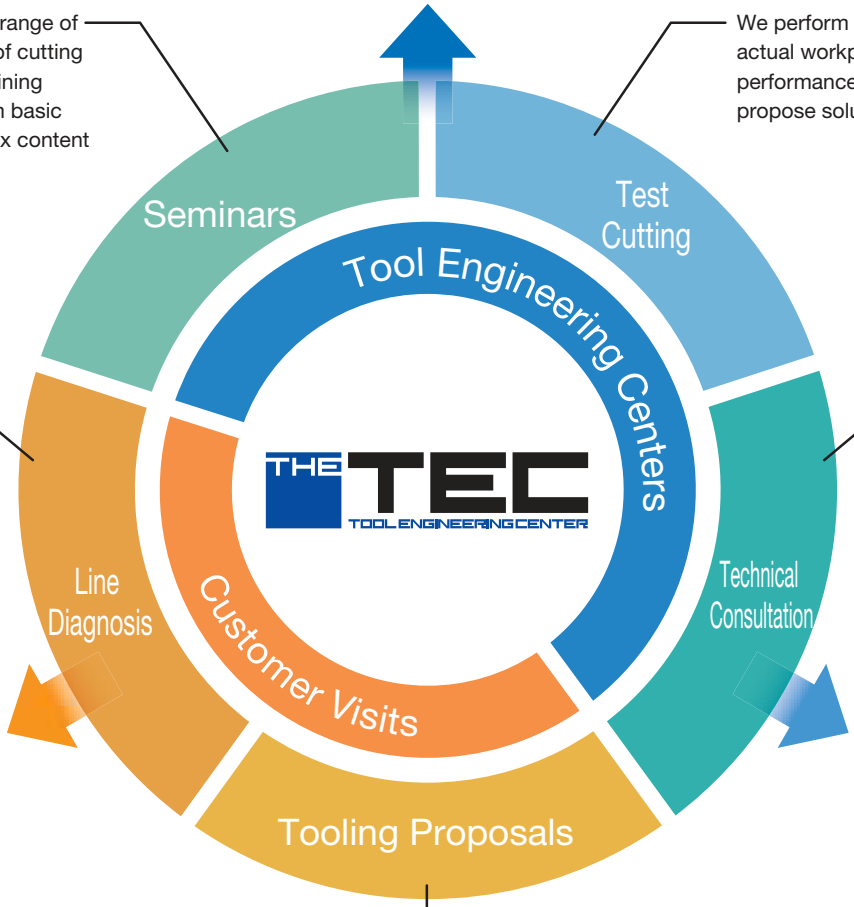


Unsatisfactory Chip Control

Supporting the Development of Knowledge and Technology

Acquire a wide-range of understanding of cutting tools and machining technology from basic through complex content

We perform test cutting on customers' actual workpieces and use the latest performance evaluation technology to propose solutions



Support of machining improvement activities through investigation of the current machining lines, proposals for improvements and test cutting

Troubleshooting and technology proposals based on the latest tool information and machining databases

We also can help solve problems by visiting your production site

Proposing solutions to your problems

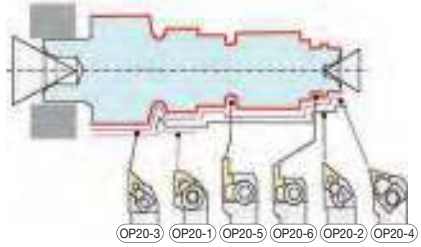
Proposals for solutions to potential problems, estimating tool life for tooling and tool selections for newly established production lines

Line Diagnosis



Technical consultation and line diagnosis are performed in order to propose the ideal solutions to our customers.

Tooling Proposals



We propose optimal tools, cutting conditions, estimated tool life and machining times.

Technical Consultation



Improvements are proposed based on investigation of various tool damage and machining databases.

Contact your local sales office for details.

Dimension symbols are compliant with ISO13399

The following table shows ISO13399-compliant dimension symbols. Content corresponding to the sample symbols/notations are shown below. Tool shape diagrams and stock charts use the symbols and notation examples from the table below. Please contact Sumitomo Engineering Dept. for more details regarding ISO13399.

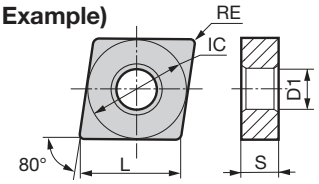
(1) Inserts (For Turning / For Milling)

Symbol	Notation Example	Description
AN	Main Blade Relief Angle	Clearance angle major
APMX	Undercut Depth, Maximum Depth of Cut	Depth of cut maximum
BS	Wiper	Wiper edge length
CDX	Machining Groove Depth, Depth of Cut	Cutting depth maximum
CHW	Chamfering	Corner chamfer width
CW	Width of Cut	Cutting width
D1	Bore Dia.	Fixing hole diameter
DMIN	Min. Bore Dia.	Minimum bore diameter
IC	Inscribed Circle	Inscribed circle diameter
INSL	Length	Insert length
L	Cutting Edge Length, Overall Length, Length	Cutting edge length
PDX	X Direction	Profile distance ex
PDY	Y Direction	Profile distance ey
PNA	Thread Ridge, Thread Ridge Angle	Profile included angle
RE	Nose Radius	Corner radius
RER	Nose Radius	Right side corner radius
REL	Nose Radius	Left side corner radius
S	Thickness	Insert thickness
W1	Height, Width	Insert width
WF	Cutting Edge, Cutting Edge Distance	Functional width

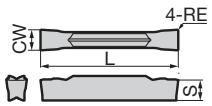
(2) Tool Holders For Turning

Symbol	Notation Example	Description
APMX	Undercut Depth	Depth of cut maximum
B	Width	Shank width
BD	Body Dia., Cutting Edge	Body diameter
CDX	Machining Groove Depth, Depth of Cut	Cutting depth maximum
CRKS	Screw	Connection retention knob thread size
DC	Work Dia.	Cutting diameter
DCB	Shank Dia.	Connection bore diameter
DCON	Dia., Mounting Dia.	Connection diameter
DCSFMS	Mounting	Contact surface diameter machine side
DMIN	Min. Bore Dia.	Minimum bore diameter
DMM	Shank Dia.	Shank diameter
DN	Neck Diameter	Neck diameter
GAMF	Rake Angle	Rake angle radial
GAMP	Rake Angle	Rake angle axial
H	Height	Shank height
HBH	Offset, Step	Head bottom offset height
HBKL	Head	Head back offset length
HBKW	Step	Head back offset width
HBL	Offset, Bottom Offset	Head bottom offset length
HF	Cutting Edge Height	Functional height
KDP	Groove Depth	Groove depth
KWW	Groove Width	Keyway width
LF	Overall Length, Overhang	Functional length
LH	Head, Head Length	Head length
LHD	Head	Head lengh
LS	Shank Length	Shank length
LSCX	Clamping Length, Cutting Edge	Clamping length maximum
LU	Usable Length	Usable length
LUX	Effective Overhang	Usable length maximum
WF	Cutting Edge, Cutting Edge Distance	Functional width

(Turning Insert Example)



(Grooving Insert Example)



(External Holder Example)

Fig 1

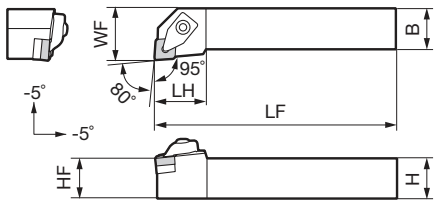
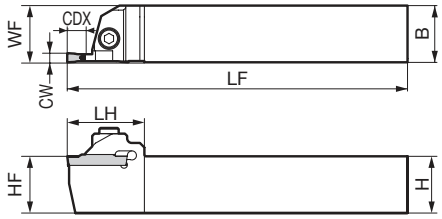


Figure shows right-hand (R) tool.

(Grooving Tool Holder Example)



*1 The symbols in the above table are compliant with ISO13399 and do not include symbols unique to our company.
*2 As symbols under review are not included, these may change over time.

(3) Cutters / Indexable Endmills

Symbol	Notation Example	Description
APMX	Max. Depth of Cut	Depth Of Cut Maximum
BD	O.D.	Body Diameter
BDX	Max. O.D.	Body Diameter Maximum
CBDP	Mounting Depth	Connection Bore Depth
CRKS	Screw	Connection Retention Knob Thread Size
CW	Width	Cutting Width
DBC	Hole Position	Connection Bore Diameter
DC	Dia., Cutter Dia.	Cutting Diameter
DCB	Bore Dia.	Connection Bore Diameter
DCON	Mounting Dia.	Connection Diameter
DCSFMS	Boss	Contact Surface Diameter Machine Side
DCX	Max. Dia., Cutter Dia.	Cutting Diameter Maximum
DMM	Shank	Shank Diameter
DN	Diameter	Neck Diameter
H	Width	Shank Height
KDP	Keyway Depth	Groove Depth
KWW	Keyway Width	Keyway Width
LBX	Length	Body Length Maximum
LF	Height	Functional Length
	Overall Length	Functional Length
	Effective Length, Overhang	Functional Length
LH	Head	Head Length
LS	Shank	Shank Length
LU	Length	Usable Length
OAL	Overall Length	Overall Length
RMPX	Maximum Ramping Angle	Maximum Ramping Angle
SNT	Key Groove Width	Keyway Width
THUB	Thickness	Hub Thickness

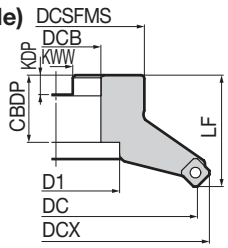
(4) Endmills

Symbol	Notation Example	Description
APMX	Cutting Edge Length	Depth Of Cut Maximum
CHW	Chamfering	Corner Chamfer Width
DC	Dia.	Cutting Diameter
DMM	Shank Dia.	Shank Diameter
DN	Head Dia.	Neck Diameter
LF	Overall Length	Functional Length
LFS	Neck Length	Functional Length Secondary
LU	Neck Length	Usable Length
RE	Radius	Corner Radius

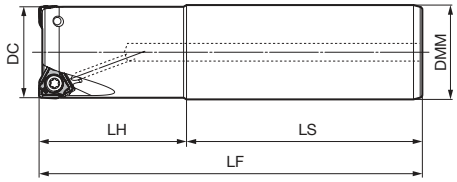
(5) Drills / Reamers

Symbol	Notation Example	Description
BD	Diameter	Body Diameter
BDX	Diameter	Body Diameter Maximum
CW	Machining Width	Cutting Width
DC	Dia.	Cutting Diameter
DCB	Shank Dia., Bore Dia.	Connection Bore Diameter
DCON	Shank Dia.	Connection Diameter
DCSFMS	Flange Dia., Boss	Contact Surface Diameter Machine Side
DF	Diameter	Flange Diameter
DMM	Shank Dia.	Shank Diameter
LBX	Body	Body Length Maximum
LCF	Flute Length	Length Chip Flute
LF	Shoulder Length, Length	Functional Length
LFA	Bolt	A Dimension On Lf
LFS	Length	Functional Length Secondary
LH	Neck Length	Head Length
LPR	Overhang Length	Protruding Length
LS	Shank	Shank Length
LU	Effective Length	Usable Length
LUX	Neck Length	Usable Length Maximum
OAL	Overall Length	Overall Length
PL	Tip	Point Length
WBTHK	Web Thickness	Web Thickness

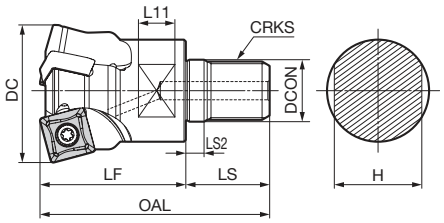
(Shell Type Example)



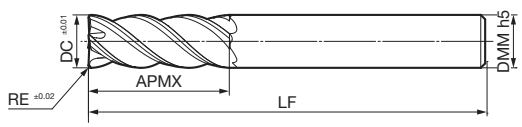
(Shank Type Example)



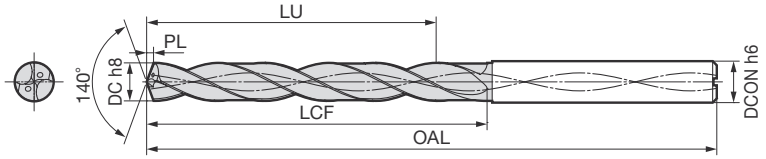
(Modular Type Example)



(Endmill Example)



(Drill Example)



Notice

Thank you for using the Sumitomo Electric Carbide, Inc, Cutting Tool General Catalog

- This catalog presents the major items in the Sumitomo Cutting Tools product line.
  The catalog is organized as follows:
  (1) Cutting Tool Grade
  (2) Cutting Tool Products (Carbide)
  (3) CBN - SUMIBORON / PCD -SUMIDIA Products

  • Ask for our individual product brochures with most current product information or visit www.sumicarbide.com to download digital versions.

- This catalog is current as of July 2020.

- As a result of our ongoing research, products may reflect enhancements in quality, performance, and specifications not listed in this catalog. Please take note of this.

- To order CBN - SUMIBORON / PCD - SUMIDIA products, contact your nearest Sumitomo Electric Carbide, Inc. Sales Representative or distributor. For inquiries or other requests, feel free to contact your nearest sales office.

Stock Symbols

- The following symbols indicate whether products are in stock.

Stock Symbols	●: Standard stocked item ★: Worldwide Warehouse Item ▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).	Blank: Made-to-order item — mark: Not available

Meaning of Icons

Common New : New item to Sumitomo Electric Carbide, Inc.

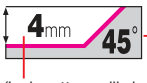
Grade
ISO classification of work material:



Holders
Example:



Milling Cutters
Example:



Max. Depth of Cut (Inch cutters will show inch dimensions)

Drill
Example:

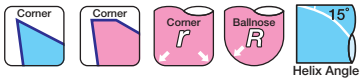


L/D (Example) Internal Coolant Supply Indexable

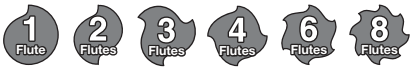
Endmills
Coating Type (Example):



Shape:



No. of teeth:



Application (Example):

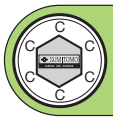


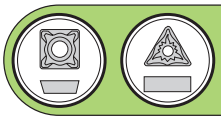


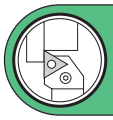
Cutting edge angle
(not listed for ballnose blade types)

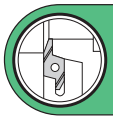
Safety Notes

- Refer to Z4 & Z5 for the Carbide Tool Product Safety Pamphlet.

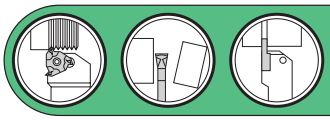

Grades A

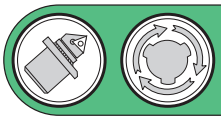

Inserts B

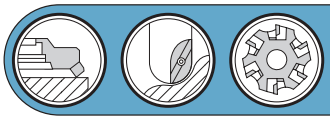

Toolholders C

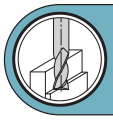

Small Parts Machining D

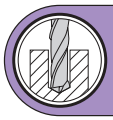

Boring Bars E

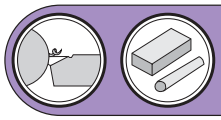

Grooving Cut-Off Threading F


Tooling Systems Polygon Shank Cartridges G


Milling Cutters Modular Tools H

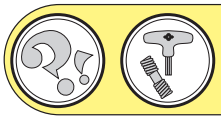

Endmills I


Drills Reamers J


Carbide Materials K


CBN - SUMIBORON L


PCD - SUMIDIA Binderless PCD SUMICRYSTAL M

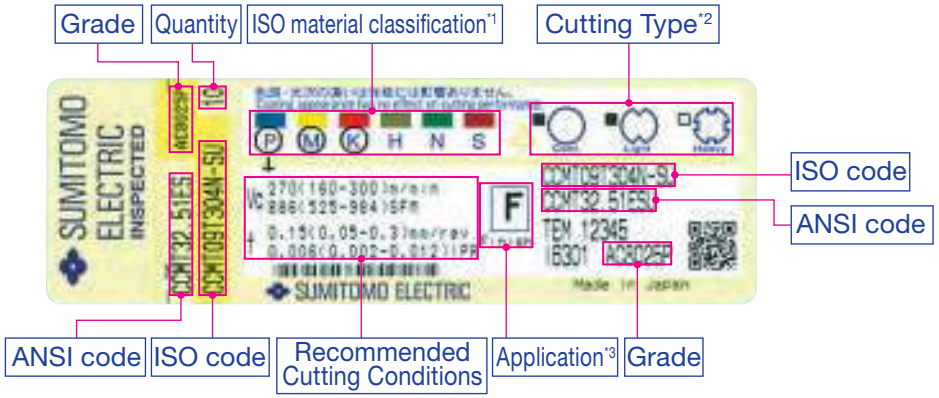

Spare Parts Technical Guidance References N


Index O

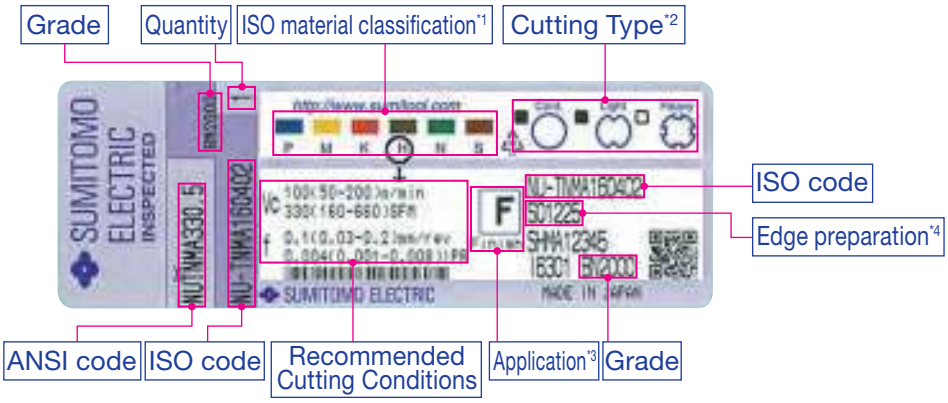
A.L.M.T.

Examples of Insert Labeling

Carbide / Cermet Inserts



CBN - SUMIBORON / PCD - SUMIDIA Inserts



***1 ISO material classification**

- P Steel
- M Stainless Steel
- K Cast Iron
- H Hardened Steel
- N Non-ferrous Metal
- S Exotic Alloy

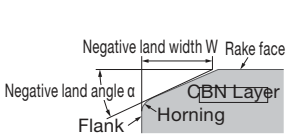
***2 Cutting Type**

- Cont. Continuous
- Light General
- Heavy Interrupted

***3 Application**

- **F** Finishing
- **M** Medium cutting
- **R** Rough cutting

***4 Edge preparation (CBN - SUMIBORON)**



S 0 1 2 2 5

- Negative land angle
- Negative land width
- Edge shape T: Negative land, S: Negative land + honing

Eg: S01225
→Negative land 25°/0.12 mm width, honed

Product Package Change for Indexable Insert Cutters

Please see below specifications of our indexable milling cutter product package and wrench have changed.

■ Change Details

- The cutter case has changed from a paper-based box to a PP (plastic) case.
- The applicable wrench has been changed from an integrated type (1 piece) to an attachable/detachable version.

■ Products with Changed Package and Wrench

<Applicable Products> Cutter Diameter ø1.25 to 5.00" / ø32 to 125mm Shell Type Cutters

*Note that RF Type, WAX Type, DNH12125R, DNHB12125R, and BBT-SB integrated type HFFH cutters are not applicable.
*For some time, there may be a mixture of new and old package types on the market.



■ Wrench Cat. No. Details

*Either Cat. No. can be used if purchasing the wrench separately.

	Before change	After change	
	Integrated Wrench	Bit	Handle Grip
Cat. No.	TRDR10IP	TRB10IP	HPS1015
	TRDR15IP	TRB15IP	
	TRDR20IP	TRB20IP	HPL2025
	TRDR25IP	TRB25IP	

SUMITOMO

CARBIDE - CBN - DIAMOND



Success from Sumitomo's Craftsmenship and Engineering Passion.

Every Sumitomo product contains our craftsmen's passion. The "Manufacturing DNA" of our cutting tools demonstrate our heart & soul.

The result of our relentless passion is continuously strengthening our worldwide manufacturing.

Followed by a dedication to recycling program and comany-wide Corporate Social Responibility.

SUMITOMO ELECTRIC

Insert Grades A

A1 to A37



Grades for Turning A2
Grades for Milling A3
Grade Comparison Chart
(CVD / PVD Coated Grades) A4
(Cermet, Cemented Carbide, Ceramic) A6
(CBN, Polycrystalline Diamond) A7
Chipbreaker Comparison Chart A8

Chipbreaker and Grade Selection Guide
For Steel Turning A10
For Stainless Steel Turning A14
For Cast Iron Turning A16
For Exotic Alloy Turning A18
For Hardened Steel Turning A20
For Non-Ferrous Metal Turning A22
For Small Lathes A24

Coated Carbide A26
Cermet A29
Carbide A30
CBN A32
Polycrystalline Diamond A34
Ceramic A36
Material Properties A37

Grades for Turning



P General Steel (Carbon Steel, Alloy Steel), Mild Steel

Wear Resistance ← → Fracture Resistance

Work Material	–	P01	P10	P20	P30	P40
Coated Carbide (A26)		New AC8015P	AC8025P	New AC8035P		
			AC810P			
			AC820P			
					AC830P	
For Small Lathes (A24)			AC1030U			
Coated Cermet (A29)			T1500Z	T2500Z		
Cermet (A29)		T1000A	T1500A	T2500A		
Carbide (A30)			ST10P	ST20E	A30	
Ceramic (A36)						
Uncoated CBN / Coated CBN (A32)						

M Stainless Steel

Wear Resistance ← → Fracture Resistance

Work Material	–	M01	M10	M20	M30	M40
Coated Carbide (A26)			AC6020M			
			AC6030M			
				AC6040M		
			AC610M	AC630M		
					AC830P	
					AC520U	AC530U
For Small Lathes (A24)				AC1030U		
Coated Cermet (A29)						
Cermet (A29)		T1000A	T1500A			
Carbide (A30)						
Ceramic (A36)						
Uncoated CBN / Coated CBN (A32)						

K Cast Iron

Wear Resistance ← → Fracture Resistance

Work Material	–	K01	K10	K20	K30
Coated Carbide (A26)		New AC4010K	New AC4015K	AC420K	AC8025P
			AC405K		
			AC415K		
For Small Lathes (A24)				AC1030U	
Coated Cermet (A29)					
Cermet (A29)		T1000A			
Carbide (A30)			G10E		
Ceramic (A36)		NB90S			
Uncoated CBN / Coated CBN (A32)		BN7000		BNS800	
		BN500			
		BNC500	(Dedicated for Ductile Cast Iron)		

S Exotic Alloy

Wear Resistance ← → Fracture Resistance

Work Material	–	S01	S10	S20	S30
Coated Carbide (A26)		New AC5015S	New AC5025S		
			AC510U		
				AC520U	
Carbide (A30)		EH510			
				EH520	
Ceramic (A36)					
Coated CBN (A32)					
Uncoated CBN (A32)		New NCB100			
			BN7000		
					BNS800

H Hardened Steel

Wear Resistance ← → Fracture Resistance

Work Material	–	H01	H10	H20	H30
Coated Carbide (A26)			AC503U		
Carbide (A30)					
Ceramic (A36)			NB100C		
Coated CBN (A32)			BNC2010		
				BNC2020	BNC300
		BNC100	BNC160		
				BNC200	
Uncoated CBN (A32)			BN1000		
				BN2000	
					BNX20
					BN350
		BNX10			
					BNX25

N Non-Ferrous Metal

Wear Resistance ← → Fracture Resistance

Work Material	–	N01	N10	N20	N30
Carbide (A30)					H1
PCD (A34)		DA90			
			DA150		
				DA1000	

Powdered Metal

Wear Resistance ← → Fracture Resistance

Work Material	–	01	10	20	30
Coated Carbide (A26)				AC5015S	
Cermet (A29)		T1000A			
Uncoated CBN (A32)		BN7500			
				BN7000	

Cemented Carbides and Hard Brittle Materials

Wear Resistance ← → Fracture Resistance

Work Material	–	01	10	20	30
PCD (A34)		NPD10			
			DA90		

: 1st Recommended Grade / : 2nd Recommended Grade ▽ : CVD Coating △ : PVD Coating Blank: Uncoated

Grades for Milling

Work Material	P General Steel (Carbon Steel, Alloy Steel), Mild Steel	M Stainless Steel	K Cast Iron
Classification	Wear Resistance ← → Fracture Resistance	Wear Resistance ← → Fracture Resistance	Wear Resistance ← → Fracture Resistance
	– P01 P10 P20 P30 P40	– M01 M10 M20 M30 M40	– K01 K10 K20 K30
Coated Carbide A26	New ACP2000 New ACP3000 New ACU2500 ACP100 ACP200 ACP300	ACM100 ACM200 ACM300 New ACU2500 ACK300 ACP300	New ACK2000 New ACK3000 New ACU2500 ACK100 ACK200 ACK300
Cermet A29	New T2500A T250A T4500A	New T2500A T250A T4500A	
Carbide A30	A30N	A30N	G10E
Uncoated CBN A32			BN7000 BNS800

Work Material	S Exotic Alloy	H Hardened Steel	N Non-Ferrous Metal
Classification	Wear Resistance ← → Fracture Resistance	Wear Resistance ← → Fracture Resistance	Wear Resistance ← → Fracture Resistance
	– S01 S10 S20 S30 S40	– H01 H10 H20 H30	– N01 N10 N20 N30
Coated Carbide A26	ACM100 ACM200 ACM300 New ACU2500 ACK300		DL1000 New DL2000
Carbide A30	EH520		H1 New H20
Uncoated CBN A32		BN350 BN7000	
PCD A34			DA1000

: 1st Recommended Grade / : 2nd Recommended Grade ▽ : CVD Coating △ : PVD Coating Blank: Uncoated

Grade Comparison Chart

■ CVD Coated Grades

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P05	**AC8015P AC810P**	UE6105	T9105 T9215	CA510 CA5505	HG8010		GC4305 GC4205	KCP05 KCP05B KCPK05	TP0501 TP0500	WPP05S WPP05 WPP01	IC8005 IC8150 IC428	TT8105
		P10	**AC8015P AC810P**	MC6015 UE6110	T9105 T9115 T9215	CA510 CA515 CA5515	HG8010	CP7	GC4305 GC4315 GC4215	KCP10 KCP10B	TP1501 TP1500	WPP10S WPP10	IC5100 IC8150 IC8250 IC9015	TT8115
		P20	**AC8025P AC820P**	MC6025 UE6020	T9115 T9125 T9225	CA025P CA525	HG8025 GM8020	CP7	GC4315 GC4325 GC4225 GC1515	KCP25 KCP25B	TP2501 TP2500	WPP20S WPP20	IC8150 IC8250 IC8350 IC9015	TT5100 TT8125
		P30	**AC8035P AC830P AC6030M AC630M**	MC6035 UE6035	T9125 T9135 T6130	CA025P CA525 CA530	GM25		GC2025 GC4325 GC4335 GC4235	KCP30 KCP30B	TP3500	WPP30S WPP30	IC8350 IC8025	TT7100 TT8135
		P40	**AC8035P AC830P AC6030M AC630M**	UH6400	T9135 T6130	CA530 CA5535	GX30 GM8035		GC4335 GC4235 GC30	KCP40 KCP40B	TP3500		IC8350 IC8025	TT7100
	M Stainless Steel S Exotic Alloy	M10 S10	**AC6020M AC610M**	MC7015 US7020 US905	T9115	CA6515	HS9105		GC2015 GC1515 S05F	KCM15			IC6015 IC8025 IC8150 IC8250 IC5820	TT9215
		M20 S20	**AC6020M AC6030M AC610M AC630M**	MC7025 US7020	T6120 T9125	CA6525	HG8025		GC2025 GC1515	KCM25	TP2501 TP2500 TM2000		IC6015 IC6025 IC8350	TT5100 TT9225
		M30	**AC6030M AC630M AC8035P AC830P**	MC7025 US735	T6130	CA6535	GM8035 GX30 GM25		GC2035 GC235	KCM35 KC9240	TP3500 TM4000		IC6025	TT9235
		M40	**AC6030M AC630M**	US735					GC235 GC2035		TM4000			TT7800
	K Cast Iron	K05	**AC4010K AC405K**	MC5005 UC5105 UC5115	T5105	CA310 CA4505 CA4010	HG3305 HX3505	CP1	GC3005 GC3205 GC3210	KCK05	TK1001 TK1000	WKK10S WAK10	IC5005	TT7005 TT7505
		K10	**AC4010K AC4015K AC405K AC415K**	MC5005 MC5015 MC5020 UC5105 UC5115	T515 T5105 T5115 T5125	CA315 CA4505 CA4515 CA4115	HX3305 HG3305 HG3315 HX3515 HG8010 TH315 ATH10E	CP1	GC3005 GC3210 GC4305	KCK15	TK1001 TK1000	WKK10S WKK20S WAK10 WAK20	IC5005 IC5010 IC5100	TT7015
		K20	**AC4015K AC415K AC420K AC425K AC8025P**	MC5015 UC5115 UE6110	T5125 T9115	CA320 CA4515 CA4120 CA4115	HX3515 HG3315 HG8025		GC3215 GC4325	KCK15 KCK20	TK2001 TK2000	WKK20S WAK20 WAK30	IC5010 IC8150	TT7015
For Milling	P Steel	P10	**ACP2000 ACP100**	FH7020 F7030 MV1020	T3130 T3030				GC4220 GC4230 GC3040	KC930M KC935M	MP1500 MP2500	WKP25S WKP25 WKP35S WKP35G	IC4100 IC520M IC4050 DT7150 IC5400	TT7080 TT7515 TT9300
		P20	**ACP2000 ACP100**	F7030					GC2040 GC4240	KCPM20				TT7400
		P30	**ACP2000 ACP100**	F7030						KCPK30 KCMP30				TT7800
	M Stainless Steel	M10	**ACM200**											
	S Exotic Alloy	M20	**ACM200**	F7030	T3130	CA6535	GX2160 AX2040		GC2040		MS2500	WKP35S		TT7800
		M30	**ACM200**	F7030						KC994M			IC5820	TT7800
	K Cast Iron	K10	**ACK2000 ACK100 ACK200**							KCK15			IC5100	TT7515
		K20	**ACK2000 ACK200**	MV1020 MC5020 F5010 F5020	T1115	CA420M	GX2120		GC3330 GC3220 GC3225 GC3020 GC3040	KC915M KC930M KC935M	MK1500	WAK15 WKP25S	IC5100 DT7150 IC4010 IC4050 IC4100	TT6800 TT7080

■ PVD Coated Grades

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P05	**ACZ150**		AH710 AH110	PR915 PR1005								
		P10	**AC1030U ACZ150 AC5025S AC520U**	VP15TF MS6015	AH120 AH725	PR930 PR1215 PR1225		TM1 VM1 DT4 DM4					IC807	
		P20	**AC1030U AC5025S AC520U AC530U**	VP15TF VP20RT	AH120 AH725 AH3135	PR1225 PR1425	IP2000	TM1 TM4 VM1 QM3 DM4	GC15 GC1125	KCU25			IC807 IC808 IC810	TT9080
		P30	**AC1030U AC530U**	VP15TF VP20RT	AH120 AH725 SH730	PR1425 PR1525 PR1535	IP3000 CY250	QM3	GC1125				IC328 IC330 IC830 IC928	TT8020 TT8080 TT9080
		P40	**AC1030U**			PR660	IP3000		GC4335 GC4235				IC830	TT8020 TT8080

Note: The data shown was collected from various published catalogues. The information may therefore not be up to date.

Grade Comparison Chart

■ PVD Coated Grades (continued)

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	M Stainless Steel / S Exotic Alloy	M10 S10	**AC5015S AC5025S AC510U AC520U ACZ150**	MP9005 MP9015 VP15TF VP05RT VP10RT	AH110 AH710 AH725 AH905 AH8005	PR005S PR015S PR915 PR1025 PR1215 PR1225 PR1305 PR1310	IP050S IP100S JP9105 JP9115	TM1 VM1 DT4 DM4 ZM3 ST4	GC1105 GC1115	KC5510 KCU10	TS2000	WSM01 WSM10 WSM10S	IC807 IC808 IC907 IC908	TT5080 TT3010
		M20 S20	**AC5015S AC5025S AC1030U AC520U**	MP9015 MP9025 VP15TF VP20RT VP20MF UP20M	AH630 AH120 AH725 AH8015	PR015S PR915 PR930 PR1025 PR1125 PR1215 PR1225 PR1325	IP100S HS9115	DT4 DM4 ZM3 QM3 TM4 ST4	GC15 GC1115 GC1125	KC5525 KCU25 KC5025	TS2500	WSM20 WSM20S	IC330 IC806 IC808 IC830 IC908 IC928	TT9080 TT9020 TT3020
		M30	**AC5025S AC6040M AC1030U AC520U AC530U**	MP7035 VP15TF VP20MF	AH630 AH645 AH725	PR1125 PR1525 PR1535		QM3 TM4 DT4 DM4	GC1125			WSM30 WSM30S	IC328 IC330 IC830 IC840 IC882	TT8020 TT8080 TT9080
		M40	**AC6040M AC1030U AC530U**	MP7035 VP15TF MS6015	AH645	PR1125 PR1535	GX30						IC830 IC928	TT8020 TT8080
	K Cast Iron	K10	**AC1030U AC510U ACZ150**	VP10RT	AH110 AH120	PR905	HX3305 HG3305 HG3315 HX3515 HG8010 TH315 ATH10E		GC15				IC810	TT6080
		K20	**AC1030U AC510U AC530U ACZ150**	VP10RT VP20RT VP15TF	AH120	PR905		DM4 QM3						TT6080
		K30	**AC1030U AC530U**	VP15TF VP20RT	AH110 AH120 AH725								IC830 IC908 IC910 IC928	
For Milling	P Steel	P10	**ACU2500 ACP200**	VP15TF MP6120	AH120 AH725	PR930 PR1225	PN215 PN15M JP4005 JP4105 JP4115 JP4120 GX2140	TM1 DT4 DM4		KC715M	T250M T350M F25M		IC807 IC903	TT2510 TT7080
		P20	**ACP3000 ACU2500 ACP200 ACP300**	VP15TF VP20RT MP6120 MP6130	AH9030 AH120 AH725 AH3135	PR1525 PR1225 PR1230 PR830	JP4020 JP4120 JS4045	TM1 TM4 DT4 DM4	GC1010 GC1025		MP3000 F30M	WSM20 WSM20S	IC807 IC808 IC810 IC380 IC330	TT7080 TT9030 TT9080
		P30	**ACP3000 ACU2500 ACP200 ACP300**	VP15TF VP30RT MP6130	AH3035 AH3135 AH120 AH130 AH140 AH725	PR1525 PR1535 PR1230	JD4045 JS4060 JX1045 JX1060 CY150 CY250 PTH30E	DM4 TM4 ZM3	GC1030 GC1130 GC2030	KC725M KC730M KC735M KC7140 KCU40	MM4500 F40M	WSM35 WSP45 WSP45S	IC328 IC330 IC380 IC830 IC928	TT8080 TT8020
		P40	**ACP3000 ACU2500 ACP300**	VP30RT	AH140		JS4060 JM4160 PTH40H						IC830	TT8020 TT8080
	M Stainless Steel	M10 S10	**ACU2500 ACM100 ACK300 ACP300**	MP9120 VP15TF VP10RT	AH110 AH120 AH330 AH725	PR1025 PR1225	JX1020 CY9020 JP4020 JP4120 PN08M PN215	TM1 DT4 DM4 ZM3	GC1025 GC1030 GC1130	KC522M			IC807 IC808 IC903 IC907 IC908	
		M20	**ACU2500 ACM300 ACP300**	MP7130 MP9120 MP9130 UP20M VP15TF VP20RT	AH120 AH130 AH725 AH3135 AH6030	PR1025 PR1225 PR1525	JP4120 JS1025 JX1015 CY150 CY15	DT4 DM4 ZM3		KC730M KC525M	F25M F30M T350M	WSM35 WSM35S WXM35	IC330 IC808 IC830 IC840 IC882 IC908 IC928	TT9080 TT9030
		M30	**ACM300**	MP7130 MP7140 MP9130 VP15TF	AH130 AH140 AH330 AH725 AH3135	PR1525 PR1535	JX1045 JM4160 PTH30E	DT4 DM4 ZM3	GC2030 GC1040	KC725M KC7140 KCU40	F30M F40M MM4500	WSM35 WSM35S WXM35	IC328 IC330 IC830 IC840 IC882	TT8020 TT8080 TT9080
		M40	**ACM300**	MP7140 VP15TF VP30RT	AH140	PR1535	GX30 JM4160 PTH40H						IC830 IC928	TT8020 TT8080
	K Cast Iron	K05	**ACK3000**		AH110		TH303 TH308 ATH80D							
		K10	**ACK3000 ACU2500**		AH110 AH120	PR905 PR1210							IC810	TT6080 TT7080
		K20	**ACK3000 ACU2500 ACK300**	VP20RT VP15TF	AH120 AH9030	PR905 PR1210 PR1510	JP4020 JP4120 PTH13S	DM4	K15W K20D K20W		MK3000 T150M	WKK25	IC808 IC810 IC830	TT6080 TT7515
		K30	**ACK3000 ACU2500 ACK300**	VP15TF VP20RT	AH725 AH110 AH120 AH330 GH110 GH130	PR1510 PR1210	JS4045 JX1045 CY150 CY250		GC1010 GC1020 GC1025 GC1030 GC1130	KC510M KC520M KC525M KCU40	MK2050 MH1000		IC830 IC810 IC908 IC910 IC928 IC950	TT6080

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grade Comparison Chart

■ Cermet *mark indicates coated cermet

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P10	**T1500Z* T1000A T1500A**	AP25N* NX2525 NX3035 VP25N*	GT720* GT9530* J9530* NS520	TN30,PV30*,TN60 TN6010,TN610 PV710*,PV7005* PV7010*	CZ25* CH550	Q15* Z15* T15 C7Z*	CT5015	KT125 HTX KT1120			IC20N IC30N IC520N	PV3030 PV3010 CT3000
		P20	**T1500Z* T2000Z* T2500Z* T3000Z* T1500A T2500A**	AP25N* NX2525 NX3035 MP3025*	NS530 NS730 GT530* GT730* AT9530* NS9530 GT9530* J9530*	TN60,TN6020 TN620,PV60* TN90 PV7020* PV7025* PV720	CZ25* CH550	T15 C7Z* C7X	GC1525*	KT6215 KT315* KT175 KT5020*	CM CMP C15M TP1020		IC20N IC30N IC520N IC530N	CT7000
		P30	**T2500A T3000Z***	MX2525 MP3025* VP45N*	NS9530 GT9530* AT9530*	TN620 PV7025* PV90* PV720		N40 C7X						
	K Cast Iron	K10	**T1000A**	AP25N* VP25N* NX2525	GT720* GT9530* NS9530 J9530* NS520	TN30 PV30* TN610 TN6010 PV710* PV7005* PV7010*	CH550		CT5015	KT125 HTX				PV3030 CT3000
For Milling	P Steel	P30	**T2500A T250A T4500A**	NX2525 MX3030 NX4545 VP45N*	NS540 NS740	TN90 TC60M TN100M	MZ1000* MZ2000* MZ3000* CH7030 CH7035		CT530	KT530M* KTPK20*	C15M		IC30N	

■ Cemented Carbide

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/ Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning / For Milling	P Steel	P10	**ST10P**		TH10		WS10		S1P					
		P20	**ST20E**	UTi20T	KS20		EX35		SMA	K125M			IC07 IC50M	UF10
		P30	**A30 A30N**	UTi20T	KS15F UX30	PW30	EX35 EX40		SM30				IC54 IC28	P30
		P40	**ST40E**		TX40		EX45		S6				IC54 IC28	
	M Stainless Steel	M10	**EH510**		TH10		EX35 WA10B	KM1	H10A	KU10,K313 K68,KYSM10	890		IC07,IC20 IC08	
		M20	**EH520**	UTi20T	KS20		EX35		H13A	K313 K68	HX 883		IC07,IC20 IC08	UF10
		M30	**A30 A30N**	UTi20T	UX30				H10F SM30				IC28	
	K Cast Iron	K01	**H2 H1**	HTi05T	KS05F		WH01 WH05			KU10,K313 K68,K115M			IS8	
		K10	**H1 EH510**	HTi10	TH10	KW10 GW15	WH10	KM1	H13A	KU10,K313 K68,K115M K110M KY3500	890		IC20,IS8	K10
		K20	**G10E,H10E EH520**	UTi20T	KS15F KS20	GW25	WH20	KM3	H13A	KMF KY3500 KYHS10	890 883 HX		IC20 IS8	
		K30	**G10E,H10E**	UTi20T			WH30			KY3500	883			
	S Exotic Alloy	S10 S20	**EH510 EH520**	RT9005 RT9010 MT9015 TF15	TH10 KS05F KS15F KS20	SW05,SW10 SW25,KW10 GW15	WH10		H10A H10F H13A	KU10,K313 K68,KMF K110M,KYHS10 K1025	HX H25		IC20,IC07 IC08,IC28	K10
	Micro-fine Grained Carbide	Z01	**F0**	SF10,MF07 MF10,TBA16A	F,MD1508 MD08F		NM08						IC07	UF1A
		Z10	**AFU XF1**	HTi10 MF20	M,MD10 MD05F,MD07F	FW30	NM15		6UF,8UF PN90,H6FF		890		IC07	UF1A
		Z20	**AF0 AF1**	TF15 MF30	EM10,MD20 MD15		BRM20 EF20N		12UF		890 883		IC08	UF10
		Z30	**A1**		UM		NM25		N6F,H10F		883		IC08	

■ Ceramic

Applications	Work Material	Sumitomo Electric	Tungaloy	Kyocera	NTK	Sandvik	Kennametal	TaeguTec
For Turning / For Milling	H Hardened Steel	**NB100C**	WG300 LX11	A66N A65 KT66 PT600M	HC4,HC7 ZC7,WA1	GC6050 CC650 CC670	KY1615 KY4300	AB20 AB2010
	K Cast Iron	**NB90S**	LX11,LX21 CXC73,FX105 CX710	A65,A66N KA30,KS500 KS6000,KT66 PT600M CS7050,KS6050	HC1,HW2,HC2,HC6 HC7,WA1,SX1,SX2 SP2,SX9,SX8	CC620,CC650 CC6090 GC1690	KY1615,KY1310 KY1320,KY3500 KY4300	AW120,AB30 AS500,AS10 SC10

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grade Comparison Chart

■ CBN

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	NTK	Chukyo	Sandvik	Kennametal	SECO Tools	ISCAR
For Turning / For Milling	K Cast Iron	K01	**NCB100 BNC500* BN7000 BN500**	MB710 MB5015	BX910 BX930 BX870	KBN475 KBN60M	B30 B16		CB50 CB7525	KB1340		IB50 IB85
		K10	**BN7000 BN500**	MB710,MB730 MB5015,MB4020	BX470,BX480 BX950	KBN60M KBN900	B23 B16	HB55,HB56 HB569 HB580,HB57	CB7925		CBN200,CBN300 CBN300P,CBN400C	IB55 IB90
		K20	**BN7000 BNS800**	MB730,MB4020 MB4120,MBS140	BX470,BX480 BXC90,BX90S	KBN900		HB56,HB569 HB580,HB57				
		K30	**BNS800**	MB4120,MBS140 BC5030	BXC90 BX90S			HB57		KB5630	CBN500	
	S Exotic Alloy	S01	**NCB100 BN7000**	MB730 MB4020 MB4120	BX940,BX950 BX470,BX480 M714B			HB55 HB580 HB52		KB5630 KB1340		IB85 IB05S IB10S
	H Hardened Steel	H01	**BNC2010 BNC100 BN1000 BN2000 BNX10**	BC8105 BC8110 MBC010 MB810 MB8110	BXM10 BX310	KBN05M KBN10M KBN510	B5K B52	HB55 HB550 HB580 HB590	CB7105	KB5610	CH0550 CBN10 CBN100 CBN060K	IB05H IB50 IB10HC
		H10	**BNC2010 BNC2020 BNC160 BNC200 BN2000**	BC8110 BC8120 MBC020 MB8025 MB8110 MB825	BXM10 BX330 BX530	KBN05M KBN25M KBN525	B5K B6K B52 B36	HB55 HB59 HB550 HB580 HB52	CB7015 CB7115 CB20	KBH20 KB5610 KB5625	CBN10 CBN100 CBN150 CBN060K CBN160C	IB10H IB55 IB25HA
		H20	**BNC2020 BNC200 BNX20**	BC8120,BC8020 MBC020 MB8025,MB8120	BXA20 BXM20 BX360	KBN30M KBN35M KBN900	B36 B40 B6K	HB57,HB59 HB590 HB580	CB7025 CB7125 CB50	KBH20 KB5625 KB5630	CH2540 CBN150 CBN160C	IB20H,IB20HC IB25H,IB25HC
		H30	**BNC300 BN350 BNX25**	BC8130 MB8130 MB835	BXM20 BXA20 BXC50 BX380	KBN30M KBN35M KBN900	B40	HB57 HB580	CB7135 CB7525	KB5630	CH3515	IB90

*mark: For ductile cast iron cutting

■ Polycrystalline Diamond

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	NTK	Chukyo	Sandvik	Kennametal	SECO Tools	ISCAR
For Turning / For Milling	N Non-Ferrous Metal	N01	**DA1000 DA90**	MD205	DX180 DX160	KPD001	PD1		CD05 CD10	KD1400		ID5
		N10	**DA1000 DA150**	MD205 MD220	DX140	KPD001 KPD010 KPD230	PD2	HD100 HD30 HD60	CD1810	KD1400 KD1425	PCD05 PCD10	ID5
		N20	**DA1000 DA2200**	MD220 MD230	DX120 DX110	KPD230 KPD250	PD2	HD100 HD30 HD50		KD1400 KD1425	PCD05 PCD20	
		N30	**DA1000 DA2200**	MD2030 MD230	DX110			HD30,HD50 HD700 HD100		KD1400	PCD05 PCD30 PCD30M	

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Chipbreaker Comparison Chart

■ Negative Type Inserts

Work Material	Applications	Sumitomo	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
P Steel	Fine Cutting	**EFA**	FH	TF	GP			QF	FF	FF1		SF	
		EFL,EFB	FS,FY	NS,ZF	XP,XF,VF	FE	WM			FF2	FP5		FA
	Finishing	**ELU,EFE**	SA,SY	NM	PP,XQ,CQ	BE	ZF1	LC	FN		NF3		FG
		ESU	SH	TS,TSF	HQ	CE,B,BH	UL,WV	XF,MF	CT	MF2		NF	FC
	Finishing (Wiper Edge)	**ELUW**		AFW,FW	WP			WL,WP		W-FF2			
		ESEW	SW	ASW,SW	WQ			WF,WMX	FW	W-MF2	NF	WF	WS
	Finishing to Light Cutting	**ESE,SX**	LP	AS,ZM	CJ,XS	AB,CT	ZW1,WR	PF,KF	LF,33		MP3,NS6	F3P,TF	
	Medium Cutting	**EGU**(EUG)	MA,MV	TM,TQ	HS,PS	AH	ZP	XM,QM PMC	P,MG	M3		GN	ML,MP MC
		EGE,EUX	MH,MP	DM,AM	PQ,GS PT,PG	AE,AY	Z5	PM,SM KM,HM	MN,MP1		MP5,NM4 NM6	RF,LF	PC,MT
	Medium Cutting (Wiper Edge)	**EGUW**	MW					WM	MW,RW	W-M3	NM	WG	WT
	Roughing	**EMU,EME**	RP,GH	TH,S	HT,GT PH	RE,AR	G	PR,XMR KR	RP	M5,MR7	RP5,NM9 RP7	M3P,NR	RT
		EMX	HAS,MT	CH					RN	MR6			
	Heavy Cutting	**EHG**	HZ,HX,HL	THS,TRS	PX, Standard	TE,UE		QR	RM,MR	R4,R5,M6	NR6,NRF	NM	RX
		EHP	HH,HXD,HR	65				HR,SR	RH	R7,MR7	NR8	TNM	RH
		EHU,EHW	HV			H							HT,HD HY
		EHF	HCS	TUS		HX,HE		MR		RR9	NRR	R3P	HZ
M Stainless Steel	Finishing	**ESU,EEF**	LM,SH	SS	MQ,GU	SE,MP	ZF1	MF	FP,FS,LF	MF2	NF4		EA,SF
	Light to Medium Cutting	**EEX,EEG**	GM,MS	SF,SA	MS,MU	PV	ZP	23	MS	MF1,M1		TF,VL	EM
	Medium Cutting	**EGU**	MM	SM		DE		MM,MMC SMR	MP	MF3,M3	NM4	M3M PP	ET
	Roughing	**EHM**	ES,1M,2M,HL	S					UP	MF4,MF5	NR4,RM5		VF
		EEM,EMU	RM,GH,HM	SH	TK			MR,MRR		M5,MR3,MR4		MR	SU
K Cast Iron	Light Cutting	**ENZ**	LK,MA,MK	CM,CF	Standard, C	V,VA		KF	UN	M4	NM5	GN	MT
	Medium Cutting	**EGZ**(EUX)	GK,RK,GH	Standard, CH, 33	ZS,GC	Y,RE		KM,KR KRR		MR7	RK5,RK7		RT
N Non-Ferrous Metal	Finishing	**RAX / LAX**		P	AH				MS				
S Exotic Alloy	Finishing	**EEF**	LS,FJ	HRF				SF,SGF			NFT		
	Medium Cutting	**EEG,EEX**	MS,MJ	HMM,SA,HRM		VI		SM,SMC			NMT		
	Roughing	**EMU,EEM**	RS,GJ					SMR			NRT		
H Hardened Steel	Finishing	**FV***		HP*									
	Light Cutting	**LV***	BF*	HF*	HH*,HL*								
	Medium to Roughing	**EGH**											
	Carburised Layer Removal	**SV***	BM*	HM*	HD*			HGR*					

( ) indicates a discontinued item. *mark indicates CBN / PCD tool breaker

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Chipbreaker Comparison Chart

■ Positive Type Inserts

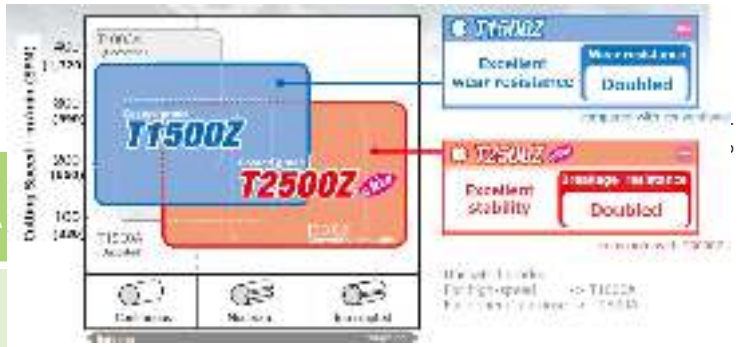
Work Material	Applications	Sumitomo	Mitsubishi	Tungaloy	Kyocera	Mitsubishi Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
P Steel	Finishing	**EFC**	FJ,AM	01,JRP,JTS	CF,GF,VF		AZ7,AMX FG	UM		GT-F1	FM4		
		EFB,ELU (EFP,EFK)	FP,FM FV,SQ	PSF,PF,23 SS,JSS	GP,XP,PP MQ,DP	JQ,MP	ZR	PF,UF MF,XF	11,UF,MF KF,XF	FF1	FP4	PF	FA,FX
	Finishing (Wiper Edge)	**ELUW**	SW		WP			WF	FW	W-F1	PF	WF	WT
		SDW						WK,WM	MW	W-F2		WG	
	Finishing to Light Cutting	**MESI**	SMG	JS	CK		YL,1L						SA
	Light Cutting	**ELB,ESU** (ENK,ENF)	LP,LM SV,MQ	PSS,PS,TS TJS,CM	HQ,XQ GK	JE	AZ8,AM2 AM5	PM,UM XM	LF	F1	MP4,MM4 FP6	SM,14	FG,PC
		(M)EFM			GQ, SK, Standard		AF1,CL		MP	MF2			
	Light to Medium Cutting	**EGU**	Blank	PS, PM	HQ			PM, UM			PM5		
		EMU	MP,MM MK,MV	PM				PR,UR,MMC MPC,XR	MF	F2,M3 M5	PM5,RP4 RM4	19	MT,PMR
M Stainless Steel	Finishing	**MEFC**	FM,FV	PSF,PF SS,JSS			AZ7,AM3	MF,XF	11,UF	FF1	FM4	PF	FA,FX
	Finishing to Light Cutting	**MESI**	SMG				YL,1L	UF	LF,FP				FG
	Light Cutting	**ELB,ESU**	LM,SV		MQ,HQ		AM5,CL	MM	MP	F1,MF2	MM4,PS5	SM	PC
	Light to Medium Cutting	**EMU**	MM, MV, Blank	PM				UM,MR XR,UR	MF	F2,M3 M5	PM5,RM4		MT,PMR
K Cast Iron	Finishing	**EFC**		CF				KF,XF	11,UF		FK6		
	Light to Medium Cutting	**EMU**	MK				AF1,FM	KM,UM,XR	FP,LF MF,MP	M5	MK4,RK4		MT
N Non-Ferrous Metal	Finishing	**NAG,AW,AY**	AZ	AL,PP	AH			AL	HP	AL	PM2	AS,AF	FL
	Finishing to Light Cutting	**LD*,GD***											SA
H Hardened Steel	Finishing	**FV***		HP*									
	Light Cutting	**LV***	BF*										

( ) indicates a discontinued item. *mark indicates CBN / PCD tool breaker

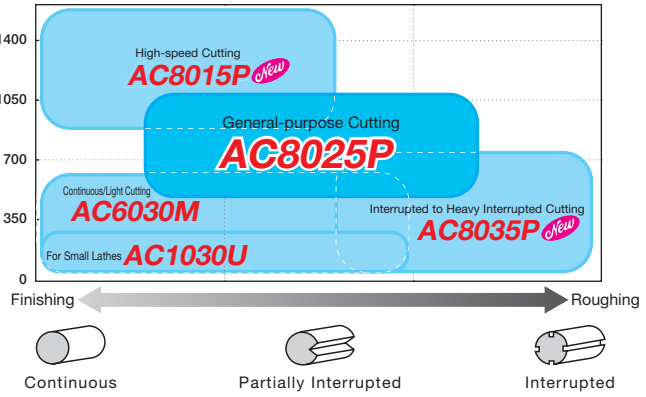
Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grades

- Fine Cutting to Finishing (Cermet)

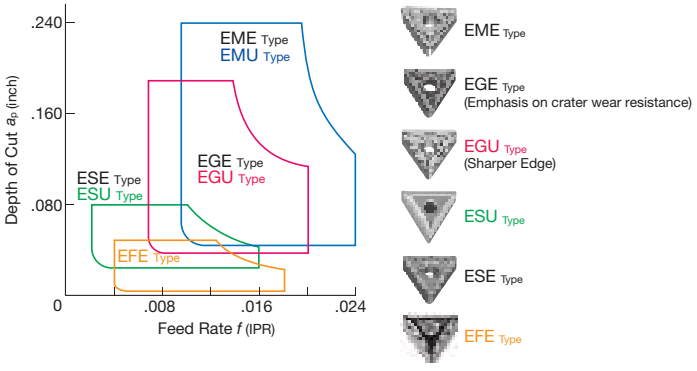


- Finishing to Roughing (Coated Carbide)

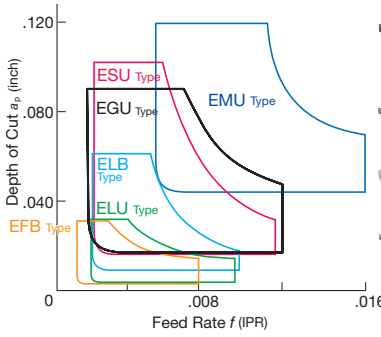


Main Chipbreakers

Negative Type



Positive Type

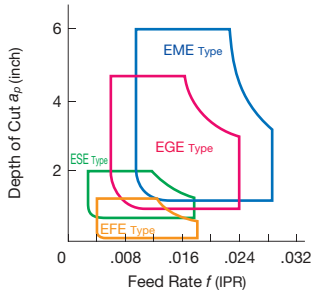




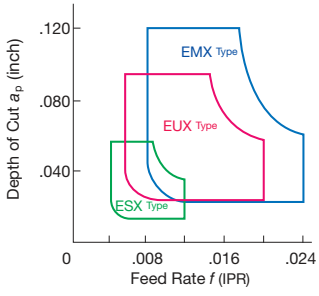
Sub-Chipbreakers

Negative Type

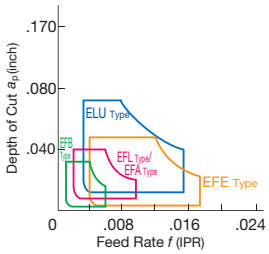
Chipbreakers for High-efficiency Machining



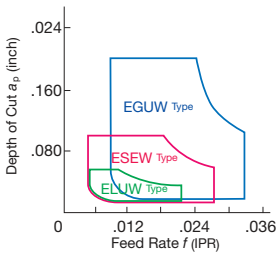
Strong Cutting Edge Chipbreakers



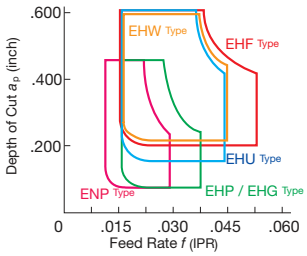
Chipbreakers for Shallow Depth of Cut



Wiper Insert



Chipbreakers for Heavy Cutting



Grades T1000A / T1500A / T1500Z / T2500Z

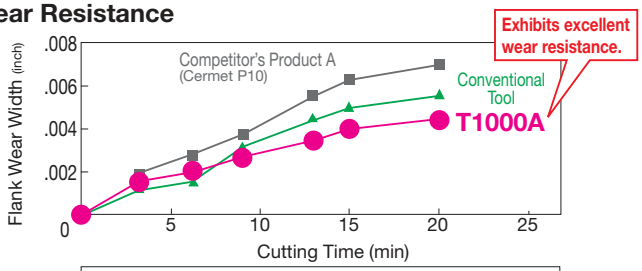



T1000A : High-hardness cermet with outstanding wear resistance and toughness. Creates high dimensional accuracy for continuous steel machining or finishing of powdered metal or cast iron.
T1500A : A general-purpose cermet made from hard grains with different grain sizes, delivering functionality that provides an excellent balance of wear resistance and toughness, along with good surface finish quality.
T1500Z : Incorporates Brilliant Coat® PVD coating with excellent lubricity to provide better wear resistance and consistent surface finishes in low-speed cutting applications such as machining of small products or low carbon steel.
T2500Z : Features Brilliant Coat® PVD coating along with optimized substrate for doubling breakage resistance in moderate to interrupted cutting applications.

Performance

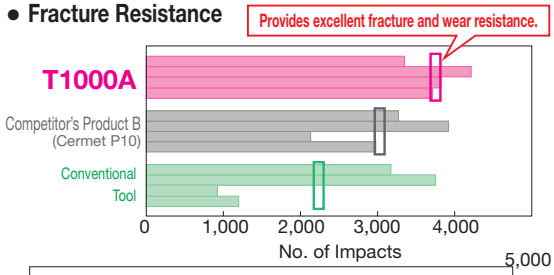
T1000A

• Wear Resistance



Part Material: 4135 Insert: CNMG432ESU
Cutting Conditions: v_c=1,050 SFM, f=0.008 IPR a_p=.060", Dry

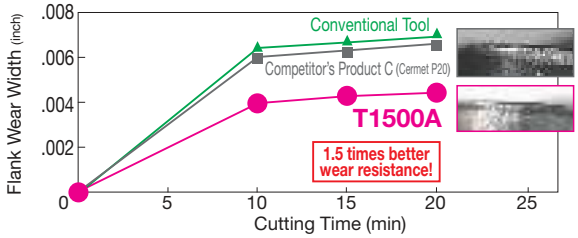
• Fracture Resistance



Part Material: 4135 Insert: CNMG432ESU
Cutting Conditions: v_c=755 SFM, f=0.008 IPR, a_p=.040", Wet

T1500A

• Wear Resistance



Part Material: 4135 Insert: CNMG432ESU
Cutting Conditions: v_c=755 SFM, f=0.008 IPR, a_p=.040", Wet

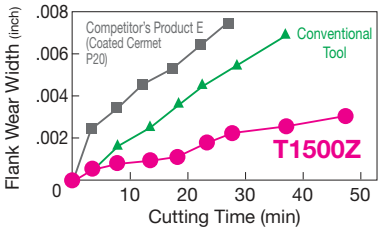
• Machined Surface Quality



Part Material: 1045 Insert: DNMG431ELU
Cutting Conditions: v_c=490 SFM, f=0.005 IPR, a_p=0.004", Wet

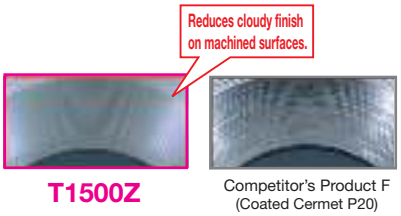
T1500Z

• Wear Resistance



Part Material: 4135 Insert: CNMG432ESU
Cutting Conditions: v_c=755 SFM, f=0.008 IPR, a_p=.040", Wet

• Machined Surface Quality



Part Material: 8620H Insert: DNMG432ESU
Cutting Conditions: v_c=490 SFM, f=0.008 IPR, a_p=.040", Wet



Part Material: STKM13A Insert: CNMG432ESU
Cutting Conditions: v_c=330 SFM, f=0.006 IPR, a_p=.040", Wet

Recommended Cutting Conditions

Part Material	Cutting Process	Chipbreaker	Grade	Cutting Conditions Min. - Max.		
				Depth of Cut a_p (inch)	Feed Rate f (IPR)	Cutting Speed v_c (SFM)
Mild Steel (SS400 and others)	Fine Finishing	EFB / EFL	T1500Z	.008 - .040	.002 - .010	490 - 1500
	Finishing	EFE / ELU	T3000Z	.012 - .070	.003 - .015	490 - 1500
Carbon Steel Alloy Steel (S45C, SCM435, and others)	Fine Finishing	EFB / EFA	T1500A	.008 - .040	.002 - .010	330 - 1200
	Finishing	EFE / ESU	T1500A	.020 - .080	.003 - .015	330 - 1200
	Medium	EGU	T1500Z	.030 - .160	.006 - .020	330 - 1200
Hard Steel Alloy Steel (SCM440H and others)	Fine Finishing	EFB / EFA	T1000A	.008 - .040	.002 - .010	165 - 1000
	Finishing	EFE / ESU	T1500Z	.020 - .080	.003 - .015	165 - 1000
	Medium	EGU	T1500Z	.030 - .160	.006 - .020	165 - 1000

Grades

ABSOTECH ABSOTECH ABSOTECH ABSOTECH
New AC8015P / AC8025P / New AC8035P / AC1030U

Covers a wide range of machining applications from high-speed to interrupted cutting and small lathes

AC8015P : Development of crater damage is suppressed by controlling the orientation of the alumina crystal grains. Achieves long, stable tool life during high-speed and high feed cutting.

AC8025P : Our 1st recommended grade for turning steel. Surface smoothing technology significantly suppresses adhesion of work material components. Achieves long, stable tool life with various cutting speeds and work materials.

AC8035P : Tensile stress removal of the coating layer greatly improves fracture resistance. Achieves long, stable tool life during heavy interrupted cutting.

AC1030U : Employs a new PVD coating, and a dedicated tough carbide substrate. High-quality cutting edge grade suppresses adhesion and micro-chipping, realizing excellent machined surface quality.

Performance

AC8015P

● Alumina crystal grain orientation control technology suppresses crater damage due to chip abrasion

Conventional Tool

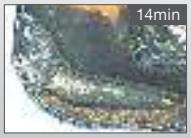




Crystal orientation not aligned



TiCN layer exposed



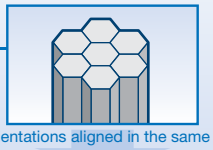
Tool life

Crater damage progression due to peeling of alumina layer

Workpiece Material: SUJ2 (O.D. Continuous) Insert: CNMG432EGU
Cutting Conditions: v_c=985 SFM, f=0.012 IPR, a_p=060", Wet

AC8015P



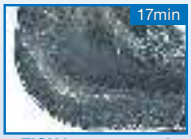


Crystal orientations aligned in the same direction

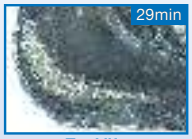
Significantly suppresses alumina layer damage



Minor Wear



TiCN layer exposed



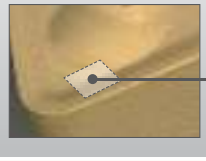
Tool life

Suppresses crater damage due to chip abrasion → Twice the crater wear resistance

AC8025P

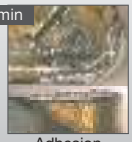
● Surface smoothing treatment significantly suppresses adhesion and chipping

Conventional Tool

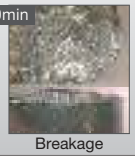




Ra 0.4μm



Adhesion



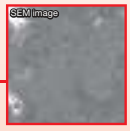
Breakage

Unable to Continue

Workpiece Material: SCM415 (Face) Insert: CNMG432EGU
Cutting Conditions: v_c=330-985 SFM, f=0.012 IPR, a_p=060", Wet

AC8025P





Ra 0.04μm



Normal Wear





Minor Damage Only, Able to Continue

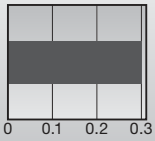
Suppresses adhesion with ultra-smooth surface → At least twice the adhesion/fracture resistance

AC8035P

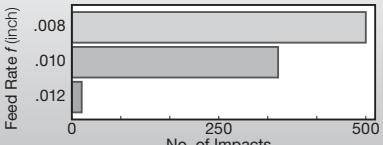
● Special surface treatment reduces tensile stress in the coating layer, significantly suppressing breakages

Conventional Tool





Tensile stress in coating (GPa)

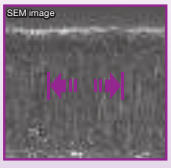


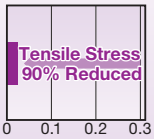


Unable to Continue

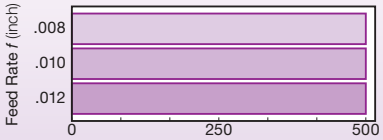
Workpiece Material: SCM435 (O.D. Interrupted) Insert: CNMG120408N-GU
Cutting Conditions: v_c=525 SFM, f=0.008-0.012 IPR, a_p=080", Dry

AC8035P





Tensile stress in coating (GPa)





All Corners Able to Continue

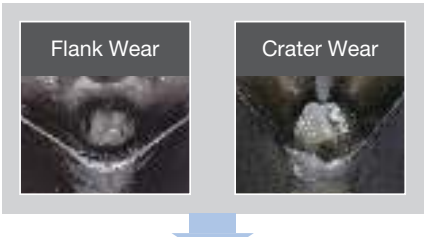
Suppresses crack growth and breakages by reducing tensile residual stress → At least twice the fracture resistance

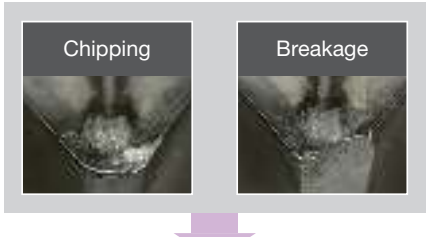
■ Application Guide

*Chipbreaker dimensions in mm

1st Recommended Grade AC8025P + **EGU Type Chipbreaker** (1st Recommended)

	Chipbreakers for High-efficiency Machining		Main Chipbreakers	Strong Cutting Edge Chipbreakers
Finishing to Shallow Depth of Cut	EFE Type	ESE Type	ESU Type	ESX Type
General-purpose	EGE Type		EGU Type (1st Recommended)	EUX Type
Roughing to Large Depth of Cut	EME Type		EMU Type	EMX Type





Better Wear Resistance — High-speed Machining **AC8015P**

To improve tool life	EGU Type
To improve machining efficiency	EGE Type

Better Toughness — Interrupted Machining **AC8035P**

To improve tool life	EGU Type
To improve machining stability	EUX Type

Dimensions in mm

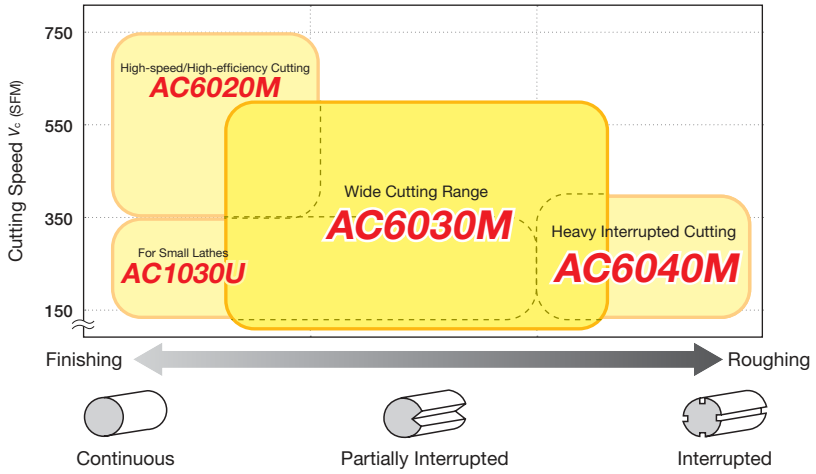
P Steel Recommended Cutting Conditions

(Red text indicates 1st recommendation)

Workpiece Material	Cutting Process	Chipbreaker	Grade	Cutting Conditions Min. - Max.		
				Depth of Cut a_p (inch)	Feed Rate f (IPR)	Cutting Speed v_c (SFM)
Mild Steel (SS400 and others)	Fine Finishing	EFB	**T1500Z**	.008 - .040	.002 - .010	330 - 1500
	Finishing	EFE	**AC8015P**	.020 - .060	.004 - .016	850 - 1600
	Medium	**EGU**	**AC8025P**	.040 - .160	.008 - .020	650 - 1200
	Rough	EMU	**AC8035P**	.060 - .240	.012 - .024	450 - 800
Carbon Steel Alloy Steel (S45C, SCM435, and others)	Fine Finishing	EFB	**T1500Z**	.008 - .040	.002 - .010	330 - 1100
	Finishing	EFE	**AC8015P**	.020 - .060	.004 - .016	700 - 1400
	Medium	**EGU**	**AC8025P**	.040 - .160	.008 - .020	500 - 850
	Rough	EMU	**AC8035P**	.060 - .240	.012 - .024	350 - 600
Hard Steel Alloy Steel (SCM440H and others)	Fine Finishing	EFB	**T1500Z**	.008 - .040	.002 - .010	160 - 900
	Finishing	EFE	**AC8015P**	.020 - .060	.004 - .016	550 - 1100
	Medium	**EGU**	**AC8025P**	.040 - .160	.008 - .020	400 - 750
	Rough	EMU	**AC8035P**	.060 - .240	.012 - .024	300 - 550

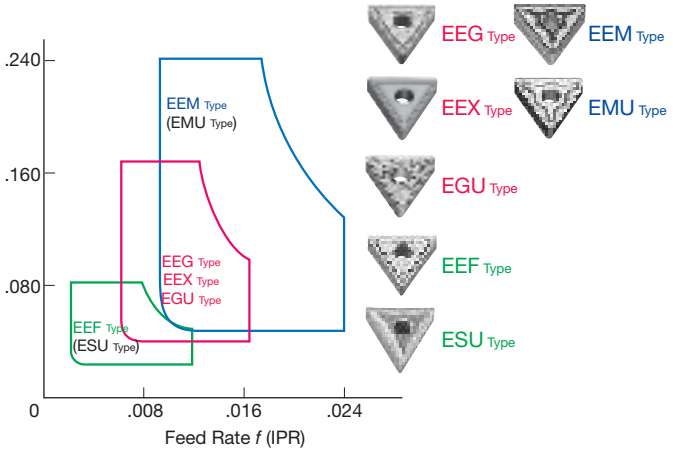
Stainless Steel M

Grades

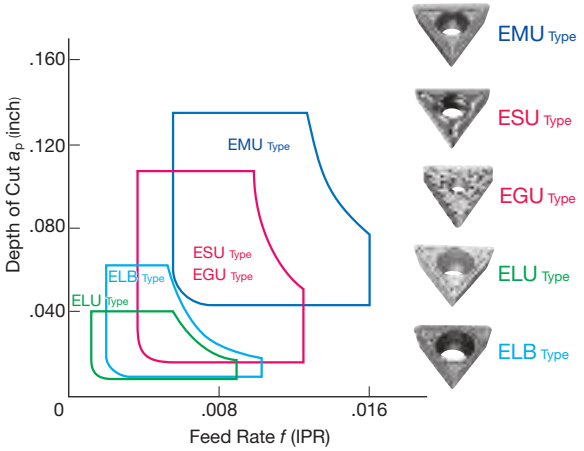


Chipbreakers

Negative Type



Positive Type



Refer to the Tools for Small Lathes chapter D7 for the Chipbreaker Selection Guide for ground (G Class) inserts.

Recommended Cutting Conditions

(Red text indicates 1st recommendation)

Workpiece Material			Cutting Process	Chipbreaker	Grade	Cutting Conditions Min. - Max.		
						Depth of Cut a_p (inch)	Feed Rate f (IPR)	Cutting Speed V_c (SFM)
Cr-based	Ferritic	SUS405, SUS410L, SUS430, SUS430F, SUS434, SUS447FJ1	Finishing	EEF(ESU)	AC6020M	.020 - .080	.002 - .010	550 - 1000
			Medium	EEG/EGU/EEX	AC6030M	.040 - .160	.004 - .015	450 - 900
			Rough	EEM	AC6040M	.060 - .240	.008 - .025	450 - 450
	Martensitic	SUS403, SUS410, SUS420J2,SUS420F, SUS440F	Finishing	EEF(ESU)	AC6020M	.020 - .080	.002 - .010	400 - 900
			Medium	EEG/EGU/EEX	AC6030M	.040 - .160	.004 - .015	300 - 750
			Rough	EEM	AC6040M	.060 - .240	.008 - .025	250 - 650
Cr/Ni-based	Austenitic	SSU304, SUS304L, SUS316, SUS316L, SUS303, SUS321	Finishing	EEF(ESU)	AC6020M	.020 - .080	.002 - .010	400 - 900
			Medium	EEG/EGU/EEX	AC6030M	.040 - .160	.004 - .015	300 - 750
			Rough	EEM	AC6040M	.060 - .240	.008 - .025	250 - 650
	Duplex (Austenitic/ Ferritic)	SUS329J1, SUS329J3L, SSU329J4L	Finishing	EEF(ESU)	AC6020M	.020 - .080	.002 - .010	300 - 650
			Medium	EEG/EGU/EEX	AC6030M	.040 - .160	.004 - .015	250 - 600
			Rough	EEM	AC6040M	.060 - .240	.008 - .025	225 - 525
	Deposition Hardened Structures	SUS630, SUS631, SUS632J1	Finishing	EEF(ESU)	AC6020M	.020 - .080	.002 - .010	300 - 525
			Medium	EEG/EGU/EEX	AC6030M	.040 - .160	.004 - .015	225 - 500
			Rough	EEM	AC6040M	.060 - .240	.008 - .025	150 - 400

Stainless Steel M

Grades

ABSOTECH AC6020M / ABSOTECH AC6030M / ABSOTECH AC6040M / ABSOTECH AC1030U

AC6020M : Combines a high-hardness carbide substrate with excellent wear resistance and a new CVD coating with improved coating strength to achieve both excellent wear resistance and fracture resistance. Achieves long, stable tool life during high-speed cutting.

AC6030M : Our 1st recommended grade for turning of stainless steel, achieving long and stable machining. Drastically reduces the abnormal damage common in stainless steel machining, thanks to the improved coating strength and excellent adhesion.

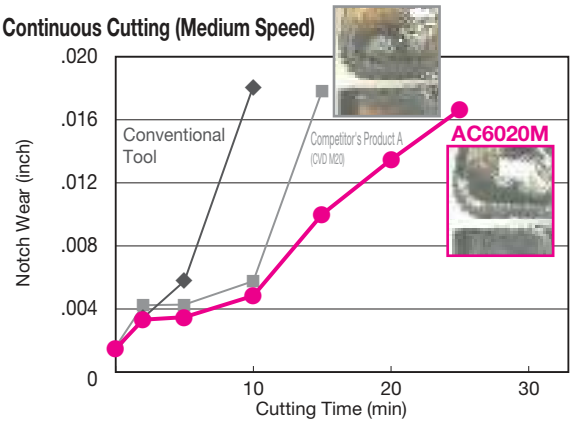
AC6040M : Drastically improves reliability in the unstable cutting range, thanks to the excellent adhesion and peel-off resistance of the new PVD coating as well as the improved fracture resistance of the dedicated carbide substrate.

AC1030U : High-quality cutting edge grade suppresses adhesion and micro-chipping, realizing excellent machined surface quality.

Performance

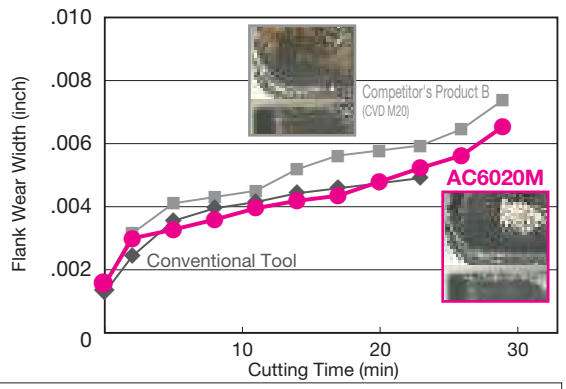
AC6020M

● Continuous Cutting (Medium Speed)



Workpiece Material: 316L Insert: CNMG432EGU
Cutting Conditions: v_c=490 SFM, f=0.012 IPR, a_p=.080", Wet

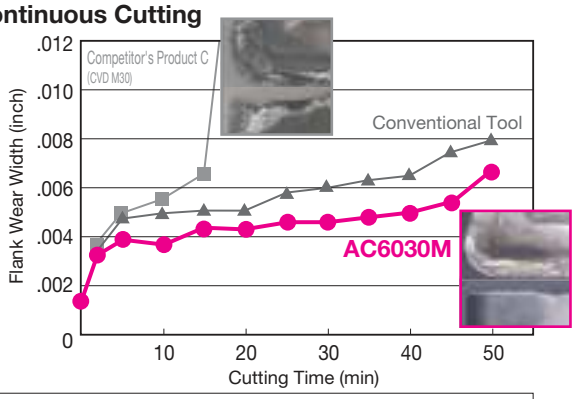
● Continuous Cutting (High Speed)



Workpiece Material: 316L Insert: CNMG432EGU
Cutting Conditions: v_c=656 SFM, f=0.012 IPR, a_p=.080", Wet

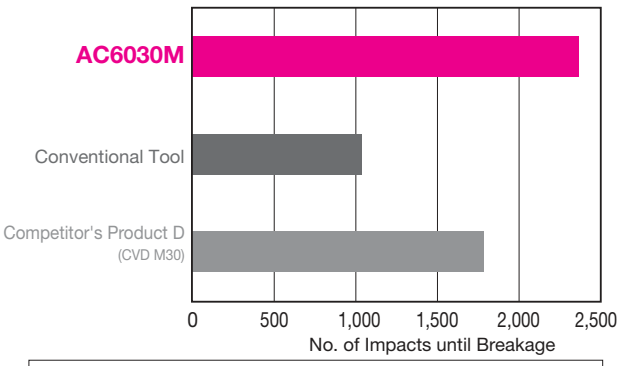
AC6030M

● Continuous Cutting



Workpiece Material: 316 Insert: CNMG432EEX
Cutting Conditions: v_c=656 SFM, f=0.008 IPR, a_p=.080", Wet

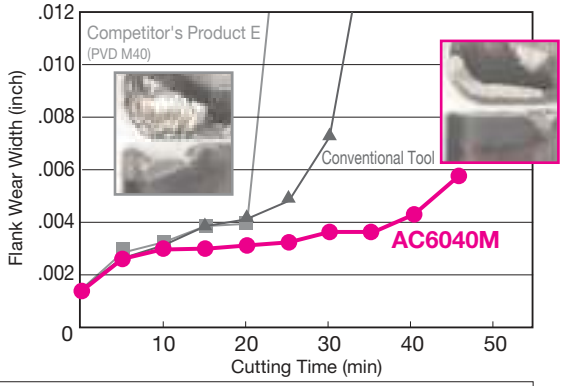
● Interrupted Cutting



Workpiece Material: 316 Insert: CNMG432EGU
Cutting Conditions: v_c=330 SFM, f=.004 IPR, a_p=0.04", Wet

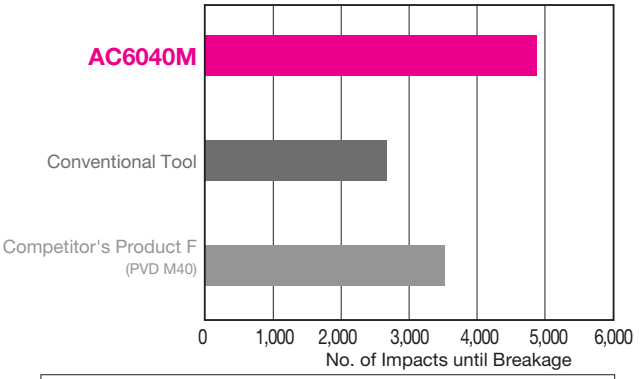
AC6040M

● Continuous Cutting



Workpiece Material: 316 Insert: CNMG432EGU
Cutting Conditions: v_c=490 SFM, f=.008 IPR, a_p=.080", Wet

● Interrupted Cutting

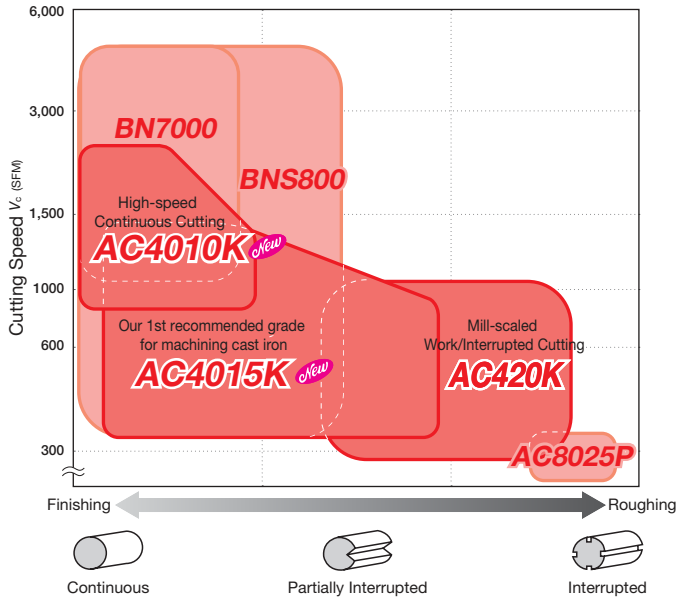


Workpiece Material: 316 Insert: CNMG432EGU
Cutting Conditions: v_c=755 SFM, f=.009 IPR, a_p=.030", Dry

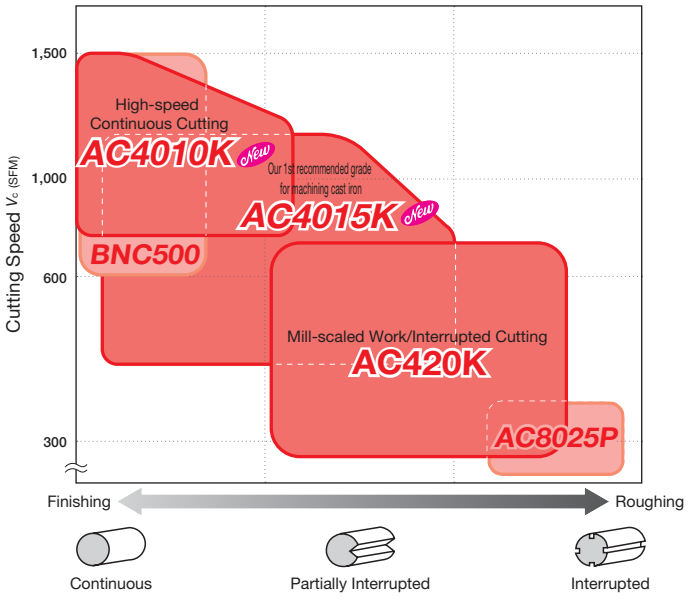
Grades

CBN Coated SUMIBORON BNC500 / SUMIBORON BN7000 / Solid SUMIBORON BNS800··· L7

• FC (Gray Cast Iron)

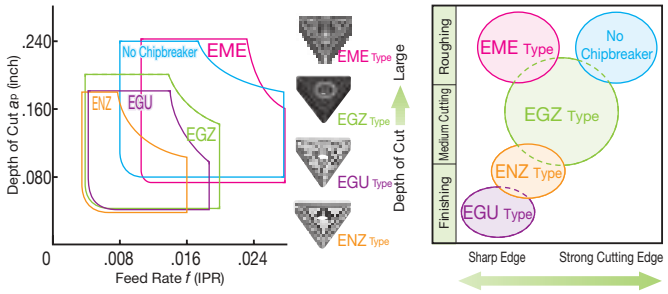


• FCD (Ductile Cast Iron)

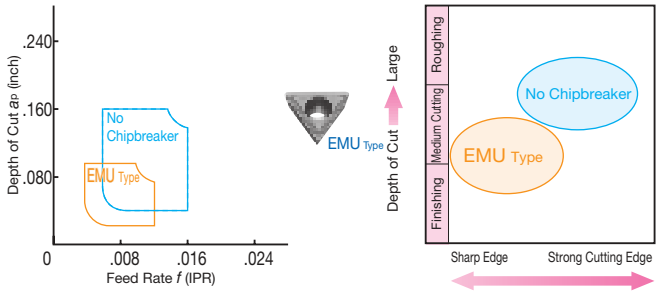


Chipbreakers

Negative Type



Positive Type



K Cast Iron Recommended Cutting Conditions

(Red text indicates 1st recommendation)

Workpiece Material	Cutting Process	Grade	Cutting Conditions (Min. - Max.)		
			Depth of Cut a_p (inch)	Feed Rate f (IPR)	Cutting Speed v_c (SFM)
Gray Cast Iron (FC250, etc.)	High-speed	BN7000	.004 - .040	.004 - .020	1,650 - 6,500
	Continuous to General	**AC4010K**	.020 - .240	.004 - .015	650 - 2,300
	Interrupted	AC4015K	.020 - .240	.004 - .020	600 - 1,500
	Heavy Interrupted	AC420K	.020 - .240	.004 - .025	500 - 1,000
Ductile Cast Iron (FCD450, etc.)	High-speed	BNC500	.004 - .020	.004 - .015	500 - 1,600
	Continuous to General	AC4010K	.020 - .240	.004 - .015	600 - 1,500
	Interrupted	**AC4015K**	.020 - .240	.004 - .020	525 - 1,300
	Heavy Interrupted	AC420K	.020 - .240	.004 - .025	400 - 800
High-strength Ductile Cast Iron (FCD700, etc.)	High-speed	BNC500	.004 - .020	.004 - .015	650 - 1,600
	Continuous to General	AC4010K	.020 - .240	.004 - .015	525 - 1,300
	Interrupted	**AC4015K**	.020 - .240	.004 - .020	450 - 1,150
	Heavy Interrupted	AC420K	.020 - .240	.004 - .025	250 - 725

Grades

ABSOTECH
New AC4010K / New AC4015K / AC420K

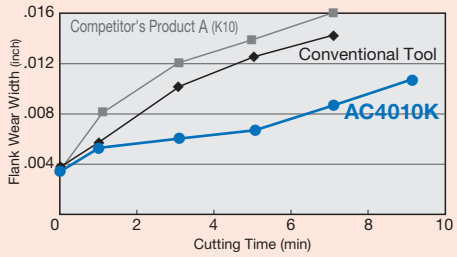


AC4010K : Our 1st recommended grade for machining gray cast iron.
Adopts an ultra-thick new CVD coating to realise ultra-high-speed machining at V_C = 2,300 SFM.
AC4015K : Our 1st recommended grade for ductile cast iron.
New high-adhesion, high-strength CVD coating realises both wear resistance and chipping resistance.
AC420K : Superior fracture resistance, providing excellent stability in interrupted unstable cutting and when cutting mill-scaled work.

Performance

AC4010K/AC4015K Wear Resistance

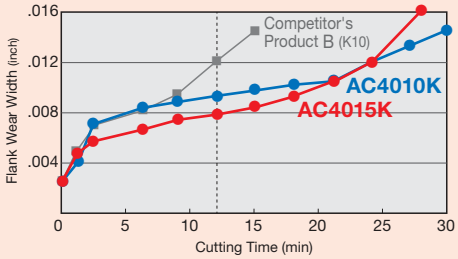
• Gray Cast Iron





Workpiece Material: FC250 Continuous Insert: CNMG432EGZ
Cutting Conditions: v_c=1,970 SFM, f=0.016 IPR, a_p=.080", Dry

• Ductile Cast Iron

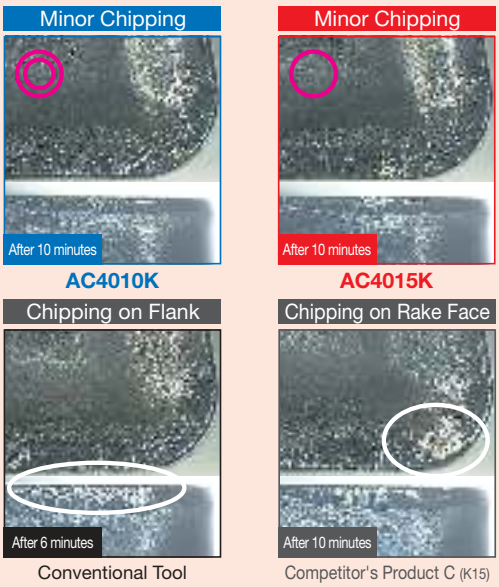




Workpiece Material: FCD700 Continuous Insert: CNMG432EGZ
Cutting Conditions: v_c=460 SFM, f=0.012 IPR, a_p=.060", Wet

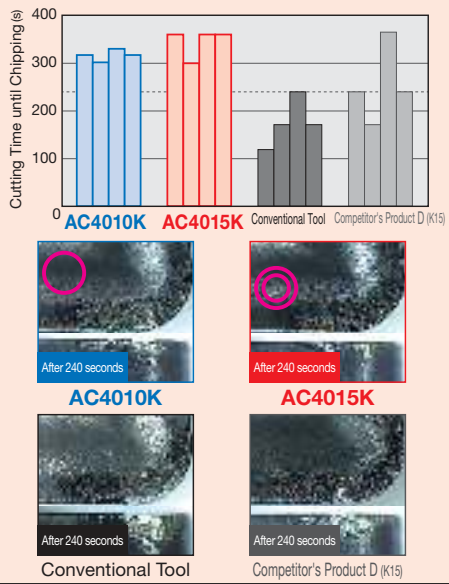
AC4010K/AC4015K Chipping Resistance

• Gray Cast Iron



Workpiece Material: FC250 Interrupted Insert: CNMG432EGZ
Cutting Conditions: v_c=1,300 SFM, f=0.012 IPR, a_p=.080", Wet

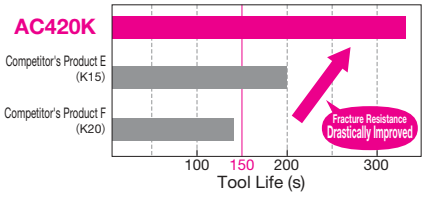
• Ductile Cast Iron



Workpiece Material: FCD450 Interrupted Insert: CNMG432EGZ
Cutting Conditions: v_c=1,475 SFM, f=0.012 IPR, a_p=.060", Wet

AC420K Fracture Resistance

FCD450 Grooved (Heavy Interrupted Acceleration Test)



Cutting Edge Wear Comparison (After 150s)



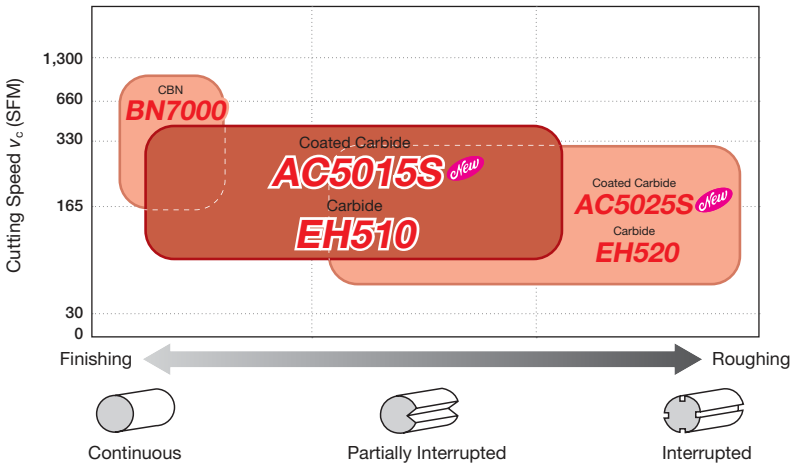
Workpiece Material: FCD450 Interrupted Insert: CNMG432EGZ
Cutting Conditions: v_c=1,150 SFM, f=0.010 IPR, a_p=060", Wet

Exotic Alloy

S Exotic Alloy

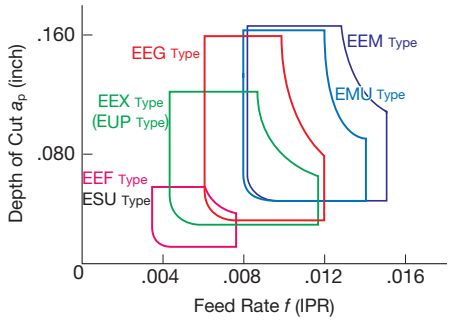
Grades

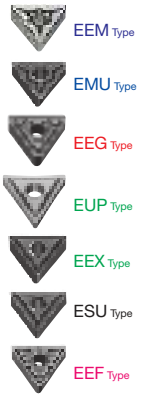
CBN SUMIBORON BN7000 ••• L10



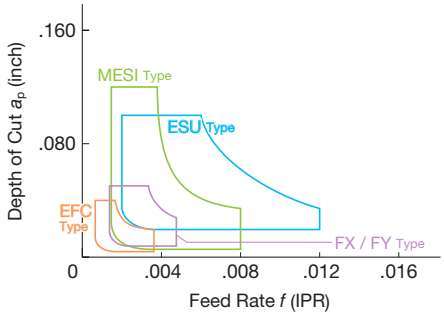
Chipbreakers

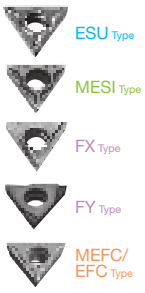
Negative Type





Positive Type





S Exotic Alloy Recommended Cutting Conditions

(Red text indicates 1st recommendation)

Work Material	Cutting Process	Chipbreaker	Grade	Cutting Conditions Min. - Max.		
				Depth of Cut a_p (inch)	Feed Rate f (IPR)	Cutting Speed v_c (SFM)
Heat-Resistant Alloy (Ni-based Material, Fe-based Material, Co-based Material)	Finishing	**EEF**	**AC5015S** **AC5025S**	.008 - .060	.004 - .008	165 - 400
	Light	EEX	**AC5015S** **AC5025S**	.020 - .120	.004 - .012	130 - 350
	Medium	**EEG**	**AC5015S** **AC5025S**	.020 - .160	.006 - .012	130 - 350
	Rough	EMU/EEM	**AC5015S** **AC5025S**	.040 - .160	.008 - .016	100 - 300
Titanium Alloy (Pure Titanium (99.5%), $\alpha + \beta$ Alloy)	Finishing	**EEF**(ESU)	**EH510** (**AC5015S**)	.008 - .060	.004 - .008	165 - 300
	Light	EEX	**AC5015S**	.020 - .100	.004 - .010	130 - 250
	Medium	**EEG**	**EH510** (**AC5015S**)	.020 - .140	.006 - .012	130 - 250
	Rough	EMU/EEM	**AC5025S**	.040 - .140	.008 - .012	100 - 165

Grades

ABSOTECH
New AC5015S / New ABSOTECH AC5025S / EH510 / EH520

- New PVD coated grade with excellent wear and thermal resistance

AC5015S : Our 1st recommended grade for turning exotic alloys as it realizes stable tool life with high-speed, high-efficiency machining.

AC5025S : High-toughness grade for realizing stable tool life for interrupted cutting machining or mill-scaled work.

- Dedicated carbide grades with excellent thermal, wear and fracture resistance for machining titanium alloys

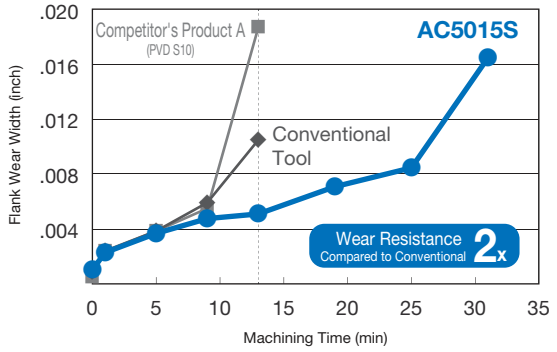
EH510 : General-purpose grade for titanium machining that features excellent wear and thermal resistance. For applications from roughing to finishing.

EH520 : Tough grade for titanium machining with excellent fracture and thermal resistance. Perfect for interrupted cutting and mill-scaled work.

Performance

AC5015S

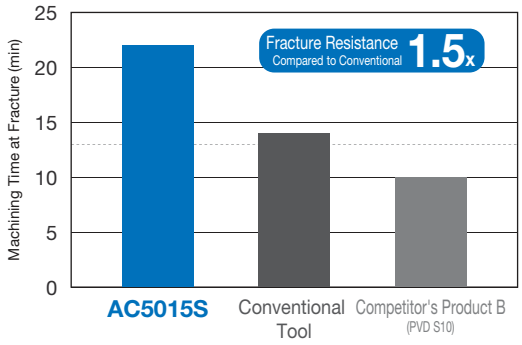
● Wear Resistance





Workpiece Material: Inconel 718 (44HRC)
Insert: CNMG432EEX
Cutting Conditions: v_c=130 SFM, f=0.004 IPR, a_p=.060", Wet

● Fracture Resistance

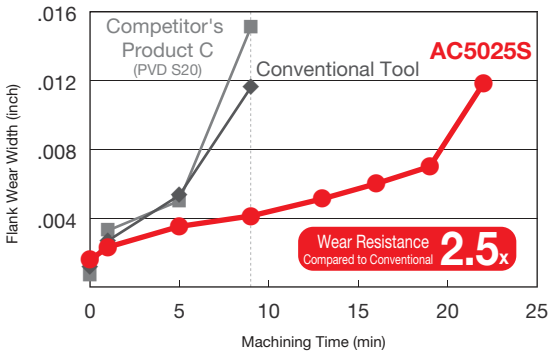




Workpiece Material: Hastelloy (22HRC)
Insert: CNMG432EEX
Cutting Conditions: v_c=165 SFM, f=0.004 IPR, a_p=.060", Wet

AC5025S

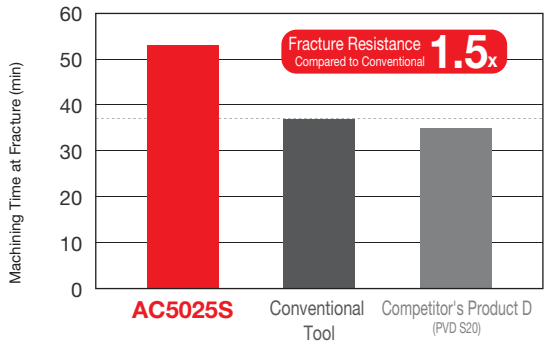
● Fracture Resistance





Workpiece Material: Hastelloy (22HRC)
Insert: CNMG432EEX
Cutting Conditions: v_c=130 SFM, f=0.004 IPR, a_p=.060",Wet

● Wear Resistance



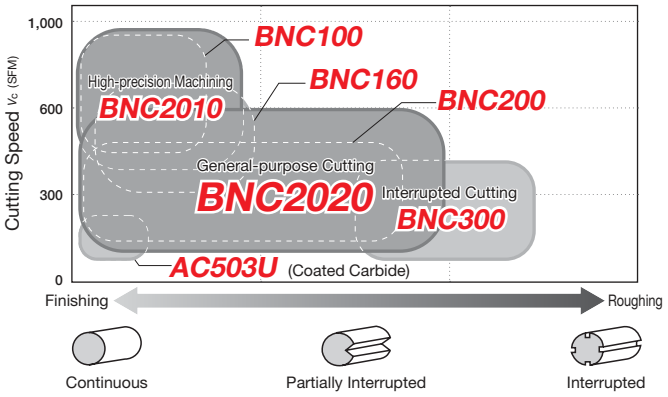


Workpiece Material: Inconel 718 (44HRC)
Insert: CNMG432EEX
Cutting Conditions: v_c=165 SFM, f=0.004 IPR, a_p=.060", Wet

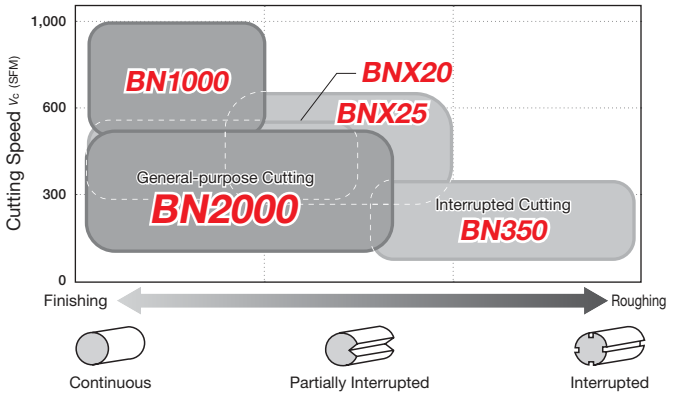
Hardened Steel H

Grades

● Coated SUMIBORON, Coated Carbide



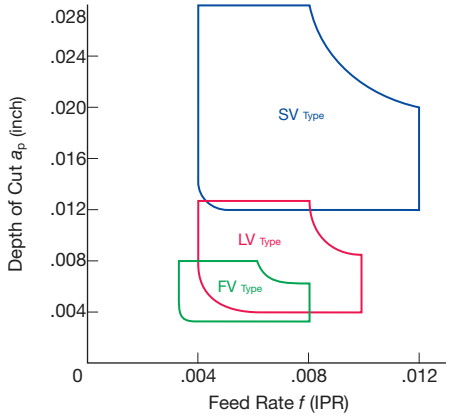
● Uncoated SUMIBORON

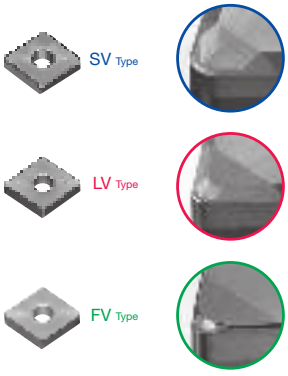


CBN SUMIBORON ••• L2

Chipbreakers

LV/FV Type Chipbreaker : For chip control during finishing of hardened steel
SV Type Chipbreaker : For chip control during carburised layer removal





CBN SUMIBORON Break Master ••• L26

H Recommended Cutting Conditions

(Red text indicates 1st recommendation)

Cutting Process	Grade	Cutting Conditions (Min. - Max.)		
		Depth of Cut a_p (inch)	Feed Rate f (IPR)	Cutting Speed V_c (SFM)
Continuous Cutting	**BNC2010**	.001 - .014	.001 - .010	400 - 1000
	BNC100	.001 - .012	.001 - .008	400 - 1000
	BN1000	.001 - .008	.001 - .006	400 - 1000
	BNX10	.001 - .008	.001 - .006	400 - 1000
	AC503U (Coated Carbide)	.001 - .040	.001 - .004	130 - 330
General Cutting	**BNC2020**	.001 - .020	.001 - .016	160 - 720
	BNC160	.001 - .014	.001 - .008	400 - 820
	BNC200	.002 - .020	.002 - .014	160 - 720
	BN2000	.001 - .012	.001 - .008	160 - 660
	BNX20	.001 - .020	.001 - .012	230 - 560
Interrupted Cutting	**BNC300**	.001 - .012	.001 - .008	160 - 500
	BN350	.001 - .012	.001 - .008	160 - 500
	BNX25	.001 - .020	.001 - .012	400 - 725

BNC2010 / BNC2020 / BN1000 / BN2000


BNC2010 / BNC2020

BNC2010 : For high-precision finishing requiring good surface roughness and dimensional tolerance.
Maintains excellent surface roughness thanks to coating with high boundary wear resistance and CBN substrate.

BNC2020 : General-purpose grade suitable for typical hardened steel machining applications.
Achieves long tool life thanks to highly wear-resistant, highly adhesive coating and tough CBN substrate.

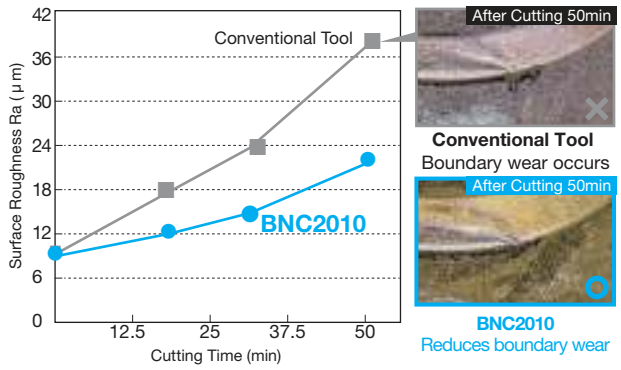
BN1000 : For high-speed machining, BN1000 provides the highest wear resistance of all uncoated SUMIBORON grades, improving fracture resistance while maintaining an emphasis on wear resistance.

BN2000 : General-purpose grade for general hardened steel machining with a high degree of fracture and wear resistance.

Performance

BNC2010

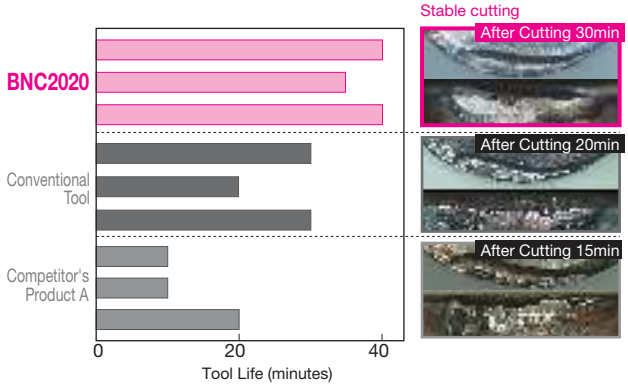
● Continuous Cutting of Hardened Steel



Workpiece Material: SCM415 58-62HRC (Continuous)
Insert: 4NC-DNGA432 Cutting Edge Treatment: S01225
Cutting Conditions: v_c=525 SFM, f=0.003 IPR, a_p=0.004", Wet

BNC2020

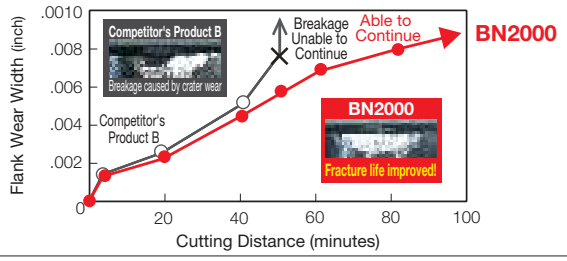
● Interrupted Cutting of Hardened Steel



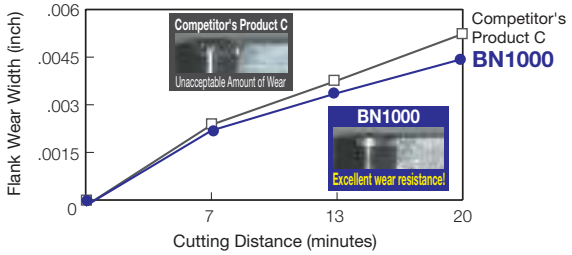
Workpiece Material: SCM415-5V 58-62HRC (Interrupted Cutting)
Insert: 4NC-CNGA432 Cutting Edge Treatment: S01225
Cutting Conditions: v_c=426 SFM, f=0.004 IPR, a_p=0.024", Dry

BN1000 / BN2000

● Wear Resistance (Continuous Cutting)



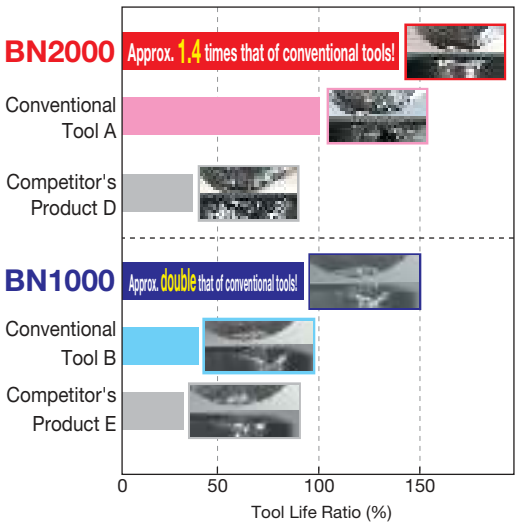
Workpiece Material: SCM415H Round Bar (58-62HRC)
Insert: 2NU-CNGA432
Cutting Conditions: v_c=330 SFM, f=0.004 IPR, a_p=0.008", Dry



Workpiece Material: 51200 Round Bar (62HRC)
Insert: 2NU-CNGA432
Cutting Conditions: v_c=492 SFM, f=0.004 IPR, a_p=0.008", Dry

● Chipping Resistance (Interrupted Cutting)

(Conventional tool A as 100%)

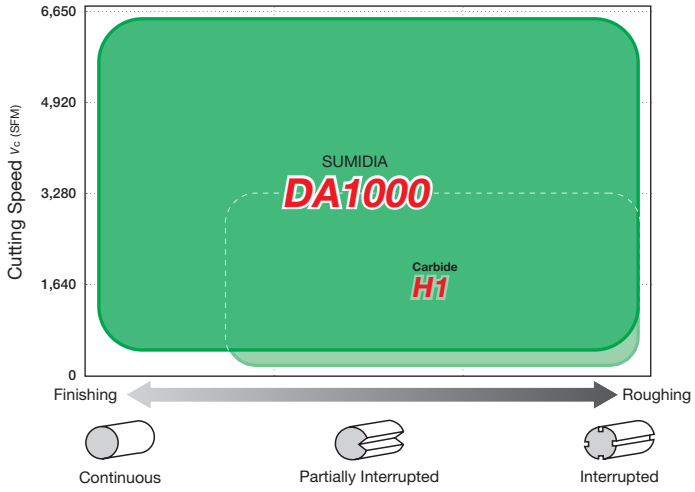


Workpiece Material: SCM415H 8V Grooved (58-62HRC)
Insert: 2NU-CNGA432
Cutting Conditions: v_c=492 SFM, f=0.004 IPR, a_p=0.008", Dry

Non-Ferrous Metal

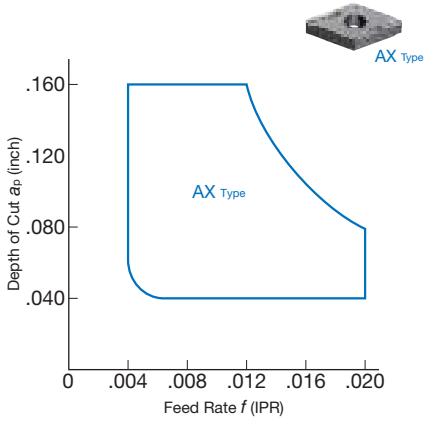
Grades

PCD SUMIDIA DA1000 ··· M6

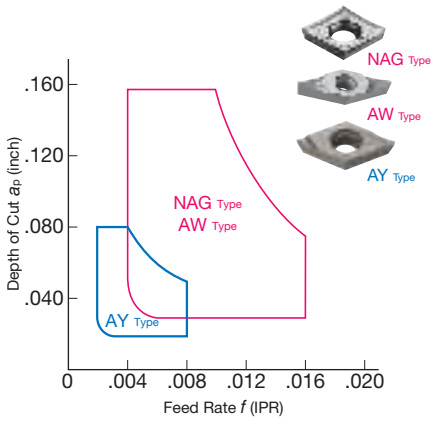


Main Chipbreakers

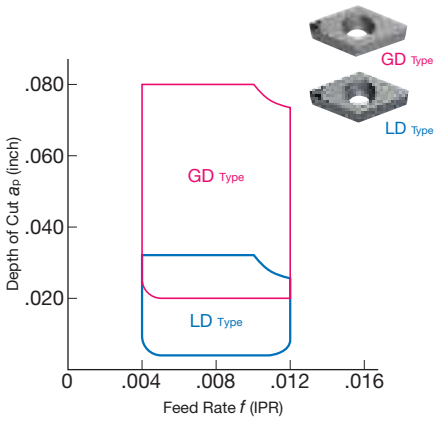
Negative Type



Positive Type



Positive Type (PCD)



Recommended Cutting Conditions

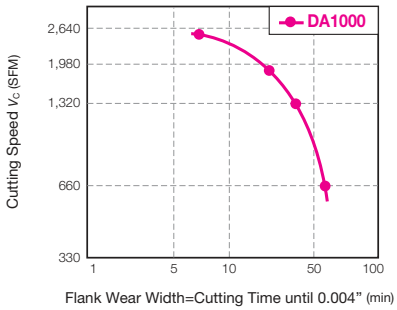
Cutting Process	Application	Grade	Cutting Conditions (Min. - Max.)		
			Depth of Cut a_p (inch)	Feed Rate f (IPR)	Cutting Speed V_c (SFM)
Continuous Cutting General Cutting Interrupted Cutting	SUMIDIA	**DA1000**	.004 - .120	.002 - .008	up to 6,500
	Carbide	**H1**	.012 - .200	.004 - .020	up to 3,300

Grade DA1000

- Ultra-high-density sintered ultra-fine grain diamond
- Significantly improved surface roughness on machined surfaces
- World's highest-level wear resistance and strength
- Suitable for use with diverse aluminum and non-ferrous alloys

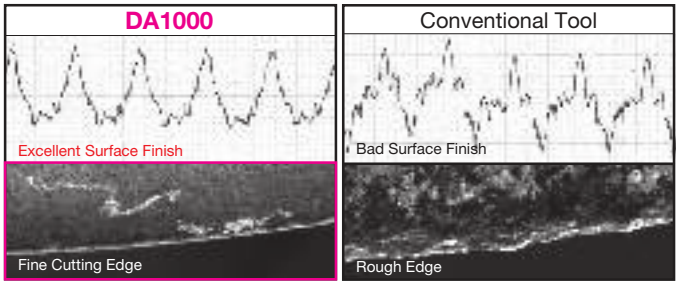
Performance

● Wear Resistance



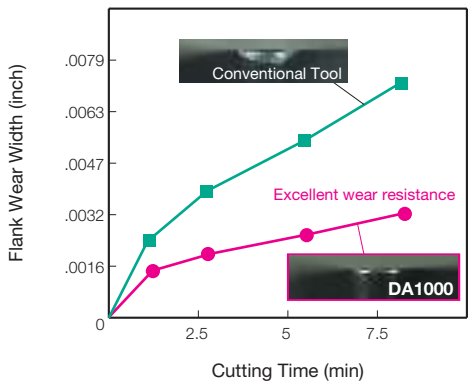
Workpiece Material: 17% Si-Al Alloy
Insert: TPGN321
Cutting Conditions: v_c=656 to 2,624 SFM, f=0.005 IPR, a_p=0.020", Wet

● Cutting Edge Surface Roughness Comparison



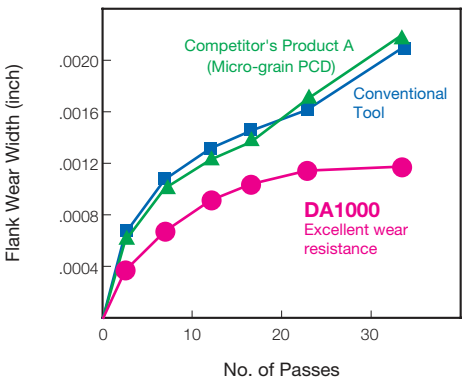
Workpiece Material: 17% Si-Al Alloy
Insert: TPGA321
Cutting Conditions: v_c=3,280 SFM, f=0.006 IPR, a_p=0.008", Wet

● Wear Resistance in Turning Applications



Workpiece Material: 17% Si-Al Alloy
Insert: TPGN321
Cutting Conditions: v_c=2,620 SFM, f=0.005 IPR, a_p=0.020", Wet

● Wear Resistance in Milling Applications



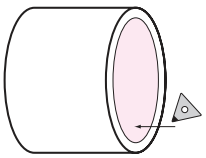
Workpiece Material: ADC12 (12% Si-Al Alloy)
Insert: NF-SNEW1204ADFR
Cutting Conditions: v_c=6,560 SFM, f=0.006 IPR, a_p=.120", Wet

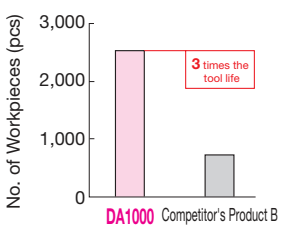
Application Examples

DA1000

[Copper Alloy Bushing]

Stable surface roughness with no cutting edge breakage (3.2S).
Tool life improved to 3 times that of conventional models.



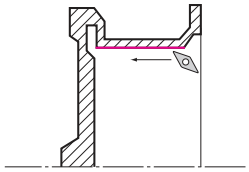


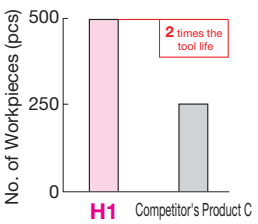
Insert: NF-TPGN322
Cutting Conditions: v_c=984 SFM f=0.0028 IPR, a_p=0.003", Wet

H1

[ADC12 Aluminum Wheel]

Excellent adhesion resistance.
Longer tool life.





Insert: VCGT332NAG
Cutting Conditions: v_c=7,216 SFM, f=0.010 IPR, a_p=.080", Wet

For Small Lathes

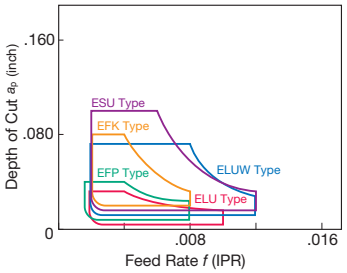
Grades

Insert Grade	Application Range: High-precision / Finishing to Light Cutting / Medium Cutting	Work Material: P General Steel	M Stainless Steel	K Cast Iron	S Heat-Resistant Alloy	H Hardened Steel	N Non-Ferrous Metal
Coated Carbide (PVD)	ACZ150	◎	◎				○
	New AC5015S	○	◎	○	◎		
	New AC5025S	○	◎	○	◎		
	AC530U	◎	◎	○	○		○
	AC1030U	◎	◎	○	○		○
Uncoated Cermet Coated Cermet	T1000A	◎	○	◎			○
	T1500A/T1500Z	◎	○	○			○
Carbide	BL130	○	○	○			○
	H1	○	○	○			◎
	EH510	○	○	○	◎		○
CBN (SUMIBORON)	BN1000/BN2000					◎	
	BN7000			◎	○		
PCD (SUMIDIA)	DA1000						◎

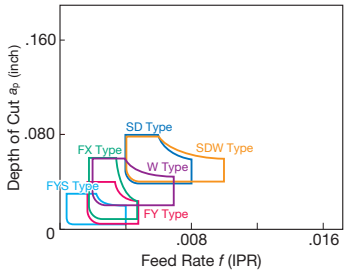
◎ 1st Recommendation ○ 2nd Recommendation

Chipbreakers

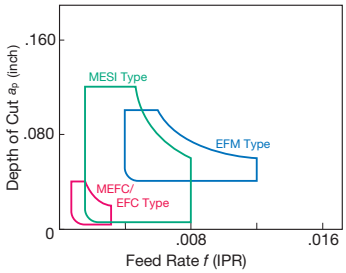
● M Class Finishing to Light Cutting



● G Class Ground Type



● G Class Ground Type



Recommended Cutting Conditions

(Red text: 1st recommendation, blue text: 2nd recommendation)

Material / Tool Grade	P Free-Cutting Steel		P Carbon Steel		M Stainless Steel		S Heat-Resistant Alloy		H Hardened Steel		N Aluminum Alloy		N Brass	
	v_c (SFM)	f (IPR)	v_c (SFM)	f (IPR)	v_c (SFM)	f (IPR)	v_c (SFM)	f (IPR)	v_c (SFM)	f (IPR)	v_c (SFM)	f (IPR)	v_c (SFM)	f (IPR)
ACZ150	165 to 650	.001 to .004	165 to 500	.0005 to .003	165 to 500	.0005 to .002					230 to 1000	.002 to .008	230 to 1000	.002 to .008
AC5015S	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 650	.001 to .004	100 to 350	.001 to .004					230 to 1000	.002 to .008
AC5025S	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 650	.001 to .004	100 to 350	.001 to .004					230 to 1000	.002 to .008
AC530U	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 650	.001 to .004							230 to 1000	.002 to .008
AC1030U	165 to 500	.001 to .006	165 to 500	.001 to .004	165 to 500	.001 to .004							230 to 1000	.002 to .008
T1000A	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 500	.001 to .004					230 to 1000	.002 to .008	230 to 1000	.002 to .008
T1500A	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 500	.001 to .004					230 to 1000	.002 to .008	230 to 1000	.002 to .008
T1500Z	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 500	.001 to .004					230 to 1000	.002 to .008	230 to 1000	.002 to .008
BN1000									400 to 1000	.001 to .006				
BN2000									165 to 650	.001 to .008				
BN7000							165 to 650	.001 to .004						
DA1000											230 to 1,000	.001 to .004	230 to 1,000	.001 to .004

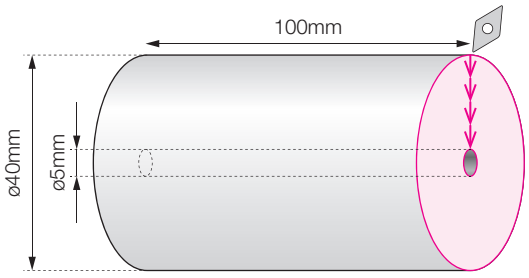
Grade

ABSOTECH
AC1030U

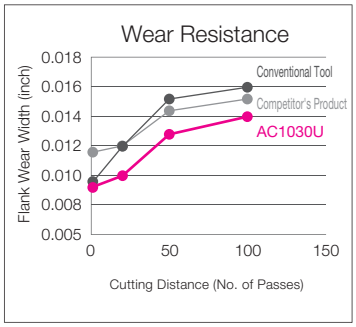
Employs a new PVD coating, and a dedicated tough carbide substrate.
High-quality cutting edge grade suppresses adhesion and micro-chipping, realizing excellent machined surface quality.

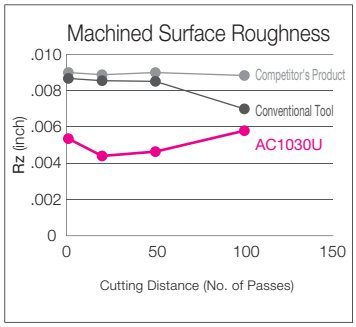
Performance

AC1030U



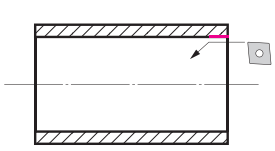
Workpiece Material: SUS304 Insert: DCGT32.50.5RFY
Cutting Conditions: v_c=330 SFM, f=0.002 IPR, a_p=0.004", Wet (Oil-based)

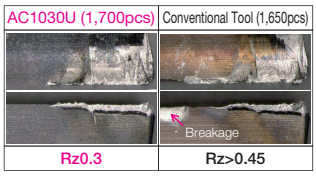




Application Examples

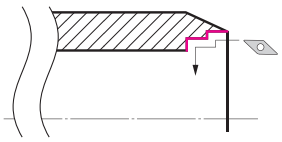
[STKM12C-EC Pipe]

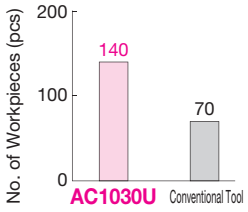




Insert: CCGT21.50LFX
Cutting Conditions: v_c=645 SFM, f=0.0015 IPR, a_p=0.015"

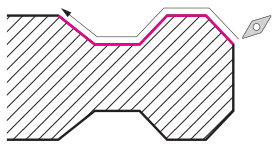
[S45C Shaft Stator]

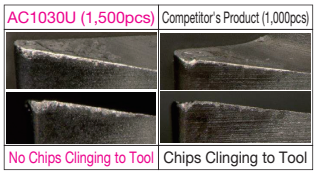




Insert: VCGT220.5RFX
Cutting Conditions: v_c=640 SFM, f=0.0047 IPR, a_p=0.007-0.010" Wet

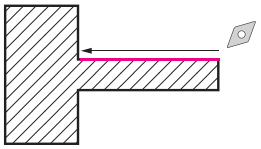
[SUS304 Body Valve]

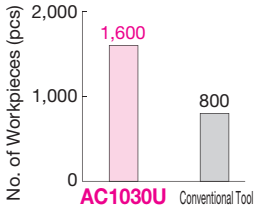




Insert: VCGT220RFY
Cutting Conditions: v_c=105 SFM, f=0.001 IPR, a_p=0.008", Wet

[SUS430 Sensor Housing]





Insert: DCGT32.51MEFC
Cutting Conditions: v_c=165 SFM, f=0.0025 IPR, a_p=0.008"

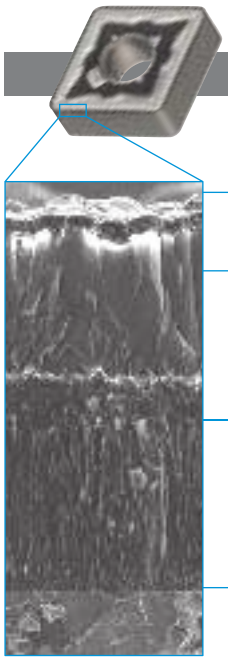
Coated Carbide

Sumitomo's Coating Series combines a proprietary tough cemented carbide substrate with a multi-layered coating for use in high-speed, high-efficiency applications on a wide range of workpiece materials including steel, cast iron and exotic alloys.

Features

ABSOTECH® : New coating technology that realizes absolute stability

CVD



Special Surface Treatment: Chipping resistance and adhesion resistance are significantly improved by special surface treatments applied to suit the application

High Strength Alumina Layer: Significantly improves the coating strength by controlling crystal growth direction

High Hardness Micro-Grain TiCN Layer: Significantly improves the coating hardness by using a fine and uniform crystal structure

High Adhesion Technology: Significantly improves adhesion strength through a smooth interface between the coating and carbide substrate

- Suppresses abnormal damage such as chipping and adhesion. Stable machining is achieved in various situations.
- Next-level high strength and high hardness coating is achieved. Achieves long, stable tool life even in high-efficiency machining.

■ Applicable Grades:

(For Steel Turning)	AC8015P, AC8025P, AC8035P
(For Stainless Steel Turning)	AC6020M, AC6030M
(For Cast Iron Turning)	AC4010K, AC4015K
(For Milling)	ACP2000, ACK2000

PVD



Our proprietary super multi-layered coating structure: Advanced nanotechnology enables nanometre-level thickness (1 nanometre is one billionth of a metre) Hardness, thermal resistance and toughness are significantly improved by alternately layering one thousand layers of super thin films

Cross Section of Cutting Edge Coating TEM Structure

High Adhesion Technology: Significantly improves adhesion strength through advanced control technology at the interface of the coating and carbide substrate

- Optimised coating composition according to application. Achieves stable machining regardless of the work material.
- Significantly improves chipping resistance by improving coating adhesion strength. Stable machining is realised even under high load conditions.

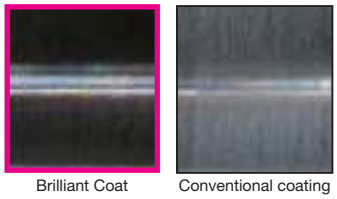
■ Applicable Grades:

(For Stainless Steel Turning)	AC6040M
(For Exotic Alloy Turning)	AC5015S, AC5025S
(For Small Lathes)	AC1030U
(For Milling)	ACU2500, ACP3000, ACK3000

Brilliant Coat® PVD

Brilliant Coat provides excellent lubricity for higher quality machining





Workpiece Material: STKM13A
Insert: CNMG432ELU
Cutting Conditions: v_c=330 SFM
f=0.006 IPR
a_p=.040", Wet

- PVD coating with excellent wear resistance and lubricity
- Suppresses reactions with work material and realises beautiful machined surfaces

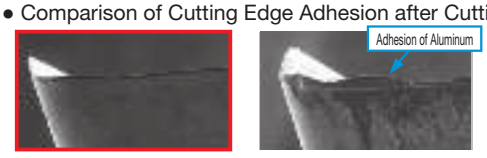
■ Applicable Grade: (For Steel Turning) T1500Z

AURORA Coat (DLC: **D**iamond **L**ike **C**arbon) PVD

Using our proprietary PVD process technology, we have developed a hydrogen-free DLC coating that is extremely hard, flat and smooth.



- Comparison of Cutting Edge Adhesion after Cutting ADC12



AURORA Coat　　Uncoated Carbide

Workpiece Material: ADC12
Cutting Conditions: v_c= 1,000 SFM
f_z = 0.006 IPT
a_p= .200"
a_e= .200", Dry

- Second only to diamond in terms of hardness, this flat and smooth coating has a low coefficient of friction and provides excellent adhesion resistance to deliver better machined surface quality
- Can be used for high-speed, high-efficiency cutting of aluminum alloys, copper alloys, resins and more

■ Applicable Grades:

(For Milling)	DL1000, DL2000
(For Endmilling)	DL1000, DL1200
(For Drilling)	DL1300, DL1500

Coated Carbide

Characteristic Values

For Turning (CVD)

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	**AC810P**	91.0	2.2	Super FF Coat	18	· For high-speed and high-efficiency machining of steel · Grade emphasising wear resistance for high- to medium-speed cutting	AC700G
	New **AC8015P**	91.0	2.3	Absotech	14	· For high-speed and high-efficiency machining of steel · Crystal orientation control technology is used to drastically suppress the advancement of crater wear, achieving long, stable tool life during high-speed and high feed cutting	AC810P
	AC820P	90.1	2.2	Super FF Coat	14	· General-purpose grade with a superior balance of fracture and wear resistance	AC2000
	AC8025P	90.1	2.3	Absotech	12	· Our 1st recommended grade for turning steel · Smooth surface treatment suppresses abnormal damage from adhesion/chipping while realizing stable tool life over a wide range of work materials and cutting speeds	AC820P
	AC830P	89.4	2.6	Super FF Coat	8	· For interrupted machining of steel · Tough grade with an emphasis on fracture resistance	AC3000
	New **AC8035P**	89.4	2.6	Absotech	9	· For interrupted machining of steel · Coating layer tensile stress removal technology greatly improves fracture resistance and achieves long, stable tool life during heavy interrupted cutting	AC830P
M Stainless Steel	**AC610M**	91.0	2.2	Super FF Coat	5	· For high-speed machining of stainless steel · Grade emphasising wear resistance for high-efficiency machining	—
	AC6020M	90.1	2.3	Absotech	5	· For high-speed machining of stainless steel · Adopts a high-hardness carbide substrate and new coating to realise excellent wear resistance and fracture resistance, resulting in stable long tool life in high-speed machining	AC610M
	AC6030M	89.5	2.7	Absotech	5	· Our 1st recommended grade for turning stainless steel · Drastically reduces the occurrence of abnormal damage in stainless steel machining and achieves long and stable tool life thanks to the new coating	AC630M
	AC630M	89.5	2.7	Super FF Coat	5	· General-purpose grade with a superior balance of fracture and wear resistance for stainless steel machining · Supports continuous and light cutting of steel with low cutting speeds	AC304
K Cast Iron	**AC405K**	92.0	2.4	Super FF Coat	18	· For high-speed cast iron milling · Grade emphasising wear resistance for high- to medium-speed cutting	AC410K
	New **AC4010K**	91.1	2.5	Absotech	20	· Our 1st recommended grade for turning gray cast iron · For high-speed cast iron milling · New thick coating realises stable long tool life even with ultra-high-speed machining of gray cast iron at V_C = 700 m/min	AC405K
	New **AC4015K**	91.1	2.5	Absotech	16	· Our 1st recommended grade for turning ductile cast iron · New high-adhesion, high-strength coating realises high wear resistance and chipping resistance for stable long tool life over a wide range of cutting conditions	AC415K
	AC415K	91.1	2.5	Super FF Coat	18	· General-purpose grade with a superior balance of fracture and wear resistance	AC410K
	AC420K	91.1	2.5	Super FF Coat	12	· For interrupted machining of cast iron · Designed as a grade with emphasis on fracture resistance and chipping resistance, outstanding stability is realised with heavy interrupted cutting and unstable cutting of cast iron	AC700G

For Milling (CVD)

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	**ACP100**	89.3	3.1	Super FF Coat	6	· For high-speed machining of steel · Grade emphasising wear resistance for high-speed machining	AC230
	New **ACP2000**	89.5	3.2	Absotech	10	· For high-speed machining of steel · Stable long tool life with high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
M Stainless Steel	**ACM200**	89.8	3.4	Super FF Coat	6	· For machining high-hardness stainless steel · Adopts newly developed high-strength cemented carbide with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	**ACK100**	92.0	2.4	Super FF Coat	6	· For high-speed cast iron milling · Adopts a high-hardness substrate as a grade with high wear resistance	—
	ACK200	91.7	2.5	Super FF Coat	6	· For high-speed cast iron milling · Adopts a tough carbide substrate as a grade with excellent wear resistance and thermal crack resistance	AC211
	New **ACK2000**	91.7	3.1	Absotech	10	· For high-speed cast iron milling · Stable long tool life with high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200

Coated Carbide

Characteristic Values

For Turning (PVD)

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	**T1500Z** (Cermet)	92.0	2.2	Brilliant Coat® *	3	· For finishing steel · Adopts Brilliant Coat for excellent lubricity and higher machined surface quality	T2000Z
P Steel	**T2500Z** (Cermet)	92.0	2.4	Brilliant Coat® *	3	· For finishing steel · High toughness & high thermal conductivity · High efficiency machining with good surface finish	–
P Steel	**T3000Z** (Cermet)	91.3	2.4	ZX Coat	3	· For finishing steel · Grade with a tough cermet substrate and an emphasis on fracture resistance	–
P Steel	**AC530U**	91.4	3.3	Super ZX Coat	3	· For interrupted machining of steel and stainless steel · Adopts a micro-grain tough carbide substrate and super multi-layered coating to realise outstanding fracture resistance	ACZ310
M Stainless Steel	**AC6040M**	91.6	3.8	Absotech®	3	· Our 1st recommended grade for interrupted machining of stainless steel · New coating with excellent adhesion resistance and peel-off resistance, together with the tough carbide substrate, realise stable tool life with heavy interrupted machining	AC530U
S Exotic Alloy	**AC510U**	92.6	2.6	Super ZX Coat	3	· For continuous to partially interrupted machining of exotic alloy · Grade with an emphasis on wear resistance and thermal resistance for continuous machining of exotic alloy · Can also be used for interrupted machining of cast iron	EH510Z EH10Z
S Exotic Alloy	New **AC5015S**	92.7	3.2	Absotech®	5	· Our 1st recommended grade for turning exotic alloy · Adopts a carbide substrate with excellent thermal resistance and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cutting conditions	AC510U
S Exotic Alloy	**AC520U**	91.7	3.0	Super ZX Coat	3	· For interrupted machining of exotic alloy · Grade with an emphasis on fracture resistance for interrupted machining of exotic alloy · Also suitable for interrupted machining of stainless steel	EH520Z EH20Z
S Exotic Alloy	New **AC5025S**	91.8	3.6	Absotech®	5	· For partially interrupted to interrupted machining of exotic alloy · Adopts a carbide substrate with excellent fracture resistance and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life with unstable cutting conditions	AC520U
H Hardened Steel	**AC503U**	93.2	1.7	Super ZX Coat	3	· For roughing of hardened steel · Adopts a high-hardness carbide substrate and super multi-layered coating to realise outstanding wear resistance	–
For Small Lathes	**AC1030U**	91.6	3.8	Absotech®	2	· Our 1st recommended grade for high-precision machining · Adopts a new coating with excellent adhesion resistance and peel-off resistance which realises outstanding stability and machined surface quality due to the improved cutting edge quality	–
For Small Lathes	**ACZ150**	91.4	3.3	ZX Coat	1	· For high-precision machining · Adopts an ultra-thin coating and micro-grain tough carbide substrate to realise excellent machined surface quality	–

For Milling (PVD)

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	New **ACU2500**	91.6	3.8	Absotech®	3	· General-purpose grade supporting steel, stainless steel, and cast iron machining · Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life with various work material grades	–
P Steel	**ACP200**	89.5	3.2	Super ZX Coat	3	· Our 1st recommended grade for steel applications · General-purpose grade with an excellent balance of wear and fracture resistance · Also suitable for machining stainless steel	ACZ330
P Steel	**ACP300**	89.3	3.1	Super ZX Coat	3	· For interrupted machining of steel · Tough grade with an emphasis on fracture resistance · Also suitable for interrupted machining of stainless steel	ACZ350
P Steel	New **ACP3000**	89.5	3.2	Absotech®	3	· Our 1st recommended grade for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	**ACM100**	91.4	3.3	Super ZX Coat	3	· For high-speed machining of stainless steel · Adopts high-hardness micro-grain carbide substrate and super multi-layered coating to realise outstanding wear resistance	ACZ310
M Stainless Steel	**ACM300**	89.8	3.4	Super ZX Coat	3	· Our 1st recommended grade for milling stainless steel · Adopts high-strength carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	–
K Cast Iron	**ACK300**	91.4	3.3	Super ZX Coat	3	· General-purpose grade with an excellent balance of wear and fracture resistance	ACZ310
K Cast Iron	New **ACK3000**	91.7	3.1	Absotech®	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	**DL1000**	92.9	2.1	AURORA Coat (DLC)	0.5	· For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	–
N Non-Ferrous Metal	New **DL2000**	91.6	3.8	AURORA Coat (DLC)	0.5	· For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	–

*Brilliant Coat may appear a slightly different colour or lustre due to light interference, but these variations do not affect the performance.

Cermet



Various grades and expanded range of inserts meet a wide range of finishing needs.

Lineup includes wear-resistant T1000A, general-purpose T1500A, general-purpose coated cermet T1500Z, T2500Z and tough T2500A grades.
Expanded lineup for a wide variety of finishing applications.

Features

Uncoated

T1000A

High-hardness grade with superior wear resistance

- Improved wear and fracture resistance
- Solid solution hard phase reduces reaction with steel
- Perfect for high-speed continuous finishing of steel, cast iron, and powdered metal



Uncoated

T1500A

A general-purpose grade that provides both wear and fracture resistance with higher-quality surface finishes

- Mixing hard phases of different functionality grain size and composition improves balance of wear and fracture resistance.
- Improved cutting edge treatment technology provides beautiful finished machined surfaces.



Uncoated

T2500A

Tough grade with excellent fracture resistance and thermal crack resistance

- Fine, uniform grain structure greatly improves toughness
- Improves thermal crack resistance due to the high thermal conductivity and realises stable, long tool life



Coated

T1500Z & T2500Z

General-purpose coated grade that employs our proprietary Brilliant Coat* PVD coating with excellent lubricity

- Excellent wear resistance provides long tool life.
- Reduces adhesion of work material for beautiful finished machined surfaces.



Characteristic Values

For Turning

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel / K Cast Iron	**T1000A**	93.3	1.8	—	—	· For continuous machining of steel · High-hardness grade with superior wear resistance · Supports finishing of cast iron and sintered metals	T110A
	T1500A	92.0	2.2	—	—	· Our 1st recommended cermet grade for turning steel · General-purpose grade with an excellent balance of wear and fracture resistance, achieving an excellent machined surface over a wide range of cutting conditions	T1200A
	New **T2500A**	91.8	2.4	—	—	· For interrupted machining of steel · Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes even with interrupted cutting	—
	T1500Z	92.0	2.2	Brilliant Coat® *	3	· Adopts Brilliant Coat for excellent lubricity and higher machined surface quality	T2000Z
	T2500Z	92.0	2.4	Brilliant Coat® *	3	· For finishing steel · High toughness & high thermal conductivity · High efficiency machining with good surface finish	—
	T3000Z	91.3	2.4	ZX Coat	3	· For interrupted machining of steel · Grade with a tough substrate for interrupted finishing	—

For Milling

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel / M Stainless Steel	**T1500A**	92.0	2.2	—	—	· For finishing of steel and stainless steel · Excellent balance of wear and fracture resistance, achieving excellent machined surface quality over a wide range of cutting conditions	T1200A
	T250A	91.4	2.1	—	—	· For finishing of steel and stainless steel ·Tough grade with enhanced crack spread resistance	—
	New **T2500A**	91.8	2.4	—	—	· For finishing of steel and stainless steel · Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A
	T4500A	91.0	2.3	—	—	· For finishing of steel and stainless steel · Tough grade with excellent fracture resistance and reduced thermal cracking	—

*Brilliant Coat may appear a slightly different colour or lustre due to light interference, but these variations do not affect the performance.

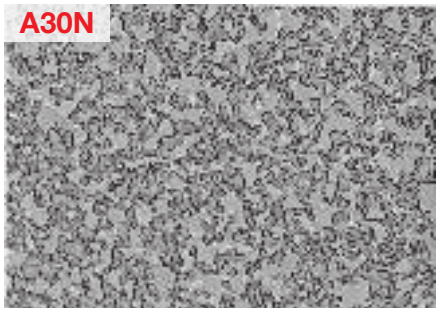
Carbide

IGETALLOY cemented carbides have a solid history and a wide variety of grades to suit many different applications. They are widely used and appreciated for their superior performance.

The IGETALLOY range consists of cemented carbide grades with various characteristics that correspond to the cutting tool application. This is achieved by varying the carbide components: the WC structure (main component) and additives such as TiC, TaC, and Co (binder).
The wide selection of IGETALLOY grades provides excellent wear resistance and toughness in various cutting conditions.

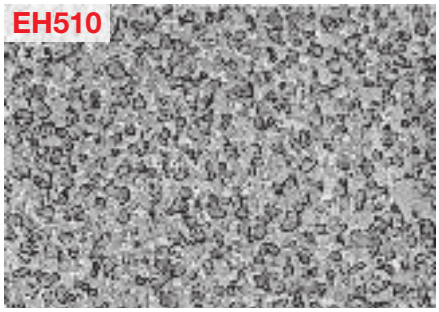
● For Steel

A30N



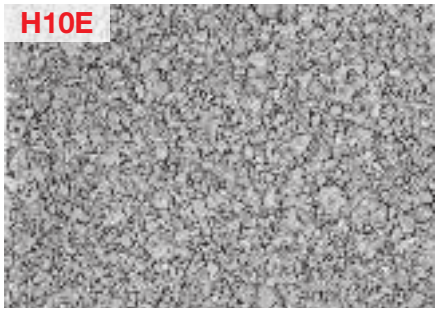
● For Stainless Steel

EH510



● For Cast Iron

H10E



Characteristic Values

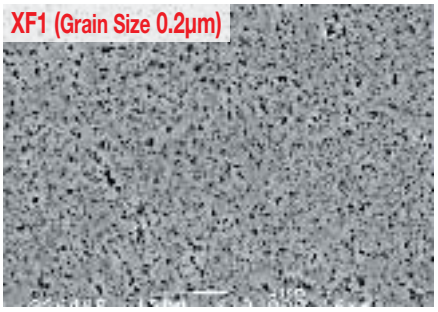
Work Material	Grade	Hardness (HRA)	TRS (GPa)	Thermal Conductivity (W/m·°C)	Young Modulus (GPa)	Compressive Strength (GPa)	Linear-Thermal Expansion Coefficient (x 10^{-6}/°C)
P Steel	ST10P	92.1	1.9	25	470	4.9	6.2
	ST20E	91.8	1.9	42	550	4.8	5.2
	A30	91.3	2.1	35	520	—	5.2
	A30N	91.2	2.2	35	520	—	—
	ST40E	90.4	2.6	75	—	—	—
M Stainless Steel	EH510	92.6	2.6	76	—	—	—
	EH520	91.7	3.0	78	—	—	—
	A30	91.3	2.1	35	520	—	5.2
	A30N	91.0	2.4	35	—	—	—
K Cast Iron	BL130	94.3	2.9	56	—	—	—
	H2	93.2	1.8	105	600	6.1	4.4
	H1	92.9	2.1	109	650	6.1	4.7
	EH510	92.6	2.6	76	—	—	—
	H10E	92.3	2.0	67	—	—	—
	EH520	91.7	3.0	78	—	—	—
	G10E	91.1	2.2	105	620	5.7	—
N Non-Ferrous Metal	H1	92.9	2.1	109	650	6.1	4.7
	New H20	91.6	3.8	—	—	—	—
S Exotic Alloy	EH510	92.6	2.6	76	—	—	—
	EH520	91.7	3.0	78	—	—	—

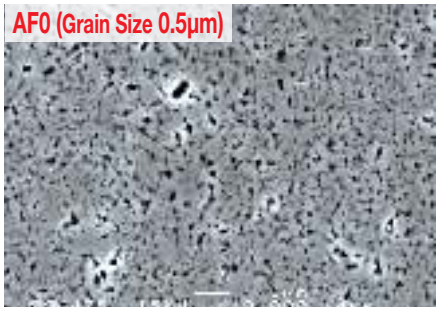
Carbide

The IGETALLOY micro-fine grained carbide series provides micro-fine grain structure at a world-class level to deliver superior performance in small drills and other tools.

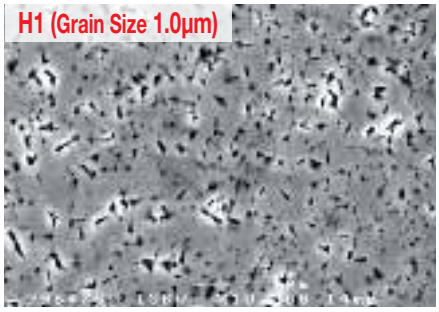
IGETALLOY micro-fine grained cemented carbides feature a WC structure between 0.2 and 1μm and are extremely strong and hard. They also provide excellent sharpness and superb surface quality on machined surfaces.
These features provide excellent performance in a variety of applications from ø0.1mm PCB drills and endmill materials to thin-bladed slitters and precision moulds.

● Ultra-fine Grained Carbide





● Micro-grained Carbide



Characteristic Values

Classification	Grade	Properties					Features	Applications
		Grain Size (μm)	Co Content (wt%)	TRS (GPa)	Hardness (HRA)	Hardness HV (GPa)		
Ultra-fine Grained Carbide	**XF1**	0.2	9.0	4.0	93.5	19.2	World highest-level micro-grain size ultra-fine grained carbide	Microdrills, Very Small Diameter Drills
	AF1	0.5	12.0	4.4	92.5	17.3	World highest-level strength in ultra-fine grained carbide	Microdrills, Mini-tools, Punches
	AF0	0.5	10.0	4.1	93.0	18.0	Tough, wear-resistant ultra-fine grained carbide	Microdrills, Routers
	AFU	0.5	8.0	3.8	93.6	19.4	Wear-resistant ultra-fine grained carbide	PCB Drills, Endmills for High-Hardness Materials
Micro-fine Grained Carbide	**A1**	0.7	13.0	3.2	91.4	15.6	Tough micro-fine grained carbide	Endmills, Taps, Drills for Cast Iron, Punches
	KH12	0.7	10.0	4.0	92.4	17.2	Micro-fine grained carbide with excellent wear resistance and toughness	Endmills, Drills for Steel
	F0	0.7	5.0	2.0	93.6	20.1	Micro-fine grained carbide with superior wear resistance	PCB Drills, Routers
Micro-grained Carbide	**KH03**	1.0	10.0	3.3	91.4	15.2	Micro-grained carbide with excellent strength and toughness	Moulds/Dies, Drills, Endmills
	KH05	1.0	13.0	3.5	90.4	13.6	Tough, micro-grained carbide	Moulds/Dies
	H1	1.0	5.0	2.1	92.9	17.7	Micro-grained carbide with superior wear resistance	Drills for Cast Iron and High-Hardness, Reamers
	EH10	1.2	6.0	3.4	92.4	17.3	Micro-grained carbide with a balance of hardness and strength	Drills for Exotic Alloy, Reamers
	ZF16	1.0	6.0	3.5	93.0	18.6	Wear- and chipping-resistant micro-grained carbide for high-speed machining	PCB Drills

Carbide Materials ••• K2

CBN



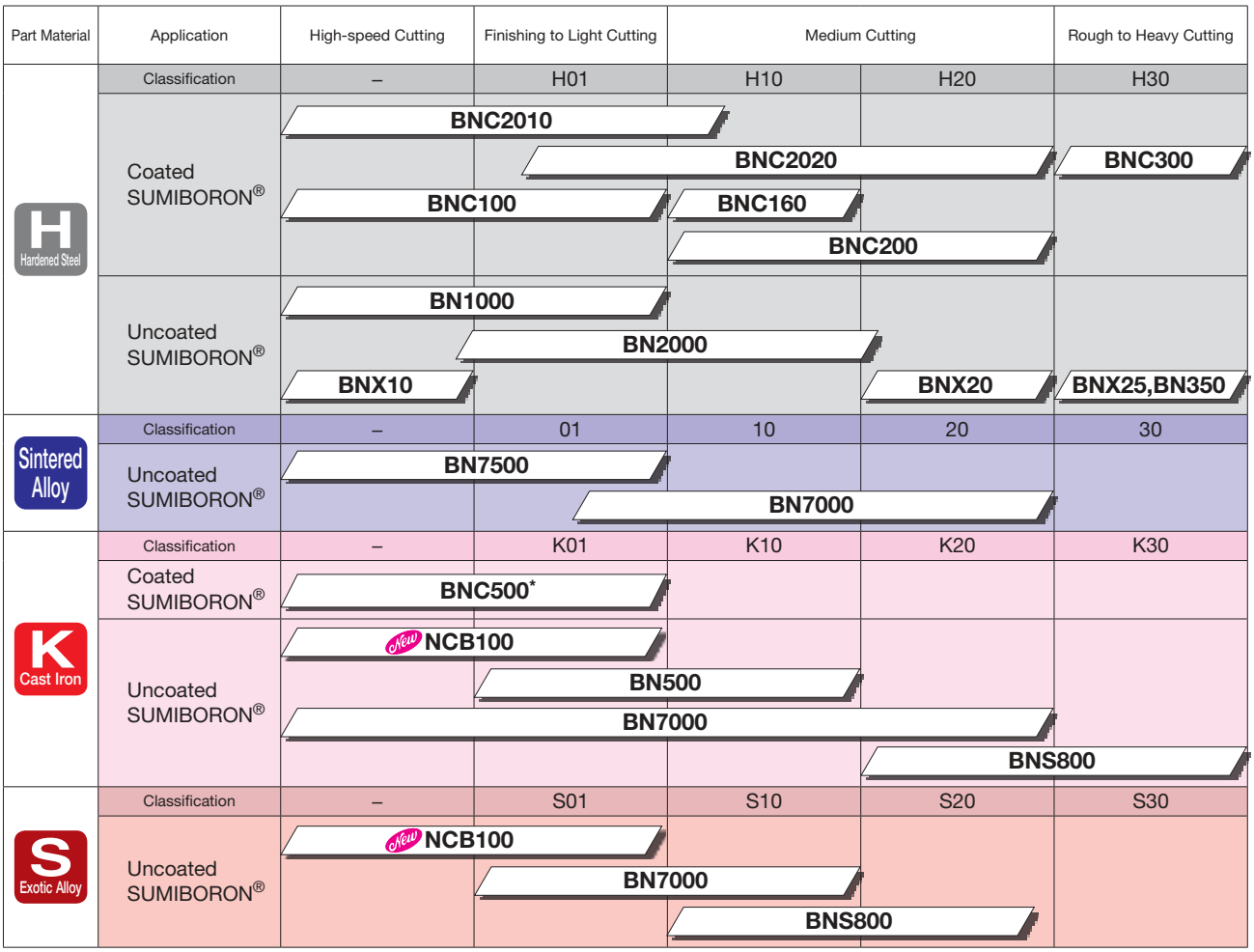
High hardness and thermal resistance for machining hardened steel and hard cast iron. High-speed finishing of gray cast iron with long tool life is also possible.

In 1977, Sumitomo Electric Hardmetal successfully developed a revolutionary CBN sintered tool called SUMIBORON®. The main component in SUMIBORON® is cubic boron nitride with a special ceramic binder sintered under super high pressure and temperature. Compared to other conventional tool materials, CBN has higher hardness and excellent thermal resistance. With these distinct characteristics, SUMIBORON® can perform machining of hardened steel, hard cast iron and exotic alloys which was previously only done by grinding. Excellent efficiency and longer tool life can also be achieved from high-speed finishing of cast iron.

Features

Structure Features	Structure	CBN Content	Hardness (GPa)	Grade	Work Materials/Applications	Features
Purely CBN particles, firmly bonded		High	54	New NCB100	Cast Iron, Titanium Alloy, Pure Titanium, Co-Cr Alloy, Cemented Carbide, Cermet	• Containing no binder, the nano-to sub-micron CBN particles have a directly bonded structure • The high hardness and thermal conductivity make it highly efficient with a long tool life when machining exotic alloys such as titanium alloys and Co-Cr alloys
Mainly CBN grains fused together				BN700 BN7000 BN7500 BNS800	Cemented Carbide, Chilled Cast Iron, Ni-Hard Cast, Iron, Sintered Ferrous Alloy, Heat-resistant Alloy, Cast Iron, Sintered Ferrous Alloy	• High CBN content. Structure consists of strongly fused CBN grains • Suited to cutting cast iron, heat-resistant alloy, cemented carbide and other high-hardness materials
Mainly CBN grains held together with a binder		Low	27	BN1000/BN2000/BN350 BNX10/BNX20/BNX25 BN500/BNC2010/BNC2020 BNC300/BNC100/BNC160 BNC200/BNC500	Alloy Steel, Case Hardened Steel, Carbon Tool Steel, Bearing Steel, Die Steel, Ductile Cast Iron	• CBN grains are fused together strongly with a special ceramic binder • Strong CBN binding provides superior wear resistance and toughness when cutting hardened steel and cast iron

Grade Map



*Dedicated for Ductile Cast Iron

CBN

Characteristic Values

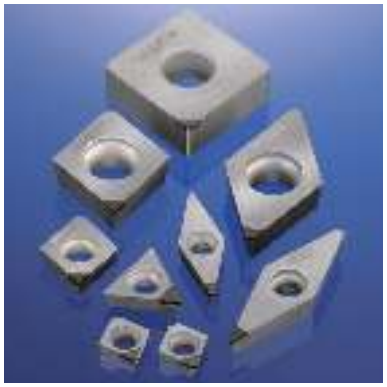
Part Material	Grade	Binder	Carbon Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
H Hardened Steel	**BNC2010**	TiCN	50 to 55	2	30 to 32	1.1 to 1.2	TiCN Multiple Layers	1.5	Improved wear resistance from coating and substrate, achieves excellent and consistent surface finish.
	BNC2020	TiN	70 to 75	5	34 to 36	1.4 to 1.5	TiAlN Multiple Layers	1.5	Utilising a tough substrate along with a highly wear-resistant and adhesive coating layer, to achieve long tool life in general-purpose to high-efficiency applications.
	BNC300	TiN	60 to 65	1	33 to 35	1.5 to 1.6	TiAlN	1	Suitable for finishing of workpieces with a mixture of continuous and interrupted cutting portions.
	BNC100	TiN	40 to 45	1	29 to 32	1.0 to 1.1	TiAlN/TiCN	2	Grade suitable for high-speed finishing thanks to highly wear-resistant coating.
	BNC160	TiN	60 to 65	3	31 to 33	1.2 to 1.3	TiAlN/TiCN	2	Achieves stable, high-precision finishing of hardened steel.
	BNC200	TiN	65 to 70	4	33 to 35	1.4 to 1.5	TiAlN	2	Provides long tool life thanks to tough substrate and highly wear-resistant coating.
	BN1000	TiCN	40 to 45	1	27 to 31	0.9 to 1.0	—	—	Grade with ultimate wear and fracture resistance, suitable for high-speed cutting.
	BN2000	TiN	50 to 55	2	31 to 34	1.1 to 1.2	—	—	General-purpose grade for hardened steel machining with a high degree of fracture and wear resistance.
	BNX20	TiN	55 to 60	3	31 to 33	1.0 to 1.1	—	—	Grade with excellent crater wear resistance, suitable for high-efficiency cutting under high-temperature conditions.
	BN350	TiN	60 to 65	1	33 to 35	1.5 to 1.6	—	—	Grade with ultimate cutting edge strength, suitable for heavy interrupted cutting.
	BNX10	TiCN	40 to 45	3	27 to 31	0.9 to 1.0	—	—	Highly wear-resistant grade, suitable for high-speed continuous cutting.
	BNX25	TiN	65 to 70	4	29 to 31	1.0 to 1.1	—	—	Grade with superior fracture resistance in high-speed cutting and suited for high-speed interrupted cutting of hardened steel.
Sintered Alloy	**BN7500**	Co Compound	90 to 95	1	41 to 44	2.0 to 2.1	—	—	Grade maintaining ultimate cutting edge sharpness, suitable for finishing of powdered metal.
	BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade exhibiting improved wear and fracture resistance in roughing of sintered materials.
K Cast Iron	**BNS800**	Al Alloy	85 to 90	8	39 to 42	0.9 to 1.1	—	—	Grade with 100% solid CBN structure and excellent thermal shock resistance.
	BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade exhibiting wear and fracture resistance in cutting of cast iron and exotic alloys.
	BN500	TiC	65 to 70	6	32 to 34	1.0 to 1.1	—	—	Grade optimised for cast iron cutting. Provides superior wear and fracture resistance.
	BNC500 (For Ductile Cast Iron)	TiC	60 to 65	4	32 to 34	1.1 to 1.2	TiAlN	2	Grade suitable for machining of hard-to-cut cast iron, thanks to the highly wear-resistant substrate and coating.
S Exotic Alloy	New **NCB100**	—	100	up to 0.5	51 to 54	1.8 to 1.9	—	—	Achieves high-efficiency, improved machining accuracy, and long tool life in machining of exotic alloys such as titanium alloy and Co-Cr alloys.

Transverse rupture strength measured with a test piece equivalent to the insert's CBN layer

CBN **SUMIBORON® Coated SUMIBORON Series** ••• L2 on

Polycrystalline Diamond





Excellent wear resistance, longer tool life and high-speed, high-efficiency, high-precision cutting of non-ferrous metals and non-metals.

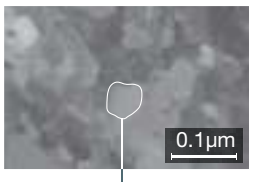
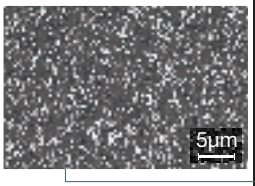
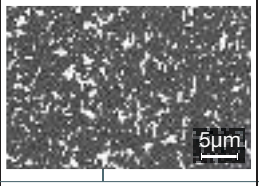
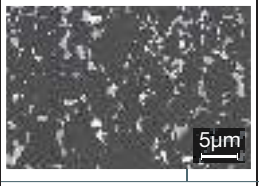
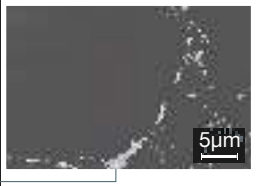
SUMIDIA® is a polycrystalline diamond material made from sintered diamond powder that was first created using our proprietary technology in 1978.
SUMIDIA®'s superior wear resistance achieves longer tool life in high speed, high-efficiency and high-precision machining of non-metal and non-ferrous metal applications including aluminum, copper, magnesium and zinc alloys.

SUMIDIA® Binderless uses nano-polycrystalline diamond for the cutting edge, demonstrating excellent wear resistance and fracture resistance.
In particular, it achieves extended tool life and machining accuracy superior to conventional polycrystalline diamond when machining hard brittle materials such as cemented carbide.

Features

- Diamond particles on the order of submicrons to several dozen microns, sintered at high density

Structure

SUMIDIA® Binderless	SUMIDIA®			
NPD10	**DA1000**	**DA2200**	**DA150**	**DA90**
 Diamond particles		 *Black areas in image are diamond particles		

Grade Map

Part Material	Application	Finishing to Light Cutting		Medium Cutting	Rough to Heavy Cutting
Hard Brittle Material	Classification	01	10	20	30
	SUMIDIA® Binderless	NPD10			
	SUMIDIA®		DA90		
N Non-Ferrous Metal	Classification	N01	N10	N20	N30
	SUMIDIA®	DA90	DA1000	DA1000	DA1000
			DA2200	DA2200	DA2200
			DA150	DA150	

Polycrystalline Diamond

Characteristic Values

Part Material	Grade	Binder	Carbon Content (%)	Grain Size (μm)	Hardness HK (GPa)	TRS (GPa)	Features
Hard Brittle Material	**NPD10**	—	100	up to 0.05	120 to 130	≈ 3.15	100% diamond that directly binds nano-order diamond particles with high strength. Demonstrates optimum wear and fracture resistance as well as the best edge sharpness.
N Non-Ferrous Metal	**DA1000**	Co	90 to 95	up to 0.5	50 to 60	≈ 2.60	High-density sintered material made of ultra-fine grain diamond that demonstrates optimum wear and fracture resistance and excellent edge sharpness.
	DA2200	Co	85 to 90	0.5	45 to 55	≈ 2.45	Sintered material made of ultra-fine grain diamond that demonstrates both wear and fracture resistance and excellent edge sharpness.
	DA150	Co	85 to 90	5	50 to 60	≈ 1.95	Micro-grained sintered diamond particles with both machinability and wear resistance.
	DA90	Co	90 to 95	50	50 to 65	≈ 1.10	Coarse sintered diamond particles, with high diamond content for excellent wear resistance.

Transverse rupture strength measured with a test piece equivalent to the insert's PCD layer

PCD **SUMIDIA® Series** ☞ M2

PCD **SUMIDIA® Binderless** ☞ M4

Ceramic



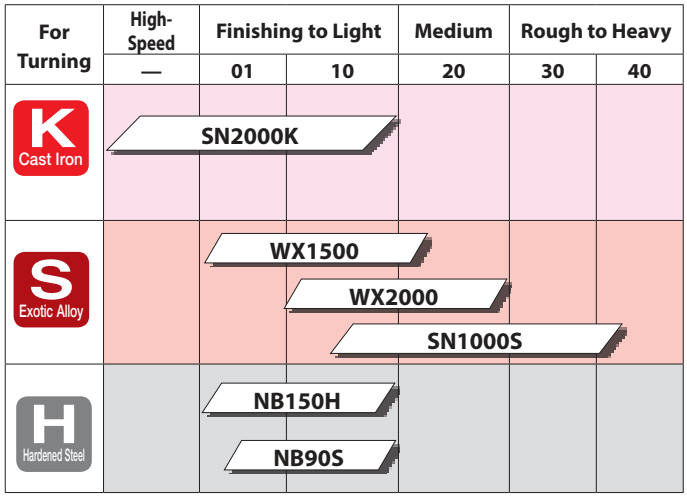
Superb wear resistance enables ultra-high-speed machining.

Sumitomo Electric Hardmetal's Advanced Ceramic utilises a special process to produce extremely tough grades.

This new development permits ultra-high-speed cutting of cast iron, heat-resistant alloy, and ultra-hard rolled material with stability.

Grade Map

For Turning



Characteristic Values

For Turning

Class	Grade	Hardness (HRA)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Characteristics
K Cast Iron	SN2000K	94.9	1.2	—	—	Contains Si_3N_4. Suitable for medium to finishing of cast iron.
S Exotic Alloy	WX1500	94.4	—	—	—	Cold-pressed Whisker reinforced ceramic for high efficiency machining of hardened steels, and Ni and Co-based alloys
	WX2000	90.0	1.2	—	—	Enhanced with SiC whiskers. For heat-resistant alloy and ultra-hard roll cutting.
	SN1000S	93.0	0.76	—	—	SiAlON grade for high speed machining of Nickel-based alloys. Superior toughness
H Hardened Steel	NB150H	96.0	4.5	—	—	Al2O2+TICN Execellent wear resistance. The best choice for machining alloy steel and hardened steel
	NB90S	95.0	1.0	TiAlN	2	Ultra-strong. Contains Al2O3 and ZX Coat. Continuous low-speed turning of hardened steel.

Material Properties

■ Material Properties

Material		Specific Gravity	Hardness (mHv) (GPa)	Young Modulus (GPa)	Thermal Conductivity (W/m·°C)	Linear-Thermal Expansion Coefficient (X 10^{-6}/°C)	Melting Point (°C)
Tungsten Carbide	**WC**	15.6	21	690	126	5.1	2,900
Titanium Carbide	**TiC**	4.94	31	450	17	7.6	3,200
Tantalum Carbide	**TaC**	14.5	18	280	21	6.6	3,800
Niobium Carbide	**NbC**	8.2	20	340	17	6.8	3,500
Titanium Nitrate	**TiN**	5.43	20	260	29	9.2	2,950
Aluminum Oxide	**Al_2O_3**	3.98	29	410	29	8.5	2,050
Silicon Nitride	**Si_3N_4**	3.17	25	310	29	3.0	>1,900 (decomposes)
Cubic Boron Nitride	**cBN**	3.48	44	700	1,300	4.7	—
Diamond	**C**	3.52	>90	970	2,100	3.1	—
Cobalt	**Co**	8.9	—	100 to 180	69	12.3	1,495
Nickel	**Ni**	8.9	—	200	92	13.3	1,455
Cemented Carbide	**WC-5% Co**	15.0	18	630	79	5.0	—
	WC-10% Co	14.6	14	580	75	5.0	—
	WC-20% Co	13.5	10	530	67	6.0	—
High Speed Steel		8.7	8	210	17	11.0	—

MEMO

Indexable Insert B

Negative / Positive / Ceramics B1 to B135



Indexable Insert Identification Table ····· B2
Grade Comparison Chart (CVD / PVD Coating) ····· B4
(Cermet, Cemented Carbide, Ceramics) ····· B6
(CBN, Polycrystalline Diamond) ····· B7
Chipbreaker Comparison Chart ····· B8
Chipbreaker Selection ····· B10

Negative M Class Chipbreakers for Low Carbon and General Steel Turning: EFB / EFE ····· B16
Positive M Class Chipbreakers for Low Carbon and General Steel Turning: EFB / ELB ····· B17
Chipbreaker for Hardened Steel Turning: EGH ····· B18
Chipbreakers for Aluminum Alloy and Non-Ferrous Metal Turning: (R/L)AX / (R/L)AY ····· B18
Chipbreaker Series for Stainless Steel Turning: EEF / EEG / EEM ····· B19

Negative Inserts

C / 80° Diamond (With Hole) ····· B20
D / 55° Diamond (With Hole) ····· B31
R / Round (With Hole) ····· B39
S / Square (With Hole) ····· B40
S / Square (Without Hole) ····· B52
T / Triangular (With Hole) ····· B54
T / Triangular (Without Hole) ····· B65
V / 35° Diamond (With Hole) ····· B66
W / Trigon (With Hole) ····· B69

Positive Inserts

C / 80° Diamond (With Hole) ····· B74
D / 55° Diamond (With Hole) ····· B85
R / Round (With Hole) ····· B92
S / Square (With Hole) ····· B94
S / Square (Without Hole) ····· B100
T / Triangular (With Hole) ····· B104
T / Triangular (Without Hole) ····· B117
V / 35° Diamond (With Hole) ····· B121
W / Trigon (With Hole) ····· B128

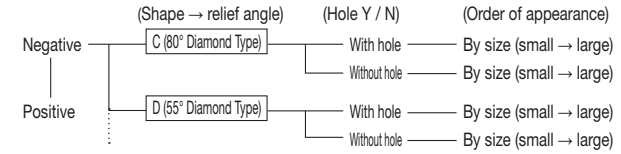
Ceramic Negative Insert (With Hole / Without Hole) ····· B130
Ceramic Positive Insert (Without Hole) ····· B133

Ceramic SG (SumiNotch) and Ceramic LNGX ····· B133
Precautions when Using Wiper Inserts ····· B134

Format of This Chapter

(1) Turning insert listing order is negative type inserts followed by positive type inserts.
(2) The order of listing in each type group is as follows: C (80° Diamond Type) → D (55° Diamond Type) → R (Round Type) → S (Square Type)→ T (Triangular Type) → V (35° Diamond Type) → W (Trigon Type).
(3) Listing of inserts with the same relief angle are provided for those with holes and then those without holes.
(4) Inserts are grouped by shape and then further divided by size (small to large according to cutting edge length and thickness).

• Structure Diagram



Symbols in Insert Diagrams

***Symbols conform to ISO13399.**

L: Cutting edge length, IC: Inscribed circle, S: Thickness, RE: Nose radius, D1: Hole diameter (For CBN (SUMIBORON) and PCD (SUMIDIA), L indicates side length.)

Handed Inserts

*Typically, photos show right-handed inserts.

If the bottom right reads "Photo: Left-handed," this indicates an exception where the photo shows a left-handed insert.

Insert Grades

(1) Each grade is carefully selected from Coated Carbide (CVD / PVD), Cermet, Carbide or Ceramic.
(2) The listing of CBN (SUMIBORON) and PCD (SUMIDIA) are in the dedicated sections: CBN (SUMIBORON) page L30 and PCD (SUMIDIA) page M10.

Stock Markings and Symbols

●: Standard stocked item
★: Worldwide Warehouse Item
▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

Indexable Insert Identification Table

	(1)	(2)	(3)	(4)
A.N.S.I.	C	N	M	G
I.S.O.	C	N	M	G

- (1) Insert Shape — Refer to Table 1
- (2) Relief Angle — Refer to Table 2
- (3) Tolerance — Refer to Table 3
- (4) Insert Hole — Refer to Table 4

Table 1: (1) Insert Shape

Symbol	Insert Shape		Angle
C		Diamond Type	80°
D			55°
E			75°
V			35°
R		Round Type	—
S		Square Type	90°
T		Triangular Type	60°
W		Trigon Type	80°
A		Parallelogram Type	85°
K			55°
H		Trigon Type	120°
O		Octagonal Type	135°
L		Rectangular Type	90°
M		Diamond Type	86°

Table 2: (2) Relief Angle

Symbol	Relief Angle
B	5°
C	7°
D	15°
E	20°
F	25°
N	0°
P★	11°
O	Others

★ mark indicates inserts that are sometimes used with a 10° relief angle.

Table 3: (3) Tolerance (inch)

Symbol	Tolerance of Nose Height (inch)	Inscribed Circle (inch)	Thickness (inch)
A	±0.0002	±0.001	±0.001
F	±0.0002	±0.0005	±0.001
C	±0.0005	±0.001	±0.001
E	±0.001	±0.001	±0.001
G	±0.001	±0.001	±0.005
J★	±0.0002	± .002 to ± .006	±0.001
M★	± .003 to ± .008	± .002 to ± .006	±0.005
U★	± .005 to ± .015	± .003 to ± .010	±0.005

★ mark indicates inserts that generally have sintered side surfaces. Refer to the table below (reference) for details on M class precision.

(Reference) Breakdown of M-Class Tolerance by Shape and Size

● Tolerance of Nose Height (inch)

Inscribed Circle	Triangular Type	Square Type	80° Diamond Type	55° Diamond Type	35° Diamond Type	Round Type
1/4	±.003	±.003	±.003	±.004	±.006	—
3/8	±.003	±.003	±.003	±.004	±.006	—
1/2	±.005	±.005	±.005	±.006	—	—
5/8	±.006	±.006	±.006	±.007	—	—
3/4	±.006	±.006	±.006	±.007	—	—
1	±.007	±.007	±.007	—	—	—
1 1/4	—	±.008	—	—	—	—

● Tolerance of Inscribed Circle (inch)

Inscribed Circle	Triangular Type	Square Type	80° Diamond Type	55° Diamond Type	35° Diamond Type	Round Type
1/4	±.002	±.002	±.002	±.002	±.002	—
3/8	±.002	±.002	±.002	±.002	±.002	±.002
1/2	±.003	±.003	±.003	±.003	—	±.003
5/8	±.004	±.004	±.004	±.004	—	±.004
3/4	±.004	±.004	±.004	±.004	—	±.004
1	±.005	±.005	±.005	—	—	±.005
1 1/4	—	±.006	—	—	—	±.006

Table 4: (4) Insert Hole

Symbol	Hole Y/N	Hole Shape	Chipbreaker	Shape (Cross Section)	Symbol	Hole Y/N	Hole Shape	Chipbreaker	Shape (Cross Section)
N	No	No	No		A	Yes	Cylindrical	No	
E									
R			One Face		M			One Face	
F			Double-sided		G			Double-sided	
W	Yes	Straight hole + single chamfer (40° to 60°)	No		B	Yes	Straight hole + single chamfer (70° to 90°)	No	
T			One Face		H			One Face	
D									
Q	Yes	Straight hole + double chamfer (40° to 60°)	No		C	Yes	Straight hole + double chamfer (70° to 90°)	No	
U			Double-sided		J			Double-sided	
					X	—	—	—	Special

Indexable Insert Identification Table

4	3	2	EGE
12	04	08	N - GE
(5)	(6)	(7)	(8) (9)

- (5) Cutting Edge Length — Refer to Table 5
- (6) Thickness — Refer to Table 6
- (7) Nose Radius — Refer to Table 7
- (8) Feed Direction — Refer to Table 8
- (9) Chipbreaker — Refer to Table 9

Picture of insert shown as example



Table 5: (5) Cutting Edge Length (Typical Examples)

Note: Cutting edge length indicates the dimensions for a sharp edge.

Shape	ANSI Symbol	ISO Symbol	Cutting Edge Length (in.)	Inscribed Circle	Shape	ANSI Symbol	ISO Symbol	Cutting Edge Length (in.)	Inscribed Circle	Shape	ANSI Symbol	ISO Symbol	Cutting Edge Length (in.)	Inscribed Circle
C 80° Diamond Type		03	.1397	.1397	D 55° Diamond Type	2	07	.303	.250	W Trigon Type	(5)	03	.150	.225
		04	.196	.169		2.5	09	.382	.3125		2	04	.169	.250
	2	06	.252	.250		3	11	.457	.375		2.5	05	.213	.313
	2.5	08	.315	.313		4	15	.610	.500		3	06	.256	.375
	3	09	.382	.375		5	19	.764	.750		4	08	.343	.500
	4	12	.508	.500							5	10	.429	.625
	5	16	.634	.625	V 35° Diamond Type	(6)	08	.327	.188					
	6	19	.760	.750		1.8	09	.382	.225					
	8	25	1.016	1.000		2	11	.437	.250		-	08	.315	.315
											3	09	.375	.375
						3	16	.654	.375		-	10	.394	.394
						4	22	.870	.500		-	12	.472	.472
S Square Type	2	06	.250	.375	T Triangular Type	(5)	06	.272	.156	R Round Type	4	12	.500	.500
	-	S7	.281	.281		(6)	08	.323	.188		5	15	.625	.625
	2.5	07	.313	.313		1.8	09	.378	.225		-	16	.630	.630
	3	09	.375	.375		2	11	.433	.250		6	19	.750	.750
	4	12	.500	.500		2.5	13	.539	.333		-	20	.787	.787
	5	15	.625	.625		3	16	.650	.375		-	24	.945	.945
	6	19	.750	.750		4	22	.866	.500		-	25	.984	.984
	8	25	1.000	1.000		5	27	1.083	.625		8	25	1.000	1.000
	10	31	1.250	1.250		6	33	1.299	.750		-	32	1.260	1.260

Table 6: (6) Thickness

ANSI Symbol	ISO Symbol	Thickness (inch)
	X1	*
(2)	01	.063
1.5	02	.094
-	T2	.109
2	03	.125
2.5	T3	.167
3	04	.200
-	05	.224
4	06	.250
5	07	.333
5	08	.313
6	09	.375

(*)
CC□T03X1 Insert Thickness: 1.40
CC□T04X1 Insert Thickness: 1.80

Table 7: (7) Nose Radius

ANSI Symbol	ISO Symbol	Nose Radius (inch)
-	00	Sharp Edge
.001	003	.0012
-	008	.0031
0	01	.0039
-	015	.0059
-	018	.0071
.5	02	.0078
-	035	.0138
1	04	.0156
2	08	.0313
-	10	.0394
3	12	.0469
4	16	.0625
5	20	.0781
6	24	.0938
8	32	.1250
-	M0	Round Insert (Metric)
-	00	Round Insert (Inch)
-	00	Round Insert (Imperial)

"M" after the nose radius code indicates a negative tolerance.

Table 8: (8) Feed Direction

ANSI Symbol	ISO Symbol	Feed Direction
R		Right Hand
L		Left Hand
E	N	Neutral

Table 9: (9) Chipbreaker

See Pages B10 - B11 for chipbreaker information

Grade Comparison Chart

■ CVD Coated Grades

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P05	**AC8015P AC810P**	UE6105	T9105 T9215	CA510 CA5505	HG8010		GC4305 GC4205	KCP05 KCP05B KCPK05	TP0501 TP0500	WPP05S WPP05 WPP01	IC8005 IC8150 IC428	TT8105
		P10	**AC8015P AC810P**	MC6015 UE6110	T9105 T9115 T9215	CA510 CA515 CA5515	HG8010	CP7	GC4305 GC4315 GC4215	KCP10 KCP10B	TP1501 TP1500	WPP10S WPP10	IC5100 IC8150 IC8250 IC9015	TT8115
		P20	**AC8025P AC820P**	MC6025 UE6020	T9115 T9125 T9225	CA025P CA525	HG8025 GM8020	CP7	GC4315 GC4325 GC4225 GC1515	KCP25 KCP25B	TP2501 TP2500	WPP20S WPP20	IC8150 IC8250 IC8350 IC9015	TT5100 TT8125
		P30	**AC8035P AC830P AC6030M AC630M**	MC6035 UE6035	T9125 T9135 T6130	CA025P CA525 CA530	GM25		GC2025 GC4325 GC4335 GC4235	KCP30 KCP30B	TP3500	WPP30S WPP30	IC8350 IC8025	TT7100 TT8135
		P40	**AC8035P AC830P AC6030M AC630M**	UH6400	T9135 T6130	CA530 CA5535	GX30 GM8035		GC4335 GC4235 GC30	KCP40 KCP40B	TP3500		IC8350 IC8025	TT7100
	M Stainless Steel / S Exotic Alloy	M10 S10	**AC6020M AC610M**	MC7015 US7020 US905	T9115	CA6515	HS9105		GC2015 GC1515 S05F	KCM15			IC6015 IC8025 IC8150 IC8250 IC5820	TT9215
		M20 S20	**AC6020M AC6030M AC610M AC630M**	MC7025 US7020	T6120 T9125	CA6525	HG8025		GC2025 GC1515	KCM25	TP2501 TP2500 TM2000		IC6015 IC6025 IC8350	TT5100 TT9225
		M30	**AC6030M AC630M AC8035P AC830P**	MC7025 US735	T6130	CA6535	GM8035 GX30 GM25		GC2035 GC235	KCM35 KC9240	TP3500 TM4000		IC6025	TT9235
		M40	**AC6030M AC630M**	US735					GC235 GC2035		TM4000			TT7800
	K Cast Iron	K05	**AC4010K AC405K**	MC5005 UC5105 UC5115	T5105	CA310 CA4505 CA4010	HG3305 HX3505	CP1	GC3005 GC3205 GC3210	KCK05	TK1001 TK1000	WKK10S WAK10	IC5005	TT7005 TT7505
		K10	**AC4010K AC4015K AC405K AC415K**	MC5005 MC5015 MC5020 UC5105 UC5115	T515 T5105 T5115 T5125	CA315 CA4505 CA4515 CA4115	HX3305 HG3305 HG3315 HX3515 HG8010 TH315 ATH10E	CP1	GC3005 GC3210 GC4305	KCK15	TK1001 TK1000	WKK10S WKK20S WAK10 WAK20	IC5005 IC5010 IC5100	TT7015
		K20	**AC4015K AC415K AC420K AC425K AC8025P**	MC5015 UC5115 UE6110	T5125 T9115	CA320 CA4515 CA4120 CA4115	HX3515 HG3315 HG8025		GC3215 GC4325	KCK15 KCK20	TK2001 TK2000	WKK20S WAK20 WAK30	IC5010 IC8150	TT7015
For Milling	P Steel	P10	**ACP2000 ACP100**	FH7020 F7030 MV1020	T3130 T3030				GC4220 GC4230 GC3040	KC930M KC935M	MP1500 MP2500	WKP25S WKP25 WKP35S WKP35G	IC4100 IC520M IC4050 DT7150 IC5400	TT7080 TT7515 TT9300
		P20	**ACP2000 ACP100**	F7030					GC2040 GC4240	KCPM20				TT7400
		P30	**ACP2000 ACP100**	F7030						KCPK30 KCMP30				TT7800
	M Stainless Steel / S Exotic Alloy	M10	**ACM200**											
		M20	**ACM200**	F7030	T3130	CA6535	GX2160 AX2040		GC2040		MS2500	WKP35S		TT7800
		M30	**ACM200**	F7030						KC994M			IC5820	TT7800
	K Cast Iron	K10	**ACK2000 ACK100 ACK200**							KCK15			IC5100	TT7515
		K20	**ACK2000 ACK200**	MV1020 MC5020 F5010 F5020	T1115	CA420M	GX2120		GC3330 GC3220 GC3225 GC3020 GC3040	KC915M KC930M KC935M	MK1500	WAK15 WKP25S	IC5100 DT7150 IC4010 IC4050 IC4100	TT6800 TT7080

■ PVD Coated Grades

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P05	**ACZ150**		AH710 AH110	PR915 PR1005								
		P10	**AC1030U ACZ150 AC5025S AC520U**	VP15TF MS6015	AH120 AH725	PR930 PR1215 PR1225		TM1 VM1 DT4 DM4					IC807	
		P20	**AC1030U AC5025S AC520U AC530U**	VP15TF VP20RT	AH120 AH725 AH3135	PR1225 PR1425	IP2000	TM1 TM4 VM1 QM3 DM4	GC15 GC1125	KCU25			IC807 IC808 IC810	TT9080
		P30	**AC1030U AC530U**	VP15TF VP20RT	AH120 AH725 SH730	PR1425 PR1525 PR1535	IP3000 CY250	QM3	GC1125				IC328 IC330 IC830 IC928	TT8020 TT8080 TT9080
		P40	**AC1030U**			PR660	IP3000		GC4335 GC4235				IC830	TT8020 TT8080

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grade Comparison Chart

■ PVD Coated Grades (continued)

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	M Stainless Steel / S Exotic Alloy	M10 S10	**AC5015S AC5025S AC510U AC520U ACZ150**	MP9005 MP9015 VP15TF VP05RT VP10RT	AH110 AH710 AH725 AH905 AH8005	PR005S PR015S PR915 PR1025 PR1215 PR1225 PR1305 PR1310	IP050S IP100S JP9105 JP9115	TM1 VM1 DT4 DM4 ZM3 ST4	GC1105 GC1115	KC5510 KCU10	TS2000	WSM01 WSM10 WSM10S	IC807 IC808 IC907 IC908	TT5080 TT3010
		M20 S20	**AC5015S AC5025S AC1030U AC520U**	MP9015 MP9025 VP15TF VP20RT VP20MF UP20M	AH630 AH120 AH725 AH8015	PR015S PR915 PR930 PR1025 PR1125 PR1215 PR1225 PR1325	IP100S HS9115	DT4 DM4 ZM3 QM3 TM4 ST4	GC15 GC1115 GC1125	KC5525 KCU25 KC5025	TS2500	WSM20 WSM20S	IC330 IC806 IC808 IC830 IC908 IC928	TT9080 TT9020 TT3020
		M30	**AC5025S AC6040M AC1030U AC520U AC530U**	MP7035 VP15TF VP20MF	AH630 AH645 AH725	PR1125 PR1525 PR1535		QM3 TM4 DT4 DM4	GC1125			WSM30 WSM30S	IC328 IC330 IC830 IC840 IC882	TT8020 TT8080 TT9080
		M40	**AC6040M AC1030U AC530U**	MP7035 VP15TF MS6015	AH645	PR1125 PR1535	GX30						IC830 IC928	TT8020 TT8080
	K Cast Iron	K10	**AC1030U AC510U ACZ150**	VP10RT	AH110 AH120	PR905	HX3305 HG3305 HG3315 HX3515 HG8010 TH315 ATH10E		GC15				IC810	TT6080
		K20	**AC1030U AC510U AC530U ACZ150**	VP10RT VP20RT VP15TF	AH120	PR905		DM4 QM3						TT6080
		K30	**AC1030U AC530U**	VP15TF VP20RT	AH110 AH120 AH725								IC830 IC908 IC910 IC928	
For Milling	P Steel	P10	**ACU2500 ACP200**	VP15TF MP6120	AH120 AH725	PR930 PR1225	PN215 PN15M JP4005 JP4105 JP4115 JP4120 GX2140	TM1 DT4 DM4		KC715M	T250M T350M F25M		IC807 IC903	TT2510 TT7080
		P20	**ACP3000 ACU2500 ACP200 ACP300**	VP15TF VP20RT MP6120 MP6130	AH9030 AH120 AH725 AH3135	PR1525 PR1225 PR1230 PR830	JP4020 JP4120 JS4045	TM1 TM4 DT4 DM4	GC1010 GC1025		MP3000 F30M	WSM20 WSM20S	IC807 IC808 IC810 IC380 IC330	TT7080 TT9030 TT9080
		P30	**ACP3000 ACU2500 ACP200 ACP300**	VP15TF VP30RT MP6130	AH3035 AH3135 AH120 AH130 AH140 AH725	PR1525 PR1535 PR1230	JD4045 JS4060 JX1045 JX1060 CY150 CY250 PTH30E	DM4 TM4 ZM3	GC1030 GC1130 GC2030	KC725M KC730M KC735M KC7140 KCU40	MM4500 F40M	WSM35 WSP45 WSP45S	IC328 IC330 IC380 IC830 IC928	TT8080 TT8020
		P40	**ACP3000 ACU2500 ACP300**	VP30RT	AH140		JS4060 JM4160 PTH40H						IC830	TT8020 TT8080
	M Stainless Steel	M10 S10	**ACU2500 ACM100 ACK300 ACP300**	MP9120 VP15TF VP10RT	AH110 AH120 AH330 AH725	PR1025 PR1225	JX1020 CY9020 JP4020 JP4120 PN08M PN215	TM1 DT4 DM4 ZM3	GC1025 GC1030 GC1130	KC522M			IC807 IC808 IC903 IC907 IC908	
		M20	**ACU2500 ACM300 ACP300**	MP7130 MP9120 MP9130 UP20M VP15TF VP20RT	AH120 AH130 AH725 AH3135 AH6030	PR1025 PR1225 PR1525	JP4120 JS1025 JX1015 CY150 CY15	DT4 DM4 ZM3		KC730M KC525M	F25M F30M T350M	WSM35 WSM35S WXM35	IC330 IC808 IC830 IC840 IC882 IC908 IC928	TT9080 TT9030
		M30	**ACM300**	MP7130 MP7140 MP9130 VP15TF	AH130 AH140 AH330 AH725 AH3135	PR1525 PR1535	JX1045 JM4160 PTH30E	DT4 DM4 ZM3	GC2030 GC1040	KC725M KC7140 KCU40	F30M F40M MM4500	WSM35 WSM35S WXM35	IC328 IC330 IC830 IC840 IC882	TT8020 TT8080 TT9080
		M40	**ACM300**	MP7140 VP15TF VP30RT	AH140	PR1535	GX30 JM4160 PTH40H						IC830 IC928	TT8020 TT8080
	K Cast Iron	K05	**ACK3000**		AH110		TH303 TH308 ATH80D							
		K10	**ACK3000 ACU2500**		AH110 AH120	PR905 PR1210							IC810	TT6080 TT7080
		K20	**ACK3000 ACU2500 ACK300**	VP20RT VP15TF	AH120 AH9030	PR905 PR1210 PR1510	JP4020 JP4120 PTH13S	DM4	K15W K20D K20W		MK3000 T150M	WKK25	IC808 IC810 IC830	TT6080 TT7515
		K30	**ACK3000 ACU2500 ACK300**	VP15TF VP20RT	AH725 AH110 AH120 AH330 GH110 GH130	PR1510 PR1210	JS4045 JX1045 CY150 CY250		GC1010 GC1020 GC1025 GC1030 GC1130	KC510M KC520M KC525M KCU40	MK2050 MH1000		IC830 IC810 IC908 IC910 IC928 IC950	TT6080

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Grade Comparison Chart

■ Cermet

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning	P Steel	P10	**T1500Z* T1000A T1500A**	AP25N* NX2525 NX3035 VP25N*	GT720* GT9530* J9530* NS520	TN30,PV30*,TN60 TN6010,TN610 PV710*,PV7005* PV7010*	CZ25* CH550	Q15* Z15* T15 C7Z*	CT5015	KT125 HTX KT1120			IC20N IC30N IC520N	PV3030 PV3010 CT3000
		P20	**T1500Z* T2500Z* T3000Z* T1500A T2500A**	AP25N* NX2525 NX3035 MP3025*	NS530 NS730 GT530* GT730* AT9530* NS9530 GT9530* J9530*	TN60,TN6020 TN620,PV60* TN90 PV7020* PV7025* PV720	CZ25* CH550	T15 C7Z* C7X	GC1525*	KT6215 KT315* KT175 KT5020*	CM CMP C15M TP1020		IC20N IC30N IC520N IC530N	CT7000
		P30	**T2500A T2500Z* T3000Z***	MX2525 MP3025* VP45N*	NS9530 GT9530* AT9530*	TN620 PV7025* PV90* PV720		N40 C7X						
	K Cast Iron	K10	**T1000A**	AP25N* VP25N* NX2525	GT720* GT9530* NS9530 J9530* NS520	TN30, PV30* TN610 TN6010 PV710* PV7005* PV7010*	CH550		CT5015	KT125 HTX				PV3030 CT3000
For Milling	P Steel	P30	**T2500A T250A T4500A**	NX2525 MX3030 NX4545 VP45N*	NS540 NS740	TN90 TC60M TN100M	MZ1000* MZ2000* MZ3000* CH7030 CH7035		CT530	KT530M* KTPK20*	C15M		IC30N	

*mark indicates coated cermet

■ Cemented Carbide

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/ Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
For Turning / For Milling	P Steel	P10	**ST10P**		TH10		WS10		S1P					
		P20	**ST20E**	UTi20T	KS20		EX35		SMA	K125M			IC07 IC50M	UF10
		P30	**A30 A30N**	UTi20T	KS15F UX30	PW30	EX35 EX40		SM30				IC54 IC28	P30
		P40	**ST40E**		TX40		EX45		S6				IC54 IC28	
	M Stainless Steel	M10	**EH510**		TH10		EX35 WA10B	KM1	H10A	KU10,K313 K68,KYSM10	890		IC07,IC20 IC08	
		M20	**EH520**	UTi20T	KS20		EX35		H13A	K313 K68	HX 883		IC07,IC20 IC08	UF10
		M30	**A30 A30N**	UTi20T	UX30				H10F SM30				IC28	
	K Cast Iron	K01	**H2 H1**	HTi05T	KS05F		WH01 WH05			KU10,K313 K68,K115M			IS8	
		K10	**H1 EH510**	HTi10	TH10	KW10 GW15	WH10	KM1	H13A	KU10,K313 K68,K115M K110M KY3500	890		IC20,IS8	K10
		K20	**G10E,H10E EH520**	UTi20T	KS15F KS20	GW25	WH20	KM3	H13A	KMF KY3500 KYHS10	890 883 HX		IC20 IS8	
		K30	**G10E,H10E**	UTi20T			WH30			KY3500	883			
	S Exotic Alloy	S10 S20	**EH510 EH520**	RT9005 RT9010 MT9015 TF15	TH10 KS05F KS15F KS20	SW05,SW10 SW25,KW10 GW15	WH10		H10A H10F H13A	KU10,K313 K68,KMF K110M,KYHS10 K1025	HX H25		IC20,IC07 IC08,IC28	K10
	Micro-fine Grained Carbide	Z01	**F0**	SF10,MF07 MF10,TBA16A	F,MD1508 MD08F		NM08						IC07	UF1A
		Z10	**AFU XF1**	HTi10 MF20	M,MD10 MD05F,MD07F	FW30	NM15		6UF,8UF PN90,H6FF		890		IC07	UF1A
		Z20	**AF0 AF1**	TF15 MF30	EM10,MD20 MD15		BRM20 EF20N		12UF		890 883		IC08	UF10
		Z30	**A1**		UM		NM25		N6F,H10F		883		IC08	

■ Ceramic

Applications	Work Material	Sumitomo Electric	Tungaloy	Kyocera	NTK	Sandvik	Kennametal	TaeguTec
For Turning / For Milling	H Hardened Steel	**NB100C**	WG300 LX11	A66N A65 KT66 PT600M	HC4,HC7 ZC7,WA1	GC6050 CC650 CC670	KY1615 KY4300	AB20 AB2010
	K Cast Iron	**NB90S**	LX11,LX21 CXC73,FX105 CX710	A65,A66N KA30,KS500 KS6000,KT66 PT600M CS7050,KS6050	HC1,HW2,HC2,HC6 HC7,WA1,SX1,SX2 SP2,SX9,SX8	CC620,CC650 CC6090 GC1690	KY1615,KY1310 KY1320,KY3500 KY4300	AW120,AB30 AS500,AS10 SC10

Note: The above data was collected from various published catalogs. The information may therefore not be up to date.

Grade Comparison Chart

■ CBN

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	NTK	Chukyo	Sandvik	Kennametal	SECO Tools	ISCAR
For Turning / For Milling	K Cast Iron	K01	**NCB100 BNC500* BN7000 BN500**	MB710 MB5015	BX910 BX930 BX870	KBN475 KBN60M	B30 B16		CB50 CB7525	KB1340		IB50 IB85
		K10	**BN7000 BN500**	MB710,MB730 MB5015,MB4020	BX470,BX480 BX950	KBN60M KBN900	B23 B16	HB55,HB56 HB569 HB580,HB57	CB7925		CBN200,CBN300 CBN300P,CBN400C	IB55 IB90
		K20	**BN7000 BNS800**	MB730,MB4020 MB4120,MBS140	BX470,BX480 BXC90,BX90S	KBN900		HB56,HB569 HB580,HB57				
		K30	**BNS800**	MB4120,MBS140 BC5030	BXC90 BX90S			HB57		KB5630	CBN500	
	S Exotic Alloy	S01	**NCB100 BN7000**	MB730 MB4020 MB4120	BX940,BX950 BX470,BX480 M714B			HB55 HB580 HB52		KB5630 KB1340		IB85 IB05S IB10S
	H Hardened Steel	H01	**BNC2010 BNC100 BN1000 BN2000 BNX10**	BC8105 BC8110 MBC010 MB810 MB8110	BXM10 BX310	KBN05M KBN10M KBN510	B5K B52	HB55 HB550 HB580 HB590	CB7105	KB5610	CH0550 CBN10 CBN100 CBN060K	IB05H IB50 IB10HC
		H10	**BNC2010 BNC2020 BNC160 BNC200 BN2000**	BC8110 BC8120 MBC020 MB8025 MB8110 MB825	BXM10 BX330 BX530	KBN05M KBN25M KBN525	B5K B6K B52 B36	HB55 HB59 HB550 HB580 HB52	CB7015 CB7115 CB20	KBH20 KB5610 KB5625	CBN10 CBN100 CBN150 CBN060K CBN160C	IB10H IB55 IB25HA
		H20	**BNC2020 BNC200 BNX20**	BC8120,BC8020 MBC020 MB8025,MB8120	BXA20 BXM20 BX360	KBN30M KBN35M KBN900	B36 B40 B6K	HB57,HB59 HB590 HB580	CB7025 CB7125 CB50	KBH20 KB5625 KB5630	CH2540 CBN150 CBN160C	IB20H,IB20HC IB25H,IB25HC
		H30	**BNC300 BN350 BNX25**	BC8130 MB8130 MB835	BXM20 BXA20 BXC50 BX380	KBN30M KBN35M KBN900	B40	HB57 HB580	CB7135 CB7525	KB5630	CH3515	IB90

*mark: For ductile cast iron cutting

■ Polycrystalline Diamond

Applications	Work Material	Classification Code	Sumitomo Electric	Mitsubishi	Tungaloy	Kyocera	NTK	Chukyo	Sandvik	Kennametal	SECO Tools	ISCAR
For Turning / For Milling	N Non-Ferrous Metal	N01	**DA1000 DA90**	MD205	DX180 DX160	KPD001	PD1		CD05 CD10	KD1400		ID5
		N10	**DA1000 DA150**	MD205 MD220	DX140	KPD001 KPD010 KPD230	PD2	HD100 HD30 HD60	CD1810	KD1400 KD1425	PCD05 PCD10	ID5
		N20	**DA1000 DA2200**	MD220 MD230	DX120 DX110	KPD230 KPD250	PD2	HD100 HD30 HD50		KD1400 KD1425	PCD05 PCD20	
		N30	**DA1000 DA2200**	MD2030 MD230	DX110			HD30,HD50 HD700 HD100		KD1400	PCD05 PCD30 PCD30M	

Note: The above data was collected from various published catalogs. The information may therefore not be up to date.

Chipbreaker Comparison Chart

■ Negative Type Inserts

Part Material	Applications	Sumitomo	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
P Steel	Fine Cutting	**EFA**	FH	TF	GP			QF	FF	FF1		SF	
		EFL,EFB	FS,FY	NS,ZF	XP,XF,VF	FE	WM			FF2	FP5		FA
	Finishing	**ELU,EFE**	SA,SY	NM	PP,XQ,CQ	BE	ZF1	LC	FN		NF3		FG
		ESU	SH	TS,TSF	HQ	CE,B,BH	UL,WV	XF,MF	CT	MF2		NF	FC
	Finishing (Wiper Edge)	**ELUW**		AFW,FW	WP			WL,WP		W-FF2			
		ESEW	SW	ASW,SW	WQ			WF,WMX	FW	W-MF2	NF	WF	WS
	Finishing to Light Cutting	**ESE,ESX**	LP	AS,ZM	CJ,XS	AB,CT	ZW1,WR	PF,KF	LF,33		MP3,NS6	F3P,TF	
	Medium Cutting	**EGU**(EUG)	MA,MV	TM,TQ	HS,PS	AH	ZP	XM,QM PMC	P,MG	M3		GN	ML,MP MC
		EGE,EUX	MH,MP	DM,AM	PQ,GS PT,PG	AE,AY	Z5	PM,SM KM,HM	MN,MP1		MP5,NM4 NM6	RF,LF	PC,MT
	Medium Cutting (Wiper Edge)	**EGUW**	MW					WM	MW,RW	W-M3	NM	WG	WT
	Roughing	**EMU,EME**	RP,GH	TH,S	HT,GT PH	RE,AR	G	PR,XMR KR	RP	M5,MR7	RP5,NM9 RP7	M3P,NR	RT
		EMX	HAS,MT	CH					RN	MR6			
	Heavy Cutting	**EHG**	HZ,HX,HL	THS,TRS	PX, Standard	TE,UE		QR	RM,MR	R4,R5,M6	NR6,NRF	NM	RX
		EHP	HH,HXD,HR	65				HR,SR	RH	R7,MR7	NR8	TNM	RH
		EHU,EHW	HV			H							HT,HD HY
		EHF	HCS	TUS		HX,HE		MR		RR9	NRR	R3P	HZ
M Stainless Steel	Finishing	**ESU,EEF**	LM,SH	SS	MQ,GU	SE,MP	ZF1	MF	FP,FS,LF	MF2	NF4		EA,SF
	Light to Medium Cutting	**EEX,EEG**	GM,MS	SF,SA	MS,MU	PV	ZP	23	MS	MF1,M1		TF,VL	EM
	Medium Cutting	**EGU**	MM	SM		DE		MM,MMC SMR	MP	MF3,M3	NM4	M3M PP	ET
	Roughing	**EHM**	ES,1M,2M,HL	S					UP	MF4,MF5	NR4,RM5		VF
		EEM,EMU	RM,GH,HM	SH	TK			MR,MRR		M5,MR3,MR4		MR	SU
K Cast Iron	Light Cutting	**ENZ**	LK,MA,MK	CM,CF	Standard, C	V,VA		KF	UN	M4	NM5	GN	MT
	Medium Cutting	**EGZ**(EUX)	GK,RK,GH	Standard, CH, 33	ZS,GC	Y,RE		KM,KR KRR		MR7	RK5,RK7		RT
N Non-Ferrous Metal	Finishing	**RAX/ LAX**		P	AH				MS				
S Exotic Alloy	Finishing	**EEF**	LS,FJ	HRF				SF,SGF			NFT		
	Medium Cutting	**EEG,EEX**	MS,MJ	HMM,SA,HRM		VI		SM,SMC			NMT		
	Roughing	**EMU,EEM**	RS,GJ					SMR			NRT		
H Hardened Steel	Finishing	**FV***		HP*									
	Light Cutting	**LV***	BF*	HF*	HH*,HL*								
	Medium to Roughing	**EGH**											
	Carburised Layer Removal	**SV***	BM*	HM*	HD*			HGR*					

( ) indicates a discontinued item. *mark indicates CBN / PCD tool breaker

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Chipbreaker Comparison Chart

■ Positive Type Inserts

Part Material	Applications	Sumitomo	Mitsubishi	Tungaloy	Kyocera	Mitsubishi/Hitachi	NTK	Sandvik	Kennametal	SECO Tools	WALTER	ISCAR	TaeguTec
P Steel	Finishing	**EFC**	FJ,AM	01,JRP,JTS	CF,GF,VF		AZ7,AMX FG	UM		GT-F1	FM4		
		EFB,ELU (EFP,EFK)	FP,FM FV,SQ	PSF,PF,23 SS,JSS	GP,XP,PP MQ,DP	JQ,MP	ZR	PF,UF MF,XF	11,UF,MF KF,XF	FF1	FP4	PF	FA,FX
	Finishing (Wiper Edge)	**ELUW**	SW		WP			WF	FW	W-F1	PF	WF	WT
		RW/LW						WK,WM	MW	W-F2		WG	
	Finishing to Light Cutting	**MESI**	SMG	JS	CK		YL,1L						SA
	Light Cutting	**ELB,ESU** (ESK,ENF)	LP,LM SV,MQ	PSS,PS,TS TJS,CM	HQ,XQ GK	JE	AZ8,AM2 AM5	PM,UM XM	LF	F1	MP4,MM4 FP6	SM,14	FG,PC
		EFM			GQ, SK, Standard		AF1,CL		MP	MF2			
	Light to Medium Cutting	**EGU**	Blank	PS, PM	HQ			PM, UM			PM5		
		EMU	MP,MM MK,MV	PM				PR,UR,MMC MPC,XR	MF	F2,M3 M5	PM5,RP4 RM4	19	MT,PMR
M Stainless Steel	Finishing	**EFC**	FM,FV	PSF,PF SS,JSS			AZ7,AM3	MF,XF	11,UF	FF1	FM4	PF	FA,FX
	Finishing to Light Cutting	**MESI**	SMG				YL,1L	UF	LF,FP				FG
	Light Cutting	**ELB,ESU**	LM,SV		MQ,HQ		AM5,CL	MM	MP	F1,MF2	MM4,PS5	SM	PC
	Light to Medium Cutting	**EMU**	MM, MV, Blank	PM				UM,MR XR,UR	MF	F2,M3 M5	PM5,RM4		MT,PMR
K Cast Iron	Finishing	**EFC**		CF				KF,XF	11,UF		FK6		
	Light to Medium Cutting	**EMU**	MK				AF1,FM	KM,UM,XR	FP,LF MF,MP	M5	MK4,RK4		MT
N Non-Ferrous Metal	Finishing	**NAG,NAW,(R)LAY**	AZ	AL,PP	AH			AL	HP	AL	PM2	AS,AF	FL
	Finishing to Light Cutting	**LD*, GD***											SA
H Hardened Steel	Finishing	**FV***		HP*									
	Light Cutting	**LV***	BF*										

( ) indicates a discontinued item. *mark indicates CBN / PCD tool breaker

Note: The above data was collected from various published catalogues. The information may therefore not be up to date.

Negative — Finishing to Medium Cutting

Dimensions shown in mm

Fine Finishing

EFB
P M K N S H
Provides excellent chip control and sharp edge needed for low feed machining
0.80 | 27° | CNMG43
C D R S T V W

EFA
P M K N S H
Profile breaker perfect for fine finishing
1.0 | 20° | CNMG43
C D R S T V W

EFL
P M K N S H
Optimal breaker for chip control on rolled steel
1.0 | 10° | CNMG43
C D R S T V W

EFE
P M K N S H
Excellent chip control for low to high feed machining
1.40 | 0.70 | 20° | CNMG43
C D R S T V W

J=Uncoated, polished grade for Non-Ferrous materials

Finishing

ELU
P M K N S H
Effective chip control for variable depths of cut and profiling
1.5 | 1.0 | 10° | CNMG43
C D R S T V W

ESU(J)
P M K N S H
Effective at high feed and low depth of cut
1.3 | 13° | CNMG43
C D R S T V W

ESE
P M K N S H
Finishing breaker reduces tool wear on rake face. Effective even for high-efficiency machining.
0.1 | 1.5 | 17° | 5° | CNMG43
C D R S T V W

EEF
P M K N S H
Exotic alloy finishing breaker with excellent chip control
1.2 | 20° | CNMG43
C D R S T V W

ELUW
P M K N S H
High-efficiency finishing breaker with wiper edge
Wiper Insert
1.5 | 1.0 | 10° | CNMG43
C D R S T V W

ESEW
P M K N S H
New high-feed finishing breaker with wiper edge
Wiper Insert
0.13 | 1.9 | 17° | 5° | CNMG43
C D R S T V W

(R/L)FX
P M K N S H
Parallel breaker with superior sharp edge
1.5 | 14° | TNP33
C D R S T V W

(R/L)FY
P M K N S H
Wide breaker with sharp edge
2.5 | 15° | TNP33
C D R S T V W

(R/L)Q
P M K N S H
Arc-shaped ground finishing breaker
0.15 | 1.35 | TNP22
C D R S T V W

Light to Medium Cutting

EFJ
P M K N S H
Standard chipbreaker with excellent cutting edge strength
0.18 | 1.2 | SNMG43
C D R S T V W

(R/L)T
P M K N S H
Arc-shaped ground breaker for light cutting
0.15 | 1.65 | TNP32
C D R S T V W

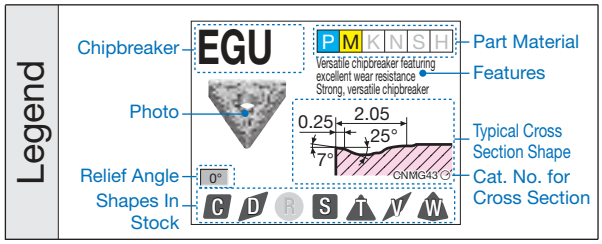
(R/L)GX
P M K N S H
Double positive chipbreaker providing superior sharpness
1.5 | 15° | SNGG43
C D R S T V W

ESX
P M K N S H
Perform profiling and raise steps
0.2 | 1.35 | 3° | 15° | CNMG43
C D R S T V W

EEX
P M K N S H
Standard chipbreaker designed especially for use with exotic alloys
2.0 | 16° | CNMG43
C D R S T V W

EUP
P M K N S H
Double positive edge for optimal stainless steel cutting
2.1 | 10° | CNMG43
C D R S T V W

Legend

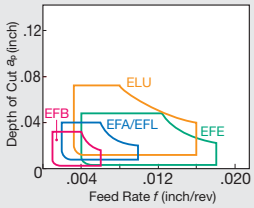


Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
Break Master (CBN/PCD) | For Chamfering

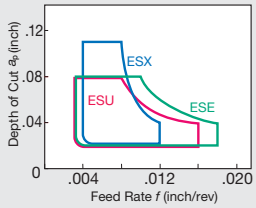
Applicable Part Material: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range (Inscribed Circle of Insert up to ø.5000inch)

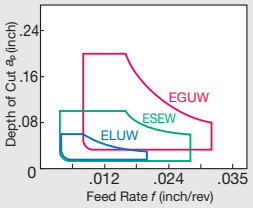
Fine Cutting to Finishing



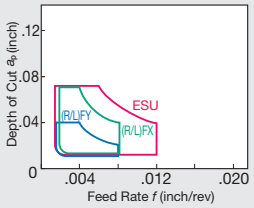
Finishing to Light Cutting



Wiper Insert



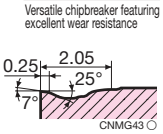
High-precision Cutting (Ground)



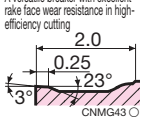
Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number. For details, refer to "Stock Items" in Chapter B.

Negative — Medium Cutting to Roughing

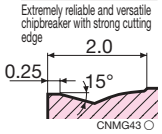
For Medium Cutting

EGU
P M K N S H
Versatile chipbreaker featuring excellent wear resistance


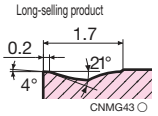
0° C D R S T V W

EGE
P M K N S H
A versatile breaker with excellent rake face wear resistance in high-efficiency cutting


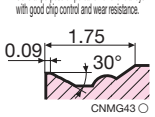
0° C D R S T V W

EUX
P M K N S H
Extremely reliable and versatile chipbreaker with strong cutting edge


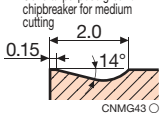
0° C D R S T V W

ENG
P M K N S H
Popular and versatile chipbreaker
Long-selling product


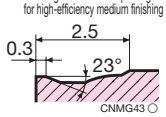
0° C D R S T V W

EEG
P M K N S H
General-purpose chipbreaker for exotic alloys with good chip control and wear resistance.


0° C D R S T V W

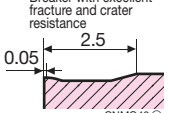
(R/L)M
P M K N S H
General-purpose ground chipbreaker for medium cutting


0° C D R S T V W

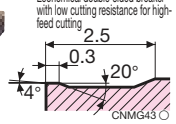
EGUW
P M K N S H
Finishing breaker with wiper edge for high-efficiency medium finishing


Wiper Insert
0° C D R S T V W

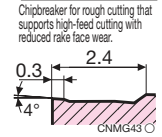
Medium to Roughing

EEM
P M K N S H
Breaker with excellent fracture and crater resistance


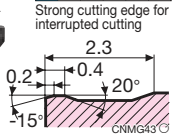
0° C D R S T V W

EMU
P M K N S H
Economical double-sided breaker with low cutting resistance for high-feed cutting


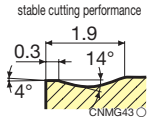
0° C D R S T V W

EME
P M K N S H
Chipbreaker for rough cutting that supports high-feed cutting with reduced rake face wear.


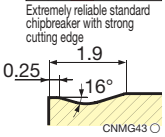
0° C D R S T V W

EMX
P M K N S H
Strong cutting edge for interrupted cutting


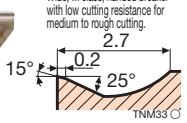
0° C D R S T V W

ENZ
P M K N S H
Standard breaker with stable cutting performance


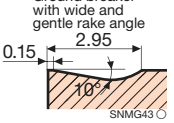
0° C D R S T V W

EGZ
P M K N S H
Extremely reliable standard chipbreaker with strong cutting edge


0° C D R S T V W

(R/L)HM
P M K N S H
Wide, M class, handed breaker with low cutting resistance for medium to rough cutting.


0° C D R S T V W

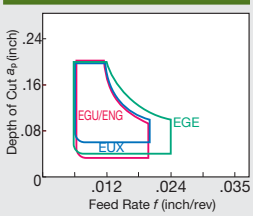
(R/L)M
P M K N S H
Ground breaker with wide and gentle rake angle


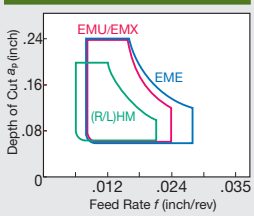
0° C D R S T V W

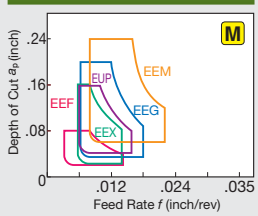
Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
Break Master (CBN/PCD) | For Chamfering

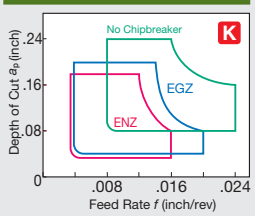
Applicable Part Material: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

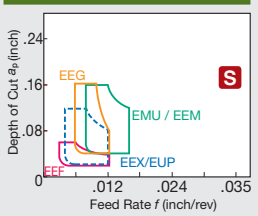
Chipbreaker Application Range (Inscribed Circle of Insert up to ø.5000inch)

For Medium Cutting


For Roughing


Stainless Steel


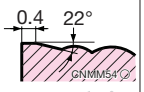
Cast Iron


Exotic Alloy


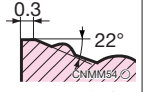
Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number. For details, refer to "Stock Items" in Chapter B.

Negative Roughing

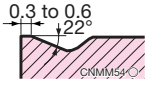
Rough to Heavy Cutting

EHG — P M K N S H
Excellent chip control for heavy cutting


0° C D R S I N W

ENP — P M K N S H
Single-sided chipbreaker with low cutting resistance for rough cutting


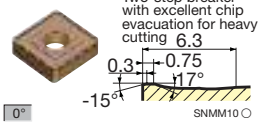
0° C D R S I N W

EHP — P M K N S H
Strongest cutting edge for heavy cutting


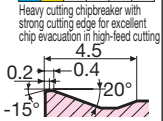
0° C D R S I N W

EHU — P M K N S H
Heavy cutting chipbreaker with strong cutting edge for excellent chip control


0° C D R S I N W

EHW — P M K N S H
Two-step breaker with excellent chip evacuation for heavy cutting


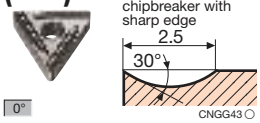
0° C D R S I N W

EHF — P M K N S H
Heavy cutting chipbreaker with strong cutting edge for excellent chip evacuation in high-feed cutting


0° C D R S I N W

Negative Aluminum Alloy Cutting

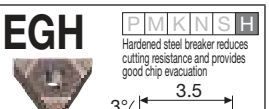
Finishing

(R/L)AX — P M K N S H
Parallel Al chipbreaker with sharp edge


0° C D R S I N W

Negative Hardened Steel Cutting

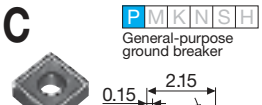
Finishing

EGH — P M K N S H
Hardened steel breaker reduces cutting resistance and provides good chip evacuation


0° C D R S I N W

Negative Chamfering

For Chamfering

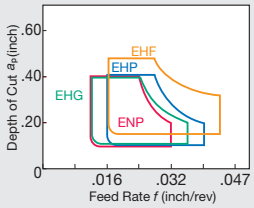
C — P M K N S H
General-purpose ground breaker


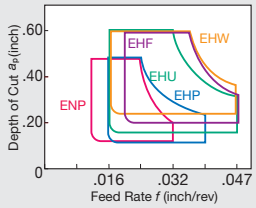
0° C D R S I N W

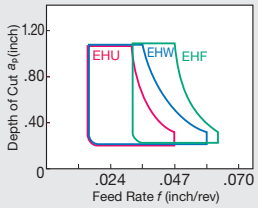
Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
Break Master (CBN/PCD) | For Chamfering

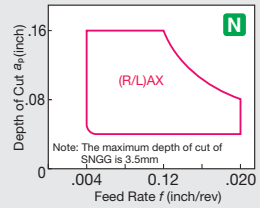
Applicable Part Material: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

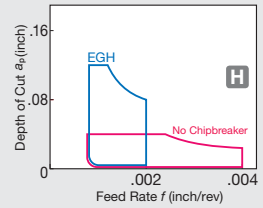
Chipbreaker Application Range

Rough to Heavy Cutting (Inscribed Circle ø.6250 to .7500inch)


Rough to Heavy Cutting (Inscribed Circle ø1 inch)


Rough to Heavy Cutting (Inscribed Circle ø1.2205inch)


Aluminum Alloy


Hardened Steel


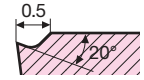
Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number. For details, refer to "Stock Items" in Chapter B.

Chipbreaker Selection

M Class Positive (Finishing to Medium Cutting)

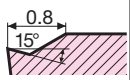
Finishing to Light Cutting

EFB — P M K N S H
Finishing breaker for mild steel, with good chip control and surface finish



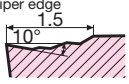
5° 7° 11° CCMT32 ○
C D R S T V W

ELU — P M K N S H
Chip control significantly improved in fine finishing



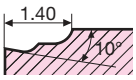
5° 7° 11° CCMT32 ○
C D R S T V W

ELUW — P M K N S H
High-performance finishing breaker with wiper edge
Wiper Insert



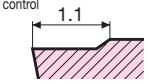
7° 11° CCMT32 ○
C D R S T V W

EFP — P M K N S H
Provides good chip control in fine finishing



7° CCMT32 ○
C D R S T V W

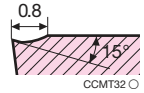
EFK — P M K N S H
Finishing breaker with sharp edge and good chip control



11° TPMT33 ○
C D R S T V W

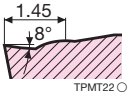
Light to Medium Cutting

ELB — P M K N S H
Light-cutting breaker with sharp edge and good chip control



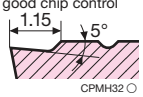
5° 7° 11° CCMT32 ○
C D R S T V W

ESU — P M K N S H
General breaker with excellent edge sharpness



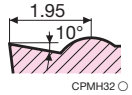
7° 11° TPMT22 ○
C D R S T V W

ENS — P M K N S H
Medium-cutting breaker providing good chip control

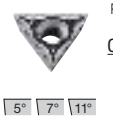
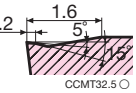


11° CPMH32 ○
C D R S T V W

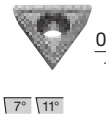
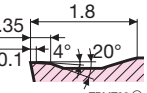
ENS/ENX — P M K N S H
Small Hole Boring Bars



11° CPMH32 ○
C D R S T V W

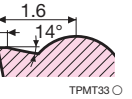
EGU — P M K N S H
Highly Recommended Versatile Positive Chipbreaker



5° 7° 11° CCMT32.5 ○
C D R S T V W

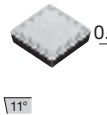
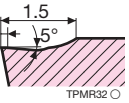
EMU — P M K N S H
Long-life breaker with low cutting resistance



7° 11° TPMT33 ○
C D R S T V W

ENF — P M K N S H
Very reliable breaker with sharp edge



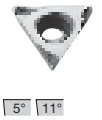
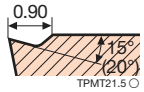
11° TPMT33 ○
C D R S T V W

ENJ — P M K N S H
Ensures stable tool life



11° TPMR32 ○
C D R S T V W

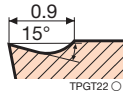
Positive G Class (Ground)

Finishing to Light Cutting

FW — P M K N S H
Wide-dimpled chipbreaker with sharp edge



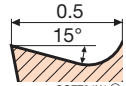
5° 11° TPMT21.5 ○
C D R S T V W

(R/L)FX — P M K N S H
Parallel breaker with sharp edge



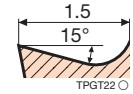
5° 7° 11° TPGT22 ○
C D R S T V W

(R/L)FYS — P M K N S H
Fine-cutting breaker with sharp edge

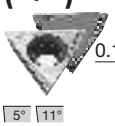
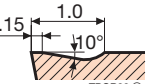


5° 7° CCET04X1 ○
C D R S T V W

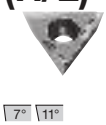
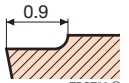
(R/L)FY — P M K N S H
Wide breaker with sharp edge



5° 7° 11° TPGT22 ○
C D R S T V W

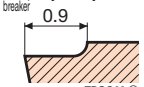
(R/L)W — P M K N S H
Wide finishing breaker



5° 11° TPGR22 ○
C D R S T V W

(R/L) — P M K N S H
Stepped parallel ground



7° 11° TPGT22 ○
C D R S T V W

(R/L)W — P M K N S H
High-performance finishing breaker with wiper edge. Parallel ground breaker
Wiper Insert



11° TPGG22 ○
C D R S T V W

Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
Break Master (CBN/PCD) | For Chamfering

Applicable Part Material: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range

Class M Finishing to Light Cutting

Class M Light to Medium Cutting

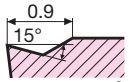
Class G Ground

Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number. For details, refer to "Stock Items" in Chapter B.

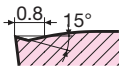
Positive G Class

Finishing to Light Cutting

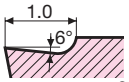
(M)EFC
P M K N S H
Peripheral grinding 3D breaker with good chip control and sharp edge



(M)ESI
P M K N S H
Sharp edged breaker for a wide range of applications from finishing to light cutting.



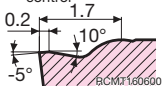
(M)EFM
P M K N S H
Two-step breaker for light cutting



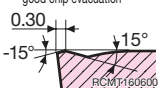
Positive Insert Round Inserts

Thread Rolling Cylindrical Die

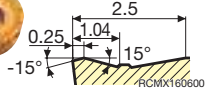
RX
P M K N S H
Round, bumpy insert with excellent chip control



RH
P M K N S H
Highly reliable general-purpose breaker providing good chip evacuation



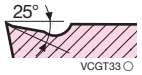
RP
P M K N S H
Standard breaker for profiling



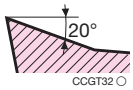
Positive For Aluminum Alloy

Finishing

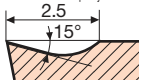
NAW
P M K N S H
Finishing breaker for aluminum with sharp edge



NAG
P M K N S H
Al breaker for mirror finish and anti-adhesion performance



(R/L)AY
P M K N S H
High-quality ground aluminum breaker achieving excellent machined surface quality

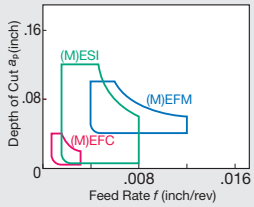


Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
Break Master (CBN/PCD)

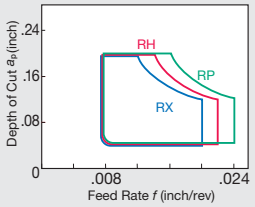
Applicable Part Material: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range

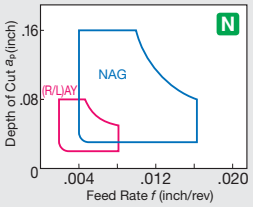
Class G Chipbreaker



Round Inserts (Inscribed Circle up to .5000inch)



Aluminum Alloy



Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number. For details, refer to "Stock Items" in Chapter B.

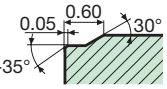
SUMIBORON Insert CBN

Finishing to Light Cutting

LV

P M K N S H

Drastically improved chip control in finishing of hardened steel.



Break Master

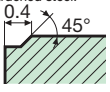
0° 7°

C D R S T V W

FV

P M K N S H

Drastically improved chip control in finishing of hardened steed.



Break Master

0° 7°

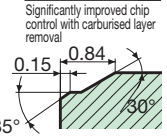
C D R S T V W

Carburised Layer Removal

SV

P M K N S H

Significantly improved chip control with carburised layer removal



Break Master

0°

C D R S T V W

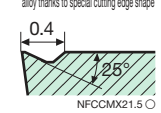
SUMIDIA Insert PCD

Finishing to Light Cutting

LD

P M K N S H

Ideal breaker for finishing of aluminum alloy thanks to special cutting edge shape



Break Master

7° 11°

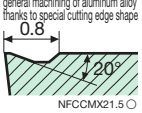
NFCCMX21.5

C D R S T V W

GD

P M K N S H

Ideal breaker for medium finishing to general machining of aluminum alloy thanks to special cutting edge shape



Break Master

7° 11°

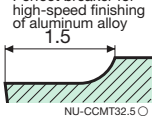
NFCCMX21.5

C D R S T V W

DM

P M K N S H

Perfect breaker for high-speed finishing of aluminum alloy



Break Master

7° 11°

NU-CCMT32.5

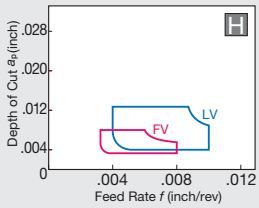
C D R S T V W

Bumpy Chipbreaker | Standard Chipbreaker | Handed Chipbreaker
Break Master (CBN/PCD)

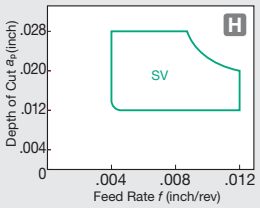
Applicable Part Material: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy H Hardened Steel

Chipbreaker Application Range

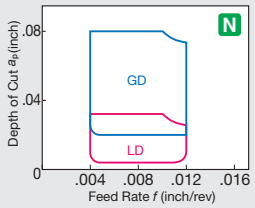
SUMIBORON (For Hardened Steel) (Inscribed Circle up to .5000inch)



SUMIBORON (Carburised Layer Removal) (Inscribed Circle up to .5000inch)



SUMIDIA (For Aluminum Alloy)



Indicated chipbreaker application ranges and shapes are representative values only. Actual values may change according to the actual catalogue number. For details, refer to "Stock Items" in Chapter B.

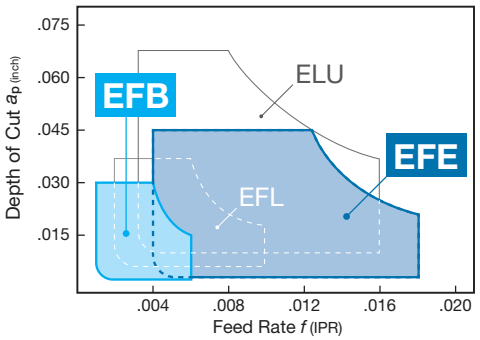
EFB / EFE

P Steel



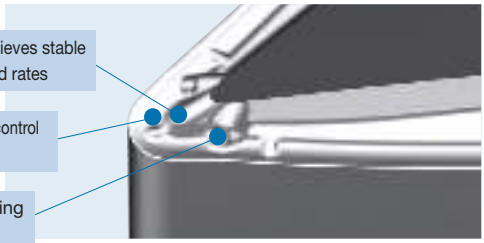
- The EFE main breaker for finishing achieves stable chip control over a wide range of feed rates for low carbon steel and general steel.
- Item range covers a wide variety of machining applications.
- The EFB for low feed finishing increases chip strain and thereby improves chip breaking performance thanks to the variable rake angle in the nose radius.

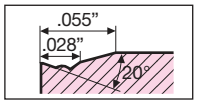
■ **Application Range**



EFE Breaker for Finishing

General purpose to high feed cutting





Cross Section of Chipbreaker

Application Examples

Part Material: Iron plate (1011 Hot Rolled Steel) Facing Insert: CNMG432EFE-AC8025P
Cutting Conditions: v_c=656 SFM, f=.0059 IPR, a_p=.0079-.0197", Wet

Breaks chips with a steady curl even in facing of rolled steel

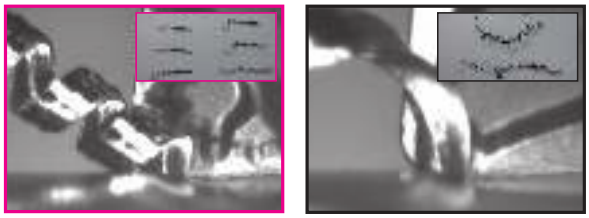


EFE Breaker (AC8025P) | Competitor's Product

Performance — Chip Control

Part Material: Pipe material (A36) Insert: CNMG432EFE-AC8025P
Cutting Conditions: v_c = 656 SFM, f = .0157 IPR, a_p = .0079" Dry

Excellent chip control at low depth of cut, high feed conditions



EFE Breaker (AC8025P) | Conventional Tool

Application Examples

Part Material: 1053 Steel ø.785-3.935" External Diameter/Facing Insert: DNMG433EFE-AC8025P
Cutting Conditions: v_c=591 SFM, f=.0098 IPR (Corner), .0177IPR (Straight), a_p=.0118", Wet

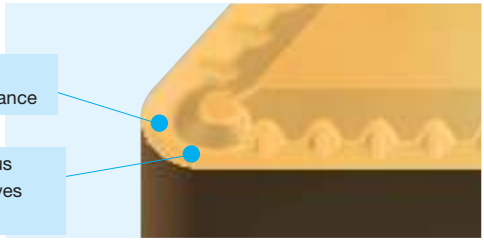
Stable chip control even at low depth of cut and variable feed conditions

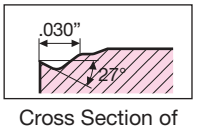


EFE Breaker (AC8025P) | Conventional Tool

EFB Breaker for Low Feed Finishing

Low feed cutting





Cross Section of Chipbreaker

Application Examples

Part Material: Pipe material (A36) Internal Diameter Machining Insert: DNMG431EFB-T3000Z
Cutting Conditions: v_c=1155sfm, f=.0012-.0079 IPR, a_p=.0276", Wet

Small curls of chips even for pipe material, achieving a steady chip length



EFB Chipbreaker (T3000Z) | Competitor's Product

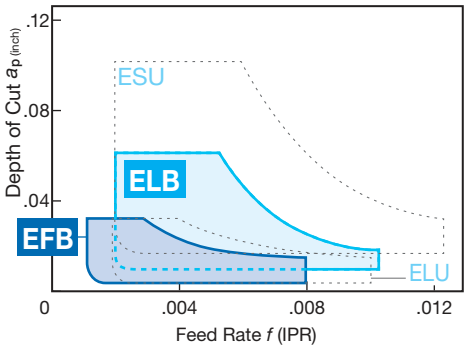
EFB / ELB

P Steel

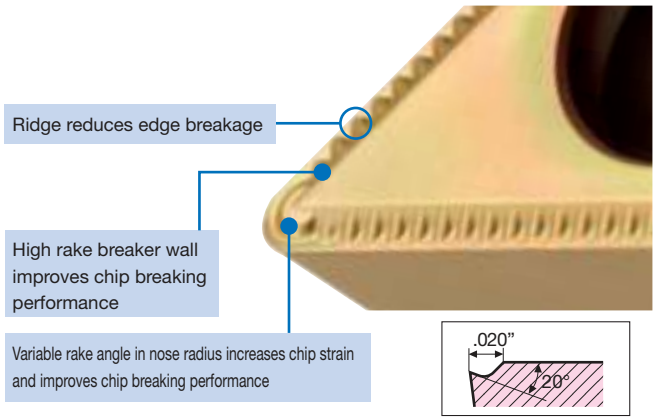


- The EFB for finishing and the ELB for light cutting have been added to the chipbreaker series for low carbon and general steel machining in addition to the existing ELU for finishing and ESU for light cutting.
- The EFB and ELB chipbreakers improve chip control in finishing of low carbon and general steel.

■ Application Range

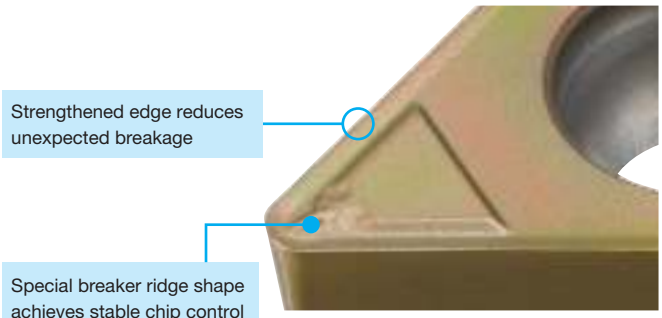


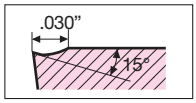
EFB Breaker for Finishing



Cross Section of Chipbreaker

ELB Breaker for Light Cutting





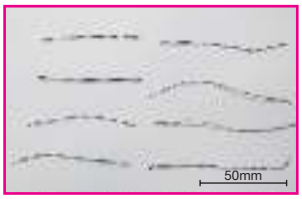
Cross Section of Chipbreaker

Performance

Chip Control

Part Material: Pipe material (A36) ø1.18" Internal Diameter Machining Insert: TPMT221EFB-T1500A
Cutting Conditions: v_c = 328 SFM, f = .0047 IPR, a_p = .0039" Wet

Achieves stable chip control at shallow depths of cut and low feeds



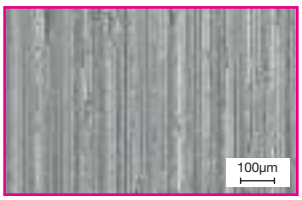
EFB Chipbreaker (T1500A)



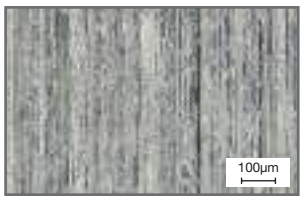
Competitor's Product

Comparison of Surface Roughness of Finished Surfaces

Part Material: Pipe material (A36) ø3.93" Internal Diameter Machining Insert: TPMT221EFB-T1500A
Cutting Conditions: v_c = 656 SFM, f = .0028 IPR, a_p = .0039" Wet



EFB Chipbreaker (T1500A)



Competitor's Product

Performance

Chip Control (1)

Part Material: Pipe material (A36) ø1.18" Internal Diameter Machining Insert: TPMT221ELB-T1500A
Cutting Conditions: v_c = 656 SFM, f = .0059 IPR, a_p = .0197" Wet

Achieves stable chip control in light cutting



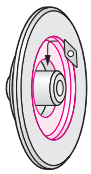
ELB Chipbreaker (T1500A)



Competitor's Product

Chip Control (2)

Part Material: Hub (1045 Steel) Insert: VBMT332ELB-T1500A
Cutting Conditions: v_c=787 SFM, f=0.010 to .011 IPR, a_p=.0236", Wet



ELB Chipbreaker (T1500A)



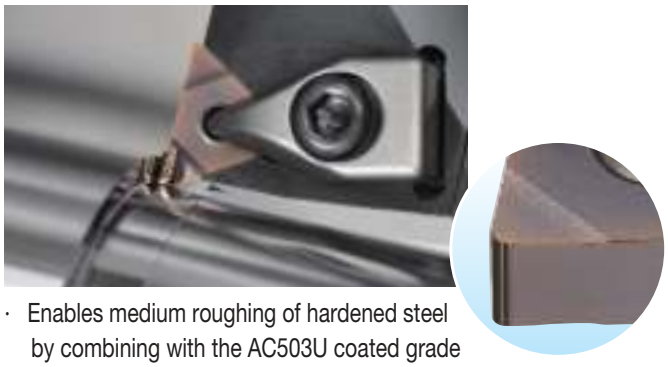
Competitor's Product



Doubles the tool life by improving chip control and reducing blemishes on machined surfaces

EGH H / (R/L)AX / (R/L)AY N

Negative Insert for Medium Roughing EGH Chipbreaker

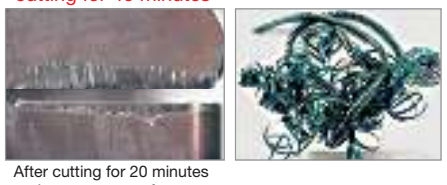


- Enables medium roughing of hardened steel by combining with the AC503U coated grade
- Reduces heat generation and enables deep cuts (a_p=.040 to .120") in hardened steel thanks to a wide neutral ground breaker (rake angle = 4°) and sharp edge
- Makes smooth chip evacuation possible

Performance







Part Material: D1 Tool Steel (61HRC) Insert: TNGG331EGH-AC503U
Cutting Conditions: v_c = 164 SFM, f = .0020 IPR, a_p = .1181" Dry

■ Recommended Cutting Conditions

Part Material: Hardened steel (50-62HRC), SKD11, SKD61, SKH51, high-speed steel powder, high-speed steel

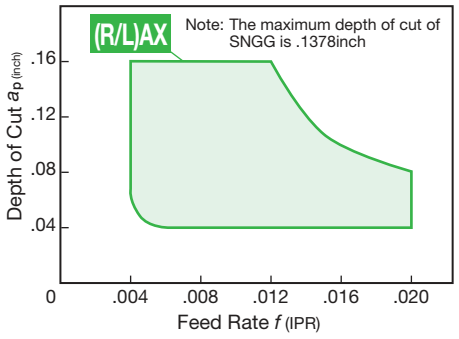
Process	Cutting Speed v_c (SFM)	Feed Rate f (IPR)	Depth of Cut a_p(inch)	Recommended Chipbreaker
Finishing	130 to 330	.0008 to .0040	< .040	Without Chipbreaker Inserts
Medium Roughing	65 to 200	.0008 to .0020	.040 to .120	EGH

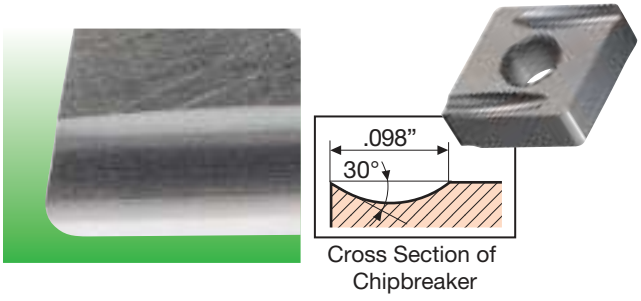
For hardened steel (50 to 62HRC)

Negative Insert (R/L)AX Chipbreaker

- Ideal for external turning of non-ferrous metal when combined with carbide grade H1
- Achieves stable cutting over a wide cutting range thanks to a high-quality parallel ground breaker
- Covers a wide variety of applications with a wide selection of tools (28 items)

■ Application Range



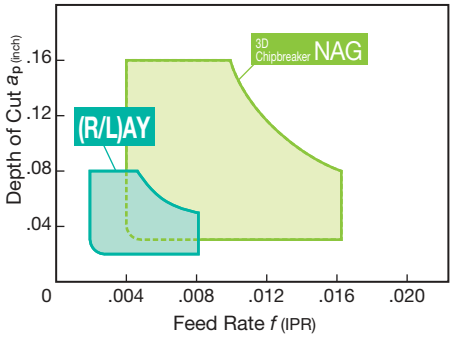


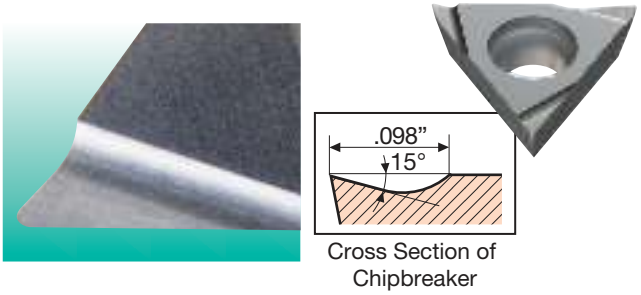
Cross Section of Chipbreaker

Positive Insert (R/L)AY Chipbreaker

- Ideal for internal turning of non-ferrous metal when combined with carbide grade H1
- Provides excellent machined surface quality and chip control with a high-quality ground breaker in finishing applications
- In addition to a wide selection (56 items), this product can be used in combination with the NAG 3D chipbreaker, covering a wide variety of applications

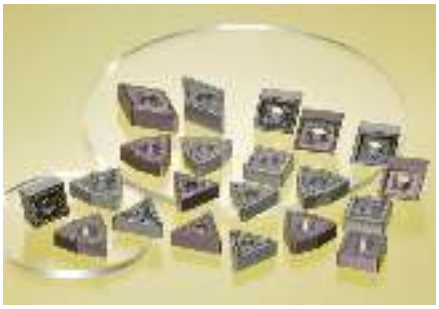
■ Application Range





Cross Section of Chipbreaker

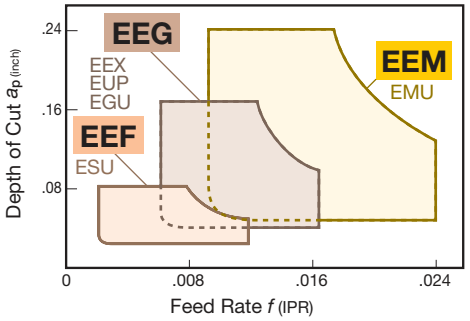
EEF / EEG / EEM



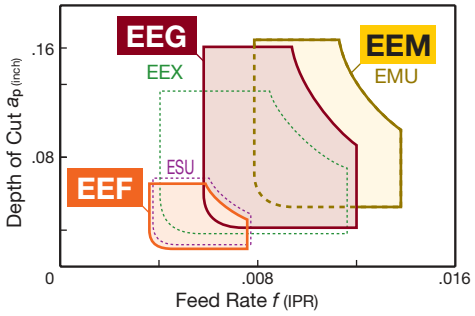
- The chipbreaker series for stainless steel machining features EEF for finishing, EEG for medium cutting and EEM for roughing.
- The EEM achieves both excellent wear resistance and high cutting edge strength.
- The EEG and EEF breakers are ideal for a variety of exotic alloys including titanium alloy and heat-resistant alloys.
- Achieves both excellent wear resistance and strong chip control, reducing issues with equipment and quality that occur in conventional chipbreakers due to unstable tool life and chips.

■ Application Range

Stainless steel machining

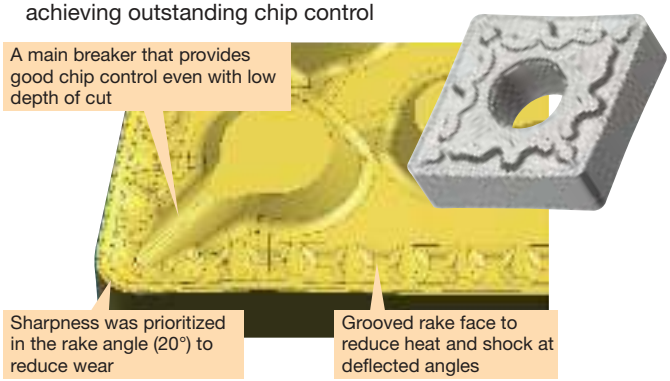


Milling of Exotic Alloys



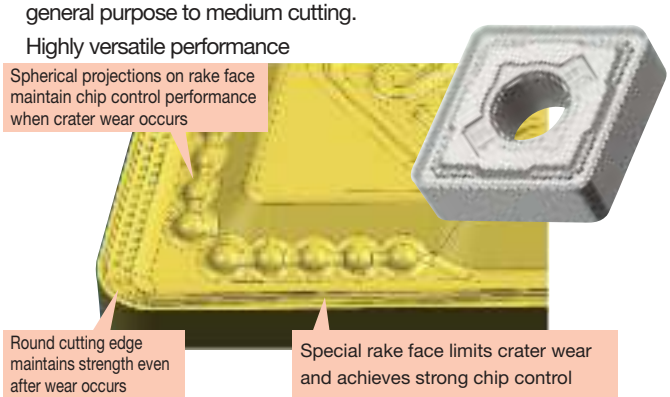
EEF Chipbreaker for Finishing

● Reduces curl diameter of chips during finishing, achieving outstanding chip control



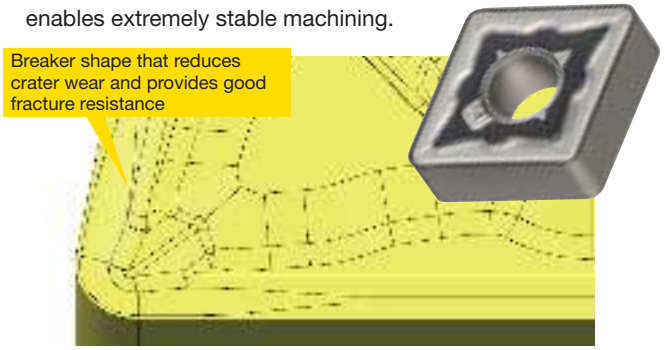
EEG Chipbreaker for Medium Cutting

● Achieves excellent wear resistance and strong chip control in general purpose to medium cutting.
Highly versatile performance

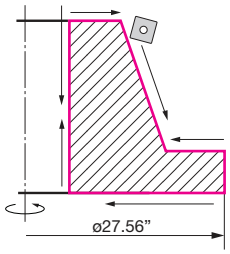


EEM Chipbreaker for Roughing

● Achieves excellent fracture and crater wear resistance and enables extremely stable machining.



Performance



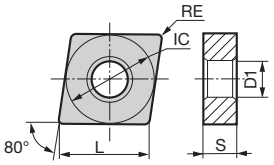
Part Material: Stainless Cast Steel (Equivalent to 316 Stainless) Flange part
Insert: SNMG644EEM-AC6030M
Cutting Conditions: v_c=230 SFM
f=.0197 IPR, a_p=.0118 to .3150”, wet

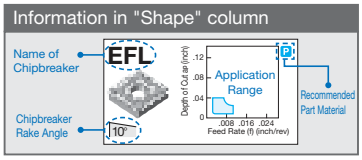


EEM Chipbreaker (AC6030M) | Conventional Tool

Reduces cutting edge breakage and enables stable machining

CN 80° Diamond Neg. With Hole





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✪ Interrupted Cutting 2nd Recommended

Recommended Application
P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous Metal
S Exotic Alloy
H Hardened Steel

CN■■32●

Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

Applicable External Holders C7 Applicable Internal Holders E12

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Fine Cutting	**EFB** 27°		**CNMG321EFB** **CNMG322EFB**	CNMG090304N-FB CNMG090308N-FB	.0156 .0313								★ ★								—						—	★ ★			★ ★	—	—	—
	EFL 10°		**CNMG322EFL**	CNMG090308N-FL	.0313		★			★											—						—						—	—	—
	EFE 20°		**CNMG321EFE** **CNMG322EFE**	CNMG090304N-FE CNMG090308N-FE	.0156 .0313	★ ★	★ ★	★ ★	★ ★		★ ★		★ ★	★ ★								—						—	★ ★			★ ★			—
Finishing	**ELU** 10°		**CNMG321ELU** **CNMG322ELU**	CNMG090304N-LU CNMG090308N-LU	.0156 .0313	● ★	★ ★		● ★	★ ★			★ ★								—						▲ ▲	—	★ ★	★ ★	★ ★	★ ★			—
	ESU 13°		**CNMG321ESU** **CNMG322ESU**	CNMG090304N-SU CNMG090308N-SU	.0156 .0313	★ ★	★ ★			★ ●											—						—	—	—	—	—			—
Medium Cutting	**EGU** 7°		**CNMG321EGU** **CNMG322EGU**	CNMG090304N-GU CNMG090308N-GU	.0156 .0313	★ ★	★ ●	★ ★		★ ★	★ ★						★ ★	★ ★				—						—	—	—	—	—			—
	EUX 0°		**CNMG321EUX** **CNMG322EUX**	CNMG090304N-UX CNMG090308N-UX	.0156 .0313			★ ●		★ ●											—						—	—	—	—	—			—
	ENG 4°		**CNMG321ENG** **CNMG322ENG**	CNMG090304N-UG CNMG090308N-UG	.0156 .0313		★ ●	★ ★		★ ●	★ ★											—						—	—	—	—	—			—

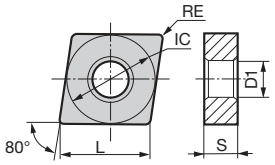
CN■■32.5●

Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	**ESU** 13°		**CNMG32.51ESU** **CNMG32.52ESU**	CNMG09T304N-SU CNMG09T308N-SU	.0156 .0313	★ ★	★ ★			★ ★												—						—	—	—	—			—
Medium Cutting	**ENG** 4°		**CNMG32.51ENG** **CNMG32.52ENG**	CNMG09T304N-UG CNMG09T308N-UG	.0156 .0313		★ ★			★ ★												—						—	—	—	—			—

CN 80° Diamond Neg. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

CN■■33●

Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

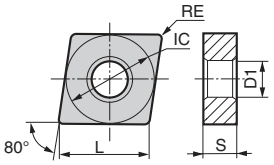
Applicable External Holders C9

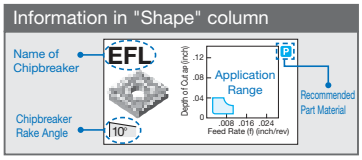
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Fine Cutting	EFB	(ap) .08 .04 0 .008 .016 (f) P	CNMG331EFB	CNMG090404N-FB	.0156									★							—						—	★		★	—	—	
	27°		CNMG332EFB	CNMG090408N-FB	.0313									★							—						—	★		★	—	—	
	EFE	(ap) .08 .04 0 .008 .016 (f) P	CNMG331EFE	CNMG090404N-FE	.0156	★	★	★	★		★		★	★							—						—	★		★			
	20°		CNMG332EFE	CNMG090408N-FE	.0313	★	★	★	★		★		★	★							—						—	★		★			
Finishing	ESU	(ap) .08 .04 0 .008 .016 (f) P M S	CNMG331ESU	CNMG090404N-SU	.0156	★	★		★	★	★										—						—	★		★			
	13°		CNMG332ESU	CNMG090408N-SU	.0313	★	★		★	★	★										—						—	★		★			
			CNMG333ESU	CNMG090412N-SU	.0469	★	★	★	★		★										—						—	★		★			
	ESEW	(ap) .16 .08 0 .008 .020 .032 (f) P	CNMG331ESEW	CNMG090404N-SEW	.0156	★	★	★	★		★										—						—	—		—			
	5° → B134 Wiper		CNMG332ESEW	CNMG090408N-SEW	.0313	★	★	★	★		★										—						—	—		—			
	EEF	(ap) .08 .04 0 .008 .016 (f) M S	CNMG331EEF	CNMG090404N-EF	.0156							★	★	★							—	★	★				—	—		—			
	20°		CNMG332EEF	CNMG090408N-EF	.0313							★	★	★							—	★	★				—	—		—			
Medium Cutting	EGU	(ap) .24 .16 .08 0 .008 .016 .024 (f) P M	CNMG331EGU	CNMG090404N-GU	.0156		★		★		★										—						—	★		★			
	7°		CNMG332EGU	CNMG090408N-GU	.0313		★		★		★										—						—	★		★			
			CNMG333EGU	CNMG090412N-GU	.0469	★	★	★	★		★						★	★				—						—	★		★			
	ENG	(ap) .24 .16 .08 0 .008 .016 .024 (f) P M	CNMG331ENG	CNMG090404N-UG	.0156		★			★											—						—	—		—			
	4°		CNMG332ENG	CNMG090408N-UG	.0313		★	★		★	★										—						—	—		—			
	EEG	(ap) .24 .16 .08 0 .008 .016 .024 (f) M	CNMG332EEG	CNMG090408N-EG	.0313							★	★	★							—	★	★				—	—		—			
	0°		CNMG333EEG	CNMG090412N-EG	.0469							★	★	★							—	★	★				—	—		—			
Medium to Roughing	EGZ	(ap) .24 .16 .08 0 .008 .016 .024 (f) K	CNMG332EGZ	CNMG090408N-GZ	.0313												★	★	★	★	★	—						—	—		—			
	0°		CNMG333EGZ	CNMG090412N-GZ	.0469												★	★	★	★	★	—						—	—		—			

CN 80° Diamond Neg. With Hole





CN■■43●

Dimensions (inch)	Cutting Edge Length L	.5079	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																					Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
P	Steel	●	◕	✱	○	○	◔	✱														○	◕	◕	◔	✱	◕		◕			
M	Stainless Steel							●	◕	✱	○											◕										
K	Cast Iron						✱						●	◕	○	◔	✱					✱	◕									
N	Non-Ferrous Metal																												◕			
S	Exotic Alloy																		◕	✱												
H	Hardened Steel																	●														

SUMIBORON (CBN) Inserts L30 on | SUMIDIA (PCD) Inserts M10 | Ceramic Inserts B130

Applicable External Holders C5 | Applicable Internal Holders E12

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE
Fine Cutting	**EFB** 27°	P	CNMG430.5EFB	CNMG120402N-FB	.0078
			CNMG431EFB	CNMG120404N-FB	.0156
			CNMG432EFB	CNMG120408N-FB	.0313
	EFA 20°	P	CNMG430.5EFA	CNMG120402N-FA	.0078
			CNMG431EFA	CNMG120404N-FA	.0156
			CNMG432EFA	CNMG120408N-FA	.0313
	EFL 10°	P	CNMG431EFL	CNMG120404N-FL	.0156
			CNMG432EFL	CNMG120408N-FL	.0313
	EFE 20°	P	CNMG430.5EFE	CNMG120402N-FE	.0078
			CNMG431EFE	CNMG120404N-FE	.0156
			CNMG432EFE	CNMG120408N-FE	.0313
			CNMG433EFE	CNMG120412N-FE	.0469
Finishing	**ELU** 10°	P	CNMG430.5ELU	CNMG120402N-LU	.0078
			CNMG431ELU	CNMG120404N-LU	.0156
			CNMG432ELU	CNMG120408N-LU	.0313
			CNMG433ELU	CNMG120412N-LU	.0469
	ELUW → B134 Wiper 10°	P	CNMG431ELUW	CNMG120404N-LUW	.0156
			CNMG432ELUW	CNMG120408N-LUW	.0313
			CNMG433ELUW	CNMG120412N-LUW	.0469
	ESU 13°	P M S	CNMG430.5ESU	CNMG120402N-SU	.0078
			CNMG431ESU	CNMG120404N-SU	.0156
			CNMG432ESU	CNMG120408N-SU	.0313
			CNMG433ESU	CNMG120412N-SU	.0469
	ESU(J) 13°	P	CNGG430ESU	CNGG120401N-SU	.0039
			CNGG430.5ESU	CNGG120402N-SU	.0078
			CNGG431ESU	CNGG120404N-SU	.0156
			CNGG431ESUJ	CNGG120404N-SUJ	.0156
			CNGG432ESU	CNGG120408N-SU	.0313
			CNGG432ESUJ	CNGG120408N-SUJ	.0313

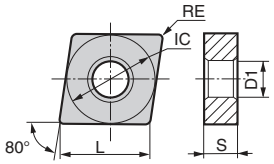
ESUJ depth of cut can be increased to .200" in Aluminum material

80° Diamond Negative Inserts

CN 80° Diamond Neg. With Hole

CN■■43●

Dimensions (inch)	Cutting Edge Length L	.5079	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

Recommended Application

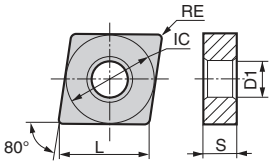
		Coated Carbide																						Coated Cermet			Cermet	Carbide		
P	Steel	●	●	✖	○	○	◔	✖											○	●	●	◔	✖	●		●				
M	Stainless Steel								●	●	✖	○								●										
K	Cast Iron						✖						●	●	○	◔	✖			✖	●									
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖											
H	Hardened Steel																●													

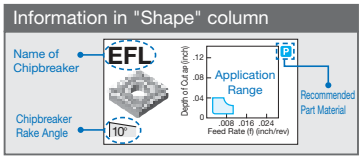
SUMIBORON (CBN) Inserts L30 on | SUMIDIA (PCD) Inserts M10 | Ceramic Inserts B130

Applicable External Holders C5 | Applicable Internal Holders E12

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**ESE** 5°	P .24 .16 .08 0 .008 .016 .024 (f)	CNMG431ESE	CNMG120404N-SE	.0156	●	●	●	●	★	★											—						—	●			●			—
			CNMG432ESE	CNMG120408N-SE	.0313	●	●	●	●	●	●											—						—	★			●			—
			CNMG433ESE	CNMG120412N-SE	.0469	●	●	●	●	★	★											—						—	—	—	—	—			—
	ESEW → B134 Wiper 5°	P .16 .08 0 .008 .020 .032 (f)	CNMG431ESEW	CNMG120404N-SEW	.0156	●	●		●	●												—						—	★			●			—
			CNMG432ESEW	CNMG120408N-SEW	.0313	●	●		●	●												—						—	★			●			—
			CNMG433ESEW	CNMG120412N-SEW	.0469	●	●		●	●												—						—	—	—	—	—			—
	EEF 20°	M S .08 .04 0 .008 .016 (f)	CNMG431EEF	CNMG120404N-EF	.0156	★	★	●				●	●	●		●						—	●	●	●	●			—	—	—	—	—	●	●	—
			CNMG432EEF	CNMG120408N-EF	.0313	★	★	●				●	●	●		●						—	●	●	●	●			—	—	—	—	—	●	●	—
			CNMG433EEF	CNMG120412N-EF	.0469	★	★	●				●	●	●								—	●	●		●			—	—	—	—	—			—
	EEF 20°	M S .08 .04 0 .008 .016 (f)	CNGG430.5EEF	CNGG120402N-EF	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●				—	—	—	—	—	—	★	★	—
			CNGG431EEF	CNGG120404N-EF	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	●		—	—	—	—	—	—	★	★	—
			CNGG432EEF	CNGG120408N-EF	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	★			—	—	—	—	—	—	★	★	—
	ENK 8°	P .24 .16 .08 0 .008 .016 .024 (f)	CNMG431ENK	CNMG120404N-SK	.0156						▲											—						—								
			CNMG432ENK	CNMG120408N-SK	.0313						●											—						—								
Light to Medium Cutting	**ESX** 3°	P .08 .04 0 .008 .016 (f)	CNMG431ESX	CNMG120404N-SX	.0156	●	●	●	●	●	●											—					▲	—	●	▲	★	★			—
			CNMG432ESX	CNMG120408N-SX	.0313	●	●	●	●	●	●											—					▲	—	●	▲	★	●			—
			CNMG433ESX	CNMG120412N-SX	.0469	●	●	★	●	●	★											—					▲	—	—	—	—	—			—
	EEX 16°	M S .12 .08 .04 0 .008 .016 (f)	CNMG431EEX	CNMG120404N-EX	.0156							●	●	●	▲	●						—	●	●	●	●	★			—	—	—	—	●	●	—
			CNMG432EEX	CNMG120408N-EX	.0313							●	●	●	▲	●						—	●	●	●	●	★			—	—	—	—		●	—
			CNMG433EEX	CNMG120412N-EX	.0469							●	●	●	▲	●						—	●	●	●	●	★			—	—	—	—			—
	EUP 10°	M S .16 .12 .08 .04 0 .008 .016 .024 (f)	CNMG431EUP	CNMG120404N-UP	.0156		●	●		●	●	★	●	●		●						—	●	●	●	●	★			—	—	—	—			—
			CNMG432EUP	CNMG120408N-UP	.0313		●	●		●	●	★	●	●	▲	●						—	●	●	●	●	★			—	—	—	—	●		—
			CNMG433EUP	CNMG120412N-UP	.0469			●		●	●	★	●	●	▲	●						—	★	●	●	●	★			—	—	—	—			—
	(P) 10°	M S .16 .12 .08 .04 0 .008 .016 .024 (f)	CNGP432	CNGP120408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●				—		—	—	—	—			—
			CNGP433	CNGP120412	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●				—		—	—	—	—			—
Medium Cutting	**EGU** 7°	P M .24 .16 .08 0 .008 .016 .024 (f)	CNMG431EGU	CNMG120404N-GU	.0156	●	●	●	●	●	●	●	●	●	▲	●	●	★				—	★	●			★	▲	—	★			★			—
			CNMG432EGU	CNMG120408N-GU	.0313	●	●	●	●	●	●	●	●	●	▲	●	●	●				—	★	●			●	▲	—	★			●			—
			CNMG433EGU	CNMG120412N-GU	.0469	●	●	●	●	●	●	●	●	●	▲	●	●	●				—	★	●			★	▲	—	—	—	—	—			—
			CNMG434EGU	CNMG120416N-GU	.0625	★	★	★		●	●						●	★				—						▲	—	—	—	—	—			—

CN 80° Diamond Neg. With Hole





CN■■43●

Dimensions (inch)	Cutting Edge Length L	.5079	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		
P	Steel	● ● ✖ ○ ○ ◔ ✪
M	Stainless Steel	● ● ✖ ○
K	Cast Iron	✪ ● ● ○ ◔ ✖
N	Non-Ferrous Metal	●
S	Exotic Alloy	● ✖
H	Hardened Steel	●

SUMIBORON (CBN) Inserts L30 on | SUMIDIA (PCD) Inserts M10 | Ceramic Inserts B130
Applicable External Holders C5 | Applicable Internal Holders E12

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Medium Cutting	**EGE**	P	CNMG431EGE	CNMG120404N-GE	.0156	●	●	●	★	●	●											—						▲	—	—	—				
	3°		CNMG432EGE	CNMG120408N-GE	.0313	●	●	●	●	●	●											—						▲	—	—	—				
			CNMG433EGE	CNMG120412N-GE	.0469	●	●	●	●	●	●											—						▲	—	—	—				
			CNMG434EGE	CNMG120416N-GE	.0625	★	●	★	★	●	●											—							—	—	—				
	EGUW	P	CNMG432EGUW	CNMG120408N-GUW	.0313	●	●	●	●	●	●		●			●	●	●	▲	▲		—						▲	—	—	—				
	→ B134 Wiper 0°		CNMG433EGUW	CNMG120412N-GUW	.0469	●	●		●	●			●			●	●	●	▲	▲		—						▲	—	—	—				
	EUX	P K	CNMG431EUX	CNMG120404N-UX	.0156	●	●	●	●	●	●											—						▲	—	—	—				
	0°		CNMG432EUX	CNMG120408N-UX	.0313	●	●	●	●	●	●											—						▲	—	—	—				
			CNMG433EUX	CNMG120412N-UX	.0469	●	●	●	●	●	●											—						▲	—	—	—				
			CNMG434EUX	CNMG120416N-UX	.0625	●	●	★	●	●	●											—						▲	—	—	—				
	ENG	P M	CNMG431ENG	CNMG120404N-UG	.0156	●	●	●		●	●											—						▲	—	—	—				
	4°		CNMG432ENG	CNMG120408N-UG	.0313	●	●	●		●	●											—						▲	—	—	—				
			CNMG433ENG	CNMG120412N-UG	.0469		●	●		●	●											—						▲	—	—	—				
			CNMG434ENG	CNMG120416N-UG	.0625		★	★		★	★											—							—	—	—				
	EEG	M	CNMG431EEG	CNMG120404N-EG	.0156	★	●	●				●	●	★								—	★	★					—	—	—		●	●	
	0°		CNMG432EEG	CNMG120408N-EG	.0313	★	●	●				●	●	●	▲	●						—	●	●	●	●			—	—	—		●	●	
			CNMG433EEG	CNMG120412N-EG	.0469	★	●	●				●	●	●		●						—	●	●	●	●			—	—	—		●	●	
		—	CNMA431	CNMA120404	.0156												●	●	▲	▲	●	—						▲	—	—	—				
			CNMA432	CNMA120408	.0313												●	●	▲	▲	●	—	★	★				▲	—	—	—				
			CNMA433	CNMA120412	.0469												●	●	▲	▲	●	—						▲	—	—	—				
			CNMA434	CNMA120416	.0625												●	●	▲	▲	●	—						▲	—	—	—				
		—	CNGA430.5	CNGA120402	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—
			CNGA431	CNGA120404	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—
			CNGA432	CNGA120408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—
Medium to Roughing	**EMU**	P M S	CNMG432EMU	CNMG120408N-MU	.0313	●	●	●	●	●	●		●	●	▲	●	●	●		▲		—	●	●	●	●	●	▲	—	—	—				●
	4°		CNMG433EMU	CNMG120412N-MU	.0469	●	●	●	●	●	●		●	●	▲	●	●					—	●	●	●	●	●	▲	—	—	—		★	●	
			CNMG434EMU	CNMG120416N-MU	.0625	●	●	●	●	●	●		●	●		●						—	★	●			●	▲	—	—	—				
	EEM	M S	CNMG432EEM	CNMG120408N-EM	.0313	★	●	●				●	●	●								—	●	●	●	●			—	—	—				
	0°		CNMG433EEM	CNMG120412N-EM	.0469	★	●	●				●	●	●								—	●	●	●	●			—	—	—				
			CNMG434EEM	CNMG120416N-EM	.0625	★	★	●				●	●	★								—	★	★					—	—	—				
	EME	P	CNMG432EME	CNMG120408N-ME	.0313	●	●	●	●	●	●						●	●				—							—	—	—				
	4°		CNMG433EME	CNMG120412N-ME	.0469	●	●	●	●	●	●						●	●				—							—	—	—				
			CNMG434EME	CNMG120416N-ME	.0625	★	●	★	★	●	●						●	★				—							—	—	—				
	EMX	P	CNMG432EMX	CNMG120408N-MX	.0313		●	●		●	●											—							—	—	—				
	-15°		CNMG433EMX	CNMG120412N-MX	.0469		●	●		●	●											—							—	—	—				
			CNMG434EMX	CNMG120416N-MX	.0625		●			●												—							—	—	—				

CN 80° Diamond Neg. With Hole

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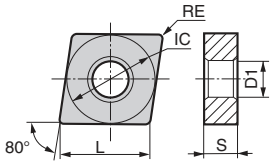
Dimensions (inch)	Cutting Edge Length L	.5079	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

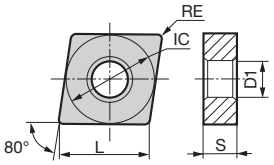
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

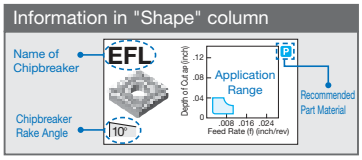
Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L30 on
SUMIDIA (PCD) Inserts M10
Ceramic Inserts B130
Applicable External Holders C5
Applicable Internal Holders E12

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Medium to Roughing	**ENZ**	K, 4°	CNMG431ENZ	CNMG120404N-UZ	.0156		★			★							★	★	★	★	●	—							—	—	—			—
			CNMG432ENZ	CNMG120408N-UZ	.0313		●	★		●	●						●	●	▲	▲	●	—	★	★				▲	—	—	—	—			—
			CNMG433ENZ	CNMG120412N-UZ	.0469		★	★		●	●						●	●	▲	▲	●	—	★	★				▲	—	—	—	—			—
			CNMG434ENZ	CNMG120416N-UZ	.0625		★			★							★	★	★	★	●	—							—	—	—	—			—
	EGZ	K, 0°	CNMG431EGZ	CNMG120404N-GZ	.0156					★							●	●	▲	▲	●	—							—	—	—			—
			CNMG432EGZ	CNMG120408N-GZ	.0313					★							●	●	▲	▲	●	—							—	—	—			—
			CNMG433EGZ	CNMG120412N-GZ	.0469					★							●	●	▲	▲	●	—							—	—	—			—
			CNMG434EGZ	CNMG120416N-GZ	.0625					★							★	●	★	▲	●	—							—	—	—			—
Roughing	**ENP**	P, 0°	CNMM432ENP	CNMM120408N-MP	.0313	★	★	★	★	★	★	★	★	★								—	★	★					—	—	—			—
			CNMM433ENP	CNMM120412N-MP	.0469	★	★	★	★	★	★	★	★	★								—	★	★					—	—	—			—
			CNMM434ENP	CNMM120416N-MP	.0625	★	★	★	★	★	★	★	★									—	★	★					—	—	—			—
Heavy Cutting	**EHG**	P, 0°	CNMM432EHG	CNMM120408N-HG	.0313	●	●	★	★	●	●											—						▲	—	—	—			—
			CNMM433EHG	CNMM120412N-HG	.0469	●	●	★	★	●	●											—							—	—	—			—
			CNMM434EHG	CNMM120416N-HG	.0625		★			★												—							—	—	—			—
	EHP	P, 0°	CNMM432EHP	CNMM120408N-HP	.0313		★	★		★	★											—							—	—	—			—
			CNMM433EHP	CNMM120412N-HP	.0469		★	★		★	★											—							—	—	—			—
			CNMM434EHP	CNMM120416N-HP	.0625		★	★		★	★											—							—	—	—			—
For Aluminum	**(R/L)AX**	N, 30°	CNGG430.5RAX	CNGG120402R-AX	.0078																	—							—	—	—			★
			CNGG430.5LAX	CNGG120402L-AX	.0078																	—							—	—	—			★
			CNGG431RAX	CNGG120404R-AX	.0156																	—							—	—	—			★
			CNGG431LAX	CNGG120404L-AX	.0156																	—							—	—	—			★
			CNGG432RAX	CNGG120408R-AX	.0313																	—							—	—	—			★
			CNGG432LAX	CNGG120408L-AX	.0313																	—							—	—	—			★
Light Cutting of Hardened Steel	**EGH**	H, 3°	CNGG430.5EGH	CNGG120402N-GH	.0078																★							—	—	—			—
			CNGG431EGH	CNGG120404N-GH	.0156																★							—	—	—			—
			CNGG432EGH	CNGG120408N-GH	.0313																★							—	—	—			—

CN 80° Diamond Neg. With Hole





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Dimensions (inch)	Cutting Edge Length L	.6339	Thickness S	.2500
	Inscribed Circle IC	.6250	Hole Dia. D1	.2500

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

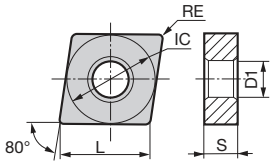
Recommended Application

P	Steel	●	●	✖	○	○	◔	✖												○	●	●	◔	✖	●					
M	Stainless Steel								●	●	✖	○									●									
K	Cast Iron						✖						●	●	○	◔	✖				✖	●								
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖											
H	Hardened Steel																●													

Applicable External Holders C5 Applicable Internal Holders E12

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																		Coated Cermet	Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light to Medium Cutting	**EEX** 16°		CNMG543EEX	CNMG160612N-EX	.0469									●								●	●	●	●								
	EUP 10°		CNMG542EUP	CNMG160608N-UP	.0313		●	●		▲	●																						
			CNMG543EUP	CNMG160612N-UP	.0469		●	●		●	▲																						
Medium Cutting	**EGU** 7°		CNMG542EGU	CNMG160608N-GU	.0313	●	●	●	★	●	●		★	★			●	●															
			CNMG543EGU	CNMG160612N-GU	.0469	●	●	●	●	●	●		★	★			●	●									▲						
			CNMG544EGU	CNMG160616N-GU	.0625	●	★	★	●	●	●		★	★			●	●									▲						
	EGE 3°		CNMG542EGE	CNMG160608N-GE	.0313	●	●	★	●	●	●																						
			CNMG543EGE	CNMG160612N-GE	.0469	●	●	★	●	●	●																▲						
			CNMG544EGE	CNMG160616N-GE	.0625	★	★	★	●	●	★																▲						
	EGUW 0° → B134 Wiper		CNMG543EGUW	CNMG160612N-GUW	.0469	●	●	●	●	●	●																						
	EUX 0°		CNMG542EUX	CNMG160608N-UX	.0313	●	●	★	●	●	●																▲						
			CNMG543EUX	CNMG160612N-UX	.0469	●	●	●	●	●	●																▲						
			CNMG544EUX	CNMG160616N-UX	.0625	●	★	★	★	★	★																▲						
	ENG 4°		CNMG542ENG	CNMG160608N-UG	.0313		●	●		●	●																						
			CNMG543ENG	CNMG160612N-UG	.0469		●	●		●	●																						
			CNMG544ENG	CNMG160616N-UG	.0625		★	★		★	★																						
	EEG 0°		CNMG542EEG	CNMG160608N-EG	.0313	★	★	●				●	●	●									●	●	●	●							
			CNMG543EEG	CNMG160612N-EG	.0469	★	●	★				●	●	●	▲	●							●	●	●	●						★	★
			CNMG544EEG	CNMG160616N-EG	.0625	★	★	●				●	●	●									★	★	●	●							
		—	CNMA542	CNMA160608	.0313												★	★	★	★	★												
			CNMA543	CNMA160612	.0469												●	●	▲	▲	●						▲						
			CNMA544	CNMA160616	.0625												●	●	▲	▲	●												
Medium to Roughing	**EMU** 4°		CNMG542EMU	CNMG160608N-MU	.0313	●	●	●	●	●	●												●	●	●	●	▲						
			CNMG543EMU	CNMG160612N-MU	.0469	●	●	●	●	●	●		●			●							●	●	●	●	▲						
			CNMG544EMU	CNMG160616N-MU	.0625	●	●	●	●	●	●		●			●							★	●	★	●	▲						
	EEM 0°		CNMG542EEM	CNMG160608N-EM	.0313	★	★	●				★	●	●									★	★									
			CNMG543EEM	CNMG160612N-EM	.0469	★	●	●				●	●	●									●	●	●	●							
			CNMG544EEM	CNMG160616N-EM	.0625	★	★	●				●	●	●									●	●		●							
	EME 4°		CNMG542EME	CNMG160608N-ME	.0313	●	●	●	●	●	●						●	●															
			CNMG543EME	CNMG160612N-ME	.0469	●	●	●	●	●	●						●	●															
			CNMG544EME	CNMG160616N-ME	.0625	★	●	★	●	●	●						●	●															

CN 80° Diamond Neg. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

CN■■54●

Dimensions (inch)	Cutting Edge Length L	.6339	Thickness S	.2500
	Inscribed Circle IC	.6250	Hole Dia. D1	.2500

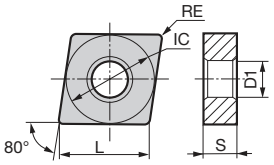
Applicable External Holders C5 | Applicable Internal Holders E12

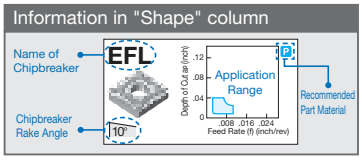
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet	Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✱	○	○	◔	✱													○	●	●	◔	✱	●				
M	Stainless Steel							●	●	✱	○											●								
K	Cast Iron						✱						●	●	○	◔	✱				✱	●								
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✱											
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	**EMX**	P	CNMG542EMX	CNMG160608N-MX	.0313		●	●		●	●											—							—	—	—			—
			CNMG543EMX	CNMG160612N-MX	.0469		●	●		●	●											—							—	—	—			—
			CNMG544EMX	CNMG160616N-MX	.0625		●	●		●	●											—							—	—	—			—
	ENZ	K	CNMG542ENZ	CNMG160608N-UZ	.0313		●	★		●	●											—							—	—	—			—
			CNMG543ENZ	CNMG160612N-UZ	.0469	●	●	★		●	●						●	●	▲	▲	●	—						▲	—	—	—			—
			CNMG544ENZ	CNMG160616N-UZ	.0625		★	★		★	●						★	●	▲	▲	●	—							—	—	—			—
	EGZ	K	CNMG542EGZ	CNMG160608N-GZ	.0313												★	★	★	★	●	—							—	—	—			—
			CNMG543EGZ	CNMG160612N-GZ	.0469												●	●	★	▲	★	—							—	—	—			—
			CNMG544EGZ	CNMG160616N-GZ	.0625												★	★	★	▲	●	—							—	—	—			—
Roughing	**ENP**	P M	CNMM542ENP	CNMM160608N-MP	.0313		★	★		★	★		★									—	★	★					—	—	—			—
			CNMM543ENP	CNMM160612N-MP	.0469	★	★	★	★	★	★		★									—	★	★					—	—	—			—
			CNMM544ENP	CNMM160616N-MP	.0625	★	★	★	★	★	★		★									—	★	★					—	—	—			—
Heavy Cutting	**EHG**	P	CNMM543EHG	CNMM160612N-HG	.0469	★	★	★	★	●	●											—							—	—	—			—
			CNMM544EHG	CNMM160616N-HG	.0625	★	★	★	★	●	●											—							—	—	—			—
	EHP	P	CNMM542EHP	CNMM160608N-HP	.0313		★	★		★	★											—							—	—	—			—
			CNMM543EHP	CNMM160612N-HP	.0469		★	★		★	★											—							—	—	—			—
			CNMM544EHP	CNMM160616N-HP	.0625		★	★		★	★											—							—	—	—			—

CN 80° Diamond Neg. With Hole





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Dimensions (inch)	Cutting Edge Length L	.7598	Thickness S	.2500
	Inscribed Circle IC	.7500	Hole Dia. D1	.3126

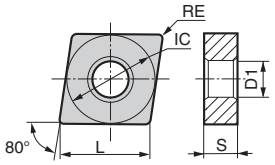
Applicable External Holders C5 | Applicable Internal Holders E12

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

Recommended Application
P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous Metal
S Exotic Alloy
H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Light to Medium Cutting	EEX		CNMG643EEX	CNMG190612N-EX	.0469																	●	●		●	●								
	EUP		CNMG643EUP	CNMG190612N-UP	.0469			●		●	●																							
Medium Cutting	EGE		CNMG643EGE	CNMG190612N-GE	.0469	●	●	★	●	●	●																							
			CNMG644EGE	CNMG190616N-GE	.0625	★	●	★	●	●	●																							
	EUX		CNMG642EUX	CNMG190608N-UX	.0313			●			●																▲							
			CNMG643EUX	CNMG190612N-UX	.0469	●	●	●	●	●	●																▲							
			CNMG644EUX	CNMG190616N-UX	.0625	★	★	★	★	●	●																▲							
	ENG		CNMG642ENG	CNMG190608N-UG	.0313		●	●		●	●																							
			CNMG643ENG	CNMG190612N-UG	.0469		●	●		●	●																							
			CNMG644ENG	CNMG190616N-UG	.0625		●	★		●	★																							
	EEG		CNMG643EEG	CNMG190612N-EG	.0469	★	●	●				●	●	●	▲	●							●	●	●	●							★	★	
			CNMG644EEG	CNMG190616N-EG	.0625	★	★	●				●	●	★									●	★										★	★	
		—	CNMA643	CNMA190612	.0469												●	●	▲	▲	●						▲							
			CNMA644	CNMA190616	.0625												●	★	▲	▲	●						▲							
Medium to Roughing	EMU		CNMG642EMU	CNMG190608N-MU	.0313	●		●	●		●													●		●								
			CNMG643EMU	CNMG190612N-MU	.0469	●	●	●	●	●	●		●			●							●	●	●	●	▲							
			CNMG644EMU	CNMG190616N-MU	.0625	●	●	●	●	●	●		●			●							★	●	●	●	▲						●	
			CNMG646EMU	CNMG190624N-MU	.0938	★	★	★	★	★	★												★	★											
	EEM		CNMG643EEM	CNMG190612N-EM	.0469	★	●	●				●	●	●									●	●	●	●								
			CNMG644EEM	CNMG190616N-EM	.0625	★	★	●				●	●	●									●	●	●	●								
			CNMG646EEM	CNMG190624N-EM	.0938	★	★	●				★	★	★									★	★											
	EME		CNMG643EME	CNMG190612N-ME	.0469	★	●	●	●	●	●						●	●																
			CNMG644EME	CNMG190616N-ME	.0625	★	●	●	●	●	●						●	●																
			CNMG646EME	CNMG190624N-ME	.0938	★	★	★	★	★	★						★	★																
	EMX		CNMG643EMX	CNMG190612N-MX	.0469	●	●	●	●	●	●																							
			CNMG644EMX	CNMG190616N-MX	.0625	●	●	●	●	●	●																							
	ENZ		CNMG642ENZ	CNMG190608N-UZ	.0313		●	★		●	●																							
			CNMG643ENZ	CNMG190612N-UZ	.0469	●	●	●		●	●						★	●	▲	▲	●						▲							
			CNMG644ENZ	CNMG190616N-UZ	.0625		●	★		★	★						●	●	▲	▲	●													

CN 80° Diamond Neg. With Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

CN■■64●

Dimensions (inch)	Cutting Edge Length L	.7598	Thickness S	.2500
	Inscribed Circle IC	.7500	Hole Dia. D1	.3126

Applicable External Holders C5
Applicable Internal Holders E12

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																			Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	EGZ		CNMG643EGZ	CNMG190612N-GZ	.0469												●	●	★	★	▲	—						—	—	—	—	—	—
			CNMG644EGZ	CNMG190616N-GZ	.0625												★	★	▲	▲	★	—						—	—	—	—	—	—
Roughing	ENP		CNMM642ENP	CNMM190608N-MP	.0313		★	★		★	★		★									—	★	★				—	—	—	—	—	—
			CNMM643ENP	CNMM190612N-MP	.0469	★	★	★	★	★	★	★	★									—	★	★				—	—	—	—	—	—
			CNMM644ENP	CNMM190616N-MP	.0625	★	★	★	★	★	★	★	★	★								—	★	★				—	—	—	—	—	—
			CNMM646ENP	CNMM190624N-MP	.0938	★	★	★	★	★	●	★	★	★								—	★	★				—	—	—	—	—	—
Heavy Cutting-	EHG		CNMM643EHG	CNMM190612N-HG	.0469	★	●	★	★	●	●											—					▲	—	—	—	—	—	—
			CNMM644EHG	CNMM190616N-HG	.0625	●	★	★	★	●	●											—						—	—	—	—	—	—
			CNMM646EHG	CNMM190624N-HG	.0938	★	★	★	★	★	★											—						—	—	—	—	—	—
	EHP		CNMM642EHP	CNMM190608N-HP	.0313		★	★		★	★											—						—	—	—	—	—	—
			CNMM643EHP	CNMM190612N-HP	.0469		★	★		★	★											—						—	—	—	—	—	—
			CNMM644EHP	CNMM190616N-HP	.0625		★	★		★	★											—						—	—	—	—	—	—
			CNMM646EHP	CNMM190624N-HP	.0938		★	★		★	★											—						—	—	—	—	—	—
	EHF		CNMM644EHF	CNMM190616N-HF	.0625		★	★		★	★											—						—	—	—	—	—	—
			CNMM646EHF	CNMM190624N-HF	.0938		★	★		★	★											—						—	—	—	—	—	—

CN■■85●

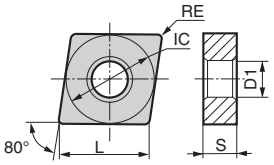
Dimensions (inch)	Cutting Edge Length L	1.0157	Thickness S	.3125
	Inscribed Circle IC	1.0000	Hole Dia. D1	.3622

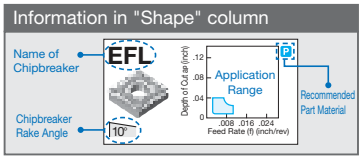
Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																			Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Roughing	ENP		CNMM856ENP	CNMM250724N-MP	.0938		★		★													—						—	—	—	—	—	—

CN 80° Diamond Neg. With Hole





CN■■86●

Dimensions (inch)	Cutting Edge Length L	1.0157	Thickness S	.3750
	Inscribed Circle IC	1.0000	Hole Dia. D1	.3622

Applicable External Holders ☞ C5

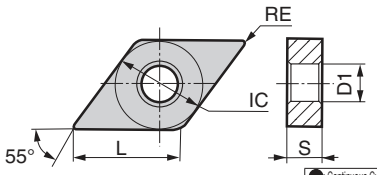
● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																						Coated Cermet	Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	◕	✖	○	○	◔	✖													○	◕	◕	◔	✖	◕				
M	Stainless Steel							●	◕	✖	○											◕								
K	Cast Iron						✖						●	◕	○	◔	✖				✖	◕								
N	Non-Ferrous Metal																													◕
S	Exotic Alloy																	◕	✖											
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	**EMU**		**CNMG866EMU**	**CNMG250924N-MU**	.0938	●	●	★	●	★	●											—	★	★					—	—	—	—			—
	EEM		**CNMG866EEM**	**CNMG250924N-EM**	.0938	★	★	★					●	●								—	★	●		●			—	—	—	—			—
	EME		**CNMG866EME**	**CNMG250924N-ME**	.0938	●	●	★	●	●	★						●	●				—							—	—	—	—			—
Roughing	**ENP**		**CNMM866ENP**	**CNMM250924N-MP**	.0938		★			★												—							—	—	—	—			—
Heavy Cutting	**EHF**		**CNMM866EHF** **CNMM868EHF**	**CNMM250924N-HF** **CNMM250932N-HF**	.0938 .1250		★ ★ ★ ★	★ ★ ★ ★		★ ★ ★ ★	★ ★ ★ ★											— —							— —	— —	— —	— —			— —

DN 55° Diamond Neg. With Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

Recommended Application

P	Steel	●	●	✖	○	○	◔	✖											○	●	●	◔	✖	●		●				
M	Stainless Steel								●	●	✖	○								●										
K	Cast Iron						✖						●	●	○	◔	✖			✖	●									
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖											
H	Hardened Steel																●													

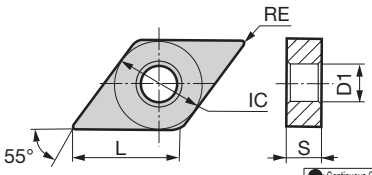
DN■■33●

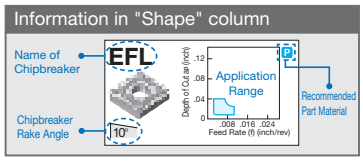
Dimensions (inch)	Cutting Edge Length L	.4567	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

SUMIBORON (CBN) Inserts L47
Applicable External Holders C11
Applicable Internal Holders E15

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																					Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Fine Cutting	**EFB** 27°	(ap) 2 1 0 0.2 0.4 (f) P	DNMG331EFB	DNMG110404N-FB	.0156									★													—	★			★	—	—	
			DNMG332EFB	DNMG110408N-FB	.0313									★													—	★			★	—	—	
	EFE 20°	(ap) 2 1 0 0.2 0.4 (f) P	DNMG331EFE	DNMG110404N-FE	.0156	★	★	★	★		★		★	★								—						—	★		★	★			
			DNMG332EFE	DNMG110408N-FE	.0313	●	★	★	★		★		★	★								—						—	★		★	★			
			DNMG333EFE	DNMG110412N-FE	.0469	★	★	★	★		★		★	★								—						—	★			★			
Finishing	**ELU** 10°	(ap) .08 .04 0 .008 .016 (f) P	DNMG331ELU	DNMG110404N-LU	.0156	★	●			★			★									—						—				★			
			DNMG332ELU	DNMG110408N-LU	.0313	★	●			★			★									—						—				★			
	ESU 13°	(ap) 2 1 0 0.2 0.4 (f) P M S	DNMG331ESU	DNMG110404N-SU	.0156	★	●	★	★	★	★	★	★	★								—	★	●					—	★						
			DNMG332ESU	DNMG110408N-SU	.0313	●	●	★	●	●	★	★	●	●								—	★						—	★						
			DNMG333ESU	DNMG110412N-SU	.0469	★	●	★	★	★	★	★	★	★								—							—	★						
	ESE 5°	(ap) .24 .16 .08 0 .008 .016 .024 (f) P	DNMG332ESE	DNMG110408N-SE	.0313	●	●	★	●	●	★											—							—	—	—	—				—
	ESEW 5° → B134 Wiper	(ap) 4 2 0 0.2 0.5 0.8 (f) P	DNMX331ESEW	DNMX110404N-SEW	.0156	★	★	★	★	★	★											—							—	—	—	—				—
			DNMX332ESEW	DNMX110408N-SEW	.0313	●	●	★	●	●	●											—							—	—	—	—				—
			DNMX333ESEW	DNMX110412N-SEW	.0469	★	★	★	★	★	★											—							—	—	—	—				—
	EEF 20°	(ap) 2 1 0 0.2 0.4 (f) M S	DNMG331EEF	DNMG110404N-EF	.0156	★	★	★				●	●	●								—	★	●		●			—	—	—	—				—
			DNMG332EEF	DNMG110408N-EF	.0313	★	★	★				●	●	●								—	★	●		●			—	—	—	—				—
			DNMG333EEF	DNMG110412N-EF	.0469	★	★	★				★	★	★								—	★	★		●			—	—	—	—				—
Medium Cutting	**EGU** 7°	(ap) .24 .16 .08 0 .008 .016 .024 (f) P M	DNMG331EGU	DNMG110404N-GU	.0156	★	●	★		●	●	●	★	★			●	●				—							—				★			
			DNMG332EGU	DNMG110408N-GU	.0313	★	●	●		●	●	●	★	★			●	●				—							—				★			
			DNMG333EGU	DNMG110412N-GU	.0469	★	★	★	★	★	★	●	★	★			★	★				—							—	★						
	EGE 3°	(ap) .24 .16 .08 0 .008 .016 .024 (f) P	DNMG332EGE	DNMG110408N-GE	.0313	●	●	●	★	★	★											—							—	—	—	—				—
			DNMG333EGE	DNMG110412N-GE	.0469	●	●	★	●	●	●											—							—	—	—	—				—
	EUX 0°	(ap) .24 .16 .08 0 .008 .016 .024 (f) P K	DNMG332EUX	DNMG110408N-UX	.0313	★	★	★			●											—							—							—
	ENG 4°	(ap) .24 .16 .08 0 .008 .016 .024 (f) P M	DNMG331ENG	DNMG110404N-UG	.0156		●	★		●	★											—							—	—	—	—				—
			DNMG332ENG	DNMG110408N-UG	.0313		●	●		●	★											—							—	—	—	—				—
	EEG 0°	(ap) 6 4 2 0 0.2 0.4 0.6 (f) M	DNMG332EEG	DNMG110408N-EG	.0313	★	★	★				●	●	●								—	★	●		●			—	—	—	—				—
			DNMG333EEG	DNMG110412N-EG	.0469	★	★	★				●	●	●								—	★	★		●			—	—	—	—				—

DN 55° Diamond Neg. With Hole





Continuous Cutting 1st Recommended
Continuous Cutting 2nd Recommended
General Cutting 1st Recommended
General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended
Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

DN■■33●

Dimensions (inch)	Cutting Edge Length L	.4567	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

SUMIBORON (CBN) Inserts L47

Applicable External Holders C11 Applicable Internal Holders E15

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Medium Cutting	(R/L)M		DNGG331RM	DNGG110404R-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★			
			DNGG331LM	DNGG110404L-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★			
			DNGG332RM	DNGG110408R-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★			
			DNGG332LM	DNGG110408L-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★			
Medium to Roughing	EGZ		DNMG332EGZ	DNMG110408N-GZ	.0313												●	●	▲	▲	●	—												—
			DNMG333EGZ	DNMG110412N-GZ	.0469												★	★	▲	▲	●	—												—

DN■■43●

Dimensions (inch)	Cutting Edge Length L	.6102	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

SUMIBORON (CBN) Inserts L47 SUMIDIA (PCD) Inserts M14

SUMIDIA Binderless Inserts M27 Ceramic Inserts B130

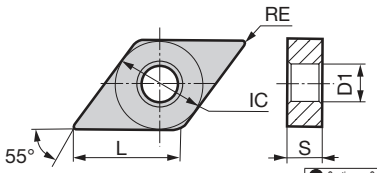
Applicable External Holders C10 Applicable Internal Holders E15

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Fine Cutting	EFB		DNMG431EFB	DNMG150404N-FB	.0156	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★			
			DNMG432EFB	DNMG150408N-FB	.0313	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★			
	EFA		DNMG431EFA	DNMG150404N-FA	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	●	—	—	
			DNMG432EFA	DNMG150408N-FA	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	●	—	—	
	EFL		DNMG431EFL	DNMG150404N-FL	.0156		●		●	●												—						—	●	▲	★			
			DNMG432EFL	DNMG150408N-FL	.0313		●		●	●												—						—	●	▲	★			
			DNMG433EFL	DNMG150412N-FL	.0469		★															—						—						
	EFE		DNMG430.5EFE	DNMG150402N-FE	.0078	●	★	●	★		★		★	★								—						—	★		★			
			DNMG431EFE	DNMG150404N-FE	.0156	●	★	●	★		★		★	★								—						—	★		★			
			DNMG432EFE	DNMG150408N-FE	.0313	●	★	●	★		★		★	●								—						—	★		★			
			DNMG433EFE	DNMG150412N-FE	.0469	●	★	●	★		★		★	★								—						—	★		★			
Finishing	ELU		DNMG430.5ELU	DNMG150402N-LU	.0078	★	★		★	★				★								—						—	★		★			
			DNMG431ELU	DNMG150404N-LU	.0156	●	●	★	●	●	★			★								—						▲	—	●	▲	●			
			DNMG432ELU	DNMG150408N-LU	.0313	●	●	★	●	●	★			★								—						▲	—	●	▲	●			
			DNMG433ELU	DNMG150412N-LU	.0469	●	★	★	●	●	★			★								—						▲	—	●	▲	★			
	ESU		DNMG430.5ESU	DNMG150402N-SU	.0078							★	★	★								—	★	●	●				—	★		★			
			DNMG431ESU	DNMG150404N-SU	.0156	●	●	●	●	●	●	★	●	●		●						—	●	●	●	●	★	▲	—	●	▲	●			
			DNMG432ESU	DNMG150408N-SU	.0313	●	●	●	●	●	●	★	●	●	▲	●						—	●	●	●	●	★	▲	—	●	▲	●	●		
			DNMG433ESU	DNMG150412N-SU	.0469	●	●	●	●	●	●	★	★	★		●						—	●	●	●			▲	—	●	▲	●			

DN 55° Diamond Neg. With Hole

DN■■43●

Dimensions (inch)	Cutting Edge Length L	.6102	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

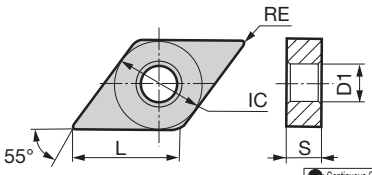
Recommended Application
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-Ferrous Metal
- S Exotic Alloy
- H Hardened Steel

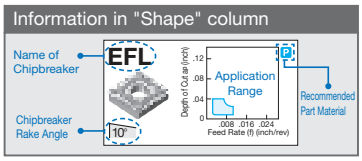
SUMIBORON (CBN) Inserts 47 | SUMIDIA (PCD) Inserts M14 | SUMIDIA Binderless Inserts M27 | Ceramic Inserts B130 | Applicable External Holders C10 | Applicable Internal Holders E15

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	**ESU(J)** 13°	ESUJ depth of cut can be increased to .200" in Aluminum	DNGG430ESU	DNGG150401N-SU	.0039																				●									
			DNGG430.5ESU	DNGG150402N-SU	.0078																	●	●		●				●	▲	●			
			DNGG430.5ESUJ	DNGG150402N-SUJ	.0078																													●
			DNGG431ESU	DNGG150404N-SU	.0156																	●	●		●				●	▲	●			
			DNGG431ESUJ	DNGG150404N-SUJ	.0156																													●
			DNGG432ESU	DNGG150408N-SU	.0313																	●	●		●				●	▲	●			
			DNGG432ESUJ	DNGG150408N-SUJ	.0313																													●
	ESE 5°		DNMG431ESE	DNMG150404N-SE	.0156	●	★	●	●	★	★																		★		●			
			DNMG432ESE	DNMG150408N-SE	.0313	●	●	●	●	●	★																		★		●			
			DNMG433ESE	DNMG150412N-SE	.0469	●	●	●	●	●	★																		★		●			
	ESEW → B134 Wiper 5°		DNMX431ESEW	DNMX150404N-SEW	.0156	●	●		●	●																			●		●			
			DNMX432ESEW	DNMX150408N-SEW	.0313	●	●		●	●																			●	▲	●			
			DNMX433ESEW	DNMX150412N-SEW	.0469	★	●		●	●																								
	EEF 20°		DNMG431EEF	DNMG150404N-EF	.0156	★	★	●				●	●	●		●							●	●	●	●							●	★	
			DNMG432EEF	DNMG150408N-EF	.0313	★	★	●				●	●	●		●							●	●	●	●							●	●	
			DNMG433EEF	DNMG150412N-EF	.0469	★	★	★				●	●	★		●							★	★	●	●							★	★	
	EEF 20°		DNGG431EEF	DNGG150404N-EF	.0156																		●	●		★							★	★	
			DNGG432EEF	DNGG150408N-EF	.0313																		●	●		★							★	★	
	(R/L)FY *1 15°		DNGG430.5RFY	DNGG150402R-FY New	.0078																							★						
			DNGG430.5LFY	DNGG150402L-FY New	.0078																							★						
			DNGG431RFY	DNGG150404R-FY New	.0156																							★						
			DNGG431LFY	DNGG150404L-FY New	.0156																							★						
			DNGG432RFY	DNGG150408R-FY New	.0313																							★						
			DNGG432LFY	DNGG150408L-FY New	.0313																							★						
	(R/L)FX *1 14°		DNGG430.5RFX	DNGG150402R-FX New	.0078																							★						
			DNGG430.5LFX	DNGG150402L-FX New	.0078																							★						
			DNGG431RFX	DNGG150404R-FX New	.0156																							★						
			DNGG431LFX	DNGG150404L-FX New	.0156																							★						
			DNGG432RFX	DNGG150408R-FX New	.0313																							★						
			DNGG432LFX	DNGG150408L-FX New	.0313																							★						
	ENK 8°		DNMG431ENK	DNMG150404N-SK	.0156					▲																								
			DNMG432ENK	DNMG150408N-SK	.0313					●																								
Light to Medium Cutting	**ESX** 3°		DNMG431ESX	DNMG150404N-SX	.0156	●	●	●	●	●	●																	▲		●	▲	●			
			DNMG432ESX	DNMG150408N-SX	.0313	●	●	●	●	●	●																	▲		●	▲	★			
			DNMG433ESX	DNMG150412N-SX	.0469	●	★	●	●	●	●																	▲							
	EEX 16°		DNMG431EEX	DNMG150404N-EX	.0156							●	●	●	▲	●							●	●	●	●	★						●	●	
			DNMG432EEX	DNMG150408N-EX	.0313							●	●	●	▲	●							●	●	●	●	★						●	▲	
			DNMG433EEX	DNMG150412N-EX	.0469							●	●	★	★	●							●	●	●	●	★						●		

*1: Photo shows left hand.

DN 55° Diamond Neg. With Hole





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

Recommended Application		
P	Steel	● ◔ ✱ ○ ◔ ✱
M	Stainless Steel	● ◔ ✱ ○ ✱
K	Cast Iron	✱ ◔ ○ ◔ ✱
N	Non-Ferrous Metal	●
S	Exotic Alloy	◔ ✱ ○ ◔ ✱
H	Hardened Steel	●

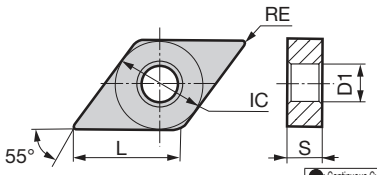
DN■■43●

Dimensions (inch)	Cutting Edge Length L	.6102	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

SUMIBORON (CBN) Inserts ☞ L47 | SUMIDIA (PCD) Inserts ☞ M14
SUMIDIA Binderless Inserts ☞ M27 | Ceramic Inserts ☞ B130
Applicable External Holders ☞ C10 | Applicable Internal Holders ☞ E15

						Coated Carbide																Coated Cermet	Cermet	Carbide		
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light to Medium Cutting	EUP		DNMG431EUP	DNMG150404N-UP	.0156		●	●		●	●	★	★	●								—	●	●	●	●	★								—
			DNMG432EUP	DNMG150408N-UP	.0313		●	●		●	●	★	★	●								—	●	●	●	●	★						★		—
			DNMG433EUP	DNMG150412N-UP	.0469			★		●	★	★	★	★								—	●	●		●	★								—
Medium Cutting	EGU		DNMG431EGU	DNMG150404N-GU	.0156	●	●	●	●	●	●	●	●	●	▲	●	●	●				—	★	●			★	▲		★		●			—
			DNMG432EGU	DNMG150408N-GU	.0313	●	●	●	●	●	●	●	●	●	▲	●	●	●				—	★	●			★	▲		★		●			—
			DNMG433EGU	DNMG150412N-GU	.0469	●	●	●	●	●	●	●	●	★	▲	●	●	★				—	★	★			★	▲		★		★			—
			DNMG434EGU	DNMG150416N-GU	.0625		★			★							●	★				—												—
	EGUW		DNMX432EGUW	DNMX150408N-GUW	.0313	●	●															—												—
			DNMX433EGUW	DNMX150412N-GUW	.0469	●	●															—												—
	EGE		DNMG431EGE	DNMG150404N-GE	.0156	●	●	★	★	●	●											—												—
			DNMG432EGE	DNMG150408N-GE	.0313	●	●	●	●	●	●											—						▲						—
			DNMG433EGE	DNMG150412N-GE	.0469	●	●	●	●	●	●											—						▲						—
			DNMG434EGE	DNMG150416N-GE	.0625		★															—												—
	EUX		DNMG431EUX	DNMG150404N-UX	.0156	●	●	●	●	●	●											—						▲						—
			DNMG432EUX	DNMG150408N-UX	.0313	●	●	●	●	●	●											—						▲						—
			DNMG433EUX	DNMG150412N-UX	.0469	●	●	★	●	●	●											—						▲						—
	ENG		DNMG431ENG	DNMG150404N-UG	.0156		●	●		●	●											—						▲						—
			DNMG432ENG	DNMG150408N-UG	.0313	●	●	●		●	●											—						▲						—
			DNMG433ENG	DNMG150412N-UG	.0469		★	★		★	★											—						▲						—
	EEG		DNMG431EEG	DNMG150404N-EG	.0156	★	●	●				●	●	★		●						—	●	●	●	●						★	●		—
			DNMG432EEG	DNMG150408N-EG	.0313	★	●	●				●	●	●	▲	●						—	●	●	●	●						●	●		—
			DNMG433EEG	DNMG150412N-EG	.0469	★	★	★				●	●	●		●						—	★	★	●	●						★	●		—
	EEG		DNGG431EEG	DNGG150404N-EG	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●											—
			DNGG432EEG	DNGG150408N-EG	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●											—
	(R/L)M		DNMR431M	DNMG150404R-UM	.0156																	—								★		★			—
			DNML431M	DNMG150404L-UM	.0156																	—								★		★			—
			DNMR432M	DNMG150408R-UM	.0313																	—								★		★			—
			DNML432M	DNMG150408L-UM	.0313																	—								★		★			—
	(R/L)M		DNGG431RM	DNGG150404R-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●			—
			DNGG431LM	DNGG150404L-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●			—
			DNGG432RM	DNGG150408R-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●			—
			DNGG432LM	DNGG150408L-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●			—
		—	DNMA431	DNMA150404	.0156												★	★	★	★	●	—					▲							—
			DNMA432	DNMA150408	.0313												●	●	▲	▲	●	—					▲							—
			DNMA433	DNMA150412	.0469												●	●	▲	▲	●	—					▲							—
		—	DNGA430.5	DNGA150402	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—
			DNGA431	DNGA150404	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	—	—	—	—	—	—	—	—	—	—
			DNGA432	DNGA150408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—

DN 55° Diamond Neg. With Hole



Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																				Coated Cermet		Cermet	Carbide	
P	Steel	●	●	✱	○	◔	✲													○	●	●	◔	●		
M	Stainless Steel							●	●	✱	○	✲									●					
K	Cast Iron					✲							●	●	○	◔	✱				✲	●				
N	Non-Ferrous Metal																									●
S	Exotic Alloy																	●	✱	○	◔	✲				
H	Hardened Steel																●									

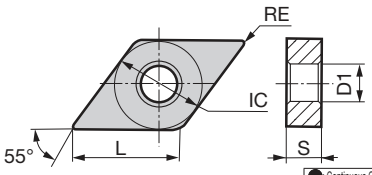
DN■■43●

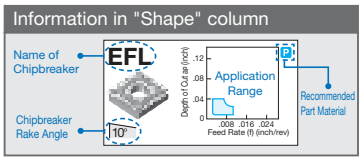
Dimensions (inch)	Cutting Edge Length L	.6102	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

SUMIBORON (CBN) Inserts ☞ L47 | SUMIDIA (PCD) Inserts ☞ M14
SUMIDIA Binderless Inserts ☞ M27 | Ceramic Inserts ☞ B130
Applicable External Holders ☞ C10 | Applicable Internal Holders ☞ E15

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	**EMU**	P M S	DNMG432EMU	DNMG150408N-MU	.0313	●	●	●	●	●	●		●	●	★	●						—	●	●	●	●	★	▲	—	—	—	—	●	—
	4°		DNMG433EMU	DNMG150412N-MU	.0469	●	●	★	●	●	●		●	●		●						—	●		●	●	★	▲	—	—	—	—		—
			DNMG434EMU	DNMG150416N-MU	.0625		★	★		★	★											—	★	★			★		—	—	—	—		—
	EEM	M S	DNMG432EEM	DNMG150408N-EM	.0313	★	●	●				●	●	●								—	●	●	●	●			—	—	—	—		—
	0°		DNMG433EEM	DNMG150412N-EM	.0469	★	★	★				●	●	●								—	●	●	●	●			—	—	—	—		—
			DNMG434EEM	DNMG150416N-EM	.0625		★	★				★	★	★								—	★	★					—	—	—	—		—
	EME	P	DNMG432EME	DNMG150408N-ME	.0313	●	●	●	●	●	●						●	●				—							—	—	—	—		—
	4°		DNMG433EME	DNMG150412N-ME	.0469	★	●	★	●	●	●						●	★				—							—	—	—	—		—
			DNMG434EME	DNMG150416N-ME	.0625		★										●	★				—							—	—	—	—		—
	EMX	P	DNMG432EMX	DNMG150408N-MX	.0313		●	●		●	●											—							—	—	—	—		—
	-15°		DNMG433EMX	DNMG150412N-MX	.0469		●	●		●	●											—							—	—	—	—		—
			DNMG434EMX	DNMG150416N-MX	.0625			●			●											—							—	—	—	—		—
	ENZ	K	DNMG431ENZ	DNMG150404N-UZ	.0156		★	●		★	●						●	★	▲	★	●	—							—	—	—	—		—
	4°		DNMG432ENZ	DNMG150408N-UZ	.0313		●	●		●	●						●	●	▲	▲	●	—	★	★				▲	—	—	—	—		—
			DNMG433ENZ	DNMG150412N-UZ	.0469		●	★		●	●						●	★	▲	▲	●	—	★	★				▲	—	—	—	—		—
	EGZ	K	DNMG431EGZ	DNMG150404N-GZ	.0156					★							●	●	▲	▲	●	—							—	—	—	—		—
	0°		DNMG432EGZ	DNMG150408N-GZ	.0313					★							●	●	▲	▲	●	—							—	—	—	—		—
			DNMG433EGZ	DNMG150412N-GZ	.0469					★							●	●	▲	▲	●	—							—	—	—	—		—
	(R/L)HM	P M K	DNMR431EHM	DNMG150404R-HM	.0156	★	★	★	★	★	★	★	★	★								—							—	—	—	—		—
	15°		DNML431EHM	DNMG150404L-HM	.0156		★			★		★	★	★								—							—	—	—	—		—
			DNMR432EHM	DNMG150408R-HM	.0313	★	★	★	★	★	★	★	★	★								—							—	—	—	—		—
			DNML432EHM	DNMG150408L-HM	.0313		★			★		★	★	★								—							—	—	—	—		—
Roughing	**ENP**	P	DNMM431ENP	DNMM150404N-MP	.0156		★	★		★	★											—							—	—	—	—		—
	0°		DNMM432ENP	DNMM150408N-MP	.0313	★	★	★	★	★	★											—							—	—	—	—		—
			DNMM433ENP	DNMM150412N-MP	.0469	★	★	★	★	★	★											—							—	—	—	—		—
			DNMM434ENP	DNMM150416N-MP	.0625	★	★		★	★												—							—	—	—	—		—
Heavy Cutting	**EHP**	P	DNMM431EHP	DNMM150404N-HP	.0156		★	★		★	★											—							—	—	—	—		—
	0°		DNMM432EHP	DNMM150408N-HP	.0313		★	★		★	★											—							—	—	—	—		—
			DNMM433EHP	DNMM150412N-HP	.0469		★	★		★	★											—							—	—	—	—		—
			DNMM434EHP	DNMM150416N-HP	.0625		★			★												—							—	—	—	—		—
For Aluminum	**(R/L)AX**	N	DNGG430.5RAX	DNGG150402R-AX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	30°		DNGG430.5LAX	DNGG150402L-AX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG431RAX	DNGG150404R-AX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG431LAX	DNGG150404L-AX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG432RAX	DNGG150408R-AX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			DNGG432LAX	DNGG150408L-AX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
Light Cutting of Hardened Steel	**EGH**	H	DNGG430.5EGH	DNGG150402N-GH	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—
	3°		DNGG431EGH	DNGG150404N-GH	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—
			DNGG432EGH	DNGG150408N-GH	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—
			DNGG433EGH	DNGG150412N-GH	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—

DN 55° Diamond Neg. With Hole





Continuous Cutting 1st Recommended
Continuous Cutting 2nd Recommended
General Cutting 1st Recommended
General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended
Interrupted Cutting 2nd Recommended

Recommended Application
P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous Metal
S Exotic Alloy
H Hardened Steel

DN■■44●

Dimensions (inch)	Cutting Edge Length L	.6102	Thickness S	.2500
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

SUMIBORON (CBN) Inserts ☞ L53

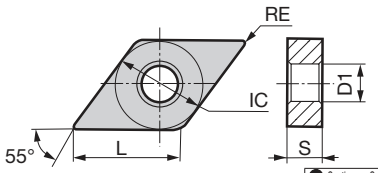
Applicable External Holders ☞ C10 Applicable Internal Holders ☞ E19

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T2500Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Fine Cutting	**EFB**		DNMG441EFB	DNMG150604N-FB	.0156	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	
			DNMG442EFB	DNMG150608N-FB	.0313	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	
	EFA		DNMG441EFA	DNMG150604N-FA	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	
			DNMG442EFA	DNMG150608N-FA	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	
	EFE		DNMG440.5EFE	DNMG150602N-FE	.0078	★	★	★	★		★		★	★								—						—	★			★			
			DNMG441EFE	DNMG150604N-FE	.0156	★	★	★	★		★		★	★								—						—	★			★			
			DNMG442EFE	DNMG150608N-FE	.0313	★	★	★	★		★		★	★								—						—	★		★	★			
			DNMG443EFE	DNMG150612N-FE	.0469	★	★	★	★		★		★	★								—						—	★		★	★			
Finishing	**ESU**		DNMG441ESU	DNMG150604N-SU	.0156	★	★			★												—	★	★				—	★	★		★			
			DNMG442ESU	DNMG150608N-SU	.0313	★	★	★		★	★											—	★	★				—	★			★			
			DNMG443ESU	DNMG150612N-SU	.0469	★	★	★		★	★											—						—							
	EEF		DNMG441EEF	DNMG150604N-EF	.0156	★	★	★				★	★	★								—	★	★	★	★			—	—	—		—	★	★	—
			DNMG442EEF	DNMG150608N-EF	.0313	★	★	★				★	★	★								—	★	★					—	—	—		—	★	★	—
			DNMG443EEF	DNMG150612N-EF	.0469	★	★	★				★	★	★								—	★	★					—	—	—		—	★	★	—
	ENK		DNMG441ENK	DNMG150604N-SK	.0156					●												—							—	—	—		—			—
			DNMG442ENK	DNMG150608N-SK	.0313					●												—							—	—	—		—			—
Light to Medium Cutting	**ESX**		DNMG441ESX	DNMG150604N-SX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	
			DNMG442ESX	DNMG150608N-SX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★		★	—	—	
	EEX		DNMG441EEX	DNMG150604N-EX	.0156							★	★	★	★	★						—	★	★					—	—	—		—			—
			DNMG442EEX	DNMG150608N-EX	.0313							★	★	★	★	★						—	★	★					—	—	—		—			—
			DNMG443EEX	DNMG150612N-EX	.0469							★	★	★	★	★						—	★	★					—	—	—		—			—
	ENJ		DNMG441ENJ	DNMG150604N-UJ	.0156					▲												—							—	—	—		—			—
			DNMG442ENJ	DNMG150608N-UJ	.0313					●												—							—	—	—		—			—

DN 55° Diamond Neg. With Hole

DN■■44●

Dimensions (inch)	Cutting Edge Length L	.6102	Thickness S	.2500
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

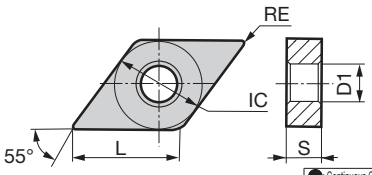
● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

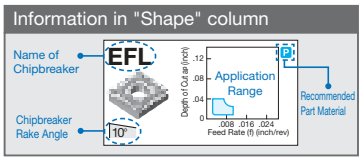
Recommended Application
P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous Metal
S Exotic Alloy
H Hardened Steel

SUMIBORON (CBN) Inserts L53
Applicable External Holders C10
Applicable Internal Holders E19

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Medium Cutting	EGU	P M	DNMG441EGU	DNMG150604N-GU	.0156	★	★	★		★	★						★	★				—						▲	—	—	—	—			—
			DNMG442EGU	DNMG150608N-GU	.0313	★	★	★	★	★	★	★	★	★	★		★	★				—						▲	—	—	—	—			—
			DNMG443EGU	DNMG150612N-GU	.0469	★	★	★	★	★	★	★	★	★	★	★	★	★				—						▲	—	—	—	—			—
			DNMG444EGU	DNMG150616N-GU	.0625		★			★							★	★				—							—	—	—	—			—
	EGE	P	DNMG441EGE	DNMG150604N-GE	.0156	★	★	★	★	★	★											—							—	—	—	—			—
			DNMG442EGE	DNMG150608N-GE	.0313	★	★	★	★	★	★											—							—	—	—	—			—
			DNMG443EGE	DNMG150612N-GE	.0469	★	★	★	★	★	★											—							—	—	—	—			—
			DNMG444EGE	DNMG150616N-GE	.0625	★	★	★	★	★	★											—							—	—	—	—			—
	EUX	P K	DNMG441EUX	DNMG150604N-UX	.0156	★	★	★		★	★											—							—	—	—	—			—
			DNMG442EUX	DNMG150608N-UX	.0313	★	★	★	★	★	★											—						▲	—	—	—	—			—
			DNMG443EUX	DNMG150612N-UX	.0469	★	★	★	★	★	★											—						▲	—	—	—	—			—
			DNMG444EUX	DNMG150616N-UX	.0625		★			★												—							—	—	—	—			—
	ENG	P M	DNMG441ENG	DNMG150604N-UG	.0156		★			★												—							—	—	—	—			—
			DNMG442ENG	DNMG150608N-UG	.0313		★	★		★	★											—							—	—	—	—			—
			DNMG443ENG	DNMG150612N-UG	.0469		★			★												—							—	—	—	—			—
			DNMG444ENG	DNMG150616N-UG	.0625		★			★												—							—	—	—	—			—
	EEG	M	DNMG441EEG	DNMG150604N-EG	.0156	★	★	★				★	★	★								—	★	★					—	—	—	★	★		—
			DNMG442EEG	DNMG150608N-EG	.0313	★	★	★				★	★	★								—	★	★					—	—	—	★	★		—
			DNMG443EEG	DNMG150612N-EG	.0469	★	★	★				★	★	★								—	★	★					—	—	—	★	★		—
		—	DNMA442	DNMA150608	.0313												★	★	★	★	●	—						▲	—	—	—	—			—
			DNMA443	DNMA150612	.0469												★	★	★	★	●	—							—	—	—	—			—
Medium to Roughing	EMU	P M S	DNMG442EMU	DNMG150608N-MU	.0313	★	★	★	★	★	★		★			★						—							—	—	—	—			—
			DNMG443EMU	DNMG150612N-MU	.0469	★	★	★	★	★	★		★			★						—						▲	—	—	—	—			—
			DNMG444EMU	DNMG150616N-MU	.0625		★			★												—						▲	—	—	—	—			—
	EEM	M S	DNMG442EEM	DNMG150608N-EM	.0313	★	★	★				★	★	★								—	★	★					—	—	—	★	★		—
			DNMG443EEM	DNMG150612N-EM	.0469	★	★	★				★	★	★								—	★	★					—	—	—	★	★		—
	EME	P	DNMG442EME	DNMG150608N-ME	.0313	★	★	★	●	●	●						★	★				—							—	—	—	—			—
			DNMG443EME	DNMG150612N-ME	.0469	★	★	★	●	●	●						★	★				—							—	—	—	—			—
			DNMG444EME	DNMG150616N-ME	.0625	★	★	★	●	●	★						★	★				—							—	—	—	—			—
	EMX	P	DNMG442EMX	DNMG150608N-MX	.0313		★			★												—							—	—	—	—			—
			DNMG443EMX	DNMG150612N-MX	.0469		★			★												—							—	—	—	—			—
	ENZ	K	DNMG442ENZ	DNMG150608N-UZ	.0313		★			★							★	★	★	★	●	—							—	—	—	—			—
			DNMG443ENZ	DNMG150612N-UZ	.0469		★			★							★	★	★	★	●	—							—	—	—	—			—

DN 55° Diamond Neg. With Hole





DN■■44●

Dimensions (inch)	Cutting Edge Length L	.6102	Thickness S	.2500
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																				Coated Cermet	Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✱	○	◔	✲																	○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✲													●					
K	Cast Iron					✲							●	●	○	◔	✱							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✱	○	◔	✲									
H	Hardened Steel																	●													

SUMIBORON (CBN) Inserts ☞ L53
Applicable External Holders ☞ C10 Applicable Internal Holders ☞ E19

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	EGZ		DNMG442EGZ	DNMG150608N-GZ	.0313					★							★	★	★	★	★	—							—	—	—			—
			DNMG443EGZ	DNMG150612N-GZ	.0469					★							★	★	★	★	★	—							—	—	—			—
Roughing	ENP		DNMM441ENP	DNMM150604N-MP	.0156		★			★												—							—	—	—			—
			DNMM442ENP	DNMM150608N-MP	.0313	★	★	★	★	★	★											—							—	—	—			—
			DNMM443ENP	DNMM150612N-MP	.0469	★	★	★	★	★	★											—							—	—	—			—
			DNMM444ENP	DNMM150616N-MP	.0625	★	★		★	★												—							—	—	—			—
Heavy Cutting	EHP		DNMM441EHP	DNMM150604N-HP	.0156		★			★												—							—	—	—			—
			DNMM442EHP	DNMM150608N-HP	.0313		★	★		★	★											—							—	—	—			—
			DNMM443EHP	DNMM150612N-HP	.0469		★	★		★	★											—							—	—	—			—
			DNMM444EHP	DNMM150616N-HP	.0625		★			★												—							—	—	—			—

DN■■54●

Dimensions (inch)	Cutting Edge Length L	.7638	Thickness S	.2500
	Inscribed Circle IC	.6250	Hole Dia. D1	.2500

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																				Coated Cermet	Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✱	○	◔	✲																	○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✲													●					
K	Cast Iron					✲							●	●	○	◔	✱							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✱	○	◔	✲									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium Cutting	ENG		DNMG542ENG	DNMG190608N-UG	.0313		●	●		●	●											—							—	—	—			—
			DNMG543ENG	DNMG190612N-UG	.0469		●	●		●	●											—							—	—	—			—
Medium to Roughing	ENZ		DNMG542ENZ	DNMG190608N-UZ	.0313		●	●		●	●											—							—	—	—			—
			DNMG543ENZ	DNMG190612N-UZ	.0469		●	●		●	●											—							—	—	—			—
			DNMG544ENZ	DNMG190616N-UZ	.0625		●	●		●	●											—							—	—	—			—

RN Round Neg. With Hole

Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

RN■■43●

Dimensions (inch)	Inscribed Circle IC	.5000	Thickness S	.1875
	Hole Dia. D1	.2031		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	IC	S	D1	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
	ENT	—	RNMG43ENT	—	.5000	.1875	.2031			●			●																									
		—	RNMA43	—	.5000	.1875	.2031												●	●	▲	▲		—						▲	—	—	—	—	—	—	

RN■■54●

Dimensions (inch)	Inscribed Circle IC	.6250	Thickness S	.2500
	Hole Dia. D1	.2500		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	IC	S	D1	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Roughing	ENU	—	RNMG54ENU	—	.6250	.2500	.2500			●			●											—						—	—	—	—	—	—	—

RN■■64●

Dimensions (inch)	Inscribed Circle IC	.7500	Thickness S	.2500
	Hole Dia. D1	.3126		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	IC	S	D1	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Roughing	ENV	—	RNMG64ENV	—	.7500	.2500	.3126			●			●											—						—	—	—	—	—	—	—

RN■■84●

Dimensions (inch)	Inscribed Circle IC	1.000	Thickness S	.2500
	Hole Dia. D1	.3622		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	IC	S	D1	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Roughing	ENY	—	RNMG84ENY	—	1.000	.2500	.3622			●			●											—						—	—	—	—	—	—	—

RN■■86●

Dimensions (inch)	Inscribed Circle IC	1.000	Thickness S	.3750
	Hole Dia. D1	.3622		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	IC	S	D1	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Roughing	ENY	—	RNMG86ENY	—	1.000	.3750	.3622			●			●											—						—	—	—	—	—	—	—

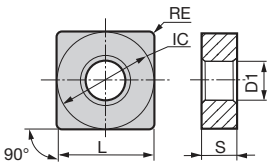
Square Negative Inserts

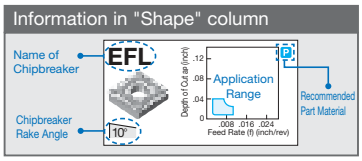
SN Square Neg. With Hole

SN■■32●

Dimensions (inch)	Cutting Edge Length L	.3750	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

Applicable External Holders C15





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

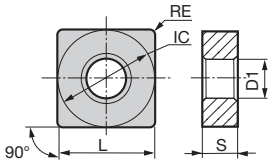
Recommended Application		Coated Carbide																				Coated Cermet	Cermet	Carbide		
P	Steel	●	◔	✱	○	◔	✱													○	◔	●	◔	●			
M	Stainless Steel							●	◔	✱	○	✱									◔						
K	Cast Iron					✱							●	◔	○	◔	✱					✱	◔				
N	Non-Ferrous Metal																										●
S	Exotic Alloy																	●	✱	○	◔	✱					
H	Hardened Steel																●										

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Fine Cutting	**EFE**		SNMG322EFE	SNMG090308N-FE	.0313	●																												
Finishing	**ENK**		SNMG321ENK	SNMG090304N-SK	.0156					▲												—							—	—	—			—
			SNMG322ENK	SNMG090308N-SK	.0313					●												—							—	—	—			—
Light Cutting	**(R/L)T**		SNPR321T	SNGG090304R-ST	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	
			SNPL321T	SNGG090304L-ST	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	
			SNPR322T	SNGG090308R-ST	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	
			SNPL322T	SNGG090308L-ST	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	
			SNPR323T	SNGG090312R-ST	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲	—	—	
	(R/L)GX		SNGG322R	SNGG090308R-GX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
			SNGG322L	SNGG090308L-GX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	EEX		SNMG322EEX	SNMG090304N-EX	.0156								●			●					—							—	—	—			—
	EGU		SNMG321EGU	SNMG090304N-GU	.0156		●			●							★	★				—							—	—				—
			SNMG322EGU	SNMG090308N-GU	.0313	★	★	★		●	★						★	★				—							—	★	—	●			—
	EUX		SNMG322EUX	SNMG090308N-UX	.0313			●			●											—							—	—	—				—
	ENG		SNMG322ENG	SNMG090308N-UG	.0313		●	●		●	●											—							—	—	—				—
Medium Cutting		—	SNMA322	SNMA090308	.0313												●	●	▲	▲		—						▲	—	—	—				—
		—	SNGA321	SNGA090304	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
		—	SNGA322	SNGA090308	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

*1: Photo shows left hand.

Square Negative Inserts

SN Square Neg. With Hole



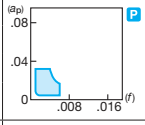
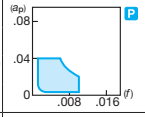
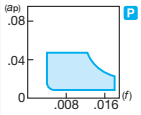
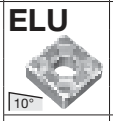
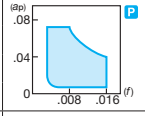
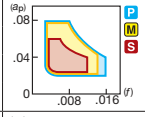
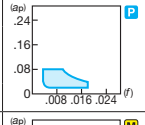
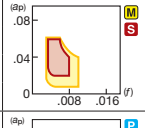
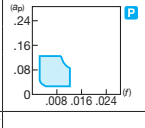
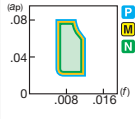
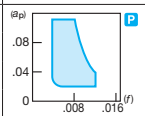
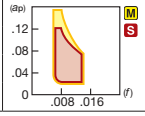
SN■■43●

Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

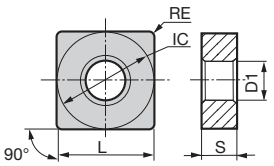
Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on
SUMIBORON (CBN) Inserts L62 SUMIDIA (PCD) Inserts M16
SUMIDIA Binderless Inserts M27 Ceramic Inserts B131
Applicable External Holders C14 Applicable Internal Holders E20

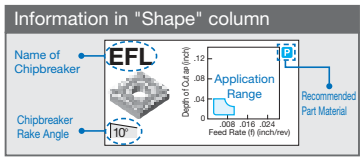
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

		Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																						Coated Cermet		Cermet	Carbide		
							AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Fine Cutting	**EFB**			SNMG431EFB	SNMG120404N-FB	.0156								★									—						—	★			★			
				SNMG432EFB	SNMG120408N-FB	.0313								★									—						—	★			★			
	EFL			SNMG432EFL	SNMG120408N-FL	.0313		●			●												—						—	●	★	★	★			
	EFE			SNMG431EFE	SNMG120404N-FE	.0156	★	★	●	★		★		★	★									—						—	★		★	★			
				SNMG432EFE	SNMG120408N-FE	.0313	★	★	●	★		★		★	★									—						—	★			★			
				SNMG433EFE	SNMG120412N-FE	.0469	★	★	●	★		★		★	★									—						—	★			★			
Finishing	**ELU**			SNMG432ELU	SNMG120408N-LU	.0313	★	★		★	●			★									—					▲	—	★	▲	★	★			
				SNMG433ELU	SNMG120412N-LU	.0469	●	★		●	★			★									—					▲	—	★	★	★	●			
	ESU			SNMG432ESU	SNMG120408N-SU	.0313	●	●	●	●	●	●	★	●	★		●						—	●	●	●	●	★	▲	—	●	▲	★	●	●		
	ESE			SNMG432ESE	SNMG120408N-SE	.0313	●	●	●	●	●	●											—						—	—	—	—	—			—
				SNMG433ESE	SNMG120412N-SE	.0469	★	★	★	●	★	★											—						—	—	—	—	—			—
	EEF			SNMG431EEF	SNMG120404N-EF	.0156	★	★	★				●	★	●								—	●	★					—	—	—	—	—			—
				SNMG432EEF	SNMG120408N-EF	.0313	★	★	●				●	★	★								—	●	★					—	—	—	—	—			—
	ENK			SNMG431ENK	SNMG120404N-SK	.0156					●												—						—	—	—	—	—			—
				SNMG432ENK	SNMG120408N-SK	.0313					●												—						—	—	—	—	—			—
Light Cutting	**(R/L)GX**			SNGG431L	SNGG120404L-GX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
				SNGG432R	SNGG120408R-GX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
				SNGG432L	SNGG120408L-GX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
Light to Medium Cutting	**ESX**			SNMG431ESX	SNMG120404N-SX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	★	★	—	—	—
				SNMG432ESX	SNMG120408N-SX	.0313	●	●	●	●	●	●											—					▲	—	●	▲	★	★			
				SNMG433ESX	SNMG120412N-SX	.0469	●	★	★	●	★	●											—					▲	—	—	—	—	—			—
	EEX			SNMG431EEX	SNMG120404N-EX	.0156							●	★	★	★	★						—	●	●	●	●			—	—	—	—	—			—
				SNMG432EEX	SNMG120408N-EX	.0313							●	●	●	▲	●						—	●	●	●	●	★		—	—	—	—	—	●	●	—
				SNMG433EEX	SNMG120412N-EX	.0469							●	●	★	★	●						—	★	★	★		★		—	—	—	—	—			—

SN Square Neg. With Hole





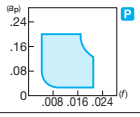
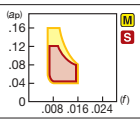
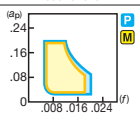
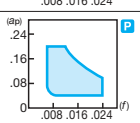
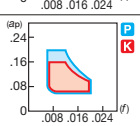
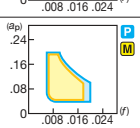
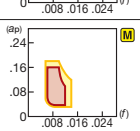
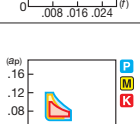
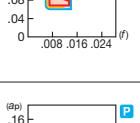
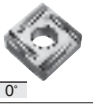
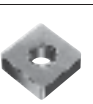
SN■■43●

Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

Recommended Application																										
P	Steel	●	●	✖	○	◔	✖														○	●	●	◔	●	
M	Stainless Steel							●	●	✖	○	✖										●				
K	Cast Iron					✖							●	●	○	◔	✖					✖	●			
N	Non-Ferrous Metal																									●
S	Exotic Alloy																	●	✖	○	◔	✖				
H	Hardened Steel															●										

SUMIBORON (CBN) Inserts L62 | SUMIDIA Binderless Inserts M27
SUMIDIA (PCD) Inserts M16 | Ceramic Inserts B131
Applicable External Holders C14 | Applicable Internal Holders E20

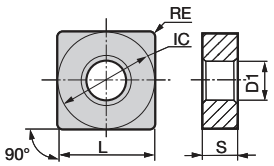
		Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																Coated Cermet		Cermet	Carbide		
							AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light to Medium Cutting	ENJ			SNMG431ENJ	SNMG120404N-UJ	.0156					●	●											—						—						—
				SNMG433ENJ	SNMG120412N-UJ	.0469						▲											—						—						—
	EUP			SNMG431EUP	SNMG120404N-UP	.0156			●	★	●	★	★	★									—						—						—
				SNMG432EUP	SNMG120408N-UP	.0313		●	●	●	●	★	★	●									—	●	●			★	—						—
				SNMG433EUP	SNMG120412N-UP	.0469			★	★	●	★	★	★									—	★	●			★	—						—
	EGU			SNMG431EGU	SNMG120404N-GU	.0156	★	●	★	★	●	★	●	★	★	★	●	●					—	★	●			★	▲		★		★			—
				SNMG432EGU	SNMG120408N-GU	.0313	●	●	●	●	●	●	●	●	★	●	●	●					—	★	●			★	▲		★		●			—
				SNMG433EGU	SNMG120412N-GU	.0469	●	●	★	●	●	●	●	●	★	★	●	●					—	★	★			★	▲							—
				SNMG434EGU	SNMG120416N-GU	.0625	★	●	★		●	●		●				●					—						▲							—
	EGE			SNMG432EGE	SNMG120408N-GE	.0313	●	●	★	●	●	●											—												—
				SNMG433EGE	SNMG120412N-GE	.0469	★	★	★	●	●	●											—												—
				SNMG434EGE	SNMG120416N-GE	.0625	●	●	★	★	●	★											—												—
	EUX			SNMG431EUX	SNMG120404N-UX	.0156			★			●											—												—
				SNMG432EUX	SNMG120408N-UX	.0313	★	●	●	★	●	●											—						▲						—
				SNMG433EUX	SNMG120412N-UX	.0469	★	●	●	★	●	●											—						▲						—
				SNMG434EUX	SNMG120416N-UX	.0625	●	●	●	★	●	●											—						▲						—
	ENG			SNMG432ENG	SNMG120408N-UG	.0313	●	●	●		●	●											—						▲						—
				SNMG433ENG	SNMG120412N-UG	.0469		★	★		★	★											—												—
				SNMG434ENG	SNMG120416N-UG	.0625			★			★											—												—
Medium Cutting	EEG			SNMG431EEG	SNMG120404N-EG	.0156	★	★	●				●	★	★								—	★	★											—
				SNMG432EEG	SNMG120408N-EG	.0313	★	●	●				●	●	●		●						—	●	●	●	●								●	●	—
				SNMG433EEG	SNMG120412N-EG	.0469	★	★	●				●	●	●		●						—	●	●	●	●								●	●	—
	(R/L)M			SNMR431M	SNMG120404R-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
				SNML431M	SNMG120404L-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
				SNMR432M	SNMG120408R-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
				SNML432M	SNMG120408L-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
				SNMR433M	SNMG120412R-UM	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
				SNML433M	SNMG120412L-UM	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
	(R/L)M			SNPR431M	SNGG120404R-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲	●	—	—	—
				SNPL431M	SNGG120404L-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
				SNPR432M	SNGG120408R-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—	★	—	—	—
				SNPL432M	SNGG120408L-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—	★	—	—	—
				SNPR433M	SNGG120412R-UM	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—
			—	SNMA431	SNMA120404	.0156	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—	—	—	▲	—	—	—	—	—	—	—
				SNMA432	SNMA120408	.0313	—	—	—	—	—	—	—	—	—	—	—	●	●	▲	▲	●	—	—	—	—	—	—	▲	—	—	—	—	—	—	★
				SNMA433	SNMA120412	.0469	—	—	—	—	—	—	—	—	—	—	—	●	●	▲	▲	●	—	—	—	—	—	—	▲	—	—	—	—	—	—	—
				SNMA434	SNMA120416	.0625	—	—	—	—	—	—	—	—	—	—	—	★	●	▲	▲	●	—	—	—	—	—	—	▲	—	—	—	—	—	—	—
				SNMA435	SNMA120420	.0781	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—	—	—	▲	—	—	—	—	—	—	—
			—	SNGA431	SNGA120404	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—
				SNGA432	SNGA120408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
				SNGA433	SNGA120412	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Square Negative Inserts

SN Square Neg. With Hole

SN■■43●

Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031



Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																				Coated Cermet	Cermet	Carbide		
P	Steel	●	●	✖	○	◔	✲													○	●	●	◔	●		
M	Stainless Steel							●	●	✖	○	✲									●					
K	Cast Iron					✲							●	●	○	◔	✖				✲	●				
N	Non-Ferrous Metal																									●
S	Exotic Alloy																	●	✖	○	◔	✲				
H	Hardened Steel																●									

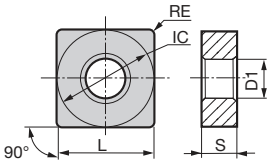
SUMIBORON (CBN) Inserts ☞ L62 SUMIDIA Binderless Inserts ☞ M27
SUMIDIA (PCD) Inserts ☞ M16 Ceramic Inserts ☞ B131
Applicable Internal Holders ☞ E20 Applicable External Holders ☞ C14

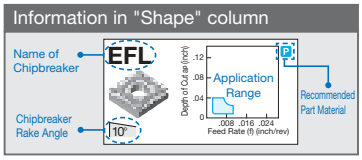
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	**EMU**		SNMG432EMU	SNMG120408N-MU	.0313	★	●	●	●	●	●		●			●						—	●	●		●	★	▲		—	—	—			—
			SNMG433EMU	SNMG120412N-MU	.0469	★	●	●	●	●	●		●			●						—	★	●		●	★	▲		—	—	—			—
			SNMG434EMU	SNMG120416N-MU	.0625	★	●	●		★	●											—								—	—	—			—
	EEM		SNMG432EEM	SNMG120408N-EM	.0313	★	●	●				●	●	●								—	●	●	●	●				—	—	—			—
			SNMG433EEM	SNMG120412N-EM	.0469	★	★	●				●	●	●								—	●	●	●	●				—	—	—			—
	EME		SNMG432EME	SNMG120408N-ME	.0313	★	●	★	★	●	●						●	●				—								—	—	—			—
			SNMG433EME	SNMG120412N-ME	.0469	●	●	★	●	●	●						●	●				—								—	—	—			—
			SNMG434EME	SNMG120416N-ME	.0625	●	●	★	●	●	★						●	●				—								—	—	—			—
	EMX		SNMG432EMX	SNMG120408N-MX	.0313		★	●		●	●											—								—	—	—			—
			SNMG433EMX	SNMG120412N-MX	.0469		●	★		●	●											—								—	—	—			—
			SNMG434EMX	SNMG120416N-MX	.0625		●			●												—								—	—	—			—
	ENZ		SNMG432ENZ	SNMG120408N-UZ	.0313		●	★		●	●						●	●	▲	▲	●	—	★	★				▲		—	—	—			—
			SNMG433ENZ	SNMG120412N-UZ	.0469		★	★		●	●						★	●	▲	▲	●	—	★	★				▲		—	—	—			—
			SNMG434ENZ	SNMG120416N-UZ	.0625		★	●		★	●						★	★	★	★	●	—								—	—	—			—
	EGZ		SNMG432EGZ	SNMG120408N-GZ	.0313					★							●	●	▲	▲	●	—								—	—	—			—
			SNMG433EGZ	SNMG120412N-GZ	.0469					★							●	●	▲	▲	●	—								—	—	—			—
			SNMG434EGZ	SNMG120416N-GZ	.0625					★							★	★	★	★	●	—								—	—	—			—
	(R/L)HM		SNMR432EHM	SNMG120408R-HM	.0313	★	★	★	★	★	★	★	★	★								—								—	—	—			—
			SNML432EHM	SNMG120408L-HM	.0313	★	★	★	★	★	★	★	★	★								—								—	—	—			—
Roughing	**ENP**		SNMM432ENP	SNMM120408N-MP	.0313	★	★	★	★	★	★	★	★	★								—	★	★						—	—	—			—
			SNMM433ENP	SNMM120412N-MP	.0469	★	★	★	★	★	★	★	★	★								—	★	★						—	—	—			—
			SNMM434ENP	SNMM120416N-MP	.0625	★	★	★	★	★	★		★									—	★	★						—	—	—			—
			SNMM435ENP	SNMM120420N-MP	.0781		★			★												—								—	—	—			—
Heavy Cutting	**EHG**		SNMM432EHG	SNMM120408N-HG	.0313	★	★	●	★	●	●											—								—	—	—			—
			SNMM433EHG	SNMM120412N-HG	.0469	★	●	★	★	●	★											—								—	—	—			—
			SNMM434EHG	SNMM120416N-HG	.0625	★	★	★	★	★	★											—								—	—	—			—
	EHP		SNMM432EHP	SNMM120408N-HP	.0313		★	★		★	★											—								—	—	—			—
			SNMM433EHP	SNMM120412N-HP	.0469		★	★		★	★											—								—	—	—			—
			SNMM434EHP	SNMM120416N-HP	.0625		★	★		★	★											—								—	—	—			—

SN Square Neg. With Hole

SN■■43●

Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031





SUMIBORON (CBN) Inserts ☞ L62
SUMIDIA (PCD) Inserts ☞ M16
SUMIDIA Binderless Inserts ☞ M27
Ceramic Inserts ☞ B131
Applicable External Holders ☞ C14
Applicable Internal Holders ☞ E20

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																						Coated Cermet	Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	↻	✲	●	●	✖	○	✲												○	●	●	↻	●			
M	Stainless Steel							●	●	✖	○	✲													●						
K	Cast Iron					✲							●	●	○	↻	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	↻	✲									
H	Hardened Steel																	●													

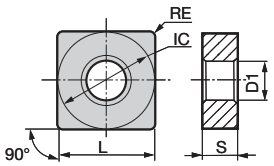
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE																										
For Aluminum	(R/L)AX	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) N	SNGG431RAX	SNGG120404R-AX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	0°		SNGG431LAX	SNGG120404L-AX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			SNGG432RAX	SNGG120408R-AX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			SNGG432LAX	SNGG120408L-AX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

Square Negative Inserts

SN Square Neg. With Hole

SN■■54●

Dimensions (inch)	Cutting Edge Length L	.6250	Thickness S	.2500
	Inscribed Circle IC	.6250	Hole Dia. D1	.2500



Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

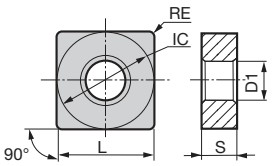
Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	●	✖	○	◔	✲						●	●	○	◔	✖							○	●	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✲													●						
K	Cast Iron					✲							●	●	○	◔	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	◔	✲									
H	Hardened Steel																	●													

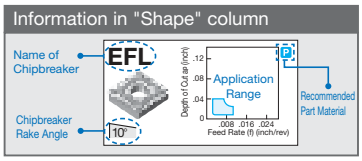
Applicable External Holders ☞ C14

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light to Medium Cutting	**EEX**		SNMG543EEX	SNMG150612N-EX	.0469																		★	●	★	●								
Medium Cutting	**EGU**		SNMG542EGU	SNMG150608N-GU	.0313	★	★	●	★	★	★		★	★			●	●				—												
			SNMG543EGU	SNMG150612N-GU	.0469	★	●	●	★	●	●		★	★			●	●				—												
			SNMG544EGU	SNMG150616N-GU	.0625	★	★	●	★	★	★		★	★			●	●				—												
	EGE		SNMG542EGE	SNMG150608N-GE	.0313	★	★	●	★	★	★											—												
			SNMG543EGE	SNMG150612N-GE	.0469	●	★	●	★	★	★											—												
			SNMG544EGE	SNMG150616N-GE	.0625	●	●	●	★	★	★											—												
	ENG		SNMG543ENG	SNMG150612N-UG	.0469		●	●		●	●											—												
	EEG		SNMG542EEG	SNMG150608N-EG	.0313	★	★	●				●	★	★		●						—	★	★	●	●								
			SNMG543EEG	SNMG150612N-EG	.0469	●	★	●				●	●	●								—	★	●	★	★						★	★	
			SNMG544EEG	SNMG150616N-EG	.0625	★	★	●				●	★	★								—	★	★										
		—	SNMA543	SNMA150612	.0469												★	●	▲	▲	★	—						▲						
			SNMA544	SNMA150616	.0625												★	★	▲	★	★	—						▲						
Medium to Roughing	**EMU**		SNMG542EMU	SNMG150608N-MU	.0313	★	★	●	★	★	★											—	★	★				▲						
			SNMG543EMU	SNMG150612N-MU	.0469	●	●	●	●	●	●		●			●						—	●	●	●	●		▲						
			SNMG544EMU	SNMG150616N-MU	.0625	★	●	●	●	●	●		●			●						—	★	●	★	●		▲						
	EEM		SNMG542EEM	SNMG150608N-EM	.0313	★	★	●				●	★	★								—	★	★										
			SNMG543EEM	SNMG150612N-EM	.0469	★	★	●				●	●	●								—	●	●	●	●								
			SNMG544EEM	SNMG150616N-EM	.0625	★	★	●				●	●	●								—	●	●	●	●								
	EME		SNMG542EME	SNMG150608N-ME	.0313	★	★	★	★	★	★						●	●				—												
			SNMG543EME	SNMG150612N-ME	.0469	●	●	★	●	●	●						●	●				—												
			SNMG544EME	SNMG150616N-ME	.0625	●	●	★	●	●	●						●	●				—												
	EMX		SNMG543EMX	SNMG150612N-MX	.0469		●	●		●	●											—												
			SNMG544EMX	SNMG150616N-MX	.0625		●	★		●	●											—												
	ENZ		SNMG543ENZ	SNMG150612N-UZ	.0469		★	●		●	●						●	●	▲	▲		—						▲						
			SNMG642ENZ	SNMG150616N-UZ	.0625			★		●	●											—												
	EGZ		SNMG543EGZ	SNMG150612N-GZ	.0469												●	★	▲	★	★	—												
			SNMG544EGZ	SNMG150616N-GZ	.0625												★	★	★	★	★	—												

Square Negative Inserts

SN Square Neg. With Hole



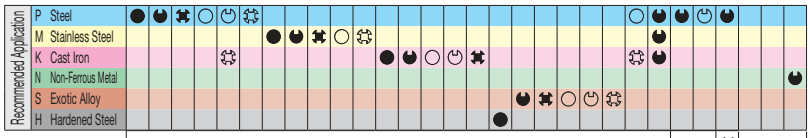


SN■■54●

Dimensions (inch)	Cutting Edge Length L	.6250	Thickness S	.2500
	Inscribed Circle IC	.6250	Hole Dia. D1	.2500

Applicable External Holders ☞ C14

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended



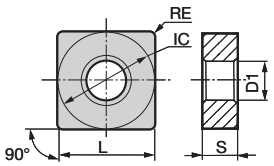
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet	Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	(R/L)HM		SNMR542EHM	SNMG150608R-HM	.0313							★	★	★								—							—	—	—			—
			SNML542EHM	SNMG150608L-HM	.0313							★	★	★								—							—	—	—			—
Heavy Cutting	ENP		SNMM543ENP	SNMM150612N-MP	.0469	★	★		★	★			★									—							—	—	—			—
			SNMM544ENP	SNMM150616N-MP	.0625	★	★		★	★			★									—							—	—	—			—
	EHG		SNMM544EHG	SNMM150616N-HG	.0625	★	★		★	★												—							—	—	—			—

Square Negative Inserts

SN Square Neg. With Hole

SN■■64●

Dimensions (inch)	Cutting Edge Length L	.7500	Thickness S	.2500
	Inscribed Circle IC	.7500	Hole Dia. D1	.3126



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

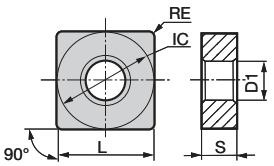
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

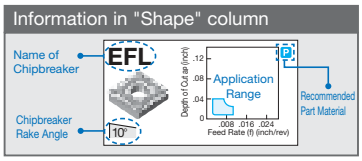
Recommended Application																															
P	Steel	●	●	✖	○	◔	✪																○	●	●	◔	●				
M	Stainless Steel							●	●	✖	○	✪												●							
K	Cast Iron					✪							●	●	○	◔	✖						✪	●							
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	◔	✪									
H	Hardened Steel																●														

Applicable External Holders C14 | Applicable Internal Holders E20

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light to Medium Cutting	**EEX**		SNMG643EEX	SNMG190612N-EX	.0469																	—	★	●	●	●								—
Medium Cutting	**EUX**		SNMG643EUX	SNMG190612N-UX	.0469	★	●	●	★	●	●											—						▲	—	—	—			—
			SNMG644EUX	SNMG190616N-UX	.0625	★	●	★	★	●	●											—						▲	—	—	—			—
	ENG		SNMG643ENG	SNMG190612N-UG	.0469		●	●		▲	●											—							—	—	—			—
			SNMG644ENG	SNMG190616N-UG	.0625		●	●		●	★											—							—	—	—			—
	EEG		SNMG643EEG	SNMG190612N-EG	.0469	★	★	●				●	●	●		●						—	●	●	●	●			—	—	—	★	★	—
			SNMG644EEG	SNMG190616N-EG	.0625	★	★	●				●	●	★		●						—	★	●	●	●			—	—	—	★	★	—
		—	SNMA643	SNMA190612	.0469												★	●	▲	▲	★	—						▲	—	—	—			—
			SNMA644	SNMA190616	.0625												●	●	▲	▲	★	—						▲	—	—	—			—
Medium to Roughing	**EMU**		SNMG643EMU	SNMG190612N-MU	.0469	★	●	●	●	●	●		●									—	●	●	●	●			—	—	—			—
			SNMG644EMU	SNMG190616N-MU	.0625	●	●	●	●	●	●		●			●						—	★	●	●	●		▲	—	—	—		●	—
			SNMG646EMU	SNMG190624N-MU	.0938	★	★	★	★	★	★											—	★	★					—	—	—			—
	EEM		SNMG643EEM	SNMG190612N-EM	.0469	★	★	●				●	●	●								—	●	●	●	●			—	—	—			—
			SNMG644EEM	SNMG190616N-EM	.0625	★	★	●				●	●	●								—	●	●	●	●			—	—	—			—
			SNMG646EEM	SNMG190624N-EM	.0938	★	★	★				★	★	★								—	★	★					—	—	—			—
	EME		SNMG643EME	SNMG190612N-ME	.0469	★	●	●	●	●	●						●	●				—							—	—	—			—
			SNMG644EME	SNMG190616N-ME	.0625	●	●	●	●	●	●						●	●				—							—	—	—			—
			SNMG646EME	SNMG190624N-ME	.0938	★	★	★	★	★	★						●	●				—							—	—	—			—
	EMX		SNMG643EMX	SNMG190612N-MX	.0469	●	●	●	●	●	●											—							—	—	—			—
			SNMG644EMX	SNMG190616N-MX	.0625	●	●	●	●	●	●											—							—	—	—			—
	ENZ		SNMG643ENZ	SNMG190612N-UZ	.0469		★	●		●	●						★	★	▲	★	●	—						▲	—	—	—			—
			SNMG644ENZ	SNMG190616N-UZ	.0625		★	★		★	●						★	●	▲	▲	●	—						▲	—	—	—			—
	EGZ		SNMG643EGZ	SNMG190612N-GZ	.0469												★	★	★	★	★	—							—	—	—			—
			SNMG644EGZ	SNMG190616N-GZ	.0625												★	★	▲	★	★	—							—	—	—			—
Heavy Cutting	**ENP**		SNMM643ENP	SNMM190612N-MP	.0469	★	★	★	★	★	★	★	★	★								—	★	★					—	—	—			—
			SNMM644ENP	SNMM190616N-MP	.0625	★	★	★	★	●	★	★	★	★								—	★	★					—	—	—			—

SN Square Neg. With Hole





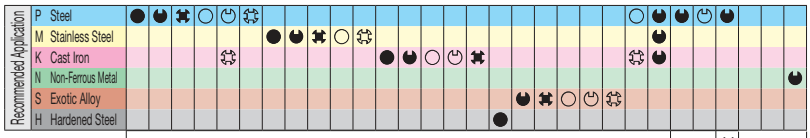
SN■■64●

Dimensions (inch)	Cutting Edge Length L	.7500	Thickness S	.2500
	Inscribed Circle IC	.7500	Hole Dia. D1	.3126

Applicable External Holders C14

Applicable Internal Holders E20

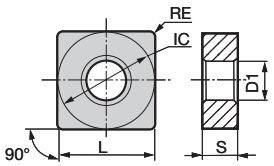
● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended



	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet	Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Heavy Cutting	**EHG**	(ap) .40 .20 0 .020 .040 (f) P	SNMM643EHG	SNMM190612N-HG	.0469	★	●	●	★	●	●											—	—	—	—	—	—	—	—	—	—	—	—
	0°		SNMM644EHG	SNMM190616N-HG	.0625	★	★	●	★	●	●											—	—	—	—	—	—	—	—	—	—	—	—
			SNMM646EHG	SNMM190624N-HG	.0938	★	●	★	★	●	★											—	—	—	—	—	—	—	—	—	—	—	—
	EHP	(ap) .40 .20 0 .020 .040 (f) P	SNMM643EHP	SNMM190612N-HP	.0469		★	●		★	●											—	—	—	—	—	—	—	—	—	—	—	—
	0°		SNMM644EHP	SNMM190616N-HP	.0625		★	★		★	★											—	—	—	—	—	—	—	—	—	—	—	—
	EHF	(ap) .60 .40 .20 0 .020 .040 .060 (f) P	SNMM644EHF	SNMM190616N-HF	.0625		★	★		★	★											—	—	—	—	—	—	—	—	—	—	—	—
	-15°		SNMM646EHF	SNMM190624N-HF	.0938		★	★		★	★											—	—	—	—	—	—	—	—	—	—	—	—

Square Negative Inserts

SN Square Neg. With Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

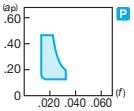
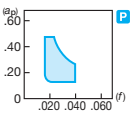
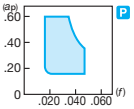
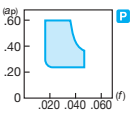
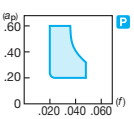
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																							Coated Cermet	Cermet	Carbide	
P	Steel	●	●	✖	○	◔	✲														○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✲										●						
K	Cast Iron					✲							●	●	○	◔	✖					✲	●					
N	Non-Ferrous Metal																											●
S	Exotic Alloy																	●	✖	○	◔	✲						
H	Hardened Steel																	●										

SN■■85●				
Dimensions (inch)	Cutting Edge Length L	1.000	Thickness S	.3125
	Inscribed Circle IC	1.000	Hole Dia. D1	.3622

Applicable External Holders ☞ C15

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Heavy Cutting	**ENP**  0°		**SNMM856ENP**	**SNMM250724N-MP**	.0938	★	★	★	★	★	★		★									—						—	—	—	—			—
	EHP  0°		**SNMM856EHP**	**SNMM250724N-HP**	.0938	★	★	★	★	★	★												—						—	—	—	—			—
	EHU  -15°		**SNMM856EHU**	**SNMM250724N-HU**	.0938	★	★		★	★													—						—	—	—	—			—
	EHW  -15°		**SNMM856EHW**	**SNMM250724N-HW**	.0938	★	★		★	★													—						—	—	—	—			—
	EHF  -15°		**SNMM856EHF** **SNMM858EHF**	**SNMM250724N-HF** **SNMM250732N-HF**	.0938 .1250		★ ★	★ ★		★ ★	★ ★												— —						— —	— —	— —	— —			— —

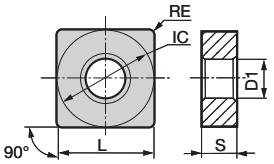
Square Negative Inserts

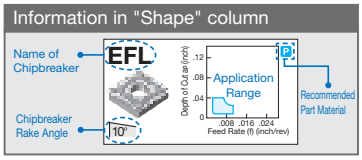
SN Square Neg. With Hole

SN■■86●

Dimensions (inch)	Cutting Edge Length L	1.000	Thickness S	.3750
	Inscribed Circle IC	1.000	Hole Dia. D1	.3622

Applicable External Holders C15





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

Recommended Application
P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous Metal
S Exotic Alloy
H Hardened Steel

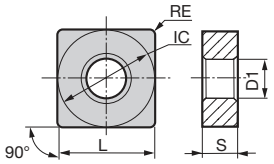
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																					Coated Cermet		Cermet	Carbide	
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium Cutting	**ENG**		SNMG866ENG	SNMG250924N-UG	.0938		●	★		●	●											—						—	—	—			—
Medium to Roughing	**EMU**		SNMG866EMU	SNMG250924N-MU	.0938	★	●	●	●	●	●											—	★	★					—	—	—			—
	EEM		SNMG866EEM	SNMG250924N-EM	.0938	★	★	●					●	●								—	★	●		●			—	—	—			—
	EME		SNMG866EME	SNMG250924N-ME	.0938	★	●	★	●	●	●						●	●				—							—	—	—			—
	ENZ		SNMG866ENZ	SNMG250924N-UZ	.0938			●		●	●											—							—	—	—			—
Heavy Cutting	**ENP**		SNMM866ENP	SNMM250924N-MP	.0938	★	★		★	★			★									—							—	—	—			—
	EHP		SNMM866EHP	SNMM250924N-HP	.0938	★	★		★	★												—							—	—	—			—
	EHU		SNMM866EHU	SNMM250924N-HU	.0938	★	★		★	★												—							—	—	—			—
	EHW		SNMM866EHW	SNMM250924N-HW	.0938	★	★		★	★												—							—	—	—			—
	EHF		SNMM866EHF SNMM868EHF	SNMM250924N-HF SNMM250932N-HF	.0938 .1250		★ ★	★ ★		★ ★	★ ★											—							—	—	—			—

Square Negative Inserts

SN Square Neg. With Hole

SN■■106●

Dimensions (inch)	Cutting Edge Length L	1.2500	Thickness S	.3750
	Inscribed Circle IC	1.2500	Hole Dia. D1	.3465



Grade Selection ☞ A2, A3

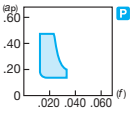
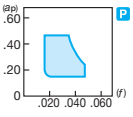
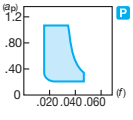
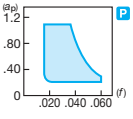
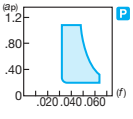
Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

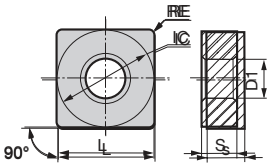
● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

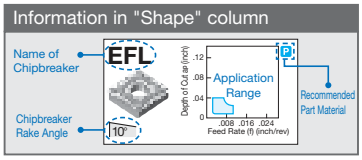
Recommended Application

		Coated Carbide																							Coated Cermet	Cermet	Carbide	
P	Steel	●	●	✖	○	◔	✲														○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✲										●						
K	Cast Iron					✲							●	●	○	◔	✖					✲	●					
N	Non-Ferrous Metal																											●
S	Exotic Alloy																	●	✖	○	◔	✲						
H	Hardened Steel																●											

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Heavy Cutting	**ENP**  0°		SNMM1066ENP	SNMM310924N-MP	.0938	★	★		★	★			★									—						—	—	—	—	—			—
	EHP  0°		SNMM1066EHP	SNMM310924N-HP	.0938	★	★		★	★												—						—	—	—	—	—			—
	EHU  -15°		SNMM1066EHU	SNMM310924N-HU	.0938	★	★		★	★												—						—	—	—	—	—			—
	EHW  -15°		SNMM1066EHW	SNMM310924N-HW	.0938	★	★		★	★												—						—	—	—	—	—			—
	EHF  -15°		SNMM1066EHF	SNMM310924N-HF	.0938		★	★		★	★											—						—	—	—	—	—			—

SN Square Neg. Without Hole





SN■■42●

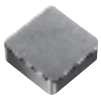
Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1250
	Inscribed Circle IC	.5000		

SUMIBORON (CBN) Inserts ☞ L65

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

Recommended Application

		AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	T1500Z	T2000Z	T3000Z	T1500A	A30	G10E	EH510	EH520	H1
		Coated Carbide																			Coated Cermet		Cermet	Carbide						
P	Steel	●	●	✱	○	◔	✱															○	●	●	◔	●				
M	Stainless Steel							●	●	✱	○	✱											●							
K	Cast Iron					✱							●	●	○	◔	✱					✱	●								
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✱	○	◔	✱								
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE
Medium Cutting		—	**SNMN422**	**SNMN120308**	.0313

SN■■43●

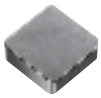
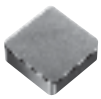
Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1875
	Inscribed Circle IC	.5000		

SUMIBORON (CBN) Inserts ☞ L65 Applicable External Holders ☞ L109

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

Recommended Application

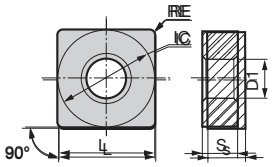
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	●	✱	○	○	◔	✱															○	●	●	◔	✱	●			
M	Stainless Steel								●	●	✱	○												●							
K	Cast Iron						✱						●	●	○	◔	✱							✱	●						
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✱											
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE
Medium Cutting		—	**SNMN432**	**SNMN120408**	.0313
			SNMN433	**SNMN120412**	.0469
			SNMN434	**SNMN120416**	.0625
		—	**SNG432**	**SNGN120408**	.0313

★ ● ▲ —

Square Negative Inserts

SN Square Neg. Without Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

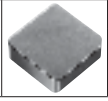
Insert Grade Selection by Part Material ☞ A10 on

SN■■53●

Dimensions (inch)	Cutting Edge Length L	.6250	Thickness S	.1875
	Inscribed Circle IC	.6250		

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	T1500Z	T2000Z	T3000Z	T1500A	A30	G10E	EH510	EH520	H1
		Coated Carbide																					Coated Cermet			Cermet	Carbide				
P	Steel	●	●	✖	○	◔	✲		●	●	✖	○	✲										○	●	●	◔	●				
M	Stainless Steel								●	●	✖	○	✲											●							
K	Cast Iron					◔	✲						●	●	○	◔	✖						✲	●							
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	◔	✲								
H	Hardened Steel																	●												

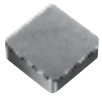
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	T1500Z	T2000Z	T3000Z	T1500A	A30	G10E	EH510	EH520	H1
Medium Cutting		—	**SNMN532**	**SNMN150408**	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			—

SN■■63●

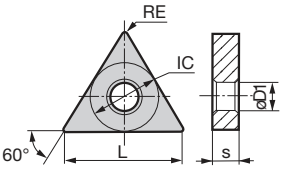
Dimensions (inch)	Cutting Edge Length L	.7500	Thickness S	.1875
	Inscribed Circle IC	.7500		

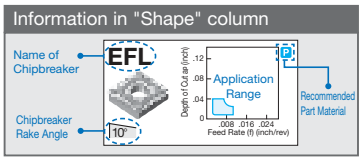
Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	T1500Z	T2000Z	T3000Z	T1500A	A30	G10E	EH510	EH520	H1
		Coated Carbide																					Coated Cermet			Cermet	Carbide				
P	Steel	●	●	✖	○	○	◔	✲													○	●	●	◔	✖	●					
M	Stainless Steel								●	●	✖	○										●									
K	Cast Iron						✲						●	●	○	◔	✖				✲	●									
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖											
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	T1500Z	T2000Z	T3000Z	T1500A	A30	G10E	EH510	EH520	H1
Medium Cutting		—	**SNMN633**	**SNMN190412**	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			—

TN Triangular Neg. With Hole





TN■■1.81.5●

Dimensions (inch)	Cutting Edge Length L	.3780	Thickness S	.0937
	Inscribed Circle IC	.2189	Hole Dia. D1	.1012

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T3000Z	Cermet: T1500A	Carbide: A30	G10E	EH510	EH520	H1
Light Cutting	(R/L)GX	(ap) .08 .04 0 .008 .016 (f) P M N	TNGG1.81.51L	TNGG090204L-GX	.0156																										★			★

*1: Photo shows left hand.

TN■■22●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.1250
	Inscribed Circle IC	.2500	Hole Dia. D1	.0890

Applicable External Holders C20

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

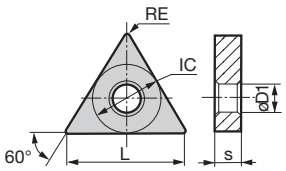
Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T3000Z	Cermet: T1500A	Carbide: A30	G10E	EH510	EH520	H1
Finishing	(R/L)Q	(ap) .08 .04 0 .008 .016 (f) P	TNPR220.5Q	TNGG110302R-FT	.0078																								★					
			TNPL220.5Q	TNGG110302L-FT	.0078																								★					
			TNPR221Q	TNGG110304R-FT	.0156																								★					
			TNPL221Q	TNGG110304L-FT	.0156																								●					
	ENK	(ap) .24 .16 .08 0 .008 .016 .024 (f) P	TNMG221ENK	TNMG110304N-SK	.0156						●											—				—				—					—
Light Cutting	(R/L)GX	(ap) .08 .04 0 .008 .016 (f) P M N	TNGG221R	TNGG110304R-GX	.0156																										★				—
			TNGG221L	TNGG110304L-GX	.0156																										★				—
Medium Cutting		—	TNGA220.5	TNGA110302	.0078																										★				—
			TNGA221	TNGA110304	.0156																										★				★
			TNGA222	TNGA110308	.0313																										★				—

*1: Photo shows left hand.

Triangular Negative Inserts

TN Triangular Neg. With Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

TN■■21.75●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.1094
	Inscribed Circle IC	.2500	Hole Dia. D1	.1087

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T3000Z	Cermet: T1500A	Carbide: A30	G10E	EH510	EH520	H1
Light Cutting	(R/L)GX		TNGG21.751L	TNGG11T204L-GX	.0156																													★

*1: Photo shows left hand.

TN■■2.52●

Dimensions (inch)	Cutting Edge Length L	.5394	Thickness S	.1250
	Inscribed Circle IC	.3126	Hole Dia. D1	.1240

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC805P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T3000Z	Cermet: T1500A	Carbide: A30	G10E	EH510	EH520	H1
Light Cutting	(R/L)GX		TNGG2.521R	TNGG130304R-GX	.0156																										★				
			TNGG2.521L	TNGG130304L-GX	.0156																										★				★
			TNGG2.522R	TNGG130308R-GX	.0313																										★				
			TNGG2.522L	TNGG130308L-GX	.0313																										★				★

*1: Photo shows left hand.

TN■■32●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

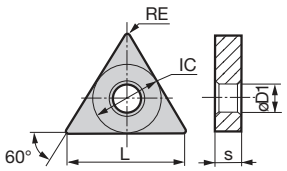
Applicable External Holders ☞ C20

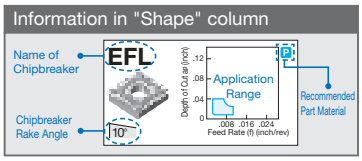
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Light Cutting	(R/L)T		TNPR320.5T	TNGG160302R-ST	.0078																										★			
			TNPL320.5T	TNGG160302L-ST	.0078																										★			
			TNPR321T	TNGG160304R-ST	.0156																										●			
			TNPL321T	TNGG160304L-ST	.0156																										●			
			TNPR322T	TNGG160308R-ST	.0313																										●			
			TNPL322T	TNGG160308L-ST	.0313																										★			
Light to Medium Cutting	ESX		TNMG321ESX	TNMG160304N-SX	.0156	★	●	●		●	●											—								—				
			TNMG322ESX	TNMG160308N-SX	.0313	★	●	●		●	●											—								—				

*1: Photo shows left hand.

Triangular Negative Inserts

TN Triangular Neg. With Hole





TN■■32●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

Applicable External Holders C20

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																					Coated Cermet		Cermet	Carbide	
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	ESU		TNMG321ESU	TNMG160304N-SU	.0156		●	●		▲	●											—						—	—	—	—			—
			TNMG322ESU	TNMG160308N-SU	.0313		●	●		●	●											—						—	—	—	—			—
	ENK		TNMG322ENK	TNMG160308N-SK	.0313					●												—						—	—	—	—			—
Medium Cutting	EUX		TNMG321EUX	TNMG160304N-UX	.0156		●			▲												—						—	—	—	—			—
			TNMG322EUX	TNMG160308N-UX	.0313		●			●												—						—	—	—	—			—
	ENG		TNMG321ENG	TNMG160304N-UG	.0156		●			●												—						—	—	—	—			—
			TNMG322ENG	TNMG160308N-UG	.0313		●	●		●	●											—						—	—	—	—			—
		—	TNMA322	TNMA160308	.0313												★	●		▲		—						▲	—	—	—			—
		—	TNGA321	TNGA160304	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	ENZ		TNMG322ENZ	TNMG160308N-UZ	.0313			●		▲												—						—	—	—	—			—
			TNMG323ENZ	TNMG160312N-UZ	.0469			●		●												—						—	—	—	—			—

TN■■33●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

SUMIBORON (CBN) Inserts L68
SUMIDIA (PCD) Inserts M18
SUMIDIA (PCD) Binderless Inserts M27
Ceramic Inserts B132
Applicable External Holders C20
Applicable Internal Holders E23

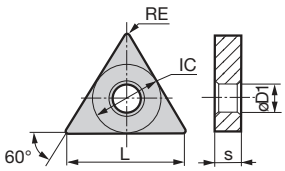
● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																					Coated Cermet		Cermet	Carbide	
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Fine Cutting	EFB		TNMG330.5EFB	TNMG160402N-FB	.0078								★								—						—	★		★	★			
			TNMG331EFB	TNMG160404N-FB	.0156								★								—						—	★		★	★			
			TNMG332EFB	TNMG160408N-FB	.0313								★								—						—	★		★	★			
	EFA		TNMG330.5EFA	TNMG160402N-FA	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	
			TNMG331EFA	TNMG160404N-FA	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	★	●	—	—	
			TNMG332EFA	TNMG160408N-FA	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	★	●	—	—	

Triangular Negative Inserts

TN Triangular Neg. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

Recommended Application																														
P	Steel	●	●	✱	○	◔	✱															○	●	●	◔	●	●			
M	Stainless Steel							●	●	✱	○	✱											●							
K	Cast Iron					✱							●	●	○	◔	✱						✱	●						
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✱	○	◔	✱								
H	Hardened Steel																●													

TN■■33●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

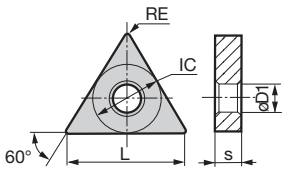
SUMIDIA (PCD) Inserts M18
SUMIBORON (CBN) Inserts L68
SUMIDIA (PCD) Binderless Inserts M27
Ceramic Inserts B132
Applicable External Holders C20
Applicable Internal Holders E23

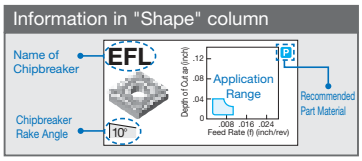
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T2500Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Fine Cutting	**EFL** 10°	(ap) .08 .04 0 .008 .016 (f) P	TNMG331EFL	TNMG160404N-FL	.0156		●			●												—						—	●	▲	★	★			
			TNMG332EFL	TNMG160408N-FL	.0313		●			●												—						—	★	▲	★	★			
	EFE 20°	(ap) .08 .04 0 .008 .016 (f) P	TNMG330.5EFE	TNMG160402N-FE	.0078	★	★	●	★		★		★	★								—						—	★		★	★			
			TNMG331EFE	TNMG160404N-FE	.0156	★	★	●	★		★		★	★								—						—	★		★	★			
			TNMG332EFE	TNMG160408N-FE	.0313	★	★	●	★		★		★	★								—						—	★		★	★			
			TNMG333EFE	TNMG160412N-FE	.0469	★	★	●	★		★		★	★								—						—	★		★	★			
	ELU 10°	(ap) .08 .04 0 .008 .016 (f) P	TNMG330.5ELU	TNMG160402N-LU	.0078								★									—						—	★		★	★			
			TNMG331ELU	TNMG160404N-LU	.0156	●	●	★	●	●	★		★									—					▲	—	●	▲	★	★			
			TNMG332ELU	TNMG160408N-LU	.0313	●	●	★	●	●	★		★									—					▲	—	●	▲	●	★			
			TNMG333ELU	TNMG160412N-LU	.0469	★	●	★	●	●	★		★									—					▲	—	★	▲	★	★			
	ESU 13°	(ap) .08 .04 0 .008 .016 (f) P M S	TNMG330.5ESU	TNMG160402N-SU	.0078							★	★	★		●						—	★	●			★		—	★		★	★			
			TNMG331ESU	TNMG160404N-SU	.0156	●	●	★	●	●	●	★	●	★		●						—	●	●			★	▲	—	●	▲	★	●			
			TNMG332ESU	TNMG160408N-SU	.0313	●	●	★	●	●	●	★	●	●		★						—	●	●	●	●	★	▲	—	●	▲	★	●			
			TNMG333ESU	TNMG160412N-SU	.0469	●	●	★	★	●	●	★	●	★								—	●	★	●	●		▲	—	●	▲	★	●			
	ESU 13°	(ap) .08 .04 0 .008 .016 (f) P	TNGG330.5ESU	TNGG160402N-SU	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	★	★		—	—	★		★	●	—	—	—
			TNGG331ESU	TNGG160404N-SU	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●				—	—	★		★	●	—	—	—
			TNGG332ESU	TNGG160408N-SU	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●				—	—	★		★	●	—	—	—
	ESE 5°	(ap) .24 .16 .08 0 .008 .016 .024 (f) P	TNMG331ESE	TNMG160404N-SE	.0156	★	●	★	●	●	★											—						—	★			●				
			TNMG332ESE	TNMG160408N-SE	.0313	●	●	★	●	●	●											—						—	★			●				
			TNMG333ESE	TNMG160412N-SE	.0469	●	★	★	●	●	★											—						—	—	—	—	—				—
	EEF 20°	(ap) .08 .04 0 .008 .016 (f) M S	TNMG331EEF	TNMG160404N-EF	.0156	★	★	●				●	●	●		●						—	●	●	●	●			—	—	—	—	—	●	●	—
			TNMG332EEF	TNMG160408N-EF	.0313	★	★	●				●	●	●		●						—	★	★	●	●			—	—	—	—	—	●	●	—
Finishing	**(R/L)FY** *1 15°	(ap) .08 .04 0 .008 .016 (f) P	TNPR330FFY	TNGG160401R-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
			TNPL330FFY	TNGG160401L-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
			TNPR330.5FFY	TNGG160402R-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	▲		★	—	—	—
			TNPL330.5FFY	TNGG160402L-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				★	★	▲		★	—	—	—
			TNPR331FFY	TNGG160404R-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	★	●		★	—	—	—
			TNPL331FFY	TNGG160404L-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	★	★	★		★	—	—	—
			TNPR332FFY	TNGG160408R-FY	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—
			TNPL332FFY	TNGG160408L-FY	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	—	—
			TNPR333FFY	TNGG160412R-FY	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNPL333FFY	TNGG160412L-FY	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
	(R/L)FX 14°	(ap) .08 .04 0 .008 .016 (f) P	TNPR330.5FFX	TNGG160402R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●					—	★	★	▲		★	—	—	—
			TNPL330.5FFX	TNGG160402L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●					—	★	★			★	—	—	—
			TNPR331FFX	TNGG160404R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●			★		—	★	★	★		★	—	—	—
			TNPL331FFX	TNGG160404L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●		★	★		—	★	★	★		★	—	—	—
			TNPR332FFX	TNGG160408R-FX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—
			TNPL332FFX	TNGG160408L-FX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—
	ENK 8°	(ap) .24 .16 .08 0 .008 .016 .024 (f) P	TNMG331ENK	TNMG160404N-SK	.0156					●												—						—	—	—	—	—				—
			TNMG332ENK	TNMG160408N-SK	.0313					●												—						—	—	—	—	—				—

*1: Photo shows left hand.

Triangular Negative Inserts

TN Triangular Neg. With Hole





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application																														
P	Steel	●	●	✱	○	◔	✲															○	●	●	◔	●	●			
M	Stainless Steel							●	●	✱	○	✲											●							
K	Cast Iron					✲							●	●	○	◔	✱					✲	●							
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✱	○	◔	✲								
H	Hardened Steel																●													

TN■■33●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

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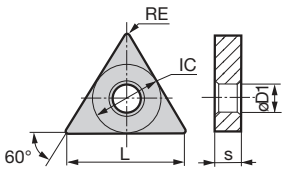
Applicable External Holders C20
Applicable Internal Holders E23

					Nose Radius	Coated Carbide																		Coated Cermet		Cermet	Carbide		
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Light Cutting	(R/L)T *1 0°		TNPR330.5T	TNGG160402R-ST	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNPL330.5T	TNGG160402L-ST	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNPR331T	TNGG160404R-ST	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNPL331T	TNGG160404L-ST	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNPR332T	TNGG160408R-ST	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNPL332T	TNGG160408L-ST	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNPR333T	TNGG160412R-ST	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNPL333T	TNGG160412L-ST	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
	(R/L)GX 15° *1		TNGX331R	TNGG160404R-GX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TNGX331L	TNGG160404L-GX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TNGX332R	TNGG160408R-GX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TNGX332L	TNGG160408L-GX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
Light to Medium Cutting	ESX 3°		TNMG331ESX	TNMG160404N-SX	.0156	●	★	●	●	●	●											—					▲	—	●	▲	★	★			
			TNMG332ESX	TNMG160408N-SX	.0313	●	●	●	●	●	●											—					▲	—	★	▲	★	★			
	EEX 16°		TNMG331EEX	TNMG160404N-EX	.0156							●	●	★	▲	●						—	●	●	●	●		—	—	—	—	—			
			TNMG332EEX	TNMG160408N-EX	.0313							●	●	●	▲	●						—	●	●	●	●	★	—	—	—	—	—		★	
			TNMG333EEX	TNMG160412N-EX	.0469							●	●	★	★	●						—	★	●	★		★	—	—	—	—	—			
	EUP 10°		TNMG331EUP	TNMG160404N-UP	.0156		●	●		●	●	★	★	●								—	●	●	●		●	—	—	—	—	—			
			TNMG332EUP	TNMG160408N-UP	.0313		●	●		●	●	★	●	★		●						—	●	●			★	—	—	—	—	—			
			TNMG333EUP	TNMG160412N-UP	.0469					●	●	★	●	★		●						—	●	★			★	—	—	—	—	—			
Medium Cutting	EGU 7°		TNMG331EGU	TNMG160404N-GU	.0156	★	●	●	●	●	●	●	●	★	★	●	●	●				—	★	●			★	▲	—	★			★			
			TNMG332EGU	TNMG160408N-GU	.0313	●	●	●	●	●	●	●	●	★	▲	●	●	●				—	★	●			★	▲	—	★			●			
			TNMG333EGU	TNMG160412N-GU	.0469	●	●	●	●	●	●	●	●	★	★	★	●	★				—	★	★			★	▲	—							
			TNMG334EGU	TNMG160416N-GU	.0625	★	★	★		★	★						●	★				—							—							
	EGE 3°		TNMG331EGE	TNMG160404N-GE	.0156	★	●	●	●	●	●											—						—	—	—	—	—			
			TNMG332EGE	TNMG160408N-GE	.0313	●	●	★	●	●	●											—						—	—	—	—	—			
			TNMG333EGE	TNMG160412N-GE	.0469	●	●	★	●	●	●											—					▲	—	—	—	—	—			
	EUX 0°		TNMG331EUX	TNMG160404N-UX	.0156	★	●	★	★	●	●											—						—	—	—	—	—			
			TNMG332EUX	TNMG160408N-UX	.0313	●	●	●	●	●	●											—					▲	—	—	—	—	—			
			TNMG333EUX	TNMG160412N-UX	.0469	★	●	★	★	●	★											—						—	—	—	—	—			
	ENG 4°		TNMG331ENG	TNMG160404N-UG	.0156		★	★		★	★											—						—	—	—	—	—			
			TNMG332ENG	TNMG160408N-UG	.0313		●	●		●	●											—					▲	—	—	—	—	—			
			TNMG333ENG	TNMG160412N-UG	.0469		★	★		★	★											—					▲	—	—	—	—	—			
			TNMG334ENG	TNMG160416N-UG	.0625		★	★		★	★											—						—	—	—	—	—			
	EEG 0°		TNMG331EEG	TNMG160404N-EG	.0156	★	●	●				●	★	★								—	★	★					—	—	—	—	—			
			TNMG332EEG	TNMG160408N-EG	.0313	★	●	●				●	●	●		★						—	●	●	●	●			—	—	—	—	—	●	●	
			TNMG333EEG	TNMG160412N-EG	.0469	★	★	●				●	●	●		●						—	★	●	●	●			—	—	—	—	—	●	★	
	(R/L)M 0°		TNMR331M	TNMG160404R-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	
			TNML331M	TNMG160404L-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	
			TNMR332M	TNMG160408R-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	
			TNML332M	TNMG160408L-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	—	

Triangular Negative Inserts

TN Triangular Neg. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application																												
P	Steel	●	●	✱	○	◔	✲														○	●	●	◔	●	●		
M	Stainless Steel							●	●	✱	○	✲										●						
K	Cast Iron					✲							●	●	○	◔	✱						✲	●				
N	Non-Ferrous Metal																											●
S	Exotic Alloy																	●	✱	○	◔	✲						
H	Hardened Steel															●												

TN■■33●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

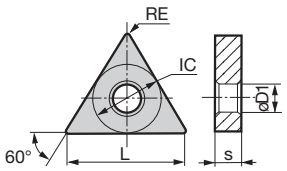
SUMIBORON (CBN) Inserts L68 | SUMIDIA (PCD) Inserts M18 | Ceramic Inserts B132 | SUMIDIA (PCD) Binderless Inserts M27

Applicable External Holders C20 | Applicable Internal Holders E23

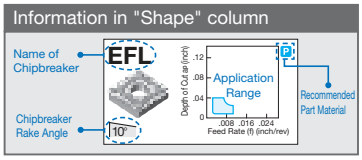
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T2000Z	T1500A	Carbide: EH510	EH520	H1
Medium Cutting	(R/L)M	P	TNPR330.5M	TNGG160402R-UM	.0078																								★	●	★	★			
			TNPL330.5M	TNGG160402L-UM	.0078																								★		★	★			
			TNPR331M	TNGG160404R-UM	.0156																								★	▲	★	●			★
			TNPL331M	TNGG160404L-UM	.0156																								★		★	●			★
			TNPR332M	TNGG160408R-UM	.0313																								★	▲	★	●			★
			TNPL332M	TNGG160408L-UM	.0313																								★	★	★	●			★
			TNPR333M	TNGG160412R-UM	.0469																											★			
			TNPL333M	TNGG160412L-UM	.0469																											★			
		—	TNMA331	TNMA160404	.0156												★	★	★	▲	●		★	★				▲							
			TNMA332	TNMA160408	.0313												●	●	▲	▲	●		★	★				▲							★
			TNMA333	TNMA160412	.0469												●	★	★	▲	★							▲							
			TNMA334	TNMA160416	.0625												★	★	▲	▲	●							▲							
			TNMA335	TNMA160420	.0781												★	★	★	★	★							▲							
		—	TNGA330.5	TNGA160402	.0078																	★													
			TNGA331	TNGA160404	.0156																	★	★	★											★
			TNGA332	TNGA160408	.0313																	★										★			★
			TNGA333	TNGA160412	.0469																														
	EMU	P M S	TNMG332EMU	TNMG160408N-MU	.0313	●	●	●	●	●	●		●	●		●						—	●	●	●	●	★	▲							
			TNMG333EMU	TNMG160412N-MU	.0469	●	★	●	●	●	●		●	●		★						—	★	★	★	★	★								
	EEM	M S	TNMG332EEM	TNMG160408N-EM	.0313	★	●	●				●	●	●								—	★	★											
			TNMG333EEM	TNMG160412N-EM	.0469	★	★	●				●	●	★								—	★	★											
	EME	P	TNMG332EME	TNMG160408N-ME	.0313	★	●	★	★	●	●						●	●				—													
			TNMG333EME	TNMG160412N-ME	.0469	★	★	★	★	●	●						●	★				—													
Medium to Roughing	EMX	P	TNMG332EMX	TNMG160408N-MX	.0313		★	●		●	●											—													
			TNMG333EMX	TNMG160412N-MX	.0469		★	★		●	●											—													
	ENZ	K	TNMG331ENZ	TNMG160404N-UZ	.0156		★			★							★	★	★	★	★	—													
			TNMG332ENZ	TNMG160408N-UZ	.0313		●	●		●	●						★	●	▲	▲	●	—						▲							
			TNMG333ENZ	TNMG160412N-UZ	.0469		★	★		●	●						★	●	▲	▲	●	—						▲							
			TNMG334ENZ	TNMG160416N-UZ	.0625		★			★							★	★	★	★	★	—													
			TNMG335ENZ	TNMG160420N-UZ	.0781		★			★							★	★	★	★	★	—													
	EGZ	K	TNMG331EGZ	TNMG160404N-GZ	.0156					★							●	★	▲	▲	★	—													
			TNMG332EGZ	TNMG160408N-GZ	.0313					★							●	●	▲	▲	●	—													
			TNMG333EGZ	TNMG160412N-GZ	.0469					★							★	●	▲	▲	★	—													
	(R/L)HM	P M K	TNMR331EHM	TNMG160404R-HM	.0156	★	★	★	★	★	★	★	★	★								—	★	★											
			TNML331EHM	TNMG160404L-HM	.0156	★	★	★	★	★	★	★	★	★								—	★	★											
			TNMR332EHM	TNMG160408R-HM	.0313	★	★	★	★	★	★	★	★	★								—	★	★											
			TNML332EHM	TNMG160408L-HM	.0313	★	★	★	★	★	★	★	★	★								—	★	★											

Triangular Negative Inserts

TN Triangular Neg. With Hole



Information in "Shape" column



● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

TN■■33●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L68 | SUMIDIA (PCD) Inserts M18 | Ceramic Inserts B132 | SUMIDIA (PCD) Binderless Inserts M27

Applicable External Holders C20 | Applicable Internal Holders E23

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Heavy Cutting	**ENP** 0°	P	TNMM331ENP	TNMM160404N-MP	.0156		★			★												—							—	—	—			—
			TNMM332ENP	TNMM160408N-MP	.0313		★	●	★	★	●											—							—	—	—			—
			TNMM333ENP	TNMM160412N-MP	.0469		★	★	★	★	★											—							—	—	—			—
	EHP 0°	P	TNMM332EHP	TNMM160408N-HP	.0313		★	★		★	★											—							—	—	—			—
			TNMM333EHP	TNMM160412N-HP	.0469		★	★		★	★											—							—	—	—			—
For Aluminium	**(R/L)AX** 30°	N	TNGG330.5RAX	TNGG160402R-AX	.0078																	—							—	—	—			★
			TNGG330.5LAX	TNGG160402L-AX	.0078																	—							—	—	—			★
			TNGG331RAX	TNGG160404R-AX	.0156																	—							—	—	—			★
			TNGG331LAX	TNGG160404L-AX	.0156																	—							—	—	—			★
			TNGG332RAX	TNGG160408R-AX	.0313																	—							—	—	—			★
			TNGG332LAX	TNGG160408L-AX	.0313																	—							—	—	—			★
Light Cutting of Hardened Steel	**EGH** 3°	H	TNGG330.5EGH	TNGG160402N-GH	.0078																	★							—	—	—			—
			TNGG331EGH	TNGG160404N-GH	.0156																	★							—	—	—			—
			TNGG332EGH	TNGG160408N-GH	.0313																	★							—	—	—			—

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

TN■■43●

Dimensions (inch)	Cutting Edge Length L	.8661	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L73 | Ceramic Inserts B132

Applicable External Holders C20 | Applicable Internal Holders E23

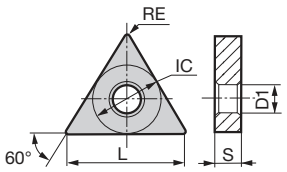
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T2500Z	T1500A	Carbide: EH510	EH520	Uncoated: G10E
Finishing	**ESU** 13°	P M S	TNMG431ESU	TNMG220404N-SU	.0156																		●	●	●			—	●	▲					
			TNMG432ESU	TNMG220408N-SU	.0313																		●	●	●			—	●	▲		●			
			TNMG433ESU	TNMG220412N-SU	.0469																							—		▲					
	ESE 5°	P	TNMG431ESE	TNMG220404N-SE	.0156	●	★	★	●	★	★																	—								
			TNMG432ESE	TNMG220408N-SE	.0313	●	★	●	●	★	★																	—								
			TNMG433ESE	TNMG220412N-SE	.0469	●	★	●	●	★	★																	—								
	ENK 8°	P	TNMG431ENK	TNMG220404N-SK	.0156					●																		—								
Light Cutting	**FNJ** 0°	P	TNMG431FNJ	TNMG220404N-UJ	.0156																							—								●

Triangular Negative Inserts

TN Triangular Neg. With Hole

TN■■43●

Dimensions (inch)	Cutting Edge Length L	.8661	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✪ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide		
P	Steel	●	●	✖	○	◔	✪														○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✪										●						
K	Cast Iron					✪							●	●	○	◔	✖				✪	●						
N	Non-Ferrous Metal																											●
S	Exotic Alloy																	●	✖	○	◔	✪						
H	Hardened Steel																●											

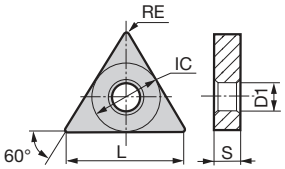
SUMIBORON (CBN) Inserts L73 | Ceramic Inserts B132
Applicable External Holders C20 | Applicable Internal Holders E23

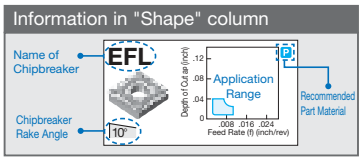
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light Cutting	(R/L)GX	P M N	TNGX432L	TNGG220408L-GX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Light to Medium Cutting	ESX	P	TNMG431ESX	TNMG220404N-SX	.0156	●	●	●	●	●	●											—					▲	—	—	—	—			—
			TNMG432ESX	TNMG220408N-SX	.0313	●	●	●	●	●	●											—					▲	—	—	—	—			—
			TNMG433ESX	TNMG220412N-SX	.0469	●	●	★		●	★											—					▲	—	—	—	—			—
	EUP	M S	TNMG432EUP	TNMG220408N-UP	.0313		●	●		●	●											—	●	●		★			—	—	—			—
			TNMG433EUP	TNMG220412N-UP	.0469			●		★	●											—							—	—	—			—
Medium Cutting	EGU	P M	TNMG431EGU	TNMG220404N-GU	.0156		●			●							●	●				—							—	—	—			—
			TNMG432EGU	TNMG220408N-GU	.0313	●	●	●	●	●	●		●			●	●	●				—					▲		—	—	—			—
			TNMG433EGU	TNMG220412N-GU	.0469	●	●	★	●	●	●		●			●	●	●				—					▲		—	—	—			—
	EGE	P	TNMG432EGE	TNMG220408N-GE	.0313	●	●	●	●	●	●											—							—	—	—			—
			TNMG433EGE	TNMG220412N-GE	.0469	★	●	●	★	★	★											—							—	—	—			—
	EUX	P K	TNMG432EUX	TNMG220408N-UX	.0313	●	●	●	★	●	●											—					▲		—	—	—			—
			TNMG433EUX	TNMG220412N-UX	.0469	●	★	●	★	●	●											—					▲		—	—	—			—
	ENG	P M	TNMG432ENG	TNMG220408N-UG	.0313		●	●		●	●											—					▲		—	—	—			—
			TNMG433ENG	TNMG220412N-UG	.0469	●	●	●		●	★											—					▲		—	—	—			—
			TNMG434ENG	TNMG220416N-UG	.0625			●			●											—							—	—	—			—
	(R/L)M	P M K	TNMR431M	TNMG220404R-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNML431M	TNMG220404L-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNMR432M	TNMG220408R-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TNML432M	TNMG220408L-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
	(R/L)M	P	TNPR431M	TNGG220404R-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—
			TNPL431M	TNGG220404L-UM	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—
			TNPR432M	TNGG220408R-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—
			TNPL432M	TNGG220408L-UM	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—
	—	—	TNMA431	TNMA220404	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TNMA432	TNMA220408	.0313												★	●	★	▲	●						▲	—	—	—			—
			TNMA433	TNMA220412	.0469												●	●	▲	▲	●						▲	—	—	—			—
			TNMA434	TNMA220416	.0625												●	★	▲	▲	▲						▲	—	—	—			—
			TNMA438	TNMA220432	.1250																						▲	—	—	—			—

*1: Photo shows left hand.

Triangular Negative Inserts

TN Triangular Neg. With Hole





TN■■43●

Dimensions (inch)	Cutting Edge Length L	.8661	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended

Recommended Application

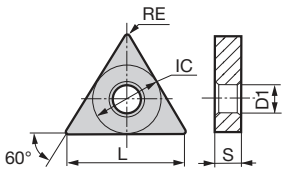
		Coated Carbide																				Coated Cermet	Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	●	○	◔	◔																							
M	Stainless Steel							●	●	●	○	◔													●	●	◔	●		
K	Cast Iron					◔							●	●	○	◔	●							◔	●					
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	●	○	◔	◔								
H	Hardened Steel																	●												

SUMIBORON (CBN) Inserts L73 | Ceramic Inserts B132
Applicable External Holders C20 | Applicable Internal Holders E23

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium Cutting		—	TNGA431	TNGA220404	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TNGA432	TNGA220408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
Medium to Roughing	EMU	4°	TNMG432EMU	TNMG220408N-MU	.0313	●	●	●	●	●	●		●			●							●	●	●	●	▲							—
			TNMG433EMU	TNMG220412N-MU	.0469	●	●	●	★	●	●		●											●	●	●	▲							—
			TNMG434EMU	TNMG220416N-MU	.0625	●	●	●	●	●	●																▲							—
	EME	4°	TNMG432EME	TNMG220408N-ME	.0313	●	●	●	●	●	●						●	●																—
			TNMG433EME	TNMG220412N-ME	.0469	●	●	●	●	●	●						●	●																—
			TNMG434EME	TNMG220416N-ME	.0625	★	●	●	●	●	●						●	●																—
	EMX	I-15°	TNMG432EMX	TNMG220408N-MX	.0313		●	●		●	●																							—
			TNMG433EMX	TNMG220412N-MX	.0469		★	●		●	●																							—
	ENZ	4°	TNMG432ENZ	TNMG220408N-UZ	.0313		●	●		●	●						●	●	▲	▲	●						▲							—
			TNMG433ENZ	TNMG220412N-UZ	.0469		★	●		●	●						★	★	★	▲	●						▲							—
			TNMG434ENZ	TNMG220416N-UZ	.0625		●	●		●	●						★	★	★	★	●													—
	EGZ	0°	TNMG432EGZ	TNMG220408N-GZ	.0313												●	●	▲	★	★													—
			TNMG433EGZ	TNMG220412N-GZ	.0469												★	●	★	★	★													—
			TNMG434EGZ	TNMG220416N-GZ	.0625												★	★	★	★	●													—
	(R/L)HM	15°	TNMR431EHM	TNMG220404R-HM	.0156	★	★	★	★	★	★																							—
			TNML431EHM	TNMG220404L-HM	.0156	★	★	★	★	★	★																							—
			TNMR432EHM	TNMG220408R-HM	.0313	★	★	★	★	★	★																							—
			TNML432EHM	TNMG220408L-HM	.0313	★	★	★	★	★	★																							—
Heavy Cutting	ENP	0°	TNMM432ENP	TNMM220408N-MP	.0313		★	★	★	★	★																							—
			TNMM433ENP	TNMM220412N-MP	.0469		★	★	★	★	★																							—
			TNMM434ENP	TNMM220416N-MP	.0625		★	★	★	★	★																							—
	EHG	0°	TNMM432EHG	TNMM220408N-HG	.0313		●	●	★	●	★																							—
			TNMM433EHG	TNMM220412N-HG	.0469		●	★	★	●	●																							—
			TNMM434EHG	TNMM220416N-HG	.0625		●	★	★	●	★																							—
	EHP	0°	TNMM432EHP	TNMM220408N-HP	.0313		★	★		★	★																							—
			TNMM433EHP	TNMM220412N-HP	.0469		★	★		★	★																							—
			TNMM434EHP	TNMM220416N-HP	.0625		★			★																								—

Triangular Negative Inserts

TN Triangular Neg. With Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

TN■■44●

Dimensions (inch)	Cutting Edge Length L	.8661	Thickness S	.2500
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	ENZ	(ap) .24 .16 .08 0 .008 .016 .024 (f) K; 4°	TNMG444ENZ	TNMG220616N-UZ	.0625			★			▲											—						—	—	—	—		—

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

TN■■54●

Dimensions (inch)	Cutting Edge Length L	1.0827	Thickness S	.2500
	Inscribed Circle IC	.6250	Hole Dia. D1	.2500

Applicable External Holders C20
Ceramic Inserts B132

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium Cutting	ENG	(ap) .24 .16 .08 0 .008 .016 .024 (f) P M; 4°	TNMG542ENG	TNMG270608N-UG	.0313		●	●		●	●											—						—	—	—	—		—
			TNMG543ENG	TNMG270612N-UG	.0469		●	●		▲	●											—						—	—	—	—		—
			TNMG544ENG	TNMG270616N-UG	.0625		●	●		●	●											—						—	—	—	—		—
		—	TNMA543	TNMA270612	.0469												●	●	▲	▲		—						▲	—	—	—	—		—
			TNMA544	TNMA270616	.0625												●		▲			—							—	—	—	—		—
Medium to Roughing	EMU	(ap) .24 .16 .08 0 .008 .016 .024 (f) P M S; 4°	TNMG543EMU	TNMG270612N-MU	.0469	●	●	●	●	●	●											—						▲	—	—	—	—		—
			TNMG544EMU	TNMG270616N-MU	.0625	●	●	●	●	●	●											—						▲	—	—	—	—		—
	ENZ	(ap) .24 .16 .08 0 .008 .016 .024 (f) K; 4°	TNMG542ENZ	TNMG270608N-UZ	.0313		●	●		●	●											—						—	—	—	—	—		—
			TNMG543ENZ	TNMG270612N-UZ	.0469		●	●		●	●											—						▲	—	—	—	—		—
			TNMG544ENZ	TNMG270616N-UZ	.0625		●	●		●	●											—						—	—	—	—	—		—
			TNMG548ENZ	TNMG270632N-UZ	.1250			●			●											—						—	—	—	—	—		—
Rough to Heavy Cutting	ENP	(ap) .40 .20 0 .020 .040 (f) P M; 0°	TNMM543ENP	TNMM270612N-MP	.0469		★			★												—						—	—	—	—	—		—
			TNMM544ENP	TNMM270616N-MP	.0625		★			★												—						—	—	—	—	—		—
Heavy Cutting	EHP	(ap) .40 .20 0 .020 .040 (f) P; 0°	TNMM543EHP	TNMM270612N-HP	.0469		★	★		★	★											—						—	—	—	—	—		—
			TNMM544EHP	TNMM270616N-HP	.0625		★	★		★	★											—						—	—	—	—	—		—

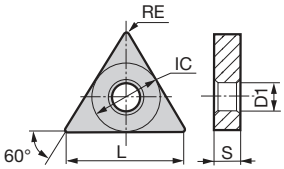
Triangular Negative Inserts

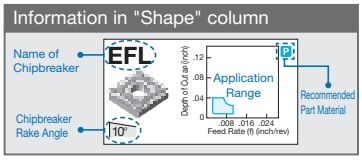
TN Triangular Neg. With Hole

TN■■66●

Dimensions (inch)	Cutting Edge Length L	1.2992	Thickness S	.3750
	Inscribed Circle IC	.7500	Hole Dia. D1	.3122

Applicable External Holders ☞ C21





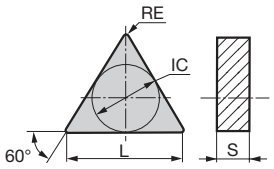
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet	Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	◉	✖	○	↻	✲																			◉	↻	◉			
M	Stainless Steel							●	◉	✖	○	✲													◉					
K	Cast Iron					✲							●	◉	○	↻	✖							✲	◉					
N	Non-Ferrous Metal																													◉
S	Exotic Alloy																	◉	✖	○	↻	✲								
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	**EEM** 0°	ap .24 .16 .08 0 .008 .016 .024 f — M S	**TNMG666EEM**	**TNMG330924N-EM**	.0938	●	★	●					●	●								—	★	●		●		—	—	—	—			—
Medium Cutting	**ENG** 4°	ap .24 .16 .08 0 .008 .016 .024 f — P M	**TNMG666ENG**	**TNMG330924N-UG**	.0938		●	●		●	●											—							—	—	—	—			—
Medium to Roughing	**ENZ** 4°	ap .24 .16 .08 0 .008 .016 .024 f — K	**TNMG666ENZ**	**TNMG330924N-UZ**	.0938		●	●	●	●	●						●		▲			—							—	—	—	—			—

Triangular Negative Inserts

TN Triangular Neg. Without Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

TN■■32●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1250
	Inscribed Circle IC	.3750		

Ceramic Inserts B132

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	G10E
						Coated Carbide																								Coated Cermet		Cermet	Carbide		Uncoated Carbide
Medium Cutting		—	TNG322	TNGN160308	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●

TN■■33●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1875
	Inscribed Circle IC	.3750		

SUMIBORON (CBN) Inserts L74

Ceramic Inserts B132

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Medium Cutting		—	TNMN331	TNMN160404	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TNMN332	TNMN160408	.0313	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TNMN333	TNMN160412	.0469	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TNMN334	TNMN160416	.0625	—	—	—	—	—	—	—	—	—	—	—	★	★	★	★	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	TNG332	TNGN160408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TN■■43●

Dimensions (inch)	Cutting Edge Length L	.8661	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	

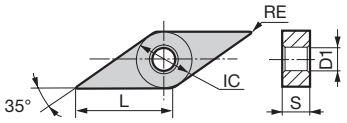
Ceramic Inserts B132

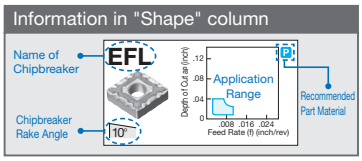
Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Medium Cutting		—	TNMN432	TNMN220408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲	—	—	—	—	—	—	—

VN 35° Diamond Neg. With Hole





VN■■33●

Dimensions (inch)	Cutting Edge Length L	.6535	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

Recommended Application

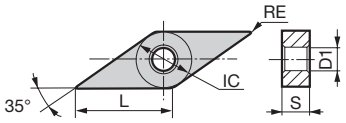
		Coated Carbide																			Coated Cermet		Cermet	Carbide	
P	Steel	●	●	✱	○	◔	✱												○	●	●	◔	◔	●		
M	Stainless Steel							●	●	✱	○	✱								●						
K	Cast Iron					✱							●	●	○	◔	✱			✱	●					
N	Non-Ferrous Metal																									●
S	Exotic Alloy																	●	✱	○	◔	✱				
H	Hardened Steel															●										

SUMIBORON (CBN) Inserts L92 | SUMIDIA (PCD) Inserts M24 | SUMIDIA (PCD) Binderless Inserts M27
Applicable External Holders C29 | Applicable Internal Holders E26 | Ceramic Inserts B132

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Fine Cutting	**EFB** 27°		VNMG331EFB	VNMG160404N-FB	.0156								★																★			★			
			VNMG332EFB	VNMG160408N-FB	.0313								★																★			★			
	EFA 20°		VNMG331EFA	VNMG160404N-FA	.0156																								●	▲		●			
			VNMG332EFA	VNMG160408N-FA	.0313																								●	▲		●			
	EFL 10°		VNMG331EFL	VNMG160404N-FL	.0156		●		●	●																			●	▲		★			
			VNMG332EFL	VNMG160408N-FL	.0313		●		●	●																			●	▲		★			
	EFE 20°		VNMG330.5EFE	VNMG160402N-FE	.0078	★	★	★	★		★		★	★															★			★			
			VNMG331EFE	VNMG160404N-FE	.0156	★	★	★	★		★		★	★															★			★			
			VNMG332EFE	VNMG160408N-FE	.0313	★	★	★	★		★		★	★															★			★			
			VNMG333EFE	VNMG160412N-FE	.0469	★	★	★	★		★		★	★															★			★			
	ELU 10°		VNMG330.5ELU	VNMG160402N-LU	.0078								★																★			★			
			VNMG331ELU	VNMG160404N-LU	.0156	●	●		●	●			★														▲		●	▲		●			
			VNMG332ELU	VNMG160408N-LU	.0313	●	●		●	●			★														▲		●	▲		●			
			VNMG333ELU	VNMG160412N-LU	.0469	●			●																											
	ESU 13°		VNMG330.5ESU	VNMG160402N-SU	.0078								★	★									●	●					★		★	★			
			VNMG331ESU	VNMG160404N-SU	.0156	●	●	●	●	●	●	★	●	●		●							●	●	●	●	★	▲		●	▲		●	●		
			VNMG332ESU	VNMG160408N-SU	.0313	●	●	●	●	●	●	★	●	●									●	●				▲		●	▲		●		●	
	ESU(J) 13°	ESUJ depth of cut can be increased to .200" in Aluminum	VNGG330ESU	VNGG160401N-SU	.0039																			●											
			VNGG330ESUJ	VNGG160401N-SUJ	.0039																														●
			VNGG330.5ESU	VNGG160402N-SU	.0078																			●		●				●	▲		●		
			VNGG330.5ESUJ	VNGG160402N-SUJ	.0078																														●
			VNGG331ESU	VNGG160404N-SU	.0156																			●		●				●	▲		●		
			VNGG331ESUJ	VNGG160404N-SUJ	.0156																														●
			VNGG332ESU	VNGG160408N-SU	.0313																			●		●				●	▲		●		
			VNGG332ESUJ	VNGG160408N-SUJ	.0313																														●
	ESE 5°		VNMG331ESE	VNMG160404N-SE	.0156	●	●	★	●	★	★																			★			●			
			VNMG332ESE	VNMG160408N-SE	.0313	●	●	●	●	●	★																			★			●			
	EEF 20°		VNMG330.5EEF	VNMG160402N-EF	.0078	★	★	★				●	★	★		●							●	●	●	●							★	★	
			VNMG331EEF	VNMG160404N-EF	.0156	★	★	★				●	●	●		●							●	●	●	●							●	●	
			VNMG332EEF	VNMG160408N-EF	.0313	★	★	★				●	●	●									●	●									●	●	
	EEF 20°		VNGG330.5EEF	VNGG160402N-EF	.0078																		●	●	★	●							★	★	
			VNGG331EEF	VNGG160404N-EF	.0156																		●	●									★	★	
	(R/L)FY 15° *1		VNGG330.5RFY	VNGG160402R-FY New	.0078																							★							
			VNGG330.5LFY	VNGG160402L-FY New	.0078																							★							
			VNGG331RFY	VNGG160404R-FY New	.0156																							★							
			VNGG331LFY	VNGG160404L-FY New	.0156																							★							
			VNGG332RFY	VNGG160408R-FY New	.0313																							★							
			VNGG332LFY	VNGG160408L-FY New	.0313																							★							

*1: Photo shows left hand.

VN 35° Diamond Neg. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

VN■■33●

Dimensions (inch)	Cutting Edge Length L	.6535	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

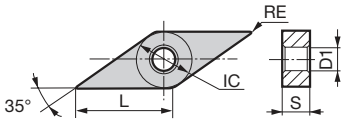
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

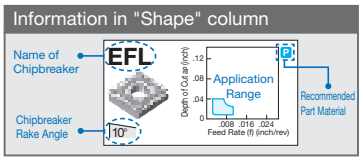
Recommended Application
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-Ferrous Metal
- S Exotic Alloy
- H Hardened Steel

SUMIBORON (CBN) Inserts L92 | SUMIDIA (PCD) Inserts M24 | SUMIDIA (PCD) Binderless Inserts M27 | Ceramic Inserts B132
Applicable External Holders C29 | Applicable Internal Holders E26

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	(R/L)FX *1 14°	P	VNGG330.5RFX	VNGG160402R-FX New	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—
			VNGG330.5LFX	VNGG160402L-FX New	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—
			VNGG331RFX	VNGG160404R-FX New	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—
			VNGG331LFX	VNGG160404L-FX New	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—
			VNGG332RFX	VNGG160408R-FX New	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—
			VNGG332LFX	VNGG160408L-FX New	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—
Light to Medium Cutting	ESX 3°	P	VNMG331ESX	VNMG160404N-SX	.0156	●	●	●	●	●	●											—					▲	—	★		★				
			VNMG332ESX	VNMG160408N-SX	.0313	●	●	●	●	●	●											—					▲	—	★		★				
	EEX 16°	M S	VNMG331EEX	VNMG160404N-EX	.0156							●	●	★	▲	●						—	●	●				—	—	—	—				—
			VNMG332EEX	VNMG160408N-EX	.0313							●	●	★	▲	●						—	●	●		●		—	—	—	—				—
	EUP 10°	M S	VNMG331EUP	VNMG160404N-UP	.0156		●	●		●	●	★	★	★								—	●	●	●	●		—	—	—	—				—
			VNMG332EUP	VNMG160408N-UP	.0313		●	●		●	●	★	★	★								—	●	●	●	●		—	—	—	—				—
Medium Cutting	EGU 7°	P M	VNMG331EGU	VNMG160404N-GU	.0156	●	●	●	●	●	●	●	●	★	▲	●	●	●				—	★	●			★	▲	—	★	—	●				—
			VNMG332EGU	VNMG160408N-GU	.0313	●	●	●	●	●	●	●	●	★	▲	●	●	●				—	★	●			★	▲	—	★	—	●				—
			VNMG333EGU	VNMG160412N-GU	.0469	★	●	●		●	★			★			★	★				—	★	★			★		—		—				—
	EGE 3°	P	VNMG331EGE	VNMG160404N-GE	.0156	●	●	★	●	●	●											—						—	—	—	—				—
			VNMG332EGE	VNMG160408N-GE	.0313	●	●	★	●	●	●											—						—	—	—	—				—
			VNMG333EGE	VNMG160412N-GE	.0469	●	●	★	●	●	★											—						—	—	—	—				—
	EUX 0°	P K	VNMG331EUX	VNMG160404N-UX	.0156	●	●	●	●	●	●											—					▲	—	—	—	—				—
			VNMG332EUX	VNMG160408N-UX	.0313	●	●	●	●	●	●											—					▲	—	—	—	—				—
			VNMG333EUX	VNMG160412N-UX	.0469	●	●	★	●	●	★											—					▲	—	—	—	—				—
	ENG 4°	P M	VNMG331ENG	VNMG160404N-UG	.0156	●	●	●		●	●											—					▲	—	—		—				—
			VNMG332ENG	VNMG160408N-UG	.0313	●	●	●		●	●											—					▲	—	—		—				—
	EEG 0°	M	VNMG331EEG	VNMG160404N-EG	.0156	★	★	●				●	★	★								—	●	★					—	—	—	—				—
			VNMG332EEG	VNMG160408N-EG	.0313	★	★	●				●	●	●		●						—	●	●	●	●			—	—	—	—		★	★	—
			VNMG333EEG	VNMG160412N-EG	.0469	★	★	●				●	★	●								—	★	★					—	—	—	—				—
	—	—	VNMA331	VNMA160404	.0156												★	●	▲	▲	●	—					▲	—	—	—	—				—
			VNMA332	VNMA160408	.0313												●	●	▲	▲	●	—					▲	—	—	—	—				—
			VNMA333	VNMA160412	.0469												●	★	▲	▲	★	—					▲	—	—	—	—				—
	—	—	VNGA331	VNGA160404	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—						—		—	—	—	—	—	—
			VNGA332	VNGA160408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—						—		—	—	—	—	—	—

VN 35° Diamond Neg. With Hole





VN■■33●

Dimensions (inch)	Cutting Edge Length L	.6535	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application																										
P	Steel	●	●	✖	○	↻	⇳														○	●	●	↻	●	
M	Stainless Steel							●	●	✖	○	⇳										●				
K	Cast Iron					⇳							●	●	○	↻	✖				⇳	●				
N	Non-Ferrous Metal																									●
S	Exotic Alloy																	●	✖	○	↻	⇳				
H	Hardened Steel																●									

SUMIBORON (CBN) Inserts L92 | SUMIDIA (PCD) Inserts M24 | SUMIDIA (PCD) Binderless Inserts M27 | Ceramic Inserts B132

Applicable External Holders C29 | Applicable Internal Holders E26

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																Coated Cermet		Cermet	Carbide	
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	**ENZ**	(ap) .24 .16 .08 0 .008 .016 .024 (f) K	VNMG331ENZ	VNMG160404N-UZ	.0156		★	●		●	●						●	★	▲	▲	●	—	★	★					—					—
	4°		VNMG332ENZ	VNMG160408N-UZ	.0313		●	●		●	●						●	●	▲	▲	●	—	★	★					—					—
			VNMG333ENZ	VNMG160412N-UZ	.0469		●	★		●	●						★	★	★	★	●	—							—					—
	EGZ	(ap) .24 .16 .08 0 .008 .016 .024 (f) K	VNMG331EGZ	VNMG160404N-GZ	.0156					★							●	★	▲	▲	●	—							—					—
	0°		VNMG332EGZ	VNMG160408N-GZ	.0313					★							●	●	▲	▲	●	—							—					—
			VNMG333EGZ	VNMG160412N-GZ	.0469					★							★	●	★	▲	●	—							—					—
For Aluminium	**(R/L)AX**	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) N	VNGG330.5RAX	VNGG160402R-AX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	30°		VNGG330.5LAX	VNGG160402L-AX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG331RAX	VNGG160404R-AX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG331LAX	VNGG160404L-AX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG332RAX	VNGG160408R-AX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VNGG332LAX	VNGG160408L-AX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

VN■■43●

Dimensions (inch)	Cutting Edge Length L	.8701	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

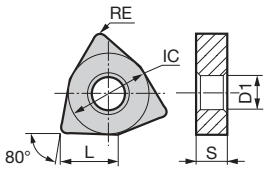
Recommended Application																										
P	Steel	●	●	✖	○	↻	⇳														○	●	●	↻	●	
M	Stainless Steel							●	●	✖	○	⇳										●				
K	Cast Iron					⇳							●	●	○	↻	✖				⇳	●				
N	Non-Ferrous Metal																									●
S	Exotic Alloy																	●	✖	○	↻	⇳				
H	Hardened Steel																●									

Applicable External Holders C31 | Ceramic Inserts B132

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																Coated Cermet		Cermet	Carbide	
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	**ENZ**	(ap) .24 .16 .08 0 .008 .016 .024 (f) K	VNMG432ENZ	VNMG220408N-UZ	.0313		●	●		●	●											—							—					—
	4°		VNMG433ENZ	VNMG220412N-UZ	.0469		●	●		●	●											—							—					—

Trigon Negative Inserts

WN Trigon Neg. With Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

WN■■32.5●

Dimensions (inch)	Cutting Edge Length L	.2559	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✪ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet T1500Z	T2000Z	T1500A	Cermet EH510	EH520	H1
Finishing	**ESU**	(ap) .08 .04 0 .008 .016 (f) P M S	WNMG32.51ESU	WNMG06T304N-SU	.0156	★			★												—							—	—	—	—		
	13°		WNMG32.52ESU	WNMG06T308N-SU	.0313	★			★												—							—	—	—	—		
Medium Cutting	**ENG**	(ap) .24 .16 .08 0 .008 .016 .024 (f) P M	WNMG32.51ENG	WNMG06T304N-UG	.0156	★			★												—							—	—	—	—		
	4°		WNMG32.52ENG	WNMG06T308N-UG	.0313	★			★												—							—	—	—	—		

WN■■33●

Dimensions (inch)	Cutting Edge Length L	.2559	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500

Applicable External Holders ☞ C32 Applicable Internal Holders ☞ E28

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✪ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

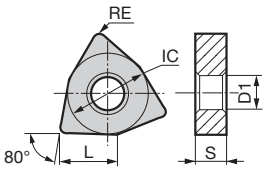
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet T1500Z	T2000Z	T2500Z	T1500A	Cermet EH510	EH520	H1
Fine Cutting	**EFB**	(ap) .08 .04 0 .008 .016 (f) P	WNMG331EFB	WNMG060404N-FB	.0156	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
	27°		WNMG332EFB	WNMG060408N-FB	.0313	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
	EFE	(ap) .08 .04 0 .008 .016 (f) P	WNMG331EFE	WNMG060404N-FE	.0156	★	★	★	★		★		★	★								—						—	★			★			
	20°		WNMG332EFE	WNMG060408N-FE	.0313	★	★	●	★		★		★	★								—						—	★		★	★			
Finishing	**ELU**	(ap) .08 .04 0 .008 .016 (f) P	WNMG331ELU	WNMG060404N-LU	.0156	★	●	★	★	★	★											—						—	★						
	10°		WNMG332ELU	WNMG060408N-LU	.0313	★	●	★	★	★	★											—						—	★						
			WNMG333ELU	WNMG060412N-LU	.0469	★	★	★	★	★	★											—						—	★						
	ELUW	(ap) .08 .04 0 .008 .016 (f) P	WNMG331ELUW	WNMG060404N-LUW	.0156	●	●		●	●			●									—					▲	—	●	▲	★	●			
	10° → B134 Wiper		WNMG332ELUW	WNMG060408N-LUW	.0313	●	●		●	●			●									—					▲	—	●	▲	●	●			
	ESU	(ap) .08 .04 0 .008 .016 (f) P M S	WNMG331ESU	WNMG060404N-SU	.0156	●	●	●	★	●	●	★	●	★		●						—	●	●	●	●		▲	—	●						
	13°		WNMG332ESU	WNMG060408N-SU	.0313	●	●	●	●	●	●	★	●	●		●						—	●	●	●	●		▲	—	★						
			WNMG333ESU	WNMG060412N-SU	.0469	★	●	★	★	★	★	★	★	★								—						—	★						
	ESEW	(ap) .16 .08 0 .008 .020 .032 (f) P	WNMG331ESEW	WNMG060404N-SEW	.0156	★	●	★	●	●	●											—						—	—						
	5° → B134 Wiper		WNMG332ESEW	WNMG060408N-SEW	.0313	●	●	★	●	●	●											—						—	—						
	EEF	(ap) .08 .04 0 .008 .016 (f) M S	WNMG331EEF	WNMG060404N-EF	.0156	★	★	★			●	●	●									—	★	●		●			—	—	—	—			
	20°		WNMG332EEF	WNMG060408N-EF	.0313	★	★	●			●	●	●									—	★	●		●			—	—	—	—			

Trigon Negative Inserts

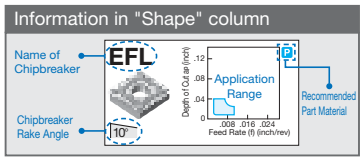
WN Trigon / Neg. / With Hole

WN■■33●

Dimensions (inch)	Cutting Edge Length L	.2559	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1500



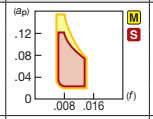
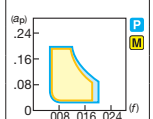
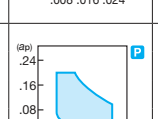
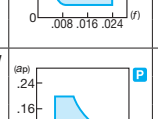
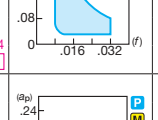
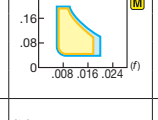
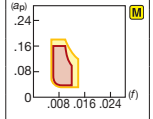
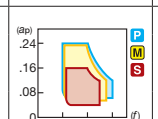
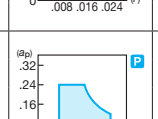
Information in "Shape" column



● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended

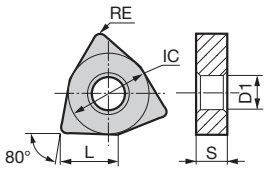
Recommended Application																														
P	Steel	●	●	✖	○	↻	✲																○	●	●	↻	●			
M	Stainless Steel							●	●	✖	○	✲												●						
K	Cast Iron					✲							●	●	○	↻	✖						✲	●						
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	↻	✲								
H	Hardened Steel																●													

Applicable External Holders C32 | Applicable Internal Holders E28

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																			Coated Cermet		Cermet	Carbide	
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light to Medium Cutting	**EEX** 16°		WNMG331EEX	WNMG060404N-EX	.0156																	—	●	●	●	●		—	—	—	—			—
			WNMG332EEX	WNMG060408N-EX	.0313																	—	●	●	●	●		—	—	—	—			—
Medium Cutting	**EGU** 7°		WNMG331EGU	WNMG060404N-GU	.0156	★	★	★	★	★	★	●	★	★			●	●				—						—	★	—	—	—			—
			WNMG332EGU	WNMG060408N-GU	.0313	★	●	●	★	●	★	●	●	★			●	●				—						—	★	—	—	—			—
			WNMG333EGU	WNMG060412N-GU	.0469	★	●	★	★	●	★	●	★	★			★	★				—						—	★	—	—	—			—
	EGE 3°		WNMG332EGE	WNMG060408N-GE	.0313	●	●	●	●	●	●											—						—	—	—	—	—			—
			WNMG333EGE	WNMG060412N-GE	.0469	●	●	★	●	●	●											—					▲	—	—	—	—	—			—
	EGUW 0° → B134 Wiper		WNMG332EGUW	WNMG060408N-GUW	.0313	★	●	●	●	●	●					●						—						—	—	—	—	—			—
																★																			
	ENG 4°		WNMG331ENG	WNMG060404N-UG	.0156		★			★												—						—	—	—	—	—			—
			WNMG332ENG	WNMG060408N-UG	.0313		★			★												—						—	—	—	—	—			—
	EEG 0°		WNMG332EEG	WNMG060408N-EG	.0313	★	●	●				●	●	●									—	★	●		●		—	—	—	—	—			—
			WNMG333EEG	WNMG060412N-EG	.0469	★	●	★				●	●	●									—	★	★		●		—	—	—	—	—			—
Medium to Roughing	**EMU** 4°		WNMG332EMU	WNMG060408N-MU	.0313	●	●	●	●	●	●		●			●						—	●	●	●	●	▲	—	—	—	—	—			—
			WNMG333EMU	WNMG060412N-MU	.0469	●	●	★		●	●		●			●						—					▲	—	—	—	—	—			—
	EME 4°		WNMG332EME	WNMG060408N-ME	.0313	★	●	●	●	●	●						●	●				—						—	—	—	—	—			—
			WNMG333EME	WNMG060412N-ME	.0469	★	●	★	●	●	★						★	★				—						—	—	—	—	—			—
	EGZ 0°		WNMG332EGZ	WNMG060408N-GZ	.0313												●	●	▲	▲	●	—						—	—	—	—	—			—
			WNMG333EGZ	WNMG060412N-GZ	.0469												★	★	▲	▲	●	—						—	—	—	—	—			—

Trigon Negative Inserts

WN Trigon Neg. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

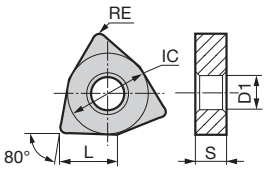
● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

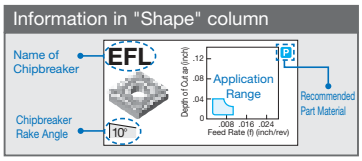
Recommended Application

| | | |

Trigon Negative Inserts

WN Trigon / Neg. / With Hole





WN■■43●

Dimensions (inch)	Cutting Edge Length L	.3425	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application

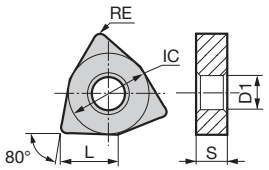
		Coated Carbide																		Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	◔	⛭																									
M	Stainless Steel							●	●	✖	○	⛭																				
K	Cast Iron					⛭							●	●	○	◔	✖							⛭	●							
N	Non-Ferrous Metal																															●
S	Exotic Alloy																		●	✖	○	◔	⛭									
H	Hardened Steel																	●														

SUMIBORON (CBN) Inserts → L103 | Ceramic Inserts → B132
Applicable External Holders → C32 | Applicable Internal Holders → E28

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EEF** 20°	ap .08 .04 0 .008 .016 f; M S	WNMG431EEF	WNMG080404N-EF	.0156	★	★	●				●	●	●		●						—	●	●	●	●			—	—	—	—	—	●	●
			WNMG432EEF	WNMG080408N-EF	.0313	★	★	●				●	●	★		●						—	●	●	●	●			—	—	—	—	—	●	★
	ENK 8°	ap .24 .16 .08 0 .008 .016 .024 f; P	WNMG431ENK	WNMG080404N-SK	.0156					●												—							—							—
			WNMG432ENK	WNMG080408N-SK	.0313					●												—							—							—
Light to Medium Cutting	**ESX** 3°	ap .08 .04 0 .008 .016 f; P	WNMG431ESX	WNMG080404N-SX	.0156	●	●	●	●	●	●											—						▲	—	●	▲	★	★			
			WNMG432ESX	WNMG080408N-SX	.0313	●	●	●	●	●	●											—						▲	—	●	▲	★	★			
			WNMG433ESX	WNMG080412N-SX	.0469	●	●	●	●	●	●											—						▲	—							—
	EEX 16°	ap .12 .08 .04 0 .008 .016 f; M S	WNMG431EEX	WNMG080404N-EX	.0156							★	●	●	▲	●						—	●	●	●	●	★		—						●	●
			WNMG432EEX	WNMG080408N-EX	.0313							●	●	●	▲	●						—	●	●	●	●	★		—						●	●
			WNMG433EEX	WNMG080412N-EX	.0469							●	●	★	▲	●						—	●	●			★		—								—
	EUP 10°	ap .16 .12 .08 .04 0 .008 .016 .024 f; M S	WNMG432EUP	WNMG080408N-UP	.0313		●	●		●	●	★	●	●		●						—	●	●	●	●	★		—								—
			WNMG433EUP	WNMG080412N-UP	.0469					●	●	★	●	★		●						—	★	●	★	●	★		—								—
Medium Cutting	**EGU** 7°	ap .24 .16 .08 0 .008 .016 .024 f; P M	WNMG431EGU	WNMG080404N-GU	.0156	●	●	●	●	●	●	●	●	★	▲	●	●	●				—	★	●			★	▲	—	★			★				—
			WNMG432EGU	WNMG080408N-GU	.0313	●	●	●	●	●	●	●	●	★	▲	●	●	●				—	●	●			★	▲	—	★			★				—
			WNMG433EGU	WNMG080412N-GU	.0469	●	●	●	●	●	●	●	●	★	▲	●	●	●				—	★	●			★	▲	—								—
	EGE 3°	ap .24 .16 .08 0 .008 .016 .024 f; P	WNMG431EGE	WNMG080404N-GE	.0156	★	★	●	★	★	★											—							—							—
			WNMG432EGE	WNMG080408N-GE	.0313	●	●	●	●	●	●											—						▲	—							—
			WNMG433EGE	WNMG080412N-GE	.0469	●	●	●	●	●	●											—						▲	—							—
			WNMG434EGE	WNMG080416N-GE	.0625	★	●	★	★	●	★											—							—							—
	EGUW 0° → B134 Wiper	ap .24 .16 .08 0 .016 .032 f; P	WNMG432EGUW	WNMG080408N-GUW	.0313	●	●		●	●			●			●	●	●	▲	▲		—						▲	—							—
			WNMG433EGUW	WNMG080412N-GUW	.0469	●	●		●	●			●			●	●	●	▲	▲		—						▲	—							—
	EUX 0°	ap .24 .16 .08 0 .008 .016 .024 f; P K	WNMG431EUX	WNMG080404N-UX	.0156	●	●	●	●	●	●											—						▲	—							—
			WNMG432EUX	WNMG080408N-UX	.0313	●	●	●	●	●	●											—						▲	—							—
			WNMG433EUX	WNMG080412N-UX	.0469	●	●	●	★	●	●											—						▲	—							—
	ENG 4°	ap .24 .16 .08 0 .008 .016 .024 f; P M	WNMG431ENG	WNMG080404N-UG	.0156	●	●	●		●	●											—						▲	—							—
			WNMG432ENG	WNMG080408N-UG	.0313	●	●	●		●	●											—						▲	—							—
			WNMG433ENG	WNMG080412N-UG	.0469		●	●		●	●											—							—							—
	EEG 0°	ap .24 .16 .08 0 .008 .016 .024 f; M	WNMG431EEG	WNMG080404N-EG	.0156	★	★	●				●	★	★								—	★	★					—							—
			WNMG432EEG	WNMG080408N-EG	.0313	★	●	●				●	●	●		●						—	●	●	●	●			—						●	●
			WNMG433EEG	WNMG080412N-EG	.0469	★	★	●				●	●	●		●						—	●	●	●	●			—						●	●
		—	WNMA432	WNMA080408	.0313												●	●	▲	▲	●	—						▲	—							—
			WNMA433	WNMA080412	.0469												●	●	▲	▲	●	—						▲	—							—
			WNMA434	WNMA080416	.0625												★	★	▲	▲	●	—						▲	—							—

Trigon Negative Inserts

WN Trigon Neg. With Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

WN■■43●

Dimensions (inch)	Cutting Edge Length L	.3425	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2031

SUMIBORON (CBN) Inserts L103 | Ceramic Inserts B132
Applicable External Holders C32 | Applicable Internal Holders E28

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
Medium to Roughing	EMU	WNMG432EMU			WNMG080408N-MU	.0313	●	●	★	●	●	●		●	●	▲	●					—	●	●	●	●	★	▲	—	—	—	—	—	—	—
		WNMG433EMU			WNMG080412N-MU	.0469	●	●	●	●	●	●		●	●	▲	●					—	★	●	●	●	★	▲	—	—	—	—	—	—	—
		WNMG434EMU			WNMG080416N-MU	.0625	★	★		★	★											—							—	—	—	—	—	—
Medium to Roughing	EEM	WNMG432EEM			WNMG080408N-EM	.0313	★	●	●				★	●	●							—	●	●		●			—	—	—	—	—	—
		WNMG433EEM			WNMG080412N-EM	.0469	★	★	●				★	●	●							—	●	●	●	●			—	—	—	—	—	—
	EME	WNMG432EME			WNMG080408N-ME	.0313	●	●	●	●	●	●						●	●				—							—	—	—	—	—	—
		WNMG433EME			WNMG080412N-ME	.0469	★	●	●	●	●	●						●	●				—							—	—	—	—	—	—
		WNMG434EME			WNMG080416N-ME	.0625	●	●	★	●	●	●						●	●				—							—	—	—	—	—	—
	EMX	WNMG432EMX			WNMG080408N-MX	.0313		●	●		●	●											—							—	—	—	—	—	—
		WNMG433EMX			WNMG080412N-MX	.0469		●	●		●	●											—							—	—	—	—	—	—
	ENZ	WNMG431ENZ			WNMG080404N-UZ	.0156		●	★		●	▲						★	★	▲	▲	●	—	★	★					—	—	—	—	—	—
		WNMG432ENZ			WNMG080408N-UZ	.0313		●	★		●	●						●	●	▲	▲	●	—	★	★				▲	—	—	—	—	—	—
		WNMG433ENZ			WNMG080412N-UZ	.0469		★	★		●	●						●	★	▲	▲	●	—	★	★				▲	—	—	—	—	—	—
	EGZ	WNMG431EGZ			WNMG080404N-GZ	.0156					★							●	●	★	▲	★	—							—	—	—	—	—	—
		WNMG432EGZ			WNMG080408N-GZ	.0313					★							●	●	▲	▲	●	—							—	—	—	—	—	—
		WNMG433EGZ			WNMG080412N-GZ	.0469					★							●	●	▲	▲	●	—							—	—	—	—	—	—

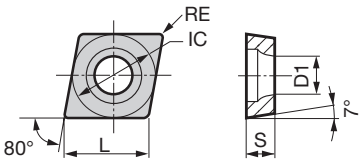
WN■■54●

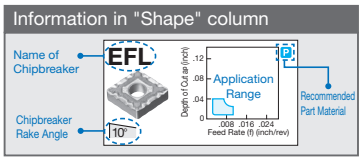
Dimensions (inch)	Cutting Edge Length L	.430	Thickness S	.250
	Inscribed Circle IC	.625	Hole Dia. D1	.250

Applicable External Holders C33

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																									
Medium Cutting	ENG	WNMG543ENG			WNMG100612N-UG	.0469		●	●		●	●										—	▲	—	—	—	—	—	—
Medium to Roughing	EMU	WNMG543EMU			WNMG100612N-MU	.0469	●	●	●	●	●	●										—	▲	—	—	—	—	—	—

CC 80° Diamond 7° Pos. With Hole





CC■■03X1●

Dimensions (inch)	Cutting Edge Length L	.1398	Thickness S	.0551
	Inscribed Circle IC	.1378	Hole Dia. D1	.0748

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

Recommended Application		
P	Steel	● ● ✖ ○ ○ ✖
M	Stainless Steel	● ● ✖ ○ ○
K	Cast Iron	○ ○ ● ● ○ ○ ✖
N	Non-Ferrous Metal	●
S	Exotic Alloy	● ✖ ○ ○ ○
H	Hardened Steel	●

SUMIBORON (CBN) Inserts L36 | SUMIDIA (PCD) Binderless Inserts M27
Applicable Internal Holders E31 | SUMIDIA (PCD) Inserts M10

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide	
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	(R/L)FYS		CCET03X1003RFYS	CCET03X1003R-FYS	.0012																						★						
			CCET03X1003LFYS	CCET03X1003L-FYS	.0012																						★						
			CCET03X101RFYS	CCET03X101R-FYS	.0039																						★						
			CCET03X101LFYS	CCET03X101L-FYS	.0039																						★						
			CCET03X102RFYS	CCET03X102R-FYS	.0078																						★						
			CCET03X102LFYS	CCET03X102L-FYS	.0078																						★						
			CCET03X104RFYS	CCET03X104R-FYS	.0156																						★						
			CCET03X104LFYS	CCET03X104L-FYS	.0156																						★						
	(R/L)FY		CCGT03X101RFY	CCGT03X101R-FY	.0039																						★	★		★			
			CCGT03X101LFY	CCGT03X101L-FY	.0039																						●	★		★			
			CCGT03X102RFY	CCGT03X102R-FY	.0078																						★	★		★			
			CCGT03X102LFY	CCGT03X102L-FY	.0078																						●	★		★			
			CCGT03X104RFY	CCGT03X104R-FY	.0156																						★	★		★			
			CCGT03X104LFY	CCGT03X104L-FY	.0156																						●	★		★			
	(R/L)FY		CCET03X1003R-FY	CCET03X1003R-FY	.0012																									★			
			CCET03X1003L-FY	CCET03X1003L-FY	.0012																					★				★			
			CCET03X101R-FY	CCET03X101R-FY	.0039																									★			
			CCET03X101L-FY	CCET03X101L-FY	.0039																					★				★			
			CCET03X102R-FY	CCET03X102R-FY	.0078																									★			
			CCET03X102L-FY	CCET03X102L-FY	.0078																					★				★			
			CCET03X104R-FY	CCET03X104R-FY	.0156																									★			
			CCET03X104L-FY	CCET03X104L-FY	.0156																					★				★			

*1: Photo shows left hand.

CC■■04X1●

Dimensions (inch)	Cutting Edge Length L	.1720	Thickness S	.0709
	Inscribed Circle IC	.1693	Hole Dia. D1	.0906

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

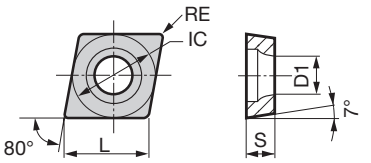
Recommended Application		
P	Steel	● ● ✖ ○ ○ ✖
M	Stainless Steel	● ● ✖ ○ ○
K	Cast Iron	○ ○ ● ● ○ ○ ✖
N	Non-Ferrous Metal	●
S	Exotic Alloy	● ✖ ○ ○ ○
H	Hardened Steel	●

SUMIBORON (CBN) Inserts L36 | SUMIDIA Binderless Inserts M27
Applicable Internal Holders E31 | SUMIDIA (PCD) Inserts M10

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide	
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	(R/L)FYS		CCGT04X1003RFYS	CCGT04X1003R-FYS	.0012																						★						
			CCGT04X1003LFYS	CCGT04X1003L-FYS	.0012																						★						
			CCGT04X101RFYS	CCGT04X101R-FYS	.0039																						★						
			CCGT04X101LFYS	CCGT04X101L-FYS	.0039																						★						
			CCGT04X102RFYS	CCGT04X102R-FYS	.0078																						★						
			CCGT04X102LFYS	CCGT04X102L-FYS	.0078																						★						
			CCGT04X104RFYS	CCGT04X104R-FYS	.0156																						★						
			CCGT04X104LFYS	CCGT04X104L-FYS	.0156																						★						
	(R/L)FY		CCGT04X101RFY	CCGT04X101R-FY	.0039																						★	★		★			
			CCGT04X101LFY	CCGT04X101L-FY	.0039																						●	★		★			
			CCGT04X102RFY	CCGT04X102R-FY	.0078																						★	★		★			
			CCGT04X102LFY	CCGT04X102L-FY	.0078																						●	★		★			
			CCGT04X104RFY	CCGT04X104R-FY	.0156																						★	★		★			
			CCGT04X104LFY	CCGT04X104L-FY	.0156																						●	★		★			

*1: Photo shows left hand.

CC 80° Diamond 7° Pos. With Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

CC■■04X1●

Dimensions (inch)	Cutting Edge Length L	.1720	Thickness S	.0709
	Inscribed Circle IC	.1693	Hole Dia. D1	.0906

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

SUMIBORON (CBN) Inserts L36 | SUMIDIA Binderless Inserts M27
Applicable Internal Holders E31 | SUMIDIA (PCD) Inserts M10

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	(R/L)FY		CCET04X1003R-FY	CCET04X1003R-FY	.0012																										★				
			CCET04X1003L-FY	CCET04X1003L-FY	.0012																										★				
			CCET04X101R-FY	CCET04X101R-FY	.0039																										★				
			CCET04X101L-FY	CCET04X101L-FY	.0039																										★				
			CCET04X102R-FY	CCET04X102R-FY	.0078																										★				
			CCET04X102L-FY	CCET04X102L-FY	.0078																										★				
			CCET04X104R-FY	CCET04X104R-FY	.0156																										★				
			CCET04X104L-FY	CCET04X104L-FY	.0156																										★				

*1: Photo shows left hand.

CC■■21.5●

Dimensions (inch)	Cutting Edge Length L	.2520	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

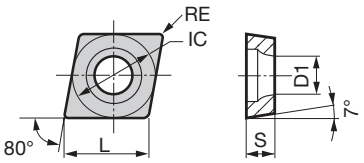
Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

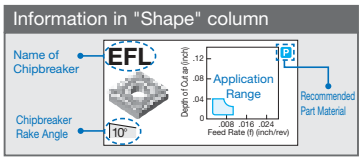
SUMIBORON (CBN) Inserts L37 | SUMIDIA (PCD) Inserts M11 | SUMIDIA Binderless Inserts M27
Applicable External Holders C34, D17 | Applicable Internal Holders E30

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	EFB		CCMT21.50.5EFB	CCMT060202N-FB	.0078																								●		●			
			CCMT21.51EFB	CCMT060204N-FB	.0156																								●		●			
	ELU		CCMT21.50.5ELU	CCMT060202N-LU	.0078	●	●		●	●		●	★		●							—					▲	—	●	▲	★			
			CCMT21.51ELU	CCMT060204N-LU	.0156	●	●		●	●		●	★		●							—					▲	—	●	▲	★			
	EFP		CCMT21.51EFP	CCMT060202N-FP	.0078																									▲	★			
			CCMT21.52EFP	CCMT060208N-FP	.0313																										▲			
	(M)EFC		CCGT21.50MEFC	CCGT060201MN-FC	< .0039																								●		●			
			CCGT21.50EFC	CCGT060201N-FC	.0039																										●			
			CCGT21.50.5MEFC	CCGT060202MN-FC	< .0078																						★	—	●			●			
			CCGT21.50.5EFC	CCGT060202N-FC	.0078																						●	—				●			
			CCGT21.51MEFC	CCGT060204MN-FC	< .0156																						●	—	●			●			
			CCGT21.51EFC	CCGT060204N-FC	.0156																						●	—				●			
	(R/L)FX		CCGT21.5.001RFX	CCGT0602003R-FX	.0012																						★	—	★			★			
			CCGT21.5.001LFX	CCGT0602003L-FX	.0012																						★	—	★			★			
			CCGT21.50RFX	CCGT060201R-FX	.0039																						★	—	●	★		★			
			CCGT21.50LFX	CCGT060201L-FX	.0039																						★	—	●	★		★			
			CCGT21.50.5RFX	CCGT060202R-FX	.0078																						★	—	★	★		★			
			CCGT21.50.5LFX	CCGT060202L-FX	.0078																						★	—	●	●	▲	★			
			CCGT21.51RFX	CCGT060204R-FX	.0156																						★	—	★			★			
			CCGT21.51LFX	CCGT060204L-FX	.0156																						★	—	●	★	▲	★			

Values for nose radius RE prefixed with "<" indicate negative tolerances.

CC 80° Diamond 7° Pos. With Hole





CC■■21.5●

Dimensions (inch)	Cutting Edge Length L	.2520	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																		Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	◔	✲																									
M	Stainless Steel							●	●	✖	○	✲													●	●	◔	●	●			
K	Cast Iron					✲							●	●	○	◔	✖							✲	●							
N	Non-Ferrous Metal																															●
S	Exotic Alloy																		●	✖	○	◔	✲									
H	Hardened Steel																	●														

SUMIBORON (CBN) Inserts L37 | SUMIDIA (PCD) Inserts M11 | SUMIDIA Binderless Inserts M27

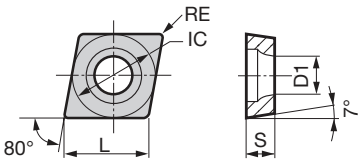
Applicable External Holders C34, D17 | Applicable Internal Holders E30

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE
Finishing	(R/L)FY	P	CCET21.50RFY	CCET060201R-FY	.0039
			CCET21.50LFY	CCET060201L-FY	.0039
			CCET21.50.5RFY	CCET060202R-FY	.0078
			CCET21.50.5LFY	CCET060202L-FY	.0078
Light Cutting	ELB	P	CCMT21.50.5ELB	CCMT060202N-LB	.0078
			CCMT21.51ELB	CCMT060204N-LB	.0156
			CCMT21.52ELB	CCMT060208N-LB	.0313
	ESU	P	CCMT21.50.5ESU	CCMT060202N-SU	.0079
			CCMT21.51ESU	CCMT060204N-SU	.0156
			CCMT21.52ESU	CCMT060208N-SU	.0313
	ENK	P	CCMT21.51ENK	CCMT060204N-SK	.0156
			CCMT21.52ENK	CCMT060208N-SK	.0313
	EFM	P	CCMT21.51EFM	CCMT060204N-SC	.0156
	(M)EFM	P	CCGT21.5.001EFM	CCGT0602003N-SC	.0012
			CCGT21.50MEFM	CCGT060201MN-SC	< .0039
			CCGT21.50EFM	CCGT060201N-SC	.0039
			CCGT21.50.5MEFM	CCGT060202MN-SC	< .0078
			CCGT21.50.5EFM	CCGT060202N-SC	.0078
			CCGT21.51MEFM	CCGT060204MN-SC	< .0156
	EGU	P	CCMT21.51EGU	CCMT060204N-GU	.0156
			CCMT21.52EGU	CCMT060208N-GU	.0313
		—	CCMA21.51	CCMW060204	.0156
	NAG	N	CCGT21.50.5NAG	CCGT060202N-AG	.0078
			CCGT21.51NAG	CCGT060204N-AG	.0156
For Aluminium	(R/L)AY	N	CCGT21.50RAY	CCGT060201R-AY	.0039
			CCGT21.50LAY	CCGT060201L-AY	.0039
			CCGT21.50.5RAY	CCGT060202R-AY	.0078
			CCGT21.50.5LAY	CCGT060202L-AY	.0078
			CCGT21.51RAY	CCGT060204R-AY	.0156
			CCGT21.51LAY	CCGT060204L-AY	.0156

*1: Photo shows left hand.

Values for nose radius RE prefixed with "<" indicate negative tolerances.

CC 80° Diamond 7° Pos. With Hole



Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

CC■■2.51.5●

Dimensions (inch)	Cutting Edge Length L	.3150	Thickness S	.0937
	Inscribed Circle IC	.3125	Hole Dia. D1	.1339

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Light Cutting	(M)EFM	ap .16 .12 .08 .04 0 .008 .016 .024 f; P; 6°	CCGT2.51.50MEFM	CCGT080201MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		●	—	—	—
			CCGT2.51.50EFM	CCGT080201N-SC	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★				
			CCGT2.51.50.5MEFM	CCGT080202MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		●	—	—	—
			CCGT2.51.50.5EFM	CCGT080202N-SC	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●				

Values for nose radius RE prefixed with "<" indicate negative tolerances.

CC■■2.52●

Dimensions (inch)	Cutting Edge Length L	.3150	Thickness S	.1250
	Inscribed Circle IC	.3125	Hole Dia. D1	.1339

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Light Cutting	EFM	ap .16 .12 .08 .04 0 .008 .016 .024 f; P; 6°	CCMT2.521EFM	CCMT080304N-SC	.0156		★			★												—						—							

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

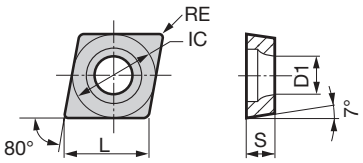
CC■■32●

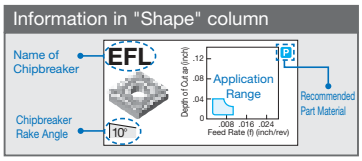
Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Light Cutting	EFM	ap .16 .12 .08 .04 0 .008 .016 .024 f; P; 6°	CCMT322EFM	CCMT090308N-SC	.0313		★			★												—						—							
	(M)EFM	ap .16 .12 .08 .04 0 .008 .016 .024 f; P; 6°	CCGT320MEFM	CCGT090301MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—
			CCGT320.5MEFM	CCGT090302MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—

Values for nose radius RE prefixed with "<" indicate negative tolerances.

CC 80° Diamond / 7° Pos. / With Hole





CC■■32.5●

Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✪ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide	
P	Steel	●	◔	✖	○	◔	✪														○	◔	◔	◔	◔	●		
M	Stainless Steel							●	◔	✖	○	✪										◔					
K	Cast Iron					✪							●	◔	○	◔	✖				✪	◔						
N	Non-Ferrous Metal																										●	
S	Exotic Alloy																	●	✖	○	◔	✪						
H	Hardened Steel															●												

SUMIBORON (CBN) Inserts L40 | SUMIDIA (PCD) Inserts M12 | SUMIDIA Binderless Inserts M27

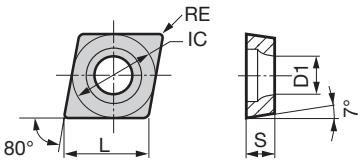
Applicable External Holders C34, D17 | Applicable Internal Holders E30

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB** 20°		CCMT32.50.5EFB	CCMT09T302N-FB	.0078																								★			★			
			CCMT32.51EFB	CCMT09T304N-FB	.0156																								●		★	●			
			CCMT32.52EFB	CCMT09T308N-FB	.0313																					★			●		★	●			
	ELU 15°		CCMT32.51ELU	CCMT09T304N-LU	.0156	●	●		●	●		●	★		●												▲		●	▲	●	★			
			CCMT32.52ELU	CCMT09T308N-LU	.0313	●	●		●	●		●	★		●												▲		●	▲	★	★			
	ELUW 10° → B131 Wiper		CCMT32.51ELUW	CCMT09T304N-LUW	.0156	●	●		★	●									▲	▲							▲		●	▲	●	●			
			CCMT32.52ELUW	CCMT09T308N-LUW	.0313	●	●		●	●							●	●	▲	▲							▲		●	▲	★	●			
	EFP 10°		CCMT32.50.5EFP	CCMT09T302N-FP	.0078																											★			
			CCMT32.51EFP	CCMT09T304N-FP	.0156																										▲		▲			
			CCMT32.52EFP	CCMT09T308N-FP	.0313																										▲		▲			
	(M)EFC 15°		CCGT32.5.001EFC	CCGT09T3003N-FC	.0012																					●		●							
			CCGT32.50MEFC	CCGT09T301MN-FC	< .0039																							●				●			
			CCGT32.50EFC	CCGT09T301N-FC	.0039																					●						●			
			CCGT32.50.5MEFC	CCGT09T302MN-FC	< .0078																					●		●				●			
			CCGT32.50.5EFC	CCGT09T302N-FC	.0078																					●						●			
			CCGT32.51MEFC	CCGT09T304MN-FC	< .0156																					●		●				●			
			CCGT32.51EFC	CCGT09T304N-FC	.0156																					●						●			

Values for nose radius RE prefixed with "<" indicate negative tolerances.

80° Diamond Positive Inserts

CC 80° Diamond / 7° Pos. / With Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

Recommended Application

P	Steel	● ● ✱ ○ ◔ ✱
M	Stainless Steel	● ● ✱ ○ ✱
K	Cast Iron	◔ ● ● ○ ◔ ✱
N	Non-Ferrous Metal	●
S	Exotic Alloy	● ✱ ○ ◔ ✱
H	Hardened Steel	●

CC■■32.5●

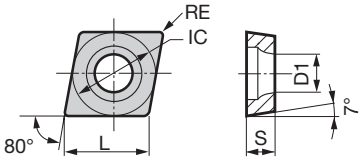
Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

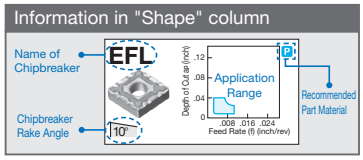
SUMIBORON (CBN) Inserts L40 | SUMIDIA (PCD) Inserts M12 | SUMIDIA Binderless Inserts M27
Applicable External Holders C34, D17 | Applicable Internal Holders E30

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T2500Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	(R/L)FX		CCGT32.5.001RFX	CCGT09T3003R-FX	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	★	—	—	—	—
			CCGT32.5.001LFX	CCGT09T3003L-FX	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	★	—	—	—	—
			CCGT32.50RFX	CCGT09T301R-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	●	★	—	★	—	—	—	—
			CCGT32.50LFX	CCGT09T301L-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	●	★	—	★	—	—	—	—
			CCGT32.50.5RFX	CCGT09T302R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	●	★	—	●	—	—	—	—
			CCGT32.50.5LFX	CCGT09T302L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	★	—	★	—	—	—	—
			CCGT32.51RFX	CCGT09T304R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	★	—	—	—	—	—	—	—
			CCGT32.51LFX	CCGT09T304L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	—	—	—	—	—
			CCGT32.52RFX	CCGT09T308R-FX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—
			CCGT32.52LFX	CCGT09T308L-FX	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—
	(R/L)FY *1		CCET32.50RFY	CCET09T301R-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
			CCET32.50LFY	CCET09T301L-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
			CCET32.50.5RFY	CCET09T302R-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
			CCET32.50.5LFY	CCET09T302L-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—
Light Cutting	ELB		CCMT32.50.5ELB	CCMT09T302N-LB	.0078		●	●		★	★	●	★	★								—						—	★		★	★				
			CCMT32.51ELB	CCMT09T304N-LB	.0156		●	●		★	★	●	★	★								—						—	★		★	★				
			CCMT32.52ELB	CCMT09T308N-LB	.0313		●	●		★	★	●	★	★								—						—	★		★	★				
	ESU		CCMT32.50.5ESU	CCMT09T302N-SU	.0078	★	●	●		●	●	●	●	★	▲	●						—	●	●	●	●	★		—	●	▲	●	★				
			CCMT32.51ESU	CCMT09T304N-SU	.0156	●	●	●	●	●	●	●	●	●	▲	●	★	●	▲	▲		—	●	●	●	●	●	▲	—	●	▲	●	●				
			CCMT32.52ESU	CCMT09T308N-SU	.0313	●	●	●	●	●	●	●	●	●	▲	●	●	●	▲	▲		—	●	●	●	●	●	▲	—	●	▲	●	●				
	(M)ESI		CCGT32.50MESI	CCGT09T301MN-SI	< .0039	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	—	●	●	●	●	●	—	★	●	—	★	●	—	—	—	—
			CCGT32.50.5MESI	CCGT09T302MN-SI	< .0078	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	—	●	●	●	●	●	—	●	●	—	★	●	—	—	—	—
			CCGT32.51MESI	CCGT09T304MN-SI	< .0156	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	—	●	●	●	●	●	—	●	●	—		●	—	—	—	—
			CCGT32.52MESI	CCGT09T308MN-SI	< .0313	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●				—	●	—	—	—	—	—	—	—	—
	ENK		CCMT32.51ENK	CCMT09T304N-SK	.0156	●	●	●		●	●																▲		—	—	—	—				
			CCMT32.52ENK	CCMT09T308N-SK	.0313	●	●	●		●	●																▲		—	—	—	—				
	(M)EFM		CCGT32.5.001EFM	CCGT09T3003N-SC	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	●				★				
			CCGT32.50MEFM	CCGT09T301MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●			●				
			CCGT32.50EFM	CCGT09T301N-SC	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—			▲							
			CCGT32.50.5MEFM	CCGT09T302MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●			●				
			CCGT32.50.5EFM	CCGT09T302N-SC	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—			▲							
	EGU		CCMT32.51EGU	CCMT09T304N-GU	.0156	●	●	●				●	●	●			●	●				—	●					—	●		★	●				
			CCMT32.52EGU	CCMT09T308N-GU	.0313	●	●	●				●	●	●			●	●				—	●					—	●		★	●				
		—	CCMA32.51	CCMW09T304	.0156												●	●	▲	▲	★						▲	—	—	—	—	—				
			CCMA32.52	CCMW09T308	.0313												●	●	▲	▲	●						▲	—	—	—	—	—				

*1: Photo shows left hand.
Values for nose radius RE prefixed with "<" indicate negative tolerances.

CC 80° Diamond 7° Pos. With Hole





CC■■32.5●

Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	◔	✪						●	●	●	●	●							○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✪													●					
K	Cast Iron					✪							●	●	○	◔	✖							✪	●						
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	◔	✪								
H	Hardened Steel																	●												

SUMIBORON (CBN) Inserts L40 | SUMIDIA (PCD) Inserts M12 | SUMIDIA Binderless Inserts M27

Applicable External Holders C34, D17 | Applicable Internal Holders E30

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light to Medium Cutting	**EMU** 0°	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	CCMT32.51EMU	CCMT09T304N-MU	.0156	●	●		★	●		●	★				★	★	▲	▲	●	—					▲	—	—	—	—	—	—	—
			CCMT32.52EMU	CCMT09T308N-MU	.0313	●	●	●	●	●	●	●	★				●	●	▲	▲	●	—					▲	—	—	—	—	—	—	—
For Aluminium	**NAG** 20°	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) N	CCGT32.50.5NAG	CCGT09T302N-AG	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●
			CCGT32.51NAG	CCGT09T304N-AG	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●
			CCGT32.52NAG	CCGT09T308N-AG	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●
	(R/L)AY *1 15°	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) N	CCGT32.50RAY	CCGT09T301R-AY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT32.50LAY	CCGT09T301L-AY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT32.50.5RAY	CCGT09T302R-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT32.50.5LAY	CCGT09T302L-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT32.51RAY	CCGT09T304R-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			CCGT32.51LAY	CCGT09T304L-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

*1: Photo shows left hand.

CC■■43●

Dimensions (inch)	Cutting Edge Length L	.5079	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2165

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	◔	✪						●	●	●	●	●							○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✪													●					
K	Cast Iron					✪							●	●	○	◔	✖							✪	●						
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	◔	✪								
H	Hardened Steel																	●												

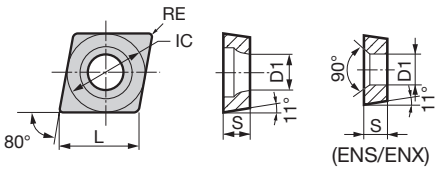
SUMIBORON (CBN) Inserts L40

Applicable External Holders C34 | Applicable Internal Holders E33

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	**EFP** 10°	(ap) .08 .04 0 .008 .016 (f) P	CCMT431EFP	CCMT120404N-FP	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			CCMT432EFP	CCMT120408N-FP	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲	—	—	—
Light Cutting	**ESU** 8°	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	CCMT431ESU	CCMT120404N-SU	.0156	★	●	●	★	●	●						●	●	▲	▲	●	—							—	—	—	—	—	—
			CCMT432ESU	CCMT120408N-SU	.0313	★	●	●	★	●	●						●	●	▲	▲	●	—							—	—	—	—	—	—
	ENK 8°	(ap) .24 .16 .08 0 .008 .016 .024 (f) P	CCMT431ENK	CCMT120404N-SK	.0156		●	●		●	●											—							—	—	—	—	—	—
			CCMT432ENK	CCMT120408N-SK	.0313		●	●		●	●											—							—	—	—	—	—	—
	EFM 6°	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	CCMT432EFM	CCMT120408N-SC	.0313		★			★												—							—	—	—	—	—	—
	EGU 8°	(ap) .12 .08 .04 .004 .008 .012 .016 (f) P	CCMT432EGU	CCMT120408N-GU	.0313	★	●	●									●	●			●	—							—	—	—	—	—	—

80° Diamond Positive Inserts

CP 80° Diamond / 11° Pos. / With Hole



Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

CP■■1.81.5●

Dimensions (inch)	Cutting Edge Length L	-	Thickness S	.0937
	Inscribed Circle IC	.2250	Hole Dia. D1	

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

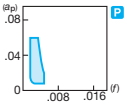
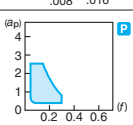
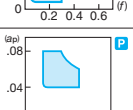
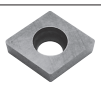
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Light Cutting		—	CPEW1.81.51	CPEW050204	.0156																														●

CP■■21.5●

Dimensions (inch)	Cutting Edge Length L	.2520	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

SUMIDIA (PCD) Inserts ☞ M12 Applicable Internal Holders ☞ E33

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	**(R/L)FX** 		CPGT21.51LFX	CPGT060204L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★			
Light Cutting	**ESU** 		CPMT21.51ESU CPMT21.52ESU	CPMT060204N-SU CPMT060208N-SU	.0156 .0313	● ●	● ●		● ●	● ●												—	● ●	● ●	● ●	● ●	▲ ▲	— —	● ●	▲ ▲	● ★			
Finishing	**ENS** 		CPMT21.51ENS	CPMT060204N-US	.0156								●			●						—							—						—
Light Cutting		—	CPEW21.51	CPEW060204	.0156																														●

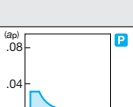
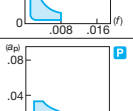
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

CP■■2.51.5●

Dimensions (inch)	Cutting Edge Length L	.3150	Thickness S	.0937
	Inscribed Circle IC	.3125	Hole Dia. D1	.1339

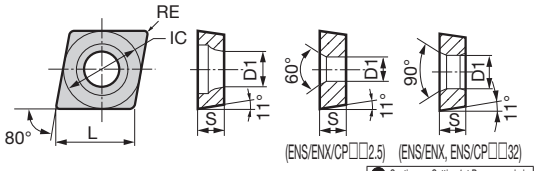
SUMIBORON (CBN) Inserts ☞ L44 SUMIDIA (PCD) Inserts ☞ M12

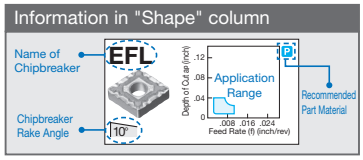
Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	**EFB** 		CPMT2.51.51EFB	CPMT080204N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		●			
	ELU 		CPMT2.51.51ELU	CPMT080204N-LU	.0156	★	★		★							●						—							—	★		★			

*1: Hole Dia. D1=4.8.

CP 80° Diamond 11° Pos. With Hole





Continuous Cutting 1st Recommended
Continuous Cutting 2nd Recommended
General Cutting 1st Recommended
General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended
Interrupted Cutting 2nd Recommended

CP■■2.51.5●

Dimensions (inch)	Cutting Edge Length L	.3150	Thickness S	.0937
	Inscribed Circle IC	.3125	Hole Dia. D1	.1339

SUMIBORON (CBN) Inserts L44 SUMIDIA (PCD) Inserts M12

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light Cutting	**SD** 0°		**CPGT2.51.50.5**	**CPGT080202N-SD**	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	●		—	●	▲	●	▲		
			CPGT2.51	**CPGT080204N-SD**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	●	▲	●			
			CPGT2.51.52	**CPGT080208N-SD**	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	●	▲	●			
	ELB 15°		**CPMT2.51.51ELB**	**CPMT080204N-LB**	.0156		★	●		★	★	●	★	★								—						—	★		★			
	ESU 8°		**CPMT2.51.51ESU**	**CPMT080204N-SU**	.0156	★	●	★	★	●	★		●	●	▲	●						—						—	★	▲	★			
			CPMT2.51.52ESU	**CPMT080208N-SU**	.0313	★	●	★	★	●	★		●		▲	●						—						—	●	▲	★			
	ENS 8°		**CPMT2.51.52ENS**	**CPMH080208N-US**	.0313								●									—						—	—	—	—			—
		—	**CPMA2.51.51**	**CPMW080204**	.0156												★	★	★	★	●	—						—	—	—	—			—
			CPMA2.51.52	**CPMW080208**	.0313												★	★	★	★	●	—						—	—	—	—			—
Light to Medium Cutting	**EMU** 0°		**CPMT2.51.51EMU**	**CPMT080204N-MU**	.0156	★	●		★	●							★	★	★	▲	●	—						—	—	—	—			—
			CPMT2.51.52EMU	**CPMT080208N-MU**	.0313	★	●		★	●							★	★	★	★	●	—						—	—	—	—			—

CP■■2.52●

Dimensions (inch)	Cutting Edge Length L	.3150	Thickness S	.1250
	Inscribed Circle IC	.3125	Hole Dia. D1	.1339

Continuous Cutting 1st Recommended
Continuous Cutting 2nd Recommended
General Cutting 1st Recommended
General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended
Interrupted Cutting 2nd Recommended

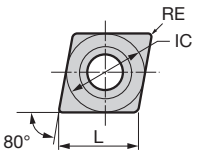
Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Coated Carbide | Coated Cermet | Cermet | Carbide

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light Cutting	**ENS** 10°		**CPMT2.522ENS**	**CPMT080308N-US**	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

80° Diamond Positive Inserts

CP 80° Diamond / 11° Pos. / With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

CP■■32●

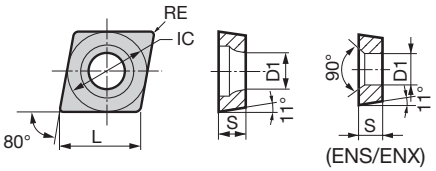
Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

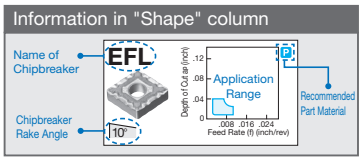
SUMIBORON (CBN) Inserts L45 SUMIDIA (PCD) Inserts M13

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	**EFB**		CPMT321EFB	CPMT090304N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
			CPMT322EFB	CPMT090308N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
Finishing	**ELU**		CPMT321ELU	CPMT090304N-LU	.0156	★	●		★	●		●	★		●						—					▲	—	★	▲	★			
			CPMT322ELU	CPMT090308N-LU	.0313	★	★		★	★		●	★								—					—	★	▲	★			
Finishing	**ELUW**	→ B134 Wiper	CPMT321ELUW	CPMT090304N-LUW	.0156	★	★		★	★											—						—	★	▲	★			
			CPMT322ELUW	CPMT090308N-LUW	.0313	★	★		★	★											—					▲	—	★	▲	★			
Light Cutting	**SD**		CPGT320.5	CPGT090302N-SD	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★	●			—	●	▲	●			
			CPGT321	CPGT090304N-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★				—	●	▲	●			
			CPGT322	CPGT090308N-SD	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★				—	●	▲	●			
Light Cutting	**ELB**		CPMT321ELB	CPMT090304N-LB	.0156		★	●		★	★	●	★	★							—						—	★		★			
			CPMT322ELB	CPMT090308N-LB	.0313		★	●		★	★	●	★	★							—						—	★		★			
	ESU		CPMT321ESU	CPMT090304N-SU	.0156	★	●	●	★	●	★	●	●	★	▲						—						—	★	▲	★			
			CPMT322ESU	CPMT090308N-SU	.0313	★	●	●	★	●	●	●	●	★	▲						—						—	★	▲	★			
	ENS		CPMT322ENS	CPMT090308N-US	.0313								●			●					—						—	—	—	—			—
	EGU		CPMT321EGU	CPMT090304N-GU	.0156	★	●	★				●	●	★		●					—						—	★		★			
			CPMT322EGU	CPMT090308N-GU	.0313	★	●	★				★	●	★		●					—						—	★		★			
		—	CPMA321	CPMW090304	.0156												★	★	★	▲	●	—					▲	—	—	—	—			—
			CPMA322	CPMW090308	.0313												★	★	★	▲	●	—						—	—	—	—			—
Light to Medium Cutting	**EMU**		CPMT321EMU	CPMT090304N-MU	.0156	★	★		★	●		●	★				★	★	★	▲	●	—					▲	—	—	—	—			—
			CPMT322EMU	CPMT090308N-MU	.0313	★	★		★	●		●	★				★	★	★	▲	●	—						—	—	—	—			—

CP 80° Diamond 11° Pos. With Hole





CP■■32.5●

Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

SUMIBORON (CBN) Inserts L46 SUMIDIA (PCD) Inserts M13
Applicable Internal Holders E33

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	◔	✪																	○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✪													●					
K	Cast Iron					✪							●	●	○	◔	✖							✪	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																														
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE																										
Light Cutting	**ESU**	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	CPGT32.50.5ESU	CPGT09T302N-SU	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	—	—	—	—	—	—	—
	8°		CPGT32.51ESU	CPGT09T304N-SU	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	—	—	—	—	—	—	—
	ESU	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	CPMT32.51ESU	CPMT09T304N-SU	.0156	●	●		●	●			●							—	●	●	●	●	▲	—	●	▲			
	8°		CPMT32.52ESU	CPMT09T308N-SU	.0313	●	●		●	●										—	●	●	●	●	▲	—	●	▲			
	ENS	(ap) .08 .04 0 .008 .016 (f) P	CPMT32.52ENS	CPMT09T308N-US	.0313							●								—						—	—	—	—	—	
	10°																														
		—	CPEW32.51	CPEW09T304	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●
			CPEW32.52	CPEW09T308	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●

*1: Photo shows left hand.

CP■■43●

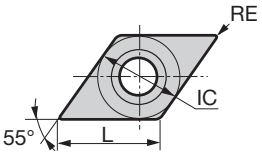
Dimensions (inch)	Cutting Edge Length L	.5079	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2165

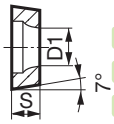
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	◔	✪																	○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✪													●					
K	Cast Iron					✪							●	●	○	◔	✖							✪	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																														
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE																										
Finishing to Light Cutting	**SD**	(ap) .08 .04 0 .008 .016 (f) P	CPGT430.5	CPGT120402N-SD	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★			—	—			●		
	0°		CPGT431	CPGT120404N-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★			—	●	▲	●			
			CPGT432	CPGT120408N-SD	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★			—			★			
	ENS	(ap) .08 .04 0 .008 .016 (f) P	CPMT432ENS	CPMH120408N-US	.0313							●		●					—						—	—	—	—	—	—
	10°																														
		—	CPEW432	CPEW120408	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲

DC 55° Diamond 7° Pos. With Hole





Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

DC■■21.5●

Dimensions (inch)	Cutting Edge Length L	.3031	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application

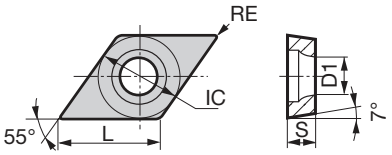
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH620	H1
P	Steel	●	●	✱	○	◔	✲																	○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✲													●						
K	Cast Iron					◔	✲						●	●	○	◔	✱							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✱	○	◔	✲									
H	Hardened Steel																	●													

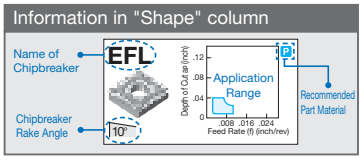
SUMIBORON (CBN) Inserts L55
SUMIDIA (PCD) Inserts M14
SUMIDIA Binderless Inserts M27
Applicable External Holders C35, D18
Applicable Internal Holders E34

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH620	H1
Finishing	**EFB**	20°	DCMT21.50.5EFB	DCMT070202N-FB	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		●	—	—	
			DCMT21.51EFB	DCMT070204N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	★		★	—	—	
			DCMT21.52EFB	DCMT070208N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		●	—	—	
	ELU	15°	DCMT21.50.5ELU	DCMT070202N-LU	.0078	★	★		●	●		★	★		●							—					★	—	★	▲	★			
			DCMT21.51ELU	DCMT070204N-LU	.0156	●	●		●	●		●	●		●							—					●	▲	●	▲	★			
	EFP	10°	DCMT21.50.5EFP	DCMT070202N-FP	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		●	—	—	
			DCMT21.51EFP	DCMT070204N-FP	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		●	—	—	
	(M)EFC	15°	DCGT21.5.001EFC	DCGT0702003N-FC	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	●					
			DCGT21.50MEFC	DCGT070201MN-FC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	—	—	●			●	—	—	
			DCGT21.50EFC	DCGT070201N-FC	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—			●	—	—	
			DCGT21.50.5MEFC	DCGT070202MN-FC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	—	—	●			●	—	—	
			DCGT21.50.5EFC	DCGT070202N-FC	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—			●	—	—	
			DCGT21.51MEFC	DCGT070204MN-FC	< .0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	—	—	★			●	—	—	
			DCGT21.51EFC	DCGT070204N-FC	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—			▲	—	—	
	(R/L)FX	15°	DCGT21.5.001RFX	DCGT0702003R-FX	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	●	—	★			★			
			DCGT21.5.001LFX	DCGT0702003L-FX	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	●	—	★			★			
			DCGT21.50RFX	DCGT070201R-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	★	—	●	★		★			
			DCGT21.50LFX	DCGT070201L-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	●	—	★	★		★			
			DCGT21.50.5RFX	DCGT070202R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	●	—	★	★		●			
			DCGT21.50.5LFX	DCGT070202L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	●	—	●	★		★			
			DCGT21.51RFX	DCGT070204R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	
			DCGT21.51LFX	DCGT070204L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	
	(R/L)FYS	15°	DCGT21.5.001RFYS	DCGT0702003R-FYS	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	
			DCGT21.5.001LFYS	DCGT0702003L-FYS	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	
			DCGT21.50RFYS	DCGT070201R-FYS	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	
			DCGT21.50LFYS	DCGT070201L-FYS	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	
			DCGT21.50.5RFYS	DCGT070202R-FYS	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	
			DCGT21.50.5LFYS	DCGT070202L-FYS	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	
			DCGT21.51RFYS	DCGT070204R-FYS	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	
			DCGT21.51LFYS	DCGT070204L-FYS	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	
	(R/L)FY	15°	DCGT21.5.001RFY	DCGT0702003R-FY	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	
			DCGT21.5.001LFY	DCGT0702003L-FY	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	
			DCGT21.50RFY	DCGT070201R-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	
			DCGT21.50LFY	DCGT070201L-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	
			DCGT21.50.5RFY	DCGT070202R-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	
			DCGT21.50.5LFY	DCGT070202L-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	
			DCGT21.51RFY	DCGT070204R-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	★	—	—	—	—	—	
			DCGT21.51LFY	DCGT070204L-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	★	—	★	—	—	—	—	—	

Values for nose radius RE prefixed with "<" indicate negative tolerances.

DC 55° Diamond 7° Pos. With Hole





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application																														
P	Steel	●	◔	✱	○	◔	✲															○	◔	◔	◔	◔				
M	Stainless Steel							●	◔	✱	○	✲											◔							
K	Cast Iron					✲							●	◔	○	◔	✱					✲	◔								
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	◔	✱	○	◔	✲								
H	Hardened Steel															●														

Dimensions (inch)	Cutting Edge Length L	.3031	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

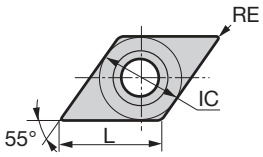
SUMIBORON (CBN) Inserts L55 | SUMIDIA (PCD) Inserts M14 | SUMIDIA Binderless Inserts M27

Applicable External Holders C35, D18 | Applicable Internal Holders E34

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																			Coated Cermet		Cermet	Carbide	
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing to Light Cutting	(R/L)		DCGT21.50.5R	DCGT070202R-SD	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★			
			DCGT21.50.5L	DCGT070202L-SD	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★			
			DCGT21.51R	DCGT070204R-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★			
			DCGT21.51L	DCGT070204L-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★			
Light Cutting	ELB		DCMT21.50.5ELB	DCMT070202N-LB	.0078		●	●		★	★	●	★	★								—						—	★		★	★			
			DCMT21.51ELB	DCMT070204N-LB	.0156		●	●		★	★	●	★	★								—						—	★		★	★			
			DCMT21.52ELB	DCMT070208N-LB	.0313		●	●		★	★	●	★	★								—						—	★		★	★			
	ESU		DCMT21.50.5ESU	DCMT070202N-SU	.0078	★	●	★		●	●	●	●	★	▲	●						—	●	●	●	●		—	—	●	▲	★	★			
			DCMT21.51ESU	DCMT070204N-SU	.0156	●	●	●	●	●	●	●	●	●	▲	●	●	●	▲	▲		—	●	●	●	●	●	▲	—	●	▲	★	●			
			DCMT21.52ESU	DCMT070208N-SU	.0313	●	●	●	●	●	●	●	●	★	▲	●	●	●	▲	▲		—	●	●	●	●		▲	—	●	▲		★			
	(M)ESI		DCGT21.50MESI	DCGT070201MN-SI	< .0039	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	—	★	●	●	●	●	—	●	●				●			
			DCGT21.50.5MESI	DCGT070202MN-SI	< .0078	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	—	●	●	●	●	●	—	●	●			★	●			
			DCGT21.51MESI	DCGT070204MN-SI	< .0156	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	—	●	●	●	●	●	—	●	●			★	●			
	ENK		DCMT21.51ENK	DCMT070204N-SK	.0156		●	●		●	●											—						—	—	—	—	—			—
	(M)EFM		DCGT21.5.001EFM	DCGT0702003N-SC	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	●				★	—	—	
			DCGT21.50MEFM	DCGT070201MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					—	●	●				★	—	—	
			DCGT21.50EFM	DCGT070201N-SC	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				●	—			▲						
			DCGT21.50.5MEFM	DCGT070202MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					—	●	●			★	★	—	—	
			DCGT21.50.5EFM	DCGT070202N-SC	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—			▲						
			DCGT21.51MEFM	DCGT070204MN-SC	< .0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					—	●					●	—	—	
			DCGT21.51EFM	DCGT070204N-SC	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					—			▲						
			DCGT21.52EFM	DCGT070208N-SC	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					—			▲						
	EGU		DCMT21.51EGU	DCMT070204N-GU	.0156	●	●	●				●	●	●			●					—	●	●					—	●		★	★			
			DCMT21.52EGU	DCMT070208N-GU	.0313	★	●	●				★	●	★			●					—	●	●					—	●		★	★			
		—	DCMA21.51	DCMW070204	.0156												★	★	▲	▲	★	—						▲	—	—	—	—	—			—
		—	DCMA21.52	DCMW070208	.0313												★	★	▲	▲	●	—							—	—	—	—	—			—
		—	DCGA21.50.5	DCGW070202	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	DCGA21.51	DCGW070204	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	DCGA21.52	DCGW070208	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—
For Aluminium	NAG		DCGT21.50.5NAG	DCGT070202N-AG	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●
			DCGT21.51NAG	DCGT070204N-AG	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●

Values for nose radius RE prefixed with "<" indicate negative tolerances.

DC 55° Diamond 7° Pos. With Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

DC■■21.5●

Dimensions (inch)	Cutting Edge Length L	.3031	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

SUMIBORON (CBN) Inserts L55 | SUMIDIA (PCD) Inserts M14 | SUMIDIA Binderless Inserts M27
Applicable External Holders C35, D18 | Applicable Internal Holders E34

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
For Aluminium	(R/L)AY	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) N	DCGT21.50RAY	DCGT070201R-AY	.0039																													★
	15°		DCGT21.50LAY	DCGT070201L-AY	.0039																													★
			DCGT21.50.5RAY	DCGT070202R-AY	.0078																													★
			DCGT21.50.5LAY	DCGT070202L-AY	.0078																													★
			DCGT21.51RAY	DCGT070204R-AY	.0156																													★
			DCGT21.51LAY	DCGT070204L-AY	.0156																													★

DC■■2.51.5●

Dimensions (inch)	Cutting Edge Length L	.3819	Thickness S	.0937
	Inscribed Circle IC	.3125	Hole Dia. D1	.1339

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Light Cutting	(M)EFM	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	DCGT2.51.50MEFM	DCGT090201MN-SC	< .0039																										●			
	6°		DCGT2.51.50EFM	DCGT090201N-SC	.0039																										★			
			DCGT2.51.50.5MEFM	DCGT090202MN-SC	< .0078																										●			
			DCGT2.51.50.5EFM	DCGT090202N-SC	.0078																										★			

Values for nose radius RE prefixed with "<" indicate negative tolerances.

DC■■32●

Dimensions (inch)	Cutting Edge Length L	.4567	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

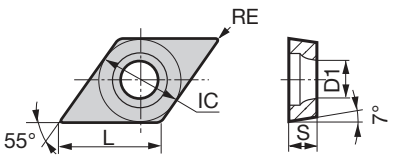
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Light Cutting	(M)EFM	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	DCGT320MEFM	DCGT110301MN-SC	< .0039																										★			
	6°		DCGT320.5MEFM	DCGT110302MN-SC	< .0078																										★			

Values for nose radius RE prefixed with "<" indicate negative tolerances.

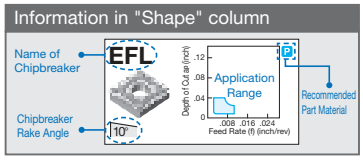
DC 55° Diamond 7° Pos. With Hole

DC■■32.5●

Dimensions (inch)	Cutting Edge Length L	.4567	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732



Information in "Shape" column



● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																				Coated Cermet		Cermet	Carbide	
P	Steel	●	●	✖	○	◔	✲													○	●	●	◔	●	●			
M	Stainless Steel							●	●	✖	○	✲									●							
K	Cast Iron					✲							●	●	○	◔	✖				✲	●						
N	Non-Ferrous Metal																									●		
S	Exotic Alloy																	●	✖	○	◔	✲						
H	Hardened Steel																●											

SUMIBORON (CBN) Inserts L57 | SUMIDIA (PCD) Inserts M15 | SUMIDIA Binderless Inserts M27

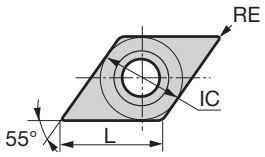
Applicable External Holders C35, D18 | Applicable Internal Holders E34

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB**	20°	DCMT32.50.5EFB	DCMT11T302N-FB	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	●	—	★	●	—	—	
			DCMT32.51EFB	DCMT11T304N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	●	—	★	★	—	—	
			DCMT32.52EFB	DCMT11T308N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	●	—	★	●	—	—	
	ELU	15°	DCMT32.50.5ELU	DCMT11T302N-LU	.0078	★	★			●				★								—				★	—	●	▲	★	★			
			DCMT32.51ELU	DCMT11T304N-LU	.0156	●	★		●	●			●	★		●						—				●	▲	—	●	▲	●	★			
			DCMT32.52ELU	DCMT11T308N-LU	.0313	●	●		●	●			●	★		●						—				●	▲	—	●	▲	★	★			
	EFP	10°	DCMT32.52EFP	DCMT11T308N-FP	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●			●	—	—	
	(M)EFC	15°	DCGT32.50MEFC	DCGT11T301MN-FC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●				—	●				●			
			DCGT32.50EFC	DCGT11T301N-FC	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●	—	●				●			
			DCGT32.50.5MEFC	DCGT11T302MN-FC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●		★		—	●				●			
			DCGT32.50.5EFC	DCGT11T302N-FC	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●	—					▲			
			DCGT32.51MEFC	DCGT11T304MN-FC	< .0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●				—	●				●			
			DCGT32.51EFC	DCGT11T304N-FC	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		●	●	—					▲			
	(R/L)FX	15°	DCGT32.5.001RFX	DCGT11T3003R-FX	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●				—	★				★			
			DCGT32.5.001LFX	DCGT11T3003L-FX	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●			★	—	●				★			
			DCGT32.50RFX	DCGT11T301R-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●			★	—	●				★			
			DCGT32.50LFX	DCGT11T301L-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●			★	—	★				★			
			DCGT32.50.5RFX	DCGT11T302R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●			★	—	●	★			★			
			DCGT32.50.5LFX	DCGT11T302L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●			★	—	★	★			★			
			DCGT32.51RFX	DCGT11T304R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
			DCGT32.51LFX	DCGT11T304L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
	(R/L)FYS	15°	DCGT32.5.001RFYS	DCGT11T3003R-FYS	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
			DCGT32.5.001LFYS	DCGT11T3003L-FYS	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
			DCGT32.50RFYS	DCGT11T301R-FYS	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
			DCGT32.50LFYS	DCGT11T301L-FYS	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
			DCGT32.50.5RFYS	DCGT11T302R-FYS	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
			DCGT32.50.5LFYS	DCGT11T302L-FYS	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
			DCGT32.51RFYS	DCGT11T304R-FYS	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
			DCGT32.51LFYS	DCGT11T304L-FYS	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				—	★							
	(R/L)FY	15°	DCGT32.5.001RFY	DCGT11T3003R-FY	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★							
			DCGT32.5.001LFY	DCGT11T3003L-FY	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★							
			DCGT32.50RFY	DCGT11T301R-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★				★			
			DCGT32.50LFY	DCGT11T301L-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★				★			
			DCGT32.50.5RFY	DCGT11T302R-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★				★			
			DCGT32.50.5LFY	DCGT11T302L-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★				★			
			DCGT32.51RFY	DCGT11T304R-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★				★			
			DCGT32.51LFY	DCGT11T304L-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	—	★				★			

Values for nose radius RE prefixed with "<" indicate negative tolerances.

55° Diamond Positive Inserts

DC 55° Diamond 7° Pos. With Hole



Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application
P Steel ● ● ✱ ○ ◔ ✲
M Stainless Steel ● ● ✱ ○ ✲
K Cast Iron ◔ ✲ ● ● ○ ◔ ✱
N Non-Ferrous Metal ●
S Exotic Alloy ● ✱ ○ ◔ ✲
H Hardened Steel ●

DC■■32.5●

Dimensions (inch)	Cutting Edge Length L	.4567	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

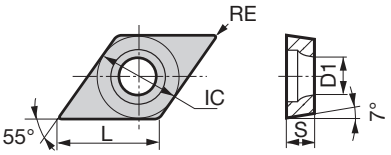
SUMIBORON (CBN) Inserts ☞ L57 | SUMIDIA (PCD) Inserts ☞ M15 | SUMIDIA Binderless Inserts ☞ M27

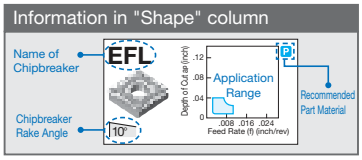
Applicable External Holders ☞ C35, D18 | Applicable Internal Holders ☞ E34

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing to Light Cutting	(R/L)		DCGT32.51R	DCGT11T304R-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			●			
			DCGT32.51L	DCGT11T304L-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★			
			DCGT32.52R	DCGT11T308R-SD	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★			
			DCGT32.52L	DCGT11T308L-SD	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★			
Light Cutting	ELB		DCMT32.50.5ELB	DCMT11T302N-LB	.0078		●	●		★	★	●	★	★								—							★		★	★			
			DCMT32.51ELB	DCMT11T304N-LB	.0156		●	●		★	★	●	★	★								—							★		★	★			
			DCMT32.52ELB	DCMT11T308N-LB	.0313	●	●	●		★	★	●	★	★								—							★		★	★			
	ESU		DCMT32.50.5ESU	DCMT11T302N-SU	.0078	★	●	●		●	●	●	●	★	▲	●						—	●	●	●	●	★			●	▲	★	●			
			DCMT32.51ESU	DCMT11T304N-SU	.0156	●	●	●	●	●	●	●	●	●	▲	●	●	●	▲	▲		—	●	●	●	●	●	▲		●	▲	★	●			
			DCMT32.52ESU	DCMT11T308N-SU	.0313	●	●	●	●	●	●	●	●	●	▲	●	●	●	▲	▲		—	●	●	●	●	●	▲		●	▲	★	★			
	(M)ESI		DCGT32.50MESI	DCGT11T301MN-SI	< .0039	—	—	—	—	—	—		●	—	▲	●	—	—	—	—	—	—	●	●	●	●	—	●	●			★	●			
			DCGT32.50.5MESI	DCGT11T302MN-SI	< .0078	—	—	—	—	—	—		●	—	▲	●	—	—	—	—	—	—	●	●	●	●	—	●	●			★	●			
			DCGT32.51MESI	DCGT11T304MN-SI	< .0156	—	—	—	—	—	—		●	—	▲	●	—	—	—	—	—	—	●	●	●	●	—	●	●				●			
			DCGT32.52MESI	DCGT11T308MN-SI	< .0313	—	—	—	—	—	—		●	—	▲		—	—	—	—	—	—	●	●	●	●	—	●	●				●			
	ENK		DCMT32.51ENK	DCMT11T304N-SK	.0156		●	●		●	●											—							—	—	—	—			—
			DCMT32.52ENK	DCMT11T308N-SK	.0313		●	●		●	●											—							—	—	—	—			—
	(M)EFM		DCGT32.5.001EFM	DCGT11T3003N-SC	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★	—	●				●			
			DCGT32.50MEFM	DCGT11T301MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—	●	●			●			
			DCGT32.50EFM	DCGT11T301N-SC	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					●	—		●	▲		●			
			DCGT32.50.5MEFM	DCGT11T302MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—	●	●			●			
			DCGT32.50.5EFM	DCGT11T302N-SC	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					●	—			▲					
			DCGT32.51MEFM	DCGT11T304MN-SC	< .0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—		●			●			
			DCGT32.51EFM	DCGT11T304N-SC	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					●	—			▲					
			DCGT32.52MEFM	DCGT11T308MN-SC	< .0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—	●	●			●			
			DCGT32.52EFM	DCGT11T308N-SC	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—			▲					
	EGU		DCMT32.50.5EGU	DCMT11T302N-GU	.0078	★	★	★				★	★	★								—							★			★			
			DCMT32.51EGU	DCMT11T304N-GU	.0156	★	●	●				●	●	★								—	●	●					●		★	★			
			DCMT32.52EGU	DCMT11T308N-GU	.0313	●	●	●				●	●	●								—							●		★	★			
			DCMT32.53EGU	DCMT11T312N-GU	.0469		●						★									—													
		—	DCMA32.51	DCMW11T304	.0156												●	★	▲	▲	★	—						▲	—	—	—	—			—
		—	DCMA32.52	DCMW11T308	.0313												★	●	▲	▲	●	—						▲	—	—	—	—			—
		—	DCGA32.50.5	DCGW11T302	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★						—	—	—	—	—			—
		—	DCGA32.51	DCGW11T304	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★						—	—	—	—	—			—
		—	DCGA32.52	DCGW11T308	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★						—	—	—	—	—			—
Light to Medium Cutting	EMU		DCMT32.51EMU	DCMT11T304N-MU	.0156	●	●		●	●		●	★				●	●	▲	▲	●	—						▲	—	—	—	—			—
			DCMT32.52EMU	DCMT11T308N-MU	.0313	●	●	●	●	●	●	●	★				★	●	▲	▲	●	—						▲	—	—	—	—			—

Values for nose radius RE prefixed with "<" indicate negative tolerances.

DC 55° Diamond 7° Pos. With Hole 55°





DC■■32.5●

Dimensions (inch)	Cutting Edge Length L	.4567	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

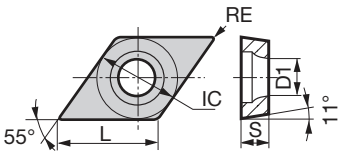
Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide	
P	Steel	●	●	✱	○	◔	✱														○	●	●	◔	●		
M	Stainless Steel							●	●	✱	○	✱										●					
K	Cast Iron					✱							●	●	○	◔	✱					✱	●				
N	Non-Ferrous Metal																										●
S	Exotic Alloy																	●	✱	○	◔	✱					
H	Hardened Steel																●										

SUMIBORON (CBN) Inserts L57 | SUMIDIA (PCD) Inserts M15 | SUMIDIA Binderless Inserts M27

Applicable External Holders C35, D18 | Applicable Internal Holders E34

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
For Aluminium	**NAG**		DCGT32.50.5NAG	DCGT11T302N-AG	.0078																													●
			DCGT32.51NAG	DCGT11T304N-AG	.0156																														●
			DCGT32.52NAG	DCGT11T308N-AG	.0313																														●
	(R/L)AY		DCGT32.50RAY	DCGT11T301R-AY	.0039																														★
			DCGT32.50LAY	DCGT11T301L-AY	.0039																														★
			DCGT32.50.5RAY	DCGT11T302R-AY	.0078																														★
			DCGT32.50.5LAY	DCGT11T302L-AY	.0078																														★
			DCGT32.51RAY	DCGT11T304R-AY	.0156																														★
			DCGT32.51LAY	DCGT11T304L-AY	.0156																														★

DP 55° Diamond 11° Pos. With Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

DP■■21.5●

Dimensions (inch)	Cutting Edge Length L	.3031	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	◔	✖	○	◔	✲						●	◔	✖	○	◔	✖						○	●	●	◔	●			
M	Stainless Steel							●	◔	✖	○	✲													●						
K	Cast Iron					✲							●	◔	○	◔	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	◔	✲									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light Cutting	ESU	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	DPMT21.51ESU	DPMT070204N-SU	.0156		●			●												—	●	●	●	●		—	—	—	—			—
		8°																																		

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

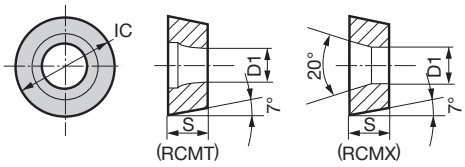
DP■■32.5●

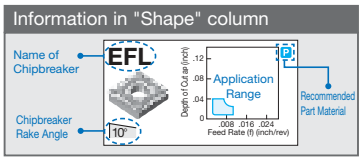
Dimensions (inch)	Cutting Edge Length L	.4567	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	◔	✖	○	◔	✲						●	◔	✖	○	◔	✖						○	●	●	◔	●			
M	Stainless Steel							●	◔	✖	○	✲													●						
K	Cast Iron					✲							●	◔	○	◔	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	◔	✲									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light Cutting	ESU	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	DPMT32.51ESU	DPMT11T304N-SU	.0156		●			●												—	●	●		●		—	—	—	—			—
		8°	DPMT32.52ESU	DPMT11T308N-SU	.0313		●			●												—	●	●	●	●		—	—	—	—			—

RC Round 7° Pos. With Hole





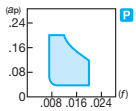
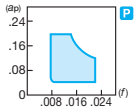
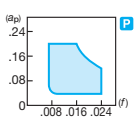
RC■■●●●●●●

Dimensions (inch)	Inscribed Circle IC	.394 to 1.260	Thickness S	.125 to .375
	Hole Dia. D1	.142 to .374		

Applicable External Holders C36

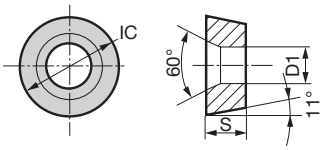
● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✪ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet	Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	◔	✖	○	◔	✪																			◔	●	◔	●		
M	Stainless Steel							●	◔	✖	○	✪													◔					
K	Cast Iron					✪							●	◔	○	◔	✖							✪	◔					
N	Non-Ferrous Metal																													◔
S	Exotic Alloy																	◔	✖	○	◔	✪								
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	IC	S	D1	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium to Roughing	**RX** 		RCMT100300	RCMT1003M0N-RX	.3937	.1252	.1732	★	★	★	●	●	●																								
			RCMT120400	RCMT1204M0N-RX	.4724	.1874	.1732	●	●	●	●	●	●												★												
			RCMT160600	RCMT1606M0N-RX	.6299	.2500	.1969	★	★	●	●	●	●																								
			RCMT200600	RCMT2006M0N-RX	.7874	.2500	.2559	●	★	●	●	●	●													★											
			RCMT250700	RCMT2507M0N-RX	.9843	.3126	.2992	●	★	●	●	●	●														●										
	ERH 		RCMT120400ERH	RCMT1204M0N-RH	.4724	.1874	.1732	★	★	★	★	★	★																								
			RCMT160600ERH	RCMT1606M0N-RH	.6299	.2500	.1969	★	★	★	★	★	★																								
			RCMT200600ERH	RCMT2006M0N-RH	.7874	.2500	.2559	★	★	★	★	★	★																								
Roughing	**RP** 		RCMX100300	RCMX1003M0N-RP	.3937	.1252	.1417	★	★	●	●	●	●						★	★	★	★	★							▲							
			RCMX120400	RCMX1204M0N-RP	.4724	.1874	.1654	●	★	●	●	●	●						●	★	★	★	●		●	★				▲							
			RCMX160600	RCMX1606M0N-RP	.6299	.2500	.2047	●	★	●	●	●	●						★	★	★	★	●							▲							
			RCMX200600	RCMX2006M0N-RP	.7874	.2500	.2559	★	★	●	★	●	●							★	★																
			RCMX250700	RCMX2507M0N-RP	.9843	.3126	.2835	●	★	★	●	●	●																								
			RCMX320900	RCMX3209M0N-RP	1.2598	.3748	.3740	★	★		★	★																									

Round Positive Inserts

RP Round 7° Pos. With Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

RP■■●●●●●

Dimensions (inch)	Inscribed Circle IC	.315 to .630	Thickness S	.125 to .1874
	Hole Dia. D1	.1299 to .2087		

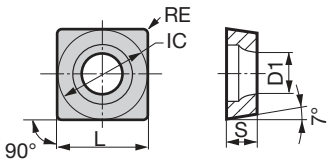
SUMIDIA (PCD) Inserts ☞ M28

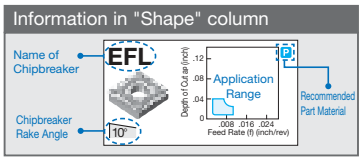
● Continuous Cutting 1st Recommended ◯ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	◔	✱	◯	◔	✲																	◯	◉	◉	◔	◉			
M	Stainless Steel							●	◉	✱	◯	✲													◉						
K	Cast Iron					◔	✲						●	◉	◯	◔	✱							✲	◉						
N	Non-Ferrous Metal																														◉
S	Exotic Alloy																	◉	✱	◯	◔	✲									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	IC	S	D1	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium Cutting		—	RPGA0803M0	RPGW0803M0	.3150	.1252	.1299																		★	★											
			RPGA1004M0	RPGW1004M0	.3937	.1874	.1496																		★	★											
			RPGA1204M0	RPGW1204M0	.4724	.1874	.1693																		★	★											
			RPGA1604M0	RPGW1604M0	.6299	.1874	.2087																														

SC Square 7° Pos. With Hole





SC■■2.51.5●

Dimensions (inch)	Cutting Edge Length L	.3125	Thickness S	.0937
	Inscribed Circle IC	.3125	Hole Dia. D1	.1339

SUMIDIA (PCD) Inserts ☞ M16

Applicable External Holders ☞ D26

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	●	✖	○	↻	⚙																	○	●	●	↻	●			
M	Stainless Steel							●	●	✖	○	⚙													●						
K	Cast Iron					⚙							●	●	○	↻	✖							⚙	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	✖	○	↻	⚙								
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	RE																											
Light Cutting	(M)EFM		SCGT2.51.50MEFM	SCGT070201MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★		★	—	—	
			SCGT2.51.5MEFM	SCGT070202MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		●	—	—	

Values for nose radius RE prefixed with "<" indicate negative tolerances.

SC■■32●

Dimensions (inch)	Cutting Edge Length L	.3750	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

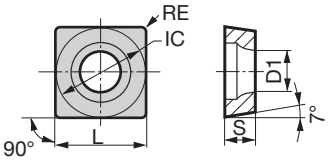
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	●	✖	○	↻	⚙																	○	●	●	↻	●			
M	Stainless Steel							●	●	✖	○	⚙													●						
K	Cast Iron					⚙							●	●	○	↻	✖							⚙	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	✖	○	↻	⚙								
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	RE																											
Light Cutting	(M)EFM		SCGT320MEFM	SCGT090301MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	
			SCGT320.5MEFM	SCGT090302MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	

Values for nose radius RE prefixed with "<" indicate negative tolerances.

SC Square 7° Pos. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

SC■■32.5●

Dimensions (inch)	Cutting Edge Length L	.3750	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Applicable External Holders C38, D26 — Applicable Internal Holders E43

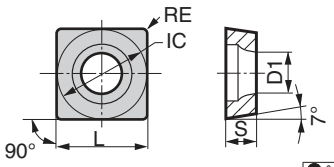
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T2500Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	EFB	20°	SCMT32.51EFB	SCMT09T304N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●		★	●	—	—	—
			SCMT32.52EFB	SCMT09T308N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	●		★	★	—	—	—
	ELU	15°	SCMT32.51ELU	SCMT09T304N-LU	.0156	●	●		●	●		★	★		●						—					▲	—	●	▲	★	★			
			SCMT32.52ELU	SCMT09T308N-LU	.0313	●	●		●	●		★	★		●						—					▲	—	★		★	★			
	EFP	10°	SCMT32.51EFP	SCMT09T304N-FP	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	—
			SCMT32.52EFP	SCMT09T308N-FP	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				●	—	—	—
	(R/L)FX	15° *1	SCGT32.50.5RFX	SCGT09T302R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	—	—	—	—
			SCGT32.50.5LFX	SCGT09T302L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	—	—	—	—
			SCGT32.51RFX	SCGT09T304R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	—	—	—	—
			SCGT32.51LFX	SCGT09T304L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	—	—	—	—
Light Cutting	ELB	15°	SCMT32.51ELB	SCMT09T304N-LB	.0156		●	●		★	★	●	★	★							—						—	★		★	★			
			SCMT32.52ELB	SCMT09T308N-LB	.0313		●	●		★	★	●	★	★							—						—	★		★	★			
	ESU	8°	SCMT32.51ESU	SCMT09T304N-SU	.0156	●	●	★	●	●	●	●	●	●	★	●					—	★	●			▲	—	●	▲					
			SCMT32.52ESU	SCMT09T308N-SU	.0313	●	●	●	●	●	●	●	●	●	★	●					—	●	●			▲	—							
	ENK	8°	SCMT32.51ENK	SCMT09T304N-SK	.0156					●	●										—						—	—	—	—	—	—	—	—
			SCMT32.52ENK	SCMT09T308N-SK	.0313		●	●		●	●										—					▲	—	—	—	—	—	—	—	—
	(M)EFM	6°	SCGT32.50MEFM	SCGT09T301MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	●			★	—	—	—
			SCGT32.50.5MEFM	SCGT09T302MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	●			●	—	—	—
	EGU	8°	SCMT32.51EGU	SCMT09T304N-GU	.0156	●	●	★				★	●	★							—						—						—	
			SCMT32.52EGU	SCMT09T308N-GU	.0313	●	●	●				★	●	●							—						—						—	
		—	SCMA32.52	SCMW09T308	.0313												★	★	★	★	●	—					▲	—						—	
Light to Medium Cutting	EMU	0°	SCMT32.52EMU	SCMT09T308N-MU	.0313	●	●		★	●		●	★			★	★	★	★	★	●	—						—						—	

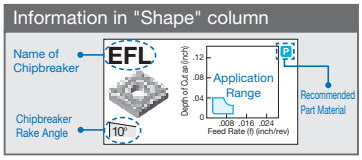
*1: Photo shows left hand.

Values for nose radius RE prefixed with "<" indicate negative tolerances.

Square Positive Inserts

SC Square 7° Pos. With Hole





SC■■43●

Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2165

Applicable External Holders C38, D26 | Applicable Internal Holders E43

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

Recommended Application

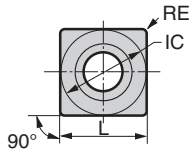
		Coated Carbide																					Coated Cermet	Cermet	Carbide		
P	Steel	●	◔	✱	○	◔	✱														○	●	●	◔	●			
M	Stainless Steel							●	◔	✱	○	✱										●					
K	Cast Iron					✱							●	◔	○	◔	✱						✱	●				
N	Non-Ferrous Metal																										●
S	Exotic Alloy																	●	◔	○	◔	✱					
H	Hardened Steel															●											

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	**EFP**		SCMT431EFP	SCMT120404N-FP	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			SCMT432EFP	SCMT120408N-FP	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
	(R/L)FX *1		SCGT431RFX	SCGT120404R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—
			SCGT431LFX	SCGT120404L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—
Light Cutting	**ESU**		SCMT431ESU	SCMT120404N-SU	.0156	★	●	●	★	●	★											—						—	—	—	—				—
			SCMT432ESU	SCMT120408N-SU	.0313	★	●	●	★	●	★											—						—	—	—	—				—
	ENK		SCMT431ENK	SCMT120404N-SK	.0156		●	●		●	●											—						—	—	—	—				—
			SCMT432ENK	SCMT120408N-SK	.0313		●	●		●	●											—						—	—	—	—				—
			SCMT433ENK	SCMT120412N-SK	.0469			●			●											—						—	—	—	—				—
	EGU		SCMT432EGU	SCMT120408N-GU	.0313	★	●	★														—						—	—	—	—				—
		—	SCMA432	SCMW120408	.0313												★	★	★	★	●	—						▲	—	—	—				—
			SCMA433	SCMW120412	.0469												★	★	★	★	●	—						▲	—	—	—				—
Light to Medium Cutting	**EMU**		SCMT432EMU	SCMT120408N-MU	.0313	●	★		★	★							●	●	★	▲	●	—						▲	—	—	—				—

*1: Photo shows left hand.

Square Positive Inserts

SP Square 11° Pos. With Hole



(ENS/ENX, ENS/SP□□2.5)

Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

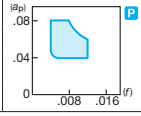
Insert Grade Selection by Part Material ☞ A10 on

SP■■21.5●

Dimensions (inch)	Cutting Edge Length L	.2500	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✱	○	◔	✱		●	●		●												○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✱													●					
K	Cast Iron					◔							●	●	○	◔	✱							✱	●					
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✱	○	◔	✱								
H	Hardened Steel																	●												

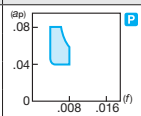
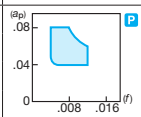
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE
Light Cutting	ENS		SPMT21.51ENS	SPMT060204N-US	.0156

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

SP■■2.52●

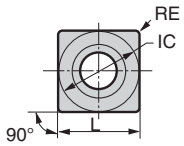
Dimensions (inch)	Cutting Edge Length L	.3125	Thickness S	.1250
	Inscribed Circle IC	.3125	Hole Dia. D1	.1339

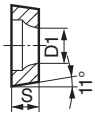
Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✱	○	◔	✱		●	●		●												○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✱													●					
K	Cast Iron					◔							●	●	○	◔	✱							✱	●					
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✱	○	◔	✱								
H	Hardened Steel																	●												

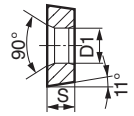
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE
Finishing to Light Cutting	(R/L)		SPGT2.521L	SPGT070304L-SD	.0156
Light Cutting	ENS		SPMT2.522ENS	SPMT070308N-US	.0313

*1: Photo shows left hand.

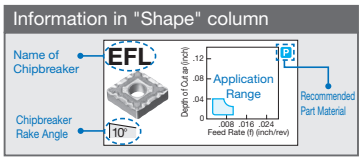
SP Square 11° Pos. With Hole







(ENS/ENX, ENS/SP□□32)



● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended

SP■■32●

Dimensions (inch)	Cutting Edge Length L	.3750	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

Recommended Application

		Coated Carbide																				Coated Cermet	Cermet	Carbide		
P	Steel	●	●	✱	○	◔	✲													○	●	●	◔	●		
M	Stainless Steel							●	●	✱	○	✲									●					
K	Cast Iron					✲							●	●	○	◔	✱					✲	●			
N	Non-Ferrous Metal																									●
S	Exotic Alloy																	●	✱	○	◔	✲				
H	Hardened Steel																●									

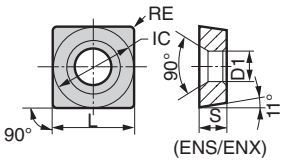
SUMIBORON (CBN) Inserts ☞ L66 SUMIDIA (PCD) Inserts ☞ M15
Applicable Internal Holders ☞ E44

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	EFB		SPMT321EFB	SPMT090304N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
			SPMT322EFB	SPMT090308N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
	ELU		SPMT321ELU	SPMT090304N-LU	.0156	★	★		★	★			●	●		●						—					▲	—			★			
			SPMT322ELU	SPMT090308N-LU	.0313	●	★		★	★			●	●		●						—					▲	—			★			
	EFK		SPMT322EFK	SPMT090308N-FK	.0313																	—						—	●	▲		—	—	
Finishing to Light Cutting	(R/L)		SPGG320.5R	SPGT090302R-SD	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
			SPGG320.5L	SPGT090302L-SD	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
			SPGG321R	SPGT090304R-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
			SPGG321L	SPGT090304L-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★	●	—	—	
			SPGG322R	SPGT090308R-SD	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
			SPGG322L	SPGT090308L-SD	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	▲	★	—	—	
Light Cutting	ELB		SPMT321ELB	SPMT090304N-LB	.0156		★	●		★	★	●	★	★								—						—	★		★			
			SPMT322ELB	SPMT090308N-LB	.0313		★	●		★	★	●	★	★		●						—						—	★		★			
	ENS		SPMT322ENS	SPMH090308N-SS	.0313								●	●								—						—	—	—	—			—
		—	SPGA321	SPGW090304	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Light to Medium Cutting	ENF		SPMT321ENF	SPMT090304N-SF	.0156		★	★		●	●											—						—	—	—	—			—
			SPMT322ENF	SPMT090308N-SF	.0313		★	●		●	●											—						—	—	—	—			—

*1: Photo shows left hand.
*2: Hole Dia. D1=.1732"
*3: Hole Dia. D1=.1299"

Square Positive Inserts

SP **Square** **11° Pos.** **With Hole**



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

SP■■32.5●

Dimensions (inch)	Cutting Edge Length L	.3750	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet			
P	Steel	●	●	✖	○	◔	✲																	○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✲													●						
K	Cast Iron					◔	✲						●	●	○	◔	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	◔	✲									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	
Light Cutting	ENX	(ap) .08 .04 0 .008 .016 (f) P	SPMT32.52ENX	SPMT09T308N-US	.0313	

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

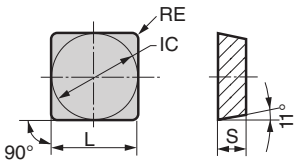
SP■■43●

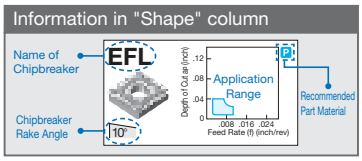
Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1875
	Inscribed Circle IC	.5000	Hole Dia. D1	.2165

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet			
P	Steel	●	●	✖	○	◔	✲																	○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✲													●						
K	Cast Iron					◔	✲						●	●	○	◔	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	◔	✲									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	
Light Cutting	ENS	(ap) .08 .04 0 .008 .016 (f) P	SPMT432ENS	SPMH120408N-US	.0313	

SP Square 11° Pos. Without Hole





SP■■2.51.5●

Dimensions (inch)	Cutting Edge Length L	.3125	Thickness S	.0937
	Inscribed Circle IC	.3125		

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✱ Interrupted Cutting 2nd Recommended

Recommended Application
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-Ferrous Metal
- S Exotic Alloy
- H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet T1500Z	T2000Z	Cermet T1500A	Carbide EH510	EH520	H1
Light Cutting		—	**SPG2.51.51**	**SPGN070204**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

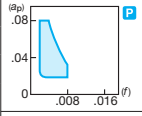
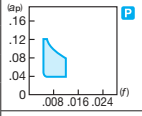
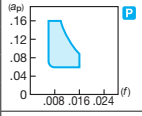
*1: Photo shows left hand.

SP■■32●

Dimensions (inch)	Cutting Edge Length L	.3750	Thickness S	.1250
	Inscribed Circle IC	.3750		

SUMIBORON (CBN) Inserts ☞ L66 SUMIDIA (PCD) Inserts ☞ M16
Applicable Internal Holders ☞ E44

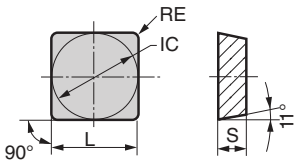
Recommended Application
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-Ferrous Metal
- S Exotic Alloy
- H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet T1500Z	T2000Z	T2500Z	Cermet T1500A	Carbide EH510	EH520	H1
Finishing	**EFK** 		**SPMR321EFK**	**SPMR090304N-FK**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			●	—	—	—
			SPMR322EFK	**SPMR090308N-FK**	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	★	●	—	—	—
Light to Medium Cutting	**ENF** 		**SPMR321ENF**	**SPMR090304N-SF**	.0156		★	★		★	●											—						—	—	—	—	—	—	—	—
			SPMR322ENF	**SPMR090308N-SF**	.0313		★	●		●	●											—						—	—	—	—	—	—	—	—
	EUJ 		**SPMR321EUJ**	**SPMR090304N-UJ**	.0156		★			★												—						—	—	—	—	—	—	—	—
			SPMR322EUJ	**SPMR090308N-UJ**	.0313		★	★		★	★											—						—	—	—	—	—	—	—	—
Medium Cutting		—	**SPMN321**	**SPMN090304**	.0156												●	★	★	▲	●	—						—	—				★		
			SPMN322	**SPMN090308**	.0313		●			●							★	★	★	★	●	—					▲	—	—				★		
		—	**SPG321**	**SPGN090304**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●	—	—	★
			SPG322	**SPGN090308**	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—		▲	●	—	—	★

*1: Photo shows left hand.

Square Positive Inserts

SP Square 11° Pos. Without Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

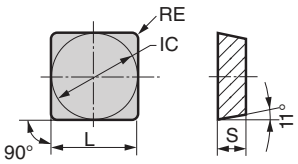
Insert Grade Selection by Part Material A10 on

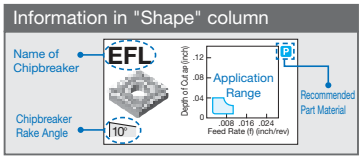
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✪ Interrupted Cutting 2nd Recommended

Recommended Application

| | | |

SP Square 11° Pos. Without Hole





SP■■53●

Dimensions (inch)	Cutting Edge Length L	.6250	Thickness S	.1875
	Inscribed Circle IC	.6250		

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Medium Cutting		—	**SPMN532**	**SPMN150408**	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—	—	—	—	—	—
			SPMN533	**SPMN150412**	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

SP■■63●

Dimensions (inch)	Cutting Edge Length L	.7500	Thickness S	.1875
	Inscribed Circle IC	.7500		

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

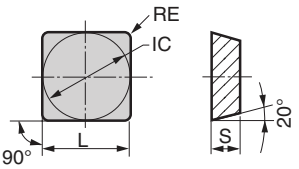
Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

Ceramic Inserts ☞ B133

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Medium Cutting		—	**SPMN633**	**SPMN190412**	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SPMN634	**SPMN190416**	.0625	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	**SPG632**	**SPGN190408**	.0313	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SPG633	**SPGN190412**	.0469	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			SPG634	**SPGN190416**	.0625	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Square Positive Inserts

SE Square 20° Pos. Without Hole



Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

SE■■2.51.5●

Dimensions (inch)	Cutting Edge Length L	.3125	Thickness S	.0937
	Inscribed Circle IC	.3125		

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Light Cutting		—	**SEGE2.51.51**	**SEGN070204**	.0156																													★

SE■■32●

Dimensions (inch)	Cutting Edge Length L	.3750	Thickness S	.1250
	Inscribed Circle IC	.3750		

SUMIDIA (PCD) Inserts ☞ M17

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Light Cutting		—	**SEGN321** **SEGN322**	**SEGN090304** **SEGN090308**	.0156 .0313																													★ ★

SE■■42●

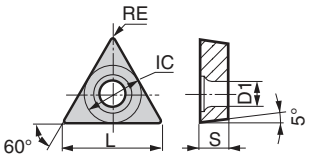
Dimensions (inch)	Cutting Edge Length L	.5000	Thickness S	.1250
	Inscribed Circle IC	.5000		

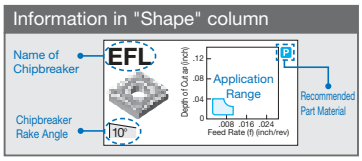
SUMIDIA (PCD) Inserts ☞ M17

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
						Coated Carbide																								Coated Cermet		Cermet	Carbide		
Light Cutting		—	**SEGN421** **SEGN422**	**SEGN120304** **SEGN120308**	.0156 .0313																													★ ★

Triangular Positive Inserts

TB Triangular 5° Pos. With Hole





TB■■52●

Dimensions (inch)	Cutting Edge Length L	.2717	Thickness S	.0626
	Inscribed Circle IC	.1563	Hole Dia. D1	.0866

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application

P	Steel	●	◔	✖	○	◔	✲															○	◔	◔	◔	◔				
M	Stainless Steel							●	◔	✖	○	✲											◔							
K	Cast Iron					✲							●	◔	○	◔	✖					✲	◔								
N	Non-Ferrous Metal																													◔
S	Exotic Alloy																	◔	✖	○	◔	✲								
H	Hardened Steel															●														

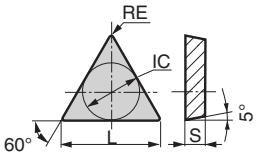
SUMIBORON (CBN) Inserts L75 SUMIDIA (PCD) Inserts M18
Applicable Internal Holders E46

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide	
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**FW** *1		TBGT520.5RFW	TBGT060102R-FW	.0078																							★			★			
			TBGT520.5LFW	TBGT060102L-FW	.0078																							●	▲		●			
			TBGT521RFW	TBGT060104R-FW	.0156																							★			★			
			TBGT521LFW	TBGT060104L-FW	.0156																							●	▲		●			
	(R/L)FX *1		TBGT520.5RFX	TBGT060102R-FX	.0078																	●	★			●		●						
			TBGT520.5LFX	TBGT060102L-FX	.0078		●			●												●	★	●		★		★						
			TBGT521RFX	TBGT060104R-FX	.0156																	●	★	●		★		★						
			TBGT521LFX	TBGT060104L-FX	.0156		●			●												●	★	●		★		●						
	(R/L)FY *1		TBGT520RFY	TBGT060101R-FY	.0039																					★		●						
			TBGT520LFY	TBGT060101L-FY	.0039																					●		●						
			TBGT520.5RFY	TBGT060102R-FY	.0078																							★			★			
			TBGT520.5LFY	TBGT060102L-FY	.0078																							★			★			
			TBGT521RFY	TBGT060104R-FY	.0156																							★			★			
			TBGT521LFY	TBGT060104L-FY	.0156																					★		★				●			
Finishing to Light Cutting	**(R/L)W** *1		TBGT520.5R	TBGT060102R-W	.0078																					●		★	★	▲		●			
			TBGT520.5L	TBGT060102L-W	.0078		●			●																★		★	●	▲	★	●			
			TBGT521R	TBGT060104R-W	.0156																					●		●	★	▲		●			
			TBGT521L	TBGT060104L-W	.0156		●			●																★		★	●	▲		●			
Light Cutting		—	TBGA520.5	TBGW060102	.0078																										★			
			TBGA521	TBGW060104	.0156																										★			
For Aluminium	**(R/L)AY** *1		TBGT520RAY	TBGT060101R-AY	.0039																													★
			TBGT520LAY	TBGT060101L-AY	.0039																													★
			TBGT520.5RAY	TBGT060102R-AY	.0078																													★
			TBGT520.5LAY	TBGT060102L-AY	.0078																													★
			TBGT521RAY	TBGT060104R-AY	.0156																													★
			TBGT521LAY	TBGT060104L-AY	.0156																													★

*1: Photo shows left hand.

Triangular Positive Inserts

TB Triangular 5° Pos. Without Hole



TB■■52●

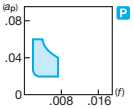
Dimensions (inch)	Cutting Edge Length L	.2717	Thickness S	.0626
	Inscribed Circle IC	.1563		

Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																								Coated Cermet	Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	◔	✱	○	◔	✲																							
M	Stainless Steel							●	◔	✱	○	✲													◔					
K	Cast Iron					✲							●	◔	○	◔	✱							✲	◔					
N	Non-Ferrous Metal																													◔
S	Exotic Alloy																	◔	✱	○	◔	✲								
H	Hardened Steel																	●												

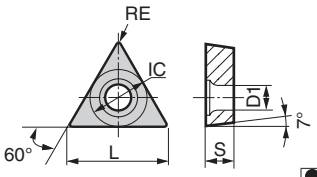
SUMIBORON (CBN) Inserts ☞ L75 **SUMIDIA (PCD) Inserts ☞ M18**

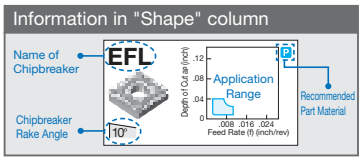
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE
Finishing to Light Cutting	(R/L)W 0° *1		TBGR521LW	TBGR060104L-W	.0156
Light Cutting		—	TBGE521	TBGN060104	.0156

Finishing to Light Cutting	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	
Light Cutting	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	★

*1: Photo shows left hand.

TC Triangular 7° Pos. With Hole





TC■■63●

Dimensions (inch)	Cutting Edge Length L	.3228	Thickness S	.0937
	Inscribed Circle IC	.1875	Hole Dia. D1	.0906

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	RE	Coated Carbide																					Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light Cutting	(M)EFM		TCGT630MEFM	TCGT080201MN-SC	< .0038																					●	★			★			
			TCGT630.5MEFM	TCGT080202MN-SC	< .0078																					●	●			★			

Values for nose radius RE prefixed with "<" indicate negative tolerances.

TC■■1.81.5●

Dimensions (inch)	Cutting Edge Length L	.3780	Thickness S	.0937
	Inscribed Circle IC	.2189	Hole Dia. D1	.0984

SUMIDIA (PCD) Inserts ☞ M18
Applicable External Holders ☞ D27

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

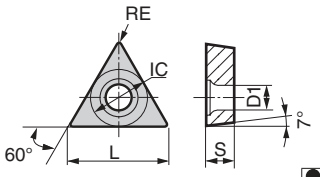
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																					Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	(R/L)FX		TCGT1.81.50RFX	TCGT090201R-FX	.0039																					★		★					
			TCGT1.81.50LFX	TCGT090201L-FX	.0039																							★					
			TCGT1.81.50.5RFX	TCGT090202R-FX	.0078																					★		★					
			TCGT1.81.50.5LFX	TCGT090202L-FX	.0078																					★		★					
	(R/L)FY		TCGT1.81.50RFY	TCGT090201R-FY	.0039																							★					
			TCGT1.81.50LFY	TCGT090201L-FY	.0039																					★		★					
			TCGT1.81.50.5RFY	TCGT090202R-FY	.0078																							★					
			TCGT1.81.50.5LFY	TCGT090202L-FY	.0078																							★					
Light Cutting	(M)EFM		TCGT1.81.50MEFM	TCGT090201MN-SC	< .0039																							★		★			
			TCGT1.81.50EFM	TCGT090201N-SC	.0039																									★				
			TCGT1.81.50.5MEFM	TCGT090202MN-SC	< .0078																							★		★			
			TCGT1.81.50.5EFM	TCGT090202N-SC	.0078																					●				●			

*1: Photo shows left hand.

Values for nose radius RE prefixed with "<" indicate negative tolerances.

Triangular Positive Inserts

TC Triangular 7° Pos. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

TC■■21.5●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application

P	Steel	●	●	✖	○	↻	✲														○	●	●	↻	●	●				
M	Stainless Steel							●	●	✖	○	✲										●								
K	Cast Iron					✲							●	●	○	↻	✖						✲	●						
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	↻	✲								
H	Hardened Steel																●													

SUMIBORON (CBN) Inserts L75 | SUMIDIA (PCD) Inserts M18

Applicable External Holders C39, D27 | Applicable Internal Holders E47

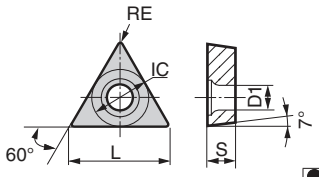
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																						Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB**		TCMT21.51EFB	TCMT110204N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●		★	●	—	—	
			TCMT21.52EFB	TCMT110208N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●		★	●	—	—	
	ELU		TCMT21.51ELU	TCMT110204N-LU	.0156	●	★		●	●		●	★		●						—						▲	—	●	▲	★	★			
			TCMT21.52ELU	TCMT110208N-LU	.0313	●	★		●	●		●	★		●						—						▲	—	★	▲	★	★			
	EFP		TCMT21.51EFP	TCMT110204N-FP	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		▲		●	—	—	
			TCMT21.52EFP	TCMT110208N-FP	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		▲		★	—	—	
	(R/L)FX		TCGT21.50RFX	TCGT110201R-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★	—	★	—	—	—	—	—	—	—
			TCGT21.50LFX	TCGT110201L-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★	—	★	—	—	—	—	—	—	—
			TCGT21.50.5RFX	TCGT110202R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★	—	★	—	—	—	—	—	—	—
			TCGT21.50.5LFX	TCGT110202L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—	★	—	—	—	—	—	—	—
	(R/L)FY		TCGT21.50RFY	TCGT110201R-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—	★	—	—	—	—	—	—	—
			TCGT21.50LFY	TCGT110201L-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—	★	—	—	—	—	—	—	—
			TCGT21.50.5RFY	TCGT110202R-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						—	★	—	—	—	—	—	—	—
			TCGT21.50.5LFY	TCGT110202L-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					★	—	●	—	—	—	—	—	—	—
Light Cutting	**ELB**		TCMT21.51ELB	TCMT110204N-LB	.0156		●	●		★	★	●	★	★								—								★		★	★			
			TCMT21.52ELB	TCMT110208N-LB	.0313		●	●		★	★	●	★	★								—								★		★	★			
	ESU		TCMT21.51ESU	TCMT110204N-SU	.0156	●	●	●	●	●	●	●	●	●	▲	●	●	●	▲	▲	—	●	●	●	●		▲	—	●	▲	★				
			TCMT21.52ESU	TCMT110208N-SU	.0313	●	●	●	●	●	★	●	●	●	★	●	●	●	▲	▲	—	●	●	●	●		▲	—	—	—	—				—
	(M)ESI		TCGT21.51MESI	TCGT110204MN-SI	< .0156	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	●	●				—	★	★			●				
	ENK		TCMT21.51ENK	TCMT110204N-SK	.0156	●	●	●	●	●	▲										—					▲	—	—	—	—	—	—	—	—	—
			TCMT21.52ENK	TCMT110208N-SK	.0313	●	●	●	●	●	●										—					▲	—	—	—	—	—	—	—	—	—
	(M)EFM		TCGT21.50EFM	TCGT110201N-SC	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—								
			TCGT21.50MEFM	TCGT110201MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●			★				
			TCGT21.50.5EFM	TCGT110202N-SC	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—			▲					
			TCGT21.50.5MEFM	TCGT110202MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●			●				

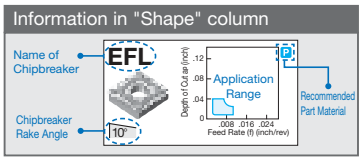
*1: Photo shows left hand.

Values for nose radius RE prefixed with "<" indicate negative tolerances.

Triangular Positive Inserts

TC Triangular 7° Pos. With Hole





TC■■21.5●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

SUMIBORON (CBN) Inserts ☞ L75 | SUMIDIA (PCD) Inserts ☞ M18

Applicable External Holders ☞ C39, D27 | Applicable Internal Holders ☞ E47

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Light Cutting		—	TCMA21.51	TCMW110204	.0156												★	●	▲	▲	●	—					▲	—	—	—	—			—
			TCMA21.52	TCMW110208	.0313												★	★	▲	▲	●	—					▲	—	—	—	—			—

*1: Photo shows left hand.

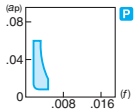
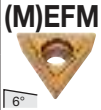
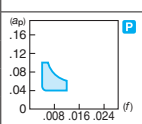
Values for nose radius RE prefixed with "<" indicate negative tolerances.

TC■■220●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.1250
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

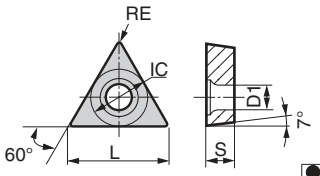
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	(R/L)FX  *1 15°		TCGT220RFX	TCGT110301R-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TCGT220LFX	TCGT110301L-FX	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TCGT220.5RFX	TCGT110302R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TCGT220.5LFX	TCGT110302L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TCGT221RFX	TCGT110304R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TCGT221LFX	TCGT110304L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
Light Cutting	(M)EFM  6°		TCGT220MEFM	TCGT110301MN-SC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—
			TCGT220.5MEFM	TCGT110302MN-SC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—

*1: Photo shows left hand.

Values for nose radius RE prefixed with "<" indicate negative tolerances.

Triangular Positive Inserts

TC Triangular 7° Pos. With Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

TC■■32.5●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1693

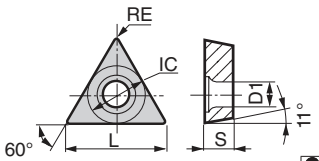
SUMIBORON (CBN) Inserts ☞ L76

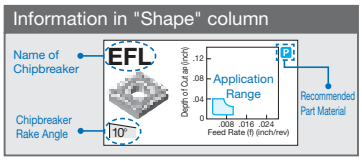
Applicable External Holders ☞ C39, D27 Applicable Internal Holders ☞ E47

Recommended Application		Coated Carbide																							Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✱	○	◔	✲																	○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✲												●							
K	Cast Iron					✲							●	●	○	◔	✱							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✱	○	◔	✲									
H	Hardened Steel																	●													
Finishing	**EFP**	TCMT32.51EFP											TCMT16T304N-FP												.0156			▲	★			
		TCMT32.52EFP											TCMT16T308N-FP												.0313			▲	●			
Light Cutting	**ESU**	TCMT32.51ESU											TCMT16T304N-SU											▲	.0156						
		TCMT32.52ESU											TCMT16T308N-SU											▲	.0313						
	ENK	TCMT32.51ENK											TCMT16T304N-SK											▲	.0156		▲				
		TCMT32.52ENK											TCMT16T308N-SK											▲	.0313						
		TCMT32.53ENK											TCMW16T312N-SK												.0469						
		TCMA32.51											TCMW16T304											▲	.0156						
	—	TCMA32.52											TCMW16T308											▲	.0313						
		TCMA32.53											TCMW16T312											▲	.0469						

Triangular Positive Inserts

TP Triangular 11° Pos. With Hole





TP■■63●

Dimensions (inch)	Cutting Edge Length L	.3228	Thickness S	.0937
	Inscribed Circle IC	.1875	Hole Dia. D1	.0945

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																				Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
P	Steel	●	◕	✱	○	◔	✲																									
M	Stainless Steel							●	◕	✱	○	✲												◕							
K	Cast Iron					✲							●	◕	○	◔	✱							✲	◕							
N	Non-Ferrous Metal																															◕
S	Exotic Alloy																		◕	✱	○	◔	✲									
H	Hardened Steel																	●														

SUMIBORON (CBN) Inserts L77 SUMIDIA (PCD) Inserts M19
SUMIDIA (PCD) Binderless Inserts M27 Applicable Internal Holders E46

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB**		TPMT630.5EFB	TPMT080202N-FB	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	
			TPMT631EFB	TPMT080204N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	
	ELU		TPMT630.5ELU	TPMT080202N-LU	.0078								★	★								—						—				★			
			TPMT631ELU	TPMT080204N-LU	.0156								★	★								—						—				★			
	FW		TPGT630.5RFW	TPGT080202R-FW	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★			
			TPGT630.5LFW	TPGT080202L-FW	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲		●			
			TPGT631RFW	TPGT080204R-FW	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲		★			
			TPGT631LFW	TPGT080204L-FW	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲		●			
	(R/L)FX		TPGT630.5RFX	TPGT080202R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	★	—	★	—	—	—	—	—	—	—	
			TPGT630.5LFX	TPGT080202L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	★	—	●	—	—	—	—	—	—	—	
			TPGT631RFX	TPGT080204R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	★	—	★	—	—	—	—	—	—	—	
			TPGT631LFX	TPGT080204L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	●	—	●	—	—	—	—	—	—	—	
	(R/L)FY *1		TPGT63.001RFY	TPGT0802003R-FY	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★	—	—	—	—	—	—	—	
			TPGT63.001LFY	TPGT0802003L-FY	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●				—	★	—	—	—	—	—	—	—	
			TPGT630RFY	TPGT080201R-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			●	—	★	—	—	—	—	—	—	—	
			TPGT630LFY	TPGT080201L-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●			★	—	●	—	—	—	—	—	—	—	
			TPGT630.5RFY	TPGT080202R-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	—	★	—	—	—	—	—	—	—	
			TPGT630.5LFY	TPGT080202L-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	—	●	—	—	—	★	—	—	—	
			TPGT631RFY	TPGT080204R-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★				—	★	—	—	—	●	—	—	—	
			TPGT631LFY	TPGT080204L-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★			★	—	●	—	—	—	★	—	—	—	
Finishing to Light Cutting	**(R/L)W** *1		TPGT630.5R	TPGT080202R-W	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	●	▲		●			
			TPGT630.5L	TPGT080202L-W	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	★	—	★	●	▲	★	●			
			TPGT631R	TPGT080204R-W	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	●	★	▲	★	●			
			TPGT631L	TPGT080204L-W	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	●	●	▲	●	●			
Light Cutting	**ELB**		TPMT630.5ELB	TPMT080202N-LB	.0078		●	●		★	★	●	★	★								—						—	★		★	★			
			TPMT631ELB	TPMT080204N-LB	.0156		●	●		★	★	●	★	★								—						—	★		★	★			
	ESU		TPMT630.5ESU	TPMT080202N-SU	.0078							●	★	★								—						—				★			
			TPMT631ESU	TPMT080204N-SU	.0156							●	★	★								—					●	—				★			
		—	TPGA630.5	TPGW080202	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	
For Aluminium	**(R/L)AY** *1		TPGT630RAY	TPGT080201R-AY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT630LAY	TPGT080201L-AY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT630.5RAY	TPGT080202R-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT630.5LAY	TPGT080202L-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT631RAY	TPGT080204R-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT631LAY	TPGT080204L-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

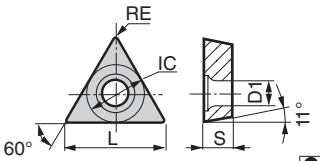
*1: Photo shows left hand.

Triangular Positive Inserts

TP Triangular 11° Pos. With Hole

TP■■1.81.5●

Dimensions (inch)	Cutting Edge Length L	.3780	Thickness S	.0937
	Inscribed Circle IC	.2189	Hole Dia. D1	.1102



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																						Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
P	Steel	●	◕	✱	○	◔	✲																								
M	Stainless Steel							●	◕	✱	○	✲													◕	◕	◔	◕	●		
K	Cast Iron					✲							●	◕	○	◔	✱						✲	◕							
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✱	○	◔	✲									
H	Hardened Steel																	●													

SUMIBORON (CBN) Inserts L78 SUMIDIA (PCD) Inserts M19

Applicable Internal Holders E48

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB** 20°	P	TPMT1.81.50EFB	TPMT090201N-FB	.0039																					★								
			TPMT1.81.50.5EFB	TPMT090202N-FB	.0078																							★		★	★			
			TPMT1.81.51EFB	TPMT090204N-FB	.0156																							★		★	★			
	ELU 15°	P	TPMT1.81.50.5ELU	TPMT090202N-LU	.0078	★	★		●												—							★		★	★			
			TPMT1.81.51ELU	TPMT090204N-LU	.0156	★	★		●												—							★		★	★			
	(R/L)FX 15° *1	P	TPGT1.81.51LFX	TPGT090204L-FX	.0156																										●			
	(R/L)FY 15° *1	P	TPGT1.81.50RFY	TPGT090201R-FY	.0039																					★								
			TPGT1.81.50LFY	TPGT090201L-FY	.0039																					★								
			TPGT1.81.50.5RFY	TPGT090202R-FY	.0078																					★					★			
			TPGT1.81.50.5LFY	TPGT090202L-FY	.0078																					★					★			
			TPGT1.81.51RFY	TPGT090204R-FY	.0156																					★					★			
			TPGT1.81.51LFY	TPGT090204L-FY	.0156																					★					★			
Light Cutting	**ELB** 15°	P	TPMT1.81.50.5ELB	TPMT090202N-LB	.0078		●	●		★	★	●	★	★							—							★		★	★			
			TPMT1.81.51ELB	TPMT090204N-LB	.0156		●	●		★	★	●	★	★							—							★		★	★			
	ESU 8°	P	TPMT1.81.50.5ESU	TPMT090202N-SU	.0078		●		●												—		●		●					●				
			TPMT1.81.51ESU	TPMT090204N-SU	.0156		●		●												—		●		●									
		—	TPEW1.81.51	TPEW090204	.0156																													●
For Aluminium	**(R/L)AY** 15° *1	N	TPGT1.81.50RAY	TPGT090201R-AY	.0039																													★
			TPGT1.81.50LAY	TPGT090201L-AY	.0039																													★
			TPGT1.81.50.5RAY	TPGT090202R-AY	.0078																													★
			TPGT1.81.50.5LAY	TPGT090202L-AY	.0078																													★
			TPGT1.81.51RAY	TPGT090204R-AY	.0156																													★
			TPGT1.81.51LAY	TPGT090204L-AY	.0156																													★

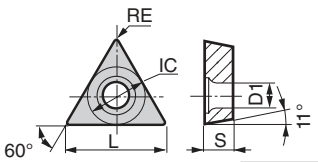
*1: Photo shows left hand.

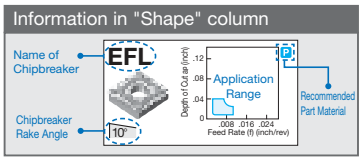
Triangular Positive Inserts

TP Triangular 11° Pos. With Hole

TP■■21.5●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																				Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	↻	✲																	○	●	●	↻	●			
M	Stainless Steel							●	●	✖	○	✲													●					
K	Cast Iron					✲							●	●	○	↻	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																		●	✖	○	↻	✲								
H	Hardened Steel																	●													

SUMIBORON (CBN) Inserts ☞ L79 SUMIDIA (PCD) Inserts ☞ M20

Applicable Internal Holders ☞ E46

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	**FW** *1	P	TPGT21.50.5RFW	TPGT110202R-FW	.0078																							★	▲	★			
			TPGT21.50.5LFW	TPGT110202L-FW	.0078																							★	▲	●			
			TPGT21.51RFW	TPGT110204R-FW	.0156																							●	▲	★			
			TPGT21.51LFW	TPGT110204L-FW	.0156																							●	▲	●			
Finishing	**(R/L)FX** *1	P	TPGT21.50.5RFX	TPGT110202R-FX	.0078																	●	★	●										
			TPGT21.50.5LFX	TPGT110202L-FX	.0078																	●	★											
			TPGT21.51RFX	TPGT110204R-FX	.0156																	●	★	●										
			TPGT21.51LFX	TPGT110204L-FX	.0156																	●	★	●										
			TPGT21.52RFX	TPGT110208R-FX	.0313																	●	★	●										
			TPGT21.52LFX	TPGT110208L-FX	.0313																	●	★											
Finishing	**(R/L)FY**	P	TPGT21.50.5RFY	TPGT110202R-FY	.0078																									★				
			TPGT21.50.5LFY	TPGT110202L-FY	.0078																									★				
			TPGT21.51RFY	TPGT110204R-FY	.0156																									★				
			TPGT21.51LFY	TPGT110204L-FY	.0156																									★				
			TPGT21.52RFY	TPGT110208R-FY	.0313																									★				
			TPGT21.52LFY	TPGT110208L-FY	.0313																									●				
Light Cutting	**ESU**	P	TPMT21.50.5ESU	TPMT110202N-SU	.0078	●	●		●	●													●	●	●	●	▲							
			TPMT21.51ESU	TPMT110204N-SU	.0156	●	●		●	●													●	●	●	●	▲							
			TPMT21.52ESU	TPMT110208N-SU	.0313	●	●		●	●													●	●	●	●	▲							
		—	TPEW21.51	TPEW110204	.0156																													●
			TPEW21.52	TPEW110208	.0313																													●
For Aluminium	**(R/L)AY** *1	N	TPGT21.50.5RAY	TPGT110202R-AY	.0078																													★
			TPGT21.50.5LAY	TPGT110202L-AY	.0078																													★
			TPGT21.51RAY	TPGT110204R-AY	.0156																													★
			TPGT21.51LAY	TPGT110204L-AY	.0156																													★

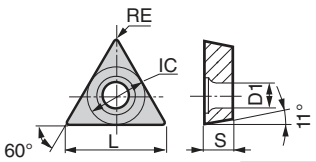
*1: Photo shows left hand.

Triangular Positive Inserts

TP Triangular 11° Pos. With Hole

TP■■22●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.1250
	Inscribed Circle IC	.2500	Hole Dia. D1	.1339



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended
○ Interrupted Cutting 2nd Recommended

Recommended Application

P	Steel	●	●	✖	○	↻	✪															○	●	●	↻	●	●				
M	Stainless Steel							●	●	✖	○	✪											●								
K	Cast Iron					✪							●	●	○	↻	✖					✪	●								
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	↻	✪									
H	Hardened Steel															●															

SUMIBORON (CBN) Inserts L81 | SUMIDIA (PCD) Inserts M20
SUMIDIA Binderless Inserts M27 | Applicable Internal Holders E46

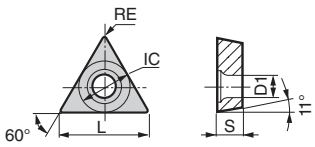
	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB**	P	TPMT220.5EFB	TPMT110302N-FB	.0078																							★		★	★			
			TPMT221EFB	TPMT110304N-FB	.0156																					★		★		★	★			
			TPMT222EFB	TPMT110308N-FB	.0313																							●		★	★			
	ELU	P	TPMT220.5ELU	TPMT110302N-LU	.0078								★															★			★			
			TPMT221ELU	TPMT110304N-LU	.0156	●	●		●	●		●	●		●											★	▲	●	▲	★	★			
			TPMT222ELU	TPMT110308N-LU	.0313	★	●		●	●		●	●		●											★	▲	●	▲	★	★			
	EFK	P	TPMT221EFK	TPMT110304N-FK	.0156																							●	▲					
			TPMT222EFK	TPMT110308N-FK	.0313																								▲		●			
	(M)EFC	P	TPGT220.5MEFC	TPGT110302MN-FC	< .0078																	★	●				★				●			
			TPGT220.5EFC	TPGT110302N-FC	< .0156																					●		●				●			
			TPGT221MEFC	TPGT110304MN-FC	< .0156																	★	●		★	●		●				●			
			TPGT221EFC	TPGT110304N-FC	< .0156																							●				●			
	(R/L)FX *1	P	TPGT220.5RFX	TPGT110302R-FX	.0078																	★	●			★		★						
			TPGT220.5LFX	TPGT110302L-FX	.0078																	★	●			★		★						
			TPGT221RFX	TPGT110304R-FX	.0156																	★	●			★		★						
			TPGT221LFX	TPGT110304L-FX	.0156																	★	●			●		●						
			TPGT222RFX	TPGT110308R-FX	.0313																	★	●					★						
			TPGT222LFX	TPGT110308L-FX	.0313																	★	●					★						
	(R/L)FY *1	P	TPGT22.001RFY	TPGT1103003R-FY	.0012																	★	★					★						
			TPGT22.001LFY	TPGT1103003L-FY	.0012																	★	★					★						
			TPGT220RFY	TPGT110301R-FY	.0039																	★	★			★		★	●	▲				
			TPGT220LFY	TPGT110301L-FY	.0039																	★	★			★		★						
			TPGT220.5RFY	TPGT110302R-FY	.0078																	★	★					★	★			★			
			TPGT220.5LFY	TPGT110302L-FY	.0078																	★	★		★			★	★	▲	★	★			
			TPGT221RFY	TPGT110304R-FY	.0156																	★	★					★	★			★			
			TPGT221LFY	TPGT110304L-FY	.0156																	★	★					★	●	▲	★	●			
			TPGT222RFY	TPGT110308R-FY	.0313																	★	★			★		★				★			
			TPGT222LFY	TPGT110308L-FY	.0313																	★	★			●		●				★			
Finishing to Light Cutting	**(R/L)** *1	P	TPGG220.5R	TPGT110302R-SD	.0078																					★		★	★		●			
			TPGG220.5L	TPGT110302L-SD	.0078																					★		★	●	▲	★	●			
			TPGG221R	TPGT110304R-SD	.0156																			●		★		★	★	▲	★	●			
			TPGG221L	TPGT110304L-SD	.0156																	★	★	●		★		★	●	▲	★	●			
			TPGG222R	TPGT110308R-SD	.0313																					★		★	★			★			
			TPGG222L	TPGT110308L-SD	.0313																							★	★	▲	★	●			
	(R/L)W *1 → B134 Wiper	P	TPGG221RW	TPGX110304R-SDW	.0156																									▲	★				
			TPGG221LW	TPGX110304L-SDW	.0156																									▲	★				
			TPGG222RW	TPGX110308R-SDW	.0313																									▲	★				
			TPGG222LW	TPGX110308L-SDW	.0313																									▲	★				

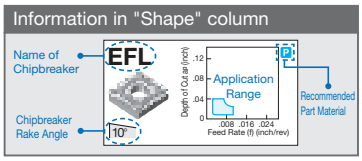
*1: Photo shows left hand.

Values for nose radius RE prefixed with "<" indicate negative tolerances.

Triangular Positive Inserts

TP Triangular 11° Pos. With Hole





TP■■22●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.1250
	Inscribed Circle IC	.2500	Hole Dia. D1	.1339

SUMIBORON (CBN) Inserts ☞ L81 SUMIDIA (PCD) Inserts ☞ M20
SUMIDIA Binderless Inserts ☞ M27 Applicable Internal Holders ☞ E46

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

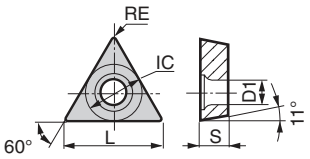
Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T2500Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Light Cutting	**ELB**	P	TPMT220.5ELB	TPMT110302N-LB	.0078		●	●		★	★	●	★	★								—						—	★		★	★			
			TPMT221ELB	TPMT110304N-LB	.0156		●	●		★	★	●	★	★								—						—	★		★	★			
			TPMT222ELB	TPMT110308N-LB	.0313		●	●		★	★	●	★	★								—						—	★		★	★			
	ESU	P	TPMT220.5ESU	TPMT110302N-SU	.0078	★	●	★	○	●	★	●	●	●	▲	●						—						—	●	▲		●			
			TPMT221ESU	TPMT110304N-SU	.0156	●	●	★	●	●	★	●	●	●	▲	●						—					★	—	●	▲	●	●			
			TPMT222ESU	TPMT110308N-SU	.0313	●	●	★	●	●	★	●	●	★	▲	●						—						—	●	▲	★	★			
		—	TPGA220.5	TPGW110302	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TPGA221	TPGW110304	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	—	—	—	—	—	—	—	—	●	—	—	—
			TPGA222	TPGW110308	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—	●	—	—	—
	EGU	P	TPMT221EGU	TPMT110304N-GU	.0156	★	●	★				●	●	★								—						—	●		★	●			
			TPMT222EGU	TPMT110308N-GU	.0313	●	●	★				●	●	★								—						—	●		★	●			
Light to Medium Cutting	**EMU**	P	TPMT221EMU	TPMT110304N-MU	.0156	★	★		●	●		●	★				★	★	★	★	●						▲	—	—	—	—	—	—	—	—	—
			TPMT222EMU	TPMT110308N-MU	.0313	●	●		●	●		●	★				★	★	★	★	●						▲	—	—	—	—	—	—	—	—	—
	ENF	P	TPMT221ENF	TPMH110304N-SF	.0156		●	●		●	●											—	●		●		▲	—	—	—	—	—	—	—	—	—
			TPMT222ENF	TPMH110308N-SF	.0313		●	●		●	●											—	●		●		▲	—	—	—	—	—	—	—	—	—
For Aluminium	**(R/L)AY** *1	N	TPGT220RAY	TPGT110301R-AY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT220LAY	TPGT110301L-AY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT220.5RAY	TPGT110302R-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT220.5LAY	TPGT110302L-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT221RAY	TPGT110304R-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TPGT221LAY	TPGT110304L-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

*1: Photo shows left hand.

Triangular Positive Inserts

TP Triangular 11° Pos. With Hole



Grade Selection ☞ A2, A3
Chipbreaker Selection ☞ B10 on
Insert Grade Selection by Part Material ☞ A10 on

TP■■32●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	◔	⛭																○	●	●	◔	●	●			
M	Stainless Steel							●	●	✖	○	⛭													●						
K	Cast Iron					⛭							●	●	○	◔	✖						⛭	●							
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	◔	⛭									
H	Hardened Steel																	●													

SUMIBORON (CBN) Inserts ☞ L85 SUMIDIA (PCD) Inserts ☞ M21
Applicable External Holders ☞ C53 Applicable Internal Holders ☞ E48

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB**		TPMT321EFB	TPMT160304N-FB	.0156																					★				★	★			
			TPMT322EFB	TPMT160308N-FB	.0313																					★				★	★			
	(R/L)FX *1		TPGT321RFX	TPGT160304R-FX	.0156																						★								
			TPGT321LFX	TPGT160304L-FX	.0156																						★								
			TPGT322RFX	TPGT160308R-FX	.0313																						★								
			TPGT322LFX	TPGT160308L-FX	.0313																						★								
	(R/L)FY *1		TPGT320.5RFY	TPGT160302R-FY	.0078																						★								
			TPGT320.5LFY	TPGT160302L-FY	.0078																						★								
			TPGT321RFY	TPGT160304R-FY	.0156																						★								
			TPGT321LFY	TPGT160304L-FY	.0156																						★								
			TPGT322RFY	TPGT160308R-FY	.0313																						★								
			TPGT322LFY	TPGT160308L-FY	.0313																						★								
Finishing to Light Cutting	**(R/L)** *1		TPGG321R	TPGT160304R-SD	.0156																								★	●				
			TPGG321L	TPGT160304L-SD	.0156																							▲	★					
Light Cutting	**ELB**		TPMT321ELB	TPMT160304N-LB	.0156		★	●		★	★	★	★	★								—						—	★		★	★			
			TPMT322ELB	TPMT160308N-LB	.0313		★	●		★	★	★	★	★								—						—	★		★	★			

*1: Photo shows left hand.

TP■■32.5●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1563
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Carbide		
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	◔	⛭																	○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	⛭													●						
K	Cast Iron					⛭							●	●	○	◔	✖						⛭	●							
N	Non-Ferrous Metal																														●
S	Exotic Alloy																		●	✖	○	◔	⛭								
H	Hardened Steel																	●													

Applicable Internal Holders ☞ E48

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light Cutting	**ESU** *1		TPMT32.51ESU	TPMT16T304N-SU	.0156	●	●		●	●												—	●	●	●	●	▲	—						
			TPMT32.52ESU	TPMT16T308N-SU	.0313	●	●		●	●												—	●	●	●	●	▲	—						

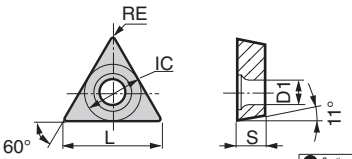
*1: Photo shows left hand.

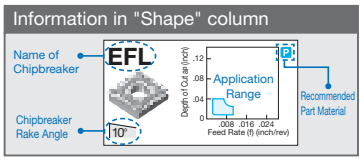
Triangular Positive Inserts

TP Triangular 11° Pos. With Hole

TP■■33●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✪ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
P	Steel	●	◔	✖	○	◔	✪																			○	●	◔	●	◔	●			
M	Stainless Steel							●	◔	✖	○	✪														●						
K	Cast Iron					✪							●	◔	○	◔	✖								✪	●						
N	Non-Ferrous Metal																															●
S	Exotic Alloy																			◔	✖	○	◔	✪								
H	Hardened Steel																		●													

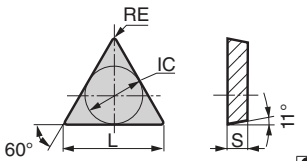
SUMIBORON (CBN) Inserts L85 | SUMIDIA (PCD) Inserts M21 | SUMIDIA Binderless Inserts M27 | Applicable Internal Holders E46

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB** 20°	ap .08 .04 0 .008 .016 f P	TPMT331EFB	TPMT160404N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—
			TPMT332EFB	TPMT160408N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	—
	EFK 0°	ap .08 .04 0 .008 .016 f P	TPMT331EFK	TPMT160404N-FK	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		▲		●	—	—	—
			TPMT332EFK	TPMT160408N-FK	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		▲		●	—	—	—
Finishing to Light Cutting	**(R/L)** *1 0°	ap .08 .04 0 .008 .016 f P	TPGG330R	TPGT160401R-SD	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					—	—	—
			TPGG330.5R	TPGT160402R-SD	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	—
			TPGG330.5L	TPGT160402L-SD	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲		●	—	—	—
			TPGG331R	TPGT160404R-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	—	—	★	▲		●	—	—	—
			TPGG331L	TPGT160404L-SD	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	●	—	—	—	—	★	▲		●	—	—	—
			TPGG332R	TPGT160408R-SD	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
			TPGG332L	TPGT160408L-SD	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲		●	—	—	—
	(R/L)W *1 → B134 Wiper 0°	ap .08 .04 0 .008 .016 f P	TPGX331RW	TPGX160404R-SDW	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
			TPGX331LW	TPGX160404L-SDW	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
			TPGX332RW	TPGX160408R-SDW	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
			TPGX332LW	TPGX160408L-SDW	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
Light Cutting	**ELB** 15°	ap .08 .04 0 .008 .016 f P	TPMT331ELB	TPMT160404N-LB	.0156		●	●		★	★	★	★	★								—						—	★		★	★			
			TPMT332ELB	TPMT160408N-LB	.0313		●	●		★	★	★	★	★								—						—	★			★			
	ESU 8°	ap .16 .12 .08 .04 0 .008 .016 .024 f P	TPMT331ESU	TPMT160404N-SU	.0156	★	●	●	★	●	●	●	●	●	▲	●						—						—	●	▲	●	★			
			TPMT332ESU	TPMT160408N-SU	.0313	★	●	●	★	●	●	●	●	●	▲	●						—						—	●	▲	★	★			
		—	TPGA331	TPGW160404	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	★	—	—	—	—	—	—	—	—	—	—	—
	EGU 8°	ap .12 .08 .04 .004 .008 .012 .016 f P	TPMT331EGU	TPMT160404N-GU	.0156	★	●	●				●	●	★								—						—	★		★	★			
			TPMT332EGU	TPMT160408N-GU	.0313	★	●	★				●	●	★								—						—	●		★	★			
Light to Medium Cutting	**EMU** 0°	ap .16 .12 .08 .04 0 .008 .016 .024 f P	TPMT331EMU	TPMT160404N-MU	.0156	●	●		★	●		●	★				★	★	★	★	●	—						▲	—	—	—	—	—	—	—
			TPMT332EMU	TPMT160408N-MU	.0313	★	●		●	●		●	★				★	★	▲	▲	●	—						▲	—	—	—	—	—	—	—
	ENF 0°	ap .16 .12 .08 .04 0 .008 .016 .024 f P	TPMT331ENF	TPMT160404N-SF	.0156		●	●		●	●											—	●		●			▲	—	—	—	—	—	—	—
			TPMT332ENF	TPMT160408N-SF	.0313		●	●		●	●											—	●		●			▲	—	—	—	—	—	—	—

*1: Photo shows left hand.

Triangular Positive Inserts

TP Triangular 11° Pos. Without Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

TP■■1.81.5●

Dimensions (inch)	Cutting Edge Length L	.3780	Thickness S	.0937
	Inscribed Circle IC	.2189		

SUMIBORON (CBN) Inserts L88 SUMIDIA (PCD) Inserts M22

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	EFK		TPMR1.81.51EFK	TPMR090204N-FK	.0156																									●	▲	●			
			TPMR1.81.52EFK	TPMR090208N-FK	.0313																									●	▲				
Finishing to Light Cutting	(R/L)W *1		TPGR1.81.50.5R	TPGR090202R-W	.0078																											★			
			TPGR1.81.50.5L	TPGR090202L-W	.0078																											★			
			TPGR1.81.51R	TPGR090204R-W	.0156																											★			
			TPGR1.81.51L	TPGR090204L-W	.0156																											★			
			TPGR1.81.52R	TPGR090208R-W	.0313																											★			
			TPGR1.81.52L	TPGR090208L-W	.0313																											★			
Light Cutting		—	TPGE1.81.50.5	TPGN090202	.0078																											★			
			TPGE1.81.51	TPGN090204	.0156																											★			★
			TPGE1.81.52	TPGN090208	.0313																											★			★

*1: Photo shows left hand.

TP■■220●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.1250
	Inscribed Circle IC	.2500		

SUMIBORON (CBN) Inserts L88 SUMIDIA (PCD) Inserts M22
Ceramic Inserts B133 Applicable Internal Holders E49

Continuous Cutting 1st Recommended / Continuous Cutting 2nd Recommended
General Cutting 1st Recommended / General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended / Interrupted Cutting 2nd Recommended

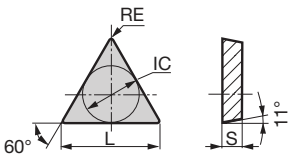
Recommended Application: P Steel, M Stainless Steel, K Cast Iron, N Non-Ferrous Metal, S Exotic Alloy, H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T2500Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	EFK		TPMR220.5EFK	TPMR110302N-FK	.0078																										★	★				
			TPMR221EFK	TPMR110304N-FK	.0156																									●	▲	★	●			
			TPMR222EFK	TPMR110308N-FK	.0313																									●		★	●			
Finishing to Light Cutting	R/L *1		TPGR220.5R	TPGR110302R-W	.0078																									★			★			
			TPGR220.5L	TPGR110302L-W	.0078																									★			★			
			TPGR221R	TPGR110304R-W	.0156																									★			★			
			TPGR221L	TPGR110304L-W	.0156																									★			★			
			TPGR222R	TPGR110308L-W	.0156																										●					
			TPGR222L	TPGR110308L-W	.0313																									★			★			
Light to Medium Cutting	ENF		TPMR221ENF	TPMR110304N-SF	.0156		●	★		●	●											—							—							—
			TPMR222ENF	TPMR110308N-SF	.0313	●	●	★		●	●											—						▲	—							—
	EUJ		TPMR221EUJ	TPMR110304N-UJ	.0156		★	★		★	★											—							—							—
			TPMR222EUJ	TPMR110308N-UJ	.0313		★	★		★	★											—							—							—
Medium Cutting		—	TPMN221	TPMN110304	.0156												★	★	★	★	●	—	★	★				▲	—							—
			TPMN222	TPMN110308	.0313												★	★	★	★	●	—	★	★				▲	—							—

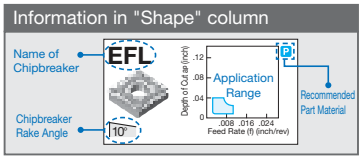
*1: Photo shows left hand.

Triangular Positive Inserts

TP Triangular 11° Pos. Without Hole



Information in "Shape" column



● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✪ Interrupted Cutting 2nd Recommended

TP■■22●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.1250
	Inscribed Circle IC	.2500		

SUMIBORON (CBN) Inserts ☞ L88 SUMIDIA (PCD) Inserts ☞ M22
Ceramic Inserts ☞ B133 Applicable Internal Holders ☞ E49

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	◔	✖	○	◔	✪						●	◔	✖	○	✪							○	◔	●	◔	●			
M	Stainless Steel							●	◔	✖	○	✪													◔						
K	Cast Iron					✪							●	◔	○	◔	✖							✪	◔						
N	Non-Ferrous Metal																														◔
S	Exotic Alloy																	◔	✖	○	◔	✪									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium Cutting		—	TPG220.5	TPGN110302	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—	●
			TPG221	TPGN110304	.0156	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—	▲	●	—	—	★
			TPG222	TPGN110308	.0313	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	▲	●	—	—	★

TP■■32●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1250
	Inscribed Circle IC	.3750		

SUMIBORON (CBN) Inserts ☞ L90 SUMIDIA (PCD) Inserts ☞ M22
Ceramic Inserts ☞ B133
Applicable External Holders ☞ C53 Applicable Internal Holders ☞ E49

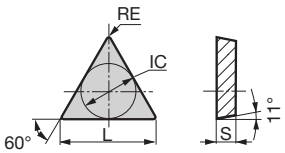
Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	◔	✖	○	◔	✪						●	◔	✖	○	✪							○	◔	●	◔	●			
M	Stainless Steel							●	◔	✖	○	✪													◔						
K	Cast Iron					✪							●	◔	○	◔	✖							✪	◔						
N	Non-Ferrous Metal																														◔
S	Exotic Alloy																	◔	✖	○	◔	✪									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	**EFK**	(ap) .08 .04 0 .008 .016 (f) P	TPMR321EFK	TPMR160304N-FK	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	●	—	—	
			TPMR322EFK	TPMR160308N-FK	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	●	—	—	
			TPMR323EFK	TPMR160312N-FK	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●	—	—	
Finishing to Light Cutting	**R/L** *1	(ap) .08 .04 0 .008 .016 (f) P	TPGR320.5R	TPGR160302R-W	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	
			TPGR320.5L	TPGR160302L-W	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	
			TPGR321R	TPGR160304R-W	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	
			TPGR321L	TPGR160304L-W	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	
			TPGR322R	TPGR160308R-W	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	
			TPGR322L	TPGR160308L-W	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	★	—	—	
Light to Medium Cutting	**ENF**	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	TPMR321ENF	TPMR160304N-SF	.0156		●	●		●	●											—					▲	—	—	—	—	—	—	
			TPMR322ENF	TPMR160308N-SF	.0313	●	●	●		●	●											—						—	—	—	—	—	—	
			TPMR323ENF	TPMR160312N-SF	.0469		●	●		●	▲											—						—	—	—	—	—	—	
	EUJ	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P	TPMR321EUJ	TPMR160304N-UJ	.0156		★	★		★	★											—						—	—	—	—	—	—	
			TPMR322EUJ	TPMR160308N-UJ	.0313		●	★		★	★											—						—	—	—	—	—	—	
Medium Cutting		—	TPMN321	TPMN160304	.0156		●			●							★	★	★	★	●	—	★	★					—	—	—	—	—	—	
			TPMN322	TPMN160308	.0313		●			●							★	★	★	★	●	—	★	★				▲	—	—	—	★	—	—	
			TPMN323	TPMN160312	.0469												★	★	★	★	●	—						▲	—	—	—	—	—	—	
		—	TPG320.5	TPGN160302	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	●	—	—	
			TPG321	TPGN160304	.0156	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	●	★	●	—	—	—	—	●	▲	●	—	—	★
			TPG322	TPGN160308	.0313	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	●	★	●	—	—	—	—	●	▲	●	—	—	★
			TPG323	TPGN160312	.0469	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TPG324	TPGN160316	.0625	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

*1: Photo shows left hand.

Triangular Positive Inserts

TP Triangular 11° Pos. Without Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

TP■■33●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1875
	Inscribed Circle IC	.3750		

Ceramic Inserts B133

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	●	✱	○	◔	✱																	○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✱													●						
K	Cast Iron					✱							●	●	○	◔	✱							✱	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																		●	✱	○	◔	✱								
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Medium Cutting		—	**TPG332**	**TPGN160408**	.0313	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

TP■■43●

Dimensions (inch)	Cutting Edge Length L	.8661	Thickness S	.1875
	Inscribed Circle IC	.5000		

SUMIBORON (CBN) Inserts L90 SUMIDIA (PCD) Inserts M22
Ceramic Inserts B133 Applicable External Holders C53

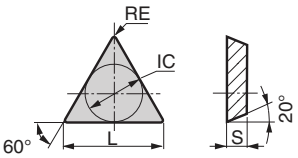
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✱ Interrupted Cutting 2nd Recommended

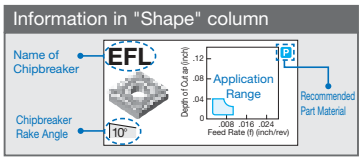
Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet	Carbide		
P	Steel	●	●	✱	○	◔	✱																	○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✱													●						
K	Cast Iron					✱							●	●	○	◔	✱							✱	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																		●	✱	○	◔	✱								
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light to Medium Cutting	**ENF**	(ap) .16 .12 .08 .04 0 .008 .016 .024 (f) P 0°	**TPMR432ENF**	**TPMR220408N-SF**	.0313		●	●		●	●											—						—	—	—	—	—	—	—
			TPMR433ENF	**TPMR220412N-SF**	.0469		●	●		●	●											—						—	—	—	—	—	—	—
Medium Cutting		—	**TPMN431**	**TPMN220404**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TPMN432	**TPMN220408**	.0313		●			●												—	★	★				▲	—			★			—
			TPMN433	**TPMN220412**	.0469		●			●												—	★	★				▲	—			—			—
		—	**TPG431**	**TPGN220404**	.0156	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TPG432	**TPGN220408**	.0313	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	●	★	●	—	—	—	—	—	—	—	—	—	—
			TPG433	**TPGN220412**	.0469	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TPG434	**TPGN220416**	.0625	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
			TPG436	**TPGN220424**	.0938	—	●	—	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Triangular Positive Inserts

TE Triangular 20° Pos. Without Hole





● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended
✖ Interrupted Cutting 2nd Recommended

TE■■21.5●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.0937
	Inscribed Circle IC	.2500		

SUMIDIA (PCD) Inserts ☞ M23

Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	◔	✖	○	◔	✖																	○	◔	●	◔	●			
M	Stainless Steel							●	◔	✖	○	◔													◔					
K	Cast Iron					◔							●	◔	○	◔	✖							◔	◔					
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	◔	◔								
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	RE																									
Light Cutting		—	**TEGE21.50.5**	**TEGN110202**	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●
			TEGE21.51	**TEGN110204**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

TE■■22●

Dimensions (inch)	Cutting Edge Length L	.4331	Thickness S	.1250
	Inscribed Circle IC	.2500		

SUMIDIA (PCD) Inserts ☞ M23

Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	◔	✖	○	◔	✖																	○	◔	●	◔	●			
M	Stainless Steel							●	◔	✖	○	◔													◔					
K	Cast Iron					◔							●	◔	○	◔	✖							◔	◔					
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	◔	◔								
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE																									
Light Cutting		—	**TEGN220.5**	**TEGN110302**	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●
			TEGN221	**TEGN110304**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TEGN222	**TEGN110308**	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

TE■■32●

Dimensions (inch)	Cutting Edge Length L	.6496	Thickness S	.1250
	Inscribed Circle IC	.3750		

SUMIDIA (PCD) Inserts ☞ M23

Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	◔	✖	○	◔	✖																	○	◔	●	◔	●			
M	Stainless Steel							●	◔	✖	○	◔													◔					
K	Cast Iron					◔							●	◔	○	◔	✖							◔	◔					
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	◔	◔								
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE																									
Light to Medium Cutting		—	**TEGN320.5**	**TEGN160302**	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●
			TEGN321	**TEGN160304**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			TEGN322	**TEGN160308**	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	★

TE■■43●

Dimensions (inch)	Cutting Edge Length L	.8661	Thickness S	.1875
	Inscribed Circle IC	.5000		

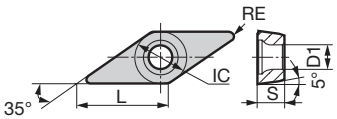
SUMIDIA (PCD) Inserts ☞ M23

Recommended Application		Coated Carbide																					Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	◔	✖	○	◔	✖																	○	◔	●	◔	●			
M	Stainless Steel							●	◔	✖	○	◔													◔					
K	Cast Iron					◔							●	◔	○	◔	✖							◔	◔					
N	Non-Ferrous Metal																													●
S	Exotic Alloy																	●	✖	○	◔	◔								
H	Hardened Steel																	●												

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE																									
Light to Medium Cutting		—	**TEGN431**	**TEGN220404**	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

Insert
B
Neg.
Pos.
C
D
R
S
T
V
W
Ceramics Solid CBN

VB 35° Diamond 5° Pos. With Hole



Grade Selection A2, A3
Chipbreaker Selection B10 on
Insert Grade Selection by Part Material A10 on

VB■■22●

Dimensions (inch)	Cutting Edge Length L	.4370	Thickness S	.1250
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

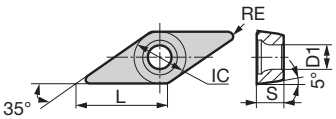
SUMIBORON (CBN) Inserts L97
Applicable Internal Holders E53
Applicable External Holders D30

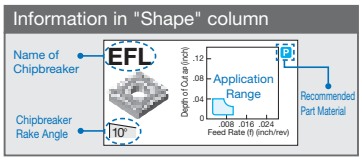
Continuous Cutting 1st Recommended
Continuous Cutting 2nd Recommended
General Cutting 1st Recommended
General Cutting 2nd Recommended
Interrupted Cutting 1st Recommended
Interrupted Cutting 2nd Recommended

Recommended Application
P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous Metal
S Exotic Alloy
H Hardened Steel

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T2500Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	EFB	P	VBMT220.5EFB	VBMT110302N-FB	.0078																								★		★	★			
	20°		VBMT221EFB	VBMT110304N-FB	.0156																								★		★	★			
			VBMT222EFB	VBMT110308N-FB	.0313																								★		★	★			
	ELU	P	VBMT220.5ELU	VBMT110302N-LU	.0078																								★			★			
	15°		VBMT221ELU	VBMT110304N-LU	.0156	●	★		●	★		●	●		●											●	▲		●	▲	★	★			
			VBMT222ELU	VBMT110308N-LU	.0313	★	★					★	★																							
	(R/L)FX	P	VBGT220RFX	VBGT110301R-FX	.0039																							★	★			★			
	15°		VBGT220LFX	VBGT110301L-FX	.0039																							★	★			★			
			VBGT220.5RFX	VBGT110302R-FX	.0078																							★	★			★			
			VBGT220.5LFX	VBGT110302L-FX	.0078																							★	★			★			
			VBGT221RFX	VBGT110304R-FX	.0156																							★	★			★			
			VBGT221LFX	VBGT110304L-FX	.0156																							★	★			★			
	(R/L)FYS	P	VBGT22.001RFYS	VBGT1103003R-FYS	.0012																							★							
	15°		VBGT22.001LFYS	VBGT1103003L-FYS	.0012																							★							
			VBGT220RFYS	VBGT110301R-FYS	.0039																							★							
			VBGT220LFYS	VBGT110301L-FYS	.0039																							★							
			VBGT220.5RFYS	VBGT110302R-FYS	.0078																							★							
			VBGT220.5LFYS	VBGT110302L-FYS	.0078																							★							
			VBGT221RFYS	VBGT110304R-FYS	.0156																							★							
			VBGT221LFYS	VBGT110304L-FYS	.0156																							★							
			VBGT222RFYS	VBGT110308R-FYS	.0313																							★							
			VBGT222LFYS	VBGT110308L-FYS	.0313																							★							
	(R/L)FY	P	VBGT220RFY	VBGT110301R-FY	.0039																							★	★			★			
	15°		VBGT220LFY	VBGT110301L-FY	.0039																							★	★			★			
			VBGT220.5RFY	VBGT110302R-FY	.0078																							★	★			★			
			VBGT220.5LFY	VBGT110302L-FY	.0078																						★	★	★			★			
			VBGT221RFY	VBGT110304R-FY	.0156																							★							
			VBGT221LFY	VBGT110304L-FY	.0156																							★							

VB 35° Diamond 5° Pos. With Hole





VB■■22●

Dimensions (inch)	Cutting Edge Length L	.4370	Thickness S	.1250
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

Recommended Application

		Coated Carbide																				Coated Cermet		Cermet	Carbide	
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
P	Steel	●	◔	✱	○	◔	✲																	○	◔	◔	◔	◔	◔			
M	Stainless Steel							●	◔	✱	○	✲												◔							
K	Cast Iron					✲							●	◔	○	◔	✱							✲	◔						
N	Non-Ferrous Metal																														◔
S	Exotic Alloy																		◔	✱	○	◔	✲								
H	Hardened Steel																	●													

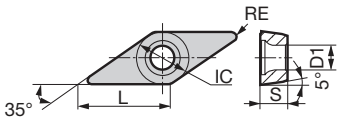
SUMIBORON (CBN) Inserts ☞ L97

Applicable Internal Holders ☞ E53 Applicable External Holders ☞ D30

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Light Cutting	**ELB**	P	VBMT220.5ELB	VBMT110302N-LB	.0078		★	●		★	★	●	★	★															—	★		★	★			
			VBMT221ELB	VBMT110304N-LB	.0156		★	●		★	★	●	★	★								—							—	★		★	★			
			VBMT222ELB	VBMT110308N-LB	.0313		★	●		★	★	●	★	★								—							—	★		★	★			
	ESU	P	VBMT221ESU	VBMT110304N-SU	.0156	●	●		●	●		●	★	▲	●							—	●	●	●	●		▲	—	●	▲	★				
			VBMT222ESU	VBMT110308N-SU	.0313	●	●			●		●	★	▲	●							—	●	●	●	●		▲	—	●	▲						
	(M)ESI	P	VBGT220MESI	VBGT110301MN-SI	< .0039	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●	●	●	●	—	★	—	—	—	—			
			VBGT220.5MESI	VBGT110302MN-SI	< .0078	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●	●	●	●	—	●	—	—	—	—			
			VBGT221MESI	VBGT110304MN-SI	< .0156	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●	●	●	●	—	●	—	—	—	—			
			VBGT222MESI	VBGT110308MN-SI	< .0313	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	★	●	●	●	●	—	★	—	—	—	—			
	EGU	P	VBMT221EGU	VBMT110304N-GU	.0156	●	●	★				●	●	★									●	●						●		★	★			
			VBMT222EGU	VBMT110308N-GU	.0313	●	●	★				●	●	★									●	●						●		★	★			
For Aluminium	**(R/L)AY**	N	VBGT220RAY	VBGT110301R-AY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT220LAY	VBGT110301L-AY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT220.5RAY	VBGT110302R-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT220.5LAY	VBGT110302L-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT221RAY	VBGT110304R-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT221LAY	VBGT110304L-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

Values for nose radius RE prefixed with "<" indicate negative tolerances.

VB 35° Diamond 5° Pos. With Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

VB■■33●

Dimensions (inch)	Cutting Edge Length L	.6535	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

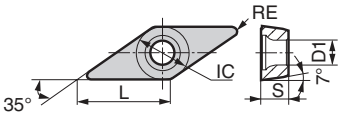
Recommended Application
- P Steel
- M Stainless Steel
- K Cast Iron
- N Non-Ferrous Metal
- S Exotic Alloy
- H Hardened Steel

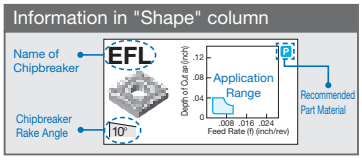
SUMIBORON (CBN) Inserts ☞ L98 | Applicable Internal Holders ☞ E53 | Applicable External Holders ☞ D30

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																				Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**EFB**	P	VBMT331EFB	VBMT160404N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	★	—	—	
			VBMT332EFB	VBMT160408N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	
	ELU	P	VBMT331ELU	VBMT160404N-LU	.0156	●	●		●	●		●	★		●							—					▲	—	●	▲	●	★			
			VBMT332ELU	VBMT160408N-LU	.0313	●	●		●	●		●	★		●							—					▲	—	●	▲	●	★			
	(R/L)FX	P	VBGT330.5RFX	VBGT160402R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	
			VBGT330.5LFX	VBGT160402L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	
			VBGT331RFX	VBGT160404R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	
			VBGT331LFX	VBGT160404L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				★	—	—	
Light Cutting	**ELB**	P	VBMT331ELB	VBMT160404N-LB	.0156		●	●		★	★	●	★	★								—						—	★		★	★			
			VBMT332ELB	VBMT160408N-LB	.0313		●	●		★	★	●	★	★								—						—	★		★	★			
			VBMT333ELB	VBMT160412N-LB	.0469		★	●		★	★	●	★	★								—						—	★			★			
	ESU	P	VBMT331ESU	VBMT160404N-SU	.0156	●	●	★	●	●	●	●	●	★	▲	●						—	●	●	●	●	▲	—	●		★	●			
			VBMT332ESU	VBMT160408N-SU	.0313	●	●	●	●	●	●	●	●	★	▲	●						—	●	●	●	●	▲	—	●			●			
			VBMT333ESU	VBMT160412N-SU	.0469	★	★			★												—						—							—
	(M)ESI	P	VBGT330MESI	VBGT160401MN-SI	< .0039	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●	●	●	●	—	★	—	—	—	—			—
			VBGT330.5MESI	VBGT160402MN-SI	< .0078	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●	●	●	●	—	●	—	—	—	—			—
			VBGT331MESI	VBGT160404MN-SI	< .0156	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●	●	●	●	—	★	—	—	—	—			—
			VBGT332MESI	VBGT160408MN-SI	< .0313	—	—	—	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●	●	●	●	●	—	●	—	—	—	—			—
	ENK	P	VBMT332ENK	VBMT160408N-SK	.0313		●			●												—						—							—
	EGU	P	VBMT331EGU	VBMT160404N-GU	.0156	●	●	★				●	●	★								—	●	●					—	●		★	●			
			VBMT332EGU	VBMT160408N-GU	.0313	●	●	●				●	●	★								—	●	●					—	★		★	★			
Light to Medium Cutting		—	VBMA331	VBMW160404	.0156												★	★	★	★	●	—						▲	—	—	—	—	—			—
			VBMA332	VBMW160408	.0313												★	★	★	★	●	—						▲	—	—	—	—	—			—
For Aluminium	**(R/L)AY**	N	VBGT330.5RAY	VBGT160402R-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT330.5LAY	VBGT160402L-AY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT331RAY	VBGT160404R-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VBGT331LAY	VBGT160404L-AY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

Values for nose radius RE prefixed with "<" indicate negative tolerances.

VC 35° Diamond 7° Pos. With Hole





VC■■63●

Dimensions (inch)	Cutting Edge Length L	.3268	Thickness S	.0937
	Inscribed Circle IC	.1875	Hole Dia. D1	.0906

● Continuous Cutting 1st Recommended ◯ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◯ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ◯ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

SUMIBORON (CBN) Inserts L100 SUMIDIA (PCD) Inserts M24
SUMIDIA Binderless Inserts M27 Applicable Internal Holders E59

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																		Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	**EFB**		VCMT630.5EFB	VCMT080202N-FB	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
			VCMT631EFB	VCMT080204N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	
	(M)EFC		VCGT631MEFC	VCGT080204MN-FC	< .0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	★	—	—	—	—	—	—
Light Cutting	**ELB**		VCMT630.5ELB	VCMT080202N-LB	.0078		★	●		★	★	★	★	★								—						—	★		★			
			VCMT631ELB	VCMT080204N-LB	.0156		●	●		★	★	★	★	★								—						—	★		★			
	ESU		VCMT631ESU	VCMT080204N-SU	.0156							★	★	★								—						—	—	—	—			—

Values for nose radius RE prefixed with "<" indicate negative tolerances.

VC■■22●

Dimensions (inch)	Cutting Edge Length L	.4370	Thickness S	.1250
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

● Continuous Cutting 1st Recommended ◯ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◯ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ◯ Interrupted Cutting 2nd Recommended

Recommended Application: P Steel; M Stainless Steel; K Cast Iron; N Non-Ferrous Metal; S Exotic Alloy; H Hardened Steel

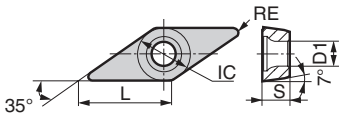
SUMIBORON (CBN) Inserts L101 SUMIDIA (PCD) Inserts M24 SUMIDIA Binderless Inserts M27
Applicable External Holders C41, D28 Applicable Internal Holders E58

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide																		Coated Cermet		Cermet	Carbide		
						AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Finishing	**EFC**		VCGT220MEFC	VCGT110301MN-FC	< .0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●				—	●			●		
			VCGT220EFC	VCGT110301N-FC	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●	—	—			●	—	—	
			VCGT220.5MEFC	VCGT110302MN-FC	< .0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●				—	●			●		
			VCGT220.5EFC	VCGT110302N-FC	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●	—	—			●	—	—	
			VCGT221MEFC	VCGT110304MN-FC	< .0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	●				—	●			●		
			VCGT221EFC	VCGT110304N-FC	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			●	—	—			●	—	—	

Values for nose radius RE prefixed with "<" indicate negative tolerances.

35° Diamond Positive Inserts

VC 35° Diamond 7° Pos. With Hole



Grade Selection A2, A3

Chipbreaker Selection B10 on

Insert Grade Selection by Part Material A10 on

VC■■22●

Dimensions (inch)	Cutting Edge Length L	.4370	Thickness S	.1250
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

SUMIBORON (CBN) Inserts L101 | SUMIDIA (PCD) Inserts M24 | SUMIDIA Binderless Inserts M27

Applicable External Holders C41, D28 | Applicable Internal Holders E58

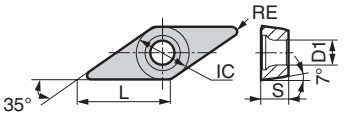
● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

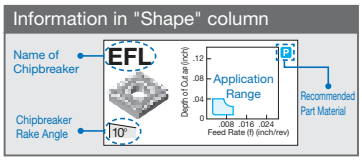
Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet			Cermet	Carbide		
P	Steel	●	◕	✖	○	◔	✪																	○	◕	◕	◔	◕	◕			
M	Stainless Steel							●	◕	✖	○	✪													◕							
K	Cast Iron					✪							●	◕	○	◔	✖							✪	◕							
N	Non-Ferrous Metal																															◕
S	Exotic Alloy																		◕	✖	○	◔	✪									
H	Hardened Steel																	●														

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Finishing	**(R/L)FX**	P .08 .04 0 .008 .016 (f) (ap) 15°	VCGT220RFX	VCGT110301R-FX	.0039																	★	●			★	—	●				★			
			VCGT220LFX	VCGT110301L-FX	.0039																	★	●			★	—	●				★			
			VCGT220.5RFX	VCGT110302R-FX	.0078																	★	●			●	—	●				●			
			VCGT220.5LFX	VCGT110302L-FX	.0078																	★	●			●	—	★				★			
			VCGT221RFX	VCGT110304R-FX	.0156																					●	—	★							
			VCGT221LFX	VCGT110304L-FX	.0156																					●	—	●							
	(R/L)FY	P .08 .04 0 .008 .016 (f) (ap) 15°	VCGT220RFY	VCGT110301R-FY	.0039																	★	●			★	—	★							
			VCGT220LFY	VCGT110301L-FY	.0039																	★	●				—	★							
			VCGT220.5RFY	VCGT110302R-FY	.0078																	★	●			★	—	★							
			VCGT220.5LFY	VCGT110302L-FY	.0078																	★	●				—	★							
			VCGT221RFY	VCGT110304R-FY	.0156																						—	★							
			VCGT221LFY	VCGT110304L-FY	.0156																						—	★							
Light Cutting	**ESU**	P .16 .12 .08 .04 0 .008 .016 .024 (f) (ap) 8°	VCMT220.5ESU	VCMT110302N-SU	.0078							●	★	★													—								
			VCMT221ESU	VCMT110304N-SU	.0156		★					●	★	★													—								
			VCMT222ESU	VCMT110308N-SU	.0313		★					●	★	★													—								
	(M)ESI	P .16 .12 .08 .04 0 .008 .016 .024 (f) (ap) 15°	VCGT220MESI	VCGT110301MN-SI	< .0039								●	—	▲	●						●	●	●	●	●	—	●	●		★	●			
			VCGT220.5MESI	VCGT110302MN-SI	< .0078								●	—	▲	●						●	●	●	●	●	—	●	●		★	●			
			VCGT221MESI	VCGT110304MN-SI	< .0156								●	—	▲	●						●	●	●	●	●	—	●	●			●			
			VCGT222MESI	VCGT110308MN-SI	< .0313								●	—	▲	●						●	●	●	●	●	—	●	●			●			
For Aluminium	**NAG**	P .16 .12 .08 .04 0 .008 .016 .024 (f) (ap) 20°	VCGT220.5NAG	VCGT110302N-AG	.0078																						—							●
			VCGT221NAG	VCGT110304N-AG	.0156																						—							●

Values for nose radius RE prefixed with "<" indicate negative tolerances.

VC 35° Diamond 7° Pos. With Hole





VC■■33●

Dimensions (inch)	Cutting Edge Length L	.6535	Thickness S	.1875
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

● Continuous Cutting 1st Recommended
○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended
◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended
✲ Interrupted Cutting 2nd Recommended

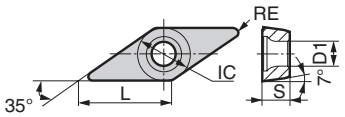
Recommended Application
P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous Metal
S Exotic Alloy
H Hardened Steel

SUMIBORON (CBN) Inserts L102
SUMIDIA (PCD) Inserts M25
SUMIDIA Binderless Inserts M27
Applicable Internal Holders E58
Applicable External Holders C41

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Coated Carbide: AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	Coated Cermet: T1500Z	T2000Z	T2500Z	Cermet: T1500A	Carbide: EH510	EH520	H1
Finishing	EFB		VCMT331EFB	VCMT160404N-FB	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	●	—	—
			VCMT332EFB	VCMT160408N-FB	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	●	—	—
	ELU		VCMT331ELU	VCMT160404N-LU	.0156	●	●		●	●		●	★		●						—					▲	—	●	▲	●	★		
			VCMT332ELU	VCMT160408N-LU	.0313	●	●		●	●		●	★		★						—					▲	—	★	▲	★	★		
	ELB		VCMT331ELB	VCMT160404N-LB	.0156		●	●		★	★	●	★	★							—						—	★			★		
			VCMT332ELB	VCMT160408N-LB	.0313		●	●		★	★	●	★	★							—						—	★		★	★		
Light Cutting	ESU		VCMT331ESU	VCMT160404N-SU	.0156	●	●	★	●	●	●	●	●	★	▲	●					—	●	●	●				—	—	—	—	—		—
			VCMT332ESU	VCMT160408N-SU	.0313	●	●	★	●	●	●	●	●	★	▲	●					—	●	●	●				—	—	—	—	—		—
	(M)ESI		VCGT330MESI	VCGT160401MN-SI	< .0039	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	●	●	●	●	●	—	●	●			●		
			VCGT330.5MESI	VCGT160402MN-SI	< .0078	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	●	●	●	●		—	●	●			●		
			VCGT331MESI	VCGT160404MN-SI	< .0156	—	—	—	—	—	—	—	●	—	▲	●	—	—	—	—	—	●	●	●	●		—	●	●			●		
			VCGT332MESI	VCGT160408MN-SI	< .0313	—	—	—	—	—	—	—	●	—			—	—	—	—	—	●	●	●	●	●	—	●						—
	ENK		VCMT331ENK	VCMT160404N-SK	.0156		●	●		●	▲										—						—	—						—
			VCMT332ENK	VCMT160408N-SK	.0313		●	●		●	●										—						—	—						—
	EGU		VCMT331EGU	VCMT160404N-GU	.0156	●	●	●				●	●	★							—	●	●					—	—	—	—	—		—
			VCMT332EGU	VCMT160408N-GU	.0313	●	●	★				●	●	★							—	●	●					—	—	—	—	—		—
For Aluminium	NAW	—	VCGT332NAW	VCGT160408N-AW	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VCGT333NAW	VCGT160412N-AW	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	NAG		VCGT332NAG	VCGT160408N-AG	.0313	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			VCGT333NAG	VCGT160412N-AG	.0469	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

35° Diamond Positive Inserts

VC 35° Diamond 7° Pos. With Hole



Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

VC■■2205●

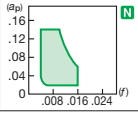
Dimensions (inch)	Cutting Edge Length L	.7953	Thickness S	.2189
	Inscribed Circle IC	.5000	Hole Dia. D1	.2165

SUMIDIA (PCD) Inserts ☞ M25

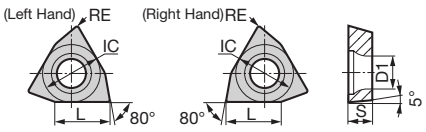
Applicable External Holders ☞ C59

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ◔ General Cutting 2nd Recommended
✱ Interrupted Cutting 1st Recommended ✲ Interrupted Cutting 2nd Recommended

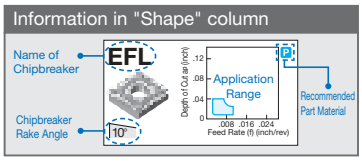
Recommended Application		Coated Carbide																						Coated Cermet	Cermet	Carbide	
P	Steel	●	●	✱	○	◔	✲														○	●	●	◔	●			
M	Stainless Steel							●	●	✱	○	✲										●						
K	Cast Iron					✲							●	●	○	◔	✱					✲	●					
N	Non-Ferrous Metal																											●
S	Exotic Alloy																	●	✱	○	◔	✲						
H	Hardened Steel																●											

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
For Aluminium	**NAW**  25°	—	—	**VCGT220520N-AW**	.0787	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
			—	**VCGT220530N-AW**	.1181	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★
	NAG  20°		—	**VCGT220530N-AG**	.1181	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★

WB Trigon 5° Pos. With Hole



*Uneven Trigon



WB■■52●

Dimensions (inch)	Cutting Edge Length L	.1260	Thickness S	.0626
	Inscribed Circle IC	.1563	Hole Dia. D1	.0866

SUMIBORON (CBN) Inserts L105 SUMIDIA (PCD) Inserts M26

Applicable Internal Holders E61

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

Recommended Application		Coated Carbide																						Coated Cermet		Cermet			
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	↻	✲																	○	●	●	↻	●			
M	Stainless Steel							●	●	✖	○	✲													●					
K	Cast Iron					✲							●	●	○	↻	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	↻	✲									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE																										
Finishing	FW *1		WBGT520.5RFW	WBGT060102R-FW	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—
			WBGT520.5LFW	WBGT060102L-FW	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●		★	—	—	—
			WBGT521RFW	WBGT060104R-FW	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—
			WBGT521LFW	WBGT060104L-FW	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	★	—	—	—
	(R/L)FX *1		WBGT520.5RFX	WBGT060102R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—
			WBGT520.5LFX	WBGT060102L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★	—	—	—	★	—	—	—	—	—	—
			WBGT521RFX	WBGT060104R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—	—	—	—	—	—
			WBGT521LFX	WBGT060104L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	★	—	—	—	★	—	—	—	—	—	—
	(R/L)FY *1		WBGT52.001LFY	WBGT0601003L-FY	.0012	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—			★	—	—	—
			WBGT520RFY	WBGT060101R-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—
			WBGT520LFY	WBGT060101L-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—			★	—	—	—
			WBGT520.5RFY	WBGT060102R-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
			WBGT520.5LFY	WBGT060102L-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	●			★	—	—	—
			WBGT521RFY	WBGT060104R-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			★	—	—	—
			WBGT521LFY	WBGT060104L-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★			●	—	—	—
Finishing to Light Cutting	(R/L)W *1		WBGT520.5R	WBGT060102R-W	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—
			WBGT520.5L	WBGT060102L-W	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		▲	●	—	—	—
			WBGT521R	WBGT060104R-W	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—
			WBGT521L	WBGT060104L-W	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	●	▲	★	—	—	—

*1: Photo shows left hand.

WB■■63●

Dimensions (inch)	Cutting Edge Length L	.1811	Thickness S	.0937
	Inscribed Circle IC	.1875	Hole Dia. D1	.0945

Applicable Internal Holders E61

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
● Interrupted Cutting 1st Recommended ○ Interrupted Cutting 2nd Recommended

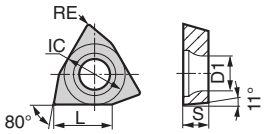
Recommended Application		Coated Carbide																						Coated Cermet		Cermet			
		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
P	Steel	●	●	✖	○	↻	✲																	○	●	●	↻	●			
M	Stainless Steel							●	●	✖	○	✲													●					
K	Cast Iron					✲							●	●	○	↻	✖							✲	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	↻	✲									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE																										
Finishing	FW *1		WBGT630.5RFW	WBGT080202R-FW	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—
			WBGT630.5LFW	WBGT080202L-FW	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	▲	★	—	—	—
			WBGT631RFW	WBGT080204R-FW	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—
			WBGT631LFW	WBGT080204L-FW	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★		★	—	—	—
	(R/L)FX *1		WBGT630.5RFX	WBGT080202R-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—
			WBGT630.5LFX	WBGT080202L-FX	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—
			WBGT631RFX	WBGT080204R-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—
			WBGT631LFX	WBGT080204L-FX	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	★	★	—	—	—	—	—	—
	(R/L)FY *1		WBGT630RFY	WBGT080201R-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—
			WBGT630LFY	WBGT080201L-FY	.0039	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—
			WBGT630.5RFY	WBGT080202R-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—
			WBGT630.5LFY	WBGT080202L-FY	.0078	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—
			WBGT631RFY	WBGT080204R-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—
			WBGT631LFY	WBGT080204L-FY	.0156	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			★	—	—	—

*1: Photo shows left hand.

Trigon Positive Inserts

WP **Trigon** **11° Pos.** **With Hole**



*Uneven Trigon

Grade Selection ☞ A2, A3

Chipbreaker Selection ☞ B10 on

Insert Grade Selection by Part Material ☞ A10 on

WP■■21.5●

Dimensions (inch)	Cutting Edge Length L	.1693	Thickness S	.0937
	Inscribed Circle IC	.2500	Hole Dia. D1	.1102

Applicable Internal Holders ☞ E63

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet		Cermet			
P	Steel	●	●	✖	○	◔	✖						●	●	✖	○	◔							○	●	●	◔	●			
M	Stainless Steel							●	●	✖	○	✖													●						
K	Cast Iron					✖								●	●	○	◔	✖						✖	●						
N	Non-Ferrous Metal																														●
S	Exotic Alloy																	●	✖	○	◔	✖									
H	Hardened Steel																	●													

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T1500A	EH510	EH520	H1
Light Cutting	**ELB**	(ap) .08 .04 0 .008 .016 (f) P 15°	**WPMT21.51ELB**	**WPMT110204N-LB**	.0156		●	★		★	★	★	★	★								—						—	★		★			

WP■■320●

Dimensions (inch)	Cutting Edge Length L	.2559	Thickness S	.1250
	Inscribed Circle IC	.3750	Hole Dia. D1	.1732

Applicable Internal Holders ☞ E63

● Continuous Cutting 1st Recommended ○ Continuous Cutting 2nd Recommended
● General Cutting 1st Recommended ○ General Cutting 2nd Recommended
✖ Interrupted Cutting 1st Recommended ✖ Interrupted Cutting 2nd Recommended

Recommended Application		AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
		Coated Carbide																								Coated Cermet			Cermet			
P	Steel	●	●	✖	○	◔	✖						●	●	✖	○	◔							○	●	●	◔	●	●			
M	Stainless Steel							●	●	✖	○	✖													●							
K	Cast Iron					✖								●	●	○	◔	✖						✖	●							
N	Non-Ferrous Metal																															●
S	Exotic Alloy																	●	✖	○	◔	✖										
H	Hardened Steel																	●														

	Shape	Application Range	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	AC8015P	AC8025P	AC8035P	AC810P	AC820P	AC830P	AC6020M	AC6030M	AC6040M	AC610M	AC630M	AC4010K	AC4015K	AC405K	AC415K	AC420K	AC503U	AC5015S	AC5025S	AC510U	AC520U	AC530U	AC700G	AC1030U	T1500Z	T2000Z	T2500Z	T1500A	EH510	EH520	H1
Light Cutting	**ELB**	(ap) .08 .04 0 .008 .016 (f) P 15°	**WPMT322ELB**	**WPMT160308N-LB**	.0313		●	★		★	★	★	★	★								—						—	★		★	★			

Ceramic Inserts

SN2000K* → Finishing and roughing of cast iron

SN2100K* → Interrupted turning /milling of cast iron

SN1000S → SiAlON grade for rough turning/ milling of exotic alloys

WX1500 → Cold pressed whiskered ceramic grade for continuous turning of exotic alloys

WX2000 → High speed turning of super alloys

NB150H → High speed finishing of hardened steels

*Ceramic grades not shown in stock can be made to order. Call for price and delivery.

Edge Preps	SN2000K	SN2100K	SN1000S	SN1000S*	WX1500	WX2000	NB150H
	.008 X 25°	.008 X 25°	.003 X 20°	A2 "Hone Only"	.003 X 20°	.002 X 20°	.008 X 25°

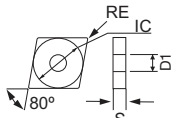
K Cast Iron
S Exotic Materials
H Hardened Steel

■ NEGATIVE

CNMA

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut



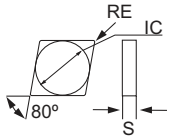


Catalog #	IC	S	RE	D1	SN2000K
CNMA432	.500	.1875	.0313	.2031	●
CNMA433			.0469		●
CNMA434			.0625		●
CNMA454		.3125	.0625		●
CNMA543	.625	.250	.0469	.250	●
CNMA544			.0625		●

CNMN

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut



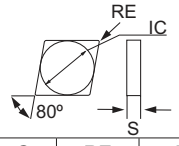


Catalog #	IC	S	RE	D1	SN2000K
CNMN434	.500	.1875	.0625	-	●

CNGX

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut



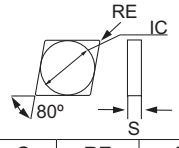


Catalog #	IC	S	RE	D1	SN2000K
CNGX452	.500	.3125	.0313	-	●

CNMX

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut



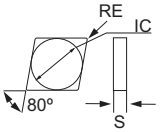


Catalog #	IC	S	RE	D1	SN2000K
CNMX453	.500	.3125	.0469	-	●
CNMX454	.500	.3125	.0625		●

CNG

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut — Grades



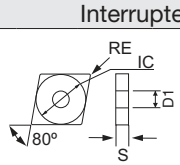


Catalog #	IC	S	RE	D1	SN2000K	WX2000
CNG432	.500	.1875	.0313	-	●	●
CNG433			.0469		●	●
CNG434			.0625		●	●
CNG452		.3125	.0313		●	
CNG453			.0469		●	
CNG454			.0625		●	
CNG643	.750	.250	.0469			

CNGA

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut — Grades



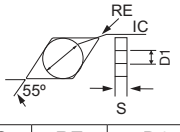


Catalog #	IC	S	RE	D1	SN2000K	SN2100K	SN1000S	WX1500	WX2000	NB150H
CNGA432	.500	.1875	.0313	.2031	●	●	●	●	●	●
CNGA433			.0469		●	●	●	●	●	●
CNGA434			.0625		●	●	●	●	●	●
CNGA542	.625	.250	.0313	.250	●					
CNGA543			.0469		●					
CNGA544			.0625		●					
CNGA643	.750		.0469	.3126	●					
CNGA644			.0625		●					

DNGA

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut — Grades





Catalog #	IC	S	RE	D1	SN2000K	SN1000S	WX2000	NB150H
DNGA432	.500	.1875	.0313	.2031	●	●	●	●
DNGA433			.0469		●	●	●	●
DNGA434			.0625		●			

SN2000K* → Finishing and roughing of cast iron

SN2100K* → Interrupted turning /milling of cast iron

SN1000S → SiAlON grade for rough turning/ milling of exotic alloys

WX1500 → Cold pressed whiskered ceramic grade for continuous turning of exotic alloys

WX2000 → High speed turning of super alloys

NB150H → High speed finishing of hardened steels

*SN2000K & SN2100K grades not shown in stock can be made to order. Call for price and delivery.

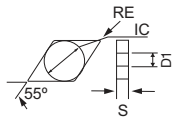
K Cast Iron
S Exotic Materials
H Hardened Steel

Edge Preps	SN2000K	SN2100K	SN1000S	SN1000S*	WX1500	WX2000	NB150H
	.008 X 25°	.008 X 25°	.003 X 20°	A2 "Hone Only"	.003 X 20°	.002 X 20°	.008 X 25°

DNMX

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

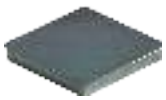


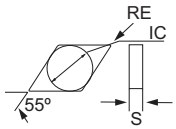


Catalog #	IC	S	RE	D1	SN2000K
DNMX354	.375	.3125	.0625	.2031 (dimple)	●
DNMX454	.500		.0625		●

DNG

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut





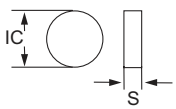
Catalog #	IC	S	RE	D1	SN2000K
DNG432	.500	.1875	.0313	—	●
DNG433			.0469		●
DNG434			.0625		●

RNG

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

Grades



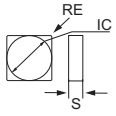


Catalog #	IC	S	RE	D1	SN2000K	SN2100K	SN1000S	WX1500	WX2000	NB150H
RNG32	.375	.125	—	—	●	●	●	●		●
RNG32A2							●			
RNG42	.500				●	●	●			
RNG42A2							●			
RNG43		.1875			●	●	●	●	●	●
RNG43A2							●			
RNG45		.3125			●	●	●	●	●	●
RNG45A2							●			
RNG55	.625				●	●	●	●		●
RNG55A2							●			

SNMN

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut



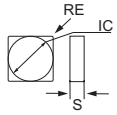


Catalog #	IC	S	RE	D1	SN2000K
SNMN434	.500	.1875	.0625	—	●

SNMX

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut





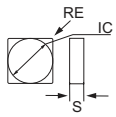
Catalog #	IC	S	RE	D1	SN2000K
SNMX453	.500	.3125	.0469	—	●
SNMX454	.500		.0625		●
SNMX554	.625		.0625		●

SNG

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

Grades





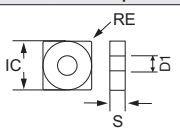
Catalog #	IC	S	RE	D1	SN2000K	SN2100K	WX2000
SNG432	.500	.1875	.0313	—	●	●	●
SNG433			.0469		●	●	●
SNG434			.0625		●	●	

SNGA

Cutting Conditions: Continuous Cut, Medium Cut, Interrupted Cut

Grades





Catalog #	IC	S	RE	D1	SN2000K	WX2000
SNGA432	.500	.1875	.0313	.2031	●	●
SNGA433			.0469		●	●
SNGA434			.0625		●	

Ceramic Inserts

SN2000K* → Finishing and roughing of cast iron

SN2100K* → Interrupted turning /milling of cast iron

SN1000S → SiAlON grade for rough turning/ milling of exotic alloys

WX1500 → Cold pressed whiskered ceramic grade for continuous turning of exotic alloys

WX2000 → High speed turning of super alloys

NB150H → High speed finishing of hardened steels

*SN2000K & SN2100K grades not shown in stock can be made to order. Call for price and delivery.

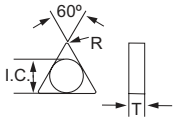
Edge Preps	SN2000K	SN2100K	SN1000S	SN1000S*	WX1500	WX2000	NB150H
	.008 X 25°	.008 X 25°	.003 X 20°	A2 "Hone Only"	.003 X 20°	.002 X 20°	.008 X 25°

K Cast Iron
S Exotic Materials
H Hardened Steel

TNG

Cutting Conditions: Continuous Cut / Medium Cut / Interrupted Cut — Grades: SN2000K, NB150H

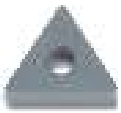


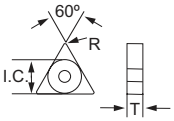


Catalog #	IC	S	RE	D1	SN2000K	NB150H
TNG321	.375	.125	.0156	-		●
TNG322			.0313			●
TNG331		.1875	.0156			●
TNG332			.0313		●	●
TNG333			.0469		●	
TNG334			.0625		●	
TNG352		.3125	.0313		●	
TNG353			.0469		●	
TNG432	.500	.1875	.0313		●	●
TNG433			.0469		●	●
TNG434			.0625		●	
TNG436			.0938		●	

TNGA

Cutting Conditions: Continuous Cut / Medium Cut / Interrupted Cut — Grades: SN2000K, NB150H

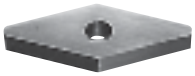


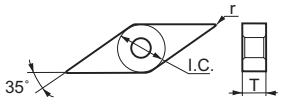


Catalog #	IC	S	RE	D1	SN2000K	NB150H
TNGA321	.375	.125	.0156	.150		●
TNGA322			.0313			●
TNGA332		.1875	.0313		●	●
TNGA333			.0469		●	●
TNGA334			.0625		●	
TNGA432	.500		.0313	.2031	●	●
TNGA433			.0469		●	●
TNGA434			.0625		●	●
TNGA436			.0938		●	
TNGA438			.1250		●	
TNGA543	.625	.250	.0469	.250	●	
TNGA544			.0625		●	

VNGA

Cutting Conditions: Continuous Cut / Medium Cut / Interrupted Cut — Grades: SN2000K, WX2000, NB150H



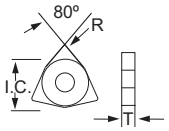


Catalog #	IC	S	RE	D1	SN2000K	WX2000	NB150H
VNGA331	.375	.1875	.0156	.150			●
VNGA332			.0313		●	●	●
VNGA333			.0469		●	●	●
VNGA432	.500		.0313	.2031			●
VNGA433			.0469				●

WNGA

Cutting Conditions: Continuous Cut / Medium Cut / Interrupted Cut — Grades: SN2000K, SN2100K, SN1000S, WX2000, NB150H





Catalog #	IC	S	RE	D1	SN2000K	SN2100K	SN1000S	WX2000	NB150H
WNGA432	.500	.1875	.0313	.2031	●	●	●	●	●
WNGA433			.0469		●		●	●	●
WNGA434			.0625				●		●

Ceramic Inserts

SN2000K* → Finishing and roughing of cast iron

SN2100K* → Interrupted turning /milling of cast iron

SN1000S → SiAlON grade for rough turning/ milling of exotic alloys

WX1500 → Cold pressed whiskered ceramic grade for continuous turning of exotic alloys

WX2000 → High speed turning of super alloys

NB150H → High speed finishing of hardened steels

*SN2000K & SN2100K grades not shown in stock can be made to order. Call for price and delivery.

K Cast Iron
S Exotic Materials
H Hardened Steel

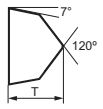
Edge Preps	SN2000K	SN2100K	SN1000S	SN1000S*	WX1500	WX2000	NB150H
	.008 X 25°	.008 X 25°	.003 X 20°	A2 "Hone Only"	.003 X 20°	.002 X 20°	.008 X 25°

■ Positive

RCGX

Cutting Conditions: Grades
Continuous Cut ● ● ● ●
Medium Cut ● ● ● ●
Interrupted Cut ● ●



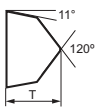


Catalog #	IC	S	RE	D1	SN2000K	SN1000S	WX1500	NB150H
RCGX35	.375	.3125	-	-	●	●	●	●
RCGX35A2						●		
RCGX45	.500				●	●	●	●
RCGX45A2						●		
RCGX55	.625							
RCGX55A2								

RPGX

Cutting Conditions: Grades
Continuous Cut ● ● ●
Medium Cut ● ● ●
Interrupted Cut ● ●



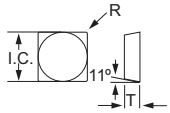


Catalog #	IC	S	RE	D1	SN1000S	WX1500	WX2000
RPGX35	.375	.3125	-	-	●	●	●
RPGX35A2					●		
RPGX45	.500				●	●	●
RPGX45A2					●		
RPGX55	.625						
RPGX55A2							

SPG

Cutting Conditions: Grades
Continuous Cut ● ●
Medium Cut ● ● ●
Interrupted Cut ●



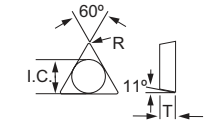


Catalog #	IC	S	RE	D1	SN2000K	SN2100K	NB150H
SPG422	.500	.125	.0313	-	●	●	●
SPG423			.0469			●	
SPG424			.0625			●	
SPG432		.1875	.0313		●	●	
SPG433			.0469		●	●	
SPG632	.750		.0313			●	
SPG633			.0469			●	
SPG634			.0625			●	

TPG

Cutting Conditions: Grades
Continuous Cut ● ●
Medium Cut ● ● ●
Interrupted Cut ●





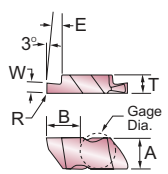
Catalog #	IC	S	RE	D1	SN2000K	SN2100K	NB150H
TPG221	.250	.125	.0156	-			●
TPG222			.0313				●
TPG321	.375		.0156				●
TPG322			.0313		●	●	●
TPG323			.0469		●	●	●
TPG332		.1875	.0313				●
TPG432	.500		.0313		●	●	●
TPG433			.0469		●	●	●

■ For Grooving

SG

Cutting Conditions:
Continuous Cut ●
Medium Cut ●
Interrupted Cut





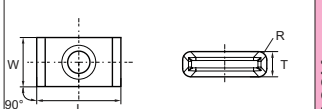
Catalog #	W ± .001	R	E ± .001	T	A	B	Gage Dia.	SN2000K
SG-3047R	.047	.005/.010	.075	.195	.344	.4050	.3750	●
SG-3062R	.062	.005/.010	.094					●
SG-3094R	.094	.005/.010	.150					●
SG-3125R	.125	.005/.010	.150					●

■ For Milling

LNGX

Cutting Conditions:
Continuous Cut
Medium Cut ●
Interrupted Cut ●





Catalog #	L	W	T	R	SN2100K
LNGX130508PNFN-W	.500	.375	.187	.031	●
LNGX130508PNFN-WO					●
LNGX160516PNFN-W	.625			.063	●
LNGX160516PNFN-WO					●

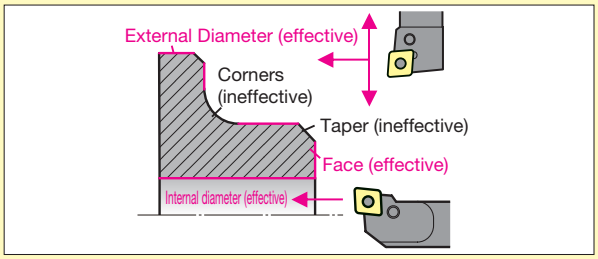
WO: Wiper Insert, 2 cutting edges

Precautions when Using Wiper Inserts

Effects of the wiper insert

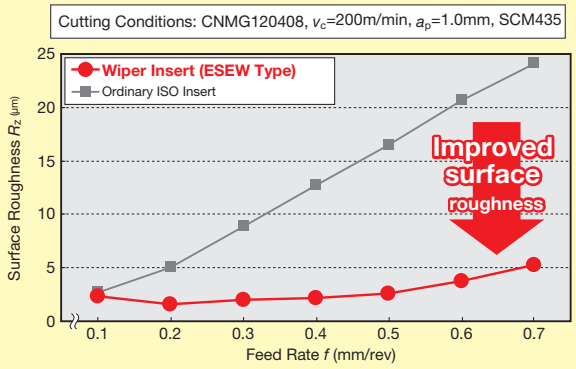
Wiper inserts are effective for external/internal diameter machining and for facing as shown in the figure below, surface roughness of the machined surface can be maintained even in high-feed machining.

■ Effective Range of Wiper Inserts



* Note that wiper inserts leave the same machined surface roughness as normal inserts at tapers and corners.
* The cutting edge position may need to be offset depending on the insert shape. See the offset table below.

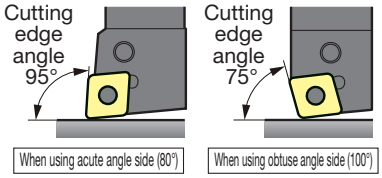
■ Machined Surface Roughness (actual measurements)



Coated Carbide / Coated Cermet / Cermet

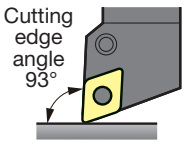
CNMG/WNMG/CCMT/CPMT Type ELUW / EGUW / ESEW Type Chipbreaker (ELUW Type chipbreaker only for CCMT / CPMT)

- Use a holder with a cutting edge angle of 95°.
- No tool compensation required.
  CNMG / WNMG / CCMT / CPMT type wiper inserts comply with the ISO standard, allowing use without correcting the machining program.
- The obtuse (100°) corner on the CNMG type can also provide a wiper effect.



DNMX Type ESEW Type Chipbreaker

- Use a holder with a cutting edge angle of 93°.
- Tool compensation required.
  DNMX type wiper inserts do not comply with the ISO standard.
  Correct the machining program (tool offset) as explained on the next page (B135).

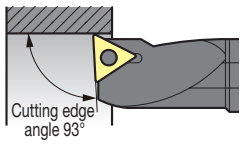


DNMX Type
Tool Program Correction Guide
(→ B135)

TPGX Type SDW Type Chipbreaker

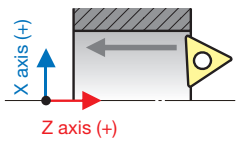
- Use a boring bar with a 93° cutting edge angle.
- Tool compensation required.
  TPGX type wiper inserts do not comply with the ISO standard.
  Correct the cutting edge position (tool offset) as explained on the right.

Note: Unlike the other profiles, the TPGX type is only effective for boring.



Cutting Edge Position Correction for TPGX Type Breaker (SDW)

Internal boring

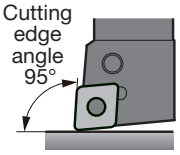


Nose Radius	X direction	Z direction
R0.4	0.12	-0.02
R0.8	0.12	-0.02

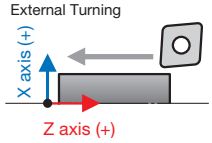
CBN (SUMIBORON / Coated SUMIBORON)

CNGA Type / CCGW Type / WNGA Type WG/WH Type Chipbreaker

- Use a holder with a cutting edge angle of 95°.
- Tool compensation required.
  CNGA, CCGW and WNGA type wiper inserts do not comply with the ISO standard. Correct the cutting edge position (tool offset) as explained on the right.



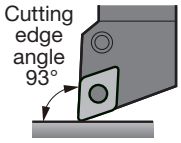
Cutting Edge Position Correction for CNGA/CCGW/WNGA Type Breaker (WG/WH Type)



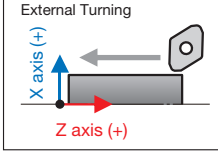
Nose Radius	Type	X direction	Z direction
R0.4	WG Type	-0.02	-0.02
	WH Type	-0.06	-0.06
R0.8/R1.2	WG Type	-0.01	-0.01
	WH Type	-0.06	-0.06

DNGA Type / DCGW Type WG/WH Type Chipbreaker

- Use a holder with a cutting edge angle of 93°.
- Tool compensation required.
  DNGA and DCGW type wiper inserts do not comply with the ISO standard.
  Correct the cutting edge position (tool offset) as explained on the right.



Cutting Edge Position Correction for DNGA/DCGW Type Breaker (WG/WH Type)



Nose Radius	Type	X direction	Z direction
R0.4	WG Type	-0.17	-0.01
	WH Type	-0.70	-0.06
R0.8	WG Type	-0.05	0
	WH Type	-0.58	-0.05

Note: Unlike other contour shapes, the DNGA / DCGW Type can only obtain the wiper effect with outer diameter and inner diameter cutting techniques, and cannot be used for edge cutting.

Dimensions in mm

dimensions in mm

Tool Program Correction Guide for DNMX Type Wiper Inserts (Compensation: mm)

(1) Cutting edge position compensation (tool offset) in X and Z axes

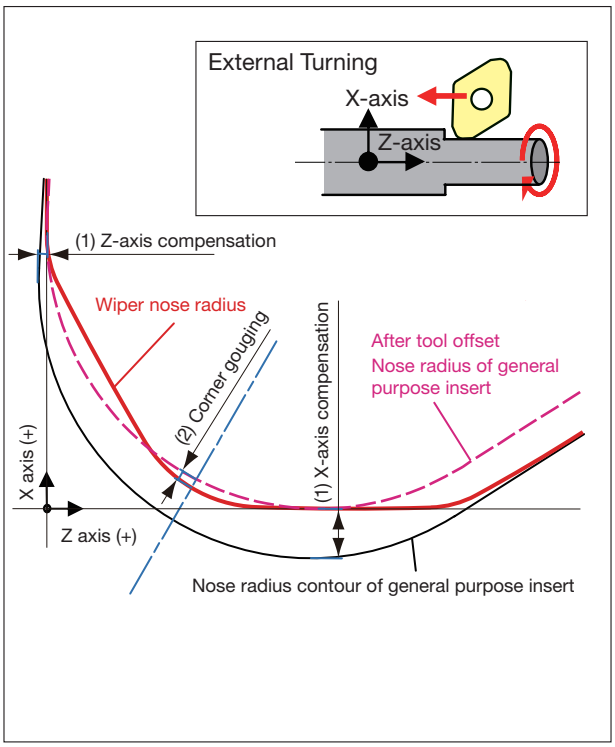
The cutting edge position for this insert differs from standard ISO inserts and therefore requires dimensional correction in the X and Z axes as shown in the table on the right.

*** The X axis compensation is positive for internal boring.**

External Turning

Nose Radius	X direction	Z direction
R0.4	-0.14	-0.02
R0.8	-0.14	-0.02
R1.2	-0.1	-0.03

● Nose Radius Tip Diagram

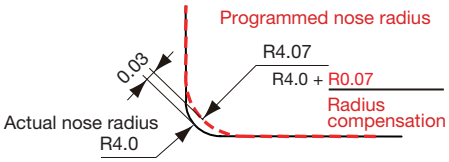


(2) Tool compensation for corners (based on compensation in step (1))

The nose radius must be corrected to prevent the insert from gouging the corner in the programmed tool path.

Programmed nose radius = actual nose radius + radius compensation

Example) To machine an R4.0 corner (using an R0.8 nose)



Nose Radius	Gouging	Radius compensation
R0.4	0.02	+R0.04
R0.8	**0.03**	**+R0.07**
R1.2	0.08	+R0.18

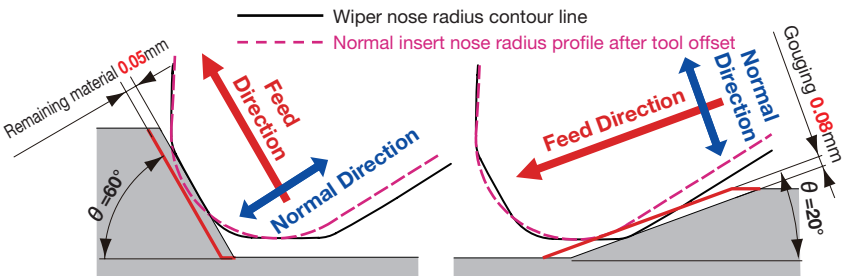
(3) Tool compensation for tapers (based on compensation in step (1))

Tool paths for tapers leave gouging and unmachined surfaces with respect to the programmed tool path. Correct the normal direction as shown below.

Compensation + indicates gouging
Compensation - indicates unmachined surfaces

Nose Radius	Taper Angle (θ)				
	-25°	**-20°**	-15°	-10°	-5°
R0.4	0.08	0.07	0.05	0.04	0.02
R0.8	0.09	**0.08**	0.06	0.05	0.02
R1.2	0.05	0.05	0.05	0.03	0.02

Example) To machine an R0.8 nose and 60°/-20° taper angle (θ)



Nose Radius	Taper Angle (θ)																		
	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	**60°**	65°	70°	75°	80°	85°	90°
R0.4	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.04	-0.05	-0.05	-0.05	-0.03	-0.02	-0.02	-0.01	0.00
R0.8	0.00	0.01	0.02	0.03	0.03	0.03	0.03	0.02	0.01	0.00	-0.02	-0.03	**-0.05**	-0.04	-0.03	-0.02	-0.01	0.00	0.00
R1.2	0.00	0.02	0.04	0.06	0.07	0.08	0.08	0.07	0.06	0.05	0.03	0.00	-0.03	-0.02	-0.01	0.00	0.01	0.00	0.00

Dimensions in mm

MEMO

External Holders C

C1 to C63



		Tool Holder Identification (Inch & Metric) ····C2
		Cutting Edge Position Dimension ····C4
Neg .	CN□□ Insert Applicable Holders	DCLN Type / MCFN Type ····C5
		MCGN Type / MCKN Type ····C6
		MCLN Type / MCMN Type ····C7
		MCRN Type / PCBN Type ····C8
		PCFN Type / PCLN Type ····C9
	DN□□ Insert Applicable Holders	WCLN Type / DDJN Type ····C10
		MDJN Type / MDPN Type ····C11
		MDQNType / PDJN Type ····C12
	RN□□ Insert Applicable Holders	MRGN Type ····C13
	SN□□ Insert Applicable Holders	DSDN Type / DSRN-AN Type ····C14
		DSSN Type / MSDN Type ····C15
		MSKN Type / MSRN Type ····C16
		MSSN Type / PSBN Type ····C17
		PSDN Type ····C18
		PSSN Type / PSKN Type ····C19
	TN□□ Insert Applicable Holders	DTGN Type / DTJN-AN Type / MTAN Type ····C20
		MTCN Type / MTENNS Type ····C21
		MTFN Type / MTGN Type ····C22
		MTJNS Type / MTJN Type / MTXN Type ····C23
		MTRN Type / PTFN Type ····C24
		PTGN Type / PTTN Type ····C25
		WTENNS Type / WTJNS Type ····C26
	T-REX Toolholders	SumiTurn T-REX Toolholders ····C27
		SumiTurn T-REX Inserts ····C28
Neg.	VN□□ Insert Applicable Holders	DVJN Type / DVVN Type ····C29
		DVQN Type ····C30
		MVJN Type / MVVN Type ····C31
	WN□□ Insert Applicable Holders	DWLN Type / MWLN Type ····C32
		PWLN Type / WWLN Type ····C33
Pos.	CC□□ Insert Applicable Holders	SCLC Type ····C34
	DC□□ Insert Applicable Holders	SDJC Type / SDPC Type ····C35
	RC□□ Insert Applicable Holders	PRDC Type / PRGC Type ····C36
		SRDC Type /SRGC Type/ SRSC ····C37
	SC□□ Insert Applicable Holders	SSDC Type ····C38
	TC□□ Insert Applicable Holders	STDC Type / STFC Type ····C39
		STGC Type / STTC Type ····C40
	VC□□ Insert Applicable Holders	SVHC Type / SVLC Type / SVJC ····C41
		SVVC Type ····C42
		SVPC Type ····C43
Neg.	CN□□ Insert Applicable Holders	CCKN-CD Type / CCKN-CX Type ····C44
		CCLN-CD Type / CCLN-CX Type ····C45
Neg. / Pos.	DN□□ / RC□□ Insert Applicable Holders	CDJN-CD Type / CDJN-CX Type / CRDC-CD Type ····C46
	RN□□ Insert Applicable Holders	CRDN-CD Type / CRGN-CD Type ····C47
Neg.	SN□□ Insert Applicable Holders	CSDN-CD Type / CSDN-CX Type ····C48
		CSKN-CD Type / CSKN-CX Type ····C49
		CSRN-CD Type / CSRN-CX Type ····C50
		CSSN-CD Type / CSSN-CX Type ····C51
Pos.	SP□□ Insert Applicable Holders	CSDP Type / CSKP Type / CSRP Type ····C52
	TP□□ Insert Applicable Holders	CTAP Type / CTFP Type / CTGP Type ····C53
	SN□□ Insert Applicable Holders	ESBN Type / ESDN Type ····C54
Neg.		ESSN Type / ESKN Type ····C55
	TN□□ Insert Applicable Holders	ETAN Type / ETGN Type ····C56
		ETFN Type / ETEN Type / ETXN Type ····C57
		Tool Holders for Aluminum Wheel Turning ····C58
Pos.	For Aluminum Wheel Machining	MV Type Profiling Tool Holders ····C59
		GD Type Profiling Tool Holders ····C60
		Discontinued holders, Spare Parts & Hardware ····C62

Stock Markings and Symbols

● mark: Standard stocked item
▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).
Blank: Made-to-order item
— mark: Not available

External Tool Identification Table

■ Catalog Classification System for Toolholders

M W L N R 16 4 D

(1)	(2)	(3)	(4)	(5)	(11)	(12)	(13)
(1) Clamping System Refer to Table 1	(2) Insert Shape Refer to Table 2	(3) Holder Style Refer to Table 3	(4) Insert Relief Angle Refer to Table 4	(5) Feed Direction Refer to Table 5	(11) Shank Size Refer to Table 11	(12) Insert Size Refer to Table 12	(13) Qualifications Refer to Table 13

Inch
Example:

Table 1

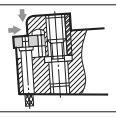
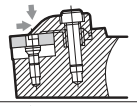
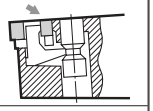
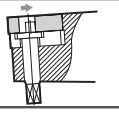
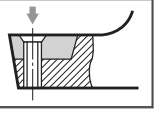
(1) Clamping System					
Symbol	Clamp	Structure	Symbol	Clamp	Structure
C	Top Clamp		M	Top Clamp + Pin Lock	
D	Double Clamp		P	Lever Lock (Insert is supported by 2 faces)	
E	Pin Lock (Eccentric Pin)		S	Screw-on	

Table 2

(2) Insert Shape	
Symbol	Insert Shape
C	80° Angle Diamond Type
D	55° Angle Diamond Type
R	Round Type
S	Square Type
T	Triangular Type
V	35° Angle Diamond Type
W	Uneven Trigon Type

Table 3

(3) Holder Style (▬ indicates major cutting edge)

Symbol	Shape	Offset	Symbol	Shape	Offset
A*	90°	No	L	95° 95°	Yes
B	75°	No	N	63°	No
D	45°	No	R	75°	Yes
E	60°	No	S	45°	Yes
F*	90°	Yes	T	60°	Yes
G*	90°	Yes	U	93°	Yes
J	93°	Yes	W	60°	Yes
K	75°	Yes	Y	85°	Yes

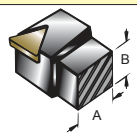
* 91° on our products

Table 4

(4) Insert Relief Angle	
Symbol	Relief Angle
B	5°
C	7°
D	15°
E	20°
F	25°
N	0°
P	11°

Table 11

(11) Shank Size

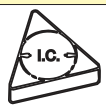


Square Shanks
This indicates the A & B dimensions in sixteenths (1/16).
Examples:
12 = 12/16 =3/4 sq.
16 = 16/16 =1.0 sq.
20 = 20/16 =1-1/4 sq.

Rectangle Shanks
The first digit indicates the "A" dimension in eighths (1/8).
The second digit indicates the "B" dimension in quarters (1/4).
examples:
86 = A x B
1.0 x 1-1/2
85 = A x B
1.0 x 1-1/4

Table 12

(12) Insert Size

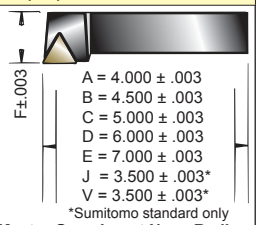


For equal sided inserts this indicates the inscribed circle (I.C.) in eighths (1/8)
Examples,
6 = 6/8 = 3/4" I.C.
4 = 4/8 = 1/2" I.C.
2.5 = 2.5/8 = 5/16 I.C.

For rectangles and parallelograms two digits are necessary.
1st digit = number of eighths (1/8) in width.
2nd digit = number of quarters (1/4) in length.

Table 13

(13) Qualifications

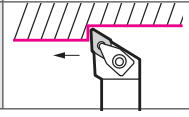
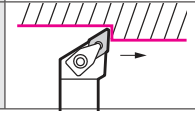
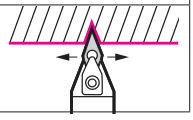


A = 4.000 ± .003
B = 4.500 ± .003
C = 5.000 ± .003
D = 6.000 ± .003
E = 7.000 ± .003
J = 3.500 ± .003*
V = 3.500 ± .003*
*Sumitomo standard only

Master Gage Insert Nose Radius Chart for Qualified Holders

Insert I.C.	Nose Radius
1/4, 5/16	.015
3/8, 1/2	.031
5/8, 3/4	.047
1.0	.062

Table 5

(5) Feed Direction					
Symbol	Right Hand	Symbol	Left Hand	Symbol	Neutral
R		L		N	

Example: **D T F N R 25 25 (–) M 16 (04 W)**

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

- (1) Clamping System — Refer to Table 1
- (2) Insert Shape — Refer to Table 2
- (3) Holder Style — Refer to Table 3
- (4) Insert Relief Angle — Refer to Table 4
- (5) Feed Direction — Refer to Table 5
- (6) Shank Height — Refer to Table 6
- (7) Shank Width — Refer to Table 7
- (8) Shank Length — Refer to Table 8
- (9) Insert Cutting Edge Length — see Page B3 (Table 5)
  Previous cat. nos.: See Table 9
- (10) Insert Thickness — Refer to Table 10
  Added only for holders with the same catalogue numbers but different insert thicknesses
- (11) Shim — Added only for holders with shims.
  Added only for holders with shims meant for SEC-30/GD types.

Metric

Example:

Table 8

(8) Shank Length	
Symbol	Length (mm)
F	80
H	100
K	125
M	150
N	160
P	170
Q	180
S	250
T	300
U	350

For some previous catalogue numbers, a hyphen (-) is used instead of a letter.

Table 9 Applicable for previous cat. nos. only

Insert Inscribed Circle			Insert Thickness	
Symbol	Inscribed Circle (mm)		Symbol	Thickness (mm)
3	9.525	+	2	3.18
4	12.70		3	4.76
5	15.875		4	6.35
6	19.05		5	7.94
8	25.40		6	9.52

Previous cat. nos. indicated an inscribed circle symbol and insert thickness symbol displayed in 2 columns.

For Round Type Inserts

Symbol	Inscribed Circle (mm)
10	10
12	12
16	16
20	20
25	25
32	32

• Identification Example

DTFNR2525M16



· Structure: Double Clamp Method
· Shape: With Triangle Insert, Cutting Edge Angle 91°
· Shank: H - 25mm, W - 25mm, L - 150mm

Table 6

(6) Shank Height	
Symbol	Height (mm)
12	12
16	16
20	20
25	25
32	32
40	40
50	50

Table 7

(7) Shank Width	
Symbol	Width (mm)
12	12
16	16
20	20
25	25
32	32
40	40
50	50

2 digits are used for shank height and width dimensions in mm.

Table 10

(10) Insert Thickness			
Symbol	Thickness (mm)	Symbol	Thickness (mm)
X1	1.40 / 1.80*	04	4.76
01	1.59	05	5.56
02	2.38	06	6.35
T2	2.78	07	7.94
03	3.18	09	9.52
T3	3.97		

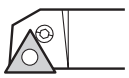
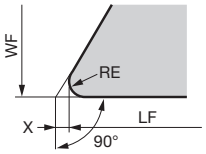
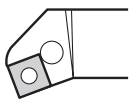
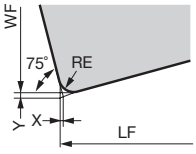
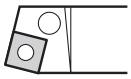
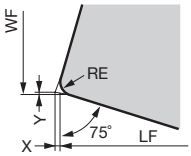
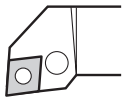
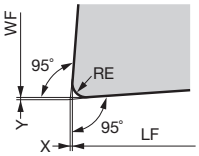
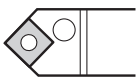
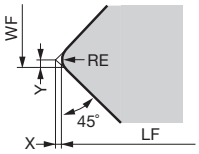
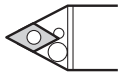
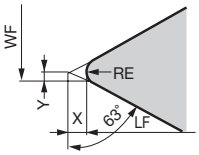
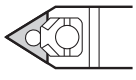
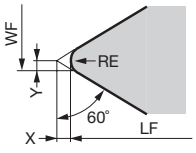
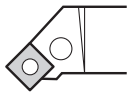
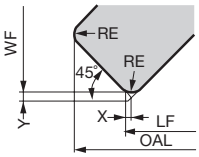
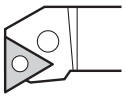
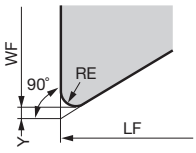
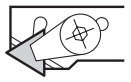
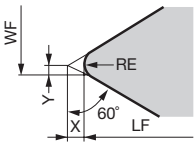
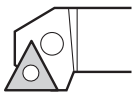
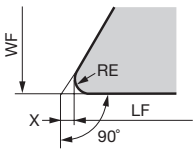
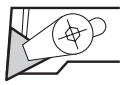
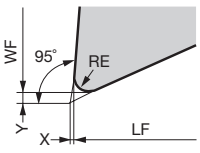
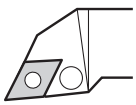
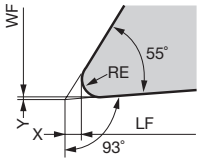
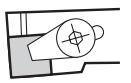
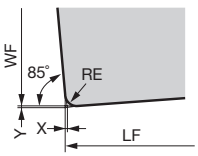
* CCET03X1→1.40, CCET04X1→1.80

Cutting Edge Position Dimension

■ Cutting Position Dimension and Nose Radius

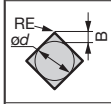
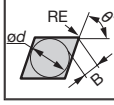
● Cutting position dimension by nose radius (ISO standard)

(Values for X and Y in the table are with lateral rake angle and cutting edge angle of 0°.)

Tool Shape			Dimensions (mm)			Tool Shape			Dimensions (mm)		
Symbol	Shape	Close-up of Cutting Edge	RE	X	Y	Symbol	Shape	Close-up of Cutting Edge	RE	X	Y
A			0.4	0.291	—	K			0.4	0.024	0.089
			0.8	0.581	—				0.8	0.048	0.178
			1.2	0.872	—				1.2	0.072	0.268
			1.6	1.162	—				1.6	0.096	0.357
			2.4	1.743	—				2.4	0.143	0.535
B			0.4	0.089	0.024	L			0.4	0.040	0.040
			0.8	0.178	0.048				0.8	0.079	0.079
			1.2	0.268	0.072				1.2	0.119	0.119
			1.6	0.357	0.096				1.6	0.159	0.159
			2.4	0.535	0.143				2.4	0.238	0.238
D			0.4	0.164	0.164	N			0.4	0.463	0.263
			0.8	0.329	0.329				0.8	0.925	0.471
			1.2	0.493	0.493				1.2	1.388	0.707
			1.6	0.658	0.658				1.6	1.850	0.943
			2.4	0.986	0.986				2.4	2.776	1.414
E			0.4	0.396	0.229	S			0.4	0.164	0.164
			0.8	0.793	0.458				0.8	0.329	0.329
			1.2	1.190	0.687				1.2	0.493	0.493
			1.6	1.587	0.916				1.6	0.658	0.658
			2.4	2.381	1.374				2.4	0.986	0.986
F			0.4	—	0.291	T			0.4	0.396	0.229
			0.8	—	0.581				0.8	0.793	0.458
			1.2	—	0.872				1.2	1.190	0.687
			1.6	—	1.162				1.6	1.587	0.916
			2.4	—	1.743				2.4	2.381	1.374
G			0.4	0.291	—	U			0.4	0.253	0.058
			0.8	0.581	—				0.8	0.506	0.116
			1.2	0.872	—				1.2	0.759	0.175
			1.6	1.162	—				1.6	1.013	0.233
			2.4	1.743	—				2.4	1.519	0.350
J			0.4	0.344	0.033	Y			0.4	0.002	0.033
			0.8	0.687	0.079				0.8	0.005	0.066
			1.2	1.031	0.118				1.2	0.008	0.099
			1.6	1.375	0.157				1.6	0.011	0.132
			2.4	2.062	0.236				2.4	0.017	0.198

● Nose radius position calculation

Calculation Formula for Nose Radius Position (mm)

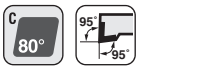
Shape		Formula
	Triangular Type	B = 3/2*d* − RE
	Square Type	B = (√2 − 1) × (*d*/2 − RE)
	Diamond Type	B = (1/Sin(θ/2) − 1) × (*d*/2 − RE)

Values of IC and RE for the Calculation of B (mm)

Inscribed Circle Nominal Value	IC for Calculation
3.97	3.9688
4.76	4.7625
5.56	5.5562
6.35	6.3500
7.94	7.9375
9.525	9.5250
12.70	12.7000
15.875	15.8750
19.05	19.0500
25.40	25.4000

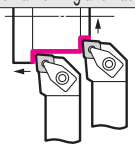
Nose Radius	Nominal Value	RE for Calculation
02	0.2	0.203
04	0.4	0.397
08	0.8	0.794
12	1.2	1.191
16	1.6	1.588
24	2.4	2.381

DCLN Type / MCFN Type



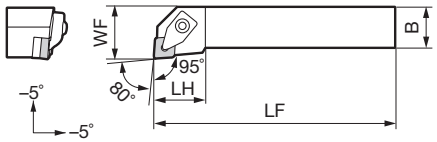
DCLN

External Turning and Facing



D Type Holder - General Turning, Facing and Profiling
Double Clamp

Fig 1



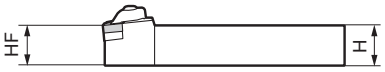


Figure shows right-hand (R) tool.

Holder

Parts

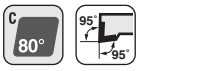
Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Shim Wrench	Clamp Wrench	Pin/ Shim Wrench	Clamp	Spring	Clamp Screw	Optional Hardware Clamp for Dimple CBN	
Inch	DCLN R/L 124BN	•	•	0.750	0.750	4.50	1.000	0.750	1.250	CN□□43□	B22	1	-	3.5	ICSN442	ST-1766	-	LH040		CL-2712			CL-2435	ST-1086
	DCLN R/L 164DN	•	•	1.000	1.000	6.00	1.250	1.000	1.250			1												
	DCLN R/L 204DN	•	•	1.250	1.250	6.00	1.500	1.250	1.250			1												
	DCLN R/L 205DN	•	•	1.250	1.250	6.00	1.500	1.250	1.375	CN□□54□	B26	1	-	3.5	ICSN533	ST-1768	-	LH040		CL-2716	SP-4295	CLB-1696	—	—
	DCLN R/L 245EN	•	•	1.500	1.500	7.00	2.000	1.500	1.375			1												
	DCLN R/L 206DN	•	•	1.250	1.250	6.00	1.500	1.250	1.653	CN□□64□	B28	1	-	3.5	ICSN633	ST-1770	-	LH040		CL-2719				
	DCLN R/L 246EN	•	•	1.500	1.500	7.00	2.000	1.500	1.653			1												
	DCLN R/L 124BAN*	•	•	0.750	0.750	4.5	1.000	0.750	1.250	CN□□43□	B22	1	-	3.5	ICSN442	ST-1766	-	LH040		CL-2712			CL-2435	ST-1086
	DCLN R/L 164DAN*	•	•	1.000	1.000	6.0	1.250	1.000	1.250			1												
	DCLN R/L 204DAN*	•	•	1.250	1.250	6.0	1.500	1.250	1.250			1												
	DCLN R/L 205DAN*	•	•	1.250	1.250	6.0	1.500	1.250	1.375	CN□□54□	B26	1	-	3.5	ICSN533	ST-1768	-	LH040		CL-2716	SP-4295	CLB-1696	—	—
	DCLN R/L 245EAN*	•	•	1.500	1.500	7.0	2.000	1.500	1.375			1												
	DCLN R/L 206DAN*	•	•	1.250	1.250	6.0	1.500	1.250	1.653	CN□□64□	B28	1	-	3.5	ICSN633	ST-1770	-	LH040		CL-2719				
	DCLN R/L 246EAN*	•	•	1.500	1.500	7.0	2.000	1.500	1.653			1												
Metric	DCLN R/L 2020K12	★	★	20	20	125	25	20	32	CN□□43□	B22	1	SCP-2	5.0	CNS1204	BFTX0409N	TRX15(*)	LH040	LH025	-	-	-	—	—
	DCLN R/L 2525M12	★	★	25	25	150	32	25	32			1												
	DCLN R/L 2525M16	★	★	25	25	150	32	25	32	CN□□54□	B26	1	SCP-3	5.0	CNS1606	BFTX0509N	TRX20(*)	LH040	LH025	-	-	-		
	DCLN R/L 3232P16	★	★	32	32	170	40	32	32			1												
	DCLN R/L 3232P19	★	★	32	32	170	40	32	42	CN□□64□	B28	1	SCP-5	5.0	CNS1906	BFTX0511N	TRX20(*)	LH040	LH025	-	-	-		
	DCLN R/L 4040S19	★	★	40	40	250	50	40	42			1												
	DCLN R/L 4040S25	★	★	40	40	250	50	40	53	CN□□86□	B30	1	SCP-6	6.0	CNS2509	BFTX0615N	TRD25(*)	LH060	-	-	-	-		

Wrench for shim is sold separately from the main body.

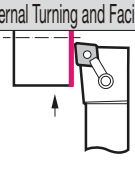
* Coolant Through (see page F16 for example and list of coolant-through parts)

Clamp Set Parts C63



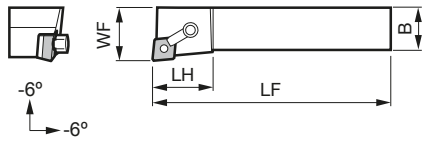
MCFN

External Turning and Facing



M Type Holder - General Turning and Facing
Clamp-on + Pin Lock

Fig 1



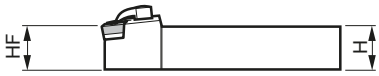


Figure shows right-hand (R) tool.

Holder

Parts

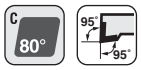
Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	MCFN R/L 124B	•	•	0.750	0.750	4.500	1.000	0.750	1.120	CN□□43□	B22	1	3.0	NL46	LH1/8	LH3/32	CL20	XNS48
	MCFN R/L 164D	•	•	1.000	1.000	6.000	1.250	1.000	1.120			1						
	MCFN R/L 204D	•	•	1.250	1.250	6.000	1.500	1.250	1.120			1						
	MCFN R/L 854D	•	•	1.250	1.000	6.000	1.250	1.250	1.120			1						
	MCFN R/L 165D	•	•	1.000	1.000	6.000	1.250	1.000	1.250	CN□□54□	B26	1	3.5	NL58	LH040	LH030	CL12	XNS510
	MCFN R/L 205D	•	•	1.250	1.250	6.000	1.500	1.250	1.250			1						
	MCFN R/L 245D	•	•	1.500	1.500	6.000	2.000	1.500	1.250			1						
	MCFN R/L 166D	•	•	1.000	1.000	6.000	1.250	1.000	1.310	CN□□64□	B28	1	3.5	NL68	LH040	LH9/64	CL12	XNS510
	MCFN R/L 206D	•	•	1.250	1.250	6.000	1.500	1.250	1.310			1				LH030		
	MCFN R/L 246D	•	•	1.500	1.500	6.000	2.000	1.500	1.310			1						

●= USA Stocked Item ★= World Wide Warehouse Item

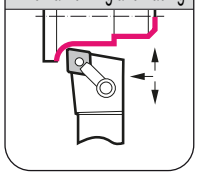
Clamp Set Parts C63

MCGN Type / MCKN Type



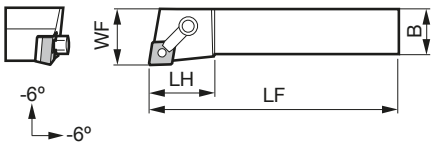
MCGN

External Turning and Facing



M Type Holder - General Turning and Facing Clamp-on + Pin Lock

Fig 1



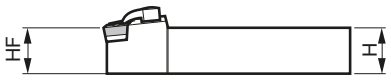


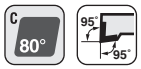
Figure shows right-hand (R) tool.

Holder

Parts

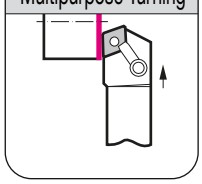
Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MCGN R/L 124B**	•	•	0.750	0.750	4.500	1.000	0.750	1.120	CN□□43□	**B22**	1	**3.0**	ICSN433	NL46	LH1/8 (For Hex Socket)	LH3/32 (For Hex Socket)	CL20	XNS48
	MCGN R/L 164D	•	•	1.000	1.000	6.000	1.250	1.000	1.120			1							
	MCGN R/L 204D	•	•	1.250	1.250	6.000	1.500	1.250	1.120			1							
	MCGN R/L 244D	•	•	1.500	1.500	6.000	2.000	1.500	1.250			1							
	MCGN R/L 165D	•	•	1.000	1.000	6.000	1.250	1.000	1.500	CN□□54□	**B26**	1	**3.5**	ICSN533	NL58	LH040	LH030	CL12	XNS510
	MCGN R/L 205D	•	•	1.250	1.250	6.000	1.500	1.250	1.500			1							
	MCGN R/L 245D	•	•	1.500	1.500	6.000	2.000	1.500	1.500			1							
	MCGN R/L 206D	•	•	1.250	1.250	6.000	1.500	1.250	1.650	CN□□64□	**B28**	1	**3.5**	ICSN633	NL68	LH040	LH9/64	CL12	XNS510
	MCGN R/L 246D	•	•	1.500	1.500	6.000	2.000	1.500	1.650			1							



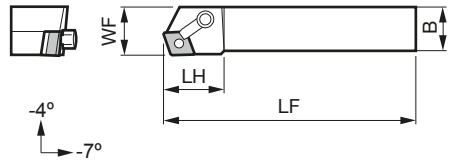
MCKN

Multipurpose Turning



M Type Holder - Multipurpose Turning Clamp-on + Pin Lock

Fig 1



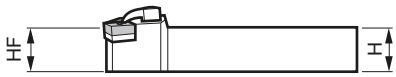


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MCKN R/L 124B**	•	•	0.750	0.750	4.500	1.000	0.750	1.200			1							
	MCKN R/L 164D	•	•	1.000	1.000	6.000	1.250	1.000	1.200	CN□□43□	**B22**	1	**3.0**	ICSN433	NL46	LH1/8 (For Hex Socket)	LH3/32 (For Hex Socket)	CL20	XNS48
	MCKN R/L 204D	•	•	1.250	1.250	6.000	1.500	1.250	1.200			1							
	MCKN R/L 165D	•	•	1.000	1.000	6.000	1.250	1.000	1.350	CN□□54□	**B26**	1	**3.5**	ICSN533	NL58	LH040	LH030	CL12	XNS510
	MCKN R/L 205D	•	•	1.250	1.250	6.000	1.500	1.250	1.350			1							
	MCKN R/L 166D	•	•	1.000	1.000	6.000	1.250	1.000	1.470	CN□□64□	**B28**	1	**3.5**	ICSN633	NL68	LH040	LH9/64	CL12	XNS510
	MCKN R/L 206D	•	•	1.250	1.250	6.000	1.500	1.250	1.470			1							
	MCKN R/L 246D	•	•	1.500	1.500	6.000	2.000	1.500	1.470			1							

●= USA Stocked Item

MCLN Type / MCMN Type

C 80° 95° 95°

MCLN

Multipurpose Turning

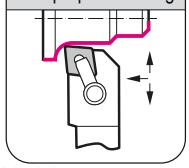
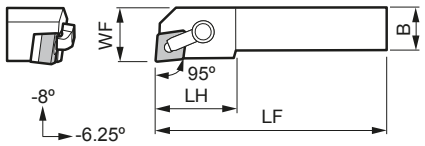


Fig 1



D Type Holder - General Turning, Facing and Profiling
Double Clamp

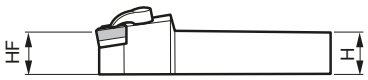


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	MCLN R/L 083A	•	•	.500	.500	4.000	0.750	0.500	1.000	CN□□32□	B20	1	3.0	N/A	NL-33	—	—	CL-6	XNS-37
	MCLN R/L 103A	•	•	.625	.625	4.000	0.875	0.625	1.000			1							
	MCLN R/L 123B	•	•	.750	.750	4.500	1.000	0.750	1.000			1							
	MCLN R/L 124B	•	•	.750	.750	4.500	1.000	0.750	1.130	CN□□43□	B22	1	3.0	ICSN433	NL46	LH1/8	LH3/32	CL20	XNS48
	MCLN R/L 164D	•	•	1.000	1.000	6.000	1.250	1.000	1.130			1							
	MCLN R/L 204D	•	•	1.250	1.250	6.000	1.500	1.250	1.130			1							
	MCLN R/L 244D	•	•	1.500	1.500	6.000	2.000	1.250	1.130			1							
	MCLN R/L 854D	•	•	1.250	1.000	6.000	1.250	1.250	1.130			1							
	MCLN R/L 165D	•	•	1.000	1.000	6.000	1.250	1.000	1.470	CN□□54□	B26	1	3.5	ICSN533	NL58	LH040	LH030	CL12	XNS510
	MCLN R/L 205D	•	•	1.250	1.250	6.000	1.500	1.250	1.470			1							
	MCLN R/L 245D	•	•	1.500	1.500	6.000	2.000	1.500	1.470			1							
	MCLN R/L 166D	•	•	1.000	1.000	6.000	1.250	1.000	1.510	CN□□64□	B28	1	3.5	ICSN633	NL68	LH040	LH9/64	CL12	XNS510
	MCLN R/L 206D	•	•	1.250	1.250	6.000	1.500	1.250	1.510			1							
	MCLN R/L 246D	•	•	1.500	1.500	6.000	2.000	1.500	1.510			1							
	MCLN R/L 246E	•	•	1.500	1.500	7.000	2.000	1.500	1.500			1							
	MCLN R/L 856D	•	•	1.250	1.000	6.000	1.250	1.250	1.510			1							
	MCLN R/L 866E	•	•	1.500	1.000	7.000	1.250	1.500	1.510			1							

C 80° 95° 95°

MCMN

Multipurpose Turning

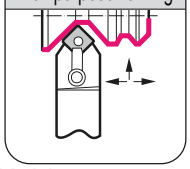
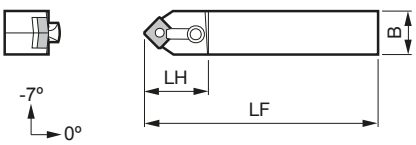
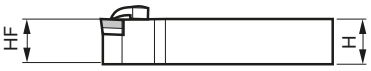


Fig 1



M Type Holder - General Turning and Facing
Clamp-on + Pin Lock



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	MCMNN124B	•	0.750	0.750	4.500	–	0.750	1.280	CN□□43□	B22	1	3.0	ICSN433	NL46	LH1/8	LH3/32	CL20	XNS48
	MCMNN164D	•	1.000	1.000	6.000	–	1.000	1.280			1							
	MCMNN204D	•	1.250	1.250	6.000	–	1.250	1.390			1							
	MCMNN854D	•	1.250	1.000	6.000	–	1.250	1.280			1							
	MCMNN165D	•	1.000	1.000	6.000	–	1.000	1.750	CN□□54□	B26	1	3.5	ICSN533	NL58	LH040	LH1/8	CL12	XNS510
	MCMNN205D	•	1.250	1.250	6.000	–	1.250	1.610			1							
	MCMNN245D	•	1.500	1.500	6.000	–	1.500	1.610			1							
	MCMNN246D	•	1.500	1.500	6.000	–	1.500	1.670	CN□□64□	B28	1		ICSN633	NL68				

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	EUZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2010	SUMIBORON BN1000
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2020	SUMIBORON BN2000
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	-	SUMIBORON BNC300	SUMIBORON BN350
Recommended Cutting Conditions	A10 on			A14 on			A16 on			A18 on			A22 on		A20 on	

BNC500 is for ductile cast iron.

●= USA Stocked Item

MCRN Type / PCBN Type

C 80° 95° 95°

M Type Holder - General Turning
Clamp-on + Pin Lock

MCRN
External Turning

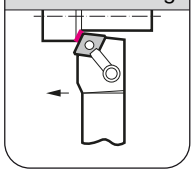
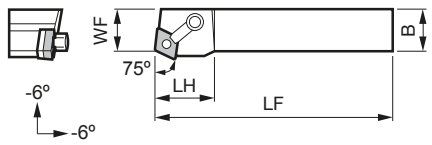


Fig 1



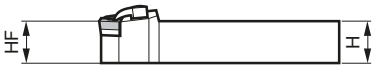


Figure shows right-hand (R) tool.

Holder Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**MCRN R/L 124B**	•	•	0.750	0.750	4.500	0.878	0.750	1.180			1							
	MCRN R/L 164D	•	•	1.000	1.000	6.000	1.128	1.000	1.180	CN□□43□	**B22**	1	**3.0**	ICSN432	NL46	LH1/8	LH3/32	CL20	XNS48
	MCRN R/L 204D	•	•	1.250	1.250	6.000	1.318	1.250	1.180			1							
	MCRN R/L 165D	•	•	1.000	1.000	6.000	1.101	1.000	1.101	CN□□54□	**B26**	1	**3.5**	ICSN533	NL58	LH040	LH1/8	CL12	XNS510
	MCRN R/L 205D	•	•	1.250	1.250	6.000	1.351	1.250	1.351			1							
	MCRN R/L 206D	•	•	1.250	1.250	6.000	1.318	1.250	1.318	CN□□64□	**B28**	1	**3.5**	ICSN633	NL68	LH040	LH9/64	CL12	XNS510
	MCRN R/L 246D	•	•	1.500	1.500	6.000	1.818	1.500	1.818			1							

C 80° 75°

70 Type Holder - General Turning
Lever Lock

PCBN
External Turning

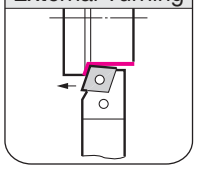


Fig 1

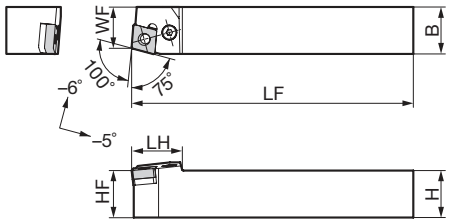


Figure shows right-hand (R) tool.

Holder Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PCBN R/L 2020K12	★	★	*20*	*20*	*125*	*17*	*20*	*27*			1					
PCBN R/L 2520M12			*25*	*20*	*150*	*17*	*25*	*27*	CN□□43□	**B22**	1	LCL4	LCS4	LSC42	LSP4	LH030
PCBN R/L 2525M12	★	★	*25*	*25*	*150*	*22*	*25*	*27*			1					
PCBN R/L 3225P12			*32*	*25*	*170*	*22*	*32*	*27*			1					
PCBN R/L 2525M16			*25*	*25*	*150*	*22*	*25*	*33*			1					
PCBN R/L 3225P16			*32*	*25*	*170*	*22*	*32*	*33*	CN□□54□	**B26**	1	LCL5	LCS5	LSC53	LSP5	LH030
PCBN R/L 3232P16			*32*	*32*	*170*	*27*	*32*	*33*			1					
PCBN R/L 3232P19			*32*	*32*	*170*	*27*	*32*	*38*			1					
PCBN R/L 4040R19			*40*	*40*	*200*	*35*	*40*	*38*	CN□□64□	**B28**	1	LCL6	LCS6	LSC63	LSP6	LH040

Applicable Inserts — DCLN Type / PCLN Type / PCBN Type / PCFN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

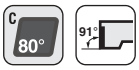
Legend: Name of Chipbreaker / CBN / PCD — EGU; Photo; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	EUZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2010	SUMIBORON BN1000
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2020	SUMIBORON BN2000
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	-	SUMIBORON BNC300	SUMIBORON BN350
Recommended Cutting Conditions	☛ A10 on			☛ A14 on			☛ A16 on			☛ A18 on			☛ A22 on		☛ A20 on	

BNC500 is for ductile cast iron.

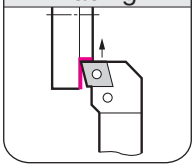
●= USA Stocked Item ★= World Wide Warehouse Item

PCFN Type / PCLN Type



PCFN

Facing



70 Type Holder - General Turning, Facing and Profiling
Lever Lock

Fig 1

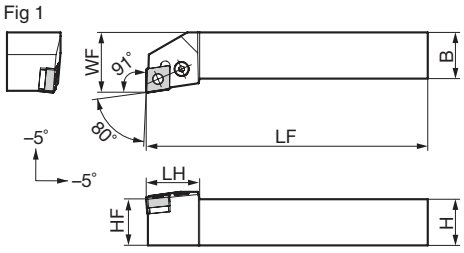


Figure shows right-hand (R) tool.

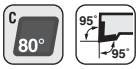
Holder

Parts

Dimensions (*mm*)

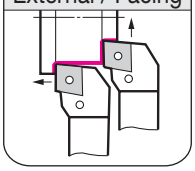
Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PCFN R/L 2020K12	★	★	*20*	*20*	*125*	*25*	*20*	*28*	CN□□43□	**B22**	1	LCL4	LCS4	LSC42	LSP4	LH030
PCFN R/L 2520M12			*25*	*20*	*150*	*25*	*25*	*28*			1					
PCFN R/L 2525M12	★	★	*25*	*25*	*150*	*32*	*25*	*28*			1					
PCFN R/L 3225P12			*32*	*25*	*170*	*32*	*32*	*28*			1					

When using handed breaker inserts for facing, the holder and insert are opposite handed.



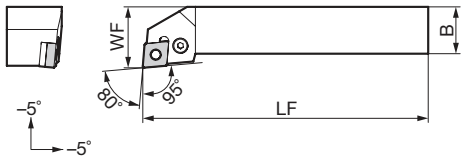
PCLN

External / Facing



70 Type Holder - General Turning, Facing and Profiling
Lever Lock

Fig 1



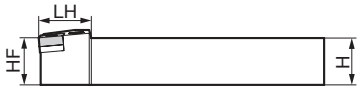


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PCLN R/L 1616H0903	★	★	*16*	*16*	*100*	*20*	*16*	*20*	CN□□32□	**B20**	1	LCL3	LCS3	LSC32	LSP3	LH025
PCLN R/L 2020K0904	★	★	*20*	*20*	*125*	*25*	*20*	*20*	CN□□33□	**B21**	1	LCL3	LCS3	LSC317	LSP3	LH025
PCLN R/L 2525M0904	★	★	*25*	*25*	*150*	*32*	*25*	*20*			1					
PCLN R/L 2020K12	★	★	*20*	*20*	*125*	*25*	*20*	*28*	CN□□43□	**B22**	1	LCL4	LCS4	LSC42	LSP4	LH030
PCLN R/L 2520M12			*25*	*20*	*150*	*25*	*25*	*28*			1					
PCLN R/L 2525M12	★	★	*25*	*25*	*150*	*32*	*25*	*28*			1					
PCLN R/L 3225P12	★	★	*32*	*25*	*170*	*32*	*32*	*28*			1					
PCLN R/L 3232P12	★	★	*32*	*32*	*170*	*40*	*32*	*28*			1					
PCLN R/L 2525M16	★	★	*25*	*25*	*150*	*32*	*25*	*33*	CN□□54□	**B26**	1	LCL5	LCS5	LSC53	LSP5	LH030
PCLN R/L 3225P16			*32*	*25*	*170*	*32*	*32*	*33*			1					
PCLN R/L 3232P16	★	★	*32*	*32*	*170*	*40*	*32*	*33*			1					
PCLN R/L 3225P19	★	★	*32*	*25*	*170*	*32*	*32*	*38*	CN□□64□	**B28**	1	LCL6	LCS6	LSC63	LSP6	LH040
PCLN R/L 3232P19	★	★	*32*	*32*	*170*	*40*	*32*	*38*			1					
PCLN R/L 4040R19	★	★	*40*	*40*	*200*	*50*	*40*	*38*			1					

★= World Wide Warehouse Item

W Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

WCLN
Multipurpose Turning

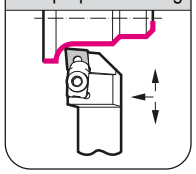
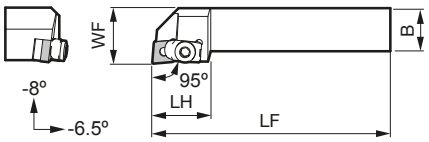


Fig 1



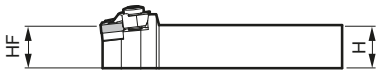


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**WCLN R/L 124B**	•	•	0.750	0.750	4.50	1.000	0.750	1.130			1						
	WCLN R/L 164D	•	•	1.000	1.000	6.00	1.250	1.000	1.130	CN□□43□	**B22**	1	**4.0**	ICSN432	ST-1661	LH3/16	CL-2019	ST-1394
	WCLN R/L 204D	•	•	1.250	1.250	6.00	1.500	1.250	1.130			1						
	WCLN R/L 166D	•	•	1.000	1.000	6.00	1.250	1.000	1.510			1						
	WCLN R/L 206D	•	•	1.250	1.250	6.00	1.500	1.250	1.510	CN□□64□	**B28**	1	**4.0**	SH3619	ST-1682	LH3/16	CL-2029	ST-1296
	WCLN R/L 246D	•	•	1.500	1.500	6.00	2.000	1.500	1.510			1						

D Type Holder - General Turning and Profiling
Double Clamp

DDJN
External / Profiling

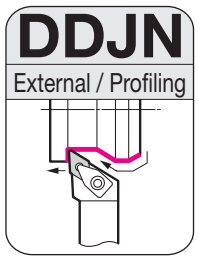
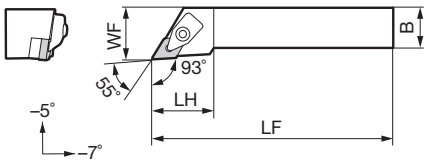


Fig 1



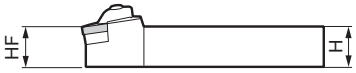


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Shim Wrench (For Torx Holes)	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Spring	Clamp Screw
Inch	**DDJN R/L 124BN**	•	•	0.750	0.750	4.50	1.000	0.750	1.535			1										
	DDJN R/L 164DN	•	•	1.000	1.000	6.00	1.250	1.000	1.535	DN□□43□		1	–	**3.5**	IDSN-442	ST-1766	–	LH040		CL-2712	SP-4295	CLB-1696
	DDJN R/L 204DN	•	•	1.250	1.250	6.00	1.500	1.250	1.535			1										
	DDJN R/L 244EN	•	•	1.500	1.500	7.00	2.000	1.500	1.535			1										
	DDJN R/L 124BAN*	•	•	0.750	0.750	4.50	1.000	0.750	1.535			1										
	DDJN R/L 164DAN*	•	•	1.000	1.000	6.00	1.250	1.000	1.535	DN□□43□	**B32**	1	–	**3.5**	IDSN-442	ST-1766	–	LH040		CL-2712	SP-4295	CLB-1696
	DDJN R/L 204DAN*	•	•	1.250	1.250	6.00	1.500	1.250	1.535			1										
	DDJN R/L 244EAN*	•	•	1.500	1.500	7.00	2.000	1.500	1.535			1										
Metric	**DDJN R/L 2020K15**	★	★	*20*	*20*	*125*	*25*	*20*	*38*	DN□□43□		1	SCP-2	**5.0**	DNS1504	BFTX0409N	TRX15(*)	LH040	LH025	–	–	–
	DDJN R/L 2525M15	★	★	*25*	*25*	*150*	*32*	*25*	*38*			1										
	DDJN R/L 2525M15E	★	★	*25*	*25*	*150*	*32*	*25*	*38*	DN□□44□	**B36**	1	SCP-2	**5.0**	DNS1506	BFTX0409N	TRX15(*)	LH040	LH025	CL-2716	–	–

Wrench for shim is sold separately from the main body.

Clamp Set Parts C63

* Coolant Through (see page F16 for example and list of coolant-through parts)

●= USA Stocked Item ★= World Wide Warehouse Item

MDJN Type / MDPN Type



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

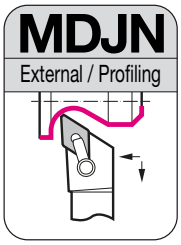
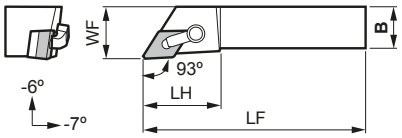


Fig 1



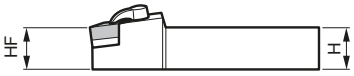


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MDJN R/L 083A**	•	•	0.500	0.500	4.00	0.625	0.500	1.062	DN□□33□	**B31**	1	3.5	–	NL33L	LH3/32 (For Hex Socket)	LH5/64 (For Hex Socket)	CL7	XNS36
	MDJN R/L 103B	•	•	0.625	0.625	4.50	0.875	0.625	1.250			1							
	MDJN R/L 123B	•	•	0.750	0.750	4.50	1.000	0.750	1.250			1		IDSN322	NL-34L		LH020		
	MDJN R/L 163D	•	•	1.000	1.000	6.00	1.250	1.000	1.250			1							
	MDJN R/L 124B	•	•	0.750	0.750	4.50	1.000	0.750	1.500	DN□□43□	**B32**	1	3.0	IDSN432	NL46	LH1/8	LH3/32	CL20	XNS48
	MDJN R/L 164D	•	•	1.000	1.000	6.00	1.250	1.000	1.500			1							
	MDJN R/L 204D	•	•	1.250	1.250	6.00	1.500	1.250	1.500			1							
	MDJN R/L 244D	•	•	1.500	1.500	6.00	2.000	1.500	1.500			1							
	MDJN R/L 854D	•	•	1.250	1.000	6.00	1.250	1.250	1.500			1							
	MDJN R/L 165D	•	•	1.000	1.000	6.00	1.250	1.000	1.440	DN□□54□	**B38**	1	3.5	IDSN533	NL58	LH040	LH1/8	CL12	XNS510
	MDJN R/L 205D	•	•	1.250	1.250	6.00	1.500	1.250	1.440			1							
	MDJN R/L 245D	•	•	1.500	1.500	6.00	2.000	1.500	1.440			1							
	MDJN R/L 855D	•	•	1.250	1.000	6.00	1.250	1.250	1.440			1							



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

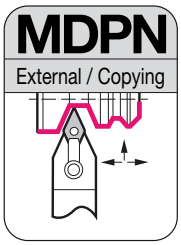
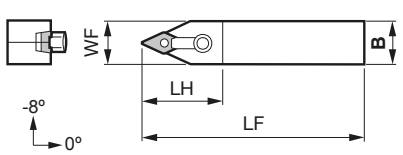
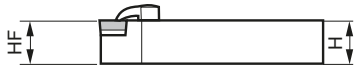


Fig 1





Holder

Parts

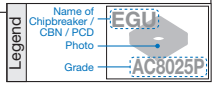
Dimensions (inch)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MDPNN123B**	•	0.750	0.750	4.50	-	.750	1.620	DN□□33□	**B31**	1	3.0	–	NL34L	LH020 (For Hex Socket)	LH3/32 (For Hex Socket)	CL7	XNS36
	MDPNN124B	•	0.750	0.750	4.50	-	0.750	1.620	DN□□43□	**B32**	1		IDSN432	NL46	LH1/8		CL22	XNS48
	MDPNN164D	•	1.000	1.000	6.00	-	1.000	1.620			1						CL20	
	MDPNN204D	•	1.250	1.250	6.00	-	1.250	1.620			1							
	MDPNN165D	•	1.000	1.000	6.00	-	1.000	1.880	DN□□54□	**B38**	1	3.5	IDSN533	NL58	LH040	LH1/8	CL12	XNS510
	MDPNN205D	•	1.250	1.250	6.00	-	1.250	1.880			1							
	MDPNN245E	•	1.500	1.500	7.00	-	1.500	1.880			1							
	MDPNN855D	•	1.250	1.000	6.00	-	1.250	1.880			1							
	MDPNN865D	•	1.500	1.000	6.00	-	1.500	1.880			1							

Applicable Inserts ◂·· DDJN Type / DDHN Type / DDNN Type / PDJN Type

1st Recommended Insert

* Refer as well to the Insert Selection Guide (page A10 on).
* Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) High-precision Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	-	SUMIBORON BNC300	SUMIBORON BN350	-
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on			☞ A18 on			☞ A22 on		☞ A20 on		☞ M2 on

●= USA Stocked Item ★= World Wide Warehouse Item

MDQN Type / PDJN Type

D 55° 93°

M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

MDQN
Multipurpose Turning

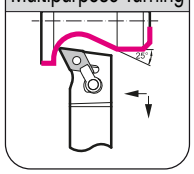


Fig 1

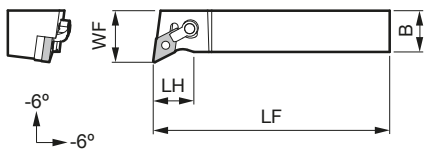




Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**MDQN R/L 124B**	★	★	0.750	0.750	4.50	1.000	0.750	1.370	DN□□43□	**B32**	1	**3.0**	IDSN432	NL46	LH1/8	LH3/32	CL20	XNS48
	MDQN R/L 164D	★	★	1.000	1.000	6.00	1.250	1.000	1.370			1							
	MDQN R/L 204D	★	★	1.250	1.250	6.00	1.500	1.250	1.370			1							
	MDQN R/L 244E	★	★	1.500	1.500	7.00	2.000	1.500	1.370			1							

D 55° 93°

70 Type Holder - General Turning and Profiling
Lever Lock

PDJN
External / Profiling

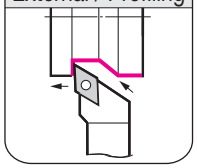


Fig 1

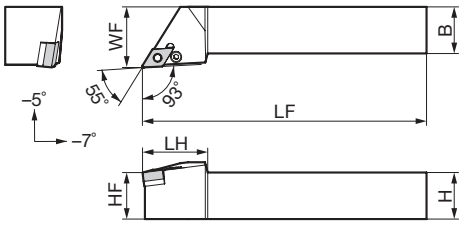


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PDJN R/L 2020K11	★	★	*20*	*20*	*125*	*25*	*20*	*25*	DN□□33	**B31**	1	LCL3	LCS3	LSD317	LSP3	LH025
PDJN R/L 2525M11	★	★	*25*	*25*	*150*	*32*	*25*	*25*			1					
PDJN R/L 2020K1504	★	★	*20*	*20*	*125*	*25*	*20*	*35*	DN□□43	**B32**	1	LCL4	LCS4	LSD42	LSP4	LH030
PDJN R/L 2525M1504	★	★	*25*	*25*	*150*	*32*	*25*	*35*			1					
PDJN R/L 3225P1504			*32*	*25*	*170*	*32*	*32*	*35*			1					
PDJN R/L 3232P1504	★	★	*32*	*32*	*170*	*40*	*32*	*35*			1					
PDJN R/L 2525M1506	★	★	*25*	*25*	*150*	*32*	*25*	*35*	DN□□44	**B36**	1	LCL4	LCS4	LSD42	LSP4	LH030
PDJN R/L 3225P1506			*32*	*25*	*170*	*32*	*32*	*35*			1					
PDJN R/L 3232P1506			*32*	*32*	*170*	*40*	*32*	*35*			1					

Applicable Inserts — DDJN Type / DDHN Type / DDNN Type / PDJN Type

1st Recommended Insert

* Refer as well to the Insert Selection Guide (page A10 on).
* Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker / CBN / PCD — EGU; Photo; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) High-precision Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	-	SUMIBORON BNC300	SUMIBORON BN350	-
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on			☞ A18 on			☞ A22 on		☞ A20 on		☞ M2 on

★= World Wide Warehouse Item

D 55° 93°

M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

MRGN
External Turning

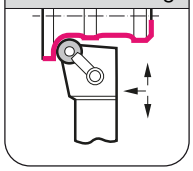
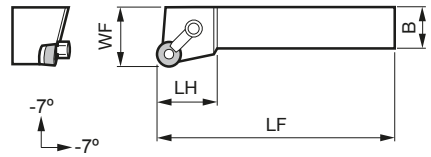


Fig 1



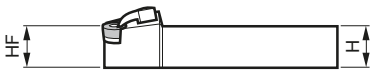


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**MRGN R/L 123B**	★	★	0.750	0.750	4.50	1.000	0.750	0.810	RN□□32□	B39	1	3.0	-	NL33	LH1/8	LH5/64	CL20	XNS48
	MRGN R/L 124B	★	★	0.750	0.750	4.50	1.000	0.750	1.060			1							
	MRGN R/L 164D	★	★	1.000	1.000	6.00	1.250	1.000	1.060			1							
	MRGN R/L 204D	★	★	1.250	1.250	6.00	1.500	1.250	1.060	RN□□43□		1	3.0	IRSN43	NL46	LH1/8	LH3/32	CL20	XNS48
	MRGN R/L 854D	★	★	1.250	1.000	6.00	1.250	1.250	1.060			1							
	MRGN R/L 864D	★	★	1.500	1.000	6.00	1.250	1.500	1.060			1							
	MRGN R/L 165D	★	★	1.000	1.000	6.00	1.250	1.000	1.250	RN□□54□		1	3.5	IRSN53	NL58	LH040	LH1/8	CL12	XNS510
	MRGN R/L 205D	★	★	1.250	1.250	6.00	1.500	1.250	1.250			1							
	MRGN R/L 166D	★	★	1.000	1.000	6.00	1.250	1.000	1.380			1							
	MRGN R/L 206D	★	★	1.250	1.250	6.00	1.500	1.250	1.380	RN□□64□		1	3.5	IRSN63	NL68	LH040	LH9/64	CL12	XNS510
	MRGN R/L 246E	★	★	1.500	1.500	7.00	2.000	1.500	1.380			1							
	MRGN R/L 248E	★	★	1.500	1.500	7.00	2.000	1.500	1.440	RN□□86□		1	3.5	IRSN84	NL810	LH040	LH040	CL30	XNS510

Applicable Inserts ◂·· PRGC Type / PRDC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker / CBN / PCD, Photo, Grade — EGU, AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing
Continuous Cutting	RX AC8015P	RX AC8025P	RX AC8025P	RP AC4010K	RP AC4010K	RP AC5015S	RP AC5015S
General Cutting	RX AC8025P	RH AC8025P	RH AC8035P	RP AC4015K	RP AC4015K	RP AC5015S	RP AC5015S
Interrupted Cutting	RH AC8025P	RH AC8035P	RP AC8035P	RP AC420K	RP AC420K	RP AC5025S	RP AC5025S
Recommended Cutting Conditions	☛ A10 on			☛ A16 on		☛ A18 on	

★= World Wide Warehouse Item

DSDN Type / DSRN-AN Type



D Type Holder - General Turning and Chamfering
Double Clamp

DSDN
External / Chamfering

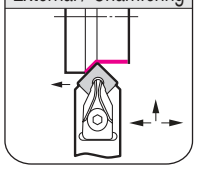


Fig 1

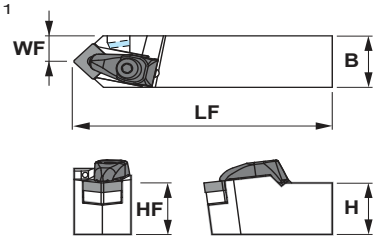
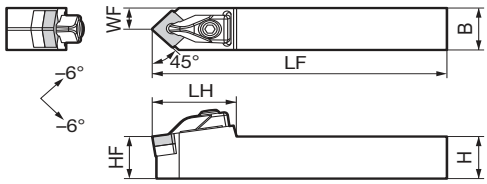


Fig 2



Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Shim Wrench (Torx Holes)	Upper Surface Wrench (For Hex Socket)	Lower Surface Wrench (For Hex Socket)	Clamp	Spring	Clamp Screw	Optional Hardware Clamp for Dimple CBN	
Inch	**DSDNN124BAN***	★	0.750	0.750	4.50	0.375	0.750	–	SN□□43□	**B41**	1	—	3.5	ISSN442	ST-1766	-	LH040	LH025	CL-2712	SP-4295	CLB-1696	CL-2435	ST-1086
	DSDNN164DAN*	★	1.000	1.000	6.00	0.500	1.000	–			1												
	DSDNN205DAN*	★	1.250	1.250	6.00	0.625	1.250	–	SN□□54□	**B45**	1	—	3.5	ISSN533	ST-1768	-			CL-2716	SP-4295	CLB-1696		
	DSDNN206DAN*	★	1.250	1.250	6.00	0.625	1.250	–	SN□□64□	**B47**	1	—	3.5	ISSN633	ST-1770	-			CL-2719	SP-4295	CLB-1696	—	—
	DSDNN246EAN*	★	1.500	1.500	7.00	0.750	1.500	–			1												
Metric	**DSDNN2020K12**	★	*20*	*20*	*125*	*10.0*	*20*	*36*	SN□□43□	**B41**	2	SCP-2	5.0	SNS1204	BFTX0409N	TRX15			—	—	—		
	DSDNN2525M12	★	*25*	*25*	*150*	*12.5*	*25*	*36*			2												

* Coolant Through (see page F16 for example and list of coolant-through parts)

Clamp Set Parts ☞ C63



D Type Holder - General Turning, Facing and Chamfering
Double Clamp

DSRN
External Turning

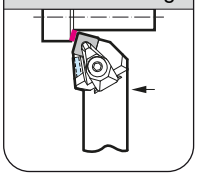
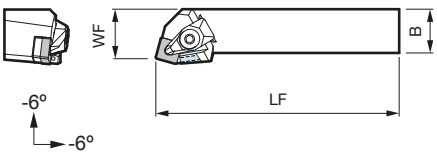


Fig 1



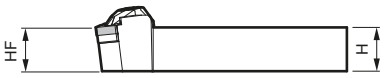


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

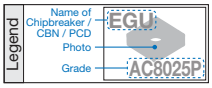
	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Clamp Wrench (Hex Socket)	Shim Wrench (Hex Socket)	Clamp	Spring	Clamp Screw	Optional Hardware Clamp for Dimple CBN	
Inch	**DSRN R/L 124BAN***	★	★	0.750	0.750	4.50	0.880	0.750	1.375	SN□□43□	**B41**	1	3.5	ISSN442	ST-1766	LH050		CL-2712	SP-4295	CLB-1696	CL-2435	ST-1086
	DSRN R/L 164DAN*	★	★	1.000	1.000	6.00	1.130	1.000	1.375			1										
	DSRN R/L 205DAN*	★	★	1.250	1.250	6.00	1.353	1.250	1.375	SN□□54□	**B45**	1	3.5	ISSN533	ST-1768	LH050		CL-2716	SP-4295	CLB-1696	–	–
	DSRN R/L 206DAN*	★	★	1.250	1.250	6.00	1.321	1.250	1.375	SN□□64□	**B47**	1	3.5	ISSN633	ST-1770	LH050		CL-2719	SP-4295	CLB-1696		

* Coolant Through (see page F16 for example and list of coolant-through parts)

Applicable Inserts ◂·· DSBN Type/DSDN Type/DSSN Type/PSBN Type/PSDN Type/PSSN Type/PSKN Type/ESBN Type/ESDN Type/ESSN Type/ESKN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN350	-
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on			☞ A18 on			☞ A20 on		☞ M2 on

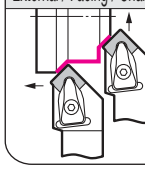
BNC500 is for ductile cast iron.

★= World Wide Warehouse Item



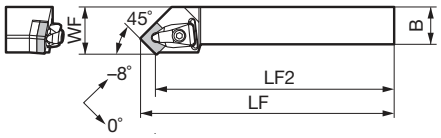
DSSN

External / Facing / Chamfering



D Type Holder - General Turning, Facing and Chamfering
Double Clamp

Fig 1



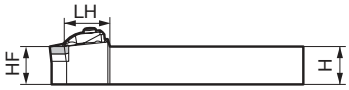


Figure shows right-hand (R) tool.

Holder

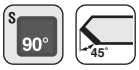
Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Shim Wrench (For Torx Holes)	Clamp Wrench (Hex Socket)	Pin/ Shim Wrench (Hex Socket)	Clamp	Spring	Clamp Screw	Optional Hardware Clamp for Dimple CBN	Optional Hardware CBN
Inch	**DSSN R/L 124BN**	★	★	0.750	0.750	4.50	1.000	0.750	1.457	SN□□43□	**B41**	1	-	3.5	ISSN442	ST-1766	–	LH040		CL-2712	SP-4295	CLB-1696	CL-2435	ST-1086
	DSSN R/L 164DN	★	★	1.000	1.000	6.00	1.250	1.000	1.457			1												
	DSSN R/L 204DN	★	★	1.250	1.250	6.00	1.500	1.250	1.457			1												
	DSSN R/L 206DN	★	★	1.250	1.250	6.00	1.500	1.250	1.772	SN□□64□	**B47**	1	-	3.5	ISSN633	ST-1770	–	LH040		CL-2719				
	DSSN R/L 246EN	★	★	1.500	1.500	7.00	2.000	1.500	1.772			1												
Metric	**DSSN R/L 2020K12**	★	★	*20*	*20*	*133.3*	*25*	*20*	*30*	SN□□43□	**B41**	1	SCP-2	5.0	SNS1204	BFTX0409N	TRX15(*)	LH040	LH025	–	–	–	—	—
	DSSN R/L 2525M12	★	★	*25*	*25*	*158.3*	*32*	*25*	*30*			1												
	DSSN R/L 2525M15	★	★	*25*	*25*	*160.2*	*32*	*25*	*30*	SN□□54□	**B45**	1	SCP-3	5.0	SNS1506	BFTX0509N	TRX20(*)	LH040	LH025	–	–	–	—	—
	DSSN R/L 3232P15	★	★	*32*	*32*	*180.2*	*40*	*32*	*30*			1												
	DSSN R/L 3232P19	★	★	*32*	*32*	*182.5*	*40*	*32*	*36*	SN□□64□	**B47**	1	SCP-5	5.0	SNS1906	BFTX0511N	TRX20(*)	LH040	LH025	–	–	–	—	—
	DSSN R/L 4040S19	★	★	*40*	*40*	*262.5*	*50*	*40*	*36*			1												
	DSSN R/L 4040S2507	★	★	*40*	*40*	*266.0*	*50*	*40*	*47*	SN□□85□	**B50**	1	SCP-6		SNS2507	BFTX0615N	TRD25(*)	LH060	–	–	–	–	—	—
	DSSN R/L 4040S2509	★	★	*40*	*40*	*266.0*	*50*	*40*	*47*	SN□□86□		1	SCP-6	6.0	SNS2509	BFTX0615N	TRD25(*)	LH060	–	–	–	–	—	—

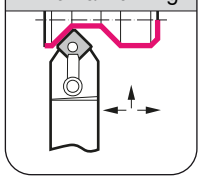
Wrench for shim is sold separately from the main body.

Clamp Set Parts C63



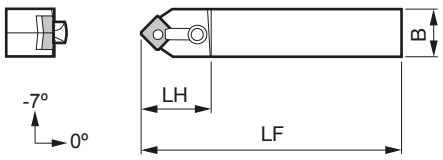
MSDN

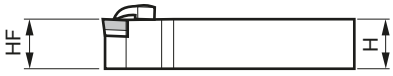
External Turning



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

Fig 1





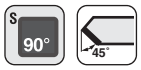
Holder

Parts

Dimensions (inch)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**MSDNN083A**	★	0.500	0.500	4.00	-	0.500	1.000	SN□□32□	**B40**	1	3.5	ISSN322	NL34	LH3/32	LH5/64	CL6	XNS36
	MSDNN103B	★	0.625	0.625	4.50	-	0.625	1.000			1							
	MSDNN124B	★	0.750	0.750	4.50	-	0.750	1.300	SN□□43□	**B41**	1	3.0	ISSN432	NL46	LH1/8	LH3/32	CL20	XNS48
	MSDNN164D	★	1.000	1.000	6.00	-	1.000	1.300			1							
	MSDNN854D	★	1.250	1.000	6.00	-	1.250	1.300			1							
	MSDNN165D	★	1.000	1.000	6.00	-	1.000	1.500	SN□□54□	**B45**	1	3.5	ISSN533	NL58	LH040	LH1/8	CL12	XNS510
	MSDNN205D	★	1.250	1.250	6.00	-	1.250	1.500			1							
	MSDNN855D	★	1.250	1.000	6.00	-	1.250	1.500			1							
	MSDNN166D	★	1.000	1.000	6.00	-	1.000	1.730	SN□□64□	**B47**	1	3.5	ISSN633	NL68	LH040	LH9/64	CL12	XNS510
	MSDNN206D	★	1.250	1.250	6.00	-	1.250	1.730			1							
	MSDNN246E	★	1.500	1.500	7.00	-	1.500	1.730			1							
	MSDNN856D		1.250	1.000	6.00	-	1.250	1.730			1							

MSKN Type / MSRN Type



M Type Holder - Facing
Clamp-on + Pin Lock

MSKN
External Turning

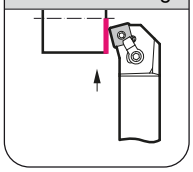
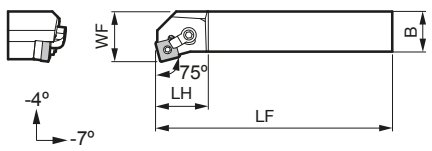


Fig 1



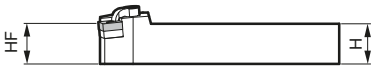


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MSKN R/L 124B**	★	★	0.750	0.750	4.50	1.000	0.750	1.220	SN□□43□	**B41**	1	**3.0**	ISSN432	NL46	LH1/8 (For Hex Socket)	LH3/32 (For Hex Socket)	CL20	XNS48
	MSKN R/L 164D	★	★	1.000	1.000	6.00	1.250	1.000	1.220			1							
	MSKN R/L 165D	★	★	1.000	1.000	6.00	1.250	1.000	1.410	SN□□54□	**B45**	1	**3.5**	ISSN533	NL58	LH040	LH1/8	CL12	XNS510
	MSKN R/L 205D	★	★	1.250	1.250	6.00	1.500	1.250	1.410			1							
	MSKN R/L 855D	★	★	1.250	1.000	6.00	1.250	1.250	1.410			1							
	MSKN R/L 206D	★	★	1.250	1.250	6.00	1.500	1.250	1.500	SN□□64□	**B47**	1	**3.5**	ISSN633	NL68	LH040	LH9/64	CL12	XNS510
	MSKN R/L 246E	★	★	1.500	1.500	7.00	2.000	1.500	1.500			1							



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

MSRN
External Turning

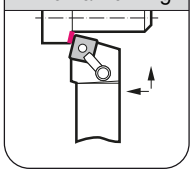
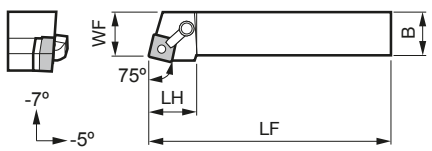


Fig 1



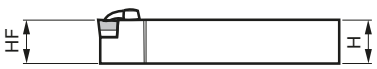


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MSRN R/L 124B**	•	•	0.750	0.750	4.50	0.880	0.750	1.250	SN□□43□	**B41**	1	**3.0**	ISSN432	NL46	LH1/8 (For Hex Socket)	LH3/32 (For Hex Socket)	CL20	XNS48
	MSRN R/L 164D	•	•	1.000	1.000	6.00	1.130	1.000	1.250			1							
	MSRN R/L 165D	★	★	1.000	1.000	6.00	1.103	1.000	1.500	SN□□54□	**B45**	1	**3.5**	ISSN533	NL58	LH040	LH1/8	CL12	XNS510
	MSRN R/L 205D	•	•	1.250	1.250	6.00	1.353	1.250	1.500			1							
	MSRN R/L 206D	•	•	1.250	1.250	6.00	1.321	1.250	1.590	SN□□64□	**B47**	1	**3.5**	ISSN633	NL68	LH040	LH9/64	CL12	XNS510
	MSRN R/L 246E	★	★	1.500	1.500	7.00	1.821	1.500	1.590			1							
	MSRN R/L 248E	★	★	1.500	1.500	7.00	1.770	1.500	1.890	SN□□86□	**B50**	1	**3.5**	ISSN846	NL810	LH040	LH040	CL30	XNS510

Applicable Inserts

◀·· DSBN Type/DSDN Type/DSSN Type/PSBN Type/PSDN Type/PSSN Type/PSKN Type/ESBN Type/ESDN Type/ESSN Type/ESKN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

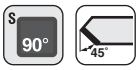


Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN350	-
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on			☞ A18 on			☞ A20 on		☞ M2 on

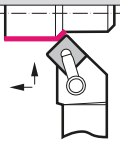
BNC500 is for ductile cast iron.

●= USA Stocked Item ★= World Wide Warehouse Item

MSSN Type / PSBN Type

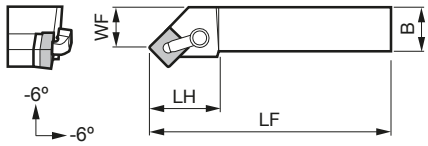


MSSN
External / Chamfering



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

Fig 1



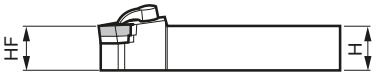


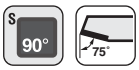
Figure shows right-hand (R) tool.

Holder

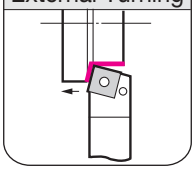
Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**MSSN R/L 124B**	★	★	0.750	0.750	4.50	0.675	0.750	1.230	SN□□43□	**B41**	1	**3.0**	ISSN432	NL46	LH1/8	LH3/32	CL20	XNS48
	MSSN R/L 164D	★	★	1.000	1.000	6.00	0.925	1.000	1.230			1							
	MSSN R/L 165D	•	★	1.000	1.000	6.00	0.847	1.000	1.380	SN□□54□	**B45**	1	**3.5**	ISSN533	NL58	LH040	LH1/8	CL12	XNS510
	MSSN R/L 205D	•	★	1.250	1.250	6.00	1.097	1.250	1.380			1							
	MSSN R/L 206D	★	★	1.250	1.250	6.00	1.011	1.250	1.470			1							
	MSSN R/L 246E	•	★	1.500	1.500	7.00	1.511	1.500	1.470	SN□□64□	**B47**	1	**3.5**	ISSN633	NL68	LH040	LH9/64	CL12	XNS510
	MSSN R/L 866E	★	★	1.500	1.000	7.00	0.761	1.500	1.470			1							



PSBN
External Turning



70 Type Holder - General Turning and Profiling
Lever Lock

Fig 1

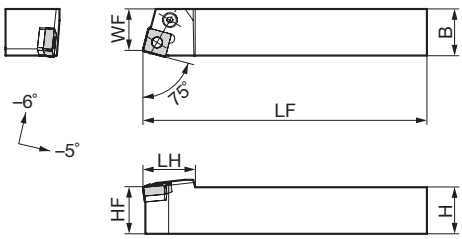


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PSBN R/L 1616H09	★	★	*16*	*16*	*100*	*13*	*16*	*22*	SN□□32□	**B40**	1	LCL3	LCS3	LSS32	LSP3	LH025
PSBN R/L 2020K12	★	★	*20*	*20*	*125*	*17*	*20*	*28*	SN□□43□	**B41**	1	LCL4	LCS4	LSS42	LSP4	LH030
PSBN R/L 2520M12			*25*	*20*	*150*	*17*	*25*	*28*			1					
PSBN R/L 2525M12	★	★	*25*	*25*	*150*	*22*	*25*	*28*			1					
PSBN R/L 3225P12			*32*	*25*	*170*	*22*	*32*	*28*			1					
PSBN R/L 3232P12			*32*	*32*	*170*	*27*	*32*	*35*			1					
PSBN R/L 3225P15			*32*	*25*	*170*	*22*	*32*	*35*	SN□□54□	**B45**	1	LCL5	LCS5	LSS53	LSP5	LH030
PSBN R/L 3232P15	★	★	*32*	*32*	*170*	*27*	*32*	*35*			1					
PSBN R/L 3232P19	★	★	*32*	*32*	*170*	*27*	*32*	*40*	SN□□64□	**B47**	1	LCL6	LCS6	LSS63	LSP6	LH040
PSBN R/L 4040R19			*40*	*40*	*200*	*35*	*40*	*40*			1					
PSBN R/L 5050S25			*50*	*50*	*250*	*43*	*50*	*50*	SN□□86□	**B50**	1	LCL8	LCS8	LSS84	LSP8	LH050

70 Type Holder - General Turning and Chamfering
Lever Lock

PSDN
External / Chamfering

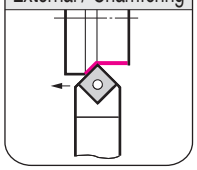
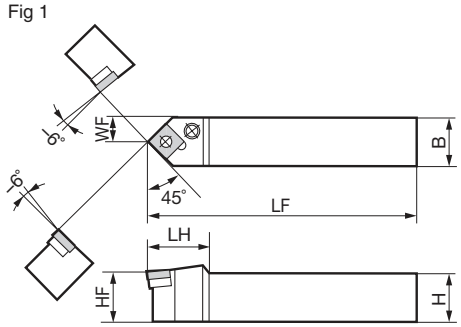


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PSDNN1616H09	★	*16*	*16*	*100*	*8.0*	*16*	*22*	SN□□32□	**B40**	1	LCL3	LCS3	LSS32	LSP3	LH025
PSDNN2020K12	★	*20*	*20*	*125*	*10.0*	*20*	*30*	SN□□43□	**B41**	1	LCL4	LCS4	LSS42	LSP4	LH030
PSDNN2520M12		*25*	*20*	*150*	*10.0*	*25*	*30*			1					
PSDNN2525M12	★	*25*	*25*	*150*	*12.5*	*25*	*30*			1					
PSDNN3225P12		*32*	*25*	*170*	*12.5*	*32*	*30*			1					
PSDNN3232P12	★	*32*	*32*	*170*	*16.0*	*32*	*40*			1					
PSDNN3225P15		*32*	*25*	*170*	*12.5*	*32*	*40*	SN□□54□	**B45**	1	LCL5	LCS5	LSS53	LSP5	LH030
PSDNN3232P15		*32*	*32*	*170*	*16.0*	*32*	*40*			1					
PSDNN3232P19	★	*32*	*32*	*170*	*16.0*	*32*	*40*	SN□□64□	**B47**	1	LCL6	LCS6	LSS63	LSP6	LH040
PSDNN4040R19		*40*	*40*	*200*	*20.0*	*40*	*40*			1					

Applicable Inserts

◀·· DSBN Type/DSDN Type/DSSN Type/PSBN Type/PSDN Type/PSSN Type/PSKN Type/ESBN Type/ESDN Type/ESSN Type/ESKN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker / CBN / PCD — Photo — Grade (EGU / AC8025P)

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN350	-
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on			☞ A18 on			☞ A20 on		☞ M2 on

BNC500 is for ductile cast iron.

★= World Wide Warehouse Item

PSSN Type / PSKN Type

70 Type Holder - General Turning, Facing and Chamfering
Lever Lock

PSSN
External / Facing / Chamfering

Fig 1

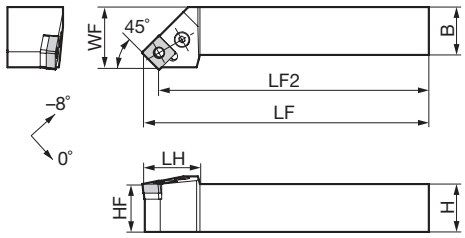


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Overall Length 2 LF2	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PSSN R/L 1616H09	★	★	*16*	*16*	*100*	*93.8*	*20*	*16*	*22*	SN□□32□	**B40**	1	LCL3	LCS3	LSS32	LSP3	LH025
PSSN R/L 2020K12	★	★	*20*	*20*	*125*	*116.7*	*25*	*20*	*30*			1					
PSSN R/L 2520M12			*25*	*20*	*150*	*141.7*	*25*	*25*	*30*			1					
PSSN R/L 2525M12	★	★	*25*	*25*	*150*	*141.7*	*32*	*25*	*30*	SN□□43□	**B41**	1	LCL4	LCS4	LSS42	LSP4	LH030
PSSN R/L 3225P12			*32*	*25*	*170*	*161.7*	*32*	*32*	*30*			1					
PSSN R/L 3232P12			*32*	*32*	*170*	*161.7*	*40*	*32*	*30*			1					
PSSN R/L 3225P15			*32*	*25*	*170*	*159.8*	*32*	*32*	*40*	SN□□54□	**B45**	1	LCL5	LCS5	LSS53	LSP5	LH030
PSSN R/L 3232P15	★	★	*32*	*32*	*170*	*159.8*	*40*	*32*	*40*			1					
PSSN R/L 3232P19	★	★	*32*	*32*	*170*	*157.5*	*40*	*32*	*40*	SN□□64□	**B47**	1	LCL6	LCS6	LSS63	LSP6	LH040
PSSN R/L 4040R19			*40*	*40*	*200*	*187.5*	*50*	*40*	*40*			1					

When using handed breaker inserts for facing, the holder and insert are opposite handed.

70 Type Holder - Facing
Lever Lock

PSKN
Facing

Fig 1

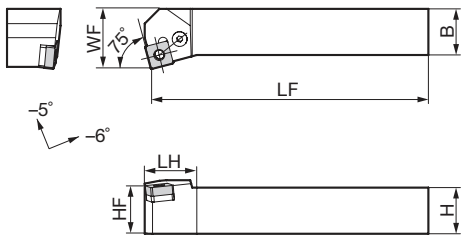


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PSKN R/L 1616H09	★	★	*16*	*16*	*100*	*20*	*16*	*20*	SN□□32□	**B40**	1	LCL3	LCS3	LSS32	LSP3	LH025
PSKN R/L 2020K12	★	★	*20*	*20*	*125*	*25*	*20*	*26*			1					
PSKN R/L 2520M12			*25*	*20*	*150*	*25*	*25*	*26*			1					
PSKN R/L 2525M12	★	★	*25*	*25*	*150*	*32*	*25*	*26*	SN□□43□	**B41**	1	LCL4	LCS4	LSS42	LSP4	LH030
PSKN R/L 3225P12			*32*	*25*	*170*	*32*	*32*	*26*			1					
PSKN R/L 3232P12			*32*	*32*	*170*	*32*	*32*	*26*			1					
PSKN R/L 3225P15			*32*	*25*	*170*	*32*	*32*	*32*	SN□□54□	**B45**	1	LCL5	LCS5	LSS53	LSP5	LH030
PSKN R/L 3232P15			*32*	*32*	*170*	*32*	*32*	*32*			1					
PSKN R/L 3232P19	★	★	*32*	*32*	*170*	*40*	*32*	*36*	SN□□64□	**B47**	1	LCL6	LCS6	LSS63	LSP6	LH040
PSKN R/L 4040R19			*40*	*40*	*200*	*50*	*40*	*36*			1					
PSKN R/L 5050S25			*50*	*50*	*250*	*60*	*50*	*50*	SN□□86□	**B50**	1	LCL8	LCS8	LSS84	LSP8	LH050

When using handed breaker inserts for facing, the holder and insert are opposite handed.

★= World Wide Warehouse Item

T 60° | 91°

D Type Holder - General Turning and Profiling
Double Clamp

DTGN
External Turning

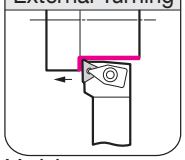
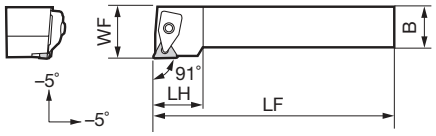


Fig 1



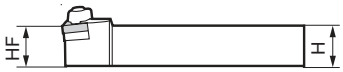


Figure shows right-hand (R) tool.

Holder — Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Shim Wrench	Clamp Wrench	Pin/ Shim Wrench	Clamp	Spring	Clamp Screw
Inch	**DTGN R/L 123BN**	★	★	0.750	0.750	4.50	0.750	0.750	1.102	TN□□33□	**B56**	1	—	**3.5**	ITSN342	ST-1764	—	LH040		CL-2708	SP-4294	CLB-1695
	DTGN R/L 163DN	★	★	1.000	1.000	6.00	1.000	1.000	1.102			1										
	DTGN R/L 164DN	★	★	1.000	1.000	6.00	1.250	1.000	1.338	TN□□43□	**B60**	1	—	**3.5**	ITSN443	ST-1766	—	LH040		CL-2712	SP-4295	CLB-1696
	DTGN R/L 204DN	★	★	1.250	1.250	6.00	1.250	1.250	1.338			1										
Metric	**DTGN R/L 2020K16**	★	★	*20*	*20*	*125*	*25*	*20*	*31*	TN□□33□	**B56**	1	SCP-1	**5.0**	TNS1604	BFTX0307N	TRX10)	LH040	LH025	—	—	—
	DTGN R/L 2525M16	★	★	*25*	*25*	*150*	*32*	*25*	*31*			1										

* Wrench for shim is sold separately from the main body.

Clamp Set Parts C63

DTJN-AN
Toolholder / Multipurpose

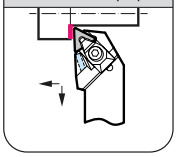
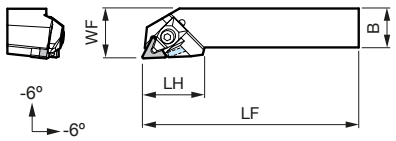


Fig 1



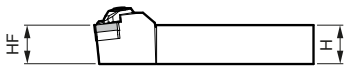


Figure shows right-hand (R) tool.

Holder *Coolant Through (see page F16 for example and list of coolant-through parts) — Parts

Clamp Set Parts C63

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Clamp Wrench	Shim Wrench	Clamp	Spring	Clamp Screw
Inch	**DTJN R/L 123BAN***	★	★	0.750	0.750	4.50	1.000	0.750	1.250	TN□□33□	**B56**	1	**3.5**	ITSN342	ST-1764	LH040		CL-2708	SP-4294	CLB-1695
	DTJN R/L 163DAN*	★	★	1.000	1.000	6.00	1.250	1.000	1.250			1								
	DTJN R/L 164DAN*	★	★	1.000	1.000	6.00	1.250	1.000	1.375	TN□□43□	**B60**	1	**3.5**	ITS443	ST-1766	LH040		CL-2712	SP-4295	CLB-1696
	DTJN R/L 204DAN*	★	★	1.250	1.250	6.00	1.500	1.250	1.250			1								
	DTJN R/L 244EAN*	★	★	1.500	1.500	7.00	2.000	1.500	1.375			1								

T 60° | 91°

M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

MTAN
External / Profiling

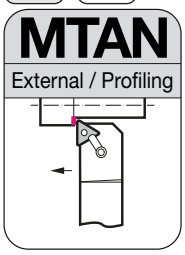
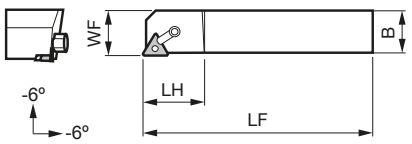


Fig 1



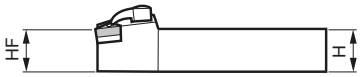


Figure shows right-hand (R) tool.

Holder — Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MTAN R/L 082A**	★	★	0.500	0.500	4.00	0.500	0.500	0.875	TN□□22□	**B54**	1	**3.5**	—	NL23	LH3/32	LH1/16	CL7	XNS-34
	MTAN R/L 103B	▲	▲	0.625	0.625	4.50	0.625	0.625	0.875	TN□□32□	**B55**	1	**3.0**	ITSN323	NL34L	LH020	LH030	CL20	XNS48
	MTAN R/L 123B	★	★	0.750	0.750	4.50	0.750	0.750	1.060	TN□□33□	**B56**	1	**3.0**			LH1/8	LH5/64		
	MTAN R/L 163D	★	★	1.000	1.000	6.00	1.000	1.000	1.060			1							
	MTAN R/L 164D	★	★	1.000	1.000	6.00	1.000	1.000	1.220	TN□□43□	**B60**	1	**3.0**	ITSN433	NL46	LH1/8	LH3/32		
	MTAN R/L 205D	★	★	1.250	1.250	6.00	1.250	1.250	1.430	TN□□54□	**B63**	1	**3.5**	ITSN533	NL58	LH040	LH1/8	CL12	XNS-510
	MTAN R/L 245D	★	★	1.500	1.500	6.00	1.500	1.500	1.430			1							

▲= Limited Availability Item ★= World Wide Warehouse Item

MTCN Type / MTENNS Type



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

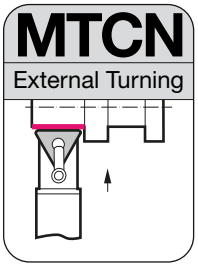
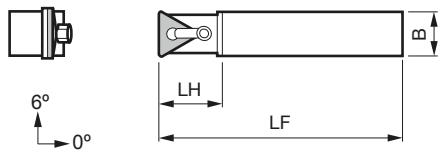


Fig 1





Holder

Parts

Dimensions (inch)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**MTCNN443F**	★	1.000	0.500	8.00	—	1.000	0.875	TN□□33□	**B56**	1	3.0	ITSN-322	NL34L	LH1/8	LH5/64	CL20	XNS48
	MTCNN124B	★	0.750	0.750	4.50	—	0.750	1.060			1							XNS58
	MTCNN644F	★	1.000	0.750	8.00	—	1.000	1.060	TN□□43□	**B60**	1	3.5	ITSN-433	NL46	LH040	LH3/32	CL12	XNS510
	MTCNN664F	★	1.500	0.750	8.00	—	1.500	1.220			1							



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

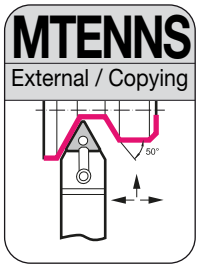
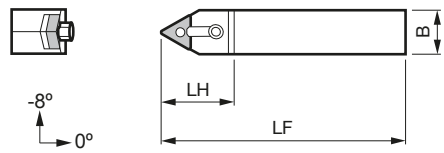


Fig 1





Holder

Parts

Dimensions (inch)

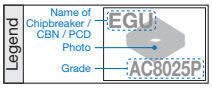
	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**MTENNS082A**	★	0.500	0.500	4.00	—	0.500	1.000	TN□□22□	**B54**	1	3.5	—	NL23	LH3/32	LH1/16	CL7	XNS-34
	MTENNS103B	★	0.625	0.625	4.50	—	0.625	1.125			1	3.5			LH3/32		CL6	XNS36
	MTENNS123B	★	0.750	0.750	4.50	—	0.750	1.300	TN□□33□	**B56**	1	3.0	ITSN322	NL34L	LH1/8	LH5/64	CL20	XNS48
	MTENNS163D	★	1.000	1.000	6.00	—	1.000	1.300			1							
	MTENNS164D	★	1.000	1.000	6.00	—	1.000	1.500	TN□□43□	**B60**	1	3.0	ITSN433	NL46	LH1/8	LH3/32	CL20	XNS48
	MTENNS205D	★	1.250	1.250	6.00	—	1.250	1.732	TN□□54□	**B63**	1	3.5	ITSN533	NL58	LH040	LH1/8	CL12	XNS510
	MTENNS246E	★	1.500	1.500	7.00	—	1.500	2.086	TN□□66□	**B64**	1	3.5	ITSN637	NL68L	LH040	LH9/64	CL12	XNS510

Applicable Inserts

DTGN Type/DTFN Type/PTGN Type/PTTN Type/PTFN Type/ETGN Type/ETAN Type/ETFN Type/ETEN Type/ETXN Type/MTJN Type/MTXN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	SUMIBORON BNC2010	SUMIBORON BN1000
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	SUMIBORON BNC2020	SUMIBORON BN2000
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EM F AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	EGZ AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	SUMIBORON BNC300	SUMIBORON BN350
Recommended Cutting Conditions	A10 on			A14 on			A16 on			A18 on			A22 on	A20 on	

BNC500 is for ductile cast iron.

★= World Wide Warehouse Item

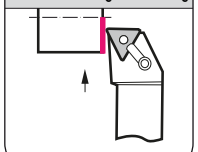
N·m Recommended Tightening Torque (N·m)

MTFN Type / MTGN Type

T 60° 93°

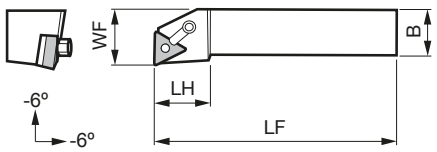
MTFN

External Turning and Facing



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

Fig 1



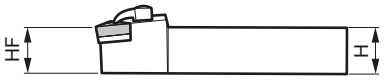


Figure shows right-hand (R) tool.

Holder Parts

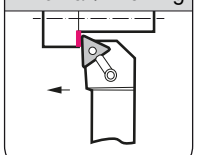
Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
																(For Hex Socket)	(For Hex Socket)		
Inch	**MTFN R/L 123B**	★	★	0.750	0.750	4.50	1.000	0.750	1.000	TN□□33□	**B56**	1	**3.0**	ITSN322	NL34L	LH1/8	LH5/64	CL20	XNS48
	MTFN R/L 163D	★	★	1.000	1.000	6.00	1.250	1.000	1.000			1							
	MTFN R/L 164D	★	★	1.000	1.000	6.00	1.250	1.000	1.000	TN□□43□	**B60**	1	**3.0**	ITSN433	NL46	LH1/8	LH3/32	CL20	XNS48
	MTFN R/L 204D	★	★	1.250	1.250	6.00	1.500	1.250	1.000			1							
	MTFN R/L 854D	★	★	1.250	1.000	6.00	1.250	1.250	1.000			1							
	MTFN R/L 864D	★	★	1.500	1.000	6.00	1.250	1.500	1.000			1							
	MTFN R/L 165D	★	★	1.000	1.000	6.00	1.250	1.000	1.440	TN□□54□	**B63**	1	**3.5**	ITSN533	NL58	LH040	LH1/8	CL12	XNS510
	MTFN R/L 205D	★	★	1.250	1.250	6.00	1.500	1.250	1.440			1							
	MTFN R/L 245E	★	★	1.500	1.500	7.00	2.000	1.500	1.440			1							
	MTFN R/L 855D	★	★	1.250	1.000	6.00	1.250	1.250	1.440			1							
	MTFN R/L 865D	★	★	1.500	1.000	6.00	1.250	1.500	1.440			1							

T 60° 93°

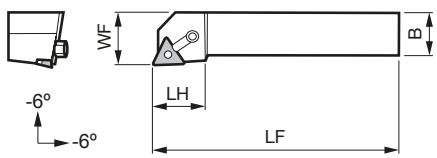
MTGN

External / Profiling



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

Fig 1



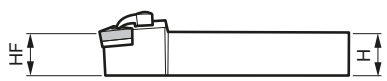


Figure shows right-hand (R) tool.

Holder Parts

Dimensions (inch)

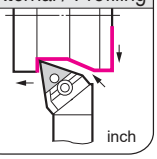
	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
																(For Hex Socket)	(For Hex Socket)		
Inch	**MTGN R/L 082A**	★	★	0.500	0.500	4.00	0.625	0.500	0.875	TN□□22□	**B54**	1	**3.5**	—	NL23	LH3/32	LH1/16	CL7	XNS-34
	MTGN R/L 103B	★	★	0.625	0.625	4.50	0.875	0.625	1.000			1							
	MTGN R/L 123B	★	★	0.750	0.750	4.50	1.000	0.750	1.060	TN□□33□	**B56**	1	**3.0**	ITSN332	NL34L	LH1/8	LH5/64	CL20	XNS48
	MTGN R/L 163D	★	★	1.000	1.000	6.00	1.250	1.000	1.375			1							
	MTGN R/L 164C	★	★	1.000	1.000	5.00	1.250	1.000	1.220	TN□□43□	**B60**	1	**3.0**	ITSN433	NL46	LH1/8	LH3/32	CL20	XNS48
	MTGN R/L 164D	★	★	1.000	1.000	6.00	1.250	1.000	1.220			1							
	MTGN R/L 204D	★	★	1.250	1.250	6.00	1.250	1.250	1.220			1							
	MTGN R/L 854D	★	★	1.250	1.000	6.00	1.250	1.250	1.220			1							
	MTGN R/L 864D	★	★	1.500	1.000	6.00	1.250	1.500	1.220			1							
	MTGN R/L 165D	★	★	1.000	1.000	6.00	1.250	1.000	1.440	TN□□54□	**B63**	1	**3.5**	ITSN533	NL-58	LH040	LH1/8	CL12	XNS510
	MTGN R/L 205D	★	★	1.250	1.250	6.00	1.250	1.250	1.440			1							
	MTGN R/L 245E	★	★	1.500	1.500	7.00	2.000	1.500	1.440			1							
	MTGN R/L 855D	★	★	1.250	1.000	6.00	1.250	1.250	1.440			1							
	MTGN R/L 865D	★	★	1.500	1.000	6.00	1.250	1.500	1.440			1							
	MTGN R/L 246E	★	★	1.500	1.500	7.00	2.000	1.500	1.500	TN□□66□	**B64**	1	**3.5**	ITSN637	NL68L	LH040	LH9/64	CL12	XNS510

★= World Wide Warehouse Item

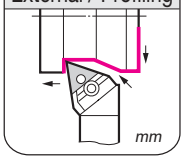
MTJN(S) Type / MTXN Type



MTJNS
External / Profiling



MTJN
External / Profiling



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

Fig 1

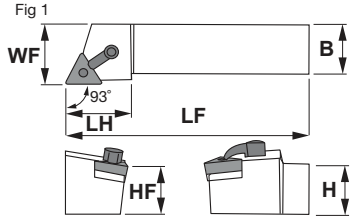


Fig 2

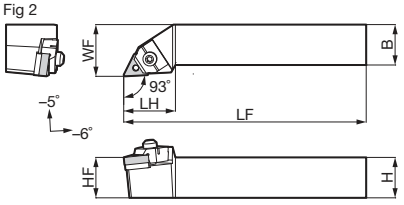


Figure shows right-hand (R) tool.

Holder

Parts

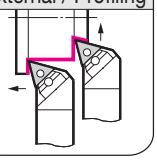
Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp	Clamp Screw	Wedge	Lock Pin	Shim	Bolt	Bolt N·m	Nut	Ring	Bolt Wrench (For Hex Socket)	Pin Wrench (For Hex Socket)
Inch	**MTJN RS/LS 123B**	★	★	0.750	0.750	4.50	1.000	0.750	1.030	TN□□33□	**B56**	1	CL20	XNS48	—	NL34L	ITSN-332	—	**3.0**	—	—	LH1/8	LH5/64
	MTJN RS/LS 163D	★	★	1.000	1.000	6.00	1.250	1.000	1.030			1											
	MTJN RS/LS 164D	★	★	1.000	1.000	6.00	1.250	1.000	1.250	TN□□43□	**B60**	1	CL20	XNS48	—	NL46	ITSN433	—	**3.0**	—	—	LH1/8	LH3/32
	MTJN RS/LS 204D	★	★	1.250	1.250	6.00	1.500	1.250	1.250			1											
	MTJN RS/LS 205D	★	★	1.250	1.250	6.00	1.500	1.250	1.440	TN□□ 54□	**B63**	1	CL12	XNS510	—	NL58	ITSN533	—	**3.5**	—	—	LH040	LH1/8
	MTJN RS/LS 246E	★	★	1.500	1.500	7.00	2.000	1.500	1.625	TN□□ 66□	**B64**	1	CL12	XNS510	—	NL68L	ITSN637	—	**3.5**	—	—	LH040	LH9/64
* Metric	**MTJN R/L 2020K16**	★	★	*20*	*20*	*125*	*25*	*20*	*32*	TN□□33□	**B56**	2	—	—	MMW30	MP317S	STW323	BHA0525	**4.0**	CPM32N	ER04	LH030	LH030
** Metric	**MTJN R/L 2520M16**		★	*25*	*20*	*150*	*25*	*25*	*32*			2				MP320S							
** Metric	**MTJN R/L 2525M16**	★	★	*25*	*25*	*150*	*32*	*25*	*32*			2				MP320S							
Metric	**MTJN R/L 2525M22**	★	★	*25*	*25*	*150*	*32*	*25*	*38*	TN□□43□	**B60**	2	—	—	MMW40	MP420	STW434	BHA0625	**4.5**	CPM43N	ER05	LH040	LH030
Metric	**MTJN R/L 3225P22**	★	★	*32*	*25*	*170*	*32*	*32*	*38*			2				MP420							

When using CIS standard inserts, the pin for holders marked * is MP317 and the pin for holders marked ** is MP320.



MTXN
External / Profiling



M Type Holder - General Turning and Facing
Clamp-on + Pin Lock

Fig 1

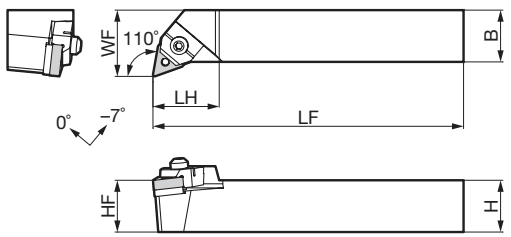


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Wedge	Lock Pin	Shim	Bolt	Bolt N·m	Nut	Ring	Bolt Wrench (For Hex Socket)	Pin Wrench (For Hex Socket)
*	**MTXN R/L 2020K16**	★	★	*20*	*20*	*125*	*25*	*20*	*32*	TN□□33□	**B56**	1	MMW30	MP317S	STW323	BHA0525	**4.0**	CPM32N	ER04	LH030	LH030
**	**MTXN R/L 2525M16**	★	★	*25*	*25*	*150*	*32*	*25*	*32*			1		MP320S							
	MTXN R/L 2525M22	★	★	*25*	*25*	*150*	*32*	*25*	*38*	TN□□43□	**B60**	1	MMW40	MP420	STW434	BHA0625	**4.5**	CPM43N	ER05	LH040	LH030

When using CIS standard inserts, the pin for holders marked * is MP317 and the pin for holders marked ** is MP320.
When using handed breaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts ◂·· DTGN Type/DTFN Type/PTGN Type/PTTN Type/PTFN Type/ETGN Type/ETAN Type/ETFN Type/ETEN Type/ETXN Type/MTJN Type/MTXN Type

1st Recommended Insert

* Refer as well to the Insert Selection Guide (page A10 on).
* Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker / CBN / PCD Photo / Grade — EGU / AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	SUMIBORON BNC2010	SUMIBORON BN1000
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	SUMIBORON BNC2020	SUMIBORON BN2000
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	EGZ AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	SUMIBORON BNC300	SUMIBORON BN350
Recommended Cutting Conditions	☛ A10 on			☛ A14 on			☛ A16 on			☛ A18 on			☛ A22 on	☛ A20 on	

★ = World Wide Warehouse Item

BNC500 is for ductile cast iron.

N·m Recommended Tightening Torque (N·m)

MTRN Type / PTFN Type



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

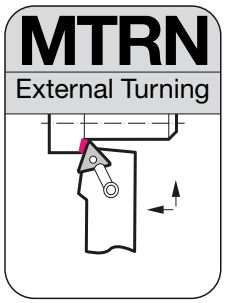
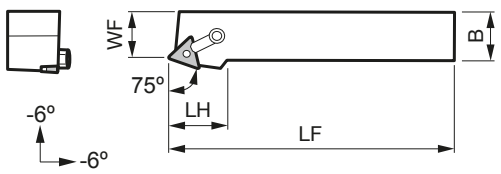


Fig 1



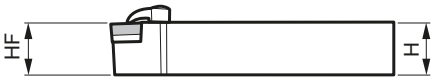


Figure shows right-hand (R) tool.

Holder — Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench (For Hex Socket)	Shim Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**MTRN R/L 123B**	★	★	0.750	0.750	4.50	0.855	0.750	1.160	TN□□33□	**B56**	1	3.0	ITSN-322	NL34L	LH1/8	LH5/64	CL20	XNS48
	MTRN R/L 163D	★	★	1.000	1.000	6.00	1.105	1.000	1.160			1							
	MTRN R/L 164D	★	★	1.000	1.000	6.00	1.048	1.000	1.380	TN□□43□	**B60**	1	3.0	ITSN433	NL46	LH1/8	LH3/32	CL20	XNS48
	MTRN R/L 204D	★	★	1.250	1.250	6.00	1.298	1.250	1.380			1							
	MTRN R/L 205D	★	★	1.250	1.250	6.00	1.252	1.250	1.560	TN□□54□	**B63**	1	3.5	ITSN533	NL58	LH040	LH1/8	CL12	XNS510
	MTRN R/L 245E	★	★	1.500	1.500	7.00	1.752	1.500	1.560			1							

★ = World Wide Warehouse Item



70 Type Holder - Facing
Lever Lock

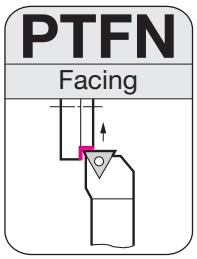
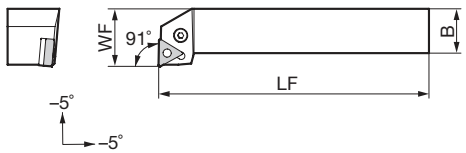


Fig 1



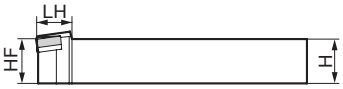


Figure shows right-hand (R) tool.

Holder — Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PTFN R/L 1616H16	★	★	*16*	*16*	*100*	*20*	*16*	*20*			1					
PTFN R/L 2020K16	★	★	*20*	*20*	*125*	*25*	*20*	*20*			1					
PTFN R/L 2520M16			*25*	*20*	*150*	*25*	*25*	*20*	TN□□33□	**B56**	1	LCL3	LCS3	LST317	LSP3	LH025
PTFN R/L 2525M16	★	★	*25*	*25*	*150*	*32*	*25*	*20*			1					
PTFN R/L 3225P16			*32*	*25*	*170*	*32*	*32*	*20*			1					
PTFN R/L 2525M22	★	★	*25*	*25*	*150*	*32*	*25*	*25*			1					
PTFN R/L 3225P22			*32*	*25*	*170*	*32*	*32*	*25*	TN□□43□	**B60**	1	LCL4	LCS4	LST42	LSP4	LH030
PTFN R/L 3232P22	★	★	*32*	*32*	*170*	*40*	*32*	*25*			1					
PTFN R/L 3232P27			*32*	*32*	*170*	*40*	*32*	*34*	TN□□54□	**B63**	1	LCL5	LCS5	LST53	LSP5	LH030
PTFN R/L 4040R27			*40*	*40*	*200*	*50*	*40*	*34*			1					

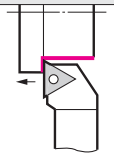
When using handed breaker inserts for facing, the holder and insert are opposite handed.

★ = World Wide Warehouse Item

PTGN Type / PTTN Type

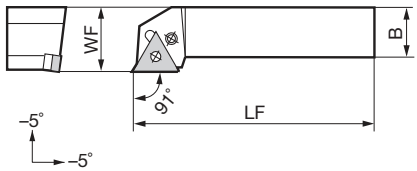


PTGN
External Turning



70 Type Holder - General Turning and Profiling
Lever Lock

Fig 1



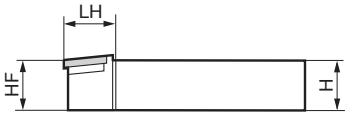


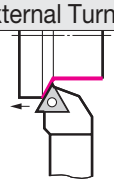
Figure shows right-hand (R) tool.

Holder — Parts — Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PTGN R/L 1616H16	★	★	*16*	*16*	*100*	*20*	*16*	*20*			1					
PTGN R/L 2020K16	★	★	*20*	*20*	*125*	*25*	*20*	*20*			1					
PTGN R/L 2520M16			*25*	*20*	*150*	*25*	*25*	*20*	TN□□33□	**B56**	1	LCL3	LCS3	LST317	LSP3	LH025
PTGN R/L 2525M16	★	★	*25*	*25*	*150*	*32*	*25*	*20*			1					
PTGN R/L 3225P16			*32*	*25*	*170*	*32*	*32*	*20*			1					
PTGN R/L 2525M22	★	★	*25*	*25*	*150*	*32*	*25*	*28*			1					
PTGN R/L 3225P22			*32*	*25*	*170*	*32*	*32*	*28*	TN□□43□	**B60**	1	LCL4	LCS4	LST42	LSP4	LH030
PTGN R/L 3232P22			*32*	*32*	*170*	*40*	*32*	*28*			1					
PTGN R/L 3232P27			*32*	*32*	*170*	*40*	*32*	*33*	TN□□54□	**B63**	1	LCL5	LCS5	LST53	LSP5	LH030
PTGN R/L 4040R27			*40*	*40*	*200*	*50*	*40*	*33*			1					

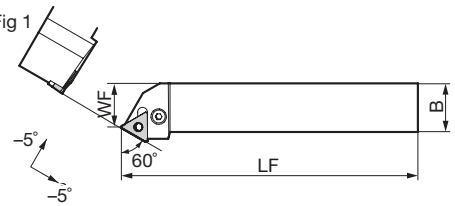


PTTN
External Turning



70 Type Holder - General Turning and Profiling
Lever Lock

Fig 1



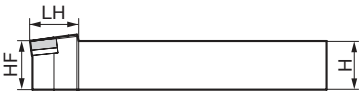


Figure shows right-hand (R) tool.

Holder — Parts — Dimensions (*mm*)

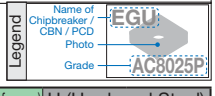
Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PTTN R/L 1616H16	★	★	*16*	*16*	*100*	*13*	*16*	*25*			1					
PTTN R/L 2020K16	★	★	*20*	*20*	*125*	*17*	*20*	*25*			1					
PTTN R/L 2520M16			*25*	*20*	*150*	*17*	*25*	*25*	TN□□33□	**B56**	1	LCL3	LCS3	LST317	LSP3	LH025
PTTN R/L 2525M16	★	★	*25*	*25*	*150*	*22*	*25*	*25*			1					
PTTN R/L 3225P16			*32*	*25*	*170*	*22*	*32*	*25*			1					
PTTN R/L 2525M22			*25*	*25*	*150*	*22*	*25*	*25*	TN□□43□	**B60**	1	LCL4	LCS4	LST42	LSP4	LH030
PTTN R/L 3225P22			*32*	*25*	*170*	*22*	*32*	*25*			1					

Applicable Inserts

◀·· DTGN Type/DTFN Type/PTGN Type/PTTN Type/PTFN Type/ETGN Type/ETAN Type/ETFN Type/ETEN Type/ETXN Type/MTJN Type/MTXN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) -	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	EUZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	SUMIBORON BNC2010	SUMIBORON BN1000
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	SUMIBORON BNC2020	SUMIBORON BN2000
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	EGZ AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	SUMIBORON BNC300	SUMIBORON BN350
Recommended Cutting Conditions	☛ A10 on			☛ A14 on			☛ A16 on			☛ A18 on			☛ A22 on	☛ A20 on	

BNC500 is for ductile cast iron.

★= World Wide Warehouse Item

WTENNS Type / WTJNS Type

WTENNS

External / Profiling

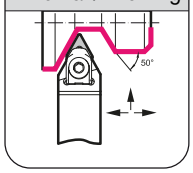
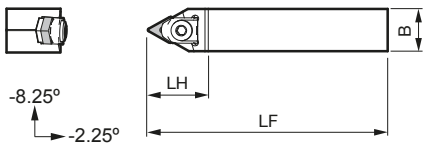
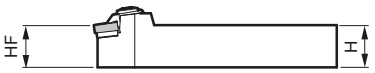


Fig 1





Holder

Parts

Dimensions (inch)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Wedge Clamp	Clamp Screw
Inch	**WTENNS123B**	★	0.750	0.750	4.50	-	0.750	1.300	TN□□33□	**B56**	1	**4.0**	SH-3414	PN-1642	LH3/16 (For Hex Socket)		CL-2013	CLB-1393
	WTENNS163D	★	1.000	1.000	6.00	-	1.000	1.300			1							
	WTENNS164D	★	1.000	1.000	6.00	-	1.000	1.500	TN□□43□	**B60**	1	**4.0**	ITSN433	PN-1661	LH3/16 (For Hex Socket)		CL-2029	CLB-1394
	WTENNS204D	★	1.250	1.250	6.00	-	1.250	1.500			1							

WTJNS

External / Profiling

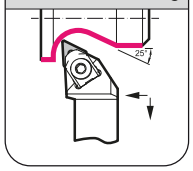
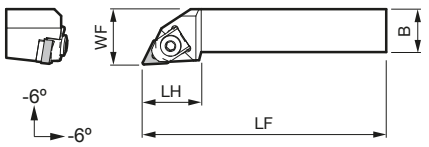


Fig 1



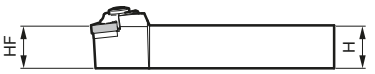


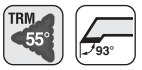
Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Wedge Clamp	Clamp Screw
Inch	**WTJN RS/LS 123B**	★	★	0.750	0.750	4.50	1.000	0.750	1.030	TN□□33□	**B56**	1	**4.0**	SH-3414	PN-1642	LH3/16 (For Hex Socket)		CL-2013	CLB-1393
	WTJN RS/LS 163D	★	★	1.000	1.000	6.00	1.250	1.000	1.030			1							
	WTJN RS/LS 164D	★	★	1.000	1.000	6.00	1.250	1.000	1.250	TN□□43□	**B60**	1	**4.0**	ITSN433	PN-1661	LH3/16 (For Hex Socket)		CL-2029	CLB-1394
	WTJN RS/LS 204D	★	★	1.250	1.250	6.00	1.500	1.250	1.250			1							



External Profiling
Double Clamp

SumiTurn T-REX

DTR55C

External / Profiling

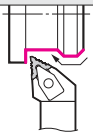


Fig 1

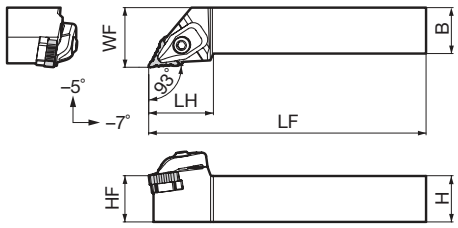


Figure shows right-hand (R) tool.

Holder Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Fig	Clamp	Spring	Cap Screw	Cap Screw N·m	Shim	Shim Screw	Wrench (For Hex Socket)	Shim Wrench (For Torx Holes)
DTR55C R/L 123B	●	●	.750	.750	4.50	1.00	.750	1.375	1	TRCP3	S-SP4-20	BX0520	3.5 to 4.5	TRW5505	BFTX0307N	TSW040	TRX10
DTR55C R/L 163D	●	●	1.00	1.00	6.00	1.25	1.00	1.375	1								
DTR55C R/L 2020-K17	★	★	*20*	*20*	*125*	*25*	*20*	*35*	1								
DTR55C R/L 2525-M17	★	★	*25*	*25*	*150*	*32*	*25*	*35*	1								

Wrench for shim is sold separately from the main body. S-DTR55C Type: Internal Profiling E27



External Profiling
Double Clamp

SumiTurn T-REX

DTR55Q

External Turning and Face Profiling

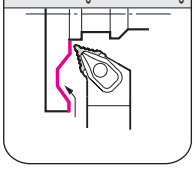


Fig 1

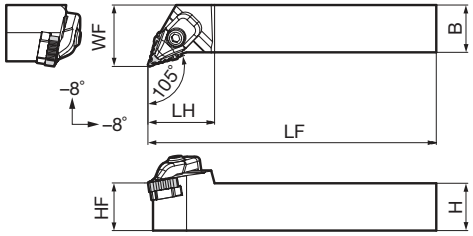


Figure shows right-hand (R) tool.

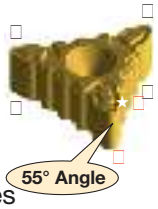
Holder Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Fig	Clamp	Spring	Cap Screw	Cap Screw N·m	Shim	Shim Screw	Wrench (For Hex Socket)	Shim Wrench (For Torx Holes)
DTR55Q R/L 163D	●	●	1.00	1.00	6.00	1.26	1.00	1.378	1	TRCP3	S-SP4-20	BX0520	3.5 to 4.5	TRW5505	BFTX0307N	TSW040	TRX10
DTR55Q R/L 2020-K17	★	★	*20*	*20*	*125*	*28.5*	*20*	*35*	1								
DTR55Q R/L 2525-M17	★	★	*25*	*25*	*150*	*32.0*	*25*	*35*	1								

■ Features

- 55° Included Angle with 6 Cutting Edges
  1.5 times more cutting edges compared to DNMG inserts, for greatly reduced machining costs



- Extra-Strong Clamping
  Powerful clamping with double clamp-on lock and serrated insert design

· Prevents the cutting edge position from shifting during profiling
· Reliable even in interrupted machining



● T-REX Insert/Tool Holder Identification

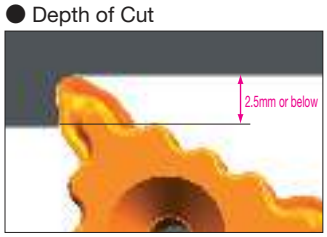
Insert
TRM 55 17 08 -GU
T-REX Insert | Angle | Insert Size | Nose Radius | Name of Chipbreaker

External Holder
DTR 55 C R 2525 -M 17
T-REX Holders | Angle | Cutting Edge Angle | Feed Direction | Shank Size | Shank Length | Insert Size

Note: Cutting Edge Angle
C: 93° (95.5° for major cutting edge)
Q: 105° (107.5° for major cutting edge)

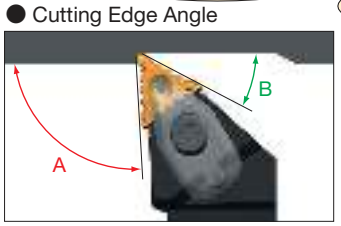
■ Important Notes

● Depth of Cut



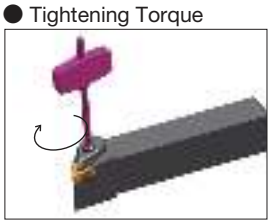
Maximum depth of cut should be 2.5mm.

● Cutting Edge Angle



Holder Cat. No.	A	B	Note
DTR55C Type	93°	27°	Main blade cutting edge angle is 95.5°
DTR55Q Type	105°	15°	Main blade cutting edge angle is 107.5°

● Tightening Torque



For the insert clamp, use the included dedicated wrench (TSW040) to tighten at 3.5 to 4.5N·m torque.

●= USA Stocked Item ★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

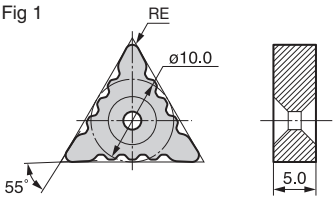
TRM 55°

Insert (Coated Carbide / Cermet)

Dimensions (*mm*)

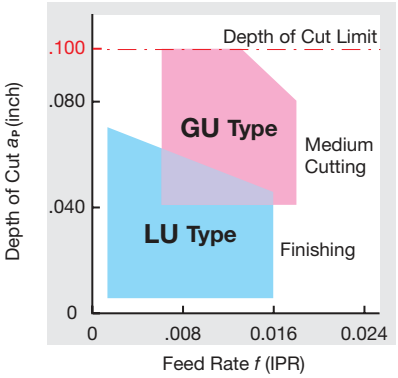
Applications	Appearance	Cat. No.	Nose Radius RE	AC810P	AC8025P	AC820P	AC830P	AC700G	AC610M	AC6020M	AC6030M	AC630M	T3000Z	Fig
Fine Cutting	 FL	TRM551704-FL	*0.4*		●	●							▲	1
		TRM551708-FL	*0.8*		●	●							▲	1
Finishing	 LU	TRM551704-LU	*0.4*	●	●	●	●	●					▲	1
		TRM551708-LU	*0.8*	●	●	●	●	●					▲	1
		TRM551712-LU	*1.2*	●	●	●	●	●					▲	1
	 SU	TRM551704-SU	*0.4*	●	●	●			●	●	●	●	▲	1
		TRM551708-SU	*0.8*	●	●	●			●	●	●	●	▲	1
		TRM551712-SU	*1.2*	●	●	●			●	●	●	●	▲	1
Medium Cutting	 GU	TRM551704-GU	*0.4*	●	●	●	●	●		●		●		1
		TRM551708-GU	*0.8*	●	●	●	●	●	●	●	●	●		1
		TRM551712-GU	*1.2*	●	●	●	●	●		●	●	●		1

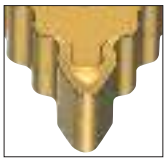
Fig 1



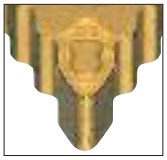
■ Chipbreaker Application Range

● Main Chipbreakers



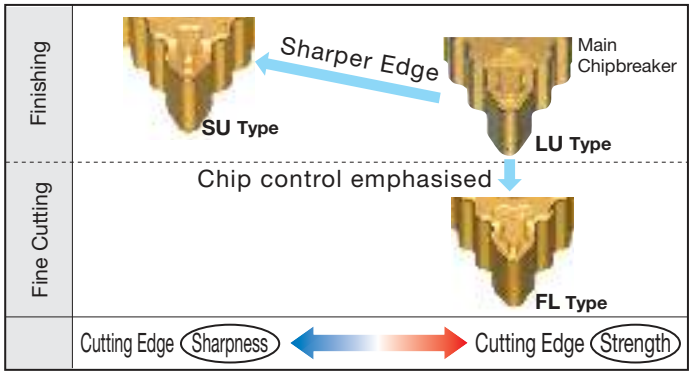


GU Type



LU Type

● Finishing Sub-Chipbreakers



■ Application Range by Grade (Numbers in Table are Recommended Cutting Speed V_C (SFM))

Insert Grade			AC810P	AC8025P	AC820P	AC830P	AC630M	T3000Z
Grade Classification			Coated Carbide	Coated Carbide	Coated Carbide	Coated Carbide	Coated Carbide	Coated Cermet
Work Material		Low Carbon Steel	660 1,312	490 1,148	490 1,148	394 984	394 984	1,082 1,312
		General Steel / Alloy Steel	490 1,082	1,082 820	1,082 820	262 660	262 755	1,082 820
		Stainless Steel				164 490	330 524	
Applications		Finishing	⊙	○	○	○	○	⊙
		Medium Cutting	○	⊙	⊙	○	⊙	○
		Interrupted Cutting		○	○	⊙	○	○

⊙: Ideal, ○: Suitable

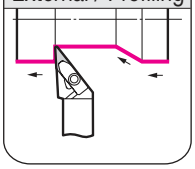
●= USA Stocked Item ▲= Limited Availability Item

DVJN Type / DVVN Type



DVJN

External / Profiling



D Type Holder - General Turning and Profiling
Double Clamp

Fig 1

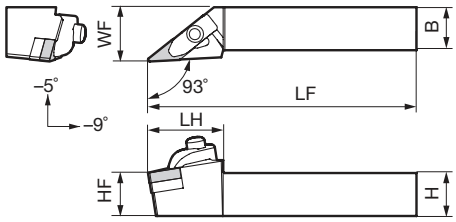


Figure shows right-hand (R) tool.

Holder

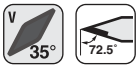
Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Wrench for Shims	Clamp	Clamp Screw	Spring	Lower Surface Wrench
																	 (For Torx Holes)				 (For Hex Socket)
Inch	DVJN R/L 123BAN*	★	★	0.750	0.750	4.50	1.000	0.750	-	VN□□33□	B66	1	-	3.5	IVSN332	ST-1764		CL-2708	CLB-1695	SP-4294	LH040
Inch	DVJN R/L 163DAN*	★	★	1.000	1.000	6.00	1.250	1.000	-			1									
Inch	DVJN R/L 203DAN*	★	★	1.250	1.250	6.00	1.500	1.250	-			1									
Inch	DVJN R/L 243EAN*	★	★	1.500	1.500	7.00	2.000	1.500	-			1									
Metric	DVJN R/L 2020K16	★	★	20	20	125	25	20	35			1	SCP-4	5.0	VNS1604	BFTX0307N	TRX10	-	-	-	LH025
Metric	DVJN R/L 2525M16	★	★	25	25	150	32	25	35			1									

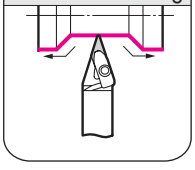
Wrench for shim is sold separately from the main body.
*Coolant Through (see page F16 for example and list of coolant-through parts)

Clamp Set Parts ☞ C63



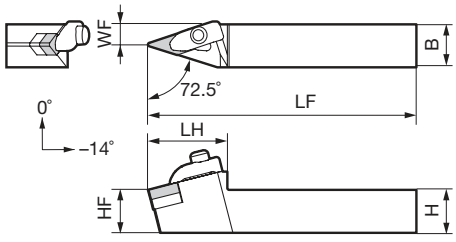
DVVN

External / Profiling



D Type Holder - General Turning and Profiling
Double Clamp

Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Wrench for Shims	Upper Surface Wrench	Lower Surface Wrench
															 (For Torx Holes)	 (For Hex Socket)	 (For Hex Socket)
DVVNN2020K16	★	20	20	125	10.0	20	37	VN□□33□	B66	1	SCP-4	5.0	VNS1604	BFTX0307N	TRX10	LH040	LH025
DVVNN2525M16	★	25	25	150	12.5	25	37			1							

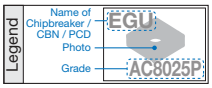
Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞ C63

Applicable Inserts ◂·· DVJN Type / DVVN Type / DVQN Type

1st Recommended Insert

* Refer as well to the Insert Selection Guide (page A10 on).
* Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	N (Non-ferrous) -	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EEF AC6020M	EEG AC6020M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EEF AC5015S	EEG AC5015S	SUMIDIA DA1000	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EEF AC6030M	EEG AC6030M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EEF AC5015S	EEG AC5015S	SUMIDIA DA1000	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EEF AC6030M	EEG AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	EEF AC5025S	EEG AC5025S	SUMIDIA DA1000	SUMIBORON BNC300	SUMIBORON BN350	-
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A16		☞ A18 on		☞ A22 on	☞ A20 on		☞ M2 on

★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

DVQN Type





D Type Holder - General Turning, Profiling and Undercutting
Double Clamp

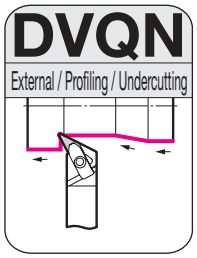


Fig 1

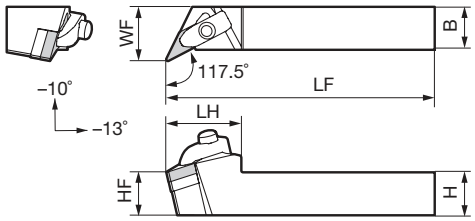


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert		Fig	Clamp Set		Shim	Shim Screw	Wrench for Shims	Upper Surface Wrench	Lower Surface Wrench
	R	L	H	B	LF	WF	HF	LH	Cat. No.	Ref. Page			N·m			 (For Torx Holes)	 (For Hex Socket)	 (For Hex Socket)
DVQN R/L 2020K16	★	★	*20*	*20*	*125*	*25*	*20*	*35*	VN□□33□	**B66**	1	SCP-4	**5.0**	VNS1604	BFTX0307N	TRX10(*)	LH040	LH025
DVQN R/L 2525M16	★	★	*25*	*25*	*150*	*32*	*25*	*35*			1							

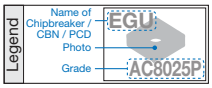
*Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞ C63

Applicable Inserts ◂·· DVJN Type / DVVN Type / DVQN Type

1st Recommended Insert

⋆ Refer as well to the Insert Selection Guide (page A10 on).
⋆ Some combinations need to be made to order or cannot be manufactured.



Process \ Cutting Range	P (Steel)		M (Stainless Steel)		K (Cast Iron)		S (Exotic Alloy)		N (Non-ferrous)	H (Hardened Steel)		Hard Brittle Material
	Finishing	Medium Cutting	Finishing	Medium Cutting	High-speed Finishing	Finishing to Medium Cutting	Finishing	Medium Cutting	-	Coated	Uncoated	Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EEF AC6020M	EEG AC6020M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EEF AC5015S	EEG AC5015S	SUMIDIA DA1000	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EEF AC6030M	EEG AC6030M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EEF AC5015S	EEG AC5015S	SUMIDIA DA1000	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EEF AC6030M	EEG AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	EEF AC5025S	EEG AC5025S	SUMIDIA DA1000	SUMIBORON BNC300	SUMIBORON BN350	-
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A16		☞ A18 on		☞ A22 on	☞ A20 on		☞ M2 on

BNC500 is for ductile cast iron.

★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

MVJN Type / MVVN Type



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

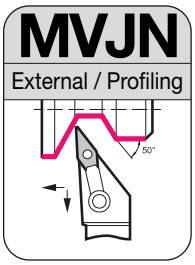
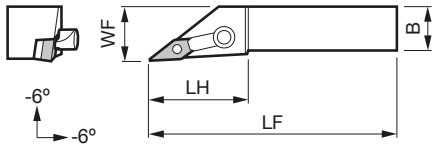


Fig 1



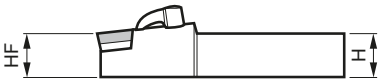


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MVJN R/L 123B**	•	•	0.750	0.750	4.50	1.000	0.750	1.620	VN□□33□	**B66**	1	3.0	IVSN322	NL34L	LH1/8 (For Hex Socket)	LH5/64 (For Hex Socket)	CL22	XNS48
	MVJN R/L 163D	•	•	1.000	1.000	6.00	1.250	1.000	1.620			1							
	MVJN R/L 203D	•	•	1.250	1.250	6.00	1.500	1.250	1.620			1							
	MVJN R/L 164D	•	•	1.000	1.000	6.00	1.250	1.000	1.880			1							
	MVJN R/L 204D	•	•	1.250	1.250	6.00	1.500	1.250	1.880			1							
	MVJN R/L 244E	★	★	1.500	1.500	7.00	2.000	1.500	1.880	VN□□43□	**B68**	1	3.5	IVSN433	NL46	LH040	LH3/32	CL30	XNS510
	MVJN R/L 854D	★	★	1.250	1.000	6.00	1.250	1.250	1.880			1							
	MVJN R/L 864D	★	★	1.500	1.000	6.00	1.250	1.500	1.880			1							



M Type Holder - General Turning and Profiling
Clamp-on + Pin Lock

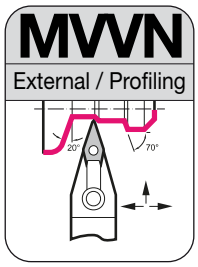
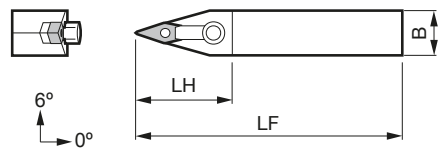
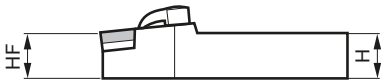


Fig 1





Holder

Parts

Dimensions (inch)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw
Inch	**MVVNN123B**	★	0.750	0.750	4.50	-	0.750	1.620	VN□□33□	**B66**	1	3.0	IVSN322	NL34L	LH1/8 (For Hex Socket)	LH5/64 (For Hex Socket)	CL22	XNS48
	MVVNN163D	★	1.000	1.000	6.00	-	1.000	1.620			1							
	MVVNN203D	★	1.250	1.250	6.00	-	1.250	1.620			1							
	MVVNN243E	★	1.500	1.500	7.00	-	1.500	1.620			1							
	MVVNN164D	★	1.000	1.000	6.00	-	1.000	2.060	VN□□43□	**B68**	1	3.5	IVSN433	NL46	LH040	LH3/32	CL30	XNS510
	MVVNN204D	★	1.250	1.250	6.00	-	1.250	2.060			1							
	MVVNN244E	★	1.500	1.500	7.00	-	1.500	2.060			1							

• : Stock Standard Item ★= World Wide Warehouse Item

DWLN Type / MWLN Type

W 80° 95° 95°

D Type Holder - General Turning and Facing
Double Clamp

DWLN
External Turning and Facing

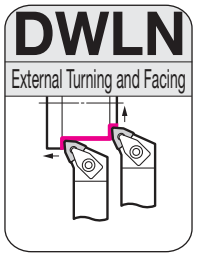


Fig 1

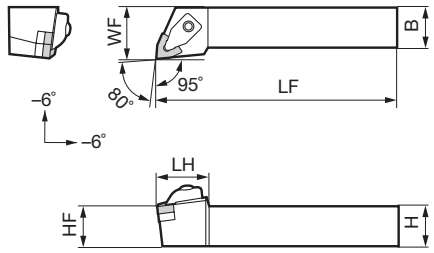


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions inch/ (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Shim Wrench (For Torx Holes)	Clamp Wrench (For Hex Socket)	Pin Wrench (For Hex Socket)
Inch	DWLN R/L 123BN	●	●	0.750	0.750	4.50	1.000	0.750	1.000	WN□□33□	B69	1	SCP-4	5.0	-	-	IWSN322	S-34	-	TRX15(*)	LH020	
	DWLN R/L 163DN	●	●	1.000	1.000	6.00	1.250	1.000	1.000			1										
	DWLN R/L 124BN	●	●	0.750	0.750	4.50	1.000	0.750	1.250	WN□□43□	B71	1	-		CL-2712	CLB-1696	IWSN433	ST-1766	SP-4295	SP-4295	LH040	
	DWLN R/L 164DN	●	●	1.000	1.000	6.00	1.250	1.000	1.250			1										
	DWLN R/L 204DN	●	●	1.250	1.250	6.00	1.500	1.250	1.250			1										
	DWLN R/L 244EN	●	●	1.500	1.500	7.00	2.000	1.500	1.250			1										
	DWLN R/L 124BAN*	★	★	0.750	0.750	4.50	1.000	0.750	1.250	WN□□43□		1	-		CL-2712	CLB-1696	IWSN433	ST-1766	SP-4295	SP-4295	LH040	
	DWLN R/L 164DAN*	★	★	1.000	1.000	6.00	1.250	1.000	1.250			1										
	DWLN R/L 204DAN*	★	★	1.250	1.250	6.00	1.500	1.250	1.250			1										
	DWLN R/L 244EAN*	★	★	1.500	1.500	7.00	2.000	1.500	1.250			1										
Metric	DWLN R/L 2020K08	★	★	*20*	*20*	*125*	*25*	*20*	*32*	WN□□43□		1	SCP-2	5.0	-	-	WNS0804	BFTX0409N	-	TRX15(*)	LH040	LH025
	DWLN R/L 2525M08	★	★	*25*	*25*	*150*	*32*	*25*	*32*			1										

Wrench for shim is sold separately from the main body.
When using handed breaker inserts for facing, the holder and insert are opposite handed.
*Coolant Through (see page F16 for example and list of coolant-through parts)

Clamp Set Parts C63

W 80° 95° 95°

M Type Holder - General Turning , Facing, Profiling and Undercutting
Clamp-on + Pin Lock

MWLN
External / Facing / Profiling / Undercutting

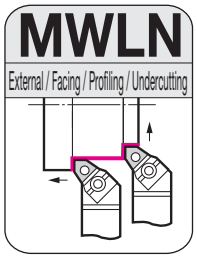


Fig 1

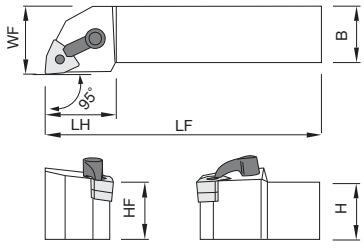


Fig 2

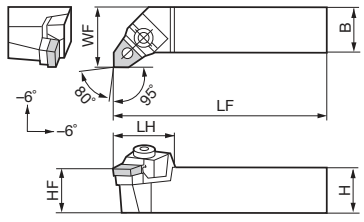


Figure shows right-hand (R) tool.

Holder

Parts

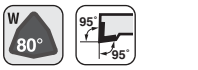
Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Wedge	Clamp	Lock Pin	Shim	Clamp Screw	N·m	Nut	Ring	Bolt Wrench (For Hex Socket)	Pin Wrench (For Hex Socket)
Inch	MWLN R/L 123B	●	●	0.750	0.750	4.50	1.000	1.000	0.750	WN□□33□	B69	1	-	CL6	NL46	IWSN322	XNS-36	3.0	-	-		LH020
	MWLN R/L 163D	●	●	1.000	1.000	5.00	1.250	1.000	1.000			1										
	MWLN R/L 124B	●	●	0.750	0.750	4.50	1.000	0.750	1.070	WN□□43□	B71	1	-	CL20		IWSN433	XNS-48				LH1/8	LH3/32
	MWLN R/L 164D	●	●	1.000	1.000	6.00	1.250	1.000	1.070			1										
	MWLN R/L 204D	●	●	1.250	1.250	6.00	1.500	1.250	1.070			1										
	MWLN R/L 244E	●	●	1.500	1.500	7.00	2.000	1.500	1.070			1										
Metric	MWLN R/L 2020K08	★	★	*20*	*20*	*125*	*25*	*20*	*32*	WN□□43□		2	MWW40	-	MP416	SWW433	BHA0625	4.5	CPM43S	ER05	LH040	LH030
	MWLN R/L 2525M08	★	★	*25*	*25*	*150*	*32*	*25*	*32*			2			MP420				CPM43N			
	MWLN R/L 3225P08	★	★	*32*	*25*	*170*	*32*	*32*	*32*			2			MP420				CPM43N			

When using handed breaker inserts for facing, the holder and insert are opposite handed.

●= USA Stocked Item ★= World Wide Warehouse Item

PWLN Type / WWLN Type



70 Type Holder - General Turning and Facing
Lever Lock

PWLN
External / Profiling

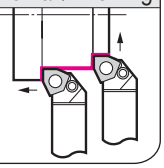


Fig 1

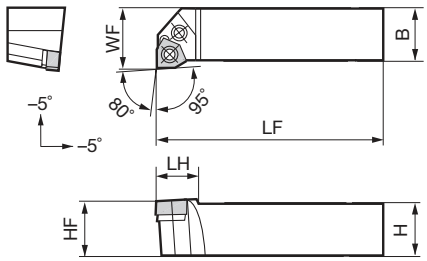


Figure shows right-hand (R) tool.

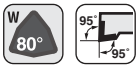
Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench
PWLN R/L 2020K06	★	★	*20*	*20*	*125*	*25*	*20*	*17*	WN□□33	**B69**	1	LCL3	LCS3	LSW317	LSP3	LH025 (For Hex Socket)
PWLN R/L 2525M06	★	★	*25*	*25*	*150*	*32*	*25*	*17*			1					

When using handed breaker inserts for facing, the holder and insert are opposite handed.



D Type Holder - General Turning and Facing
Double Clamp

WWLN
External / Multipurpose

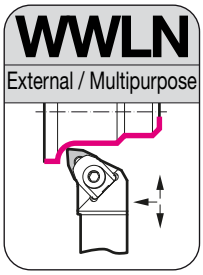
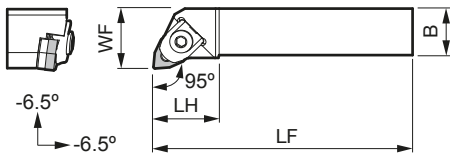


Fig 1



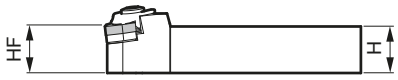


Figure shows right-hand (R) tool.

Holder

Parts

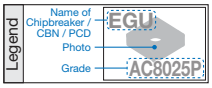
Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	(N·m)	Shim	Shim Pin	Nut	Clamp Wrench	Shim Wrench	Clamp	Clamp Screw	Alternate Parts if the lot # starts with I: Cam	Nut	Wedge Clamp	Clamp Screw
Inch	**WWLN R/L 124B**	●	●	0.750	0.750	4.50	1.000	0.750	1.070	WN□□43□	**B71**	1	4.0	IWSN433	PN-1661	–	LH3/16 (For Hex Socket)	(For Hex Socket)	CL-2012	ST-1394	MP-416	CPM-43S	MWW-40	BHA0625
	WWLN R/L 164D	●	●	1.000	1.000	6.00	1.250	1.000	1.070			1									MP-420	CPM-43N		
	WWLN R/L 204D	●	●	1.250	1.250	6.00	1.500	1.250	1.070			1												
	WWLN R/L 244E	▲	▲	1.500	1.500	7.00	2.000	1.500	1.070			1									–	–	–	–
	WWLN R/L 165D	●	●	1.000	1.000	6.00	1.500	1.000	1.593	WN□□54□	**B73**	1		SWW544	MP531 MP534	CPM-54N	LH040 LH060			BHA0834				
	WWLN R/L 205D	●	●	1.250	1.250	6.00	1.500	1.250	1.593			1												

Applicable Inserts ◂·· DWLN Type / PWLN Type / MWLN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Process \ Cutting Range	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIBORON BNC2010	SUMIBORON BN2000
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000
Recommended Cutting Conditions	A10 on			A14 on			A16 on		A18 on			A20 on	

★= World Wide Warehouse Item

(N·m) Recommended Tightening Torque (N·m)

C 80° 95° 95°

SC Type Holder - General Turning and Facing
Screw-on



Fig 1

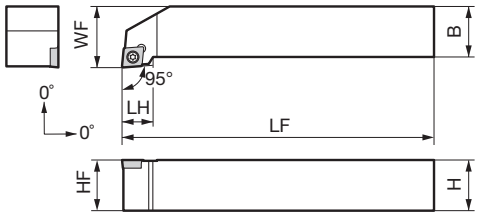


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Insert Screw	N·m	Wrench (For Torx Holes)
Inch	**SCLC R/L 062**	★	★	0.375	0.375	2.50	0.500	0.375	0.390	CC□□21.5□	**B75**	1	ST-1225	**0.9**	TRD07
Inch	**SCLC R/L 083**	★	★	0.500	0.500	3.50	0.625	0.500	0.630	CC□□32.5□	**B78**	1	ST-1240	**3.0**	TRD15
Inch	**SCLC R/L 103**	★	★	0.625	0.625	4.00	0.750	0.625	0.708			1			
Inch	**SCLC R/L 123B**	★	★	0.750	0.750	4.50	1.000	0.750	0.866			1			
Inch	**SCLC R/L 163D**	★	★	1.000	1.000	6.00	1.250	1.000	0.630			1			
Inch	**SCLC R/L 124B**	★	★	0.750	0.750	4.50	1.000	0.750	1.000	CC□□43□	**B80**	1	ST-1540	**3.0**	TRD17
Inch	**SCLC R/L 164D**	★	★	1.000	1.000	6.00	1.250	1.000	1.000			1			
Inch	**SCLC R/L 204D**	★	★	1.250	1.250	6.00	1.500	1.250	1.000			1			
Metric	**SCLC R/L 0808H06**	★	★	*8*	*8*	*100*	*10*	*8*	–	CC□□21.5□	**B75**	1	BFTX02506N	**1.5**	TRX08
Metric	**SCLC R/L 1010H06**	★	★	*10*	*10*	*100*	*12*	*10*	*15*			1			
Metric	**SCLC R/L 1212H09**	★	★	*12*	*12*	*100*	*16*	*12*	*15*	CC□□32.5□	**B78**	1	BFTX0409N	**3.4**	TRX15
Metric	**SCLC R/L 1616H09**	★	★	*16*	*16*	*100*	*20*	*16*	*15*			1			
Metric	**SCLC R/L 2020K09**	★	★	*20*	*20*	*125*	*24*	*20*	*15*			1			
Metric	**SCLC R/L 2525M09**	★	★	*25*	*25*	*150*	*30*	*25*	*15*			1			

When using handed breaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts ◂·· SCLC Type

1st Recommended Insert

* Refer as well to the Insert Selection Guide (page A10 on).
* Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker / CBN / PCD — Photo — Grade (EGU, AC8025P)

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material -
General Cutting	EFB T1500Z	ESU AC8025P	EMU AC8025P	ELB AC6030M	ESU AC6030M	EMU AC6040M	SUMIBORON BN7000/BNC500	EMU AC4015K	No Chipbreaker AC4015K	ESU AC5015S	SUMIDIA DA1000	AG H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
High Precision	EFC T1500A	MESI AC1030U	EFM AC1030U	EFC AC1030U	MESI AC1030U	EFM AC1030U	SUMIBORON BN7000/BNC500	-	-	MESI AC5015S	SUMIDIA DA1000	-	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
Recommended Cutting Conditions	☛ A10 on			☛ A14 on			☛ A16 on			☛ A18 on	☛ A22 on		☛ A20 on		☛ M2 on

BNC500 is for ductile cast iron.

★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

SDJC Type / SDPC Type



SD Type Profiling Tool Holder - General Turning , Facing and Profiling
Screw-on

SDJC

External / Profiling / Facing

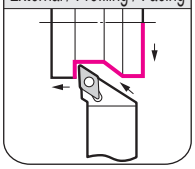


Fig 1

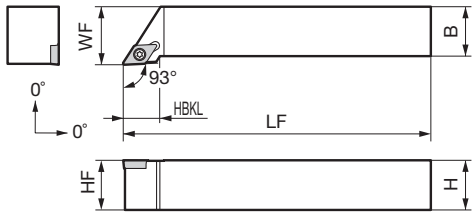


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head HBKL	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Shim Screw	Insert Screw	N·m	Wrench (For Torx Holes)
Inch	**SDJC R/L 062**	★	★	0.375	0.375	2.50	0.500	0.375	–	DC□□21.5□	**B85**	1	–	–	ST-1225	**0.9**	TRD07
	SDJC R/L 082	★	★	0.500	0.500	3.50	0.625	0.500	–			1					
	SDJC R/L 102	★	★	0.625	0.625	4.00	0.750	0.625	–			1					
	SDJC R/L 122B	★	★	0.750	0.750	4.50	1.000	0.750	–			1					
	SDJC R/L 123B	★	★	0.750	0.750	4.50	1.000	0.750	–	DC□□32.5□	**B88**	1	SH-3714	ST-1750	ST-1335	**3.0**	TRD15
	SDJC R/L 163D	★	★	1.000	1.000	6.00	1.250	1.000	–			1					
Metric	**SDJC R/L 0808H07**	★		*8*	*8*	*100*	*10*	*8*	*15*	DC□□21.5□	**B85**	1	–	–	BFTX02506N	**1.5**	TRX08
	SDJC R/L 1010H07	★	★	*10*	*10*	*100*	*12*	*10*	*18*			1					
	SDJC R/L 1212-11	★	★	*12*	*12*	*100*	*16*	*12*	*18*	DC□□32.5□	**B88**	1	–	–	BFTX0409N	**3.4**	TRX15
	SDJC R/L 1616H11	★	★	*16*	*16*	*100*	*20*	*16*	*18*			1					
	SDJC R/L 2020K11	★	★	*20*	*20*	*125*	*24*	*20*	*18*			1					
	SDJC R/L 2525M11	★	★	*25*	*25*	*150*	*29*	*25*	*18*			1					



SD Type Profiling Tool Holder - General Turning , Facing and Profiling
Screw-on

SDPC

External Turning

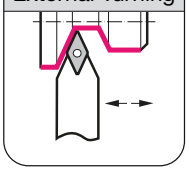
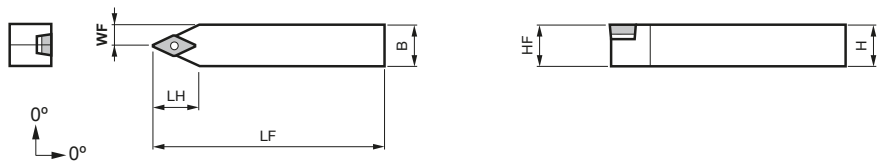


Fig 1



Holder

Parts

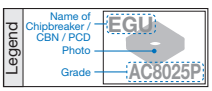
Dimensions (inch/ *mm*)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head HBKL	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Shim Screw	Insert Screw	N·m	Wrench (For Torx Holes)
Inch	**SDPCN062**	★	0.375	0.375	2.50	0.197	0.370	–	DC□□21.5□	**B85**	1	–	–	ST-1225	**0.9**	TRD07
	SDPCN082	★	0.500	0.500	3.50	0.260	0.492	–			1					
	SDPCN103	★	0.625	0.625	4.00	0.323	0.630	–	DC□□32.5□	**B88**	1	SH-3714	ST-1750	ST-1335	**3.0**	TRD15
	SDPCN123B	★	0.750	0.750	4.50	0.383	0.744	–			1					
	SDPCN163D	★	1.000	1.000	6.00	0.520	0.984	–			1					

Applicable Inserts ◂·· SDJC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material -
General Cutting	EFB T1500Z	ESU AC8025P	EMU AC8025P	ELB AC6030M	ESU AC6030M	EMU AC6030M	SUMIBORON BN7000/BNC500	EMU AC4015K	No Chipbreaker AC4015K	FX AC5015S	SUMIDIA DA1000	AG H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
High Precision	EFC T1500A	MESI AC1030U	EFM AC1030U	EFC AC1030U	MESI AC1030U	EFM AC1030U	SUMIBORON BN7000/BNC500	-	-	MESI AC5015S	SUMIDIA DA1000	-	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on			☞ A18 on	☞ A22 on		☞ A20 on		☞ M2 on

BNC500 is for ductile cast iron.

★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

PRDC Type / PRGC Type

70 Type Holder - General Turning and Profiling
Lever Lock

PRDC

External / Profiling

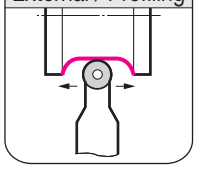
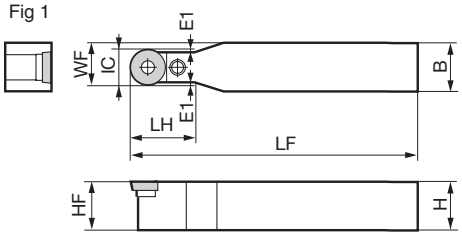


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Cutting Edge Distance E1	Inscribed Circle IC	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PRDCN2020M10	★	*20*	*20*	*150*	*15.0*	*20*	*22*	*1.0*	*10*	RCM□1003	**B92**	1	LCL10	LCS10	LSR10	LSP10	LH020
PRDCN2525M10	★	*25*	*25*	*150*	*17.5*	*25*	*22*	*1.0*	*10*			1					
PRDCN2525M12	★	*25*	*25*	*150*	*18.5*	*25*	*24*	*1.2*	*12*	RCM□1204		1	LCL12	LCS12	LSR12	LSP10	LH025
PRDCN3225Q12	★	*32*	*25*	*180*	*18.5*	*32*	*24*	*1.2*	*12*			1					
PRDCN3225Q16	★	*32*	*25*	*180*	*20.5*	*32*	*28*	*1.5*	*16*	RCM□1606		1	LCL16	LCS16	LSR16	LSP16	LH025
PRDCN3232Q20	★	*32*	*32*	*180*	*26.0*	*32*	*32*	*1.7*	*20*	RCM□2006		1	LCL20	LCS20	LSR20	LSP20	LH030
PRDCN4040T25		*40*	*40*	*300*	*32.5*	*40*	*42*	*2.0*	*25*	RCM□2507		1	LCL25	LCS25	LSR25	LSP25	LH040
PRDCN5050U32		*50*	*50*	*350*	*41.0*	*50*	*52*	*2.5*	*32*	RCM□3209		1	LCL32	LCS32	LSR32	LSP32	LH050

70 Type Holder - General Turning and Profiling
Lever Lock

PRGC

External / Profiling

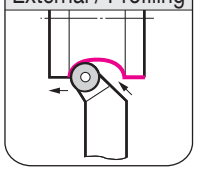


Fig 1

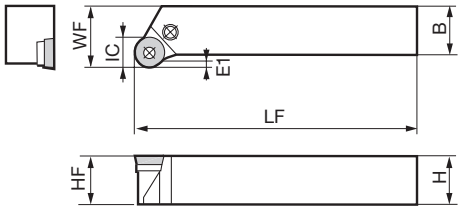


Figure shows right-hand (R) tool.

Holder

Parts

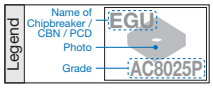
Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Cutting Edge Distance E1	Inscribed Circle IC	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
PRGC R/L 2020K10	★	★	*20*	*20*	*125*	*25*	*20*	*1.5*	*10*	RCM□1003	**B92**	1	LCL10	LCS10	LSR10	LSP10	LH020
PRGC R/L 2525M10	★	★	*25*	*25*	*150*	*32*	*25*	*1.5*	*10*			1					
PRGC R/L 2020K12	★	★	*20*	*20*	*125*	*25*	*20*	*2.5*	*12*	RCM□1204		1	LCL12	LCS12	LSR12	LSP10	LH025
PRGC R/L 2525M12	★	★	*25*	*25*	*150*	*32*	*25*	*2.5*	*12*			1					
PRGC R/L 3225P12	★	★	*32*	*25*	*170*	*32*	*32*	*2.5*	*12*			1					
PRGC R/L 2525M16			*25*	*25*	*150*	*32*	*25*	*3.0*	*16*	RCM□1606		1	LCL16	LCS16	LSR16	LSP16	LH025
PRGC R/L 3225P16			*32*	*25*	*170*	*32*	*32*	*3.0*	*16*			1					
PRGC R/L 3232P20			*32*	*32*	*170*	*40*	*32*	*4.0*	*20*	RCM□2006		1	LCL20	LCS20	LSR20	LSP20	LH030
PRGC R/L 4040S25			*40*	*40*	*250*	*50*	*40*	*4.5*	*25*	RCM□2507		1	LCL25	LCS25	LSR25	LSP25	LH040
PRGC R/L 5050T32			*50*	*50*	*300*	*63*	*50*	*5.5*	*32*	RCM□3209		1	LCL32	LCS32	LSR32	LSP32	LH050

Applicable Inserts ◂·· PRGC Type / PRDC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing
Continuous Cutting	RX AC8015P	RX AC8025P	RX AC8025P	RP AC4010K	RP AC4010K	RP AC5015S	RP AC5015S
General Cutting	RX AC8025P	RH AC8025P	RH AC8035P	RP AC4015K	RP AC4015K	RP AC5015S	RP AC5015S
Interrupted Cutting	RH AC8025P	RH AC8035P	RP AC8035P	RP AC420K	RP AC420K	RP AC5025S	RP AC5025S
Recommended Cutting Conditions	☞ A10 on			☞ A16 on		☞ A18 on	

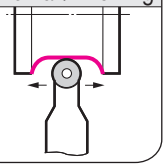
●= USA Stocked Item
★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

SRDC Type / SRGC Type / SRSC Type

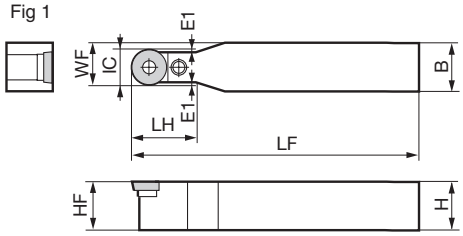
SRDC

External / Profiling



70 Type Holder - General Turning and Profiling
Screw-on

Fig 1



Holder

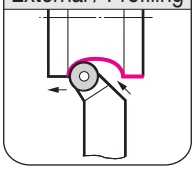
Parts

Dimensions (inch)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Shim Wrench	Clamp Screw
SRDCN164D	●	1.000	1.000	6.00	0.736	1.000	1.000	RC□□1204	**B92**	1	**3.0**	SH-3814	ST-1335	TRD15	ST-1750
SRDCN204D	●	1.250	1.250	6.00	0.861	1.250	1.000			1					

SRGC

External / Profiling



70 Type Holder - General Turning and Profiling
Screw-on

Fig 1

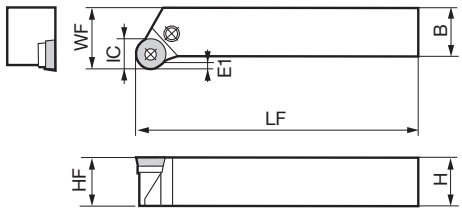


Figure shows right-hand (R) tool.

Holder

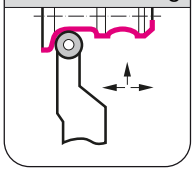
Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Shim Wrench	Clamp Screw
SRGC R/L 164D	●	●	1.000	1.000	6.00	1.250	1.000	-			1					
SRGC R/L 854D	●	●	1.250	1.000	6.00	1.250	1.250	-	RC□□1204	**B92**	1	**3.0**	SH-3814	ST-1335	TRD15	ST-1750
SRGC R/L 204D	●	●	1.250	1.250	6.00	1.500	1.250	-			1					

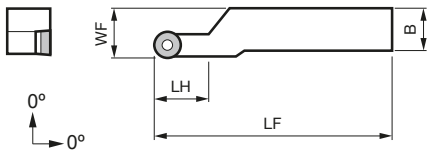
SRSC

External Turning



70 Type Holder - General Turning and Profiling
Screw-on

Fig 1



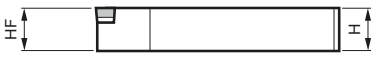


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Shim Wrench	Clamp Screw
SRSC R/L 124B	●	●	0.750	0.750	4.50	1.000	0.750	0.750			1					
SRSC R/L 164D	●	●	1.000	1.000	6.00	1.250	1.000	1.000	RC□□1204	**B92**	1	3.0	SH-3814	ST-1335	TRD15	ST-1750
SRSC R/L 204D	●	●	1.250	1.250	6.00	1.500	1.250	1.000			1					

●= USA Stocked Item

N·m Recommended Tightening Torque (N·m)

SSDC Type

SD Type Profiling Tool Holder - General Turning , Facing and Profiling
Screw-on

SSDC
External / Chamfering

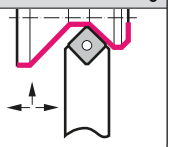
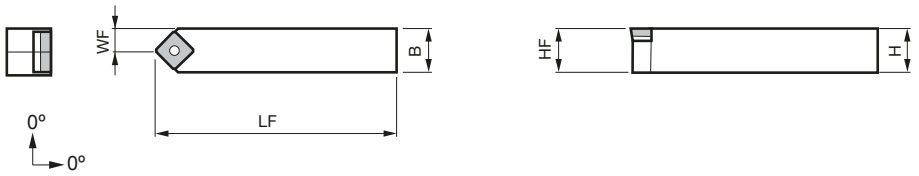


Fig 1



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Insert Screw	Clamp Wrench (For Torx Holes)	Shim Screw
Inch	**SSDCN083**	●	0.500	0.500	3.50	0.263	0.500	–	SC□□32.5□	**B95**	1	**3.0**	–	ST-1240	TRD15	–
	SSDCN103	●	0.625	0.625	4.00	0.325	0.625	–			1					
	SSDCN124B	●	0.750	0.750	4.50	0.388	0.750	–	SC□□43□	**B96**	1	**3.0**	SH-3514	ST-1540	TRD17	ST-1760

Applicable Inserts ◂·· SSDC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.

Legend: Name of Chipbreaker / CBN / PCD — Photo — Grade (EGU / AC8025P)

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-ferrous) -
General Cutting	EFB **T1500Z**	ESU **AC8025P**	EMU **AC8025P**	ELB **AC6030M**	ESU **AC6030M**	EMU **AC6040M**	EMU **AC4015K**	No Chipbreaker **AC4015K**	SUMIDIA **DA1000**
High Precision	FX **T1500A**	EFM **AC1030U**	EFM **AC1030U**	FX **AC1030U**	EFM **AC1030U**	EFM **AC1030U**	-	-	SUMIDIA **DA1000**
Recommended Cutting Conditions	☞ **A10** on			☞ **A14** on			☞ **A16** on		☞ **A22** on

●= USA Stocked Item

N·m Recommended Tightening Torque (N·m)

T 60° 91°

S Type Mini Holder - General Turning and Profiling
Screw-on

STDC
External / Chamfering

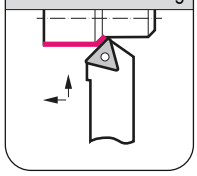


Fig 1

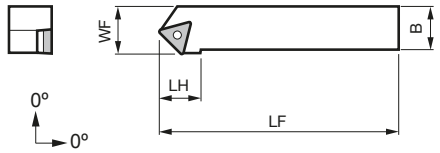




Figure shows right-hand (R) tool.

Holder Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Insert Screw	Shim Wrench	Shim Screw
Inch	**STDC R/L 062**	●	●	0.375	0.375	2.50	0.433	0.375	0.410	TC□□21.5□	**B107**	1	**0.9**	—	ST-1225	TRD07	—
	STDC R/L 082	●	●	0.500	0.500	3.50	0.512	0.500	0.570			1					
	STDC R/L 103	●	●	0.625	0.625	4.00	0.669	0.625	1.000	TC□□32.5□	**B109**	1	**3.0**	SH-3414	ST1335	TRD15	ST-1750
	STDC R/L 123B	●	●	0.750	0.750	4.50	0.866	0.750	1.000			1					
	STDC R/L 163D	●	●	1.000	1.000	6.00	1.063	1.000	1.000			1					

T 60° 91°

S Type Mini Holder - Facing
Screw-on

STFC
External Turning and Facing

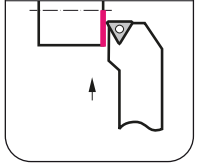


Fig 1

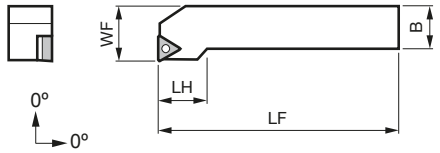




Figure shows right-hand (R) tool.

Holder Parts

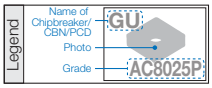
Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Insert Screw	Shim Wrench	Shim Screw
Inch	**STFC R/L 062**	●	●	0.375	0.375	2.50	0.500	0.375	0.400	TC□□21.5□	**B107**	1	**0.9**	—	ST-1225	TRD07	—
	STFC R/L 082	●	●	0.500	0.500	3.50	0.625	0.500	0.689			1					
	STFC R/L 103	●	●	0.625	0.625	4.00	0.750	0.625	1.000	TC□□32.5□	**B109**	1	**3.0**	SH-3414	ST-1335	TRD15	ST-1750
	STFC R/L 123B	●	●	0.750	0.750	4.50	1.000	0.750	1.000			1					
	STFC R/L 163D	●	●	1.000	1.000	6.00	1.250	1.000	1.000			1					

Applicable Inserts ◀·· STDC Type / STFC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-ferrous) -
General Cutting	ELU **T1500Z**	ESU **AC8025P**	ESU **AC8025P**	ELB **AC6030M**	ESU **AC6030M**	ESU **AC6040M**	EMU **AC4015K**	No Chipbreaker **AC4015K**	SUMIDIA **DA1000**
High Precision	FX **AC1030U**	MESI **AC1030U**	EFM **AC1030U**	FX **AC1030U**	MESI **AC1030U**	EFM **AC1030U**	-	-	SUMIDIA **DA1000**
Recommended Cutting Conditions	☞ **A10** on			☞ **A14** on			☞ **A16** on		☞ **A22** on

●= USA Stocked Item

N·m Recommended Tightening Torque (N·m)

STGC Type / STTC Type



S Type Mini Holder - General Turning and Profiling
Screw-on

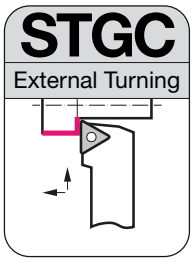
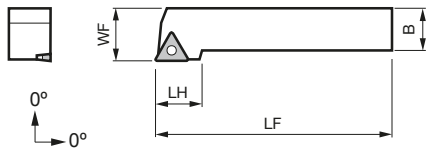


Fig 1



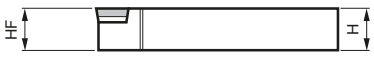


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Insert Screw	Shim Wrench (For Hex Socket)	Shim Screw
Inch	**STGC R/L 062**	●	●	0.375	0.375	2.50	0.500	0.375	0.500	TC□□21.5□	**B107**	1	**0.9**	—	ST-1225	TRD07	—
	STGC R/L 082	●	●	0.500	0.500	3.50	0.625	0.500	0.560			1					
	STGC R/L 103	●	●	0.625	0.625	4.00	0.750	0.625	1.000	TC□□32.5□	**B109**	1	**3.0**	SH-3414	ST1335	TRD15	ST-1750
	STGC R/L 123B	●	●	0.750	0.750	4.50	1.000	0.750	1.000			1					
	STGC R/L 163D	●	●	1.000	1.000	6.00	1.250	1.000	1.250			1					



S Type Mini Holder - General Turning and Profiling
Screw-on

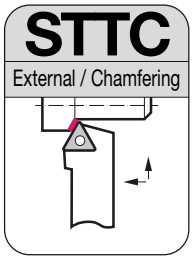


Fig 1

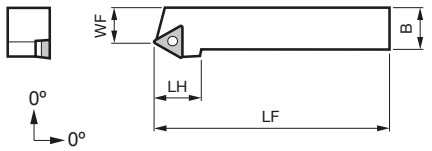




Figure shows right-hand (R) tool.

Holder

Parts

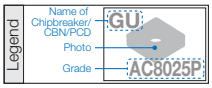
Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Insert Screw	Shim Wrench (For Hex Socket)	Shim Screw
Inch	**STTC R/L 123D**	●	●	0.750	0.750	4.50	0.718	0.750	1.000	TC□□32.5□	**B109**	1	**3.0**	SH-3414	ST-1335	TRD15	ST-1750
	STTC R/L 163D	●	●	1.000	1.000	6.00	0.860	1.000	1.000			1					

Applicable Inserts ◂·· STDC Type / STFC Type

1st Recommended Insert

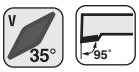
- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.



Process \ Cutting Range	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-ferrous)
General Cutting	ELU **T1500Z**	ESU **AC8025P**	ESU **AC8025P**	ELB **AC6030M**	ESU **AC6030M**	ESU **AC6040M**	EMU **AC4015K**	No Chipbreaker **AC4015K**	SUMIDIA **DA1000**
High Precision	FX **AC1030U**	MESI **AC1030U**	EFM **AC1030U**	FX **AC1030U**	MESI **AC1030U**	EFM **AC1030U**	-	-	SUMIDIA **DA1000**
Recommended Cutting Conditions	☞ **A10** on			☞ **A14** on			☞ **A16** on		☞ **A22** on

●= USA Stocked Item

N·m Recommended Tightening Torque (N·m)



SV Type Mini Holder - General Turning and Profiling
Screw-on

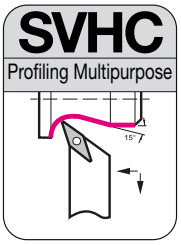
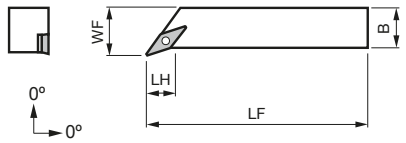


Fig 1



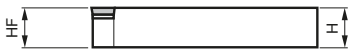


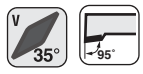
Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Insert Screw	Shim Wrench (For Torx Socket)	Shim Screw
Inch	**SVHC R/L 123B**	●	●	0.750	0.750	4.50	1.000	0.750	0.740	VC□□33□	**B126**	1	**3.0**	SH-3718	ST-1335	TRD15	ST-1750
	SVHC R/L 163D	●	●	1.000	1.000	6.00	1.250	1.000	0.756			1					



SV Type Mini Holder - General Turning and Profiling
Screw-on

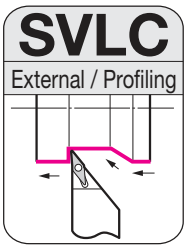


Fig 1

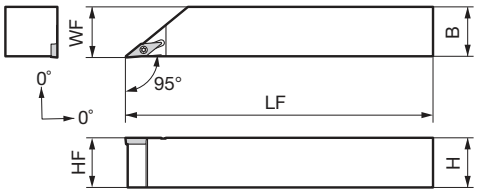


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Insert Screw	N·m	Wrench (For Torx Holes)
SVLC R/L 1010-H11	★	★	*10*	*10*	*100*	*10.5*	*10*	VC□□22□	**B124**	1			
SVLC R/L 1212-H11	★	★	*12*	*12*	*100*	*12.5*	*12*			1			
SVLC R/L 1616-H11	★	★	*16*	*16*	*100*	*16.5*	*16*			1	BFTX02508NV	**1.5**	TRX08
SVLC R/L 2020-K11*	★	★	*20*	*20*	*125*	*20.5*	*20*			1			
SVLC R/L 2525-M11	★	★	*25*	*25*	*150*	*25.5*	*25*			1			

* Old Cat. No. SVLC R/L 2020-H11



SV Type Profiling Tool Holder - For External Profiling
Screw-on

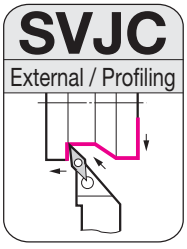


Fig 1

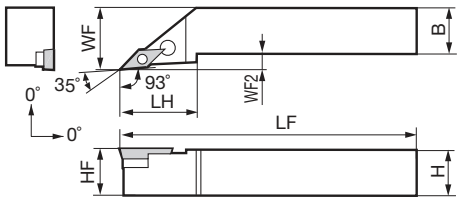


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Nut	Shim	Shim Screw	Insert Screw	N·m	Wrench (For Torx Holes)	Nut Wrench (For Hex Socket)
Inch	**SVJC R/L 123B**	●	●	0.750	0.750	4.50	1.000	0.750	1.614	-	VC□□33□	**B126**	1	-	-	SH-3718	ST-1750	ST-1335	**3.0**	TRD15	-
	SVJC R/L 163D	●	●	1.000	1.000	6.00	1.250	1.000	1.614	-			1								
	SVJC R/L 203D	●	●	1.250	1.250	6.00	1.250	1.250	1.614	-			1								
Metric	**SVJC R/L 2020K16**	★	★	*20*	*20*	*125*	*25*	*20*	*41*	*5*			1	VP20	CPV33N	SVP32	-	BFTX03508	**2.0**	TRX10	LH025
	SVJC R/L 2525M16	★	★	*25*	*25*	*150*	*32*	*25*	*41*	*7*			1	VP25							
	SVJC R/L 3225P16	★	★	*32*	*25*	*170*	*32*	*32*	*41*	*7*			1	VP32							

●= USA Stocked Item

★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

SSV Type Profiling Tool Holder - For External Profiling
Screw-on

SVVC
External Turning

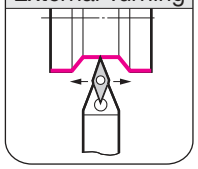
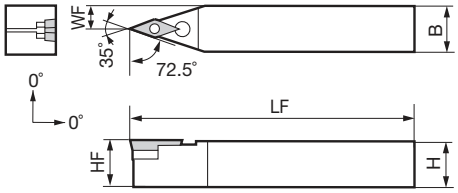


Fig 1



Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Nut	Shim	Insert Screw	N·m	Wrench (For Torx Holes)	Nut Wrench (For Hex Socket)	Shim Screw
Inch	**SVVCN123B**	●	0.750	0.750	4.50	0.398	0.750	VC□□33□	**B126**	1								
Inch	**SVVCN163D**	●	1.000	1.000	6.00	0.523	1.000			1	–	–	SH-3718	ST-1335	–	TRD15	–	ST-1750
Inch	**SVVCN203D**	●	1.250	1.250	6.00	0.648	1.250			1								
Metric	**SVVCN2020K16**	★	*20*	*20*	*125*	*10.0*	*20*			1	VP20							
Metric	**SVVCN2525M16**	★	*25*	*25*	*150*	*12.5*	*25*			1	VP25	CPV33N	SVP32	BFTX03508	**2.0**	TRX10	LH025	-
Metric	**SVVCN3225P16**	★	*32*	*25*	*170*	*12.5*	*32*			1	VP32							

Applicable Inserts ◂·· SVLC Type / SVJC Type / SVVC Type / SVPC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker / CBN / PCD — EGU; Photo; Grade — AC8025P

Process \ Cutting Range	P (Steel)		M (Stainless Steel)		S (Exotic Alloy)		N (Non-ferrous)		H (Hardened Steel)		Hard Brittle Material
	Finishing	Medium Cutting	Finishing	Medium Cutting	Finishing to Medium Cutting	Medium to Roughing	High-precision/Finishing	Finishing to Medium Cutting	Coated	Uncoated	-
General Cutting	**EFB** T1500Z	**ESU** AC8025P	**ELB** AC6030M	**ESU** AC8025P	**ESU** AC5015S	**ESU** AC5025S	**SUMIDIA** DA1000	**NAG** H1	**SUMIBORON** BNC2020	**SUMIBORON** BN2000	**SUMIDIA** DA90
High Precision	**EFC** T1500A	**MESI** AC1030U	**EFC** AC1030U	**MESI** AC1030U	**EFC** AC5015S	**MESI** AC5015S	**SUMIDIA** DA1000	-	**SUMIBORON** BNC2010	**SUMIBORON** BN1000	**SUMIDIA Binderless** NPD10
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A18 on		☞ A22 on		☞ A20 on		☞ M2 on

●= USA Stocked Item ★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)



SV Type Profiling Tool Holder - General Turning , Facing, Profiling and Undercutting
Screw-on

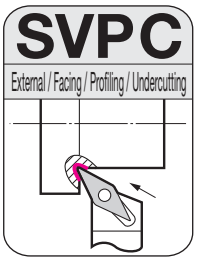


Fig 1

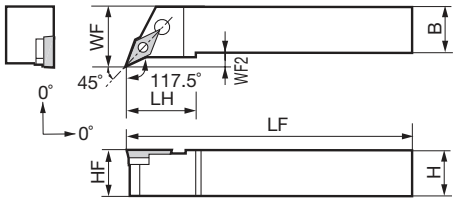


Figure shows right-hand (R) tool.

Holder

Parts

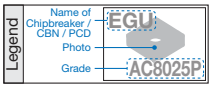
Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Nut	Shim	Insert Screw	N·m	Wrench (For Torx Holes)	Nut Wrench (For Hex Socket)
SVPC R/L 1010-H11	★	★	10	10	100	14.5	10	-	4.5			1							
SVPC R/L 1212-H11	★	★	12	12	100	16.5	12	-	4.5	VC□□22□	**B124**	1	–	–	–	BFTX02508NV	**1.5**	TRX08	–
SVPC R/L 1616-H11	★	★	16	16	100	20.5	16	-	4.5			1							
SVPC R/L 2020K16	★	★	20	20	125	25	20	35	5.0			1	VP20						
SVPC R/L 2525M16	★	★	25	25	150	32	25	35	7.0	VC□□33□	**B126**	1	VP25	CPV33N	SVP32	BFTX03508	**2.0**	TRX10	LH025
SVPC R/L 3225P16			32	25	170	32	32	35	7.0			1	VP32						

Applicable Inserts ◀·· SVLC Type / SVJC Type / SVVC Type / SVPC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material -
General Cutting	**EFB** T1500Z	**ESU** AC8025P	**ELB** AC6030M	**ESU** AC8025P	**ESU** AC5015S	**ESU** AC5025S	**SUMIDIA** DA1000	**NAG** H1	**SUMIBORON** BNC2020	**SUMIBORON** BN2000	**SUMIDIA** DA90
High Precision	**EFC** T1500A	**MESI** AC1030U	**EFC** AC1030U	**MESI** AC1030U	**EFC** AC5015S	**MESI** AC5015S	**SUMIDIA** DA1000	-	**SUMIBORON** BNC2010	**SUMIBORON** BN1000	**SUMIDIA Binderless** NPD10
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A18 on		☞ A22 on		☞ A20 on		☞ M2 on

★ = World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

CCKN-CD Type / CCKN-CX Type

Toolholders for Ceramic Inserts
Clamp Style

Ceramic Style Inserts are availble in B section of 21-22 General Catalog

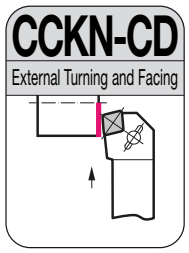
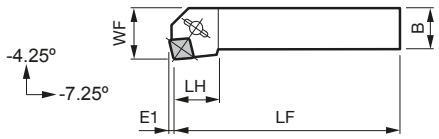


Fig 1



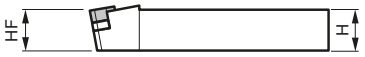


Figure shows right-hand (R) tool.



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Cutting Edge Distance E1	Applicable Insert Cat. No.	Fig	Alternate Shim for CN□□43□ inserts	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CCKN R/L 164CD**	●	●	1.000	1.000	6.00	1.250	1.000	1.338	0.122	CN□□45	1	ICSN454*	ICSN434	BXD06135	LH040 (For Hex Socket)	CLCD45	CBCR45
	CCKN R/L 204CD	●	●	1.250	1.250	6.00	1.500	1.250	1.338	0.122		1						

* Alternate Shim for CN□□43 inserts only

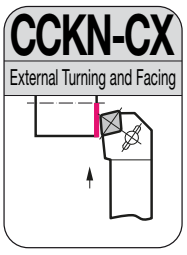
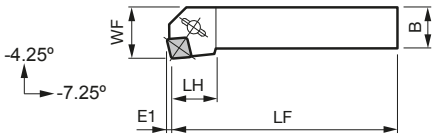


Fig 1



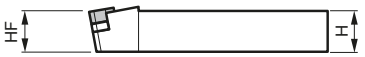


Figure shows right-hand (R) tool.



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Cutting Edge Distance E1	Applicable Insert Cat. No.	Fig	Alternate Shim for CN□□43 inserts	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CCKN R/L 164CX**	●	●	1.000	1.000	6.00	1.250	1.000	1.338	0.122	CN□X45	1	ICSN454*	ICSN434	BXD06135	LH040 (For Hex Socket)	CLCX45	CBCR45
	CCKN R/L 204CX	●	●	1.250	1.250	6.00	1.500	1.250	1.338	0.122		1						

* Alternate Shim for CN□□43 inserts only

●= USA Stocked Item

CCLN-CD Type / CCLN-CX Type

Toolholders for Ceramic Inserts
Clamp Style

Ceramic Style Inserts are availble in B section of 21-22 General Catalog

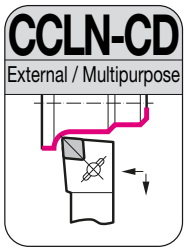
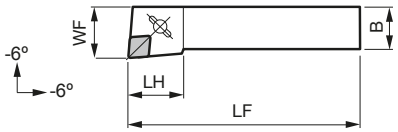


Fig 1



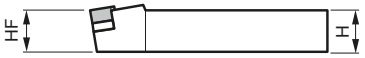


Figure shows right-hand (R) tool.



Holder Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Alternate Shim for CN□□43□ inserts	Shim	Shim Screw	Clamp Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CCLN R/L 163CD**	●	●	1.000	1.000	6.00	1.250	1.000	1.300	CN□□32	1	—	ICSN-332	ST-1764	ST-1086	LH040 (For Hex Socket)	CL-2713	CB-9416
	CCLN R/L 164CD	●	●	1.000	1.000	6.00	1.250	1.000	1.338	CN□□45	1	ICSN454	ICSN434	ST-1160	—		CLCD45	CBCR45
	CCLN R/L 204CD	●	●	1.250	1.250	6.00	1.500	1.250	1.338		1							

* Alternate Shim for CN□□43 inserts only

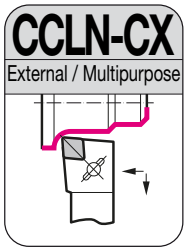
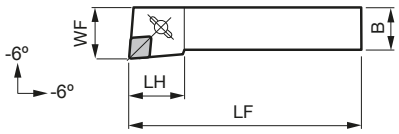


Fig 1



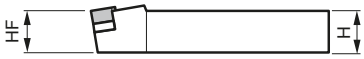


Figure shows right-hand (R) tool.



Holder Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Alternate Shim for CN□□43 Inserts	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CCLN R/L 164CX**	●	●	1.000	1.000	6.00	1.250	1.000	1.338	CN□X45	1	ICSN454	ICSN434	ST-1160	LH040 (For Hex Socket)	CL-2415	—
	CCLN R/L 204CX	●	●	1.250	1.250	6.00	1.500	1.250	1.338		1						

* Alternate Shim for CN□□43 inserts only

CDJN-CD Type / CDJN-CX Type / CRDC-CD Type

Toolholders for Ceramic Inserts
Clamp Style

Ceramic Style Inserts are availble in B section of 21-22 General Catalog

CDJN-CD

External / Profiling

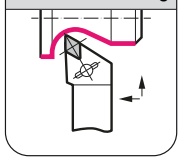
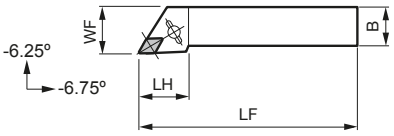


Fig 1



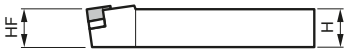


Figure shows right-hand (R) tool.

CD



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
														 (For Hex Socket)		
Inch	**CDJN R/L 164CD**	●	●	1.000	1.000	6.00	1.250	1.000	1.496	DNG43□	1	IDSN452	BXD06135	LH040	CLCD45	—
	CDJN R/L 204CD	●	●	1.250	1.250	6.00	1.500	1.250	1.496		1					

Shim IDSN452 is sold separately

CDJN-CX

External / Profiling

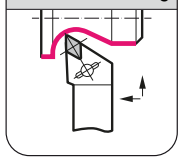
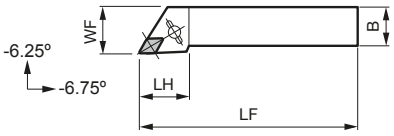


Fig 1



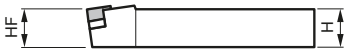


Figure shows right-hand (R) tool.

CX



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
														 (For Hex Socket)		
Inch	**CDJN R/L 164CX**	●	●	1.000	1.000	6.00	1.250	1.000	1.496	DNMX45□	1	IDSN434	BXD06135	LH040	CLCXD45	—
	CDJN R/L 204CX	●	●	1.250	1.250	6.00	1.500	1.250	1.496		1					

CRDC-CD

External / Profiling

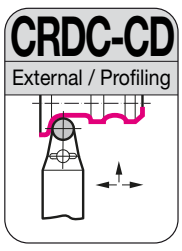
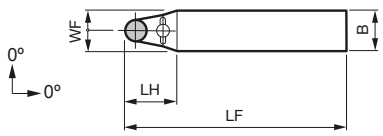


Fig 1



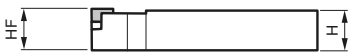


Figure shows right-hand (R) tool.



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock N	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Seat	Seat Screw	Clamp Wrench	Clamp	Clamp Screw	Wrench
													 (For Hex Socket)			
Inch	**CRDCN163CD**	●	1.000	1.000	6.00	0.500	1.000	1.420	RCGX35	1	IRSC35	BFTX0315	LH030	CLCDRC45	BFTX0520	TRX15
	CRDCN203CD	●	1.250	1.250	6.00	0.625	1.250	1.420		1						
	CRDCN164CD	●	1.000	1.000	6.00	0.500	1.000	1.300	RCGX45	1	IRSC45	BFTX0520	LH030	CLCDRC45	BFTX0309	TRX20
	CRDCN204CD	●	1.250	1.250	6.00	0.625	1.250	1.300		1						
	CRDCN205CD	●	1.250	1.250	6.00	0.625	1.250	1.300	RCGX55	1	SH-2817-55	ST-1230*	LH040	CL-2414	–	–
	CRDCN206CD	●	1.250	1.250	6.00	0.625	1.250	1.500	RCGX65	1	SH-3819-65					

CRDCN205CD & CRDCN206CD: Required Shim, sold separately

* 2 pcs of ST-1230 are required for each shim

●= USA Stocked Item

CRDN-CD Type / CRGN-CD Type

Toolholders for Ceramic Inserts
Clamp Style

Ceramic Style Inserts are availble in B section of 21-22 General Catalog

CRDN-CD

Profiling Multipurpose

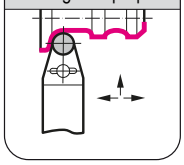
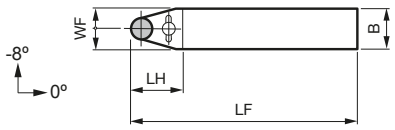
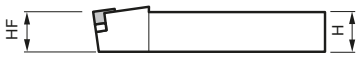


Fig 1





CD



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock N	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CRDNN164CD**	●	1.000	1.000	6.00	0.500	1.000	1.417	RNG45	1	IRSN43	BXD06135	LH040	CLCD45	CBCR45
	CRDNN204CD	●	1.250	1.250	6.00	0.625	1.250	1.417		1					
	CRDNN205CD	●	1.250	1.250	6.00	0.625	1.250	1.417	RNG55	1	IRSN53	BXD08135	LH040	CLCDRN55	CBCR45
	CRDNN245CD	●	1.500	1.500	8.00	0.750	1.500	1.417		1					
	CRDNN206CD	●	1.250	1.250	6.00	0.625	1.250	1.496	RNG65	1	SH-3919	ST-1182	LH040	CL-2417	CBCR45
	CRDNN246CD	●	1.500	1.500	8.00	0.750	1.500	1.496		1	SH-3925	ST-1192			

CRGN-CD

Profiling Multipurpose

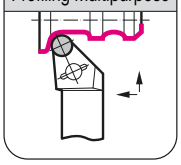
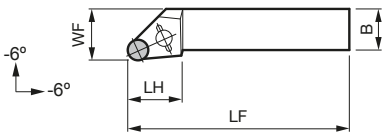


Fig 1



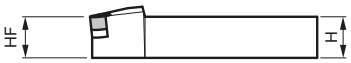


Figure shows right-hand (R) tool.

CD



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CRGN R/L 124CD**			0.750	0.750	4.50	1.000	0.750	1.250		1					
	CRGN R/L 164CD	●	●	1.000	1.000	6.00	1.250	1.000	1.338	RNG45	1	IRSN43	BXD06135	LH040	CLCDR45	CBCR45
	CRGN R/L 204CD	●	●	1.250	1.250	6.00	1.500	1.250	1.338		1					
	CRGN R/L 165CD	●	●	1.000	1.000	6.00	1.250	1.000	1.338	RNG55	1	IRSN53	BXD08135	LH040	CLCDRN55	CBCR45
	CRGN R/L 205CD	●	●	1.250	1.250	6.00	1.500	1.250	1.338		1					
	CRGN R/L 206CD	●	●	1.250	1.250	6.00	1.500	1.250	1.653	RNG65	1	SH-3919	ST-1182	LH040	CL-2417	CBCR45

●= USA Stocked Item

CSDN-CD Type / CSDN-CX Type

Toolholders for Ceramic Inserts
Clamp Style

Ceramic Style Inserts are availble in B section of 21-22 General Catalog

CSDN-CD

External and Chamfering

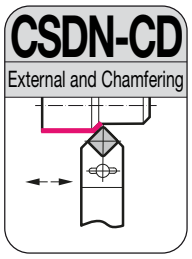
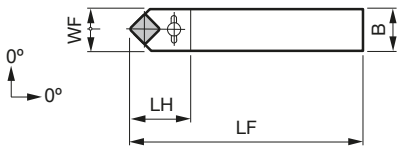


Fig 1



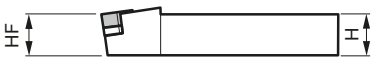


Figure shows right-hand (R) tool.



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock	Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
		N	H	B	LF	WF	HF	LH	Cat. No.						
													 (For Hex Socket)		
Inch	**CSDNN164CD**	●	1.000	1.000	6.00	0.500	1.000	1.653	SNG43	1	ISSN454	ST-1160	LH040	CLCX44	CB-9414
	CSDNN204CD	●	1.250	1.250	6.00	0.625	1.250	1.653		1					

Required shim for SNG43, sold separately

CSDN-CX

External and Chamfering

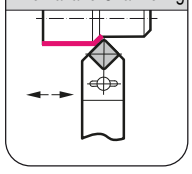
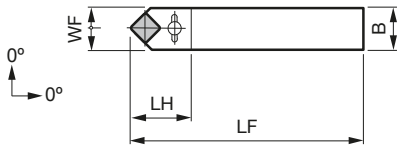


Fig 1



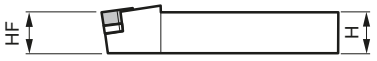


Figure shows right-hand (R) tool.



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock	Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
		N	H	B	LF	WF	HF	LH	Cat. No.						
													 (For Hex Socket)		
Inch	**CSDNN164CX**	●	1.000	1.000	6.00	0.500	1.000	1.653	SN□X45	1	ISSN434	ST-1160	LH040	CL-2415	—
	CSDNN204CX	●	1.250	1.250	6.00	0.625	1.250	1.653		1					
	CSDNN165CX	●	1.000	1.000	6.00	0.500	1.000	1.653	SN□X55	1	ISSN534	ST-1180			
	CSDNN205CX	●	1.250	1.250	6.00	0.625	1.250	1.653		1					

●= USA Stocked Item

CSKN-CD Type / CSKN-CX Type

Toolholders for Ceramic Inserts
Clamp Style

Ceramic Style Inserts are availble in B section of 21-22 General Catalog

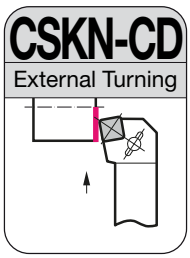
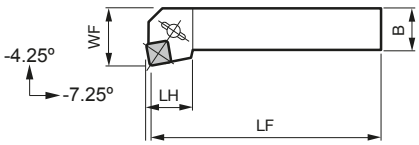


Fig 1



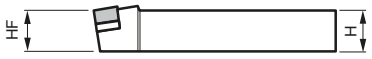


Figure shows right-hand (R) tool.



Holder / Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CSKN R/L 164CD**	●	●	1.000	1.000	6.00	1.250	1.000	1.338	SNG43	1	ISSN454	ST-1160	LH040 (For Hex Socket)	CLCX44	CB-9414
	CSKN R/L 204CD	●	●	1.250	1.250	6.00	1.250	1.250	1.338		1					

Required shim for SNG43, sold separately

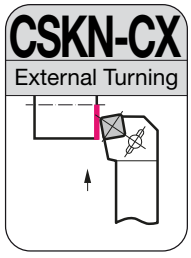
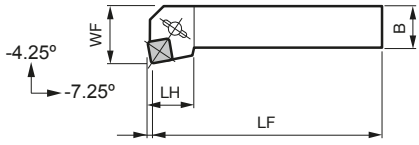


Fig 1



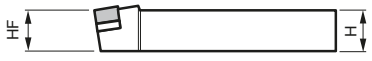


Figure shows right-hand (R) tool.



Holder / Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CSKN R/L 164CX**	●	●	1.000	1.000	6.00	1.250	1.000	1.338	SN□X45	1	ISSN434	ST-1160	LH040 (For Hex Socket)	CL-2415	CB-9414
	CSKN R/L 204CX	●	●	1.250	1.250	6.00	1.250	1.250	1.338		1					
	CSKN R/L 165CX	●	●	1.000	1.000	6.00	1.250	1.000	1.338	SN□X55	1	ISSN534	ST-1180	LH040	CL-2415	CB-9414
	CSKN R/L 205CX	●	●	1.250	1.250	6.00	1.500	1.250	1.338		1					

●= USA Stocked Item

CSRN-CD Type / CSRN-CX Type

Toolholders for Ceramic Inserts
Clamp Style

Ceramic Style Inserts are availble in B section of 21-22 General Catalog

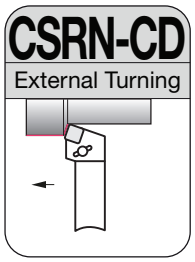
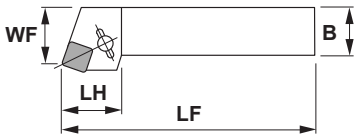
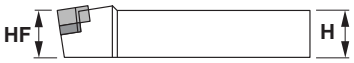


Fig 1







Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Cutting Edge Distance E1	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CSRN R/L 163CD**	●	●	1.000	1.000	6.00	1.162	1.000	1.300	0.088	SNG32□	1	ISSN-333	ST-1764	ST-1086	(For Hex Socket)	CL-2713	CB-9416
	CSRN R/L 164CD	●	●	1.000	1.000	6.00	1.130	1.000	1.338	0.120	SNG43□	1	ISSN454	ST-1160	—	LH040	CLCX44	CB-9414
	CSRN R/L 204CD	●	●	1.250	1.250	6.00	1.379	1.250	1.338	0.120		1						

Required shim for SNG43, sold separately

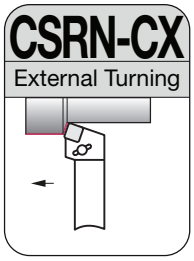
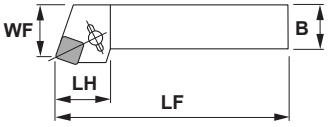


Fig 1







Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Cutting Edge Distance E1	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CSRN R/L 164CX**	●	●	1.000	1.000	6.00	1.130	1.000	1.338	0.120	SN□X45	1	ISSN434	ST-1160	LH040	CL-2415	CB-9414
	CSRN R/L 204CX	●	●	1.250	1.250	6.00	1.379	1.250	1.338	0.120		1					
	CSRN R/L 165CX	●	●	1.000	1.000	6.00	1.130	1.000	1.338	0.148	SN□X55	1	ISSN534	ST-1180			
	CSRN R/L 205CX	●	●	1.250	1.250	6.00	1.379	1.250	1.338	0.148		1					

●= USA Stocked Item

Toolholders for Ceramic Inserts
Clamp Style

Ceramic Style Inserts are availble in B section of 21-22 General Catalog

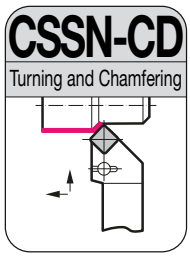
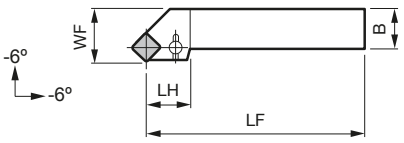


Fig 1



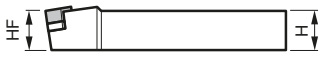


Figure shows right-hand (R) tool.



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CSSN R/L 164CD**	●	●	1.000	1.000	6.00	1.250	1.000	1.653	SNG43□	1	ISSN454	ST-1160	LH040 (For Hex Socket)	CLCX44	CB-9414
	CSSN R/L 204CD	●	●	1.250	1.250	6.00	1.500	1.250	1.653		1					

Required shim for SNG43, sold separately

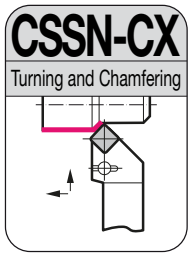
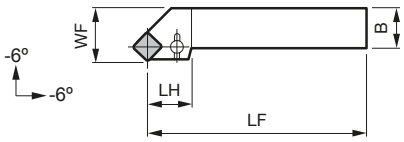


Fig 1



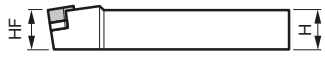


Figure shows right-hand (R) tool.



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Shim	Shim Screw	Clamp Wrench	Clamp	Chipbreaker
Inch	**CSSN R/L 164CX**	●	●	1.000	1.000	6.00	1.250	1.000	1.653	SN□X45	1	ISSN434	ST-1160	LH040 (For Hex Socket)	CL-2415	CB-9414
	CSSN R/L 204CX	●	●	1.250	1.250	6.00	1.500	1.250	1.653		1					
	CSSN R/L 165CX	●	●	1.000	1.000	6.00	1.250	1.000	1.653	SN□X55	1	ISSN534	ST-1180			
	CSSN R/L 205CX	●	●	1.250	1.250	6.00	1.500	1.250	1.653		1					

●= USA Stocked Item

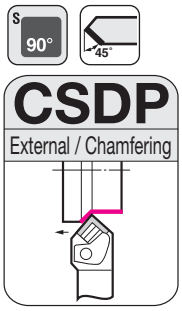
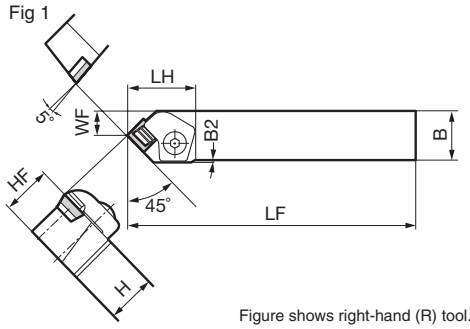


Fig 1



40 Type Holder - General Turning and Chamfering
Clamp-on

Holder

Figure shows right-hand (R) tool.

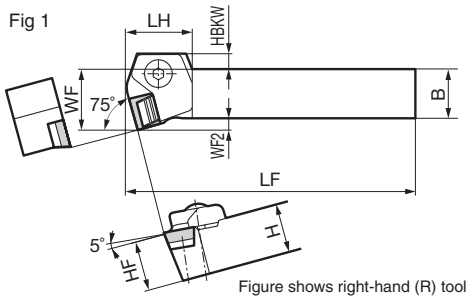
Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Step B2	Applicable Insert Cat. No.	Fig	Clamp	Clamp Screw	Chipbreaker Piece	Bolt	Shim	Shim Pin	Spring	Wrench (For Hex Socket)
CSDP R/L1919-L12	★		*19*	*19*	*140*	*10.5*	*19*	*35*	*6*		1				BH0824R/L				
CSDP R/L2525-N12	★		*25*	*25*	*160*	*12.5*	*25*	*35*	*2*	SPG42□	1	DCR/L1	-	CBD4R/L	BH0830R/L	SSPD422	SPP3	DSP5	LH040
CSDP R/L3225-N12			*32*	*25*	*160*	*12.5*	*32*	*35*	*2*		1				BH0830R/L				



Fig 1



40 Type Holder - Facing
Clamp-on

Holder

Figure shows right-hand (R) tool.

Parts

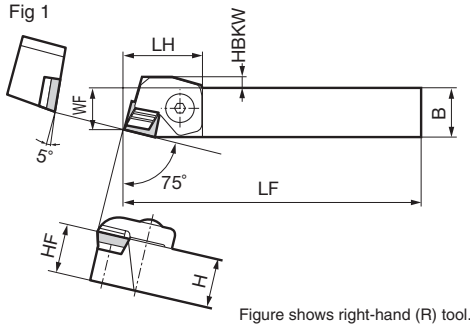
Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Step HBKW	Applicable Insert Cat. No.	Fig	Clamp	Chipbreaker Piece	Bolt	Shim	Shim Pin	Spring	Wrench (For Hex Socket)
Metric	**CSKP R/L1919-L12**			*19*	*19*	*140*	*25*	*19*	*22*	*6*	*7*		1			BH0824L/R				
	CSKP R/L2525-N12		★	*25*	*25*	*160*	*32*	*25*	*22*	*7*	-	SP□□42□	1	DCL/R1	CBD4L/R	BH0830L/R	SSPD422	SPP3	DSP5	LH040
	CSKP R/L3225-N12			*32*	*25*	*160*	*32*	*32*	*22*	*7*	-		1			BH0830L/R				
	CSKP R/L2525-N15	★		*25*	*25*	*160*	*31*	*25*	*28*	*6*	*7*	SP□□53□	1	DCL/R3	CBD5L/R	BH1030L/R	SSPD522	SPP3	DSP5	LH050
	CSKP R/L3232-Q15			*32*	*32*	*180*	*38*	*32*	*28*	*6*	-		1			BH1036L/R				

When using handed breaker inserts for facing, the holder and insert are opposite handed.



Fig 1



40 Type Holder - General / External Turning
Clamp-on

Holder

Figure shows right-hand (R) tool.

Parts

Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Step HBKW	Applicable Insert Cat. No.	Fig	Clamp	Chipbreaker Piece	Bolt	Shim	Shim Pin	Spring	Wrench (For Hex Socket)
Metric	**CSRP R/L1919-L12**	★		*19*	*19*	*140*	*15.5*	*19*	*34.5*	5.0		1			BH0824R/L				
	CSRP R/L2525-N12	★		*25*	*25*	*160*	*21.5*	*25*	*34.5*	-	SP□□42□	1	DCR/L1	CBD4R/L	BH0830R/L	SSPD422	SPP3	DSP5	LH040
	CSRP R/L3225-N12			*32*	*25*	*160*	*21.5*	*32*	*34.5*	-		1			BH0830R/L				
	CSRP R/L2525-N15	★		*25*	*25*	*160*	*21.5*	*25*	*40.0*	4.5	SP□□53□	1	DCR/L3	CBD5R/L	BH1030R/L	SSPD522	SPP3	DSP5	LH050
	CSRP R/L3232-N15			*32*	*32*	*180*	*26.0*	*32*	*40.0*	-		1			BH1036R/L				

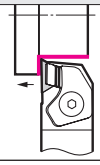
Ceramic Style Inserts are availble in B section of 21-22 General Catalog ★ Worldwide Warehouse item

CTAP Type / CTFP Type / CTGP Type



40 Type Holder - General Turning
Clamp-on

CTAP
External Turning



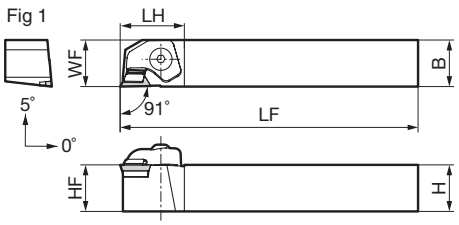


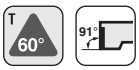
Figure shows right-hand (R) tool.

Holder

Parts

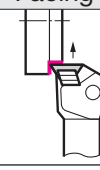
Dimensions (inch/ *mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Fig	Clamp	Chipbreaker Piece	Bolt	Shim	Shim Pin	Spring	Wrench (For Hex Socket)
CTAP R/L2525-N16	★		*25*	*25*	*160*	*25*	*25*	*34.5*	TP□□32□	1	DCR/L2	CBD4R/L	BH0830R/L	STPD322	SPP3	DSP5	LH040
CTAP R/L3225-N16			*32*	*25*	*160*	*25*	*32*	*34.5*		1							
CTAP R/L3232-Q22			*32*	*32*	*180*	*32*	*32*	*41*	TP□□43□	1	DCR/L3	CBD5R/L	BH1036R/L	STPD422	SPP3	DSP5	LH050



40 Type Holder - Facing
Clamp-on

CTFP
Facing



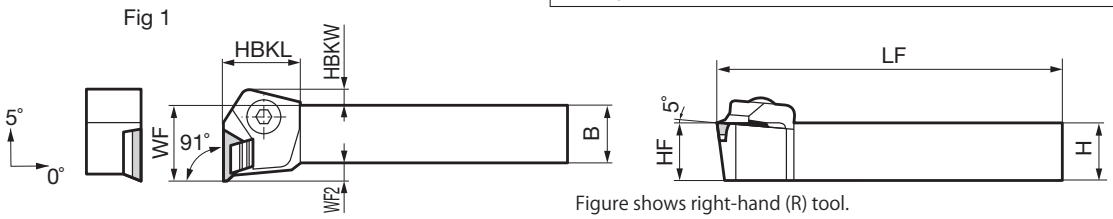


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

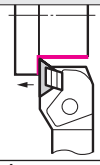
	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head HBKL	Offset WF2	Step HBKW	Applicable Insert Cat. No.	Fig	Clamp	Chipbreaker Piece	Clamp Screw	Shim	Shim Pin	Spring	Wrench (For Hex Socket)
Metric	**CTFP R/L1919-L16**	★		*19*	*19*	*140*	*25*	*19*	*26*	*6*	*8*	TP□□32□	1	DCL/R2	CBD4L/R	BH0824L/R	STPD322	SPP3	DSP5	LH040
	CTFP R/L2525-N16	★		*25*	*25*	*160*	*32*	*25*	*26*	*7*	–		1			BH0830L/R				
	CTFP R/L3225-N16			*32*	*25*	*160*	*32*	*32*	*26*	*7*	–		1	DCL/R2						
	CTFP R/L2525-N22	★		*25*	*25*	*160*	*32*	*25*	*33*	*7*	*7*	TP□□43□	1	DCL/R3	CBD5L/R	BH1030L/R	STPD422	SPP3	DSP5	LH040
	CTFP R/L3232-Q22			*32*	*32*	*180*	*39*	*32*	*33*	*7*	–		1	DCL/R3	CBD5L/R	BH1036L/R				

When using handed breaker inserts for facing, the holder and insert are opposite handed.



40 Type Holder - General Turning
Clamp-on

CTGP
External Turning



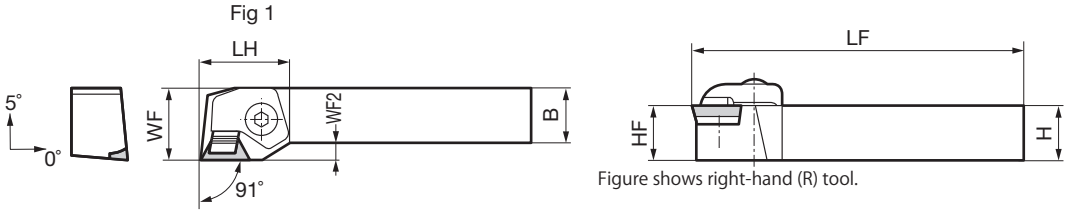


Figure shows right-hand (R) tool.

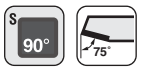
Holder

Parts

Dimensions (inch/ *mm*)

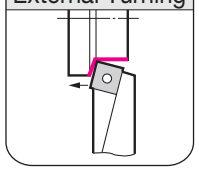
	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert Cat. No.	Fig	Clamp	Chipbreaker Piece	Bolt	Shim	Shim Pin	Spring	Wrench (For Hex Socket)
Metric	**CTGP R/L1919-L16**	★		*19*	*19*	*140*	*25*	*19*	*34.5*	*6*	TP□□32□	1	DCR/L2	CBD4R/L	BH0824R/L	STPD322	SPP3	DSP5	LH040
	CTGP R/L2525-N22	★		*25*	*25*	*160*	*32*	*25*	*41*	*7*	TP□□43□	1	DCR/L3	CBD5R/L	BH1030R/L	STPD422	SPP3	DSP5	LH050

Ceramic Style Inserts are availble in B section of 21-22 General Catalog ★ Worldwide Warehouse item



30 Type Holder - General Turning
Pin Lock

ESBN
External Turning



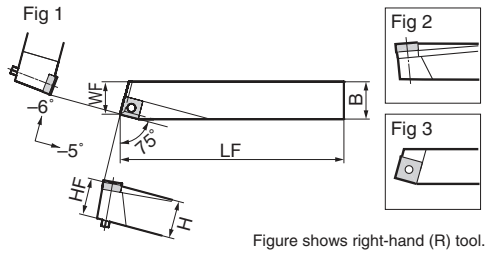


Figure shows right-hand (R) tool.

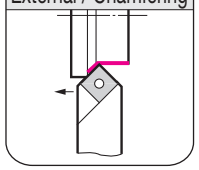
Holder — Parts Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
Metric	**ESBN R/L1212F09**	★	★	12	12	80	9.5	11.5	SN□□32□	**B40**	1	P321US	-	KY40
	ESBN R/L1616H09			16	16	100	13.0	15.5			1	P322US	-	
	ESBN R/L1616H12			16	16	100	13.0	15.5	SN□□43□	**B41**	3	P432U	-	KY40
	ESBN R/L2020K12			20	20	125	17.0	19.5			1	P433U	-	
	ESBN R/L2020K12W	★	★	20	20	125	17.0	19.5			2	P433W	ESS42	
	ESBN R/L2520M12			25	20	150	17.0	24.5			3	P434U	-	
	ESBN R/L2520M12W			25	20	150	17.0	24.5			2	P434W	ESS42	
	ESBN R/L2525M12			25	25	150	22.0	24.5			1	P434U	-	
	ESBN R/L2525M12W	★		25	25	150	22.0	24.5			2	P434W	ESS42	



30 Type Holder - General Turning and Chamfering
Pin Lock

ESDN
External / Chamfering



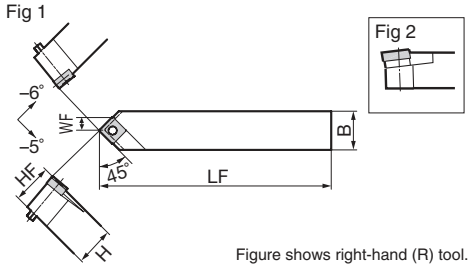


Figure shows right-hand (R) tool.

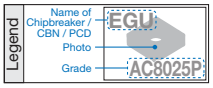
Holder — Parts Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
Metric	**ESDN R/L1212F09**	★	★	12	12	80	6.0	11.5	SN□□32□	**B40**	1	P321US	-	KY40
	ESDN R/L1616H09	★	★	16	16	100	8.0	15.5			1	P322US	-	
	ESDN R/L2020K12			20	20	125	10.0	19.5	SN□□43□	**B41**	1	P433U	-	KY40
	ESDN R/L2020K12W	★	★	20	20	125	10.0	19.5			2	P433W	ESS42	
	ESDN R/L2520M12			25	20	150	10.0	24.5			1	P434U	-	
	ESDN R/L2520M12W			25	20	150	10.0	24.5			2	P434W	ESS42	
	ESDN R/L2525M12			25	25	150	12.5	24.5			1	P434U	-	
	ESDN R/L2525M12W	★	★	25	25	150	12.5	24.5			2	P434W	ESS42	

Applicable Inserts ◀·· DSBN Type/DSDN Type/DSSN Type/PSBN Type/PSDN Type/PSSN Type/PSKN Type/ESBN Type/ESDN Type/ESSN Type/ESKN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Process \ Cutting Range	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No ChipBreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN350	-
Recommended Cutting Conditions	☛ A10 on			☛ A14 on			☛ A16 on			☛ A18 on			☛ A20 on		☛ M2 on

BNC500 is for ductile cast iron.

★ Worldwide Warehouse item

ESSN Type / ESKN Type



30 Type Holder - General Turning, Facing and Chamfering
Pin Lock

ESSN

External / Facing / Chamfering

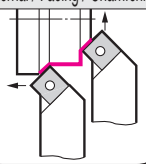


Fig 1

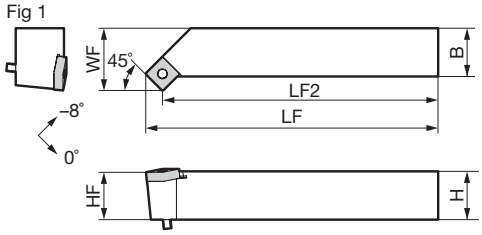


Fig 2

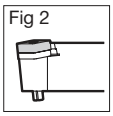


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Overall Length 2 LF2	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
Metric	**ESSN R/L1212F09**	★	★	*12*	*12*	*80*	*73.8*	*16*	*11.5*	SN□□32□	**B40**	1	P321US	-	KY40
	ESSN R/L1616H09	★	★	*16*	*16*	*100*	*93.8*	*20*	*15.5*			1	P322US	-	
	ESSN R/L1616H12			*16*	*16*	*100*	*91.7*	*20*	*15.5*	SN□□43□	**B41**	1	P432U	-	KY40
	ESSN R/L2020K12	★	★	*20*	*20*	*125*	*116.7*	*25*	*19.5*			1	P433U	-	
	ESSN R/L2020K12W	★	★	*20*	*20*	*125*	*116.7*	*25*	*19.5*			2	P433W	ESS42	
	ESSN R/L2520M12			*25*	*20*	*150*	*141.7*	*25*	*24.5*			1	P434U	-	
	ESSN R/L2520M12W			*25*	*20*	*150*	*141.7*	*25*	*24.5*			2	P434W	ESS42	
	ESSN R/L2525M12			*25*	*25*	*150*	*141.7*	*32*	*24.5*			1	P434U	-	
	ESSN R/L2525M12W	★	★	*25*	*25*	*150*	*141.7*	*32*	*24.5*			2	P434W	ESS42	

When using handed breaker inserts for facing, the holder and insert are opposite handed.



30 Type Holder - Facing
Pin Lock

ESKN

Facing

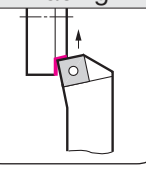


Fig 1

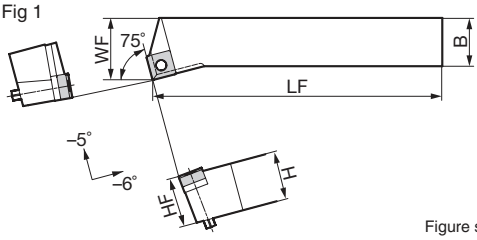


Fig 2

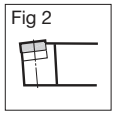


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
ESKN R/L1212F09	★	★	*12*	*12*	*80*	*16*	*11.5*	SN□□32□	**B40**	1	P321US	-	KY40
ESKN R/L1616H09	★	★	*16*	*16*	*100*	*20*	*15.5*			1	P322US	-	
ESKN R/L1616H12			*16*	*16*	*100*	*20*	*15.5*	SN□□43□	**B41**	1	P432U	-	KY40
ESKN R/L2020K12			*20*	*20*	*125*	*25*	*19.5*			1	P433U	-	
ESKN R/L2020K12W	★	★	*20*	*20*	*125*	*25*	*19.5*			2	P433W	ESS42	
ESKN R/L2520M12			*25*	*20*	*150*	*25*	*24.5*			1	P434U	-	
ESKN R/L2520M12W			*25*	*20*	*150*	*25*	*24.5*			2	P434W	ESS42	
ESKN R/L2525M12			*25*	*25*	*150*	*32*	*24.5*			1	P434U	-	
ESKN R/L2525M12W	★	★	*25*	*25*	*150*	*32*	*24.5*			2	P434W	ESS42	

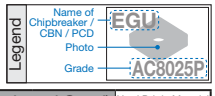
When using handed breaker inserts for facing, the holder and insert are opposite handed.

Applicable Inserts

◀·· DSBN Type/DSDN Type/DSSN Type/PSBN Type/PSDN Type/PSSN Type/PSKN Type/ESBN Type/ESDN Type/ESSN Type/ESKN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

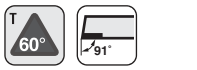


Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	ENZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN350	-
Recommended Cutting Conditions	☛ A10 on			☛ A14 on			☛ A16 on			☛ A18 on			☛ A20 on		☛ M2 on

BNC500 is for ductile cast iron.

★ Worldwide Warehouse item

ETAN Type / ETGN Type



30 Type Holder - General Turning
Pin Lock

ETAN
External Turning

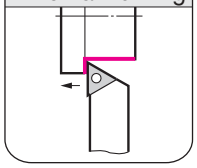


Fig 1

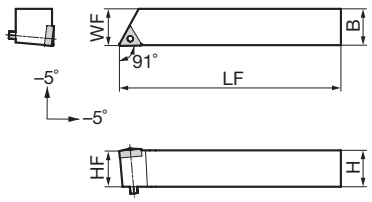


Fig 2



Fig 3



Fig 4

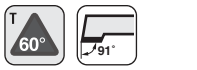


Figure shows right-hand (R) tool.

Holder — Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
ETAN R/L1212F11	★	★	*12*	*12*	*80*	*12*	*11.5*	-	TN□□22□	**B54**	1	P221US	-	KY25
ETAN R/L1616H1603			*16*	*16*	*100*	*16*	*15.5*	-	TN□□32□	**B55**	1	P322US	-	KY40
ETAN R/L1616H1604	★	★	*16*	*16*	*100*	*16*	*15.5*	-	TN□□33□	**B56**	1	P332US	-	KY40
ETAN R/L2020K1603			*20*	*20*	*125*	*20*	*19.5*	-	TN□□32□	**B55**	1	P323US	-	KY40
ETAN R/L2020K1603W			*20*	*20*	*125*	*20*	*19.5*	-			2	P323WS	EST32	
ETAN R/L2020K1604			*20*	*20*	*125*	*20*	*19.5*	-	TN□□33□	**B56**	1	P333US	-	KY40
ETAN R/L2020K1604W	★	★	*20*	*20*	*125*	*20*	*19.5*	-			2	P333WS	EST32	
ETAN R/L2520M1604			*25*	*20*	*150*	*20*	*24.5*	-			1	P334US	-	
ETAN R/L2520M1604W			*25*	*20*	*150*	*20*	*24.5*	-			2	P334WS	EST32	
ETAN R/L2525M1604			*25*	*25*	*150*	*25*	*24.5*	-			1	P334US	-	
ETAN R/L2525M1604W	★	★	*25*	*25*	*150*	*25*	*24.5*	-			2	P334WS	EST32	
ETAN R/L2525M22			*25*	*25*	*150*	*25*	*24.5*	30	TN□□43□	**B60**	3	P434U	-	KY40
ETAN R/L2525M22W	★	★	*25*	*25*	*150*	*25*	*24.5*	30			4	P434W	EST43	



30 Type Holder - General Turning
Pin Lock

ETGN
External Turning

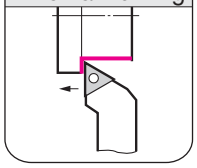


Fig 1

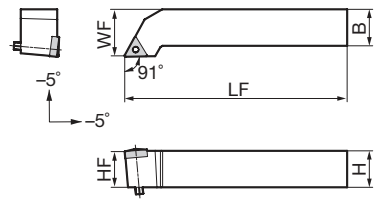


Fig 2

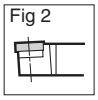


Fig 3

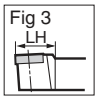


Fig 4

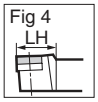


Figure shows right-hand (R) tool.

Holder — Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
ETGN R/L1212F11	★	★	*12*	*12*	*80*	*16*	*11.5*	-	TN□□22□	**B54**	1	P221US	-	KY25
ETGN R/L1616H1603	★	★	*16*	*16*	*100*	*20*	*15.5*	-	TN□□32□	**B55**	1	P322US	-	KY40
ETGN R/L1616H1604	★	★	*16*	*16*	*100*	*20*	*15.5*	-	TN□□33□	**B56**	1	P332US	-	KY40
ETGN R/L2020K1603			*20*	*20*	*125*	*25*	*19.5*	-	TN□□32□	**B55**	1	P323US	-	KY40
ETGN R/L2020K1603W			*20*	*20*	*125*	*25*	*19.5*	-			2	P323WS	EST32	
ETGN R/L2020K1604	★	★	*20*	*20*	*125*	*25*	*19.5*	-	TN□□33□	**B56**	1	P333US	-	KY40
ETGN R/L2020K1604W	★	★	*20*	*20*	*125*	*25*	*19.5*	-			2	P333WS	EST32	
ETGN R/L2520M1604			*25*	*20*	*150*	*25*	*24.5*	-			1	P334US	-	
ETGN R/L2520M1604W			*25*	*20*	*150*	*25*	*24.5*	-			2	P334WS	EST32	
ETGN R/L2525M1604			*25*	*25*	*150*	*32*	*24.5*	-			1	P334US	-	
ETGN R/L2525M1604W	★	★	*25*	*25*	*150*	*32*	*24.5*	-			2	P334WS	EST32	
ETGN R/L2525M22			*25*	*25*	*150*	*32*	*24.5*	30	TN□□43□	**B60**	3	P434U	-	KY40
ETGN R/L2525M22W	★	★	*25*	*25*	*150*	*32*	*24.5*	30			4	P434W	EST43	

★ Worldwide Warehouse item

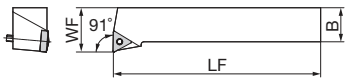
ETFN Type / ETEN Type / ETXN Type

ETFN

Facing

30 Type Holder - Facing
Pin Lock

fig 1











Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
ETFN R/L1212F11	★	★	*12*	*12*	*80*	*16*	*11.5*	-	TN□□22□		1	P221US	-	KY25
ETFN R/L1616H1603			*16*	*16*	*100*	*20*	*15.5*	-	TN□□32□		1	P322US	-	KY40
ETFN R/L1616H1604	★	★	*16*	*16*	*100*	*20*	*15.5*	-	TN□□33□		1	P332US	-	KY40
ETFN R/L2020K1603			*20*	*20*	*125*	*25*	*19.5*	-	TN□□32□		1	P323US	-	KY40
ETFN R/L2020K1603W			*20*	*20*	*125*	*25*	*19.5*	-			2	P323WS	EST32	
ETFN R/L2020K1604			*20*	*20*	*125*	*25*	*19.5*	-	TN□□33□		1	P333US	-	KY40
ETFN R/L2020K1604W	★	★	*20*	*20*	*125*	*25*	*19.5*	-			2	P333WS	EST32	
ETFN R/L2520M1604			*25*	*20*	*150*	*25*	*24.5*	-			1	P334US	-	
ETFN R/L2520M1604W			*25*	*20*	*150*	*25*	*24.5*	-			2	P334WS	EST32	
ETFN R/L2525M1604			*25*	*25*	*150*	*32*	*24.5*	-			1	P334US	-	
ETFN R/L2525M1604W	★	★	*25*	*25*	*150*	*32*	*24.5*	-			2	P334WS	EST32	
ETFN R/L2525M22			*25*	*25*	*150*	*32*	*24.5*	30	TN□□43□		3	P434U	-	KY40
ETFN R/L2525M22W	★	★	*25*	*25*	*150*	*32*	*24.5*	30			4	P434W	EST43	

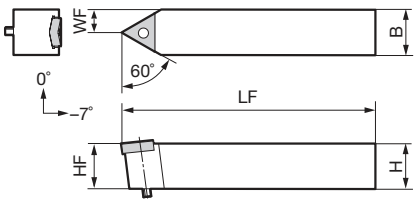
When using handed breaker inserts for facing, the holder and insert are opposite handed.

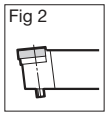
ETEN

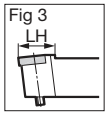
External / Profiling

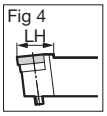
30 Type Holder - General Turning and Profiling
Pin Lock

Fig 1









Holder

Parts

Dimensions (*mm*)

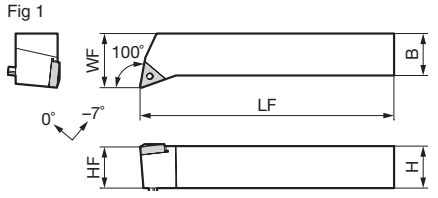
Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
ETENN1212F11	★	*12*	*12*	*80*	*6.0*	*11.5*	-	TN□□22□	**B54**	1	P221US	-	KY25
ETENN1616H1603		*16*	*16*	*100*	*8.0*	*15.5*	-	TN□□32□	**B55**	1	P322US	-	KY40
ETENN1616H1604	★	*16*	*16*	*100*	*8.0*	*15.5*	-	TN□□33□	**B56**	1	P332US	-	KY40
ETENN2020K1603		*20*	*20*	*125*	*10.0*	*19.5*	-	TN□□32□	**B55**	1	P323US	-	KY40
ETENN2020K1603W		*20*	*20*	*125*	*10.0*	*19.5*	-			2	P323WS	EST32	
ETENN2020K1604	★	*20*	*20*	*125*	*10.0*	*19.5*	-	TN□□33□	**B56**	1	P333US	-	KY40
ETENN2020K1604W	★	*20*	*20*	*125*	*10.0*	*19.5*	-			2	P333WS	EST32	
ETENN2520M1604		*25*	*20*	*150*	*10.0*	*24.5*	-			1	P334US	-	
ETENN2520M1604W		*25*	*20*	*150*	*10.0*	*24.5*	-			2	P334WS	EST32	
ETENN2525M1604		*25*	*25*	*150*	*12.5*	*24.5*	-			1	P334US	-	
ETENN2525M1604W	★	*25*	*25*	*150*	*12.5*	*24.5*	-			2	P334WS	EST32	
ETENN2525M22		*25*	*25*	*150*	*12.5*	*24.5*	30	TN□□43□	**B60**	3	P434U	-	KY40
ETENN2525M22W	★	*25*	*25*	*150*	*12.5*	*24.5*	30			4	P434W	EST43	

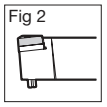
ETXN

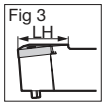
External / Profiling

30 Type Holder - General Turning and Facing
Pin Lock

Fig 1







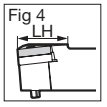


figure show right handed tools

Holder

Parts

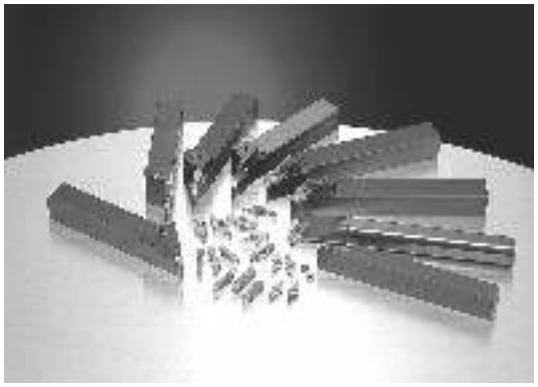
Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Eccentric Shaft	Shim	Wrench
ETXN R/L1212F11	★	★	*12*	*12*	*80*	*16*	*11.5*	-	TN□□22□	**B54**	1	P221US	-	KY25
ETXN R/L1616H1603			*16*	*16*	*100*	*20*	*15.5*	-	TN□□32□	**B55**	1	P322US	-	KY40
ETXN R/L1616H1604	★	★	*16*	*16*	*100*	*20*	*15.5*	-	TN□□33□	**B56**	1	P332US	-	KY40
ETXN R/L2020K1603			*20*	*20*	*125*	*25*	*19.5*	-	TN□□32□	**B55**	1	P323US	-	KY40
ETXN R/L2020K1603W			*20*	*20*	*125*	*25*	*19.5*	-			2	P323WS	EST32	
ETXN R/L2020K1604	★	★	*20*	*20*	*125*	*25*	*19.5*	-	TN□□33□	**B56**	1	P333US	-	KY40
ETXN R/L2020K1604W	★	★	*20*	*20*	*125*	*25*	*19.5*	-			2	P333WS	EST32	
ETXN R/L2520M1604			*25*	*20*	*150*	*25*	*24.5*	-			1	P334US	-	
ETXN R/L2520M1604W			*25*	*20*	*150*	*25*	*24.5*	-			2	P334WS	EST32	
ETXN R/L2525M1604			*25*	*25*	*150*	*32*	*24.5*	-			1	P334US	-	
ETXN R/L2525M1604W	★	★	*25*	*25*	*150*	*32*	*24.5*	-			2	P334WS	EST32	
ETXN R/L2525M22			*25*	*25*	*150*	*32*	*24.5*	30	TN□□43□	**B60**	3	P434U	-	KY40
ETXN R/L2525M22W	★	★	*25*	*25*	*150*	*32*	*24.5*	30			4	P434W	EST43	

When using handed breaker inserts for facing, the holder and insert are opposite handed.

★ Worldwide Warehouse item

MV Type / GD Type Profiling Tool Holders



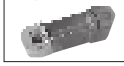
■ General Features

With a wide range of insert shapes (35˚ diamond shaped type, dogbone type and round type) available in both cemented carbide and polycrystalline diamond grades for cutting edge, we are able to provide superior performance for a vast variety of applications and cutting conditions.

■ Features and Applications

- With our new range of holders for 35˚ diamond shaped inserts and AW type chipbreakers, we are able to expand our applications to cover roughing to finishing processes.
  AW type chipbreakers provide stable roughing with reduced cutting force and increased clamp rigidity due to the new tool holder design
- Wide variety of dogbone inserts
  AW type chipbreakers, with their high rake design and newly designed dedicated tool holder, support a wide variety of tooling (straight, 15° angle, 45° angle)
- AW Type Chipbreaker for smooth chip control
- AG Type Chipbreaker for no chip adhesion on a mirror finish

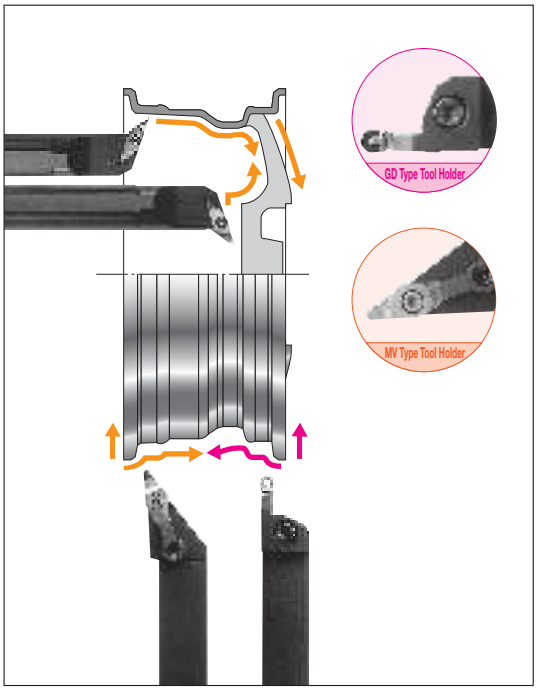
■ AW Type Chipbreaker

- 35° Diamond Type
  
  VCGT220520N-AW (H1)
- Dogbone Insert
  
  MDE4R-AW (H1)
  
  MDE4R-AW (DA2200)

■ AG Type Chipbreaker

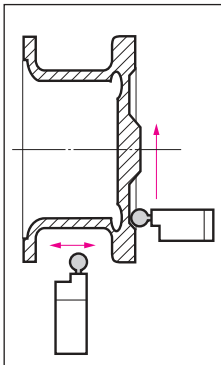
- 35° Diamond Type
  
  VCGT332NAG (H1)

■ Series Tool Type



Product Name	Type
GD Type Tool Holders	GDE R/L2525-600W/S
	GDE R/L2525-800W/S
	GDE R/L2525-615W/S
	GDE R/L2525-815W/S
	GDE R/L2525-645W/S
	GDE R/L2525-845W/S
SV Type Tool Holders	SVJC R/L2525M16
	SVVC N2525M16
	SVPC R/L2525M16
MV Type Tool Holders	MVXC R/L2525Q22-20
	MVXC R/L2525Q22-30
	MVPC R/L2525Q22-20
	MVPC R/L2525Q22-30
D Type Tool Holders	DVJN R/L2525 M16
	DVVN N2525 M16
	DVQN R/L2525 M16

■ Application Examples

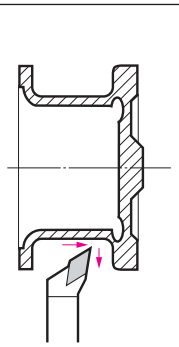


- Cutting Conditions

Tool Holder Cat. No.: GDEL2525-800W
Insert Cat. No.: MDE4R-AW
Grade: H1
n=6560 RPM
f=0.016 to 0.024 IPR
a_p=0.078" Wet

- Usage Results

Excellent chip control of AW breaker guarantees an increase in productivity.

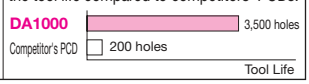


- Cutting Conditions

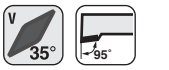
Tool Holder Cat. No.: SVJCL2525M16
Insert Cat. No.: VCMT160412
Grade: DA1000
v_c=8280 RPM
f=0.014 IPR
a_p=0.008" Wet

- Usage Results

Will not fracture and provides over 17 times the tool life compared to competitors' PCDs.

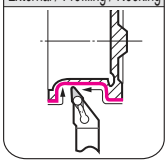


MV Type Profiling Tool Holders



MVXC

External / Profiling / Necking



35° Diamond Type - General Turning, Profiling and Undercutting
Screw-on + Clamp-on

Fig 1

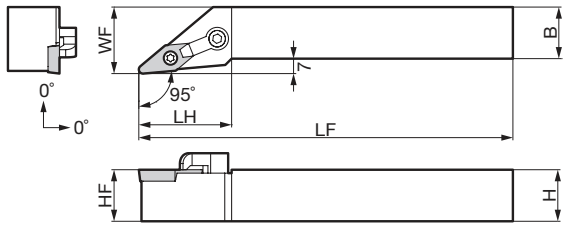


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

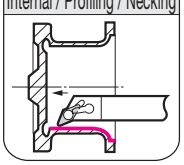
	Cat. No.	Previous Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Fig	Clamp	Double Screw	Flat Screw	Wrench (For Torx Holes)	Clamp Wrench (For Hex Socket)
★	**MVXC R/L2525Q22-20**	MVXC R/L2525-2220	★	★	*25*	*25*	*180*	*32*	*25*	*45*	1	CCM8-LONG	WB8-24	BFTX0515N	TRX20	LH040
☆	**MVXC R/L2525Q22-30**	MVXC R/L2525-2230	★	★	*25*	*25*	*180*	*32*	*25*	*45*	1					

★ : Nose Radius 2.0mm Insert, ☆ : Nose Radius 3.0mm Insert



MVPC

Internal / Profiling / Necking



35° Diamond Type Internal, Profiling and Undercutting
Screw-on + Clamp-on

Fig 1

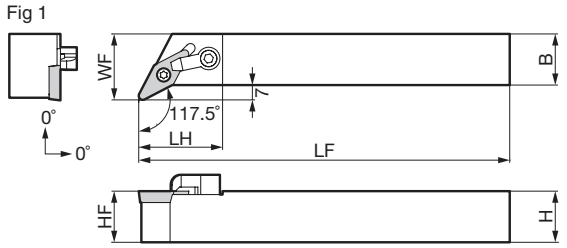


Figure shows right-hand (R) tool.

Holder

Parts

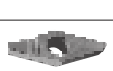
Dimensions (mm)

	Cat. No.	Previous Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Fig	Clamp	Double Screw	Flat Screw	Wrench (For Torx Holes)	Clamp Wrench (For Hex Socket)
★	**MVPC R/L2525Q22-20**	MVPC R/L2525-2220	★	★	*25*	*25*	*180*	*32*	*25*	*41*	1	CCM8-LONG	WB8-24	BFTX0515N	TRX20	LH040
☆	**MVPC R/L2525Q22-30**	MVPC R/L2525-2230	★	★	*25*	*25*	*180*	*32*	*25*	*41*	1					

★ : Nose Radius 2.0mm Insert, ☆ : Nose Radius 3.0mm Insert

Insert (● 35° Diamond Type)

(▭ Carbide / ▭ SUMIDIA) Dimensions (mm)

Shape	Cat. No.	G10E	H1	DA1000	DA2200	Inscribed Circle IC	Thickness S	Nose Radius RE	Applicable Holders
 AW	**VCGT220520N-AW**	—	●	—	—	12.70	5.56	2.0 ★	MVXC Type (holder pictured above) MVPC Type (holder pictured above)
	VCGT220530N-AW	—	●	—	—			3.0 ★	
 AG	**VCGT220530N-AG**	—	●	—	—	12.70	5.56	3.0 ★	
	**VCMT220520**	—	—	●	▲	12.70	5.56	2.0 ★	
	VCMT220530	—	—	●	▲			3.0 ★	
 AW	**VCGT160408N-AW**	—	●	—	—	9.525	4.76	0.8	SVJC Type C41 SVVC Type C42 SVPC Type C43
	VCGT160412N-AW	—	●	—	—			1.2	
 AG	**VCGT160408N-AG**	—	●	—	—	9.525	4.76	0.8	
	VCGT160412N-AG	—	●	—	—			1.2	
	**NF-VCMT160404**	—	—	●	▲	9.525	4.76	0.4	
	NF-VCMT160408	—	—	●	▲			0.8	
	NF-VCMT160412	—	—	●	▲			1.2	
	**VCMT160408**	—	—	●	▲	9.525	4.76	0.8	
	VCMT160412	—	—	●	▲			1.2	
 WF	**VCMT160412-WF**	—	—	●	▲	9.525	4.76	1.2	
 UP	**VNMG160404N-UP**	●	—	—	—	9.525	4.76	0.4	DVJN Type C29 DVVN Type C29 DVQN Type C30
	VNMG160408N-UP	●	—	—	—			0.8	
	**NF-VNMX160404**	—	—	●	▲	9.525	4.76	0.4	
	NF-VNMX160408	—	—	●	▲			0.8	
	NF-VNMX160412	—	—	●	▲			1.2	
	**VNMX160404**	—	—	●	▲	9.525	4.76	0.4	
	VNMX160408	—	—	●	▲			0.8	
	VNMX160412	—	—	●	▲			1.2	

VNMG33○-EUP (EUP Type Chipbreaker) is available in AC8025P, AC8035P, AC820P, AC830P, AC6030M, AC6040M, AC5015S, AC5025S, AC510U, & AC520U grades.

●= USA Stocked item ★= World Wide Warehouse Item ▲: Limited Availability Item.

GD Type Profiling Tool Holders

Dogbone Insert for External / Profiling
Clamp-on

GDE 600S(W) 800S(W)
External / Profiling

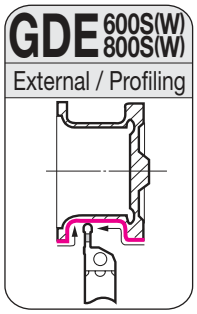


Fig 1

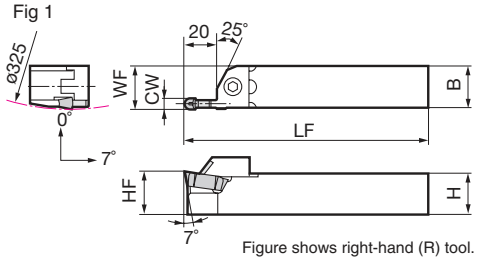


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Width of Cut CW	Group No.	Fig	Carbide Piece Clamp	Special Steel Clamp	Cap Screw	Wrench (For Hex Socket)
GDE R/L2525-600S	★	★	*25*	*25*	*150*	*26*	*25*	*6*	1	1	—	GDS600R/L	BX0625	LH050
GDE R/L2525-800S	★	★	*25*	*25*	*150*	*26*	*25*	*8*	2	1		GDS800R/L		
GDE R/L2525-600W	★	★	*25*	*25*	*150*	*26*	*25*	*6*	1	1	GDW600R/L	—		
GDE R/L2525-800W	★	★	*25*	*25*	*150*	*26*	*25*	*8*	2	1	GDW800R/L			

Refer to MDE Type insert group numbers on C61 for applicable inserts.

Dogbone Insert for Facing / Internal Profiling
Clamp-on

GDE 615S(W) 815S(W)
Facing / Internal Profiling

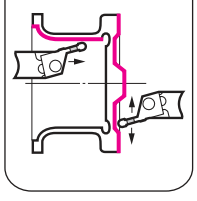


Fig 1

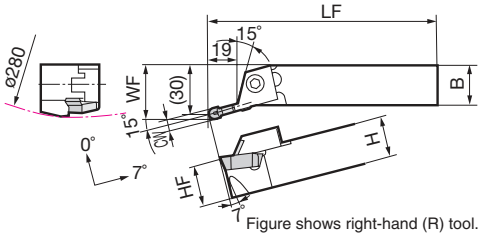


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Width of Cut CW	Group No.	Fig	Carbide Piece Clamp	Special Steel Clamp	Cap Screw	Wrench (For Hex Socket)
GDE R/L2525-615S	★	★	*25*	*25*	*150*	*32.2*	*25*	*6*	1	1	—	GDS615R/L	BX0625	LH050
GDE R/L2525-815S			*25*	*25*	*150*	*33.2*	*25*	*8*	2	1		GDS815R/L		
GDE R/L2525-615W	★	★	*25*	*25*	*150*	*32.2*	*25*	*6*	1	1	GDW615R/L	—		
GDE R/L2525-815W	★		*25*	*25*	*150*	*33.2*	*25*	*8*	2	1	GDW815R/L			

Refer to MDE Type insert group numbers on C61 for applicable inserts.

★= World Wide Warehouse Item

GD Type Profiling Tool Holders

Dogbone Insert for Internal Profiling
Clamp-on

GDE 645S(W) 845S(W)
Internal Profiling

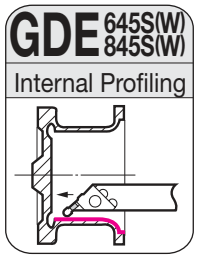


Fig 1

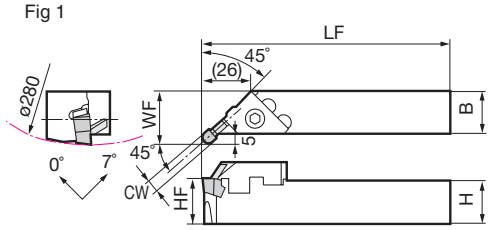


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Width of Cut CW	Group No.	Fig	Carbide Piece Clamp	Special Steel Clamp	Cap Screw	Wrench (For Hex Socket)
GDE R/L2525-645S	★	★	*25*	*25*	*150*	*30*	*25*	*6*	1	1	—	GDS645R/L	BX0625	LH050
GDE R/L2525-845S			*25*	*25*	*150*	*30*	*25*	*8*	2	1		GDS845R/L		
GDE R/L2525-645W			*25*	*25*	*150*	*30*	*25*	*6*	1	1	GDW645R/L	—		
GDE R/L2525-845W			*25*	*25*	*150*	*30*	*25*	*8*	2	1	GDW845R/L			

Refer to MDE Type insert group numbers below for applicable inserts.

Insert (▭ Carbide / ▭ SUMIDIA)

● Dogbone Insert

Shape	Cat. No.	Stock H1	Stock DA2200	Overall Length L	Thickness S	Nose Radius RE	Width of Cut CW	Group No.	Fig
 AW	**MDE3R-AW**	★	–	26	8.5	3.0	6	1	1
	MDE4R-AW	★	–	30	8.5	4.0	8	2	
	**MDE3R**	–	★	26	8.5	3.0	6	1	2
	MDE4R	–	★	30	8.5	4.0	8	2	
 AW	**MDE3R-AW**	–	★	26	8.5	3.0	6	1	3
	MDE4R-AW	–	★	30	8.5	4.0	8	2	

Fig 1

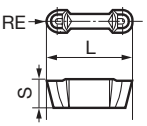


Fig 2

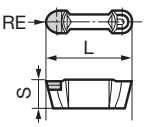
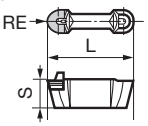


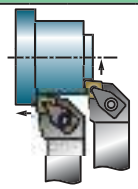
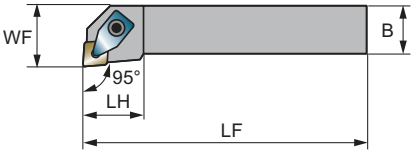
Fig 3



●= USA Stocked item ★= World Wide Warehouse Item

Discontinued Toolholders & Spare Parts

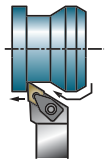
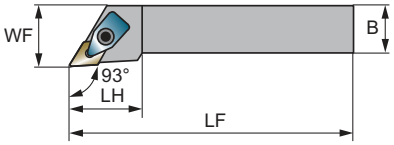
DCLN 95°



Catalog Number		Stock	H	B	LF	WF	LH	Hardware when Toolholder lot# begins with D####								
Right	Left							Clamp	Spring	Clamp Screw	Shim	Shim Screw	Wrench	Clamp Set	Shim	Shim Screw
DCLNR124B	DCLNL124B	▲	.750	.750	4.50	1.250	1.000	CL-2312	SP-4295	CLB-1907	ICSN433	ST-1160	LH040	SCP-2	CNS1204	BFTX0409N
DCLNR164D	DCLNL164D	▲	1.000	1.000	6.00	1.250	1.250									
DCLNR204D	DCLNL204D	▲	1.250	1.250	6.00	1.250	1.500							N/A	N/A	N/A
DCLNR205D	DCLNL205D	▲	1.250	1.250	6.00	1.375	1.500	CL-2318			ICSN533	ST-1180				
DCLNR245E	DCLNL245E	▲	1.500	1.500	7.00	1.375	2.000									

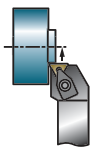
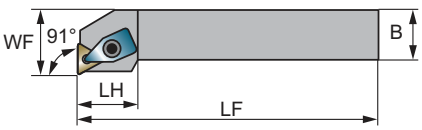
DDJ Series



Catalog Number		Stock	H	B	LF	WF	LH	Hardware when Toolholder lot# begins with D####								
Right	Left							Clamp	Spring	Clamp Screw	Shim	Shim Screw	Wrench	Clamp Set	Shim	Shim Screw
DDJNR124B	DDJNL124B	▲	.750	.750	4.50	1.535	1.000	CL-2312	SP-4295	CLB-1907	DNS1504	ST-1160	LH040	SCP-2	DNS1504	BFTX0409N
DDJNR164D	DDJNL164D	▲	1.000	1.000	6.00	1.535	1.250									

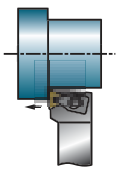
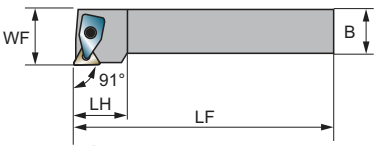
DTF Series



Catalog Number		Stock	H	B	LF	WF	LH	Hardware when Toolholder lot# begins with D####								
Right	Left							Clamp	Spring	Clamp Screw	Shim	Shim Screw	Wrench	Clamp Set	Shim	Shim Screw
DTFNR123B	DTFNL123B	▲	.750	.750	4.50	1.000	1.000	CL-2308	CSP08	CLB-1915	ITSN323	ST-1150	LH025	SCP-1	TNS1604	BFTX0307N
DTFNR163D	DTFNL163D	▲	1.000	1.000	6.00	1.000	1.250									

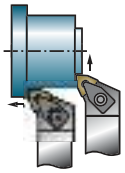
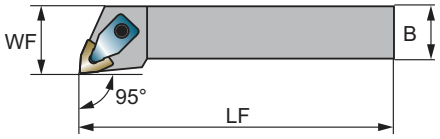
DTG Series



Catalog Number		Stock	H	B	LF	WF	LH	Hardware when Toolholder lot# begins with D####								
Right	Left							Clamp	Spring	Clamp Screw	Shim	Shim Screw	Wrench	Clamp Set	Shim	Shim Screw
DTGNR123B	DTGNL123B	▲	.750	.750	4.50	1.102	1.000	CL-2308	CSP08	CLB-1915	ITSN323	ST-1150	LH025	SCP-1	TNS1604	BFTX0307N
DTGNR163D	DTGNL163D	▲	1.000	1.000	6.00	1.102	1.250									

DWL Series



Catalog Number		Stock	H	B	LF	WF	LH									
Right	Left							Clamp	Spring	Clamp Screw	Shim	Shim Screw	Wrench	Clamp Set	Shim	Shim Screw
DWLNR123B	DWLNL123B	▲	.750	.750	4.50	1.000	1.000	SCP-4			IWSN322	S-34	LH020	N/A		
DWLNR124B	DWLNL124B	▲	.750	.750	4.50	1.250	1.000	CL-2312	SP-4295	CLB-1907	IWSN433	ST-1160	LH040	SCP-2	WNS0804	BFTX0409N
DWLNR163D	DWLNL163D	▲	1.000	1.000	6.00	1.000	1.250	SCP-4			IWSN322	S-34	LH020	N/A		
DWLNR164D	DWLNL164D	▲	1.000	1.000	6.00	1.250	1.250	CL-2312	SP-4295	CLB-1907	IWSN433	ST-1160	LH040	SCP-2	WNS0804	BFTX0409N

▲: Limited Availability Item

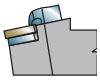
Discontinued Toolholders & Spare Parts

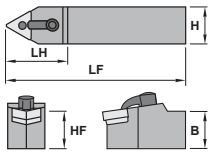
MTENN 60°





MTENN





Catalog Number / Nuetral	Applicable Insert	Stock	H	B	LF	HF	LH	Shim	Lock Pin	Clamp	Clamp Screw	Shim Screw	Wrench	Wrench
MTENN082A	TN_ _ 22	▲	.500	.500	4.000	1.000	.250	-	NL23	CL7	XNS-34	-	LH3/32	LH1/16
MTENN103B	TN_ _ 32	▲	.625	.625	4.500	1.125	.312	ITSN323	NL34L	CL20	XNS48	S34	LH020	LH030
MTENN123B	TN_ _ 32	▲	.750	.750	4.500	1.125	.375							
MTENN164D	TN_ _ 43	▲	1.000	1.000	6.000	1.500	.500	ITSN433				S34	LH020	LH030
MTENN205D	TN_ _ 54	▲	1.250	1.250	6.000	1.625	.625	ITSN533	NL58	CL12	XNS510	S58	LH040	LH030
MTENN205E	TN_ _ 54	▲	1.250	1.250	6.00	1.620	.625							

▲: Limited Availability Item

Clamp Set Parts

Applicable Clamp Sets Cat. No.	Spring	Stock	Cap Screw	Stock	N·m
SCP-1	CSP08	●	CP-M5-20-1	●	
SCP-2	CSP08	●	CP-M5-20-1	●	
SCP-3	CSP08	●	CP-M5-20-1	●	5.0
SCP-4	CSP25	●	CP-M5-20-1	●	
SCP-5	CSP08	●	CP-M5-20-1	●	
SCP-6	CSP12	●	CP-M8-25-1	●	6.0

CP-M5-20-1 can also be fastened from under the screw.

●= USA Stocked item

MEMO

Small Lathe Tools

Small Product Machining

External Holders D1 to D30

D

Small Lathe Tools Selection ····· D2
General Features of Small Lathe Tools ····· D4
Insert Grade Selection ····· D6
Chipbreaker Selection ····· D7

External Holders

Special Tool Holders for Small Product Machining	PB Tool Holders SPB Type ····· D8
	Wide-Cut Holders SGW Type ····· D10
	MINI Tool Holders SBT Type / PBT Type ····· D11
	Front Turning Tool Holders SFT Type ····· D12
Round Shank Tool Holders	RS-SCL Type ····· D13
	RS-SDU Type / RS-SDX Type ····· D14
	RS-SVX Type / RS-SVVP Type ····· D15
	RS-PTXN Type ····· D16
MINI Tool Holders Zero Offset Holders	PCLC Type / SCLC-X Type / SCAC-X Type ····· D17
	PDJC-X Type / SDJC-X Type ····· D18
	SDAC Type / SDPC / SDPC-X Type ····· D19
	SVJC Type ····· D20
	PTXN-X Type ····· D21
MINI Tool Holders PC / SC Type	PCLC Type / SCLC Type ····· D22
	SCAC Type / SCNC Type ····· D23
MINI Tool Holders PD / SD Type	PDJC Type / SDJC Type ····· D24
	SDAC Type / SDNC Type ····· D25
MINI Tool Holders SS Type	SSBC Type / SSDC Type ····· D26
MINI Tool Holders ST Type	STAC Type / STGC Type / STJC Type ····· D27
MINI Tool Holders SV Type	SVNB Type ····· D28
	SVLC Type / SVPC Type ····· D29
	SVLP Type / SVPP Type ····· D30

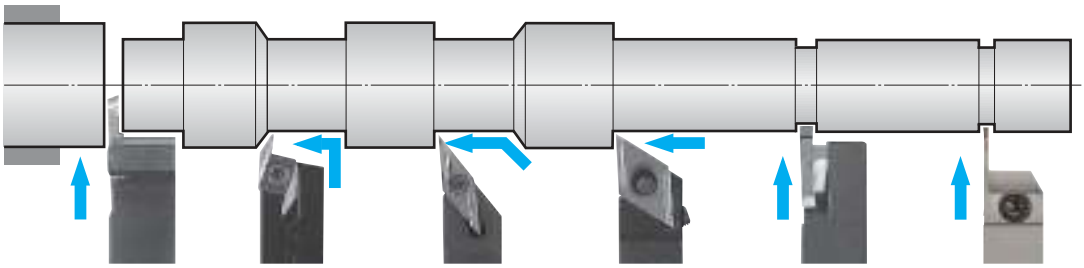
Stock Markings and Symbols

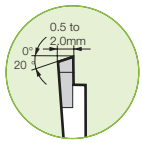
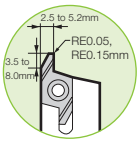
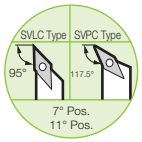
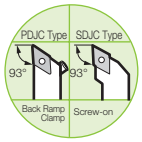
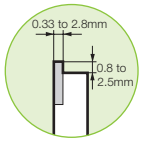
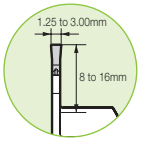
● : Standard stocked item
▲ : To be replaced by a new product, made to order, or discontinued (please confirm stock availability).
★: Worldwide Warehouse item

_ _ Blank: Made-to-order item
_ – mark: Not available

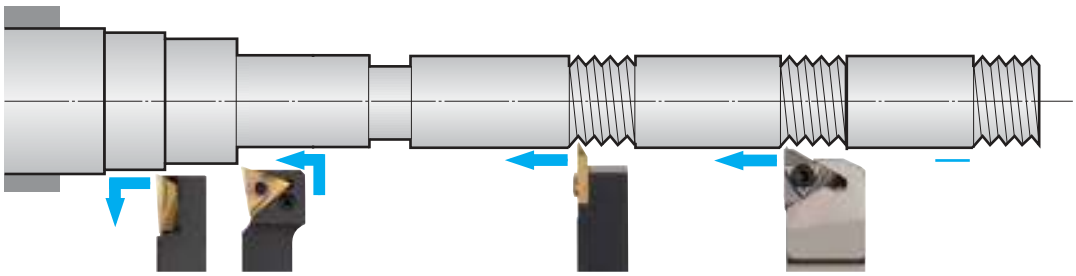
Small Lathe Tools Selection

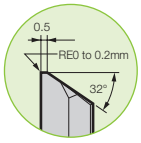
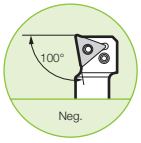
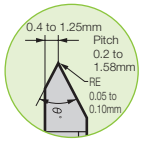
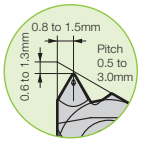
External Turning (1)



Application / Type / Page	Cut-off	Back Turning	Profiling	External Turning	Grooving	Grooving & Cut-off
	SCT Type	SBT Type PBT Type	SV Type	PD / SD Type	GWC Type	GND Type
	F56	D11	D28 on	D24, D25	F33	F4
Cutting Edge Shape	 Max. bore diameter ø5 to 16mm					

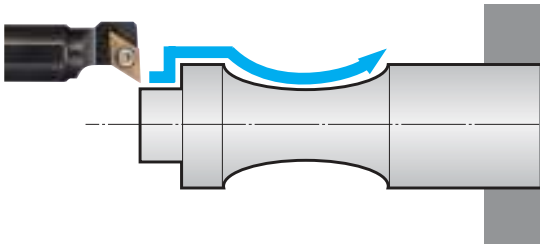
External Turning (2)



Application / Type / Page	Turning	Turning	Threading	Threading
	SFT Type	PTXN-X Type	STH Type	SSTE Type
	D12	D21	F76	F65
Cutting Edge Shape				

External Turning (3)

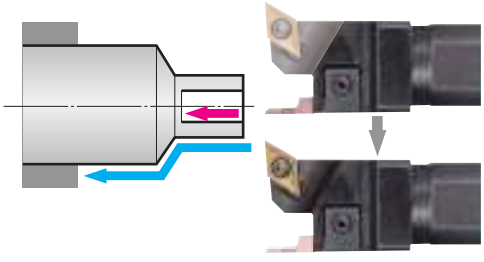
External turning made possible with holder sleeves.



Application / Type / Page	Round Shank Holder
	RS Type
	D13 to D16

Multi-functional Tool

A single holder capable of performing two operations.



Application / Type / Page	Twin Head Holder	
	I.D. + O.D. CKBE Type	I.D. + I.D. CKBB Type
	E10	E11

Small Lathe Tools Selection

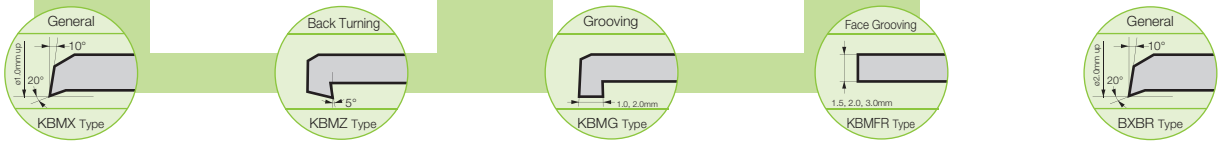
For Internal Diameter Machining (1) Machining of very small diameters 1mm and above



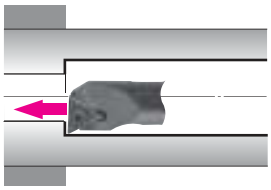
Application / Type / Page

Very Small Dia. Boring	Very Small Dia. Boring (Round Shank)	Gang-Type Toolpost Very Small Dia. Boring	Solid Carbide Bar
CKB Type	S-CKB Type / S-CKB-S Type	CKBS Type	BXBR Type
E64	E66	E65	E69

Cutting Edge Shape



For Internal Diameter Machining (2) Machining of small diameters 5mm and above

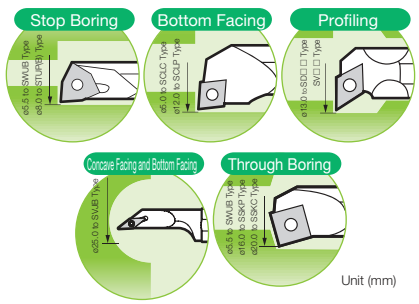


Application / Type / Page

Boring

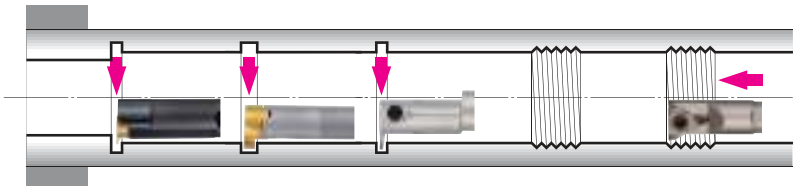
SW Type / ST Type / SC Type / SD Type / SV Type / SS Type

Cutting Edge Shape



Unit (mm)

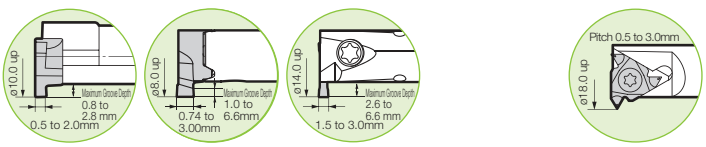
For Grooving and Threading



Application / Type / Page

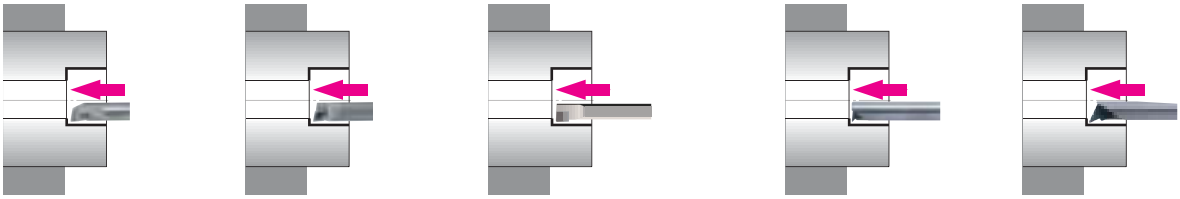
Internal Grooving	Internal Grooving	Internal Grooving	Internal Threading
SGIT Type	SSH Type New	GNDIS Type	SSTI Type
F43	F41	F30	F63

Cutting Edge Shape



SUMIBORON (CBN) Small Hole Boring Bars CBN

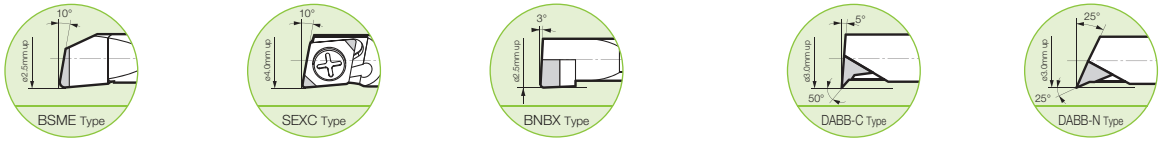
SUMIDIA (PCD) Small Hole Boring Bars PCD



Application / Type / Page

Small Hole Boring Bars	Small Hole Boring Bars	Small Hole Boring Bars	Small Hole Boring Bars	Small Hole Boring Bars
BSME Type	SEXC Type	BNBX Type	DABB-C Type	DABB-N Type
E70	E71	E72	E75	E75

Cutting Edge Shape



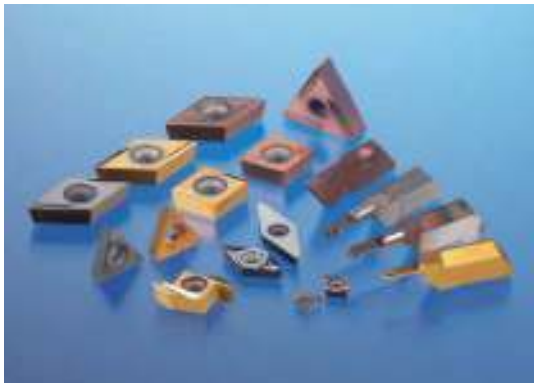
Small Product Machining



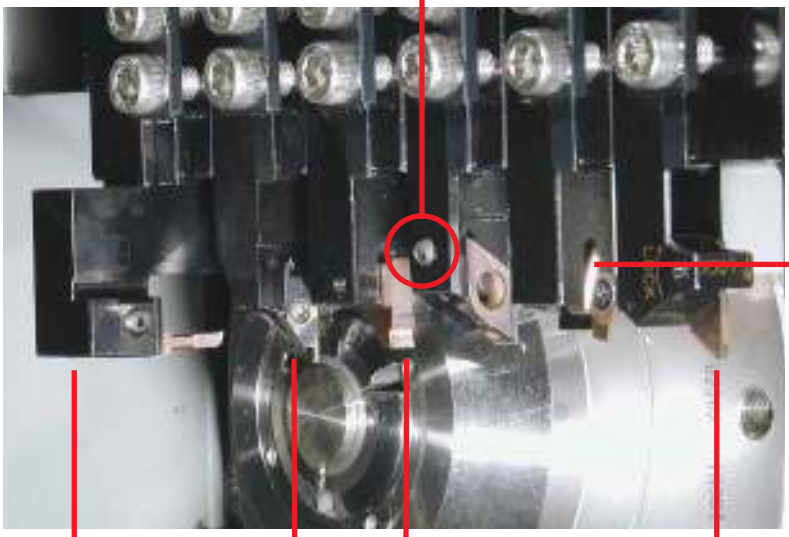
■ General Features

In 1984, Sumitomo Electric Hardmetal first released the MINI Tool Holder series for small product machining in small NC autolathes. Through these years of experience, new tool designs including our side lever lock tool holder were developed to meet various machining requirements such as back turning, profiling and cut-off; we continually strive to enhance the series.

■ From Carbide to PCD Grade Full Lineup



☞ D6 on



■ Special tools for small lathes to cover various types of machining

● Very Small Dia. Boring Bar CKB Type

Min. bore diameter ø1 to ø5mm



☞ E64

● Very Small Diameter Part Turning Tool SPB Type

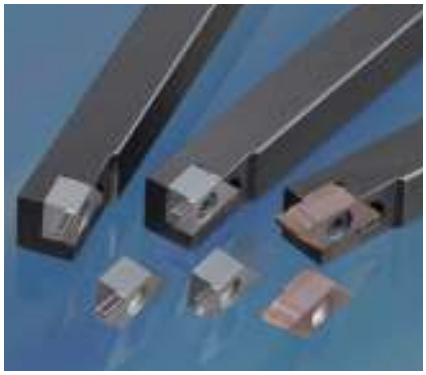
Best suited for very small parts with diameter of less than ø10mm



☞ D8

● Plunging Tool SGW Type

Ideal for high-efficiency machining of long parts, eliminating chip control issues

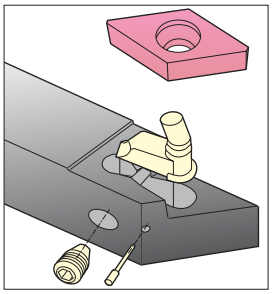


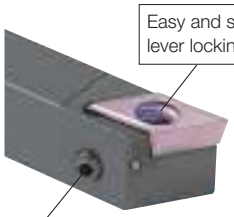
☞ D10

Small Product Machining

■ A wide selection of easy-to-use holders

●Back Clamp Tool Holder PC / PD Type





Inserts can be easily exchanged from the back

☞D22, D24

● Back-Turning Tool Holder SBT Type / PBT Type

Sharp cutting with good surface finish
Maximum machining step 8.0mm, width of cut 2.5mm



☞D11

● Cut-off Tool SCT Type

Inserts can be changed easily even from the back, simply by loosening the screw
Maximum cut-off diameters: ø5mm, ø12mm, ø16mm



☞F56

● Zero Offset Holders *Products with part number suffix "-X"

Tool compensation not required for small gang-type lathes



☞D17

● Twin Head Holder

Multi-functional Autolathe Tool
One holder performing 2 different operations



☞E10

● Round Shank Holder RS Type

External turning made possible with holder sleeves



☞D13

● Grooving Tool SSH Type

Internal coolant supply enables superb chip control, while the tough carbide body allows stable machining
Supports internal grooving of ø8mm up



☞F41

● Grooving Tool Holder GND Type

Lineup includes shanks for small lathes
Suitable for grooving at 1.25mm up



☞F4

Insert Grade Selection



In 1984, Sumitomo Electric Hardmetal first released the MINI Tool Holder series for small product machining in small NC autolathes. A full range of insert grades including AC530U and AC1030U as well as Cermet T1500A, Carbide BL130, SUMIBORON BN2000, and SUMIDIA DA1000 are available to meet a variety of machining requirements.
A high-precision grade, ACZ150, has been added to support a wide range of precision application requirements, from automotive to electronic component machining.

■ Insert Grade Selection

Insert Grade	Application Range: High-precision	Application Range: Finishing to Light Cutting	Application Range: Medium Cutting	Work Material P: General Steel	Work Material M: Stainless Steel	Work Material K: Cast Iron	Work Material S: Heat-Resistant Alloy	Work Material H: Hardened Steel	Work Material N: Non-Ferrous Metal
Coated Carbide (PVD)	ACZ150			◎	◎				○
		New AC5015S		○	◎	○	◎		
		New AC5025S		○	◎	○	◎		
		AC530U		◎	◎	○	○		○
		AC1030U		◎	◎	○	○		○
Uncoated Cermet Coated Cermet		T1000A		◎	○	◎			○
		T1500A/T1500Z		◎	○	○			○
Carbide	BL130			○	○	○			○
		H1		○	○	○			◎
		EH510		○	○	○	◎		○
CBN (SUMIBORON)		BN1000/BN2000				◎	○	◎	
		BN7000							
PCD (SUMIDIA)	DA1000								◎

◎ 1st Recommendation ○ 2nd Recommendation

■ Recommended Cutting Conditions

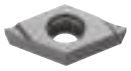
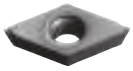
Material / Tool Grade	P Free-Cutting Steel v_c (SFM)	P Free-Cutting Steel f (IPR)	P Carbon Steel v_c (SFM)	P Carbon Steel f (IPR)	M Stainless Steel v_c (SFM)	M Stainless Steel f (IPR)	S Heat-Resistant Alloy v_c (SFM)	S Heat-Resistant Alloy f (IPR)	H Hardened Steel v_c (SFM)	H Hardened Steel f (IPR)	N Aluminum Alloy v_c (SFM)	N Aluminum Alloy f (IPR)	N Brass v_c (SFM)	N Brass f (IPR)
ACZ150	165 to 650	.001 to .004	165 to 500	.0005 to .003	165 to 500	.0005 to .002					230 to 1000	.002 to .008	230 to 1000	.002 to .008
AC5015S	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 650	.001 to .004	100 to 350	.001 to .004					230 to 1000	.002 to .008
AC5025S	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 650	.001 to .004	100 to 350	.001 to .004					230 to 1000	.002 to .008
AC530U	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 650	.001 to .004							230 to 1000	.002 to .008
AC1030U	165 to 500	.001 to .006	165 to 500	.001 to .004	165 to 500	.001 to .004							230 to 1000	.002 to .008
T1000A	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 500	.001 to .004					230 to 1000	.002 to .008	230 to 1000	.002 to .008
T1500A	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 500	.001 to .004					230 to 1000	.002 to .008	230 to 1000	.002 to .008
T1500Z	165 to 650	.001 to .006	165 to 650	.001 to .004	165 to 500	.001 to .004					230 to 1000	.002 to .008	230 to 1000	.002 to .008
BN1000									400 to 1000	.001 to .006				
BN2000									165 to 650	.001 to .008				
BN7000							165 to 650	.001 to .004						
DA1000											230 to 1,000	.001 to .004	230 to 1,000	.001 to .004

Red text: 1st recommendation, Blue text: 2nd recommendation

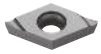
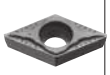
Chipbreaker Selection

■ Insert Series

● Insert Precision Selection Guide

	M Class	G Class	E Class
Insert Class			
Height Tolerance	±0.005"	±0.005"	±0.001
Features	Side surfaces have a sintered finish	Side surfaces are ground	Side surfaces are ground Thickness tolerances are smaller than G-class inserts
Applications	Roughing to Light Cutting	Finishing to Light Cutting	High-precision to Finishing
Cat. No.	CCMT32.51ELU DCMT21.52ESU	CCGT32.51RFX DCGT32.50.5MESI(*)	CCET32.50.5RFX

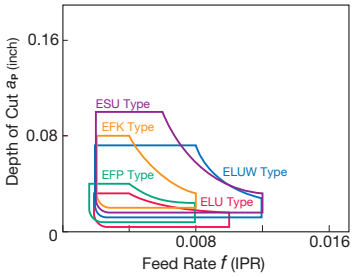
● Chipbreaker Selection

	Finishing to Light Cutting	Features
Parallel Type	FX Type 	Best suited for general-purpose O.D. finishing with larger depths of cut.
Wide Type	FYS Type  FY Type 	Burrs are less likely with undercutting. Chatter is less likely with external and face machining.
Molded Type	EFC Type  MESI Type 	3D chipbreaker with good chip control and sharp cutting edge. The FC type is for fine finishing, and the SI type for varying depths of cut.
	NAG Type 	Breaker for aluminum alloy machining. Sharp edge and low adhesion.

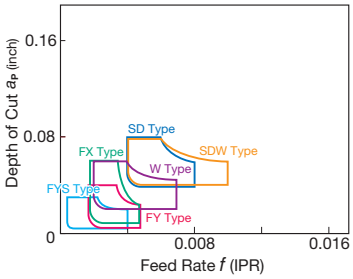
(*) A catalogue number with a feed direction symbol prefixed with "M" means that the product has a nose radius with negative tolerance.

■ Application Range of Chipbreakers for Finishing to Light Cutting

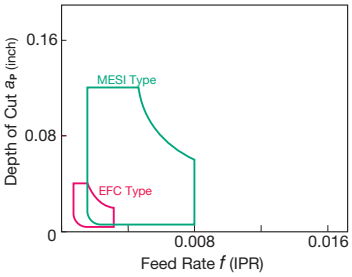
● M Class Finishing to Light Cutting



● G Class Ground Type



● G Class Molded Chipbreaker

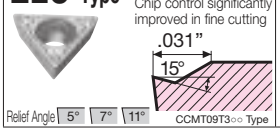


■ Chipbreakers for Finishing to Light Cutting

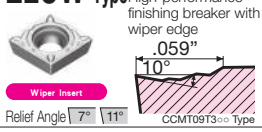
Dimensions (mm)

Positive Type M Class

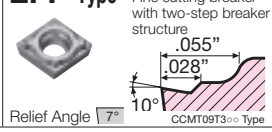
ELU Type P M K N S — Chip control significantly improved in fine cutting



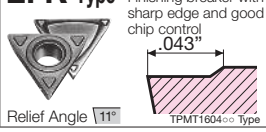
ELUW Type P M K N S — High-performance finishing breaker with wiper edge



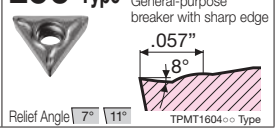
EFP Type P M K N S — Fine cutting breaker with two-step breaker structure



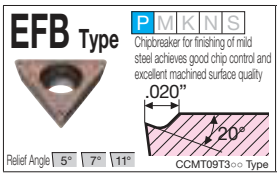
EFK Type P M K N S — Finishing breaker with sharp edge and good chip control



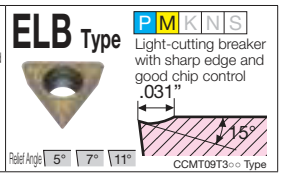
ESU Type P M K N S — General-purpose breaker with sharp edge



EFB Type P M K N S — Chipbreaker for finishing of mild steel achieves good chip control and excellent machined surface quality

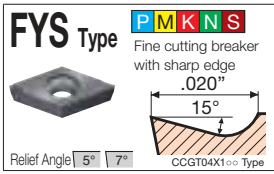


ELB Type P M K N S — Light-cutting breaker with sharp edge and good chip control

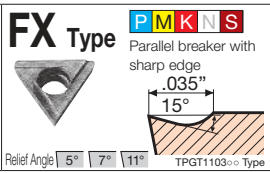


Positive Type G Class Ground Chipbreaker

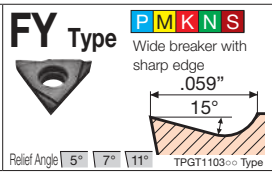
FYS Type P M K N S — Fine cutting breaker with sharp edge



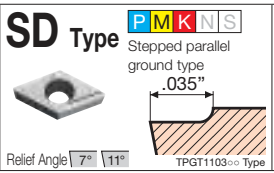
FX Type P M K N S — Parallel breaker with sharp edge



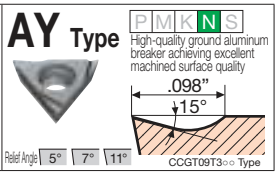
FY Type P M K N S — Wide breaker with sharp edge



SD Type P M K N S — Stepped parallel ground type

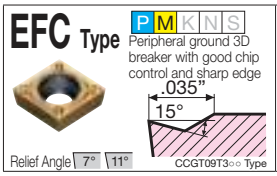


AY Type P M K N S — High-quality ground aluminum breaker achieving excellent machined surface quality

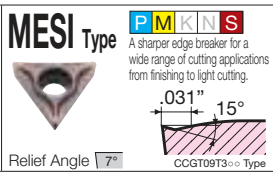


Positive Type G Class

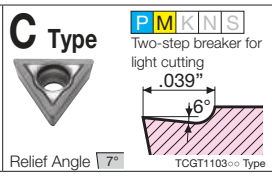
EFC Type P M K N S — Peripheral ground 3D breaker with good chip control and sharp edge



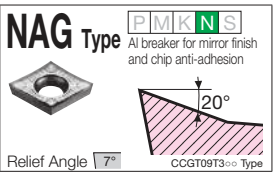
MESI Type P M K N S — A sharper edge breaker for a wide range of cutting applications from finishing to light cutting.



C Type P M K N S — Two-step breaker for light cutting

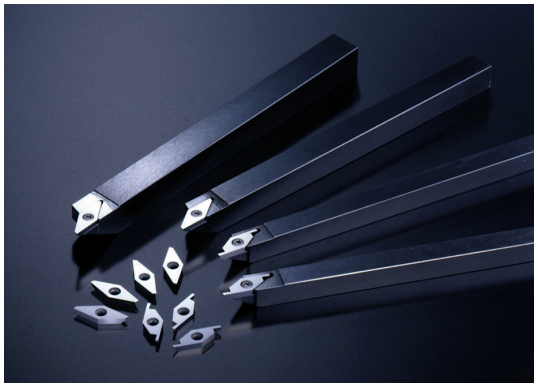


NAG Type P M K N S — Al breaker for mirror finish and chip anti-adhesion



Applicable Part Material: P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

SPB Type



■ Features

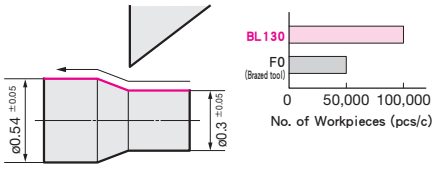
- High rigidity type tools expanded for gang-type NC lathes
- Inserts for various applications can be used on a single holder
- Can also be used on turret-type toolposts
- Uncoated blank inserts are stocked so cutting edges can be ground as required.
- BL130 has wear resistance similar to coated grades and sharpness similar to uncoated grades.
- Ultra-fine grained carbide grade F1, typically used for brazed tools, is now available for indexable inserts

■ Applicable Grades

Applicable Part Material / Insert Grade	General Steel / SK Material	Stainless Steel: Austenitic	Stainless Steel: Martensitic Ferritic	Brass, Aluminum Alloy
BL130	○	○	◎	○
F1	○	◎	○	○

■ Application Examples

Watch component



Tool: BL130 (PBVFN1102R)
Part Material: 420 Stainless Steel
Cutting Conditions:
v_c = 23-36 SFM
f = 0.0002 IPR

Very Small Diameter Part Turning
Screw-on

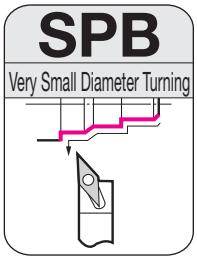


Fig 1

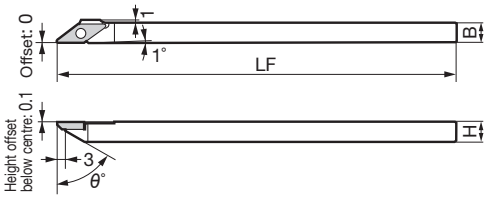


Fig 2

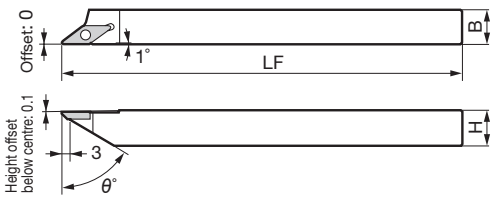


Fig 3

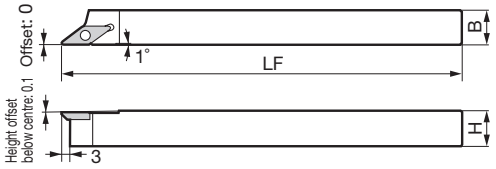


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (mm)

Toolpost	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Relief Angle θ	Fig	Flat Screw	N·m	Wrench (For Hex Socket)
Inch	**SPB R/L 063D**	●		.375	.375	6.000	-	2	BFTX02505N	1.5	LT08-06
	SPB R/L 083D	●		.500	.500	6.000	-	2			
Turret-type	**SPB R/L0707-70**		★	7	7	140	70	1	BFTX02505N	1.1	LT08-06
	SPB R/L0808-60	★		8	8	140	60	2	BFTX02506N	1.5	
	SPB R/L0808-70		★	8	8	140	70	2	BFTX02505N	1.1	
	SPB R/L0909-70		★	9.5	9.5	140	70	2	BFTX02505N	1.1	
	SPB R/L1010-60	★		10	10	140	60	2	BFTX02506N	1.5	
	SPB R/L1212-60	★		12	12	140	60	2	BFTX02506N	1.5	
Gang type	**SPB R0808**	★	-	8	8	140	-	3	BFTX02506N	1.5	LT08-06
	SPB R1010	★	-	10	10	140	-	3	BFTX02506N	1.5	
	SPB R1212	★	-	12	12	140	-	3	BFTX02506N	1.5	

● : USA stocked item
★ : Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

SPB Type

Insert

(▭ Cemented Carbide)

Blank Insert

Dimensions (*mm*)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Overall length L	Applications	Fig
PBVX1102R/L-NB	★	★	★	★	*17.2*	Wide Range	1
PBVX1102R/L-SB	★	★	★	★	*(20.14)*	Sharp Edge	2
PBVX1102R/L-BB	★	★	★	★	*17.2*	Special	3

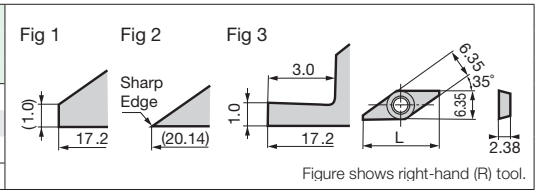


Figure shows right-hand (R) tool.

Front Turning Insert

Dimensions (*mm*)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Effective Cutting Edge Length	Wiper Edge	Fig
PBVFW1102R/L	★				*1.0*	Yes	1
PBVFN1102R/L	★				*1.0*	No	2

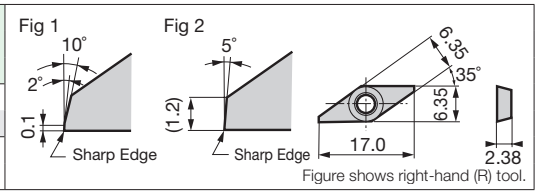


Figure shows right-hand (R) tool.

Back Turning Insert

Dimensions (*mm*)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Effective Cutting Edge Length	Wiper Edge	Fig
PBVBW1102R/L	★				*1.0*	Yes (2°)	1
PBVBN1102R/L	★				*1.0*	No (5°)	2

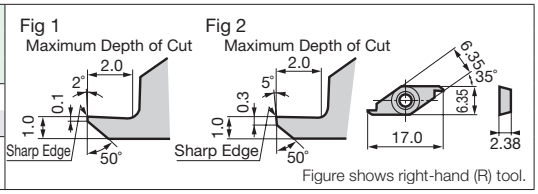


Figure shows right-hand (R) tool.

Grooving Insert

Dimensions (*mm*)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Machining Groove Depth CDX	Width of Cut CW	Fig
PBVG1102R/L-030	★				*0.5*	*0.3*	1
PBVG1102R/L-050	★				*1.0*	*0.5*	1
PBVG1102R/L-100	★				*2.0*	*1.0*	1

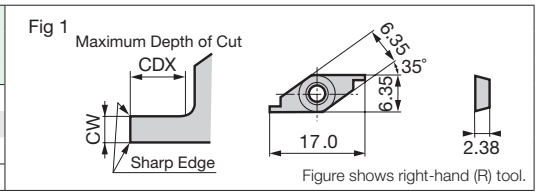
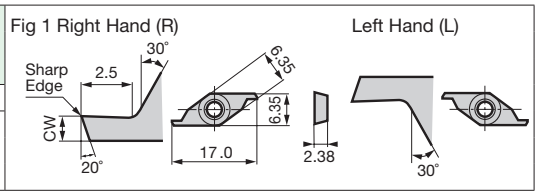


Figure shows right-hand (R) tool.

Cut-off Insert

Dimensions (*mm*)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Max. Cut-off Dia.	Width of Cut CW	Fig
PBVC1102R/L-50	★	★			*5.0*	*1.0*	1



Threading Insert

Dimensions (*mm*)

Cat. No.	Stock BL130 R	Stock BL130 L	Stock F1 R	Stock F1 L	Process Pitch	Fig
PBVTF1102R/L	★				*0.2 to 0.5*	1
PBVTB1102R/L	★				*0.2 to 0.5*	2

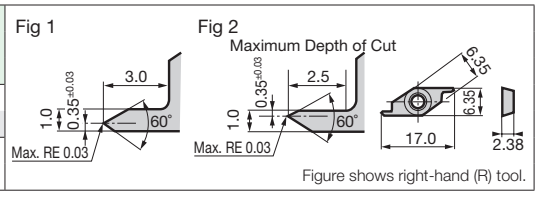


Figure shows right-hand (R) tool.

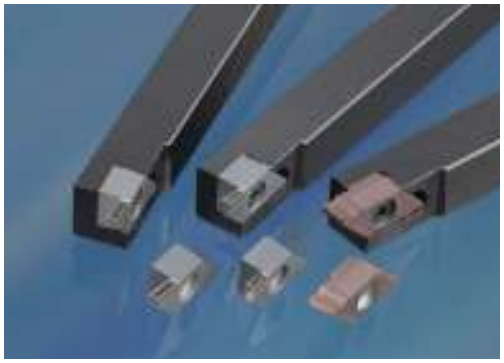
Recommended Cutting Conditions

Part Material	P Free-Cutting Steel	P Carbon Steel	M Stainless Steel	N Non-ferrous Metal
Cutting Speed (v_c) (SFM)	15 to 265	15 to 265	15 to 165	15 to 330
Feed Rate f (IPR)	0.0001 to 0.002			
Coolant	Oil-based			

● : USA stocked item

★ : Worldwide Warehouse item

SGW Type



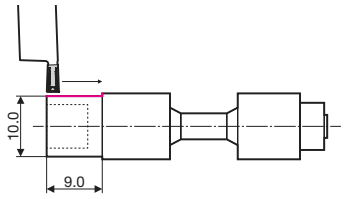




■ PCD - SUMIDIA Multi-Function Tool with Chipbreaker SUMIDIA Break Master LD Type

- Provides excellent chip control in traverse cutting and grooving of aluminum alloy.
- Solves chip control problems and dramatically improves work efficiency.
- Achieves long, stable tool life by employing high-toughness grade PCD - SUMIDIA DA1000.

■ Application Examples



Part Material: Valve (A6061) Tool Cat. No.: KGV R2004-LD (DA1000)
Cutting Conditions: v_c = 820 SFM, f = 0.004 IPR, a_p = 0.0197" Wet

SGW
External Turning

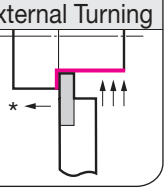
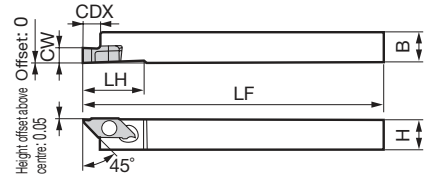
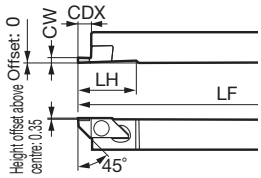


Fig 1



Dimensions with SUMIDIA insert mounted



*Use the SUMIDIA insert for traverse cutting.

External Multi-purpose Type (Grooving / Traverse Cutting) Screw-on

Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Fig	Flat Screw		Wrench
									N·m	 (For Torx Holes)
SGWR1212	★	*12*	*12*	*120*	*7.0*	*24.5*	1	BFTX0410T8R	**1.1**	TRX08
SGWR1616	★	*16*	*16*	*120*	*7.0*	*24.5*	1			

The above dimensions for LF, CDX and LH are values with a carbide insert mounted. (Refer to the table below for dimensions with PCD - SUMIDIA insert mounted)

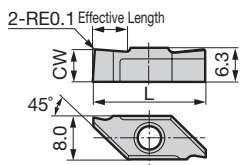
Insert (Carbide) (Coated Carbide)

Dimensions (*mm*)

Cat. No.	AC1030U	AC530U	Width of Cut CW	Overall Length L	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Effective Cutting Edge Length	Fig
KGVR400	★	★	*4.0*	*21.0*	*120*	*7.0*	*24.5*	*6.3*	1
KGVR500	★	★	*5.0*	*21.0*	*120*	*7.0*	*24.5*	*6.3*	1
KGVR600	★	★	*6.0*	*21.0*	*120*	*7.0*	*24.5*	*6.3*	1



Fig 1



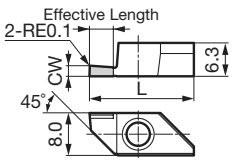
Insert (SUMIDIA) (SUMIDIA)

Dimensions (*mm*)

Cat. No.	DA1000	Width of Cut CW	Overall Length L	Overall Length LF	Maximum Groove Depth CDX	Head Length LH	Effective Cutting Edge Length	Fig
KGVR2004-LD	★	*2.0*	*19.7*	*118.7*	*5.7*	*23.2*	*4.0*	1
KGVR2504-LD	★	*2.5*	*19.7*	*118.7*	*5.7*	*23.2*	*4.0*	1
KGVR2506-LD	★	*2.5*	*21.2*	*120.2*	*7.2*	*24.7*	*5.5*	1



Fig 1



The above dimensions for LF, CDX and LH are the holder dimensions with insert mounted.

Recommended Cutting Conditions

Work Material	P Steel M Stainless Steel N Non-Ferrous Metal	N Non-ferrous Metal	
Insert Grade	AC1030U	DA1000	
Machining Details	Grooving	Grooving	Traverse Cutting
Spindle Speed n (min-1)	4,000 to 6,000	4,500 to 8,000	4,500 to 8,000
Feed Rate f (IPR)	0.002 to 0.006	0.0025 to 0.006	0.0025 to 0.006
Coolant	Wet		

Be careful with spindle power during use. For small lathes, insufficient spindle power during machining may cause the machine to stop.
Be careful when machining carbon steel and stainless steel in particular.

● : USA stocked item
★ : Worldwide Warehouse item

N·m Recommended tightening torque (N·m) Note: Regrinding the PCD - SUMIDIA BreakMaster LD Type will adversely affect chip control performance.

SBT Type / PBT Type

SBT
Back Turning

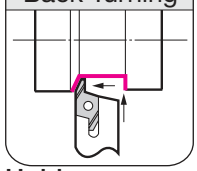


Fig 1

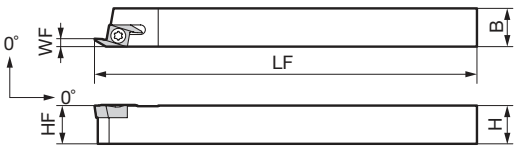
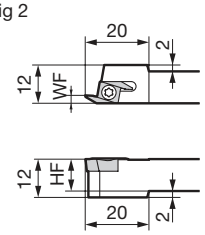


Fig 2



Holder

Parts

Dimensions (inch / *mm*)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Inch	**SBT3506**	●	.375	.375	6.000	.080	.375	BTR35○○	1	BFTX0307N	2.0	TRX10
Inch	**SBT3508**	●	.500	.500	6.000	.106	.500		1			
Inch	**SBT3510**	●	.625	.625	6.000	.133	.625		1			
Metric	**SBT35R1010**	★	*10*	*10*	*120*	*2.5*	*10*		2			
Metric	**SBT35R1212**	★	*12*	*12*	*120*	*2.5*	*12*		1			
Metric	**SBT35R1616**	★	*16*	*16*	*120*	*2.5*	*16*		1			
Metric	**SBT35R2020**	★	*20*	*20*	*125*	*2.5*	*20*		1			

PBT
Back Turning

Back Clamp

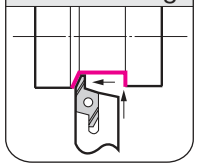


Fig 1

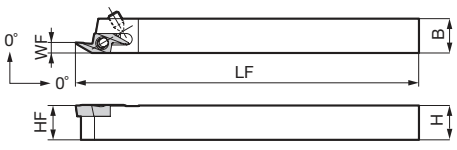
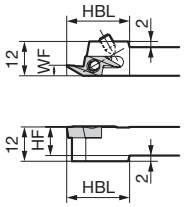


Fig 2



Back Turning
Lever Lock

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset HBL	Applicable Inserts	Fig	Lever Pin	Set Screw	Pin	Wrench (For Hex Socket)
PBT35R1010	★	*10*	*10*	*120*	*2.5*	*10*	*20*	BTR35○○	2	LCL09	BTT0407	LP07	TH020
PBT35R1212	★	*12*	*12*	*120*	*2.5*	*12*	-		1				
PBT35R1616	★	*16*	*16*	*120*	*2.5*	*16*	-		1		BTT0411		
PBT35R2020	★	*20*	*20*	*120*	*2.5*	*20*	-		1				
PBT55R1010	★	*10*	*10*	*120*	*3.7*	*10*	*22*	BTR55○○	2	LCL09	BTT0407	LP07	TH020
PBT55R1212	★	*12*	*12*	*120*	*3.7*	*12*	-		1				
PBT55R1616	★	*16*	*16*	*120*	*3.7*	*16*	-		1		BTT0411		
PBT55R2020	★	*20*	*20*	*120*	*3.7*	*20*	-		1				
PBT80R1010	★	*10*	*10*	*120*	*5.2*	*10*	*25*	BTR80○○	2	LCL09	BTT0407	LP07	TH020
PBT80R1212	★	*12*	*12*	*120*	*5.2*	*12*	-		1				
PBT80R1616	★	*16*	*16*	*120*	*5.2*	*16*	-		1		BTT0411		
PBT80R2020	★	*20*	*20*	*120*	*5.2*	*20*	-		1				

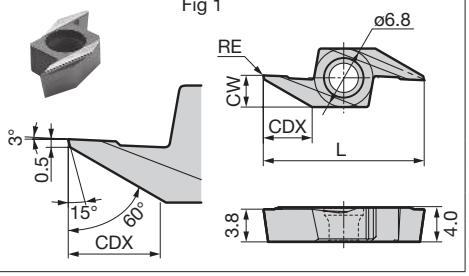
Insert

(Coated Carbide / Cermet)

Dimensions (*mm*)

Cat. No.	AC1030U	AC530U	ACZ150	T1500A	Overall Length L	Maximum Depth of Cut CDX	Width of Cut CW	Nose Radius RE	Applicable Holders	Fig
BTR3505	●	●	★	★	*15*	*3.5*	*2.5*	*0.05*	SBT35R○○○○	1
BTR3515	●	●	★	★	*15*	*3.5*	*2.5*	*0.15*	PBT35R○○○○	1
BTR5505	★	★	★	-	*19*	*5.5*	*3.7*	*0.05*	PBT55R○○○○	1
BTR5515	★	★	★	-	*19*	*5.5*	*3.7*	*0.15*		1
BTR8005	★	★	★	-	*24*	*8.0*	*5.2*	*0.05*	PBT80R○○○○	1
BTR8015	★	★	★	-	*24*	*8.0*	*5.2*	*0.15*		1

Fig 1



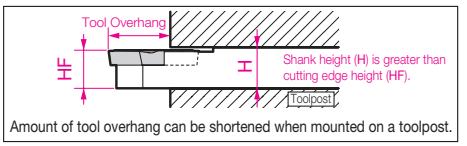
Recommended Cutting Conditions

Part Material	P Free-Cutting Steel		P Carbon Steel		M Stainless Steel	
Tooling	Plunging	Traverse Cut	Plunging	Traverse Cut	Plunging	Traverse Cut
Cutting Speed (v_c) (SFM)	165 to 500		165 to 500		165 to 500	
Feed Rate f (IPR)	.0008 - .004	.0008 - .006	.0008 - .002	.0008 - .004	.0008 - .0015	.0008 - .0025
Coolant	Oil-based					

● : USA stocked item
★ : Worldwide Warehouse item

Shank Tolerance of SBT Type / PBT Type

A positive tolerance (0.1 - 0.3) is applied to the shank height (H) to prevent the cutting edge from interfering with the toolpost.



N·m Recommended Tightening Torque (N·m)

SFT Type

General Turning
Screw-on

SFT
External Turning

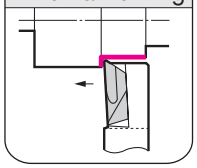
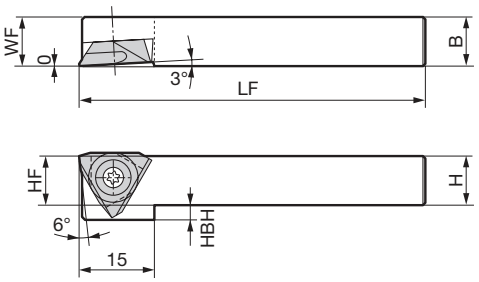


Fig 1



Holder

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset HBH	Applicable Inserts	Fig	Parts: Flat Screw	Parts: Wrench
											 (For Torx Holes)
SFTR1010	★	*10*	*10*	*120*	*10*	*10*	*3*	TFR33○○	1	BFTX0410NSW	RT08
SFTR1212	★	*12*	*12*	*120*	*12*	*12*	*1*		1		
SFTR1616	★	*16*	*16*	*120*	*16*	*16*	-		1		
SFTR2020	★	*20*	*20*	*120*	*20*	*20*	-		1		

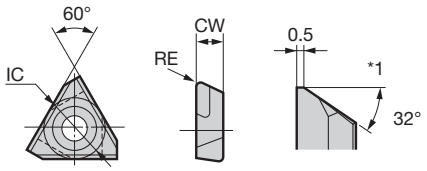
Insert

(Coated Carbide)

Dimensions (*mm*)

Cat. No.	ACZ150	Inscribed Circle IC	Width of Cut CW	Nose Radius RE	Applicable Holders	Fig
TFR3300	★	*9.525*	*4.76*	-	SFTR○○○○	1
TFR3305	★	*9.525*	*4.76*	*0.05*		1
TFR3315	★	*9.525*	*4.76*	*0.15*		1
TFR3320	★	*9.525*	*4.76*	*0.20*		1

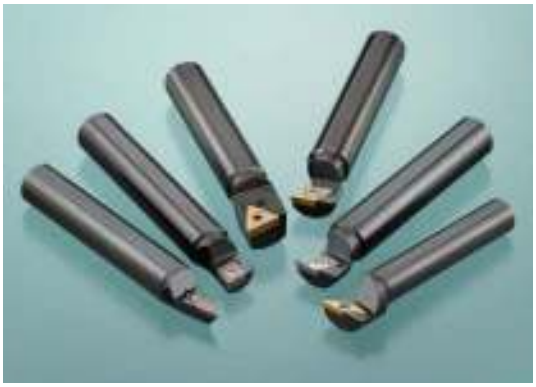
Fig 1



*1 Indicates angle when mounted on the holder
Maximum depth of cut 4.0mm

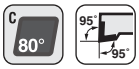
★: Worldwide Warehouse item

RS-SCL Type



■ Features of Round Shank Holders

- Shank diameters from ø14 to ø25 mm are in stock. Holders can be fitted on various manufacturers' sleeve toolposts.
- Bars can be mounted from the rear of the sleeve toolpost to increase the tooling range.



General Turning
Screw-on

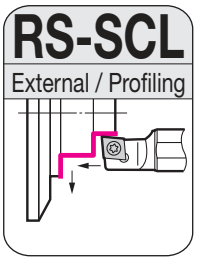
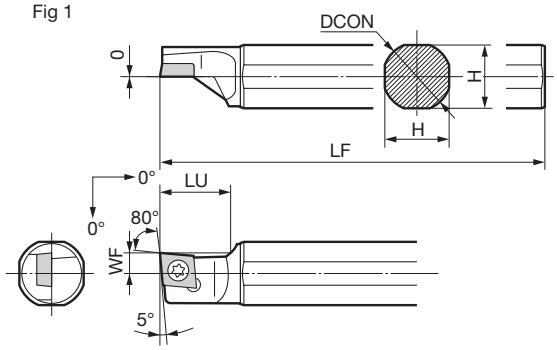


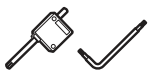
Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Usable Length LU	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Wrench
											RT08 LT25NT  (For Torx Holes)
RS15H-SCLL06	★	*15.875*	*15*	*100*	*6.0*	*20*	CC□□21.5□	**B75**	1	BFTX02507NT	RT08
RS19X-SCLL06	★	*19.05*	*18*	*120*	*6.0*	*20*			1		
RS20X-SCLL06X	★	*20*	*19*	*95*	*6.0*	*20*			1		
RS20X-SCLL06	★	*20*	*19*	*120*	*6.0*	*20*			1		
RS22X-SCLL06	★	*22*	*21*	*120*	*6.0*	*20*			1		
RS25X-SCLL06	★	*25*	*24*	*120*	*6.0*	*20*			1		
RS25M-SCLL06	★	*25.4*	*24*	*150*	*6.0*	*20*			1		
RS15H-SCLL09	★	*15.875*	*15*	*100*	*6.0*	*20*	CC□□32.5□	**B78**	1	BFTX0408NT	LT25NT
RS19X-SCLL09	★	*19.05*	*18*	*120*	*6.0*	*20*			1		
RS20X-SCLL09S	★	*20*	*19*	*95*	*6.0*	*20*			1		
RS20X-SCLL09	★	*20*	*19*	*120*	*6.0*	*20*			1		
RS22X-SCLL09	★	*22*	*21*	*120*	*6.0*	*20*			1		
RS25X-SCLL09	★	*25*	*24*	*120*	*6.0*	*20*			1		
RS25M-SCLL09	★	*25.4*	*24*	*150*	*6.0*	*20*			1		

Right hand (R) or neutral (N) inserts can be used.

★: Worldwide Warehouse item

RS-SDU / RS-SDX Type



General Turning
Screw-on

RS-SDU

External / Profiling

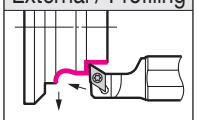
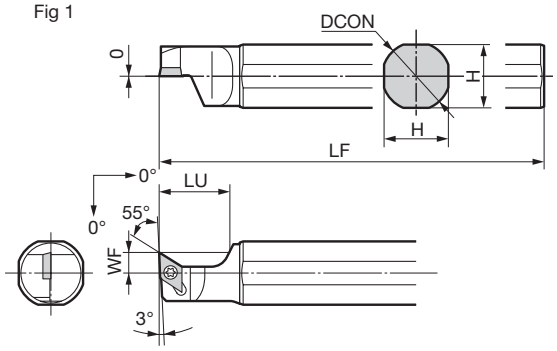


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Usable Length LU	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Wrench
RS14F-SDUL07	★	*14*	*13*	*80*	*6.0*	*20*	DC□□21.5□	**B85**	1	BFTX02507NT	RT08 (RT08 LT25NT (For Torx Holes))
RS15H-SDUL07	★	*15.875*	*15*	*100*	*6.0*	*20*			1		
RS16F-SDUL07	★	*16*	*15*	*80*	*6.0*	*20*			1		
RS16X-SDUL07	★	*16*	*15*	*120*	*6.0*	*20*			1		
RS19X-SDUL07	★	*19.05*	*18*	*120*	*6.0*	*20*			1		
RS20X-SDUL07S	★	*20*	*19*	*95*	*6.0*	*20*			1		
RS20X-SDUL07	★	*20*	*19*	*120*	*6.0*	*20*			1		
RS22X-SDUL07	★	*22*	*21*	*120*	*6.0*	*20*			1		
RS19X-SDUL11	★	*19.05*	*18*	*120*	*10.0*	*20*	DC□□32.5□	**B88**	1	BFTX0410NT	LT25NT
RS20X-SDUL11S	★	*20*	*19*	*95*	*10.0*	*20*			1		
RS20X-SDUL11	★	*20*	*19*	*120*	*10.0*	*20*			1		
RS22X-SDUL11	★	*22*	*21*	*120*	*10.0*	*20*			1		
RS25X-SDUL11	★	*25*	*24*	*120*	*10.0*	*20*			1		
RS25M-SDUL11	★	*25.4*	*24*	*150*	*10.0*	*20*			1		

Right hand (R) or neutral (N) inserts can be used.



General Turning
Screw-on

RS-SDX

External/Profiling

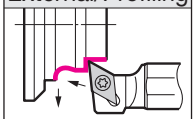
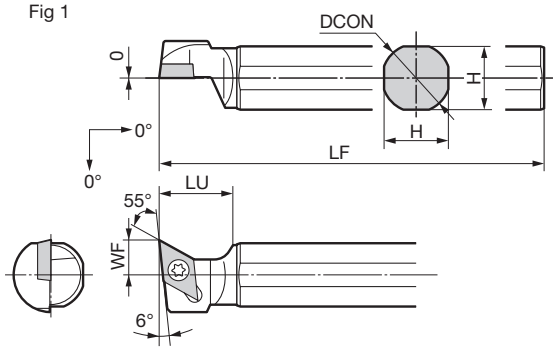


Fig 1



Holder

Parts

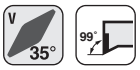
Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Usable Length LU	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Wrench
RS19X-SDXL11	★	*19.05*	*18*	*120*	*10.0*	*20*	DC□□32.5□	**B88**	1	BFTX0410NT	LT25NT (For Torx Holes)
RS20X-SDXL11S	★	*20*	*19*	*95*	*10.0*	*20*			1		
RS20X-SDXL11	★	*20*	*19*	*120*	*10.0*	*20*			1		
RS25X-SDXL11	★	*25*	*24*	*120*	*10.0*	*20*			1		

Right hand (R) or neutral (N) inserts can be used.

★: Worldwide Warehouse item

RS-SVX Type / RS-SVVP Type



General Turning
Screw-on

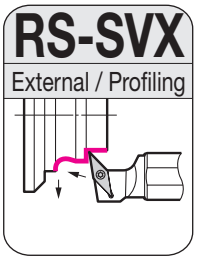
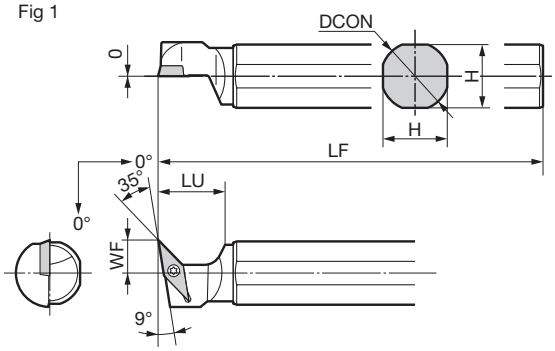


Fig 1



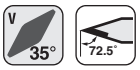
Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Usable Length LU	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Wrench (For Torx Holes)
RS15H-SVXL11	★	*15.875*	*15*	*100*	*10.0*	*20*	VC□□22□	**B124**	1	BFTX02507NT	RT08
RS19X-SVXL11	★	*19.05*	*18*	*120*	*10.0*	*20*			1		
RS20X-SVXL11S	★	*20*	*19*	*95*	*10.0*	*20*			1		
RS20X-SVXL11	★	*20*	*19*	*120*	*10.0*	*20*			1		
RS22X-SVXL11	★	*22*	*21*	*120*	*10.0*	*20*			1		
RS25X-SVXL11	★	*25.4*	*24*	*150*	*10.0*	*20*			1		

Right hand (R) or neutral (N) inserts can be used.



General Turning
Screw-on

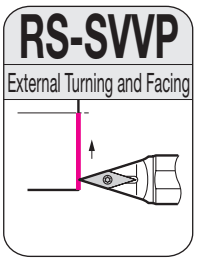
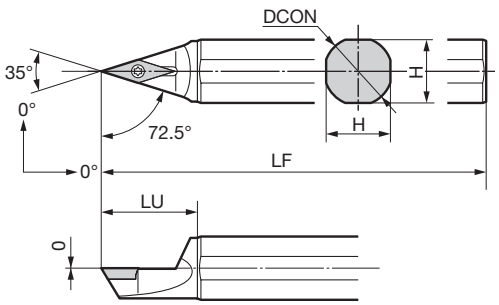


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Usable Length LU	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Wrench (For Torx Holes)
RS19X-SVVPN11	★	*19.05*	*18*	*120*	*27*	VP□□22□	Contact ENG Dept.	1	BFTX02507NT	RT08
RS22X-SVVPN11	★	*22*	*21*	*120*	*27*			1		

★: Worldwide Warehouse item

RS-PTXN Type



General Turning
Lever Lock

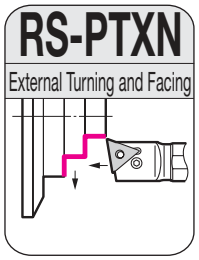
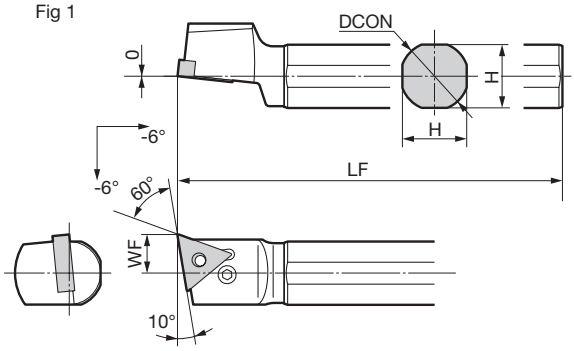


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Lever Pin	Bolt	Wrench (For Hex Socket)
RS19X-PTXNL16	★	*19.05*	*18*	*120*	*11.0*	TN□□33□	**B56**	1	LCL33NT	LCS33NT	LH020NT
RS20X-PTXNL16	★	*20*	*19*	*120*	*11.0*			1			
RS25M-PTXNL16	★	*25.4*	*24*	*150*	*13.0*			1			

Right hand (R) or neutral (N) inserts can be used.

★: Worldwide Warehouse item

Zero Offset Holders

Zero Offset | Back Clamp | C 80° | 95° 95°

PCLC
External Turning and Facing

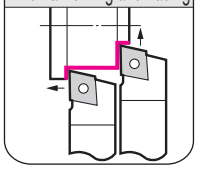
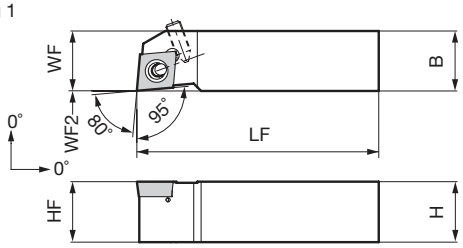


Fig 1



For PCLC R/L1212-K09X

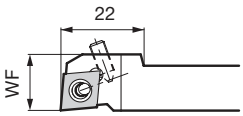


Figure shows right-hand (R) tool.

Dimensions (inch / *mm*)

Holder

Parts

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Lever Pin	Set Screw	Pin	Wrench (For Hex Socket)
Inch	**PCLC R/L 062D**	●	●	.375	.375	6.000	.395	.375	.020	CC□□21.5	**B75**	1	LCL06	BTT0407	LP07	TH020
Inch	**PCLC R/L 083D**	●	●	.500	.500	6.000	.520	.500	.020	CC□□32.5	**B78**	1	LCL09	BTT0411	LP06	
Inch	**PCLC R/L 103D**	●	●	.625	.625	6.000	.645	.625	.020			1				
Metric	**PCLC R/L 1010-K06X**	★		*10*	*10*	*125*	*10*	*10*	*0*	CC□□21.5	**B75**	1	LCL06	BTT0407	LP07	
Metric	**PCLC R/L 1212-K09X**	★		*12*	*12*	*125*	*15*	*12*	*0*	CC□□32.5	**B78**	1	LCL09	BTT0411	LP06	
Metric	**PCLC R/L 1616-K09X**	★		*16*	*16*	*125*	*16*	*16*	*0*			1				

Zero Offset | C 80° | 95° 95°

SCLC-X
External Turning and Facing

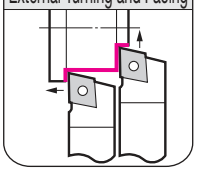


Fig 1

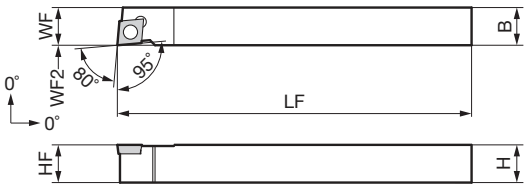


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
SCLC R/L 1010-H06X	★	★	*10*	*10*	*100*	*10*	*10*	*0*	CC□□21.5	**B75**	1	BFTX02506N	1.5	TRX08
SCLC R/L 1215-K09X	★	★	*12*	*15*	*125*	*15*	*12*	*0*	CC□□32.5	**B78**	1	BFTX0409N	3.4	TRX15
SCLC R/L 1215-F09X*	★	★	*12*	*15*	*85*	*15*	*12*	*0*			1			

*85mm Shank

Zero Offset | C 80° | 91°

SCAC-X
External Turning

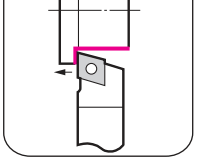


Fig 1

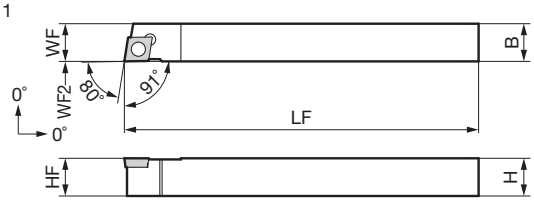


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
SCAC R/L 1010-H06X	★	★	*10*	*10*	*100*	*10*	*10*	*0*	CC□□21.5	**B75**	1	BFTX02506N	1.5	TRX08
SCAC R/L 1215-F09X*	★	★	*12*	*15*	*85*	*15*	*12*	*0*	CC□□32.5	**B78**	1	BFTX0409N	3.4	TRX15
SCAC R/L 1215-K09X	★	★	*12*	*15*	*125*	*15*	*12*	*0*			1			

*85mm Shank

●: USA stocked item
★: Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

Zero Offset Holders

Zero Offset | Back Clamp | D 55° | 93°

PDJC

External / Profiling

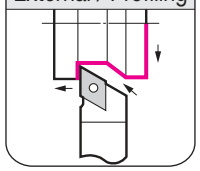
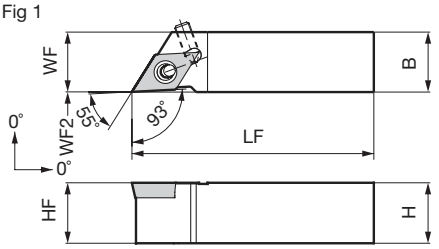


Fig 1



For PDJC R/L1212-K11X

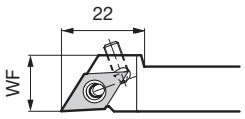


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch / *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Lever Pin	Set Screw	Pin	Wrench (For Hex Socket)
Inch	**PDJC R/L 062D**	●	●	.375	.375	6.000	.375	.395	.020	DC□□21.5	**B85**	1	LCL06	BTT0407	LP04	TH020
Inch	**PDJC R/L 083D**	●	●	.500	.500	6.000	.500	.520	.020	DC□□32.5	**B88**	1	LCL09	BTT0411	LP07	TH020
Inch	**PDJC R/L 103D**	●	●	.625	.625	6.000	.625	.645	.020	DC□□32.5	**B88**	1	LCL09	BTT0411	LP07	TH020
Metric	**PDJC R/L1010-K07X**	★		*10*	*10*	*125*	*10*	*10*	*0*	DC□□21.5	**B85**	1	LCL06	BTT0407	LP04	TH020
Metric	**PDJC R/L1212-K11X**	★		*12*	*12*	*125*	*15*	*12*	*0*	DC□□32.5	**B88**	1	LCL09	BTT0411	LP07	TH020
Metric	**PDJC R/L1616-K11X**	★		*16*	*16*	*125*	*16*	*16*	*0*	DC□□32.5	**B88**	1	LCL09	BTT0411	LP07	TH020

Zero Offset | D 55° | 93°

SDJC-X

External / Profiling

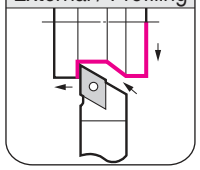


Fig 1

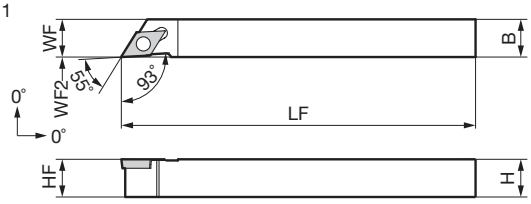


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch / *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Metric	**SDJC R/L1010-H07X**	★	★	*10*	*10*	*100*	*10*	*10*	*0*	DC□□21.5	**B85**	1	BFTX02506N	1.5	TRX08
Metric	**SDJC R/L1215-F11X***	★	★	*12*	*15*	*85*	*15*	*12*	*0*	DC□□32.5	**B88**	1	BFTX0409N	3.4	TRX15
Metric	**SDJC R/L1215-K11X**	★	★	*12*	*15*	*125*	*15*	*12*	*0*	DC□□32.5	**B88**	1	BFTX0409N	3.4	TRX15

*85mm Shank

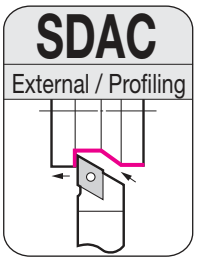
● : USA stocked item

★ : Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

Zero Offset Holders

SDAC
External / Profiling



Zero Offset | D 55° | 91°

Fig 1

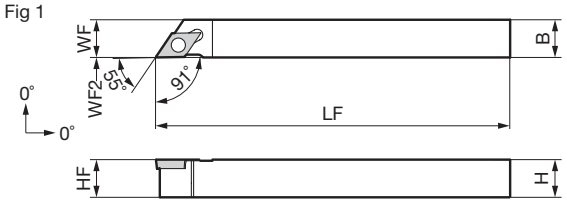


Figure shows right-hand (R) tool.

Holder

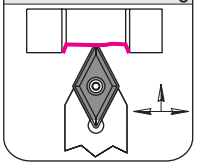
Parts

Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Torq Screw	N·m	Wrench (For Torx Holes)
Inch	**SDAC R/L 062B**	●	●	0.375	0.375	4.500	0.375	0.375	0	DC□□21.5	**B85**	1	TS25.456M2	**1.5**	TRX08
	SDAC R/L 062D	●	●	0.375	0.375	6.000	0.375	0.375	0			1			
	SDAC R/L 082B	●	●	0.500	0.500	4.500	0.500	0.500	0			1			
	SDAC R/L 082D	●	●	0.500	0.500	6.000	0.500	0.500	0			1			
	SDAC R/L 083B	●	●	0.500	0.500	4.500	0.500	0.500	0	DC□□32.5	**B88**	1	TS4.710M1	**3.0**	TRX15
	SDAC R/L 083D	●	●	0.500	0.500	6.000	0.500	0.500	0			1			
	SDAC R/L 103B	●	●	0.625	0.625	4.500	0.625	0.625	0			1			
	SDAC R/L 103D	●	●	0.625	0.625	6.000	0.625	0.625	0			1			
	SDAC R/L 123B	●	●	0.750	0.750	4.500	0.750	0.750	0			1			
Metric	**SDAC R/L1010-H07X**	★	★	*10*	*10*	*100*	*10*	*10*	*0*	DC□□21.5	**B85**	1	BFTX02506N	**1.5**	TRX08
	SDAC R/L1215-F11X*	★	★	*12*	*15*	*85*	*15*	*12*	*0*	DC□□32.5	**B88**	1	BFTX0409N	**3.4**	TRX15
	SDAC R/L1215-K11X	★	★	*12*	*15*	*125*	*15*	*12*	*0*			1			

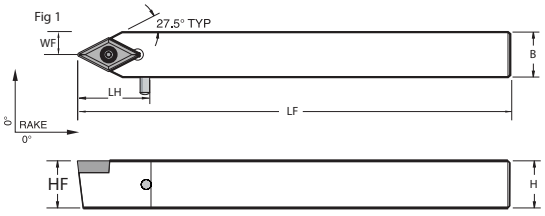
*85mm Shank

SDPC
External Machining



Zero Offset | D 55° | 117.5°

Fig 1



Neutral Hand Shown

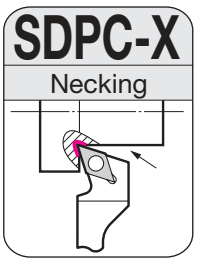
Holder

Dimensions (inch)

Parts

Cat. No.	Stock Neutral	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Torq Screw	N·m	Wrench (For Torx Holes)
SDPCN062B	●	.375	.375	4.500	.1875	.375	1.000	DC□□21.5	**B85**	1	TS25.456M2	**1.5**	TRX08
SDPCN062D	●	.375	.375	6.000	.1875	.375	1.000			1			
SDPCN082B	●	.500	.500	4.500	.250	.500	1.000			1			
SDPCN083B	●	.500	.500	4.500	.250	.500	1.000	DC□□32.5	**B88**	1	TS4.710M1	**3.0**	TRX15
SDPCN083D	●	.500	.500	6.000	.250	.500	1.000			1			
SDPCN103B	●	.625	.625	4.500	.3125	.625	1.000			1			
SDPCN103D	●	.625	.625	6.000	.3125	.625	1.000			1			

SDPC-X
Necking



Zero Offset | D 55° | 107.5°

Fig 1

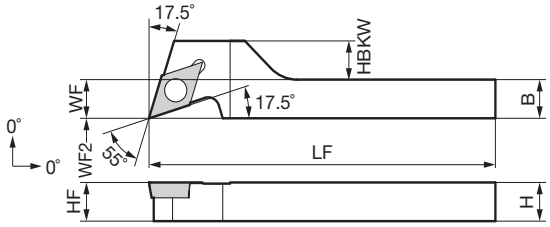


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBKW	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
SDPC R/L1010-H11X	★	★	*10*	*10*	*100*	*10*	*10*	*10*	*0*	DC□□21.5	**B85**	1	BFTX0409N	**3.4**	TRX15

● : USA stocked item
★ : Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

Zero Offset Holders

Zero Offset | V 35° | 93°

SVJC

General Turning and Profiling

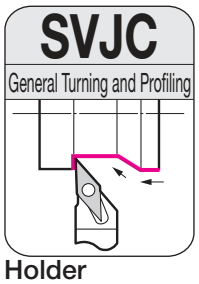


Fig 1

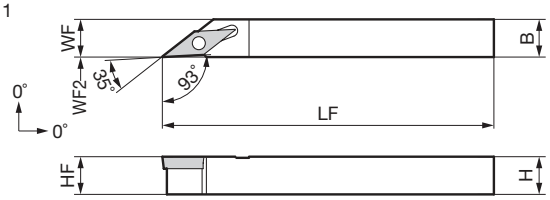


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Torq Screw	N·m	Wrench (For Torx Holes)
Inch	**SVJC R/L 062D**	●	●	.375	.375	6.00	0.375	.375	0	VC□□22□	**B124**	1	ST-1225	1.5	TRX15040
	SVJC R/L 082D	●	●	.500	.500	6.00	0.500	.500	0						
	SVJC R/L 083D	●	●	.500	.500	6.00	0.500	.500	0	VC□□33□	**B126**		ST-1240		
	SVJC R/L 103D	●	●	.625	.625	6.00	0.625	.625	0						
Metric	**SVJC R/L1010-H11X**	★	★	*10*	*10*	*100*	*10*	*10*	*0*	VC□□22□	**B124**				
	SVJC R/L1212-F11X*	★	★	*12*	*12*	*85*	*12*	*12*	*0*			1	BFTX02508NV	1.5	TRX08
	SVJC R/L1212-K11X	★	★	*12*	*12*	*125*	*12*	*12*	*0*			1			

*85mm Shank

● : USA stocked item

★ : Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

Zero Offset Holders

Zero Offset | T 60° | 100°

PTXN-X

External Turning and Facing

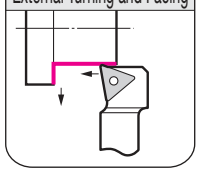
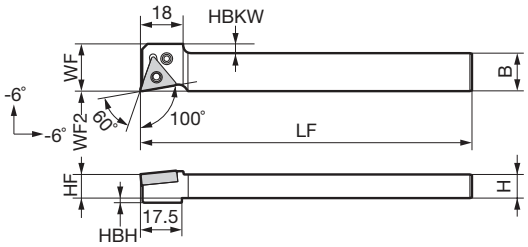


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBH	Step HBKW	Offset WF2	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Lever Pin	Bolt	Wrench (For Hex Socket)
PTXNR1016-X16X	★	*10*	*16*	*120*	*20*	*10*	*2*	*4*	*0*	TN□□33□	**B56**	1	LCL33NT	LCS33NT	LH020NT
PTXNR1216-X16X	★	*12*	*16*	*120*	*20*	*12*	*0*	*4*	*0*			1			
PTXNR1616-X16X	★	*16*	*16*	*120*	*20*	*16*	*0*	*4*	*0*			1			
PTXNR2020-X16X	★	*20*	*20*	*120*	*20*	*20*	*0*	*0*	*0*			1			

★: Worldwide Warehouse item

Back Clamp

General Turning
Lever Lock

PCLC

External Turning and Facing

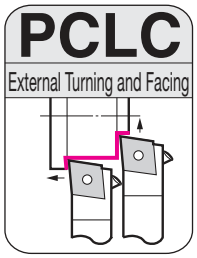
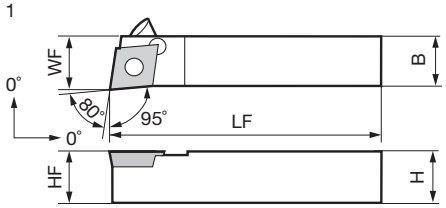


Fig 1



For PCLC R/L0810-K06

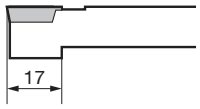


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Lever Pin	Set Screw	Pin	Wrench
Inch	**PCLC R/L 062D**	●	●	0.375	0.375	6.00	0.395	0.375	CC□□21.5	**B75**	1	LCL06	BTT0407	LP07	TH020
Inch	**PCLC R/L 083D**	●	●	0.500	0.500	6.00	0.520	0.500	CC□□32.5	**B78**	1	LCL09	BTT0407	LP06	TH020
Inch	**PCLC R/L 103D**	●	●	0.625	0.625	6.00	0.645	0.625			1		BTT0411		
Metric	**PCLC R/L 0810-K06**	★	★	*8*	*10*	*125*	*10.5*	*8*	CC□□21.5	**B75**	1	LCL06	BTT0407	LP07	TH020
Metric	**PCLC R/L 1010-K06**	★	★	*10*	*10*	*125*	*10.5*	*10*			1				
Metric	**PCLC R/L 1212-K09X**	★		*12*	*12*	*150*	*12.5*	*12*	CC□□32.5	**B78**	1	LCL09	BTT0411	LP06	TH020
Metric	**PCLC R/L 1212-M09**	★	★	*12*	*12*	*150*	*12.5*	*12*			1		BTT0407		TH020
Metric	**PCLC R/L 1616-M09**	★	★	*16*	*16*	*150*	*16.5*	*16*			1		BTT0411		
Metric	**PCLC R/L 2020-M09**	★	★	*20*	*20*	*150*	*20.5*	*20*			1				

General Turning
Screw-on

SCLC

External Turning and Facing

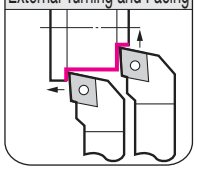


Fig 1

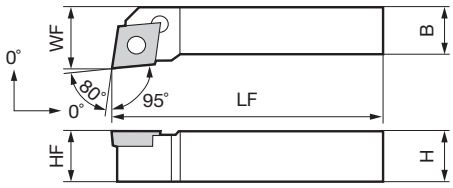


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	N·m	Wrench
Inch	**SCLC R/L 4.52D**	●	●	0.281	0.281	6.00	0.281	0.281	CC□□21.5	**B75**	1	ST-1225	**0.9**	TRD07
Inch	**SCLC R/L 052D**	●	●	0.312	0.312	6.00	0.312	0.312			1			
Inch	**SCLC R/L 062D**	●	●	0.375	0.375	6.00	0.375	0.375			1			
Inch	**SCLC R/L 083D**	●	●	0.500	0.500	6.00	0.500	0.500	CC□□32.5	**B78**	1	ST-1240	**3.0**	TRD15
Inch	**SCLC R/L 103D**	●	●	0.625	0.625	6.00	0.625	0.625			1			
Metric	**SCLC R/L 0808-06**	★	★	*8*	*8*	*100*	*10*	*8*	CC□□21.5	**B75**	1	BFTX02506N	**1.5**	TRX08
Metric	**SCLC R/L 1010-06**	★	★	*10*	*10*	*100*	*12*	*10*			1			
Metric	**SCLC R/L 1212-09**	★	★	*12*	*12*	*100*	*16*	*12*	CC□□32.5	**B78**	1	BFTX0409N	**3.4**	TRX15
Metric	**SCLC R/L 1616-09**	★	★	*16*	*16*	*100*	*20*	*16*			1			
Metric	**SCLC R/L 2020-09**	★	★	*20*	*20*	*125*	*24*	*20*			1			

● : USA stocked item
★ : Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)



● : USA stocked item
★ : Worldwide Warehouse item

General Turning
Screw-on

SCAC
External Turning

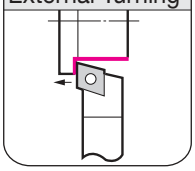


Fig 1

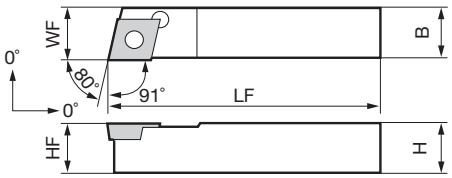


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Inch	**SCAC R/L 4.5D**	●	●	0.281	0.281	6.00	0.281	0.281	CC□□21.5	**B75**	1	ST-1225	**0.9**	TRD07
	SCAC R/L 052D	●	●	0.312	0.312	6.00	0.312	0.312			1			
	SCAC R/L 062B	●	●	0.375	0.375	4.50	0.375	0.375			1			
	SCAC R/L 062D	●	●	0.375	0.375	6.00	0.375	0.375			1			
	SCAC R/L 083B	●	●	0.500	0.500	4.50	0.500	0.500	CC□□32.5	**B78**	1	ST-1240	**3.0**	TRD15
	SCAC R/L 083D	●	●	0.500	0.500	6.00	0.500	0.500			1			
	SCAC R/L 103B	●	●	0.625	0.625	4.50	0.625	0.625			1			
	SCAC R/L 103D	●	●	0.625	0.625	6.00	0.625	0.625			1			
Metric	**SCAC R/L 0808-06**	★		*8*	*8*	*100*	*8.5*	*8*	CC□□21.5	**B75**	1	BFTX02506N	**1.5**	TRX08
	SCAC R/L 1010-06	★	★	*10*	*10*	*100*	*10.5*	*10*			1			
	SCAC R/L 1212-09	★	★	*12*	*12*	*100*	*12.5*	*12*	CC□□32.5	**B78**	1	BFTX0409N	**3.4**	TRX15
	SCAC R/L 1616-09	★	★	*16*	*16*	*100*	*16.5*	*16*			1			
	SCAC R/L 2020-09	★	★	*20*	*20*	*125*	*20.5*	*20*			1			

SCNC
General Turning and Profiling

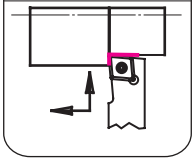
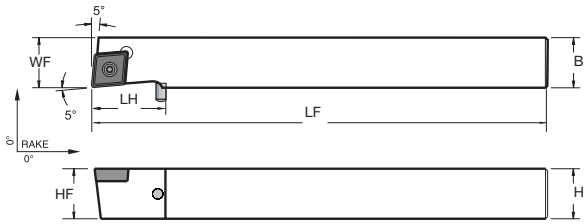


fig 1



Right Hand Shown, Left Hand Opposite

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head Length LH	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Inch	**SCNC R/L 062B**	●	●	0.375	0.375	4.50	0.375	0.375	1.000	CC□□21.5	**B75**	1	TS25.456M2	**0.9**	TRX08
	SCNC R/L 062D	●	●	0.375	0.375	6.00	0.375	0.375	1.000			1			
	SCNC R/L 082B	●	●	0.500	0.500	4.50	0.500	0.500	1.000			1			
	SCNC R/L 083B	●	●	0.500	0.500	4.50	0.500	0.500	1.000	CC□□32.5	**B78**	1	TS4.710M1	**3.0**	TRX15
	SCNC R/L 083D	●	●	0.500	0.500	6.00	0.500	0.500	1.000			1			
	SCNC R/L 103B	●	●	0.625	0.625	4.50	0.625	0.625	1.000			1			
	SCNC R/L 103D	●	●	0.625	0.625	4.50	0.625	0.625	1.000			1			

Applicable Inserts

◀·· PCLC Type / SCLC Type / SCAC Type

Legend: Name of Chipbreaker/ CBN/PCD — EGU; Photo; Grade — AC8025P

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) -	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material -
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**EMU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC6030M**	**EMU** **AC6040M**	SUMIBORON BN7000/BNC500	**EMU** **AC4015K**	No Chipbreaker **AC4015K**	**ESU** **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2020**	SUMIBORON **BN2000**	SUMIDIA **DA90**
High Precision	**EFC** **T1500A**	**MESI** **AC1030U**	**EFM** **AC1030U**	**EFC** **AC1030U**	**MESI** **AC1030U**	**EFM** **AC1030U**	SUMIBORON BN7000/BNC500	-	-	**MESI** **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2010**	SUMIBORON **BN1000**	SUMIDIA Binderless **NPD10**
Recommended Cutting Conditions	**A10** on			**A14** on			**A16** on			**A18** on	**A22** on	**A20** on		**M2** on

BNC500 is for ductile cast iron.

N·m Recommended Tightening Torque (N·m)

PD / SD Type

Back Clamp | D 55° | 93°

● : USA stocked item
★ : Worldwide Warehouse item

General Turning and Profiling
Lever Lock

PDJC

External / Profiling

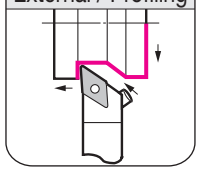
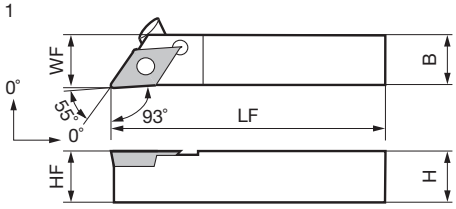


Fig 1



For PDJC R/L0810-K07

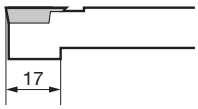


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (Inch/ *mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Lever Pin	Set Screw	Pin	Wrench (For Hex Socket)
PDJC R/L 062D	●	●	0.375	0.375	6.00	0.395	0.375	DC□□21.5	**B85**	1	LCL06	BTT0407	LP04	TH020
PDJC R/L 083D	●	●	0.500	0.500	6.00	0.520	0.500	DC□□32.5	**B88**	1	LCL09	BTT0407	LP07	TH020
PDJC R/L 103D	●	●	0.625	0.625	6.00	0.645	0.625			1		BTT0411		
PDJC R/L0810-K07	★	★	*8*	*10*	*125*	*10.5*	*8*	DC□□21.5	**B85**	1	LCL06	BTT0407	LP04	TH020
PDJC R/L1010-K07	★	★	*10*	*10*	*125*	*10.5*	*10*			1				
PDJC R/L1212-M11	★	★	*12*	*12*	*150*	*12.5*	*12*	DC□□32.5	**B88**	1	LCL09	BTT0407	LP07	TH020
PDJC R/L1616-M11	★	★	*16*	*16*	*150*	*16.5*	*16*			1		BTT0411		
PDJC R/L2020-M11	★	★	*20*	*20*	*150*	*20.5*	*20*			1				

D 55° | 93°

General Turning and Profiling
Screw-on

SDJC

External / Profiling

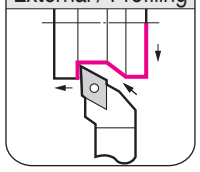


Fig 1

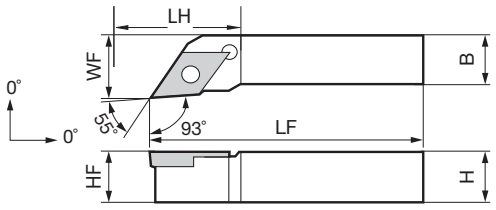


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Inch	**SDJC R/L 062D**	●	●	0.375	0.375	6.00	0.375	0.375	0.625	DC□□21.5	**B85**	1	ST-1225	**0.9**	TRD07
	SDJC R/L 082D	●	●	0.500	0.500	6.00	0.500	0.500	0.625			1			
	SDJC R/L 083D	●	●	0.500	0.500	6.00	0.500	0.500	0.750	DC□□32.5	**B88**	1	ST-1240	**3.0**	TRD15
	SDJC R/L 103D	●	●	0.625	0.625	6.00	0.625	0.625	0.750			1			
Metric	**SDJC R/L0808-07**	★		*8*	*8*	*100*	*10*	*8*	–	DC□□21.5	**B85**	1	BFTX02506N	**1.5**	TRX08
	SDJC R/L1010-07	★	★	*10*	*10*	*100*	*12*	*10*	–			1			
	SDJC R/L1212-11	★	★	*12*	*12*	*100*	*16*	*12*	–	DC□□32.5	**B88**	1	BFTX0409N	**3.4**	TRX15
	SDJC R/L1616H11	★	★	*16*	*16*	*100*	*20*	*16*	–			1			
	SDJC R/L2020K11	★	★	*20*	*20*	*125*	*24*	*20*	–			1			

Applicable Inserts

◀·· PDJC Type / SDJC Type / SDAC Type / SDNC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — EGU; Photo; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) –	H (Hardened Steel) Coated	H (Hardened Steel) Non-coated	Hard Brittle Material –
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**EMU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC6030M**	**EMU** **AC6030M**	SUMIBORON BN7000/BNC500	**EMU** **AC4015K**	No Chipbreaker **AC4015K**	**ESU** **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2020**	SUMIBORON **BN2000**	SUMIDIA **DA90**
High Precision	**EFC** **T1500A**	**MESI** **AC1030U**	**EFM** **AC1030U**	**EFC** **AC1030U**	**MESI** **AC1030U**	**EFM** **AC1030U**	SUMIBORON BN7000/BNC500	–	–	**MESI** **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2010**	SUMIBORON **BN1000**	SUMIDIA Binderless **NPD10**
Recommended Cutting Conditions	☞ **A10** on			☞ **A14** on			☞ **A16** on			☞ **A18** on	☞ **A22** on	☞ **A20** on		☞ **M2** on

BNC500 is for ductile cast iron.

N·m Recommended Tightening Torque (N·m)



General Turning and Profiling
Screw-on

SDAC

External / Profiling

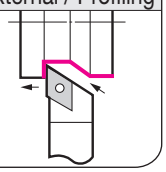


Fig 1

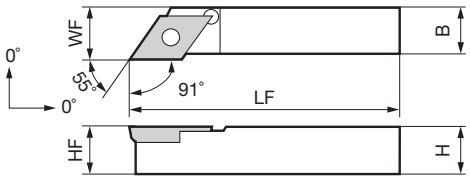


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Inch	**SDAC R/L 062B**	●	●	0.375	0.375	4.50	0.375	0.375	0.625	DC□□21.5	**B85**	1	ST-1225	**0.9**	TRD07
	SDAC R/L 062D	●	●	0.375	0.375	6.00	0.375	0.375	0.625			1			
	SDAC R/L 082B	●	●	0.500	0.500	4.50	0.500	0.500	0.625			1			
	SDAC R/L 082D	●	●	0.500	0.500	6.00	0.500	0.500	0.625			1			
	SDAC R/L 083B	●	●	0.500	0.500	4.50	0.500	0.500	0.875	DC□□32.5	**B88**	1	ST-1240	**3.0**	TRD15
	SDAC R/L 083D	●	●	0.500	0.500	6.00	0.500	0.500	0.875			1			
	SDAC R/L 103B	●	●	0.625	0.625	4.50	0.625	0.625	0.875			1			
	SDAC R/L 103D	●	●	0.625	0.625	6.00	0.625	0.625	0.875			1			
	SDAC R/L 123D	●	●	0.750	0.750	4.50	0.750	0.750	0.875			1			
Metric	**SDAC R/L 0808-07**	★	★	*8*	*8*	*100*	*8.5*	*8*	–	DC□□21.5	**B85**	1	BFTX02506N	**1.5**	TRX08
	SDAC R/L 1010-07	★	★	*10*	*10*	*100*	*10.5*	*10*	–			1			
	SDAC R/L 1212-11	★	★	*12*	*12*	*100*	*12.5*	*12*	–	DC□□32.5	**B88**	1	BFTX0409N	**3.4**	TRX15
	SDAC R/L 1616-11	★	★	*16*	*16*	*100*	*16.5*	*16*	–			1			
	SDAC R/L 2020-11	★	★	*20*	*20*	*125*	*20.5*	*20*	–			1			



General Turning and Profiling
Screw-on

SDNC

External / Profiling

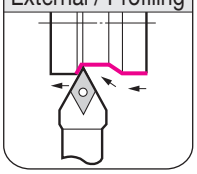
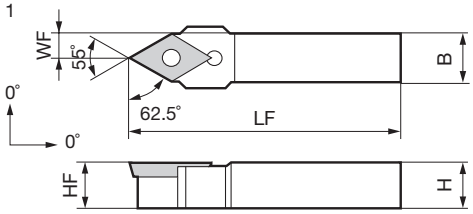
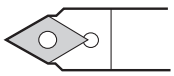


Fig 1



For SDNC N1616
SDNC N2020



Holder

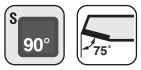
Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Inch	**SDNCN062B**	●	0.375	0.375	4.50	0.375	0.375	DC□□21.5	**B85**	1	ST-1225	**0.9**	TRD07
	SDNCN062D	●	0.375	0.375	6.00	0.375	0.375			1			
	SDNCN082B	●	0.500	0.500	4.50	0.500	0.500			1			
	SDNCN082D	●	0.500	0.500	6.00	0.500	0.500			1			
	SDNCN083D	●	0.500	0.500	6.00	0.500	0.500	DC□□32.5	**B88**	1	ST-1240	**3.0**	TRD15
	SDNCN103B	●	0.625	0.625	4.50	0.625	0.625			1			
	SDNCN103D	●	0.625	0.625	6.00	0.625	0.625			1			
Metric	**SDNCN0808-07**		*8*	*8*	*100*	*4*	*8*	DC□□21.5	**B85**	1	BFTX02506N	**1.5**	TRX08
	SDNCN1010-07	★	*10*	*10*	*100*	*5*	*10*			1			
	SDNCN1212-11	★	*12*	*12*	*100*	*6*	*12*	DC□□32.5	**B88**	1	BFTX0409N	**3.4**	TRX15
	SDNCN1616-11	★	*16*	*16*	*100*	*8*	*16*			1			
	SDNCN2020-11	★	*20*	*20*	*125*	*10*	*20*			1			

● : USA stocked item
★: Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)



General Turning
Screw-on

SSBC
External Turning

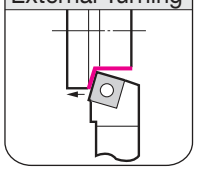


Fig 1

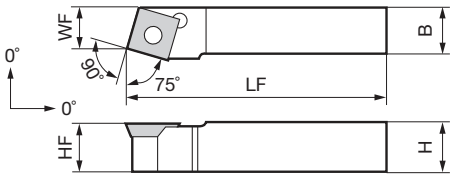


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
SSBC R/L1010-07	★	★	*10*	*10*	*100*	*9*	*10*	SC□□2.51.5	**B94**	1	BFTX0307N	**2.0**	TRX10
SSBC R/L1212-09	★	★	*12*	*12*	*100*	*11*	*12*	SC□□32.5	**B95**	1	BFTX0409N	**3.4**	TRX15
SSBC R/L1616-09	★	★	*16*	*16*	*100*	*15*	*16*			1			
SSBC R/L2020-09	★	★	*20*	*20*	*125*	*19*	*20*			1			

Zero Offset



SSDC
External Machining

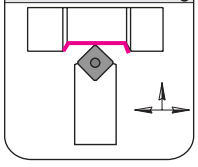
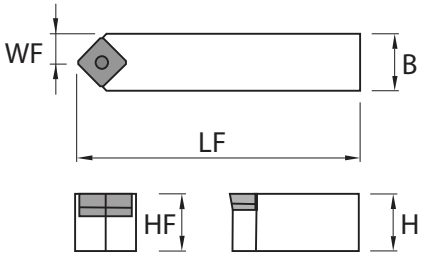


fig 1



Holder

Parts

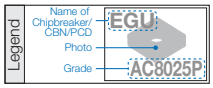
Dimensions (inch)

Cat. No.	Stock Neutral	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Shim	Insert Screw	Shim Screw	Wrench (For Torx Holes)
SSDCN083	•	.500	.500	3.50	.263	.500	SC□□32.5	**B95**	1	–	BFTX0407N	–	TRX15
SSDCN103	•	.625	.625	4.00	.325	.625			1				
SSDCN124B	•	.750	.750	4.50	.263	.750	SC□□43	**B96**	1	SH-3514	ST-1540	TRX15040	BFTX0405

Applicable Inserts ◂·· SSBC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-ferrous)
General Cutting	EFB **T1500Z**	ESU **AC8025P**	EMU **AC8025P**	ELB **AC6030M**	ESU **AC6030M**	EMU **AC6040M**	EMU **AC4015K**	No Chipbreaker **AC4015K**	SUMIDIA **DA1000**
High Precision	FX **T1500A**	C **AC1030U**	C **AC1030U**	FX **AC1030U**	EFM **AC1030U**	EFM **AC1030U**	–	–	SUMIDIA **DA1000**
Recommended Cutting Conditions	☞ **A10** on			☞ **A14** on			☞ **A16** on		☞ **A22** on

N·m Recommended Tightening Torque (N·m)

● : USA stocked item

★ : Worldwide Warehouse item

● : USA stocked item
★ : Worldwide Warehouse item

General Turning
Screw-on

STAC
External Turning

Fig 1

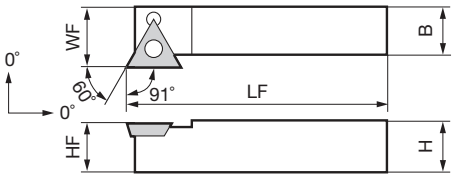


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch / *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Inch	**STAC R/L 062B**	●	●	0.375	0.375	4.50	0.375	0.375	TC□□21.5	**B107**	1	ST-21.5		TRX08
	STAC R/L 062D	●	●	0.375	0.375	6.00	0.375	0.375			1			
	STAC R/L 082B	●	●	0.500	0.500	4.50	0.500	0.500			1			
	STAC R/L 082D	●	●	0.500	0.500	6.00	0.500	0.500			1			
	STAC R/L 102D	●	●	0.625	0.625	6.00	0.625	0.625			1			
	STAC R/L 103B	●	●	0.625	0.625	4.50	0.625	0.625	TC□□32.5	**B109**	1	ST-32.5		TRX15
	STAC R/L 103D	●	●	0.625	0.625	6.00	0.625	0.625			1			
Metric	**STAC R/L 0808-09**		★	*8*	*8*	*100*	*8.5*	*8*	TC□□1.81.5	**B106**	1	BFTX02205N	**0.5**	TRX06
	STAC R/L 1010-09	★		*10*	*10*	*100*	*10.5*	*10*			1			
	STAC R/L 1010-11*			*10*	*10*	*100*	*12*	*10*	TC□□21.5	**B107**	1	BFTX02506N	**1.5**	TRX08
	STAC R/L 1212-11	★	★	*12*	*12*	*100*	*12.5*	*12*			1			
	STAC R/L 1616-11	★	★	*16*	*16*	*100*	*16.5*	*16*			1			
	STAC R/L 1616-16*			*16*	*16*	*100*	*20*	*16*	TC□□32.5	**B109**	1			
	STAC R/L 2020-11	★	★	*20*	*20*	*125*	*20.5*	*20*	TC□□21.5	**B107**	1			

STGC
External Turning

Fig 1

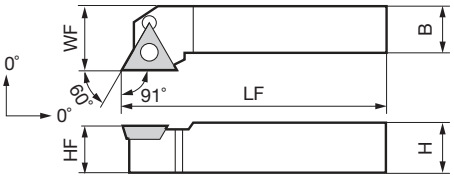


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
STGC R/L0808-09	★		*8*	*8*	*100*	*10*	*8*	TC□□1.81.5	**B106**	1	BFTX02205N	**0.5**	TRX06
STGC R/L1010-09	★	★	*10*	*10*	*100*	*12*	*10*			1			
STGC R/L1212-11	★	★	*12*	*12*	*100*	*16*	*12*	TC□□21.5	**B107**	1	BFTX02506N	**1.5**	TRX08
STGC R/L1616-11	★	★	*16*	*16*	*100*	*20*	*16*			1			
STGC R/L2020-11	★	★	*20*	*20*	*125*	*25*	*20*			1			

STJC
External Turning and Facing

Fig 1

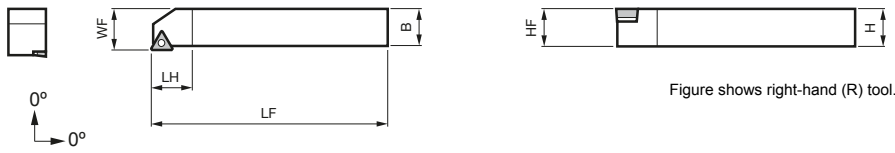


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Wrench (For Torx Holes)
STJC R/L 062D	●	●	0.375	0.375	6.00	0.375	0.375	0.625	TC□□21.5	**B107**	1	ST-1225	TRD07
STJC R/L 082D	●	●	0.500	0.500	6.00	0.500	0.500	0.625			1		
STJC R/L 102D	●	●	0.625	0.625	6.00	0.625	0.625	0.625					

Applicable Inserts

◀ STGC Type / STAC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.

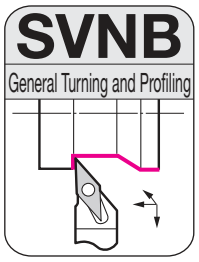
Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-ferrous) –
General Cutting	**ELU** **T1500Z**	**ESU** **AC8025P**	**ESU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC6030M**	**ESU** **AC6040M**	**EMU** **AC4015K**	No Chipbreaker **AC4015K**	SUMIDIA **DA1000**
High Precision	**FX** **AC1030U**	**MESI** **AC1030U**	**C** **AC1030U**	**FX** **AC1030U**	**MESI** **AC1030U**	**EFM** **AC1030U**	–	–	SUMIDIA **DA1000**
Cutting Conditions	☞ **A10** on			☞ **A14** on			☞ **A16** on		☞ **A22** on

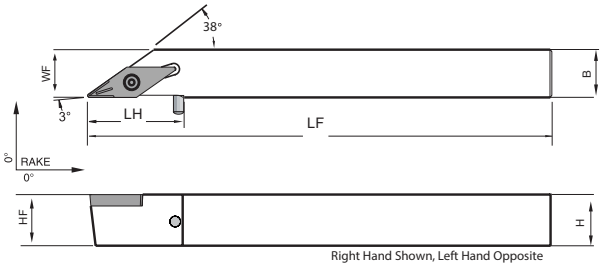
Legend: Name of Chipbreaker / CBN/PCD — EGU; Photo; Grade — AC8025P

SV Type (5° Pos.)



General Turning and Profiling
Screw-on





Right Hand Shown, Left Hand Opposite

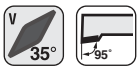
Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head Length LH	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Wrench
SVNB R/L 062B	●	●	0.375	0.375	4.50	0.375	0.375	1.000	VB□□22□	**B121**	1	TS25.456M2	TRX08 (For Torx Holes)
SVNB R/L 062D	●	●	0.375	0.375	6.00	0.375	0.375	1.000			1		
SVNB R/L 082B	●	●	0.500	0.500	4.50	0.500	0.500	1.000			1		
SVNB R/L 082D	●	●	0.500	0.500	6.00	0.500	0.500	1.000			1		
SVNB R/L 103B	●	●	0.625	0.625	4.50	0.625	0.625	1.000	VB□□33□	**B123**	1	TS4.710M1	TRX15
SVNB R/L 103D	●	●	0.625	0.625	6.00	0.625	0.625	1.000			1		

SV Type (7° Pos.)



General Turning and Profiling
Screw-on

SVLC

External / Profiling

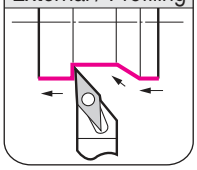


Fig 1

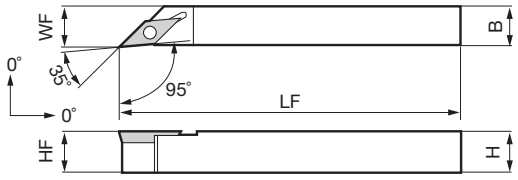


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
SVLC R/L 1010-H11	★	★	*10*	*10*	*100*	*10.5*	*10*	VC□□22□	**B124**	1	BFTX02508NV	**1.5**	TRX08
SVLC R/L 1212-H11	★	★	*12*	*12*	*100*	*12.5*	*12*			1			
SVLC R/L 1616-H11	★	★	*16*	*16*	*100*	*16.5*	*16*			1			
SVLC R/L 2020-K11*	★	★	*20*	*20*	*125*	*20.5*	*20*			1			

*Old Cat. No. SVLC R/L 2020-H11



General Turning and Profiling
Screw-on

SVPC

Necking

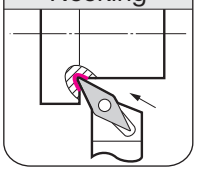


Fig 1

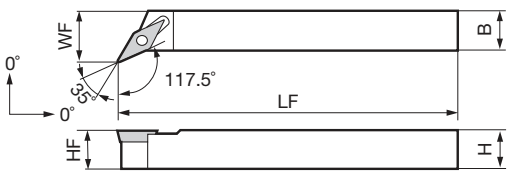


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Applicable Inserts Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
SVPC R/L 1010-H11	★	★	*10*	*10*	*100*	*14.5*	*10*	VC□□22□	**B124**	1	BFTX02508NV	**1.5**	TRX08
SVPC R/L 1212-H11	★	★	*12*	*12*	*100*	*16.5*	*12*			1			
SVPC R/L 1616-H11	★	★	*16*	*16*	*100*	*20.5*	*16*			1			
SVPC R/L 2020-K11*	★	★	*20*	*20*	*125*	*24.5*	*20*			1			

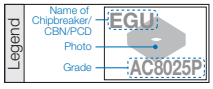
*Old Cat. No. SVPC R/L 2020-H11

Applicable Inserts

◀·· SVLC Type / SVPC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.

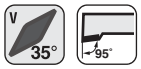


Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-ferrous) –	H (Hardened Steel) Coated	H (Hardened Steel) Non-coated	Hard Brittle Material Finishing
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**EFC** **AC1030U**	**ESU** **AC6030M**	SUMIBORON **BN7000**	**ESU** **AC5015S**	**ESU** **AC5025S**	SUMIDIA **DA1000**	SUMIBORON **BNC2020**	SUMIBORON **BN2000**	SUMIDIA **DA90**
High Precision	**EFC** **T1500A**	**MESI** **AC1030U**	**EFC** **AC1030U**	**MESI** **AC1030U**	SUMIBORON **BN7000**	**EFC** **AC5015S**	**MESI** **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNC2010**	SUMIBORON **BN1000**	SUMIDIA Binderless **NPD10**
Recommended Cutting Conditions	☛ **A10** on		☛ **A14** on		☛ **A16** on	☛ **A18** on		☛ **A22** on	☛ **A20** on		☛ **M2** on

★: Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

SV Type (11° Pos.)



General Turning and Profiling
Screw-on

SVLP

External / Profiling

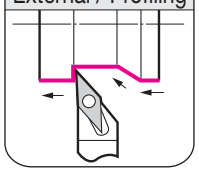


Fig 1

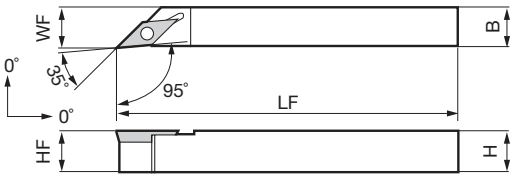


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
SVLP R/L 1010-H11	★	★	*10*	*10*	*100*	*10.5*	*10*	VP□□22	1	BFTX02508NV	1.5	TRX08
SVLP R/L 1212-H11	★	★	*12*	*12*	*100*	*12.5*	*12*		1			
SVLP R/L 1616-H11	★	★	*16*	*16*	*100*	*16.5*	*16*		1			



General Turning and Profiling
Screw-on

SVPP

Undercutting

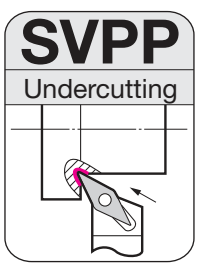


Fig 1

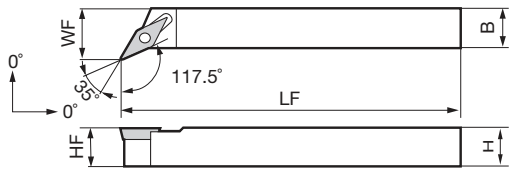


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

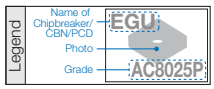
Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Applicable Inserts Cat. No.	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
SVPP R/L 1010-H11	★	★	*10*	*10*	*100*	*14.5*	*10*	VP□□22	1	BFTX02508NV	1.5	TRX08
SVPP R/L 1212-H11	★	★	*12*	*12*	*100*	*16.5*	*12*		1			
SVPP R/L 1616-H11	★	★	*16*	*16*	*100*	*20.5*	*16*		1			

Applicable Inserts

◀·· SVLP Type / SVPP Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Depending on the insert size, some combinations cannot be made-to-order or manufactured.



Process \ Cutting Range	P (Steel)	M (Stainless Steel)
	Finishing	Finishing
High Precision	**FX**  **ACZ150**	**FX**  **ACZ150**
Recommended Cutting Conditions	**A24** on	**A24** on

N·m Recommended Tightening Torque (N·m)

★: Worldwide Warehouse item

Boring Bars E

E1 to E75



Selection Guide for Boring Tools by Tooling E2
Boring Bars Identification Table E4
Selection Guide for Boring Bars E6
Boring Tools Series E8
Twin Head Holders for Multi-functional Small Lathe Tools E10

Boring Bars

A-MCKN / A-MCLN Type E12
S-DCLN / S-PCLN / S-ECLN Type E13
D-DCLN / BMCLN / B-PCLN Type E14
A-MDQN / A-MDUN Type E15
S-DDQN / S-DDUN Type E16
S-PDUN / S-PDZN / S-EDUN Type E17
S-EDZN / D-DDQN Type E18
D-DDUN / BMDLN Type E19
S-DSKN / S-PSKN Type E20
S-PSYN / S-ESKN Type E21
S-ESYN / BMSKN Type E22
A-MTFN / S-DTFN Type E23
S-PTFN / S-ETFN Type E24
D-DTFN / B-PTFN Type E25
A-MVUN / D-DVUN Type E26
TREX E27
A-MWLN / S-DWLN / S-PWLN Type E28
D-DWLN / BMWLN Type E29
A-SCLC E30
S-SCLC / E-SCLC Type E31
C-SCLC / D-SCLC Type E32
B-SCLC Type E33
A-SCFP / A-SCLP Type E34
S-SCLP / C-SCLP Type E35
B-SCLP / D-SCLP Type E36
BSCLO Type E37
A-SDQC / A-SDUC Type E38
S-SDQC / S-SDUC Type E39
S-SDZC / C-SDUC Type E40
BSDJO / B-SDQC / B-SDUC Type E41
D-SDUC / A-SDUP / A-SDXP Type E42
S-SSKC Type E43
S-SSKP / C-SSKP Type E44
S-CSKP / BSSKO Type E45
C-STUB / C-STUP Type E46
A-STFC / D-STUC Type E47
A-STFP / A-STUP Type E48
S-CTFP Type E49
E-STFP / E-STUP Type E50
CSTJO / D-STUP Type E51
BSTJO / B-STUP / BCTJP Type E52
A-SVQB / A-SVUB Type E53
S-SVQB / S-SVUB Type E54
C-SVQB / C-SVUB / C-SVZB Type E55
B-SVJB / B-SVQB Type E56
B-SVUB / B-SVZB Type E57
A-SVQC / A-SVUC Type E58
S-SVJC / S-SVQC Type E59
S-SVUC / S-SVZC Type E60
S-SWUB / CSWJO Type E61
C-SWUB / BSWJO Type E62
S-SWUP Type E63

Very Small Diameter Turning

MINI Boring Tool Holders
Solid Carbide Bars
SUMIBORON Small Hole Boring Bars

CKB Type E64
BXBR Type E69
BSME Type E70
SEXC Type E71
BNBX Type E72
BNZ Type E73

Small Diameter Turning

SUMIDIA Small Diameter Boring Bars

BNB / BNC Type E74
DABB Type E75

Stock Markings and Symbols

●: Standard stocked item
▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).
★: Worldwide Warehouse Item
Blank: Made-to-order item
– mark: Not available

Selection Guide by Tooling

Applications		Bottom Facing		Profiling			Back Turning	
Insert Shape	Structure/Shank Material	80° Diamond Type C		55° Diamond Type D	35° Diamond Type V		55° Diamond Type D	35° Diamond Type V
Screw-on	Steel	S-SCLP [BBPC]	S-SCLC	S-SDUC S-SDQC	S-SVUC S-SVUB	S-SVQC S-SVQB	S-SDZC	S-SVZC S-SVZB
	Steel	A-SCLP Oil Hole	A-SCLC Oil Hole	A-SDUC Oil Hole A-SDQC Oil Hole	A-SVUC Oil Hole A-SVQC Oil Hole	—	—	—
	Steel with Anti-Vibration Mechanism	B-SCLP/D-SCLP Oil Hole [XBPC/XBPC-H]	B-SCLC	B-SDUC B-SDQC	B-SVUB B-SVQB	—	—	B-SVZB
	Carbide	C-SCLP [WBPC]	C-SCLC E-SCLC Oil Hole	C-SDUC	C-SVUB C-SVQB	—	—	C-SVZB
Clamp-on/Double Clamp	Steel	S-DCLN	—	S-DDUN S-DDQN	—	—	—	—
	Steel with Anti-Vibration Mechanism	D-DCLN Oil Hole	—	D-DDUN Oil Hole	—	—	—	—
	Carbide	—	—	—	—	—	—	—
Lever Lock	Steel	S-PCLN	—	S-PDUN	—	—	S-PDZN	—
	Steel with Anti-Vibration Mechanism	B-PCLN	—	—	—	—	—	—
Pin Lock	Steel	S-ECLN [BCLN]	—	S-EDUN [BDUN]	—	—	S-EDZN [BDZN]	—
Special Double Clamp	T-REX Tool Holders	—	—	S-DTR55C T-REX	—	—	—	—
CBN	Carbide	BNZ	—	—	—	—	—	—

Symbols in [ ] indicate the previous product types Oil Hole: With oil hole

Selection Guide by Tooling

Applications		Spherical Internal Facing	Through Boring		Stop Boring			
Insert Shape / Structure/Shank Material		35° Diamond Type V	Trigon Type W / Others	Square Type S	Trigon Type W / Others		Triangular Type T / Others	
Screw-on	Steel	S-SVJB S-SVJC	S-SWUB[BBPW] S-SWUP	S-SSKP[BBPS] S-SSKC	S-SWUB[BBPW] S-SWUP	—	S-STUP/S-STUB [BBPT]	—
		—	—	—	—	—	A-STUP (Oil Hole)	—
	Steel with Anti-Vibration Mechanism	B-SVJB	—	—	—	—	B-STUP/D-STUP (Oil Hole) [XBPT/XBPT-H]	—
	Carbide	—	C-SWUB [WBPW]	C-SSKP [WBPS]	C-SWUB [WBPW]	—	C-STUP/C-STUB [WBPT]	E-STUP (Oil Hole) [WBPT-H]
Clamp-on/Double Clamp	Steel	—	—	S-DSKN	CKB	S-DWLN	S-DTFN	—
	Steel with Anti-Vibration Mechanism	—	—	—	D-DWLN (Oil Hole)	—	D-DTFN (Oil Hole)	—
	Carbide	—	—	S-CSKP	—	—	S-CTFP	—
Lever Lock	Steel	—	—	S-PSKN S-PSYN	S-PWLN	—	S-PTFN	—
	Steel with Anti-Vibration Mechanism	—	—	—	—	—	B-PTFN	—
Pin Lock	Steel	—	—	S-ESKN[BSKN] S-ESYN[BSYN]	—	—	S-ETFN [BTFN]	—
Solid	Carbide	—	—	—	BXBR	—	—	—
CBN	Carbide	—	—	—	BSME (Oil Hole)	BNBX	BNB	SEXC (Oil Hole)

Symbols in [ ] indicate the previous product types (Oil Hole): With oil hole

Boring Bars Identification Table - Inch

Example: A16MCLNR3

A

Boring Bar Type

A
Solid Steel Bar with Coolant Hole

B
Solid Steel Bar with Anti-Vibration Device

C
Solid Carbide Bar

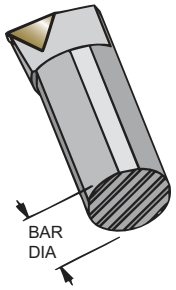
D
Solid Steel Bar with Anti-Vibration Device and coolant hole

E
Carbide Bar with Fixed Steel Head & Coolant Hole

S
Solid Steel Bar

16

Boring Bar Diameter



This indicates D dimensions in sixteenths (1/16).

examples:

08 = 8/16 = 1/2" Diameter

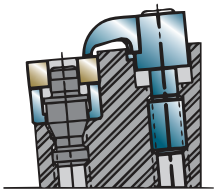
16 = 16/16 = 1.0" Diameter

24 = 24/16 = 1-1/2" Diameter

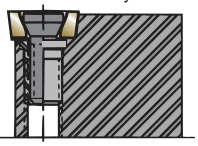
M

Insert Holding

M
Clamp and Lock Pin



S
Screw Lock Only



C

Insert Shape

C Diamond — 80°

D Diamond — 55°

R Round — 360°

S Square — 90°

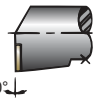
T Triangle — 60°

V Diamond — 35°

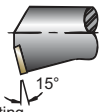
W Trigon — 80°

L

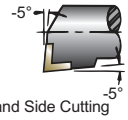
Boring Bar Style



F
0° End Cutting



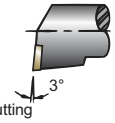
K
15° End Cutting



L
-5° End and Side Cutting



Q
-17.5° End Cutting



U
-3° End Cutting



X
-5° Back Facing/Boring

C

Insert Relief Angle

B — 5°

C — 7°

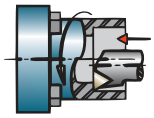
N — 0°

P — 11°

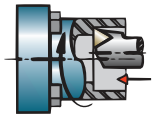
R

Hand

R
Right Hand

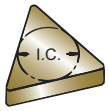


L
Left Hand



3

Insert Size



For equal sided inserts this indicates the inscribed circle (I.C.) in eighths (1/8).

examples,

6 = 6/8 = 3/4" I.C.

4 = 4/8 = 1/2" I.C.

3 = 3/8 = 3/8" I.C.

2.5 = 2.5/8 = 5/16" I.C.

Boring Bars Identification Table - Metric

■ Catalog Classification System for Boring Bars (Round Shank) [ISO Standard]

Example: **S 16 R — S T U P R 11 03 - 18**

(1)	(2)	(3)		(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Shank Material Refer to Table 1	(2) Shank Diameter mm	(3) Shank Length Refer to Table 3		(4) Clamping System Refer to Table 4	(5) Insert Shape Refer to Table 5	(6) Holder Style Refer to Table 6	(7) Insert Relief Angle Refer to Table 7	(8) Feed Direction Refer to Table 8	(9) Insert Cutting Edge Length mm	* (10) Insert Thickness mm	* (11) Min. Bore Diameter mm

* This code may only be included in some of the catalogue nos.

Table 1

(1) Shank Material	
Symbol	Shank Material
S	Steel Shank
A	Steel Shank with Oil Hole
B	Steel Shank with Anti-Vibration Mechanism
D	Steel Shank with Anti-Vibration Mechanism and Oil Hole
C	Carbide Shank
E	Carbide Shank with Oil Hole

Table 3

(3) Shank Length					
Symbol	Length (mm)	Symbol	Length (mm)	Symbol	Length (mm)
F	80	M	150	T	300
G	90	N	160	U	350
H	100	P	170	V	400
J	110	Q	180	W	450
K	125	R	200		
L	140	S	250		

Table 4

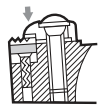
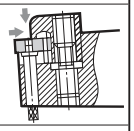
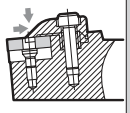
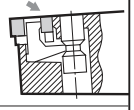
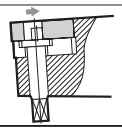
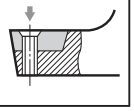
(4) Clamping System					
Symbol	Clamp	Structure	Symbol	Clamp	Structure
C	Clamp-on		M	Clamp-on + Pin Lock	
D	Double Clamp		P	Lever Lock (insert supported by 2 faces)	
E	Pin Lock (insert supported by 1 face)		S	Screw-on	

Table 8

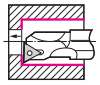
(8) Feed Direction			
Symbol	Right Hand	Symbol	Left Hand
R		L	

Table 5

(5) Insert Shape			
Symbol	Insert Shape	Symbol	Insert Shape
A	85° Angle Parallelogram	M	86° Apex Angle Diamond Type
B	82° Angle Parallelogram	O	Octagonal Type
C	80° Apex Angle Diamond Type	P	Pentagonal Type
D	55° Apex Angle Diamond Type	R	Round Type
E	75° Apex Angle Diamond Type	S	Square Type
F	50° Apex Angle Diamond Type	T	Triangular Type
H	Trigon Type	V	35° Apex Angle Diamond Type
K	55° Angle Parallelogram	W	Uneven Trigon Type
L	Rectangular Type		

Table 6

(6) Holder Style (— indicates major cutting edge)					
Symbol	Shape	Offset	Symbol	Shape	Offset
A		No	N		No
B		No	Q		Yes
D		No	R		Yes
E		No	S		Yes
F		Yes	T		Yes
G		Yes	U		Yes
J		Yes	W		Yes
K		Yes	Y		Yes
L		Yes	Z		Yes

Table 7

(7) Insert Relief Angle	
Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Special Angle

■ Catalog Classification System for Boring Bars (Round Shank) [SEH Standard]

Example: **WB P T — 2 12 R (H) (14)**

BB	Steel Shank Boring Bar
WB	Carbide Shank Boring Bar
XB	Steel Shank Boring Bar with Anti-Vibration Mechanism

P	Positive Insert

Symbol	T	S	C
Insert Shape	Triangular Type	Square Type	80° Diamond Type

W/ Oil Hole

Min. Bore diameter

Symbol	R	L
Direction	Right	Left

Symbol	08	10	12	16	20	25
Shank Diameter (mm)	8	10	12	16	20	25

Symbol	5	6	2	0	3	4
Insert Inscribed Circle (mm)	3.97	4.76	6.35	7.94	9.525	12.70

Selection Guide for Boring Bars

Applications	Tool Type	Shank Material Depth of Cut (L/D) Steel	Carbide	Anti-vibration	Applicable Insert and Shape	Tooling
Very Small Dia. Boring	CKB E64	up to 3			Coated Carbide and Dedicated SUMIDIA Inserts	
	BXBR E69		up to 5		Coated Carbide	
	DABB E75		up to 2		Brazed SUMIDIA	
Stop Boring	BSME (Oil Hole) E70		up to 4		Brazed SUMIBORON	
	SEXC (Oil Hole) E71		up to 3		SUMIBORON Dedicated Inserts	
	BNBX E72		up to 5		Brazed SUMIBORON	
	BNB E74		up to 4		SUMIBORON Dedicated Inserts	
	A-STUP (Oil Hole) E48	up to 3				
	B-STUP [XBPT] E52			up to 6		
	D-STUP (Oil Hole) [XBPT-H] E51			up to 6		
	C-STUP(B) [WBPT] E46		up to 8			
	E-STUP (Oil Hole) [WBPT-H] E50		up to 8			
	S-CTFP E49	up to 3			Triangular Type 11° Pos. (Without Hole)	
	S-PTFN E24	up to 3				
	B-PTFN E25			up to 6		
	S-DTFN E23	up to 3				
	D-DTFN (Oil Hole) E25			up to 6		
	S-ETFN [BTFN] E24	up to 3			Triangular Type Negative (With Hole)	
Bottom Facing	BNZ E73		up to 5		SUMIBORON Dedicated Inserts	
	S-SCLC E31	up to 3				
	A-SCLC (Oil Hole) E30	up to 3				
	B-SCLC E33			up to 6	80° Diamond Type 7° Positive (With Hole)	

Symbols in [ ] indicate the previous product types (Oil Hole): With oil hole

Applications	Tool Type	Shank Material Depth of Cut (L/D) Steel	Carbide	Anti-vibration	Applicable Insert and Shape	Tooling
Bottom Facing	C-SCLC E32		up to 8		80° Diamond Type 7° Positive (With Hole)	
	E-SCLC (Oil Hole) E31		up to 8			
	S-SCLP E35	up to 3			80° Diamond Type 11° Positive (With Hole)	
	B-SCLP E36			up to 6		
	D-SCLP (Oil Hole) E36			up to 6		
	C-SCLP E35		up to 8			
	S-DCLN E13	up to 3			80° Diamond Type Negative (With Hole)	DCLN Type
	D-DCLN (Oil Hole) E14			up to 6		
	S-PCLN E13	up to 3				PCLN/ECLN Type
	B-PCLN E14			up to 6		
	S-ECLN E13	up to 3				
	D-DWLN (Oil Hole) E29			up to 6	Trigon Type Negative (With Hole)	
	S-DWLN E28	up to 3				
	S-PWLN E28	up to 3				
Profiling	S-SDUC S-SDQC E39	up to 3			55° Diamond Type 7° Positive (With Hole)	SDUC Type SDQC Type
	A-SDUC (Oil Hole) A-SDQC (Oil Hole) E38	up to 3				
	B-SDUC B-SDQC E41			up to 6		
	C-SDUC E40		up to 8			
	S-SDZC E40	up to 3				
	B-SVJB E56			up to 6		
	S-SVJC E59	up to 3				
	S-SVQC S-SVUC E59, E60	up to 3				SVU□/SVQ□ Type
	A-SVUC (Oil Hole) E58	up to 3				
	A-SVQC (Oil Hole) E58	up to 3			35° Diamond Type 5° Positive (With Hole) 7° Positive (With Hole)	

(Oil Hole): With oil hole

: Steel Shank : Carbide Shank : Steel Shank with Anti-Vibration Mechanism

Coloured box: Manufacturable size (no oil hole), (H): In stock with oil hole

Selection Guide for Boring Bars

Applications	Tool Type	Shank Material Depth of Cut (L/D) Steel	Carbide	Anti-vibration	Applicable Insert and Shape	Tooling
Profiling	S-SVQB S-SVUB E54	up to 3			35° Diamond Type 5° Positive (With Hole) 7° Positive (With Hole)	SVU□/ SVQ□ Type
	B-SVQB B-SVUB E56, E57			up to 6		
	C-SVQB C-SVUB E55		up to 8			
	S-SVZC E60	up to 3				
	B-SVZB E57			up to 6		
	C-SVZB E55		up to 8			
	S-DDQN E16	up to 3			55° Diamond Type Negative (With Hole)	
	S-DDUN E16	up to 3				
	D-DDUN Oil Hole E19			up to 6		
	S-PDUN E17	up to 3				
	S-EDUN E17	up to 3				
	S-PDZN E17	up to 3				
	S-EDZN E18	up to 3				
	S-DTR55C E27	up to 3			Dedicated T-REX Inserts	
Through Boring	S-SWUB E61	up to 3			Trigon Type 5° Positive (With Hole) 11° Positive (With Hole)	
	C-SWUB E62		up to 8			
	S-SWUP E63	up to 3				
	S-SSKP E44	up to 3			Square Type 11° Positive (With Hole)	
	C-SSKP E44		up to 8			
	S-SSKC E43	up to 3			Square Type 7° Pos. (With Hole)	
	S-CSKP E45	up to 3			Square Type 11° Pos. (Without Hole)	
	S-DSKN E20	up to 3			Square Type Negative (with hole)	
	S-PSKN E20	up to 3				
	S-PSYN E21	up to 3				
	S-ESKN E21	up to 3				
	S-ESYN E22	up to 3				

Oil Hole: With oil hole

: Steel Shank : Carbide Shank : Steel Shank with Anti-Vibration Mechanism

Coloured box: Manufacturable size (no oil hole), H: In stock with oil hole

Boring Tools Series



■ General Features

Since its launch in 1976, our industry leading Boring Bar Series with its steel/carbide shank holders and high rigidity heads has since included the popular Small Diameter Boring Bars and now the SumiTurn X-Bars with anti-vibration mechanism, optimized insert grades and chipbreakers.

■ Features of Boring Bars

- Applicable to a wide range of applications such as Stop-Boring/Bottom Facing/Through-Boring/Profiling
- Min. machining diameter: ø1mm for CKB Type, ø5mm for C-SCLC Type
- Anti-vibration boring bar SumiTurn X-Bar
- Carbide short shank type usable on turret lathes without shortening (C16M-STUP, C20M-STUP Types)
- Wide selection of insert grades and chipbreakers available for various work materials

■ Steel Shank Type with Anti-Vibration Mechanism

SumiTurn X-Bar

- Higher anti-chatter capability for effective rough boring of deep holes
- Achieves low-cost boring of large diameters and deep holes, with ø32mm shank now in stock
- Excellent chip evacuation with double chip pockets
- Bars with internal coolant hole are also in stock
- Negative insert holders (shank dia. ø25 to ø50mm) are now in stock



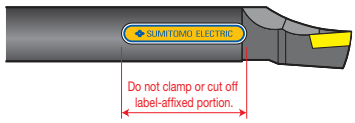
■ Shank Material Selection

SumiTurn X-Bar

Application \ Shank Material		Steel	Steel with Anti-Vibration Mechanism	Carbide
General Steel	Shallow Holes (L/D < 3)	⊙		
	Deep Boring (L/D > 3)		⊙	⊙
High efficiency boring with wiper insert			●	⊙
Hardened Steel			—	⊙
High-precision Machining				⊙

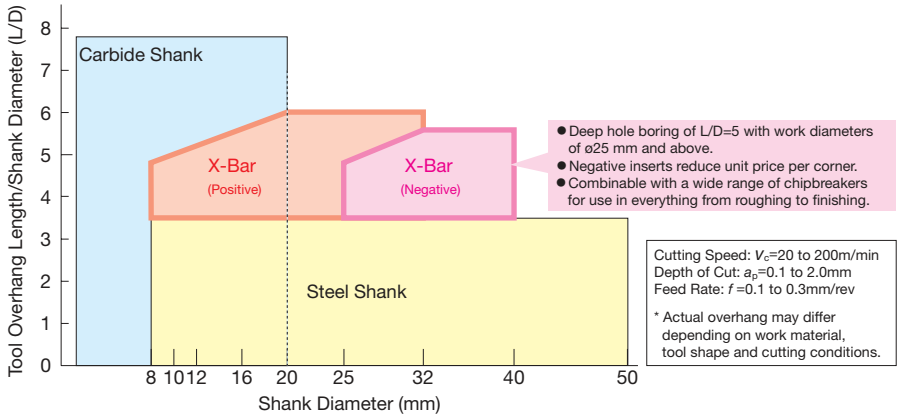
⊙1st Recommendation ● 2nd Recommendation

⚠ Precautions for Clamping Position on Steel Shank with Anti-Vibration Mechanism



Clamping a shank on the " SUMITOMO ELECTRIC " label-affixed portion may disturb normal functioning (due to built-in Anti-Vibration mechanism).
Therefore, minimum tool overhang length is kept to 3.5D (shank diameter x 3.5). This is a dedicated turning tool. It cannot be used as a rotating tool.

■ Application Range by Shank Type

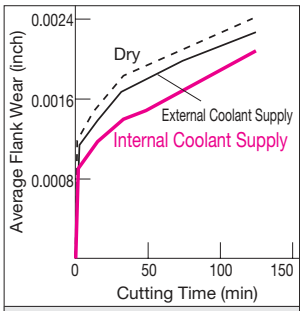


- Deep hole boring of L/D=5 with work diameters of ø25 mm and above.
- Negative inserts reduce unit price per corner.
- Combinable with a wide range of chipbreakers for use in everything from roughing to finishing.

Cutting Speed: V_c=20 to 200m/min
Depth of Cut: a_p=0.1 to 2.0mm
Feed Rate: f =0.1 to 0.3mm/rev

* Actual overhang may differ depending on work material, tool shape and cutting conditions.

■ Wear Comparison by Coolant Supply Method



Work Material: SCM435, Insert: FX Breaker (Grade AC510U)
Cutting Conditions: v_c=492 SFM, f=0.004 IPR, a_p=0.012"

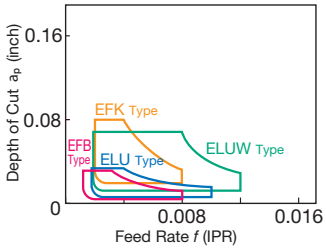
■ Recommended Grades

Insert Grade		Application Range: High Precision	Application Range: Finishing to Light Cutting	Application Range: Medium Cutting	P General Steel	M Stainless Steel	K Cast Iron	S Heat-Resistant Alloy	H Hardened Steel	N Non-ferrous Metal	Powdered Metal
Coated Carbide	CVD		New AC8015P		◎						
			AC8025P		◎		○				
			New AC8035P		◎	○					
			AC6020M		○	◎					
			AC6030M		○	◎					
			New AC4010K				◎				
			New AC4015K				◎				
			AC420K				◎				
	PVD		ACZ150		◎	◎				○	
			New AC5015S		○		○	◎			
			New AC5025S		○	○	○	◎			
			AC530U		◎	◎	○	○		○	
			AC1030U		◎	◎	○	○		○	
			AC6040M			◎					
Uncoated Cermet Coated Cermet			T1000A		◎	○	◎			○	○
			T1500A/T1500Z		◎	○	○			○	
			T3000Z		◎	○	○				
Carbide			G10E				◎			○	
CBN (SUMIBORON)			BN1000						◎		
			BN2000						◎		
			BNC2010						◎		
			BNC2020						◎		
			BN7000				◎	○			○
			BN7500								◎
PCD (SUMIDIA)			DA1000							◎	
			DA150							◎	

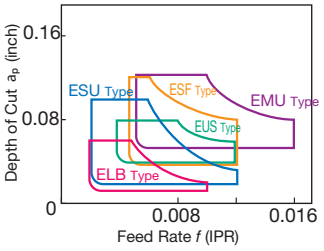
◎ 1st Recommendation ● 2nd Recommendation

■ Recommended Chipbreakers

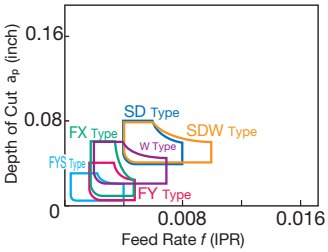
● Class M Finishing to Light Cutting



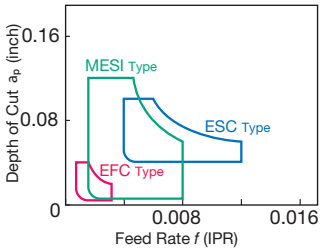
● M Class Light to Medium Cutting



● Class G Ground Chipbreakers



● G Class Molded Chipbreakers



Twin Head Holder



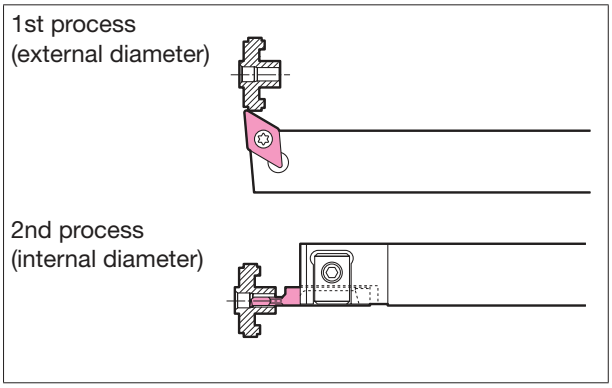
TWIN HEAD

■ Features

- ●Having one holder that performs two operations is equivalent to mounting an additional tool on the drill sleeve toolpost.
- ●External turning possible with the aid of a drill sleeve.
- ●2 holder configurations, internal + external and internal + internal, are standard stocked items.
- ●Centre height difference of the 2 cutting edges is below 40μm, which is good for high precision machining.

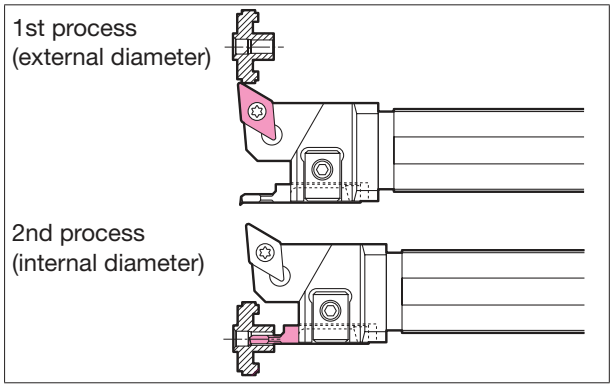
■ Advantages of the Twin Head Holder

● Conventional Tool



· 2 different operations requiring 2 separate tools.

● Twin Head Holder

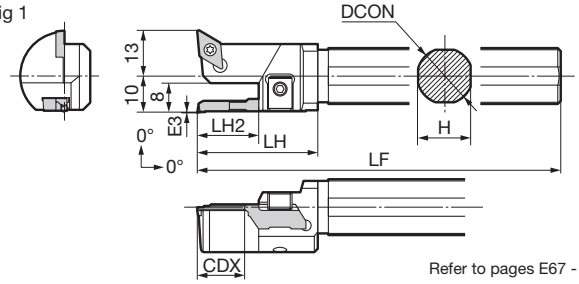


· A single tool performing 2 different operations.

· Toolpost moving time can also be reduced.



Fig 1



Internal + External Diameter Machining Screw-on + Clamp-on

Refer to pages E67 - E68.

Holder (Internal Machining, Depth of Cut 6.0mm)

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Head LH	Depth of Cut CDX	Head LH2	*Max. Work Material	For Internal Diameter Machining Insert	For External Turning Insert	Fig
S1588X-CKBE-06	●	*15.875*	*15*	*130*	*27*	*6*	*10*	*12.0*	KBMX R○○06-○○ KBMX R○○06-○○T	DC□□21.5	1
S16X-CKBE-06	●	*16*	*15*	*130*	*27*	*6*	*10*	*12.0*			1
S1905X-CKBE-06	●	*19.05*	*17*	*130*	*27*	*6*	*10*	*12.0*			1
S20X-CKBE-06	●	*20*	*18*	*130*	*27*	*6*	*10*	*12.0*			1
S22X-CKBE-06	●	*22*	*20*	*130*	*27*	*6*	*10*	*12.0*			1

* When machining internal diameter

Holder (Internal Machining, Depth of Cut 11.0mm)

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Head LH	Depth of Cut CDX	Head LH2	*Max. Work Material	For Internal Diameter Machining Insert	For External Turning Insert	Fig
S1588X-CKBE-11	●	*15.875*	*15*	*130*	*32*	*11*	*15*	*12.0*	KBMX R○○11-○○ KBMX R○○11-○○T	DC□□21.5	1
S16X-CKBE-11	●	*16*	*15*	*130*	*32*	*11*	*15*	*12.0*			1
S1905X-CKBE-11	●	*19.05*	*17*	*130*	*32*	*11*	*15*	*12.0*			1
S20X-CKBE-11	●	*20*	*18*	*130*	*32*	*11*	*15*	*12.0*			1
S22X-CKBE-11	●	*22*	*20*	*130*	*32*	*11*	*15*	*12.0*			1

* When machining internal diameter

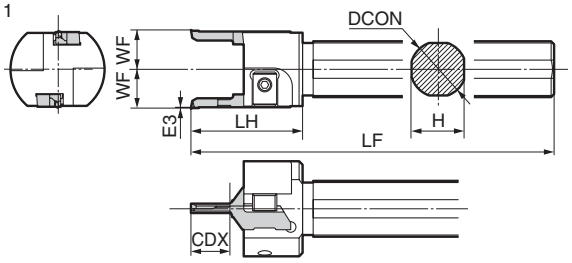
Internal Diameter Inserts ☞ E67 to E68 External Diameter Inserts ☞ B85 to B87

Twin Head Holder

Internal Diameter Machining, Face Grooving
Clamp-on



Fig 1



Holder

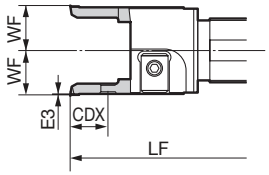
Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Head LH	Cutting Edge Distance WF	Depth of Cut CDX	For Internal Diameter Machining Insert	For Face Grooving Insert	Fig
S1588X-CKBB-F	●	*15.875*	*15*	*130*	*32*	*11.0*	*11*	KBMX R0000-00 KBMX R0000-00T	KBMF R0000-05	1
S16X-CKBB-F	●	*16*	*15*	*130*	*32*	*11.0*	*11*			1
S1905X-CKBB-F	●	*19.05*	*17*	*130*	*32*	*11.0*	*11*			1
S20X-CKBB-F	●	*20*	*18*	*130*	*32*	*11.0*	*11*			1
S22X-CKBB-F	●	*22*	*20*	*130*	*32*	*11.0*	*11*			1

* Reference values for LF, WF and CDX dimensions are with KBMXR0311-○○(T) mounted. (Refer to the table below for dimensions with other inserts mounted.)

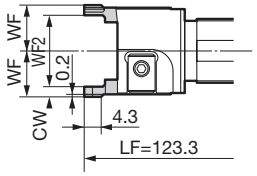
Ref. Page for Inserts E67 to E68

Insert: KBMX (ID+ID) assembled



Insert	Offset E3	Depth of Cut CDX	Cutting Edge Distance WF	Overall Length LF
KBMXR0103-○○(T)	*0.2*	*3*	*10.9*	*122*
KBMXR01506-○○(T)	*0.25*	*6*	*10.95*	*125*
KBMXR0206-○○(T)	*0.25*	*6*	*10.95*	*125*
KBMXR0311-○○(T)*	*0.3*	*11*	*11.0*	*130*
KBMXR0411-○○(T)	*0.5*	*11*	*11.2*	*130*
KBMXR0511-○○(T)	*0.7*	*11*	*11.4*	*130*
KBMXR0420-○○(T)	*0.5*	*20*	*11.2*	*139*
KBMXR0520-○○(T)	*0.7*	*20*	*11.4*	*139*

Insert: KBMF (Face+Face) assembled



Insert	Cutting Edge Distance WF	Cutting Edge Distance WF2	Width of Cut CW
KBMFR0615-05	*10.9*	*18.8*	*1.5*
KBMFR0620-05	*10.9*	*17.8*	*2.0*
KBMFR0630-05	*10.9*	*15.8*	*3.0*

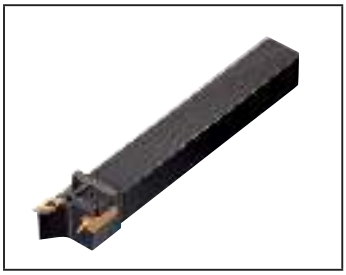
Parts (KBM□R insert mounting part)

Clamp	Double Screw	Wrench
		 (For Hex Socket)
CKBW16	WB4-8	LH020

Parts (DC□□ insert mounting part)

Flat Screw		Wrench
	N·m	 (For Torx Holes)
BFTX02506N	1.5	TRX08

Special Holder Configurations



Internal diameter + external diameter (angled holder)



Internal diameter + Centre drill



Internal diameter + Internal diameter (parallel design)

Holder configurations for different work materials or various machining details, such as centre holes, chamfering and external undercutting, can be made to order.

N·m Recommended Tightening Torque (N·m)

A-MCKN Type / A-MCLN Type



Medium Diameter General-purpose
Double Clamp

- USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

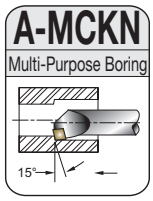
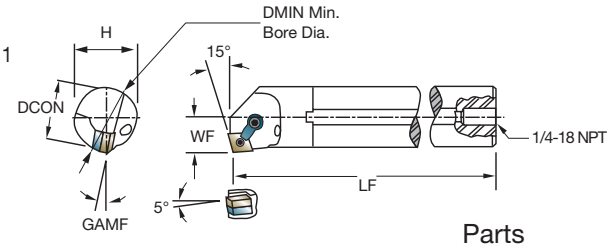


Fig. 1



Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Lock Pin	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**A20MCKN R/L 4**	▲	▲	**1.470**	1.250	1.250	—	14.00	0.765	—	14°	CN□□43□	**B22**	1	**3.0**	ICSN43□	S46	NL46	LH3/32	LH030	CL20	XNS48
	A24MCKN R/L 5	▲	▲	**1.760**	1.500	1.500	—	14.00	0.890	—	12°	CN□□54□	**B26**	1	**3.5**	ICSN53□	S58	NL58			CL12	XNS510

Wrench for shim is sold separately from the main body.
Coolant Through

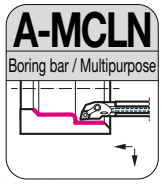
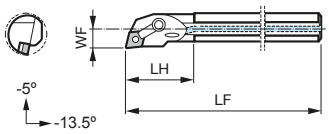


Fig 1



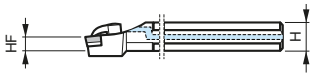


Figure shows right-hand (R) tool.

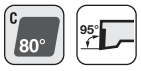
Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Lock Pin	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**A16MCLN R/L 3**	▲	▲	**1.200**	1.000	0.750	—	12.00	0.640	—	14°	CN□□32□	**B20**	1	—	—	—	NL33	—	—	CL-7	XNS-36
	A16MCLN R/L 4	▲	▲	**1.200**	1.000	0.750	—	12.00	0.640	—	14°	CN□□43□	**B22**	1	**3.0**	—	S46	NL44	LH030	LH 3/32	CL20	XNS48
	A16TMCLN R/L 4	•	•	**1.280**	1.000	0.900	0.450	12.00	0.640	2.500	-13.5°			1					LH1/8			XNS47
	A20MCLN R/L 4	▲	▲	**1.470**	1.250	1.250	—	12.00	0.765	—	14°			1		ICSN433		NL46	LH030			XNS48
	A20UMCLN R/L 4	•	•	**1.530**	1.250	1.180	0.590	14.00	0.765	3.000	-13.5°			1								
	A24MCLN R/L 4	▲	▲	**1.760**	1.500	1.500	—	14.00	0.890	—	14°			1					LH030			XNS47
	A24UMCLN R/L 4	•	•	**1.780**	1.500	1.370	0.685	14.00	0.890	3.000	-13.5°			1								
	A28MCLN R/L 4	▲	▲	**2.010**	1.750	1.750	—	14.00	1.015	—	12°			1					LH030			
	A28UMCLN R/L 4	•	•	**2.030**	1.750	1.630	0.815	14.00	1.015	4.000	-13.5°			1					LH1/8			XNS48
	A32MCLN R/L 4	▲	▲	**2.400**	2.000	2.000	—	14.00	1.281	—	12°			1				NL44	LH030			
	A40MCLN R/L 4	▲	▲	**3.030**	2.500	2.500	—	16.00	1.531	—	10°			1				NL44	LH030			
	A32MCLN R/L 5	▲	▲	**2.400**	2.000	2.000	—	16.00	1.281	—	12°	CN□□54□	**B26**	1	**3.5**	ICSN533	S58	NL58	LH040	LH030	CL12	XNS510
	A32VMCLN R/L 5	•	•	**2.562**	2.000	1.870	0.935	16.00	1.281	4.000	-13.5°			1						LH1/8		
	A32VMCLN R/L 6	•	•	**2.562**	2.000	1.870	0.935	16.00	1.281	4.000	-13.5°	CN□□64□	**B28**	1	**3.5**	ICSN633	—	NL68	LH040	LH9/64		

Wrench for shim is sold separately from the main body.
Coolant Through



New

Medium Diameter General-purpose
Double Clamp

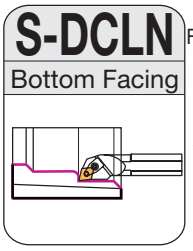
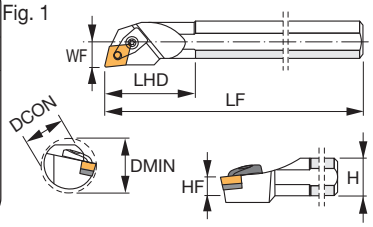


Fig. 1



Optional Clamping Systems

		Clamp	Clamp Screw	Wrench	Shim	Pin	Wrench	N·m	N·m
MCLNR/LN	CNMG43□	CL-2613	ST-1086	LH040	ICSN-422	PN-1657	–	**3.0**	**2.0**

		Clamp	Clamp Screw	Chipbreaker	Optional Chipbreaker	Wrench	Shim	Shim Screw	N·m
CCLNR/LN	CNG43□	CL-2713	ST-1086	CB-9414	CB-9419	LH040	ICSN-422	ST-1766	**3.5**

		Clamp	Clamp Screw	Wrench	Shim	Shim Screw	N·m
CCLNR/LN	CNGX43□	CL-2435	ST-1086	LH040	ICSN-422	ST-1766	**3.5**

Holder

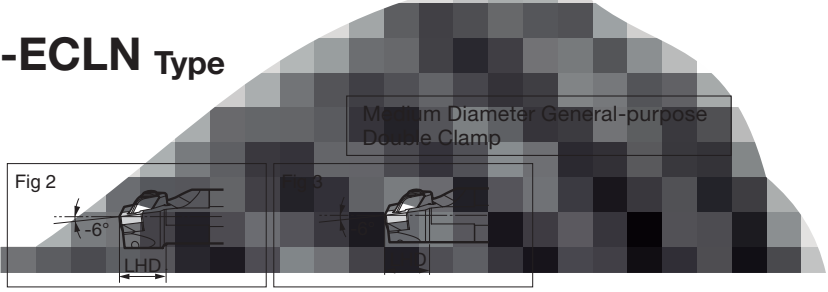
Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp	N·m	Clamp Bolt	Spring	Shim	Shim Screw	Wrench (For Hex Socket)
Inch	**S16T-DCLNR/L4N**	★	★	**1.280**	1.000	0.900	12.0	0.640	1.575	-13.5°			1					ICSN-422		
	S20U-DCLNR/L4N	★	★	**1.530**	1.250	1.180	14.0	0.765	1.771	-13.5°	CN□□43□	**B22**	1	CL-2712	**3.5**	CLB-1696	SP-4295	ICSN-442	ST-1766	LH040
	S25U-DCLNR/L4N	★	★	**1.780**	1.500	1.370	14.0	0.890	1.968	-13.5°			1							

S-DCLN Type / S-PCLN Type / S-ECLN Type





S-DCLN
Bottom Facing

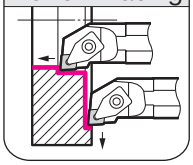


Fig 1

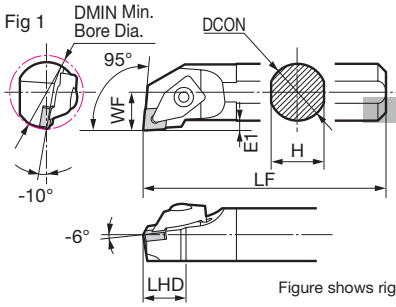


Fig 2

Fig 3

Holder

Figure shows right-hand (R) tool.

Parts

Clamp Set Parts C63

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Upper Surface Wrench (For Hex Socket)	Lower Surface Wrench (For Hex Socket)
Steel	**S25R-DCLN R/L0903-32**	★	★	***32***	*25*	*23*	*200*	*17.0*	*18*	*4.5*	CN□□32□	**B20**	1	SCP-1	**5.0**	-	-	LH040	LH025
	S25T-DCLN R/L0903-32	★	★	***32***	*25*	*23*	*300*	*17.0*	*18*	*4.5*			1						
	S32S-DCLN R/L1204-40	★	★	***40***	*32*	*30*	*250*	*22.0*	*26*	*7.0*	CN□□43□	**B22**	2	SCP-2	**5.0**	CNS1204B	BFTX0409N	LH040	LH025
	S40T-DCLN R/L1204-50	★	★	***50***	*40*	*37*	*300*	*27.0*	*26*	*8.5*			2						
	S50U-DCLN R/L1204-63	★	★	***63***	*50*	*47*	*350*	*31.5*	*36*	*8.0*			3						

Feed direction of applicable inserts differs according to machining details. (Refer to * note below)

S-PCLN
Bottom Facing

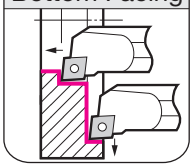


Fig 1

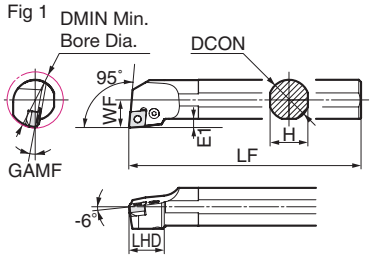
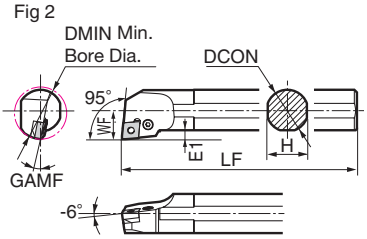


Fig 2



Medium Diameter General-purpose
Lever Lock

Holder

Figure shows right-hand (R) tool.

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
Steel	**S25R-PCLN R/L0903-32**	★	★	***32***	*25*	*23*	*200*	*17.0*	*30*	*4.5*	-15°	CN□□32□	**B20**	1	LCL3	LCS3	LSC32	LSP3	LH025
	S32S-PCLN R/L1204-40	★	★	***40***	*32*	*30*	*250*	*22.0*	*29*	*7.0*	-10°			1					
	S32S-PCLN R/L1204-44	▲	▲	***44***	*32*	*30*	*250*	*22.0*	*29*	*7.0*	-10°			1			LSC42B		
	S40T-PCLN R/L1204-50	★	★	***50***	*40*	*37*	*300*	*25.0*	*29*	*6.5*	-10°	CN□□43□	**B22**	1	LCL4	LCS4		LSP4	LH030
	S40T-PCLN R/L1204-54	▲	▲	***54***	*40*	*37*	*300*	*27.0*	*29*	*8.5*	-10°			1			LSC42		
	S50U-PCLN R/L1204-63	★	★	***63***	*50*	*47*	*350*	*31.5*	-	*8.0*	-10°			2			LSC42B		
	S50U-PCLN R/L1906-70	▲	▲	***70***	*50*	*47*	*350*	*35.0*	*39*	*11.5*	-10°	CN□□64□	**B28**	1	LCL6	LCS6	LSC63	LSP6	LH040

Feed direction of applicable inserts differs according to machining details. (Refer to * note below)

S-ECLN
Bottom Facing

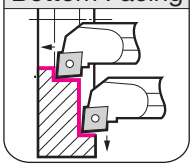
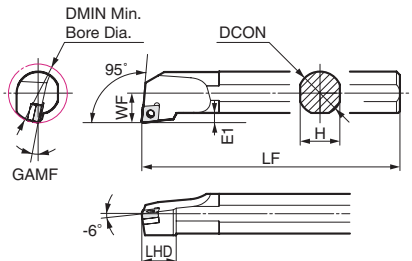


Fig 1



Medium Diameter General-purpose
Pin Lock

***Applicable Inserts for ECLN Type**

For internal diameter machining: Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

For facing: Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Holder

Figure shows right-hand (R) tool.

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench (For Hex Socket)
Steel	**S20Q-ECLN R/L0903-26**	★	★	***26***	*20*	*18*	*180*	*13*	*20*	*4.0*	-12°	CN□□32□	**B20**	1	-	CPU304C	LH030
	S25R-ECLN R/L0903-34	★	★	***34***	*25*	*23*	*200*	*17*	*20*	*5.5*	-12°			1	SCW323	CPB32C	LH025
	S25R-ECLN R/L1204-34	★	★	***34***	*25*	*23*	*200*	*17*	*20*	*5.5*	-12°			1		CPB42	
	S32S-ECLN R/L1204-44	★	★	***44***	*32*	*30*	*250*	*22*	*25*	*7.0*	-10°	CN□□43□	**B22**	1	SCW423	CPB43S	LH030
	S40T-ECLN R/L1204-54	★		***54***	*40*	*37*	*300*	*27*	*25*	*8.5*	-10°			1		CPB43	
	S50U-ECLN R/L1906-70			***70***	*50*	*47*	*350*	*35*	*32*	*11.5*	-10°	CN□□64□	**B28**	1	SCW635	CPB64	LH040

Feed direction of applicable inserts differs according to machining details. (Refer to * note below)

C 80° | 95° | Steel with Anti-Vibration Mechanism | Coolant Hole

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

Medium Diameter General-purpose Double Clamp

SumiTurn X-Bar

D-DCLN
Bottom Facing

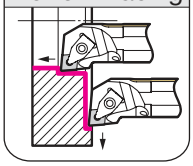


Fig 1

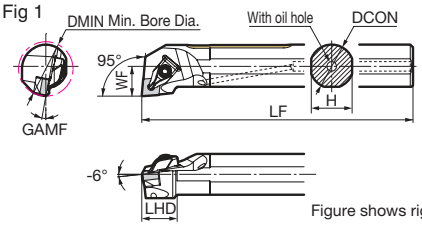


Figure shows right-hand (R) tool.

***Applicable Inserts for DCLN Type**
For internal diameter machining: Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
For facing: Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) toolholders are compatible with left-handed (L) or neutral (N) inserts.

Holder / Parts

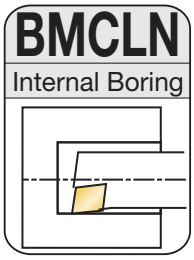
Dimensions (inch/ *mm*)

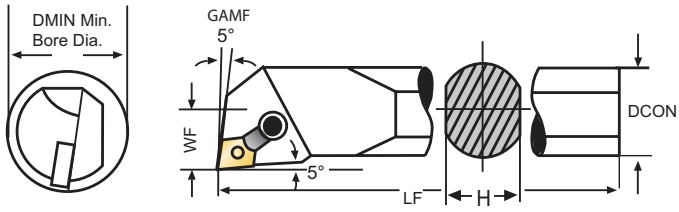
	Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Upper Surface Wrench (For Hex Socket)	Lower Surface Wrench (For Hex Socket)
Inch	Steel with Anti-Vibration Mechanism with Oil Hole	**D16TDCLN R/L 4**	●	●	**1.250**	1.000	1.000	12.00	0.640	-	-14°	CN□□43□	**B22**	1	SCP-2		CNS1203B	BFTX0309N	LH040	LH025
		D20TDCLN R/L 4	●	●	**1.470**	1.250	1.250	12.00	0.765	-	-14°			1			CNS1204B	BFTX0409N		
		D24UDCLN R/L 4	●	●	**1.760**	1.500	1.500	14.00	0.890	-	-14°			1						
Metric	Steel with Anti-Vibration Mechanism with Oil Hole	**D25T-DCLN R/L1204-32**	●	●	***32***	*25*	*23*	*300*	*17*	*26*	-12°			1			CNS1203B	BFTX0307N		
		D32T-DCLN R/L1204-40	●	●	***40***	*32*	*30*	*300*	*22*	*26*	-10°			1	SCP-2	**5.0**	CNS1204B	BFTX0409N	LH040	LH025
		D40U-DCLN R/L1204-50	●	●	***50***	*40*	*37*	*350*	*27*	*26*	-10°			1						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Feed direction of applicable inserts differs according to machining details. (Refer to * note below)

Clamp Set Parts C63

BMCLN
Internal Boring





Holder / Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Shim	Cam	Clamp	Screw
BMCLN R/L 244	▲		**1.781**	1.500	—	—	14.00	0.890	1.350	—	CN□□43□	**B22**	1		LH030	LH040	SCW423	CPB43S	CCM8F	WB8F30
BMCLN R/L 284	▲		**2.031**	1.750	—	—	14.00	0.015	1.615	—			1					CPB43		
BMCLN R/L 324	▲	▲	**2.563**	2.000	—	—	16.00	1.281	1.850	—			1							

Wrench for shim is sold separately from the main body.

Maximum overhang = 3xD

B-PCLN
Bottom Facing

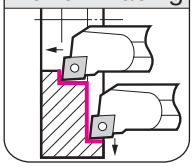


Fig 1

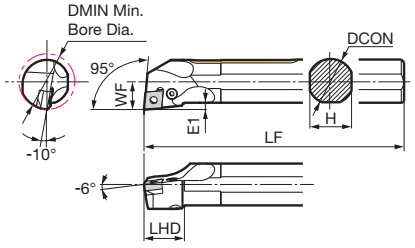


Figure shows right-hand (R) tool.

Medium Diameter General-purpose Lever Lock

***Applicable Inserts for PCLN Type**
For internal diameter machining: Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
For facing: Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Holder / Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
Steel with Anti-Vibration Mechanism	**B32U-PCLN R/L1204-40**	★		***40***	*32*	*30*	*350*	*20*	*29*	*5.0*	CN□□43□	**B22**	1	LCL4	LCS4CA	LSC42B	LSP4	LH030
	B40W-PCLN R/L1204-50	★		***50***	*40*	*37*	*450*	*25*	*29*	*6.5*			1		LCS4			

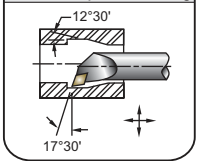
Feed direction of applicable inserts differs according to machining details. (Refer to * note below)

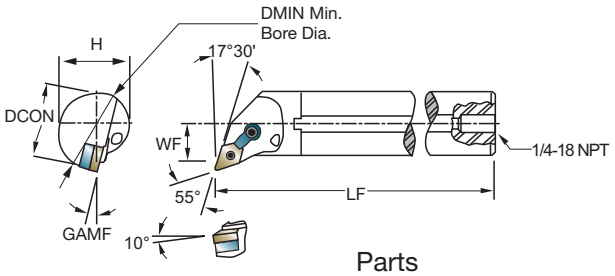
A-MDQN Type / A-MDUN Type

Medium Diameter General-purpose
Double Clamp

A-MDQN

Multi-Purpose Boring





- USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Lock Pin	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**A20MDQN R/L 4**	▲	▲	**1.705**	1.250	1.250	—	14.00	1.000	—	12°	DN□□43□	**B32**	1		IDSN433	S46	NL46	LH3/32	LH030	CL20	XNS48
	A24MDQN R/L 4	▲	▲	**2.000**	1.500	1.500	—	14.00	1.125	—	8°			1								

Wrench for shim is sold separately from the main body.
Coolant Through

Medium Diameter General-purpose
Double Clamp

A-MDUN

Boring bar / Profiling

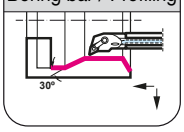


Fig 1

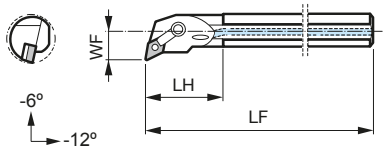
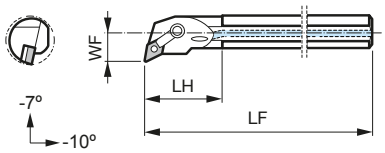


Fig 2



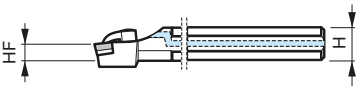


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**A16MDUN R/L 3**	▲	▲	**1.300**	1.000	1.000	—	12.00	0.750	—	12°	DN□□33	**B31**	2		—	NL33	—	—	CL-7	XNS36
	A16TMDUN R/L 4	•	•	**1.750**	1.000	0.900	0.450	12.00	0.875	2.500	-12°	DN□□43	**B32**	2	3.0	—	NL44	LH1/8	LH3/32	CL20	XNS47
	A20MDUN R/L 4	▲	▲	**1.705**	1.250	1.250	—	14.00	1.000	—	10°			2		IDSN433	NL46	LH3/32	LH030		XNS48
	A20UMDUN R/L 4	•	•	**2.000**	1.250	1.180	0.590	14.00	1.000	3.000	-12°			1				LH1/8	LH3/32		
	A24MDUN R/L 4	▲	▲	**2.000**	1.500	1.500	—	14.00	1.250	—	10°			2				LH3/32	LH030		
	A24UMDUN R/L 4	•	•	**2.250**	1.500	1.370	0.685	14.00	1.125	3.000	-12°			1				LH1/8	LH3/32		
	A28MDUN R/L 4			**2.250**	1.750	1.750	—	14.00	1.250	—	10°			2				LH3/32	LH030	CL12	XNS59
	A32MDUN R/L 4	▲	▲	**2.500**	2.000	2.000	—	16.00	1.375	—	10°			2		IDSN533	NL58	LH030	LH040		XNS510
	A32VMDUN R/L 4	•	•	**3.000**	2.000	1.870	0.935	16.00	1.375	4.000	-12°			2		IDSN433	NL46	LH1/8	LH3/32	CL20	XNS48

Wrench for shim is sold separately from the main body.
Coolant Through

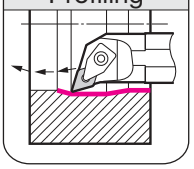
S-DDQN / S-DDUN Type



Profiling
Double Clamp

S-DDQN

Profiling



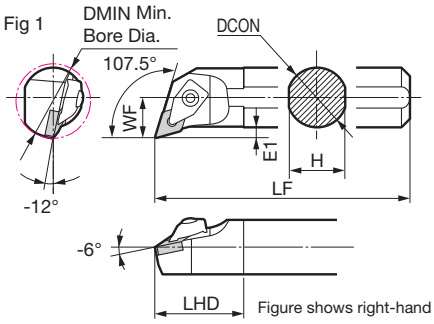


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Upper Surface Wrench	Lower Surface Wrench
Steel	**S32T-DDQN R/L1504-40**	★	★	***40***	*32*	*30*	*300*	*22*	*48*	*6*	DN□□43□	**B32**	1	SCP-2	**5.0**	LH040 (For Hex Socket)	LH025 (For Hex Socket)

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

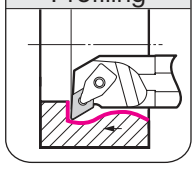
Clamp Set Parts ☞ C63



Profiling
Double Clamp

S-DDUN

Profiling



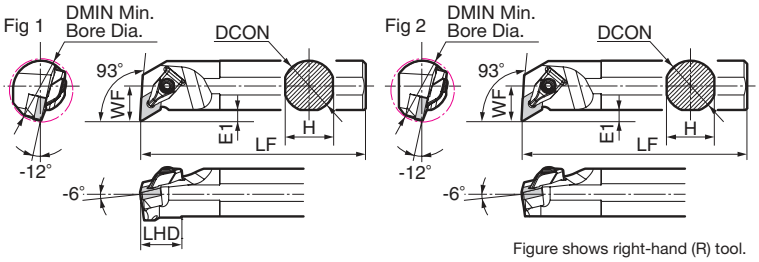


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Upper Surface Wrench	Lower Surface Wrench
Steel	**S32S-DDUN R/L1504-40**	★	★	***40***	*32*	*30*	*250*	*22.0*	*26*	*7.0*	DN□□43□	**B32**	1	SCP-2	**5.0**	DNS1504B	BFTX0409N	LH040 (For Hex Socket)	LH025 (For Hex Socket)
	S40T-DDUN R/L1504-50	★	★	***50***	*40*	*37*	*300*	*27.0*	*26*	*8.5*			1						
	S50U-DDUN R/L1504-63	★	★	***63***	*50*	*47*	*350*	*31.5*	*-*	*8.0*			2						

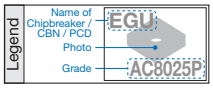
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Clamp Set Parts ☞ C63

Applicable Inserts ◂·· S-DDQN / S-DDUN / D-DDUN / S-PDUN / S-EDUN / S-PDZN / S-EDZN

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	**EFE** T1500Z	**EGU** AC8015P	**EMU** AC8025P	**EEF** AC6020M	**EEG** AC6020M	**EEM** AC6030M	**SUMIBORON** BN7000/BNC500	**EUZ** AC4010K	**EGZ** AC4010K	**EEF** AC5015S	**EEG** AC5015S	**EEM** AC5015S	**SUMIDIA** DA1000	**AX** H1	**SUMIBORON** BNC2010	**SUMIBORON** BN1000	**SUMIDIA Binderless** NPD10
General Cutting	**ESU** AC8015P	**EGU** AC8025P	**EMU** AC8025P	**EEF** AC6030M	**EEG** AC6030M	**EEM** AC6040M	**SUMIBORON** BN7000/BNC500	**EGZ** AC4015K	**EGZ** AC4015K	**EEF** AC5015S	**EEG** AC5015S	**EEM** AC5025S	**SUMIDIA** DA1000	**AX** H1	**SUMIBORON** BNC2020	**SUMIBORON** BN2000	**SUMIDIA** DA90
Interrupted Cutting	**ESX** AC8025P	**EUX** AC8035P	**EMX** AC8035P	**EEF** AC6030M	**EEG** AC6040M	**EEM** AC6040M	**SUMIBORON** BN7000/BNC500	**EGZ** AC420K	No Chipbreaker AC420K	**EEF** AC5025S	**EEG** AC5025S	**EEM** AC5025S	**SUMIDIA** DA1000	–	**SUMIBORON** BNC300	**SUMIBORON** BN350	–
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on			☞ A18 on			☞ A22 on		☞ A20 on		☞ M2 on

N·m Recommended Tightening Torque (N·m)

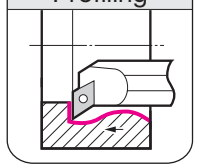
S-PDUN / S-PDZN Type / S-EDUN Type

D 55° | 93° | Steel

Profiling
Lever Lock

S-PDUN

Profiling



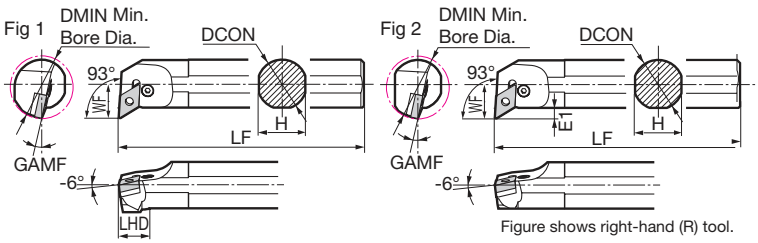


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench
Steel	**S25R-PDUN R/L1104-32**	★	★	***32***	*25*	*22*	*200*	*17.0*	*20*	*7.0*	-15°	DN□□33□	**B31**	1	LCL3	LCS3	LSD317	LSP3	LH025 (For Hex Socket)
	S32S-PDUN R/L1504-40	★	★	***40***	*32*	*30*	*250*	*22.0*	*20*	*7.0*	-12°	DN□□43□	**B32**	1	LCL4	LCS4	LSD42	LSP4	LH030
	S32S-PDUN R/L1504-44	▲	▲	***44***	*32*	*30*	*250*	*22.0*	*20*	*7.0*	-10°			1					
	S40T-PDUN R/L1504-50	★	★	***50***	*40*	*37*	*300*	*27.0*	*20*	*8.5*	-12°			1					
	S50U-PDUN R/L1504-63	★	★	***63***	*50*	*47*	*350*	*31.5*	-	*8.0*	-12°			2					

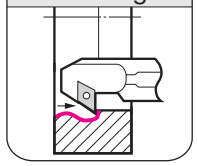
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

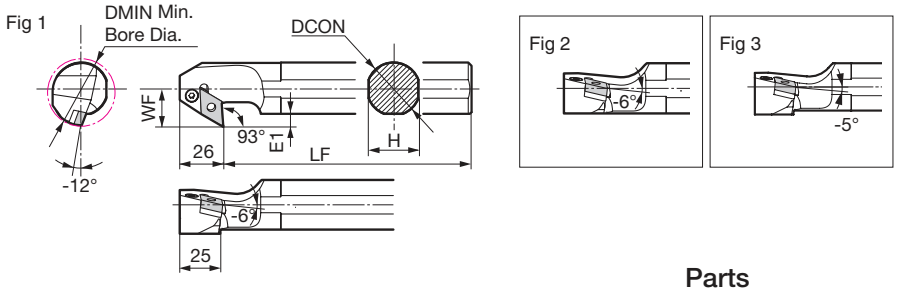
D 55° | 93° | Steel

Profiling
Lever Lock

S-PDZN

Profiling





Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench
Steel	**S32S-PDZN R/L1504-40**	★	★	***40***	*32*	*30*	*250*	*22.0*	*7.0*	DN□□43□	**B32**	2	LCL4	LCS4	LSD42	LSP4	LH030 (For Hex Socket)
	S32S-PDZN R/L1504-44	▲	▲	***44***	*32*	*30*	*250*	*22.0*	*7.0*			1					
	S40T-PDZN R/L1504-50	★	★	***50***	*40*	*37*	*300*	*27.0*	*8.5*			2					
	S50U-PDZN R/L1504-63	★	★	***63***	*50*	*47*	*350*	*31.5*	*8.0*			3					

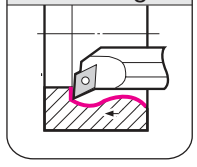
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

D 55° | 93° | Steel

Profiling
Pin Lock

S-EDUN

Profiling



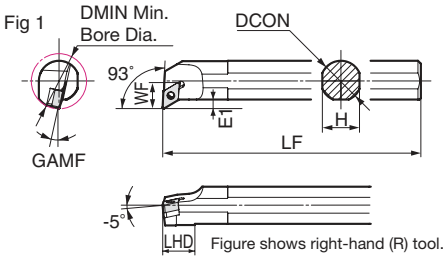


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench
Steel	**S25R-EDUN R/L1104-34**	★		***34***	*25*	*23*	*200*	*17*	*20*	*5.5*	-12°	DN□□33□	**B31**	1	SDW323	CPB34	LH025 (For Hex Socket)
	S32S-EDUN R/L1504-44	★		***44***	*32*	*30*	*250*	*22*	*20*	*7.0*	-10°	DN□□43□	**B32**	1	SDW423	CPB43	LH030

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Steel

Profiling
Pin Lock

S-EDZN
Profiling

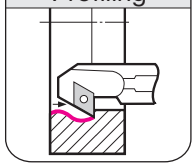


Fig 1

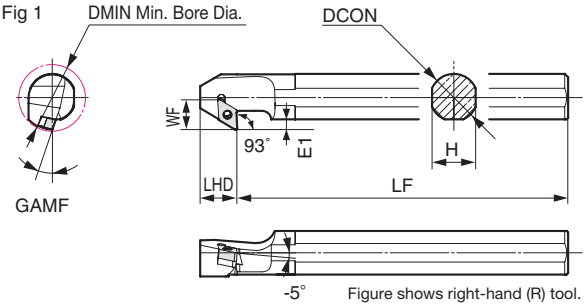


Figure shows right-hand (R) tool.

Holder

Parts

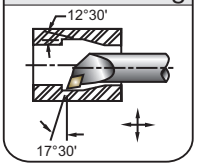
Dimensions (*mm*)

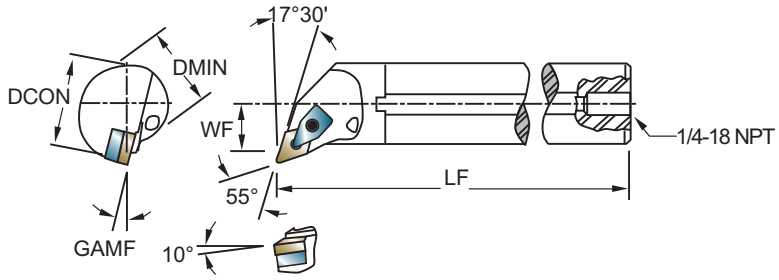
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Head LHD	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench (For Hex Socket)
Steel	**S25R-EDZN R/L1104-34**	★		***34***	*25*	*23*	*200*	*20*	*17*	*5.5*	-12°	DN□□33□	**B31**	1	SDW323	CPB34	LH025
	S32S-EDZN R/L1504-44	★		***44***	*32*	*30*	*250*	*25*	*22*	*7.0*	-10°	DN□□43□	**B32**	1	SDW423	CPB43	LH030

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

SumiTurn XBar

D-DDQN
Internal Boring





Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Clamp Set	Wrench (For Hex Socket)	Shim	Screw
Inch	**D20TDDQNR4**	•	1.705	1.250	—	—	12.00	1.000	—	-12°	DN□□43□	**B32**	1	0.9	SCP-2	LH040	DNS1506B	BFTX0409N
	D24TDDQNR4	•	2.000	1.500	—	—	14.00	1.250	—	-8°			1			LH025		

•Wrench for shim is sold separately from the main body.

Clamp Set Parts ☞C63

Profiling
Double Clamp

SumiTurn X-Bar

D-DDUN
Profiling

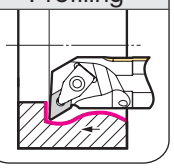


Fig 1

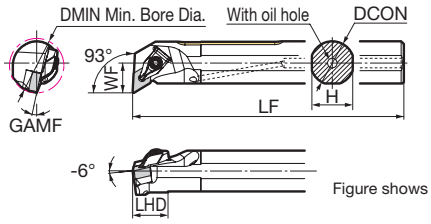


Figure shows right-hand (R) tool.

Holder

Parts

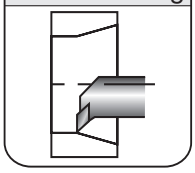
Dimensions (inch/ *mm*)

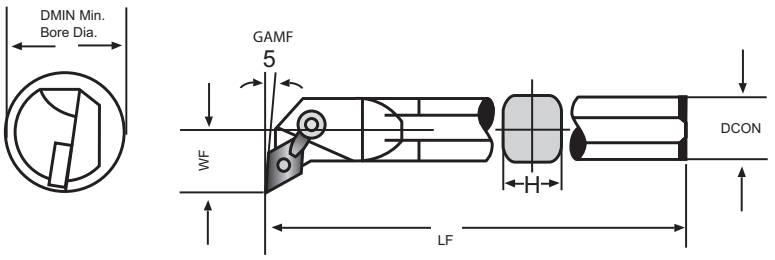
	Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Upper Surface Wrench (For Hex Socket)	Lower Surface Wrench (For Hex Socket)
Inch	Steel with Oil Hole with Anti-Vibration Mechanism	**D20TDDUNR4**	•		**1.705**	1.250	1.250	12.00	1.000	—	10°	DN□□43	**B32**	1	SCP-2	**5.0**	DNS1506B	BFTX0409N	LH040	LH025
		D24UDDUNR4	•		**2.000**	1.500	1.500	14.00	1.250	—	10°			1						
Metric	Steel with Oil Hole with Anti-Vibration Mechanism	**D32T-DDUN R/L1104-40**	★	★	***40***	*32*	*30*	*300*	*22*	*26*	-10°	DN□□33	**B31**	1	SCP-1	**5.0**	DNS1104B	BFTX0307N	LH040	LH025
		D32T-DDUN R/L1506-40	★	★	***40***	*32*	*30*	*300*	*22*	*26*	-12°	DN□□44	**B36**	1	SCP-2	**5.0**	DNS1506B	BFTX0409N	LH040	LH025
		D40U-DDUN R/L1506-50	★	★	***50***	*40*	*37*	*350*	*27*	*26*	-12°			1						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Clamp Set Parts ☞C63

BMDLN
Internal Boring





Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Shim	Cam	Clamp	Screw
BMDLN R/L 204	•	•	2.000	1.250	—	—	14.00	1.000	1.280	—	DN□□43□	**B32**	1		LH030	LH040	SDW423	CPB43	CCM8FL	WB8F-20

Wrench for shim is sold separately from the main body.

Applicable Inserts ◂·· S-DDQN / S-DDUN / D-DDUN / S-PDUN / S-EDUN / S-PDZN / S-EDZN

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker / CBN / PCD — EGU; Photo; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	EUZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	AX H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	—	SUMIBORON BNC300	SUMIBORON BN350	—
Recommended Cutting Conditions	☞A10 on			☞A14 on			☞A16 on			☞A18 on			☞A22 on		☞A20 on		☞M2 on

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

S-DSKN / S-PSKN Type



Medium Diameter General
Double Clamp

S-DSKN
Through Boring

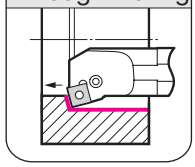


Fig 1

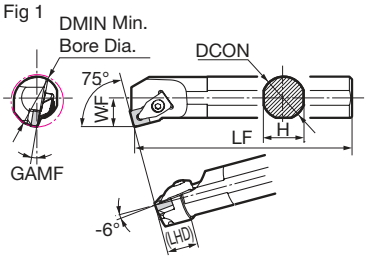


Fig 2

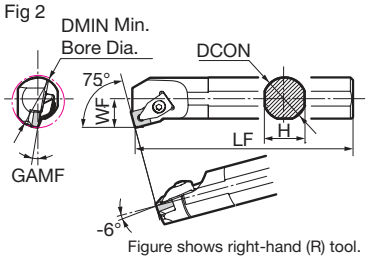


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	Clamp Set N·m	Shim	Shim Screw	Upper Surface Wrench	Lower Surface Wrench
																		(For Hex Socket)	(For Hex Socket)
Steel	**S25R-DSKN R/L1204-32**	★	★	***32***	*25*	*23*	*200*	*17.0*	*(26)*	-13°	SN□□43□	**B41**	1	SCP-2	**5.0**	SNS1203B	BFTX0307N	LH040	LH025
	S32S-DSKN R/L1204-40	★	★	***40***	*32*	*30*	*250*	*22.0*	*(21)*	-10°			1						
	S40T-DSKN R/L1204-50	★	★	***50***	*40*	*37*	*300*	*27.0*	*(21)*	-10°			1						
	S50U-DSKN R/L1204-63	★	★	***63***	*50*	*47*	*350*	*31.5*	—	-10°			2						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
( ) is a reference value.

Clamp Set Parts ☞C63



For Medium Diameter General
Lever Lock

S-PSKN
Through Boring

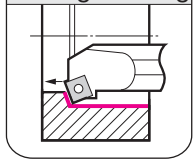


Fig 1

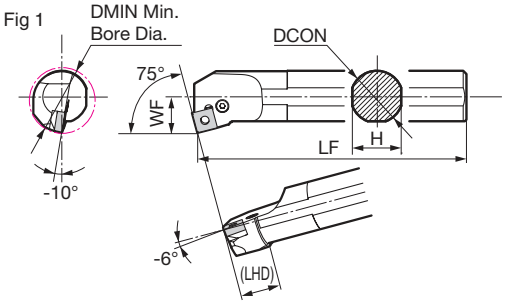


Fig 2

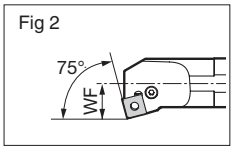


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

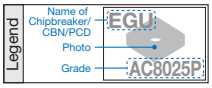
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench
																	(For Hex Socket)
Steel	**S32S-PSKN R/L1204-40**	★	★	***40***	*32*	*30*	*250*	*22.0*	*(21)*	SN□□43□	**B41**	1	LCL4	LCS4	LSS42B	LSP4	LH030
	S32S-PSKN R/L1204-44	▲	▲	***44***	*32*	*30*	*250*	*22.0*	*(21)*			1					
	S40T-PSKN R/L1204-50	★	★	***50***	*40*	*37*	*300*	*27.0*	*(21)*			1					
	S40T-PSKN R/L1204-54	▲	▲	***54***	*40*	*37*	*300*	*27.0*	*(21)*			1			LSS42		
	S50U-PSKN R/L1204-63	★	★	***63***	*50*	*47*	*350*	*31.5*	—			2			LSS42B		
	S50U-PSKN R/L1906-70	▲	▲	***70***	*50*	*47*	*350*	*35.0*	*(31)*	SN□□64□	**B47**	1	LCL6	LCS6	LSS63	LSP6	LH040

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
( ) is a reference value.

Applicable Inserts ◂·· S-DSKN / S-PSKN / S-ESKN / S-PSYN / S-ESYN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	EUZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN350	–
Recommended Cutting Conditions	☞A10 on			☞A14 on			☞A16 on			☞A18 on			☞A20 on		☞M2 on

BNC500 is for ductile cast iron.

(N·m) Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)



For Medium Diameter General
Lever Lock

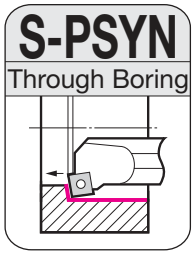


Fig 1

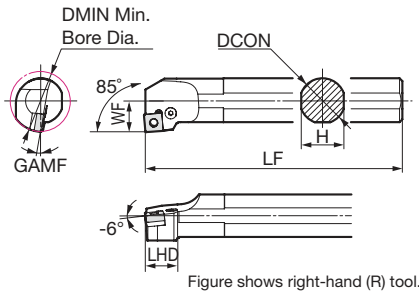


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench (For Hex Socket)
Steel	**S32S-PSYN R/L1204-44**	★	★	***44***	*32*	*30*	*250*	*22*	*(22)*	SN□□43	**B41**	1	LCL4	LCS4	LSS42B	LSP4	LH030

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The LHD ( ) is a reference value.



For Medium Diameter General
Pin Lock



Fig 1

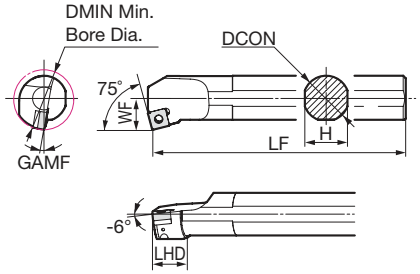


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench (For Hex Socket)
Steel	**S25R-ESKN R/L1204-34**	★		***34***	*25*	*23*	*200*	*17*	*(18)*	-12°			1		CPB42	
	S32S-ESKN R/L1204-44	★		***44***	*32*	*30*	*250*	*22*	*(20)*	-10°	SN□□43	**B41**	1	SSW423	CPB43S	LH030
	S40T-ESKN R/L1204-54			***54***	*40*	*37*	*300*	*27*	*(20)*	-10°			1		CPB43	
	S50U-ESKN R/L1906-70			***70***	*50*	*47*	*350*	*35*	*(30)*	-10°	SN□□64	**B47**	1	SSW635	CPB64	LH040

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The LHD ( ) is a reference value.

S-ESYN / BMSKN Type



For Medium Diameter General
Pin Lock

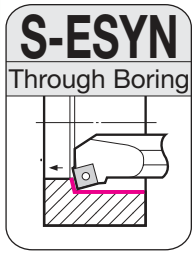


Fig 1

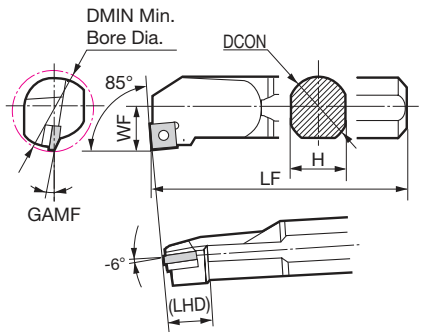


Figure shows right-hand (R) tool.

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

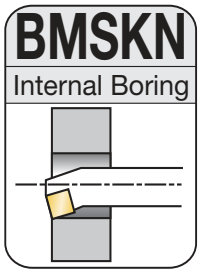
Holder

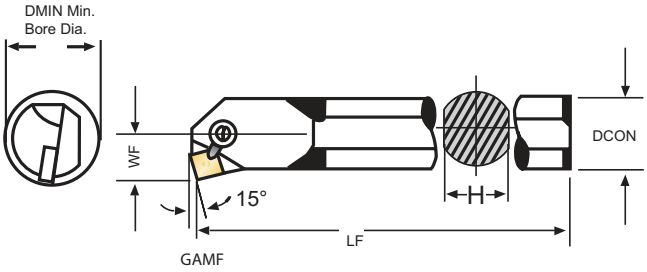
Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench (For Hex Socket)
Steel	**S25R-ESYN R/L1204-34**			***34***	*25*	*23*	*200*	*17*	*(20)*	-12°	SN□□43□	**B41**	1	SSW423	CPB42	LH030
	S32S-ESYN R/L1204-44			***44***	*32*	*30*	*250*	*22*	*(22)*	-10°			1		CPB43S	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
The LHD ( ) is a reference value.





Holder

Parts

Dimensions (inch)

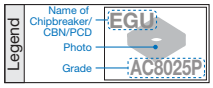
Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Shim	Cam	Clamp	Screw
BMSKN R/L 244	▲	▲	1.781	1.250	—	—	14.00	0.890	1.480	—	SN□□43	**B41**	1	3.0	LH030	LH040	SSW423	CPB43S	CCM8F	WB8F30
BMSKN R/L 324	▲		2.563	2.000	—	—	16.00	1.281	1.815	—			1					CPB43		

Wrench for shim is sold separately from the main body.
Maximum overhang = 3xD

Applicable Inserts ◂·· S-DSKN / S-PSKN / S-ESKN / S-PSYN / S-ESYN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material Finishing
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	EUZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	No Chipbreaker AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIBORON BNC2020	SUMIBORON BN350	
Recommended Cutting Conditions	☞A10 on			☞A14 on			☞A16 on			☞A18 on			☞A20 on		☞M2 on

BNC500 is for ductile cast iron.

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

A-MTFN / S-DTFN Type

A-MTFN

Boring bar / Profiling

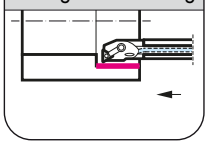
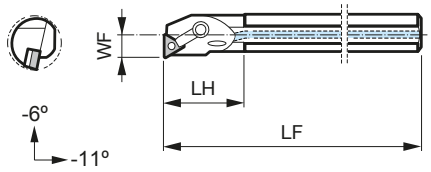


Fig 1



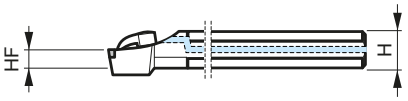


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**A16MTFN R/L 3**	▲	▲	1.200	1.000	1.000	—	12.00	0.640	—	-15°	TN□□33	**B56**	1	3.0	—	NL33L	LH020	LH030	CL20	XNS47
	A16TMTFN R/L 3	•	•	1.280	1.000	0.900	0.450	12.00	0.640	25.00	-11°			1				LH1/8	LH5/64		
	A20MTFN R/L 3	▲	▲	1.470	1.250	1.250	—	12.00	0.765	—	-12°			1		ITSN323	NL34L	LH3/32	LH030		XNS48
	A20UMTFN R/L 3	•	•	1.530	1.250	1.480	0.590	14.00	0.765	3.000	-11°			1				LH1/8	LH5/64		
	A24MTFN R/L 3	▲	▲	1.760	1.500	1.500	—	14.00	0.890	—	-10°			1				LH3/32	LH030		
	A24MTFN R/L 4	▲	▲	1.900	1.500	1.500	—	14.00	1.030	—	-10°							LH3/32			
	A24UMTFN R/L 4	•	•	1.780	1.500	1.370	0.685	14.00	0.890	3.000	-11°			1				LH1/8			
	A28UMTFN R/L 4	•	•	2.030	1.750	1.630	0.815	14.00	1.015	4.000	-11°	TN□□43	**B60**	1	3.0	ITSN433	NL46		LH030	CL20	XNS48
	A32MTFN R/L 4	▲	▲	2.400	2.000	2.000	—	14.00	1.281	—	-8°							LH3/32			
	A32VMTFN R/L 4	•	•	2.562	2.00	1.870	0.935	16.00	1.281	4.000	-11°			1				LH1/8			

Wrench for shim is sold separately from the main body.
Coolant Through

T 60° | 91° | Steel

Medium Diameter General-purpose
Double Clamp

S-DTFN

Stop Boring

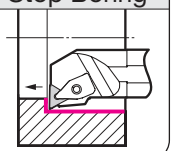


Fig 1

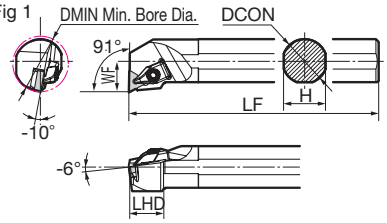


Fig 2

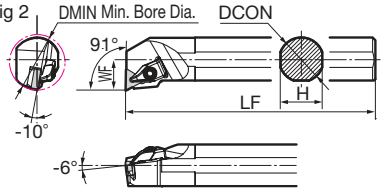


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Upper Surface Wrench (For Hex Socket)	Lower Surface Wrench (For Hex Socket)
Steel	**S32S-DTFN R/L 1604-40**	★	★	*40*	*32*	*30*	*250*	*22.0*	*26*	TN□□33□	**B56**	1	SCP-1	5.0	TNS1603B	BFTX0307N	LH040	LH025
	S40T-DTFN R/L 1604-50	★	★	*50*	*40*	*37*	*300*	*27.0*	*26*			1			TNS1604B			
	S50U-DTFN R/L 1604-63	★	★	*63*	*50*	*47*	*350*	*31.5*	—			2						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Clamp Set Parts C63

• USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

S-PTFN / S-ETFN Type



For Medium Diameter General-purpose
Lever Lock

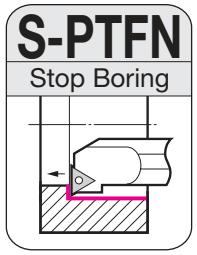


Fig 1

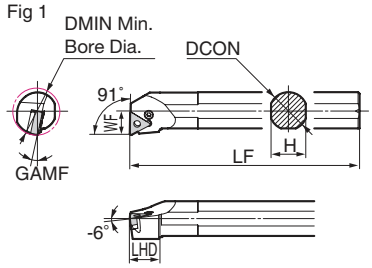


Fig 2

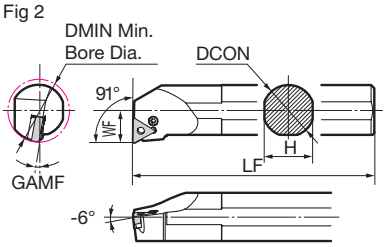


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Work Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench
																		(For Hex Socket)
Steel	**S25R-PTFN R/L1604-32**	★	★	***32***	*25*	*23*	*200*	*16.0*	*21.5*	-12°	TN□□33□	**B56**	1	LCL3	LCS3	LST317CA	LSP3	LH025
	S32S-PTFN R/L1604-40	★	★	***40***	*32*	*30*	*250*	*20.0*	*21.0*	-10°			1					
	S32S-PTFN R/L1604-44	▲	▲	***44***	*32*	*30*	*250*	*22.0*	*21.0*	-10°			1					
	S40T-PTFN R/L1604-50	★	★	***50***	*40*	*37*	*300*	*25.0*	*21.0*	-10°			1					
	S50U-PTFN R/L1604-63	★	★	***63***	*50*	*47*	*350*	*31.5*	—	-10°			2					
	S40T-PTFN R/L2204-54	▲	▲	***54***	*40*	*37*	*300*	*27.0*	*26.0*	-10°	TN□□43□	**B60**	1	LCL4	LCS4	LST42	LSP4	LH030
	S50U-PTFN R/L2204-70	▲	▲	***70***	*50*	*47*	*350*	*35.0*	*33.0*	-10°			1					

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



For Medium Diameter General-purpose
Pin Lock

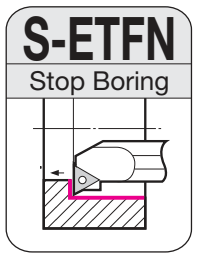


Fig 1

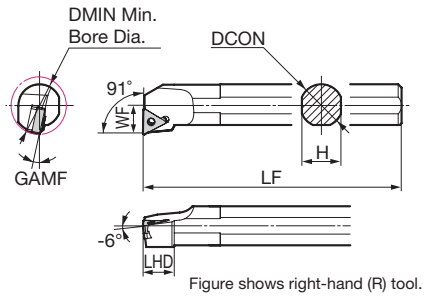


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Shim	Eccentric Pin	Wrench
																(For Hex Socket)
Steel	**S25R-ETFN R/L1604-34**	★		***34***	*25*	*23*	*200*	*17*	*18*	-12°	TN□□33□	**B56**	1	STW323	CPB34	LH025
	S32S-ETFN R/L1604-44	★		***44***	*32*	*30*	*250*	*22*	*20*	-10°			1		CPB35	
	S40T-ETFN R/L2204-54	★		***54***	*40*	*37*	*300*	*27*	*25*	-10°	TN□□43□	**B60**	1	STW434	CPB44T	LH030
	S50U-ETFN R/L2204-70			***70***	*50*	*47*	*350*	*35*	*32*	-10°			1		CPB45T	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

D-DTFN Type / B-PTFN Type

T 60° | 91° | Steel with Anti-Vibration Mechanism | Coolant Hole

Medium Diameter General-purpose Double Clamp

SumiTurn X-Bar

D-DTFN
Stop Boring

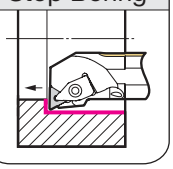


Fig 1

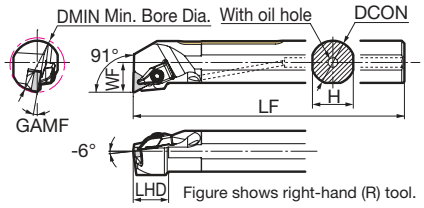


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Upper Surface Wrench	Lower Surface Wrench
Steel with Anti-Vibration Mechanism with Oil Hole	**D25T-DTFN R/L1604-32**	★	★	*32*	*25*	*23*	*300*	*17*	*21*	-12°	TN□□33□	**B56**	1	SCP-1	5.0	TNS1603B	BFTX0307N	LH040 (For Hex Socket)	LH025 (For Hex Socket)
	D32T-DTFN R/L1604-40	★	★	*40*	*32*	*30*	*300*	*22*	*26*	-10°			1			TNS1604B			
	D40U-DTFN R/L1604-50	★	★	*50*	*40*	*37*	*350*	*27*	*26*	-10°			1						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Clamp Set Parts ☞ C63

T 60° | 91° | Steel with Anti-Vibration Mechanism

For Medium Diameter General-purpose Lever Lock

SumiTurn X-Bar

B-PTFN
Stop Boring

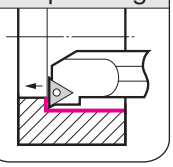


Fig 1

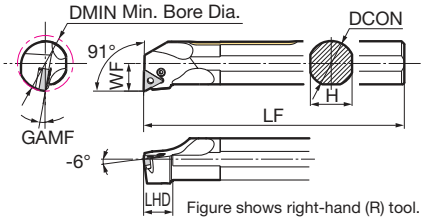


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench
Steel with Anti-Vibration Mechanism	**B25T-PTFN R/L1604-32**	★		*32*	*25*	*23*	*300*	*16*	*21*	-12°	TN□□33□	**B56**	1	LCL3	LCS3	LST317CA	LSP3	LH025 (For Hex Socket)
	B32U-PTFN R/L1604-40	★		*40*	*32*	*30*	*350*	*20*	*21*	-10°			1					
	B40W-PTFN R/L1604-50	★		*50*	*40*	*37*	*450*	*25*	*21*	-10°			1					

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-DTFN / D-DTFN / S-PTFN / B-PTFN / S-ETFN Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — EGU; Photo; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	N (Non-ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	EFE T1500Z	EGU AC8015P	EMU AC8025P	EEF AC6020M	EEG AC6020M	EEM AC6030M	SUMIBORON BN7000/BNC500	EUZ AC4010K	EGZ AC4010K	EEF AC5015S	EEG AC5015S	EEM AC5015S	SUMIDIA DA1000	SUMIBORON BNC2010	SUMIBORON BN1000
General Cutting	ESU AC8015P	EGU AC8025P	EMU AC8025P	EEF AC6030M	EEG AC6030M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC4015K	EGZ AC4015K	EEF AC5015S	EEG AC5015S	EEM AC5025S	SUMIDIA DA1000	SUMIBORON BNC2020	SUMIBORON BN2000
Interrupted Cutting	ESX AC8025P	EUX AC8035P	EMX AC8035P	EEF AC6030M	EEG AC6040M	EEM AC6040M	SUMIBORON BN7000/BNC500	EGZ AC420K	EGZ AC420K	EEF AC5025S	EEG AC5025S	EEM AC5025S	SUMIDIA DA1000	SUMIBORON BNC300	SUMIBORON BN350
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on			☞ A18 on			☞ A22 on	☞ A20 on	

BNC500 is for ductile cast iron.

A-MVUN Type / D-DVUN Type

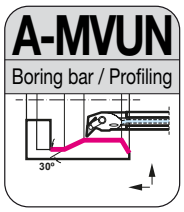
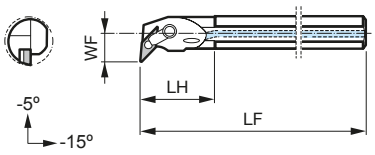


Fig 1



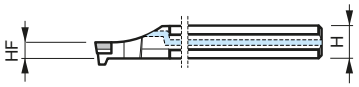


Figure shows right-hand (R) tool.

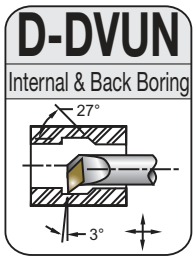
Holder

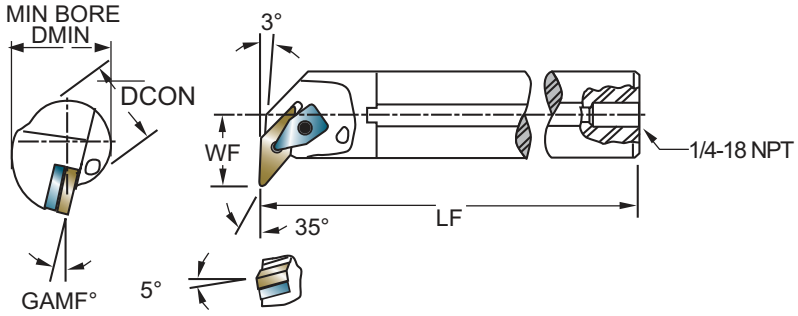
Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Lock Pin	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Clamp	Clamp Screw
Inch	**A16TMVUN R/L 3**	•	•	**2.000**	1.000	0.900	0.450	12.00	1.000	2.500	-15°	VN□□33	**B66**	1	**3.0**	IVSN322	NL34L	LH1/8	LH5/64	CL22	XNS47
	A20MVUN R/L 3	▲	▲	**2.250**	1.250	1.250	—	14.00	1.125	—	12°							LH020	LH030		
	A20UMVUN R/L 3	•	•	**2.250**	1.250	1.180	0.590	14.00	1.125	3.000	-15°			1				LH1/8	LH5/64		XNS48
	A24MVUN R/L 3	▲	▲	**2.500**	1.500	1.500	—	14.00	1.250	—	12°							LH020	LH030		XNS47
	A24UMVUN R/L 3	•	•	**2.500**	1.500	1.370	0.685	14.00	1.250	3.000	-15°			1				LH1/8	LH5/64		XNS48

Wrench for shim is sold separately from the main body.
Coolant Through





SumiTurn X Bar

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Clamp Set	Wrench (For Hex Socket)	Wrench (For Hex Socket)	Shim	Screw
Inch	**D20TDVUNR3**	•	**2.000**	1.250	—	—	12.00	1.125	—	12°	VN□□33□	**B66**	1	**1.5**	SCP-4	LH040	LH025	VNS1604	BFTX0307N
	D24UDVUNR3	•	**2.350**	1.500	—	—	12.00	1.250	—	12°			1						

Wrench for shim is sold separately from the main body.

Clamp Set Parts C63

• USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

TRM 55° | 93° | Steel

Internal Profiling
Double Clamp

SumiTurn T-REX

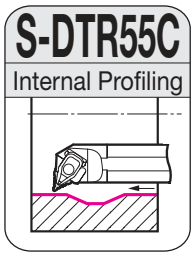
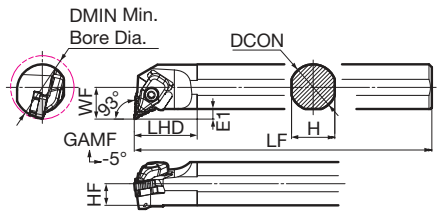


Fig 1



Holder

Parts

Dimensions (inch / *mm*)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Offset E1	Cutting Edge Height HF	Fig	Clamp	Spring	Cap Screw	Cap Screw N·m	Shim	Shim Screw	Wrench	Shim Wrench
Inch	**A20DTR55C R3 / L3**	•	•	**1.75**	1.25	1.25	10.0	.875	1.575	-12°	.309	-	1	TRCP3	SSP420	BX0520	3.5 to 4.5	TRW5505	BFTX0307N	TSW040 (For Hex Socket)	TRX10(*) (For Torx Holes)
Inch	**A24DTR55C R3 / L3**	•	•	**2.00**	1.50	1.50	12.0	1.00	1.575	-10°	.309	-	1								
Metric	**S32S-DTR55CR-17**	★		***44***	*32*	*30*	*250*	*22*	*42*	*-12°*	*7.0*	*15.0*	1								
Metric	**S40T-DTR55CR-17**	★		***50***	*40*	*37*	*300*	*25*	*42*	*-10°*	*6.2*	*18.5*	1								

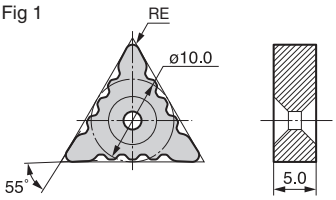
* Item is sold separately.
TR55C Type:

Insert (Coated Carbide / Cermet)

Dimensions (*mm*)

Applications	Appearance	Cat. No.	Nose Radius RE	AC810P	AC8025P	AC820P	AC830P	AC700G	AC610M	AC6020M	AC6030M	AC630M	T3000Z	Fig
Fine Cutting	FL	**TRM551704-FL**	*0.4*		•	•							▲	1
Fine Cutting	FL	**TRM551708-FL**	*0.8*		•	•							▲	1
Finishing	LU	**TRM551704-LU**	*0.4*	•	•	•	•	•					▲	1
Finishing	LU	**TRM551708-LU**	*0.8*	•	•	•	•	•					▲	1
Finishing	LU	**TRM551712-LU**	*1.2*	•	•	•	•	•					▲	1
Finishing	SU	**TRM551704-SU**	*0.4*	•	•	•			•	•	•	•	▲	1
Finishing	SU	**TRM551708-SU**	*0.8*	•	•	•			•	•	•	•	▲	1
Finishing	SU	**TRM551712-SU**	*1.2*	•	•	•			•	•	•	•	▲	1
Medium Cutting	GU	**TRM551704-GU**	*0.4*	•	•	•	•	•		•		•		1
Medium Cutting	GU	**TRM551708-GU**	*0.8*	•	•	•	•	•	•	•	•	•		1
Medium Cutting	GU	**TRM551712-GU**	*1.2*	•	•	•	•	•		•	•	•		1

Fig 1



N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (limited availability item)

A-MWLN / S-DWLN / S-PWLN Type

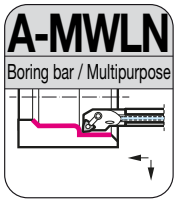
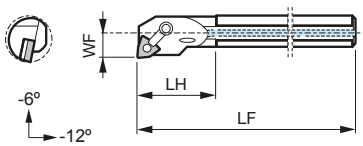


Fig 1



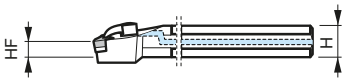


Figure shows right-hand (R) tool.

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Shim	Shim Screw	Lock Pin	Wrench	Wrench	Clamp	Clamp Screw
Inch	A12MWLN R/L 3	▲	▲	1.000	0.750	0.750	—	10.00	0.500	—	14°	WN□□33□	B69	1		—	—	NL46	LH3/32 (For Hex Socket)	LH020 (For Hex Socket)	CL6	XNS36
	A16MWLN R/L 3	▲	▲	1.200	1.000	1.000	—	12.00	0.640	—	14°			1								
	A16MWLN R/L 4	▲	▲	1.200	1.000	1.000	—	12.00	0.640	—	14°	WN□□43□	B71	1	3.0	—	S46	NL44	LH3/32	LH030	CL20	XNS47
	A16TMWLN R/L 4	•	•	1.280	1.000	0.900	0.450	12.00	0.640	2.500	-12°			1			—		LH1/8	LH3/32		
	A20MWLN R/L 4	▲	▲	1.470	1.250	1.250	—	12.00	0.765	—	14°			1		IWSN433	S46	NL46	LH3/32	LH030		XNS48
	A20UMWLN R/L 4	•	•	1.530	1.250	1.180	0.590	14.00	0.765	3.000	-12°			1			—		LH1/8	LH3/32		
	A24MWLN R/L 4	▲	▲	1.760	1.500	1.500	—		0.890	—	14°			1			S46		LH3/32	LH030		
	A24UMWLN R/L 4	•	•	1.780	1.500	1.370	0.685	14.00	0.890	3.000	-12°			1			—		LH1/8	LH3/32		

Wrench for shim is sold separately from the main body.

Coolant Through

W 80° | 95° | Steel

Medium Diameter General-purpose
Double Clamp

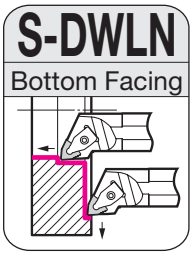


Fig 1

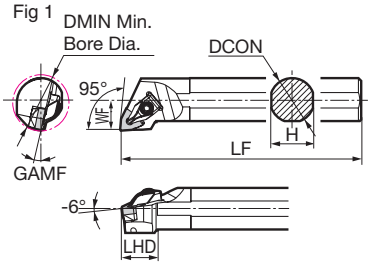


Fig 2

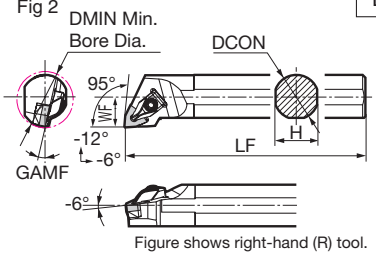


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Upper Surface Wrench	Lower Surface Wrench
Steel	S32S-DWLN R/L0604-40	•	•	40	32	30	250	22.0	29	-10°	WN□□33□	B69	1	SCP-4	5.0	WNS0603B	BFTX0307N	LH040 (For Hex Socket)	LH025 (For Hex Socket)
	S25R-DWLN R/L0804-32	•	•	32	25	23	200	17.0	26	-12°	WN□□43□	B71	1	SCP-2	5.0	WNS0803B	BFTX0307N	LH040	LH025
	S32S-DWLN R/L0804-40	•	•	40	32	30	250	22.0	26	-12°			1						
	S40T-DWLN R/L0804-50	•	•	50	40	37	300	27.0	26	-12°			1			WNS0804B	BFTX0409N		
	S50U-DWLN R/L0804-63	•	•	63	50	47	350	31.5	—	-12°			2						

Feed direction of applicable inserts differs according to machining details. (Refer to * note below)

Clamp Set Parts C63

W 80° | 95° | Steel

Medium Diameter General-purpose
Lever Lock

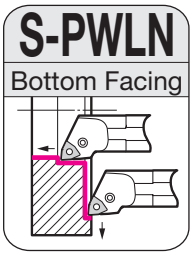


Fig 1

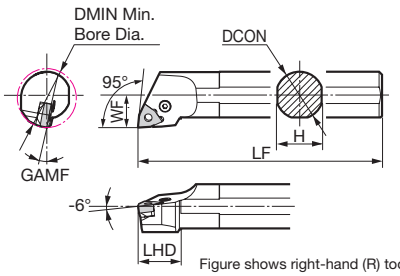


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Lever Pin	Bolt	Shim	Shim Pin	Wrench
Steel	S32S-PWLN R/L0604-40	•	•	40	32	30	250	22	29	-10°	WN□□33□	B69	1	LCL3	LCS3	LSW317	LSP3	LH025 (For Hex Socket)
	S32S-PWLN R/L0804-40	•	•	40	32	30	250	22	29	-10°	WN□□43□	B71	1	LCL4	LCS4	LSW42B	LSP4	LH030
	S40T-PWLN R/L0804-50	•	•	50	40	37	300	27	29	-10°			1					

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

N·m Recommended Tightening Torque (N·m)

W 80° | 95° | Steel with Anti-Vibration Mechanism Coolant Hole

Medium Diameter General-purpose Double Clamp

SumiTurn X-Bar

D-DWLN
Bottom Facing

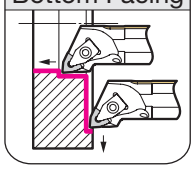


Fig 1

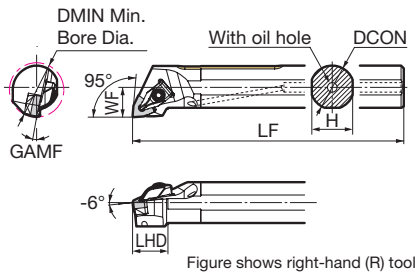


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holders Materials	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp Set	N·m	Shim	Shim Screw	Upper Surface Wrench	Lower Surface Wrench
Steel with Oil Hole with Anti-Vibration Mechanism	**D25T-DWLN R/L0804-32**	•	•	*32*	*25*	*23*	*300*	*17*	*26*	-12°	WN□□43□	**B71**	1	SCP-2	5.0	WNS0803B	BFTX0307N	(For Hex Socket) LH040	LH025
	D32T-DWLN R/L0804-40	•	•	*40*	*32*	*30*	*300*	*22*	*26*	-10°			1			WNS0804B	BFTX0409N		
	D40U-DWLN R/L0804-50	•	•	*50*	*40*	*37*	*350*	*27*	*26*	-10°			1						

Feed direction of applicable inserts differs according to machining details. (Refer to * note below)

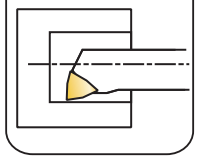
Clamp Set Parts ☞C63

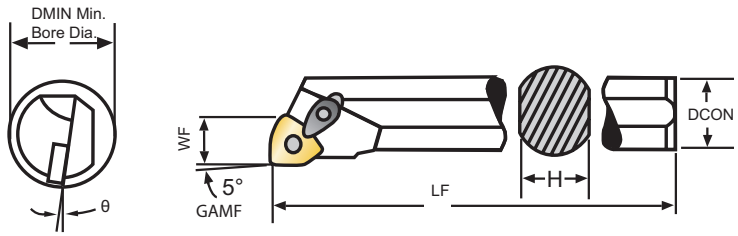
***Applicable Inserts for DWLN Type**

For internal diameter machining: Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts. Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

For facing: Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts. Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

BMWLN
Internal Boring





Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Hex Socket)	Shim	Pin	Clamp	Screw
BMWLN R/L 164	▲	▲	1.250	1.000	—	—	12.00	0.625	0.875	-15°	WN□□43□	**B71**	1	5.0	LH030	SWB422	BWP46	BCH05RM6L	WB6-16
BMWLN R/L 204	▲	▲	1.530	1.250	—	—	14.00	0.765	1.132	-14°			1		LH025				
BMWLN R/L 244	▲	▲	1.780	1.500	—	—	14.00	0.890	1.382	-12°			1						

•Wrench for shim is sold separately from the main body.

Maximum overhang = 3xD

Applicable Inserts

◀·· S-DWLN / BMWLN / D-DWLN / S-PWLN Type

1st Recommended Insert

Refer as well to the Insert Selection Guide (page A10 on).
Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — Photo — Grade (EGU / AC8025P)

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing	S (Exotic Alloy) Medium Cutting	S (Exotic Alloy) Roughing	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
Continuous Cutting	EFE **T1500Z**	EGU **AC8015P**	EMU **AC8025P**	EEF **AC6020M**	EEG **AC6020M**	EEM **AC6030M**	EUZ **AC4010K**	EGZ **AC4015K**	EEF **AC5015S**	EEG **AC5015S**	EEM **AC5015S**	SUMIBORON **BNC2010**	SUMIBORON **BN2000**
General Cutting	ESU **AC8015P**	EGU **AC8025P**	EMU **AC8025P**	EEF **AC6030M**	EEG **AC6030M**	EEM **AC6040M**	EGZ **AC4015K**	EGZ **AC420K**	EEF **AC5015S**	EEG **AC5015S**	EEM **AC5025S**	SUMIBORON **BNC2020**	SUMIBORON **BN2000**
Interrupted Cutting	ESX **AC8025P**	EUX **AC8035P**	EMX **AC8035P**	EEF **AC6030M**	EEG **AC6040M**	EEM **AC6040M**	EGZ **AC420K**	No Chipbreaker AC420K	EEF **AC5025S**	EEG **AC5025S**	EEM **AC5025S**	SUMIBORON **BNC2020**	SUMIBORON **BN2000**
Recommended Cutting Conditions	☞A10 on			☞A14 on			☞A16 on		☞A18 on			☞A20 on	

N·m Recommended Tightening Torque (N·m)



Internal Finishing to Medium Cutting
Screw-on

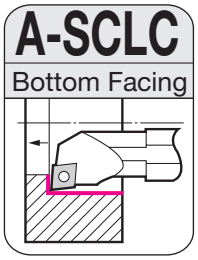


Fig 1

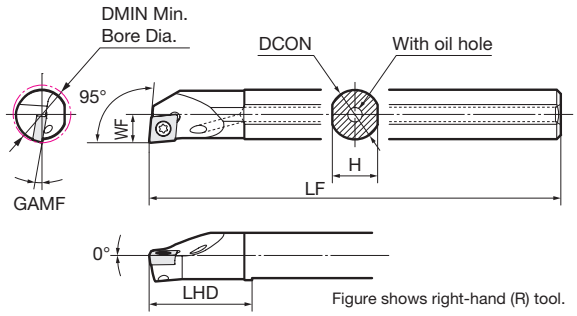


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch / *mm*)

	Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Inch	Steel with oil hole	**A06SCLC R/L 2**	▲	▲	0.480	0.375	0.375	—	6.00	0.250	0.625	-15°	CC□□21.5□	B75	1	BFTY02205	0.9	TRD07
		A06MSCLC R/L 2	●	●	0.500	0.375	0.340	0.170	6.00	0.250	0.830	-9°			1	ST-1425		
		A08SCLC R/L 2	▲	▲	0.600	0.500	0.500	—	6.00	0.312	0.750	-13°			1	BFTY02205		
		A08MSCLC R/L 2	●	●	0.625	0.500	0.460	0.230	6.00	0.312	0.910	-9°			1	ST-1425		
		A10SCLC R/L 2	▲	▲	0.770	0.625	0.625	—	8.00	0.406	1.250	-10°			1	BFTY02205		
		A10RSCLC R/L 2	●	●	0.812	0.625	0.580	0.290	8.00	0.406	1.060	-9°			1	ST-1425		
		A10SCLC R/L 3	▲	▲	0.770	0.625	0.625	—	8.00	0.406	1.250	-10°	CC□□32.5□	B78	1	BFTX0407N	3.0	TRX15
		A10RSCLC R/L 3	●	●	0.812	0.625	0.580	0.290	8.00	0.406	1.060	-9°			1	ST-1440		
		A12SCLC R/L 3	▲	▲	0.930	0.750	0.750	—	10.00	0.500	1.875	-8°			1	BFTX0407N		
		A12S-SCLC R/L 3M	●	●	1.000	0.750	0.710	0.355	10.00	0.500	1.580	-9°			1			
		A16SCLC R/L 3	▲	▲	1.200	1.000	1.000	—	12.00	0.640	2.500	-7°			1			
Metric	Steel with oil hole	**A08H-SCLC R/L 0602-10**	★	★	*10*	*8*	*7*	—	*100*	*5.5*	*19*	-13°	CC□□21.5□	B75	1	BFTX02505N	1.1	TRX08
		A10K-SCLC R/L 0602-12	★	★	*12*	*10*	*9*	—	*125*	*6.0*	*21*	-12°			1	BFTX02506N	1.5	
		A12M-SCLC R/L 0602-14	★	★	*14*	*12*	*11*	—	*150*	*7.0*	*25*	-10°			1			
		A16R-SCLC R/L 0602-18	★	★	*18*	*16*	*15*	—	*200*	*9.0*	*27*	-8°			1			
		A16R-SCLC R/L 09T3-18	★	★	*18*	*16*	*15*	—	*200*	*9.0*	*30*	-10°	CC□□32.5□	B78	1	BFTX0407N	3.0	TRX15
		A20S-SCLC R/L 09T3-22	★	★	*22*	*20*	*18*	—	*250*	*11.0*	*30*	-8°			1	BFTX0409N	3.4	
		A25T-SCLC R/L 09T3-27	★	★	*27*	*25*	*23*	—	*300*	*13.5*	*35*	-6°			1			

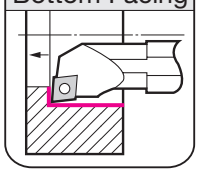
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

S-SCLC Type / E-SCLC Type



S-SCLC

Bottom Facing



Internal Finishing to Medium Cutting
Screw-on

Fig 1

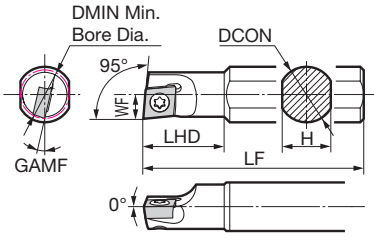
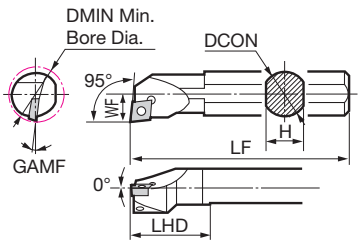


Fig 2



Holder

Figure shows right-hand (R) tool.

Parts

Dimensions (*mm*)

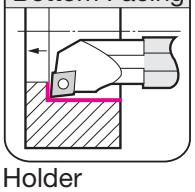
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel	**S08H-SCLC R/L 03X1-05**	★	★	*5*	*8*	*7*	*100*	*2.5*	*24*	-15°	CC□□03X1	B74	1	BFTX016033	0.2	TRX06
	S08H-SCLC R/L 03X1-06	★	★	*6*	*8*	*7*	*100*	*3.0*	*28*	-13°			1			
	S08H-SCLC R/L 04X1-07	★	★	*7*	*8*	*7*	*100*	*3.5*	*32*	-13°	CC□□04X1		1	BFTX0203N	0.5	TRX06
	S08H-SCLC R/L 04X1-08	★	★	*8*	*8*	*7*	*100*	*4.0*	*37*	-11°			1			
	S08H-SCLC R/L 0602-10	★	★	*10*	*8*	*7*	*100*	*5.5*	*19*	-13°	CC□□21.5□	B75	2	BFTX02505N	1.1	TRX08
	S10K-SCLC R/L 0602-12	★	★	*12*	*10*	*9*	*125*	*6.0*	*21*	-12°			2	BFTX02506N	1.5	
	S12M-SCLC R/L 0602-14	★	★	*14*	*12*	*11*	*150*	*7.0*	*25*	-10°			2			
	S16R-SCLC R/L 0602-18	★	★	*18*	*16*	*15*	*200*	*9.0*	*27*	-8°			2			
	S16R-SCLC R/L 09T3-18	★	★	*18*	*16*	*15*	*200*	*9.0*	*30*	-10°	CC□□32.5□	B78	2	BFTX0407N	3.0	TRX15
	S20S-SCLC R/L 09T3-22	★	★	*22*	*20*	*18*	*250*	*11.0*	*30*	-8°			2	BFTX0409N	3.4	
	S25T-SCLC R/L 09T3-27	★	★	*27*	*25*	*23*	*300*	*13.5*	*35*	-6°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



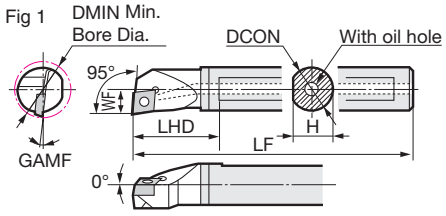
E-SCLC

Bottom Facing



Internal Finishing to Medium Cutting
Screw-on

Fig 1



Holder

Parts

Dimensions (inch/ *mm*)

	Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Inch	Carbide with oil hole	**E06MSCLC R/L 2**	▲	▲	0.480	0.375	0.375	6.00	0.250	—	-15°	CC□□21.5□	B75	1	ST21.5	—	TRX08
		E08RSCLC R/L 2	▲	▲	0.600	0.500	0.500	8.00	0.312	—	-13°			1			
		E10SCLC R/L 3	▲	▲	0.770	0.625	0.625	10.00	0.406	—	-10°	CC□□32.5□	B78	1	ST32.5	—	TRX15
		E12SCLC R/L 3	▲	▲	0.930	0.750	0.750	10.00	0.500	—	-8°			1			
		E16TSCLC R/L 3	▲	▲	1.200	1.000	1.000	12.00	0.640	—	-7°			1			
Metric	Carbide with oil hole	**E08H-SCLC R0602-10**	★	★	*10*	*8*	*7.5*	*100*	*5.5*	*18*	-13°	CC□□21.5□	B75	1	BFTX02505N	1.1	TRX08
		E10K-SCLC R0602-13	★	★	*13*	*10*	*9.5*	*125*	*7.0*	*19*	-12°			1	BFTX02506N	1.5	
		E12M-SCLC R0602-16	★	★	*16*	*12*	*11.5*	*150*	*9.0*	*25*	-10°			1			
		E16R-SCLC R09T3-20	★	★	*20*	*16*	*15.5*	*200*	*11.0*	*30*	-8°	CC□□32.5□	B78	1	BFTX0407N	3.4	TRX15

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts ◂·· S-SCLC / A-SCLC / B-SCLC / C-SCLC / E-SCLC Type

1st Recommended Insert

Refer as well to the Insert Selection Guide (page A10 on).
Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — EGU; Photo; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material
General Cutting	EFP T1500Z	ESU AC8025P	EMU AC8025P	ELP AC6030M	ESU AC6030M	EMU AC6040M	SUMIBORON BN7000/BNC500	EMU AC4015K	No Chipbreaker AC4015K	ESU AC5015S	SUMIDIA DA1000	NAG H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
High Precision	EFC T1500A	MESI AC1030U	EFM AC1030U	EFC AC1030U	MESI AC1030U	EFM AC1030U	SUMIBORON BN7000/BNC500	—	—	MESI AC5015S	SUMIDIA DA1000	—	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
Recommended Cutting Conditions	☛ A10 on			☛ A14 on			☛ A16 on			☛ A18 on	☛ A22 on		☛ A20 on		☛ M2 on

BNC500 is for ductile cast iron.

(N·m) Recommended Tightening Torque (N·m)

C-SCLC / D-SCLC Type



Internal Finishing to Medium Cutting
Screw-on

- USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

C-SCLC
Bottom Facing

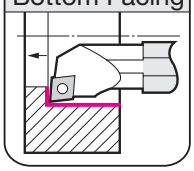


Fig 1

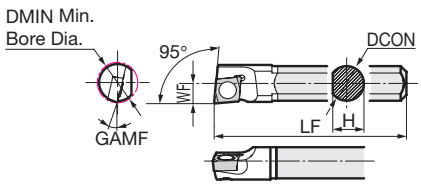
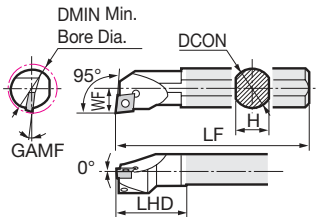


Fig 2



Holder

Parts

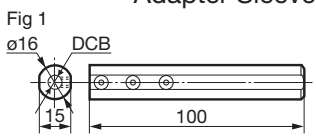
Dimensions (*mm*)

Holder Material	Cat. No.	Stock	Min. Bore Dia.	Diameter	Height	Overall Length	Cutting Edge Distance	Head	Rake Angle	Applicable Insert		Fig	Flat Screw		Wrench
										Cat. No.	Ref. Page			N·m	(For Torx Holes)
		R	DMIN	DCON	H	LF	WF	LHD	GAMF						
Carbide	**C04G-SCLCR03X1-05***	★	***5***	*4*	*3.8*	*90*	*2.5*	—	-15°	CC□□03X1	**B74**	1	BFTX016033	**0.2**	TRX06
	C05H-SCLCR03X1-06*	★	***6***	*5*	*4.4*	*100*	*3.0*	—	-13°			1			
	C06J-SCLCR04X1-07*	★	***7***	*6*	*5.4*	*110*	*3.5*	—	-13°	CC□□04X1	**B74**	1	BFTX0203N	**0.5**	TRX06
	C07K-SCLCR04X1-08*	★	***8***	*7*	*6.4*	*125*	*4.0*	—	-11°			1			
	C08H-SCLCR0602-10	★	***10***	*8*	*7.0*	*100*	*5.5*	*19*	-13°	CC□□21.5	**B75**	2	BFTX02505N	**1.1**	TRX08
	C10K-SCLCR0602-12	★	***12***	*10*	*9.0*	*125*	*6.0*	*21*	-12°			2	BFTX02506N	**1.5**	
	C10K-SCLCR0602-13	★	***13***	*10*	*9.0*	*125*	*7.0*	*21*	-12°			2			
	C12M-SCLCR0602-14	★	***14***	*12*	*11.0*	*150*	*7.0*	*25*	-10°			2			
	C12M-SCLCR0602-16	★	***16***	*12*	*11.0*	*150*	*9.0*	*25*	-10°			2			
	C16R-SCLCR09T3-20	★	***20***	*16*	*15.0*	*200*	*11.0*	*30*	-8°	CC□□32.5	**B78**	2	BFTX0407N	**3.4**	TRX15
	C20S-SCLCR09T3-25	★	***25***	*20*	*18.0*	*250*	*13.0*	*35*	-7°			2	BFTX0409N	**3.4**	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
* Separately sold sleeve is required.

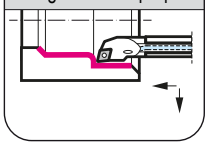
Adapter Sleeve

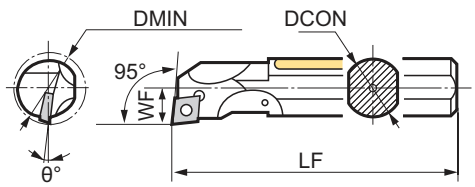
Fig 1



Cat. No.	Stock	Bore Dia. DCB	Applicable Holders	Fig
HBB 416	•	4.0	C04G-SCLC R03X1-05	1
HBB 516	•	5.0	C05H-SCLC R03X1-06	1
HBB 616	•	6.0	C06J-SCLC R04X1-07	1
HBB 716	•	7.0	C07K-SCLC R04X1-08	1

D-SCLC
Boring bar / Multipurpose





SumiTurn X Bar

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock		Min. Bore Dia.	Diameter	Height	Cutting Edge Height	Overall Length	Cutting Edge Distance	Head	Rake Angle	Applicable Insert		Fig		Wrench	Screw
												Cat. No.	Ref. Page		N·m	(For Torx Socket)	
		R	L	DMIN	DCON	H	HF	LF	WF	LH	GAMF						
Inch	**D08RSCLC R/L 2**	•	•	**0.600**	0.500	—	—	8.00	0.300	—	-10°	CC□□21.5	**B75**	1	**0.9**	TRX08	BFTX02506N
	D10SSCLC R/L 3	•	•	**0.700**	0.625	—	—	10.00	0.385	—	-8°	CC□□32.5	**B78**	1	**3.0**	TRX15	BFTX0407N
	D12SSCLC R/L 3	•	•	**0.930**	0.750	—	—	10.00	0.465	—	-7°			1			BFTX0409N
	D16TSCLC R/L 3	•		**1.200**	1.000	—	—	12.00	0.600	—	-6°			1			

Wrench for shim is sold separately from the main body.



Internal Finishing to Medium Cutting
Screw-on

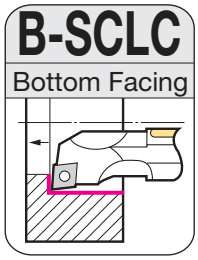


Fig 1

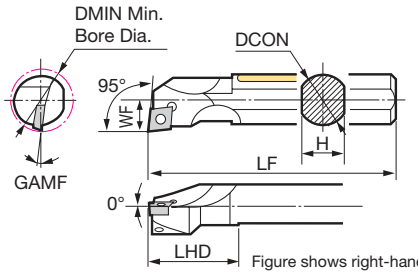


Figure shows right-hand (R) tool.

SumiTurn X Bar

- USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

Holder

Parts

Dimensions (*mm*)

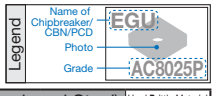
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism	**B08H-SCLC R/L 0602-10**	★	★	***10***	*8*	*7*	*100*	*5.5*	*19*	-13°	CC□□21.5	B75	1	BFTX02505N	1.1	TRX08
	B10K-SCLC R/L 0602-12	★	★	***12***	*10*	*9*	*125*	*6.0*	*21*	-12°			1	BFTX02506N	1.5	
	B12M-SCLC R/L 0602-14	★	★	***14***	*12*	*11*	*150*	*7.0*	*25*	-10°			1			
	B12M-SCLC R/L 0602-16	★	★	***16***	*12*	*11*	*150*	*9.0*	*25*	-10°			1			
	B16R-SCLC R/L 09T3-20	★	★	***20***	*16*	*15*	*200*	*11.0*	*30*	-8°	CC□□32.5	B78	1	BFTX0407N	3.0	TRX15
	B20S-SCLC R/L 09T3-25	★	★	***25***	*20*	*18*	*250*	*13.0*	*30*	-7°			1	BFTX0409N	3.4	
	B25T-SCLC R/L 1204-32	★	★	***32***	*25*	*23*	*300*	*17.0*	*38*	-6°	CC□□43□	B80	1	BFTX0511N	5.0	TRX20

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-SCLC / A-SCLC / B-SCLC / C-SCLC / E-SCLC / D-SCLC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



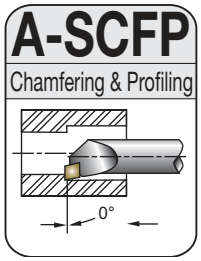
Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material
General Cutting	EFB T1500Z	ESU AC8025P	EMU AC8025P	ELB AC6030M	ESU AC6030M	EMU AC6040M	SUMIBORON BN7000/BNC500	EMU AC4015K	No Chipbreaker AC4015K	ESU AC5015S	SUMIDIA DA1000	AG H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
High Precision	EFC T1500A	MESI AC1030U	EFM AC1030U	EFC AC1030U	MESI AC1030U	EFM AC1030U	SUMIBORON BN7000/BNC500	–	–	MESI AC5015S	SUMIDIA DA1000	–	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
Recommended Cutting Conditions	☞A10 on			☞A14 on			☞A16 on			☞A18 on	☞A22 on		☞A20 on		☞M2 on

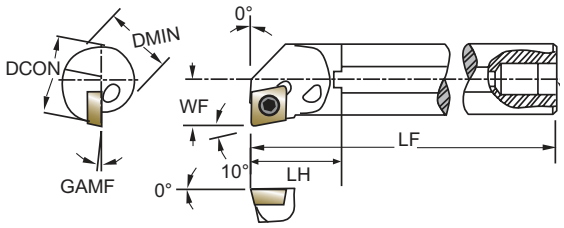
BNC500 is for ductile cast iron.

A-SCFP / A-SCLP Type



Steel





Holder

Parts

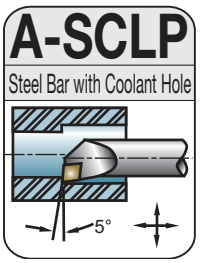
Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw	Hardware when Boring bar lot# begins with D### Wrench (For Torx Socket)	Hardware when Boring bar lot# begins with D### Screw
Inch	**A06SCFP R/L 2**	▲		0.480	0.375	0.375	—	6.00	0.250	0.625	-4°			1					
	A08SCFP R/L 2	▲	▲	0.600	0.500	0.500	—	8.00	0.312	0.750	-2°	CP□□21.5□	**B81**	1	0.9	TRX07	BFTY02205	TRX08	ST21.5
	A10SCFP R/L 2	▲		0.770	0.625	0.625	—	10.00	0.406	1.250	0°			1					
	A12SCFP R/L 3	▲		0.930	0.750	0.750	—	10.00	0.500	1.250	0°	CP□□32.5□	**B84**	1	3.0	TRX15	BFTX0407N	—	ST32.5
	A16SCFP R/L 3	▲		1.200	1.000	1.000	—	12.00	0.640	1.875	0°			1					

Wrench for shim is sold separately from the main body.
Coolant Through



Steel



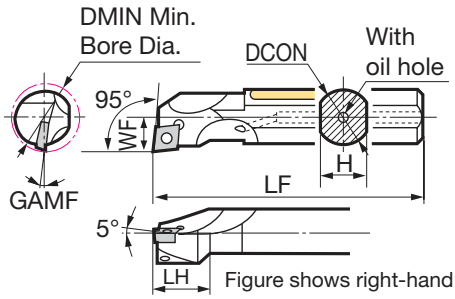


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
Inch	**A06SCLP R/L 2**	●	●	0.480	0.375	0.375	—	6.00	0.250	0.625	-6°			1			
	A08SCLP R/L 2	●	●	0.600	0.500	0.500	—	8.00	0.312	0.750	-3°	CP□□21.5□	**B81**	1	0.9	TRX07	BFTY02205
	A10SCLP R/L 2	●	●	0.770	0.625	0.625	—	10.00	0.406	1.250	-2°			1			
	A10SCLP R/L 3	●	●	0.770	0.625	0.625	—	10.00	0.406	1.250	-2°			1			
	A12SCLP R/L 3	●	●	0.930	0.750	0.750	—	10.00	0.500	1.250	-2°	CP□□32.5□	**B84**	1	3.0	TRX15	BFTX0407N
	A16SCLP R/L 3	●	●	1.200	1.000	1.000	—	12.00	0.640	1.875	0°			1			

Wrench for shim is sold separately from the main body.
Coolant Through Only

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)

C 80° | 95° | Steel

Internal Finishing to Medium Cutting
Screw-on

S-SCLP
Bottom Facing

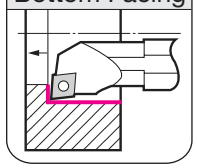


Fig 1

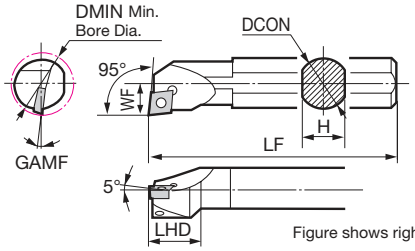


Figure shows right-hand (R) tool.

Holder

Parts Dimensions (mm)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel	S10K-SCLP R/L0802-12	★	★	12	10	9	125	6.0	12.0	-5°	CP□□2.51.5□	B82	1	BFTX0305A	2.0	TRX10
	S12M-SCLP R/L0802-14	★	★	14	12	11	150	7.0	10.6	-5°			1			
	S12M-SCLP R/L0903-16	★	★	16	12	11	150	8.0	23.0	-6°	CP□□32□	B83	1	BFTX0407A	3.4	TRX15
	S16R-SCLP R/L0903-18	★	★	18	16	15	200	9.0	18.0	-4°			1			
	S20S-SCLP R/L0903-22	★	★	22	20	18	250	11.0	18.0	-2°			1			
	S25T-SCLP R/L0903-27	★	★	27	25	22	300	13.5	18.0	-2°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

C 80° | 95° | Carbide

Internal Finishing to Medium Cutting
Screw-on

C-SCLP
Bottom Facing

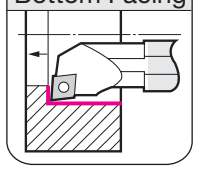


Fig 1

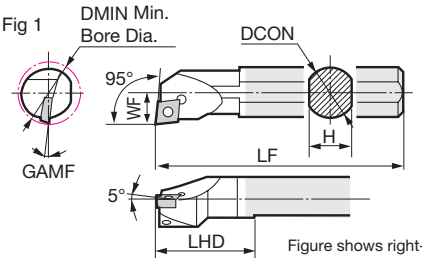


Figure shows right-hand (R) tool.

Holder

Parts Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Carbide	C10K-SCLP R/L0802-12	★	★	12	10	9	125	6	19	-5°			1			
	C12M-SCLP R/L0802-14	★	★	14	12	11	150	7	25	-5°	CP□□2.51.5□	B82	1	BFTX0305A	2.0	TRX10
	C12M-SCLP R/L0802-16	★	★	16	12	11	150	8	25	-3°			1			
	C16R-SCLP R/L0903-18	★	★	18	16	15	200	9	30	-4°			1			
	C16R-SCLP R/L0903-20	★	★	20	16	15	200	10	30	-3°	CP□□32□	B83	1	BFTX0407A	3.4	TRX15

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts S-SCLP / A-SCLP / B-SCLP / C-SCLP / D-SCLP Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD Photo — EGU; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) –	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Cutting	EFB T1500Z	ESU AC8025P	EMU AC8025P	ELB AC6030M	ESU AC6030M	EMU AC6030M	EMU AC4015K	No Chipbreaker AC4015K	SD AC5015S	SUMIDIA DA1000	SUMIBORON BNC2020	SUMIBORON BN2000
High Precision	SD T1500Z	–	–	SD AC5015S	–	–	–	–	SD AC5015S	SUMIDIA DA1000	SUMIBORON BNC2010	SUMIBORON BN1000
Recommended Cutting Conditions	A10 on			A14 on			A16 on		A18 on	A22 on	A20 on	

- USA Stocked Item

★ Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

B-SCLP / D-SCLP Type



Internal Finishing to Medium Cutting
Screw-on

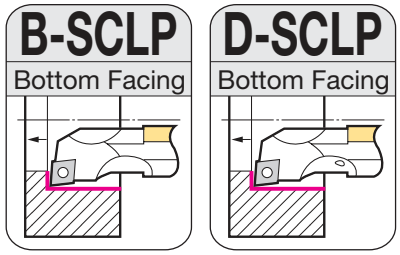


Fig 1

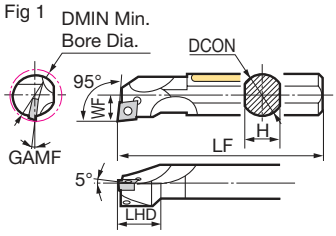


Fig 2

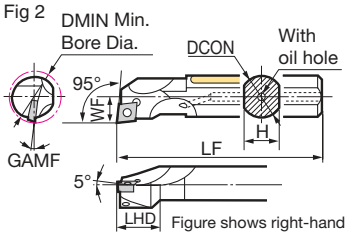


Figure shows right-hand (R) tool.

SumiTurn X-Bar

Holder

Parts

Dimensions (*mm*)

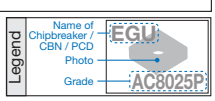
	Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Inch	Steel with Anti-Vibration Mechanism	**D10SSCLPR2**	●		**0.770**	0.625	0.625	10.00	0.355	—	-5°	CP□□21.5□	**B81**	1	BFTX0256N	**2.0**	TRX08
		D12SSCLP R/L 3	●	●	**0.930**	0.750	0.750	10.00	0.450	—	-4°	CP□□32.5□	**B84**	1	BFTX0409N		TRX15
		D16SSCLP R/L 3	●	●	**1.200**	1.000	1.000	12.00	0.550	—	-2°			1			
Metric	Steel with Anti-Vibration Mechanism	**B12M-SCLP R/L0802-14**	●	●	***14***	*12*	*11*	*150*	*7*	*10.6*	-5°	CP□□2.51.5	**B82**	1	BFTX0305A	**2.0**	TRX10
		B16R-SCLP R/L0903-18	●	●	***18***	*16*	*15*	*200*	*9*	*18.0*	-4°	CP□□32□	**B83**	1	BFTX0407A	**3.4**	TRX15
		B20S-SCLP R/L0903-22	●	●	***22***	*20*	*18*	*250*	*11*	*18.0*	-2°			1			
	Steel with Anti-Vibration Mechanism with Oil Hole	**D12M-SCLP R/L0802-14**	●		***14***	*12*	*11*	*150*	*7*	*10.6*	-5°	CP□□2.51.5	**B82**	2	BFTX0305A	**2.0**	TRX10
		D16R-SCLP R/L0903-18	●		***18***	*16*	*15*	*200*	*9*	*18.0*	-4°	CP□□32□	**B83**	2	BFTX0407A	**3.4**	TRX15
		D20S-SCLP R/L0903-22	●		***22***	*20*	*18*	*250*	*11*	*18.0*	-2°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-SCLP / A-SCLP / B-SCLP / C-SCLP / D-SCLP Type

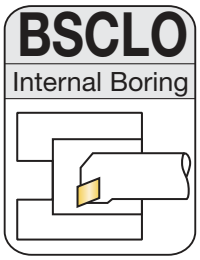
1st Recommended Insert

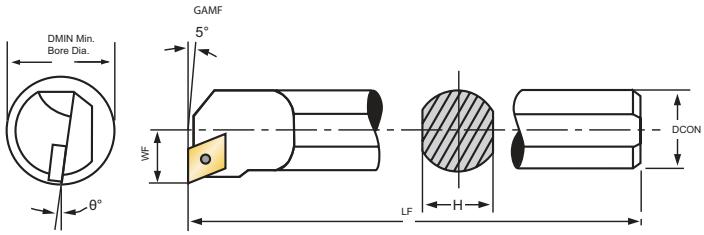
- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) —	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Cutting	**EFB** T1500Z	**ESU** AC8025P	**EMU** AC8025P	**ELB** AC6030M	**ESU** AC6030M	**EMU** AC6030M	**EMU** AC4015K	No Chipbreaker AC4015K	**SD** AC5015S	SUMIDIA DA1000	SUMIBORON BNC2020	SUMIBORON BN2000
High Precision	**SD** T1500Z	–	–	**SD** AC5015S	–	–	–	–	**SD** AC5015S	SUMIDIA DA1000	SUMIBORON BNC2010	SUMIBORON BN1000
Recommended Cutting Conditions	☞A10 on			☞A14 on			☞A16 on		☞A18 on	☞A22 on	☞A20 on	

N·m Recommended Tightening Torque (N·m)





Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
BSCLO R/L 062	▲	▲	0.500	0.375	—	—	6.000	0.250	0.336	-5°	CP□□2.51.5□	**B82**	1	3.0	TRX10	BFTX0305A
BSCLO R/L 082	▲	▲	0.625	0.500	—	—	6.000	0.313	0.462	-2°			1			
BSCLO R/L 103	▲	▲	0.750	0.625	—	—	6.500	0.375	0.586	-2°	CP□□32□	**B83**	1		TRX15	BFTX0407A
BSCLO R/L 123	▲	▲	1.000	0.750	—	—	10.000	0.500	0.672	0°			1			
BSCLO R/L 164	▲	▲	1.125	1.000	—	—	12.000	0.563	0.882	-1°	CP□□43□	**B84**	1		TRX20	BFTX0509A

Wrench for shim is sold separately from the main body.

Maximum overhang = 3xD

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

A-SDQC / A-SDUC Type



Internal Profiling
Screw-on

A-SDQC
Profiling

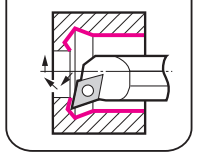


Fig 1

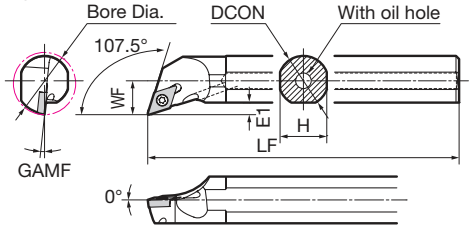


Fig 2

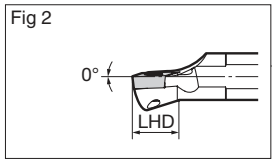


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Head LHD	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with oil hole	**A10M-SDQC R/L0702-13**	★	★	***13***	*10*	*9*	*150*	*7.0*	*2.5*	-8°	—			1			
	A12M-SDQC R/L0702-16	★	★	***16***	*12*	*11*	*150*	*9.0*	*3.5*	-8°	—			1			
	A16Q-SDQC R/L0702-20	★	★	***20***	*16*	*15*	*180*	*11.0*	*4.0*	-6°	—	DC□□21.5□	**B85**	1	BFTX02506N	**1.5**	TRX08
	A16Q-SDQC R/L11T3-23	★	★	***23***	*16*	*15*	*180*	*12.5*	*5.5*	-6°	15			2			
	A20R-SDQC R/L11T3-25	★	★	***25***	*20*	*18*	*200*	*13.0*	*4.5*	-6°	—	DC□□32.5□	**B88**	1	BFTX0409N	**3.4**	TRX15
	A25S-SDQC R/L11T3-32	★	★	***32***	*25*	*22*	*250*	*17.0*	*7.0*	-6°	—			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

A-SDUC
Multipurpose Profiling

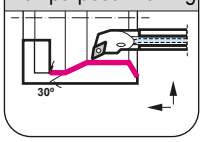
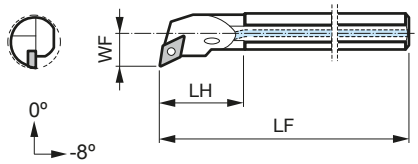


Fig 1



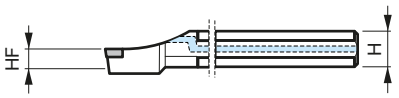


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw	Hardware when Boring bar lot# begins with D### Wrench (For Torx Socket)	Hardware when Boring bar lot# begins with D### Screw
Inch	**A06SDUC R/L 2**	▲	▲	**0.600**	0.375	0.375	—	6.00	0.375	0.625	-7°			1				TRX08	ST21.5
	A06MSDUC R/L 2	•	•	**0.750**	0.375	0.340	0.170	6.00	0.375	0.750	-8°			1			ST-1425	—	—
	A08SDUC R/L 2	▲	▲	**0.730**	0.500	0.500	—	6.00	0.500	0.750	-7°			1				TRX08	ST21.5
	A08MSDUC R/L 2	•	•	**0.875**	0.500	0.460	0.230	6.00	0.438	0.875	-8°	DC□□21.5□	**B85**	1	**0.9**	TRD07	ST-1225	—	—
	A10SDUC R/L 2	▲	▲	**0.850**	0.625	0.625	—	8.00	0.625	1.250	-7°			1			ST-1425	TRX08	ST21.5
	A10RSDUC R/L 2	•	•	**1.000**	0.625	0.580	0.290	8.00	0.500	1.000	-8°			1			ST-1225	—	—
	A12SDUC R/L 3	▲	▲	**0.980**	0.750	0.750	—	10.00	0.750	1.275	-7°			1		TRX15	BFTX0407N		ST32.5
	A12SSDUC R/L 3M	•	•	**1.250**	0.750	0.710	0.355	10.00	0.625	1.250	-8°	DC□□32.5□	**B88**	1	**3.0**	TRD15	ST-1240	—	—
	A16SDUC R/L 3	▲	▲	**1.300**	1.000	1.000	—	12.00	1.000	2.500	-5°			1		TRX15	BFTX0407N		ST32.5

Wrench for shim is sold separately from the main body.
Coolant Through

- USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)



Internal Profiling
Screw-on

S-SDQC
Profiling

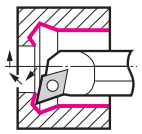


Fig 1 DMIN Min. Bore Dia.

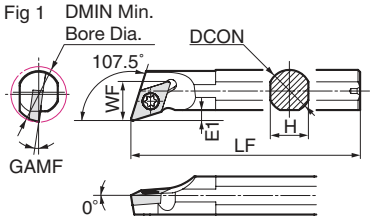


Fig 2 DMIN Min. Bore Dia.

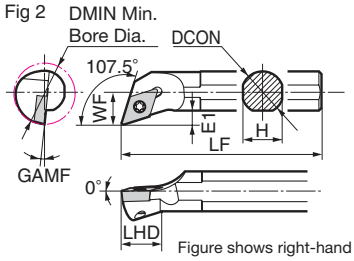


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Head LHD	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Steel	**S10M-SDQC R/L0702-13**	★	★	***13***	*10*	*9*	*150*	*7.0*	*2.5*	-8°	—	DC□□21.5□	**B85**	1	BFTX02506N	**1.5**	TRX08
	S12M-SDQC R/L0702-16	★	★	***16***	*12*	*11*	*150*	*9.0*	*3.5*	-8°	—			1			
	S16Q-SDQC R/L0702-20	★	★	***20***	*16*	*15*	*180*	*11.0*	*4.0*	-6°	—			1			
	S16N-SDQC R/L0702-20	★	★	***20***	*16*	*15*	*160*	*11.0*	*4.0*	-6°	—			1			
	S16Q-SDQC R/L11T3-23	★	★	***23***	*16*	*15*	*180*	*12.5*	*5.5*	-6°	15	DC□□32.5□	**B88**	2	BFTX0409N	**3.4**	TRX15
	S20R-SDQC R/L11T3-25	★	★	***25***	*20*	*18*	*200*	*13.0*	*4.5*	-6°	—			1			
	S20N-SDQC R/L11T3-25	★	★	***25***	*20*	*18*	*160*	*13.0*	*4.5*	-6°	—			1			
	S25S-SDQC R/L11T3-32	★	★	***32***	*25*	*22*	*250*	*17.0*	*7.0*	-6°	—			1			
	S25Q-SDQC R/L11T3-32	★	★	***32***	*25*	*22*	*180*	*17.0*	*7.0*	-6°	—			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

S-SDUC
Profiling

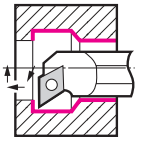


Fig 1 DMIN Min. Bore Dia.

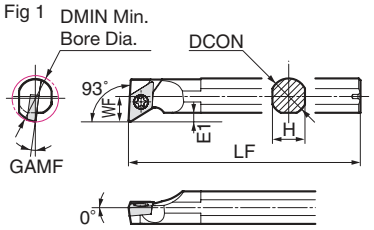


Fig 2 DMIN Min. Bore Dia.

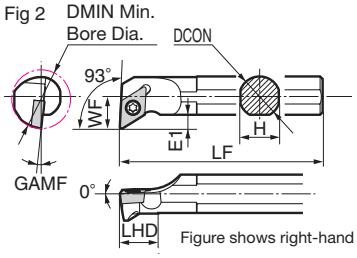


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (mm)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Head LHD	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Steel	**S10M-SDUC R/L 0702-13**	★	★	**13**	10	9	150	7.0	2.5	-8°	—	DC□□21.5□	**B85**	1	BFTX02506N	**1.5**	TRX08
	S12M-SDUC R/L 0702-16	★	★	**16**	12	11	150	9.0	3.5	-8°	—			1			
	S16Q-SDUC R/L 0702-20	★	★	**20**	16	15	180	11.0	4.0	-6°	—			1			
	S16N-SDUC R/L 0702-20	★	★	**20**	16	15	160	11.0	4.0	-6°	—			1			
	S16Q-SDUC R/L 11T3-23	★	★	**23**	16	15	180	12.5	5.5	-6°	15	DC□□32.5□	**B88**	2	BFTX0409N	**3.4**	TRX15
	S20R-SDUC R/L 11T3-25	★	★	**25**	20	18	200	13.0	4.5	-6°	—			1			
	S20N-SDUC R/L 11T3-25	★	★	**25**	20	18	160	13.0	4.5	-6°	—			1			
	S25S-SDUC R/L 11T3-32	★	★	**32**	25	22	250	17.0	7.0	-6°	—			1			
	S25Q-SDUC R/L 11T3-32	★	★	**32**	25	22	180	17.0	7.0	-6°	—			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

- USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

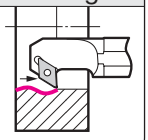
N·m Recommended Tightening Torque (N·m)

S-SDZC / C-SDUC Type



S-SDZC

Profiling



Internal Profiling
Screw-on

Fig 1 DMIN Min. Bore Dia.

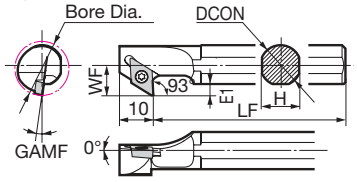


Fig 2 DMIN Min. Bore Dia.

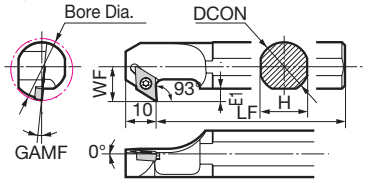


Fig 3 DMIN Min. Bore Dia.

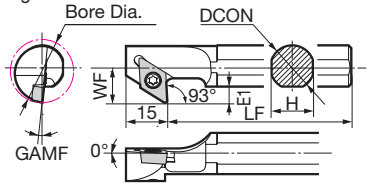
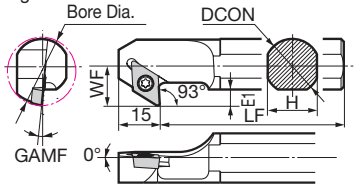


Fig 4 DMIN Min. Bore Dia.



- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

Holder

Figure shows right-hand (R) tool.

Parts

Dimensions (*mm*)

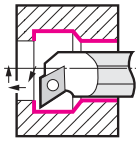
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel	**S10M-SDZC R/L0702-13**	★	★	***13***	*10*	*9*	*150*	*7.5*	*3.0*	-8°	DC□□21.5□	**B85**	1	BFTX02506N	**1.5**	TRX08
	S12M-SDZC R/L0702-16	★	★	***16***	*12*	*11*	*150*	*9.0*	*3.5*	-8°			1			
	S16Q-SDZC R/L0702-20	★	★	***20***	*16*	*15*	*180*	*11.0*	*4.0*	-6°			2			
	S16Q-SDZC R/L11T3-23	★	★	***23***	*16*	*15*	*180*	*13.0*	*6.0*	-6°	DC□□32.5□	**B88**	3	BFTX0409N	**3.4**	TRX15
	S20R-SDZC R/L11T3-25	★	★	***25***	*20*	*18*	*200*	*14.5*	*6.0*	-6°			4			
	S25S-SDZC R/L11T3-32	★	★	***32***	*25*	*22*	*250*	*17.0*	*7.0*	-6°			4			

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.



C-SDUC

Profiling



Internal Profiling
Screw-on

Fig 1 DMIN Min. Bore Dia.

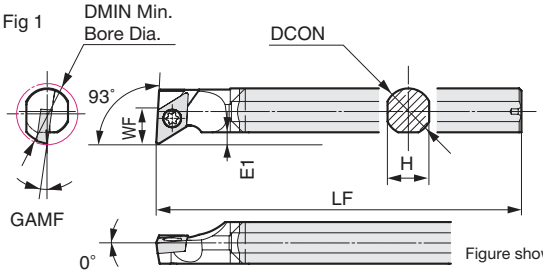


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (mm)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Carbide	**C10M-SDUC R/L0702-13**	★	★	**13**	10	9	150	7	2.5	-8°	DC□□21.5□	**B85**	1	BFTX02506N	**1.5**	TRX08
	C12M-SDUC R/L0702-16	★	★	**16**	12	11	150	9	3.5	-8°			1			
	C16R-SDUC R/L0702-20	★	★	**20**	16	15	200	11	4.0	-6°			1			
	C20S-SDUC R/L11T3-25	★	★	**25**	20	18	250	13	4.5	-6°	DC□□32.5□	**B88**	1	BFTX0409N	**3.4**	TRX15

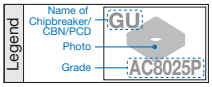
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts

◀·· S-SDUC / A-SDUC / B-SDUC / C-SDUC / S-SDQC / A-SDQC / B-SDQC / S-SDZC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**EMU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC6030M**	**EMU** **AC6030M**	SUMIBORON BN7000/BNC500	**EMU** **AC4015K**	No Chipbreaker **AC4015K**	**EFX** **AC5015S**	SUMIDIA **DA1000**	**NAG** **H1**	SUMIBORON **BNC2020**	SUMIBORON **BN2000**	SUMIDIA **DA90**
High Precision	**EFC** **T1500A**	**MESI** **AC1030U**	**EFM** **AC1030U**	**EFC** **AC1030U**	**MESI** **AC1030U**	**EFM** **AC1030U**	SUMIBORON BN7000/BNC500	–	–	**MESI** **AC5015S**	SUMIDIA **DA1000**	–	SUMIBORON **BNC2010**	SUMIBORON **BN1000**	SUMIDIA Binderless **NPD10**
Recommended Cutting Conditions	☛ A10 on			☛ A14 on			☛ A16 on			☛ A18 on	☛ A22 on		☛ A20 on		☛ M2 on

BNC500 is for ductile cast iron.

N·m Recommended Tightening Torque (N·m)

BSDJO / B-SDQC / B-SDUC Type

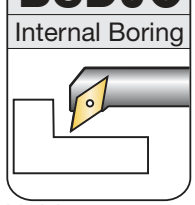
Steel

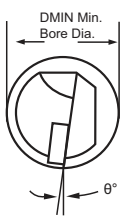
Internal Profiling
Screw-on

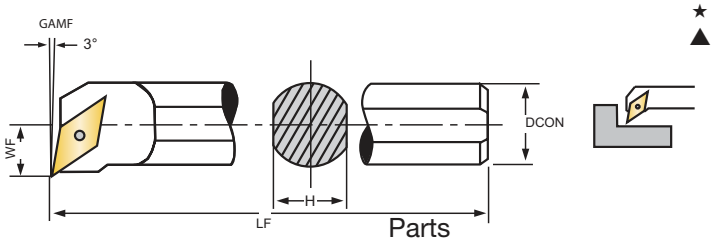
- USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

BSDJO

Internal Boring







Holder — Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
BSDJO R/L 061	▲	▲	**0.516**	0.375	—	—	5.00	0.306	0.336	-6°	DC□□21.5□□	**B85**	1	**1.5**	TRX08	BFTX02506
BSDJO R/L 081	▲		**0.687**	0.500	—	—	6.00	0.368	0.461	-6°			1			
BSDJO R/L 102	▲	▲	**0.813**	0.625	—	—	8.00	0.431	0.586	-6°			1			
BSDJO R/L 123	▲	▲	**1.000**	0.750	—	—	10.00	0.493	0.671	-6°	DC□□32.5□□	**B88**	1		TRX10	BFS0410T

Wrench for shim is sold separately from the main body.

Maximum overhang = 3xD

Steel with Anti-Vibration Mechanism

Internal Profiling
Screw-on

B-SDQC

Profiling

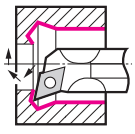


Fig 1

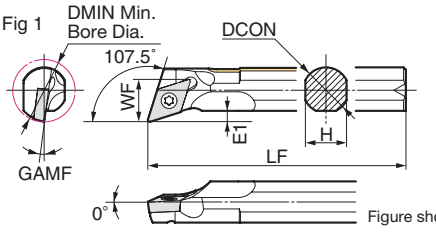


Figure shows right-hand (R) tool.

SumiTurn X-Bar

Holder — Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism	**B10M-SDQC R/L0702-13**	★	★	***13***	*10*	*9*	*150*	*7*	*2.5*	-8°	DC□□21.5□□	**B85**	1	BFTX02506N	**1.5**	TRX08
	B12M-SDQC R/L0702-16	★	★	***16***	*12*	*11*	*150*	*9*	*3.5*	-8°			1			
	B16R-SDQC R/L0702-20	★	★	***20***	*16*	*15*	*200*	*11*	*4.0*	-6°			1			
	B20S-SDQC R/L11T3-25	★	★	***25***	*20*	*18*	*250*	*13*	*4.5*	-6°	DC□□32.5□□	**B88**	1	BFTX0409N	**3.4**	TRX15
	B25S-SDQC R/L11T3-32	★	★	***32***	*25*	*22*	*250*	*17*	*7.0*	-6°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Steel with Anti-Vibration Mechanism

Internal Profiling
Screw-on

B-SDUC

Profiling

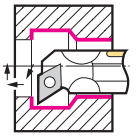


Fig 1

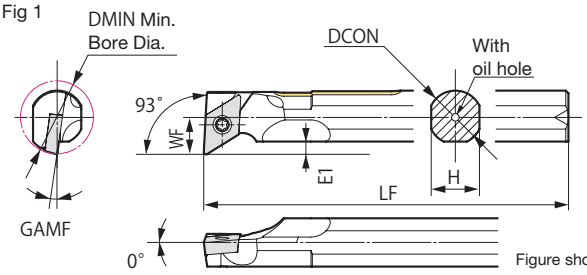


Figure shows right-hand (R) tool.

SumiTurn X-Bar

Holder — Parts

Dimensions (mm)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism	**B10M-SDUC R/L0702-13**	★	★	**13**	10	9	150	7	2.5	-8°	DC□□21.5□□	**B85**	1	BFTX02506N	**1.5**	TRX08
	B12M-SDUC R/L0702-16	★	★	**16**	12	11	150	9	3.5	-8°			1			
	B16R-SDUC R/L0702-20	★	★	**20**	16	15	200	11	4.0	-6°			1			
	B20S-SDUC R/L11T3-25	★	★	**25**	20	18	250	13	4.5	-6°	DC□□32.5□□	**B88**	1	BFTX0409N	**3.4**	TRX15
	B25S-SDUC R/L11T3-32	★	★	**32**	25	22	250	17	7.0	-6°			1			

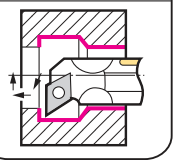
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

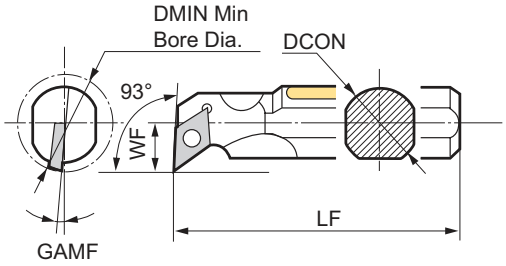
N·m Recommended Tightening Torque (N·m)

D-SDUC / A-SDUP / A-SDXP Type

D-SDUC

X-Bar Boring Bar





Holder

Parts

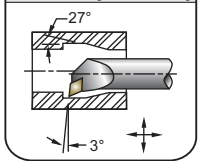
Dimensions (inch)

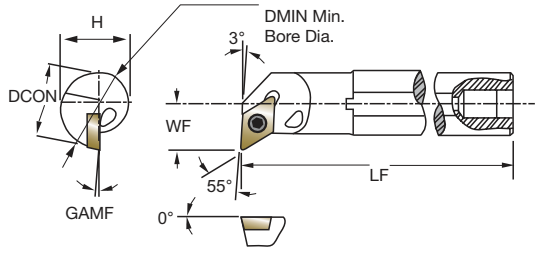
	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
Inch	**D08RSDUCR2**	●		**0.730**	0.500	0.500	—	8.00	0.375	0.500	-8°	DC□□21.5□	**B85**	1	**0.9**	TRD08	BFTX02506N
Inch	**D10SSDUC R/L 2**	●	●	**0.850**	0.625	0.625	—	10.00	0.437	0.625	-6°			1			
Inch	**D12SSDUC R/L 3**	●	●	**0.980**	0.750	0.750	—	10.00	0.562	0.750	-6°	DC□□32.5□	**B88**	1	**3.0**	TRX15	BFTX0409N
Inch	**D16TSDUC R/L 3**	●	●	**1.300**	1.000	1.000	—	12.00	0.750	1.000	-6°			1			

Wrench for shim is sold separately from the main body.

A-SDUP

Chamfering & Profiling





Holder

Parts

Dimensions (inch)

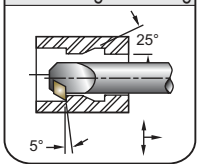
	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw	Hardware when Boring bar lot# begins with D### Wrench (For Torx Socket)	Hardware when Boring bar lot# begins with D### Screw
Inch	**A06SDUP R/L 2**	▲	▲	**0.600**	0.375	0.375	—	6.00	0.375	0.625	-3°			1					
Inch	**A08SDUP R/L 2**	▲	▲	**0.730**	0.500	0.500	—	8.00	0.437	0.500	-2°	DP□□21.5□	**B91**	1	**0.9**	TRD07	ST-1425	TRX08	ST21.5
Inch	**A10SDUP R/L 2**	▲		**0.850**	0.625	—	—	10.00	0.500	—	0°			1					
Inch	**A12SDUP R/L 3**	▲	▲	**0.980**	0.750	0.750	—	10.00	0.562	0.750	0°	DP□□32.5□		1	**3.0**	TRX15	BFTX0407N	—	ST32.5
Inch	**A16SDUP R/L 3**	▲	▲	**1.300**	1.000	1.000	—	12.00	0.750	1.000	0°			1					

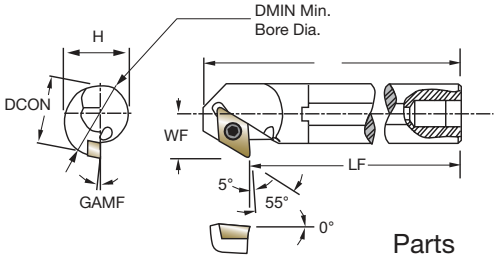
Wrench for shim is sold separately from the main body.

Coolant Through

A-SDXP

Chamfering & Profiling





Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw	Hardware when Boring bar lot# begins with D### Wrench (For Torx Socket)	Hardware when Boring bar lot# begins with D### Screw
Inch	**A08SDXP R/L 2**	▲	▲	**0.730**	0.500	—	—	8.500	0.437	—	0°	DP□□21.5□	**B91**	1	**0.9**	TRD07	ST-1425	TRX08	ST21.5
Inch	**A10SDXP R/L 2**	▲	▲	**0.850**	0.625	0.625	—	10.000	0.500	1.000	0°			1					
Inch	**A12SDXP R/L 3**	▲	▲	**0.980**	0.750	—	—	10.750	0.562	—	-2°	DP□□32.5□		1	**3.0**	TRX15	BFTX0407N	—	ST32.5
Inch	**A16SDXP R/L 3**	▲	▲	**1.300**	1.000	1.000	—	12.750	0.750	1.500	0°			1					

Wrench for shim is sold separately from the main body.

Coolant Through

S-SSKC Type



Internal General
Screw-on

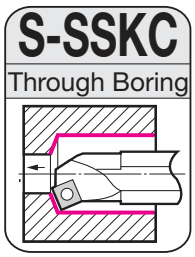


Fig 1

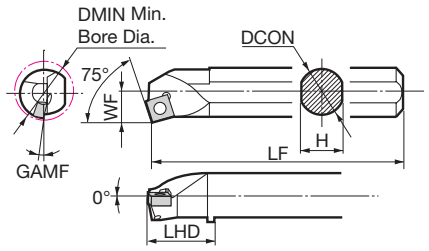


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

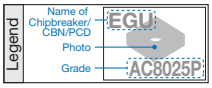
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Steel	**S16R-SSKC R/L09T3-20**	★	★	***20***	*16*	*15*	*200*	*11*	*23*	-10°	SC□□32.5□	B95	1	BFTX0407N	3.4	TRX15
	S20S-SSKC R/L09T3-25	★	★	***25***	*20*	*18*	*250*	*13*	*27*	-8°			1	BFTX0409N	3.4	
	S25T-SSKC R/L1204-32	★		***32***	*25*	*23*	*300*	*17*	*30*	-7°	SC□□43□	B96	1	BFTX0511N	5.0	TRX20
	S32U-SSKC R/L1204-40	★		***40***	*32*	*30*	*350*	*22*	*33*	-6°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-SSKC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) Finishing to Medium Cutting	K (Cast Iron) Medium to Roughing	N (Non-ferrous) —
General Cutting	EFB T1500Z	ESU AC8025P	EMU AC8025P	ELB AC6030M	ESU AC6030M	EMU AC6040M	EMU AC4015K	No Chipbreaker AC4015K	SUMIDIA DA1000
High Precision	FX T1500A	EFM AC1030U	EFM AC1030U	FX AC1030U	EFM AC1030U	EFM AC1030U	–	–	SUMIDIA DA1000
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on		☞ A22 on



Internal General
Screw-on

S-SSKP
Through Boring

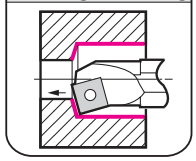


Fig 1

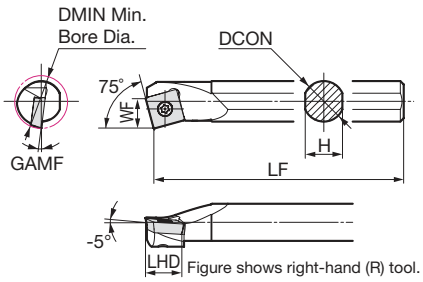


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel	**S12M-SSKP R/L0903-16**	★	★	***16***	*12*	*11*	*150*	*8.0*	*9.0*	-6°	SP□□32□	**B98**	1	BFTX0307A	**2.0**	TRX10
	S16R-SSKP R/L0903-20	★	★	***20***	*16*	*15*	*200*	*10.0*	*6.8*	-4°			1			
	S20S-SSKP R/L0903-25	★	★	***25***	*20*	*18*	*250*	*12.5*	*8.5*	-2°			1			
	S25T-SSKP R/L0903-28	★	★	***28***	*25*	*22*	*300*	*14.0*	*5.0*	0°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal General
Screw-on

C-SSKP
Through Boring

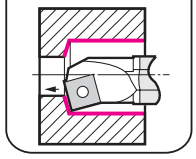
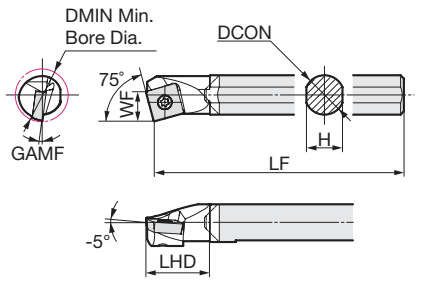


Fig 1



Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Carbide Standard	**C12M-SSKP R0903-16**	★	***16***	*12*	*11*	*150*	*8*	*25*	-6°	SP□□32□	**B98**	1	BFTX0307A	**2.0**	TRX10
Carbide Long	**C12R-SSKP R0903-16**	★	***16***	*12*	*11*	*200*	*8*	*25*	-6°			1			
	C16S-SSKP R0903-20	★	***20***	*16*	*15*	*250*	*10*	*30*	-4°			1			

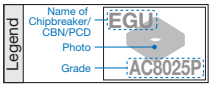
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

Applicable Inserts ◂·· S-SSKP Type / C-SSKP Type

1st Recommended Insert

• Refer as well to the Insert Selection Guide (page A10 on).
• Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	N (Non-ferrous) —
General Cutting	EFB T1500Z	ELB AC8025P	ELU AC6030M	ELB AC6030M	SUMIDIA DA1000
High Precision	SD T1500Z	—	—	—	SUMIDIA DA1000
Recommended Cutting Conditions	A10 on		A14 on		A22 on

N·m Recommended Tightening Torque (N·m)

S-CSKP / BSSKO Type

Steel

Internal General
Clamp-on

S-CSKP
Through Boring

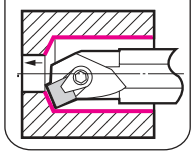


Fig 1

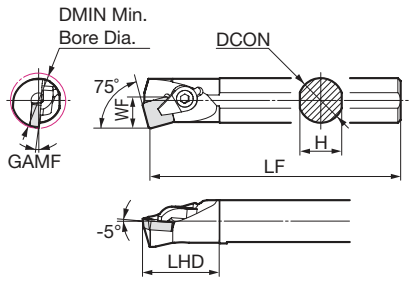


Figure shows right-hand (R) tool.

Holder

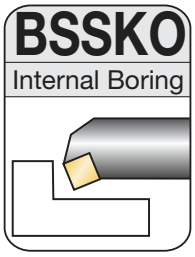
Parts

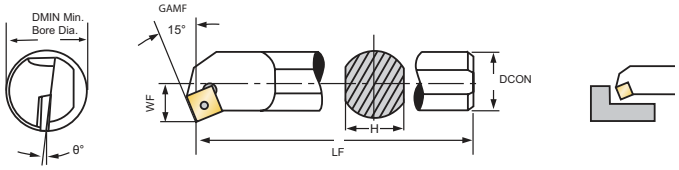
Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp	Double Screw	Wrench (For Hex Socket)
Steel	**S16Q-CSKP R/L0903-20**	★	★	***20***	*16*	*15*	*180*	*10.0*	*28*	-4°	SP□□32□	**B98**	1	CCM6B R/L	WB6-10	LH030
	S20R-CSKP R/L0903-25	★	★	***25***	*20*	*18*	*200*	*12.5*	*28*	-2°			1		WB6-13	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

BSSKO
Internal Boring





Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
BSSKO R/L 083	▲		**0.625**	0.500	—	—	6.00	0.312	0.462	-4°	SP□□32□	**B98**	1		TRX10	BFTX0307A
BSSKO R/L 103	▲	▲	**0.750**	0.625	—	—	6.50	0.375	0.582	-2°			1			
BSSKO R/L 123	▲		**1.000**	0.750	—	—	10.00	0.500	0.672	0°			1			
BSSKO R/L 163	▲		**1.125**	1.000	—	—	12.00	0.563	0.882	0°			1			

Wrench for shim is sold separately from the main body.

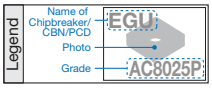
Maximum overhang = 3xD

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

Applicable Inserts ◂·· S-CSKP / BSSKO Type

1st Recommended Insert

• Refer as well to the Insert Selection Guide (page A10 on).
• Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel)		K (Cast Iron)			S (Exotic Alloy)		H (Hardened Steel)
	Finishing	Medium Cutting	High-speed Finishing	Finishing to Medium Cutting	Medium to Roughing	Finishing to Medium Cutting	Medium to Roughing	Uncoated
General Cutting	EFK T1500Z	ENF AC8025P	SUMIBORON BN7000	No Chipbreaker AC4015K	No Chipbreaker AC4015K	No Chipbreaker AC5015S	No Chipbreaker AC5025S	SUMIBORON BN2000
Recommended Cutting Conditions	☛A10 on		☛A16 on			☛A18 on		☛A20 on

11° inserts with holes can also be used.

C-STUB / C-STUP Type

T 60° | 93° | Carbide | Carbide Short | Carbide Long

Internal Finishing to Medium Cutting
Screw-on

C-STUB C-STUP
Stop Boring

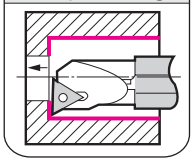


Fig 1

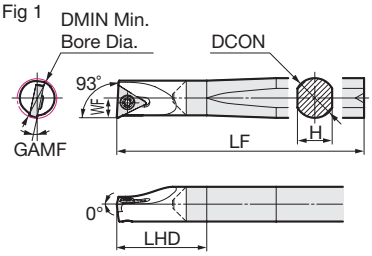


Fig 2

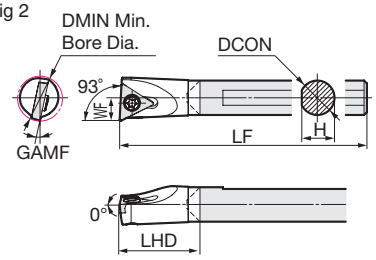
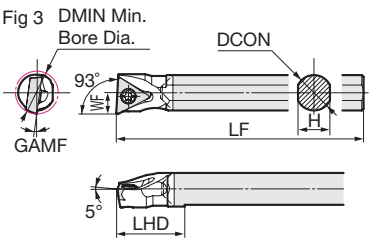


Fig 3



Holder

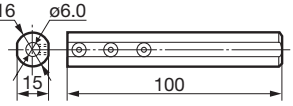
Parts

Dimensions (inch/ *mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Carbide Standard	**C06K-STUB R/L 5**	▲		**0.313**	0.375	0.375	5.00	0.156	1.800	-12°	TB□□52	**B104**		BFTX0204A		TRX06
	C06K-STUP R/L 6	▲	▲	**0.375**	0.375	0.375	5.00	0.188	1.800	-10°	TP□□63	**B110**		BFTX0204A		TRX06
	C06Q-STUP R/L 8	▲	▲	**0.500**	0.375	0.375	7.00	0.250	—	-8°	TP□□21.5□	**B112**		BFTX02507		TRX08
	C08R-STUP R/L 8	▲	▲	**0.625**	0.500	0.500	8.00	0.313	—	-6°						
	C10S-STUP R/L 8	▲	▲	**0.750**	0.625	0.625	10.00	0.375	—	-2°						
	C12S-STUP R/L 8	▲		**1.000**	0.750	0.750	10.00	0.500	—	-4°						
	C08H-STUB R/L 0601-08	★	★	***8***	*8*	*7.0*	*100*	*4.0*	*50*	-12°	TB□□52	**B104**	1	BFTX0204A	**0.5**	TRX06
	C08H-STUB R/L 0601-08K	★	★	***8***	*6*	*5.7*	*100*	*4.0*	—	-12°			2	BFTX0204N	**0.5**	
	C08H-STUP R/L 0802-10	★	★	***10***	*8*	*7.0*	*100*	*5.0*	*18*	-10°	TP□□63	**B110**	3	BFTX0204A	**0.5**	TRX06
	C10K-STUP R/L 1103-12	★	★	***12***	*10*	*9.0*	*125*	*6.0*	*19*	-8°	TP□□22	**B113**	3	BFTX0306A	**2.0**	TRX10
	C12M-STUP R/L 1103-14	★	★	***14***	*12*	*11.0*	*150*	*7.0*	*25*	-7°			3			
	C12M-STUP R/L 1103-16	★	★	***16***	*12*	*11.0*	*150*	*8.0*	*25*	-6°			3	BFTX0307A	**2.0**	
	C16R-STUP R/L 1103-18	★	★	***18***	*16*	*15.0*	*200*	*9.0*	*30*	-4°			3	BFTX0306A	**2.0**	
	C16R-STUP R/L 1103-20	★	★	***20***	*16*	*15.0*	*200*	*10.0*	*30*	-2°			3	BFTX0307A	**2.0**	
	C20S-STUP R/L 1103-22	★	★	***22***	*20*	*18.0*	*250*	*11.0*	*35*	-2°			3			
	C20S-STUP R/L 1604-25	★	★	***25***	*20*	*18.0*	*250*	*12.5*	*35*	-3°	TP□□33	**B116**	3	BFTX0410A	**3.4**	TRX15
Carbide Long	**C08M-STUB R/L 0601-08**	★	★	***8***	*8*	*7.0*	*150*	*4.0*	*50*	-12°	TB□□52	**B104**	1	BFTX0204A	**0.5**	TRX06
	C08M-STUP R/L 0802-10	★		***10***	*8*	*7.0*	*150*	*5.0*	*18*	-10°	TP□□63	**B110**	3	BFTX0204A	**0.5**	TRX06
	C10Q-STUP R/L 1103-12	★	★	***12***	*10*	*9.0*	*180*	*6.0*	*19*	-8°	TP□□22	**B113**	3	BFTX0306A	**2.0**	TRX10
	C12R-STUP R/L 1103-14	★		***14***	*12*	*11.0*	*200*	*7.0*	*25*	-7°			3			
	C12R-STUP R/L 1103-16	★		***16***	*12*	*11.0*	*200*	*8.0*	*25*	-6°			3	BFTX0307A	**2.0**	
	C16S-STUP R/L 1103-18	★		***18***	*16*	*15.0*	*250*	*9.0*	*30*	-4°			3	BFTX0306A	**2.0**	
	C16S-STUP R/L 1103-20	★		***20***	*16*	*15.0*	*250*	*10.0*	*30*	-2°			3	BFTX0307A	**2.0**	
Carbide Short	**C16M-STUP R/L 1103-18**	★	★	***18***	*16*	*15.0*	*150*	*9.0*	*30*	-4°			3	BFTX0306A	**2.0**	TRX10
	C16M-STUP R/L 1103-20	★	★	***20***	*16*	*15.0*	*150*	*10.0*	*30*	-2°			3	BFTX0307A	**2.0**	
	C20M-STUP R/L 1103-22	★	★	***22***	*20*	*18.0*	*150*	*11.0*	*35*	-2°			3			
	C20M-STUP R/L 1604-25	★	★	***25***	*20*	*18.0*	*150*	*12.5*	*35*	-3°	TP□□33	**B116**	3	BFTX0410A	**3.4**	TRX15

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
C08H-STUB R/L0601-08K requires the separately sold HBB616 adapter sleeve.
Actual products marked with * show an ISO type code.

Fig 1



Adapter Sleeve

Cat. No.	Stock	Fig
HBB 616	•	1

Adapter sleeve is optional.

Applicable Inserts ◂·· S-STUB / C-STUB Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — EGU; Photo; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	N (Non-ferrous) —	H (Hardened Steel) Uncoated
High Precision	FW T1500Z	FX AC1030U	FW AC1030U	FX AC1030U	SUMIDIA DA1000	SUMIBORON BN2000
Recommended Cutting Conditions	☞A10 on		☞A14 on		☞A22 on	☞A20 on

Applicable Inserts ◂ S-STUP / A-STUP / B-STUP / D-STUP / C-STUP / E-STUP Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

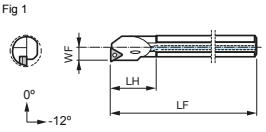
Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material —
General Cutting	EFB T1500Z	ESU AC8025P	EMU AC8025P	ELB AC6030M	ESU AC6030M	EMU AC6030M	SUMIBORON BN7000	EMU AC4015K	FX AC5015S	SUMIDIA DA1000	AY H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
High Precision	EFC T1500A	—	—	—	—	—	SUMIBORON BN7000	—	FX AC5015S	SUMIDIA DA1000	—	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
Recommended Cutting Conditions	☞A10 on			☞A14 on			☞A16 on		☞A18 on	☞A22 on		☞A20 on		☞M2 on

N·m Recommended Tightening Torque (N·m)

A-STFC / D-STUC Type

A-STFC

Boring bar / Multipurpose



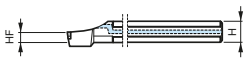


Figure shows right-hand (R) tool.

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

Holder

Parts

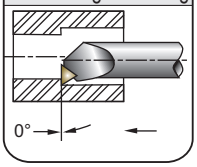
Dimensions (inch)

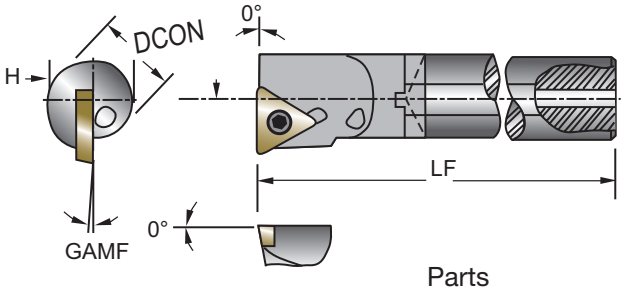
	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw	Hardware when Boring bar lot# begins with D### Wrench (For Torx Socket)	Hardware when Boring bar lot# begins with D### Screw
Inch	**A06MSTFC R/L 2**	•	•	**0.500**	0.375	0.340	0.170	6.00	0.250	0.500	-12°	TC□□21.5□	**B107**	1	0.9	TRD07	ST-1425	—	—
	A08STFC R/L 2	▲	▲	**0.600**	0.500	0.500	—	6.00	0.312	0.750	-13°			1				TRX08	ST21.5
	A08MSTFC R/L 2	•	•	**0.625**	0.500	0.460	0.230	6.00	0.312	0.625	-12°			1			ST-1225	—	—
	A10STFC R/L 2	▲	▲	**0.770**	0.625	0.625	—	8.00	0.406	1.250	-10°			1			ST-1425	TRX08	ST21.5
	A10RSTFC R/L 2	•	•	**0.812**	0.625	0.580	0.290	8.00	0.406	0.812	-12°			1					
	A12SSTFC R/L 2	•	•	**1.000**	0.750	0.170	0.355	10.00	0.500	1.000	-12°			1			ST-1225	—	—
	A12STFC R/L 3	▲	▲	**0.930**	0.750	0.750	—	10.00	0.500	1.875	-8°	TC□□32.5□	**B109**	1	3.0	TRX15	BFTX0407N	—	ST32.5
	A16STFC R/L 3	▲	▲	**1.200**	1.000	1.000	—	12.00	0.640	2.500	-7°			1					

•Wrench for shim is sold separately from the main body.
Coolant Through

E-STFC

Chamfering & Profiling





Holder

Parts

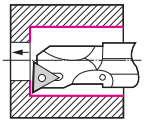
Dimensions (inch)

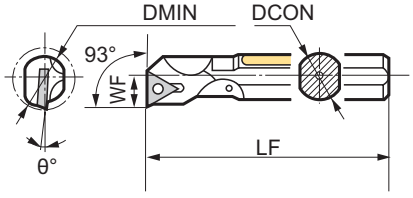
	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
Inch	**E06STFC R/L 2**	•	•	**0.480**	0.375	0.375	—	6.00	0.250	—	-15°	TC□□21.5□	**B107**	1	0.9	TRD07	ST21.5
	E08STFC R/L 2	•	•	**0.600**	0.500	0.500	—	6.00	0.312	—	-13°			1			
	E10STFC R/L 2	•	•	**0.775**	0.625	0.625	—	8.00	0.406	—	-10°			1			
	E12STFC R 3	•		**0.930**	0.750	0.750	—	10.00	0.500	—	-8°	TC□□32.5□	**B109**	1	3.0	TRX15	ST32.5
	E16STFC R 3	•		**1.200**	1.000	1.000	—	12.00	0.640	—	-7°			1			

•Wrench for shim is sold separately from the main body.
Coolant Through

D-STUC

Multipurpose Profiling





SumiTurn X-Bar

Holder

Parts

Dimensions (inch)

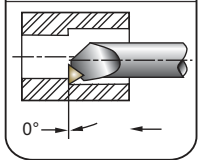
	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
Inch	**D08RSTUC R/L 2**	•	•	**0.600**	0.500	—	—	8.00	0.300	—	-10°	TC□□21.5□	**B107**	1	0.9	TRX08	BFTX02506N
	D10SSTUC R/L 2	•	•	**0.770**	0.625	—	—	10.00	0.385	—	-8°			1			
	D12SSTUC R/L 3	•	•	**0.930**	0.750	—	—	10.00	0.465	—	-7°	TC□□32.5□	**B109**	1	3.0	TRX15	BFTX0409N
	D16TSTUC R/L 3	•	•	**1.200**	1.000	—	—	12.00	0.600	—	-6°			1			

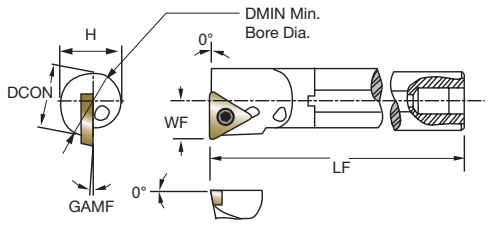
•Wrench for shim is sold separately from the main body.

N·m Recommended Tightening Torque (N·m)

A-STFP / A-STUP Type

A-STFP
Chamfering & Profiling





- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw	Hardware when Boring bar lot# begins with D### Wrench (For Torx Socket)	Hardware when Boring bar lot# begins with D### Screw
Inch	**A05STFP R/L 1.8**	▲	▲	**0.415**	0.3125	—	—	5.00	0.219	—	-8°	TP□□1.81.5□	**B111**	1	**0.9**	TRX08	ST-21.5	—	—
	A06STFP R/L 2	▲	▲	**0.480**	0.375	0.375	—	6.00	0.250	0.625	-4°	TP□□21.5	**B112**	1	**0.9**	TRD07	BFTY02205	TRX08	ST-21.5
	A08STFP R/L 2	▲	▲	**0.600**	0.500	0.500	—	8.00	0.312	0.750	-2°			1					
	A10STFP R/L 2	▲	▲	**0.770**	0.625	0.625	—	10.00	0.406	1.250	0°			1					
	A12STFP R/L 3	▲	▲	**0.930**	0.750	0.750	—	10.00	0.500	1.875	-2°	TP□□32.5	**B115**	1	**3.0**	TRX15	BFTX02507	—	ST-32.5
	A16STFP R/L 3	▲	▲	**1.200**	1.000	—	—	12.00	0.640	—	0°			1					

Wrench for shim is sold separately from the main body.
Coolant Through

T 60° | 93° | Steel Coolant Hole

Internal Finishing to Medium Cutting
Screw-on

A-STUP
Stop Boring

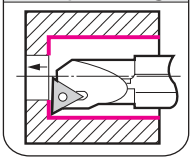


Fig 1

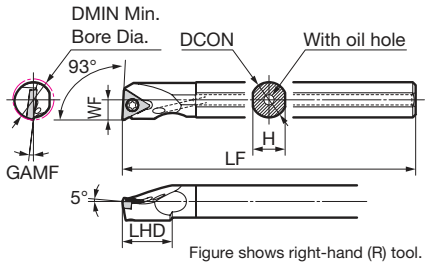


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Oil Hole	**A08H-STUP R/L0802-10**	★	★	***10***	*8*	*7*	*100*	*5*	*13*	-10°	TP□□63	**B110**	1	BFTX0204N	**0.5**	TRX06
	A08H-STUP R/L0902-10	★	★	***10***	*8*	*7*	*100*	*5*	*13*	-10°	TP□□1.81.5	**B111**	1	BFTX02505N	**1.1**	TRX08
	A10K-STUP R/L1102-12	★	★	***12***	*10*	*9*	*125*	*6*	*15*	-8°	TP□□21.5	**B112**	1	BFTX02505N	**1.1**	TRX08
	A12M-STUP R/L1102-14	★	★	***14***	*12*	*11*	*150*	*7*	*17*	-7°			1	BFTX02506N	**1.5**	
	A16R-STUP R/L1102-18	★	★	***18***	*16*	*15*	*200*	*9*	*18*	-4°			1			
	A10K-STUP R/L1103-12	★	★	***12***	*10*	*9*	*125*	*6*	*15*	-8°	TP□□22	**B113**	1	BFTX0306N	**2.0**	TRX10
	A12M-STUP R/L1103-14	★	★	***14***	*12*	*11*	*150*	*7*	*17*	-7°			1			
	A16R-STUP R/L1103-18	★	★	***18***	*16*	*15*	*200*	*9*	*18*	-4°			1			
	A20S-STUP R/L1103-22	★	★	***22***	*20*	*18*	*250*	*11*	*18*	-2°			1	BFTX0307N	**2.0**	
	A25T-STUP R/L1103-28	★	★	***28***	*25*	*22*	*300*	*14*	*18*	-2°			1			
	A20S-STUP R/L1603-22	★	★	***22***	*20*	*18*	*250*	*11*	*18*	-3°	TP□□32	**B115**	1	BFTX0407N	**2.0**	TRX15
	A25T-STUP R/L1603-28	★	★	***28***	*25*	*22*	*300*	*14*	*18*	-1°			1			
	A20S-STUP R/L1604-22	★	★	***22***	*20*	*18*	*250*	*11*	*18*	-5°	TP□33	**B116**	1	BFTX0409N	**3.4**	
	A25T-STUP R/L1604-28	★	★	***28***	*25*	*22*	*300*	*14*	*18*	-2°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

N·m Recommended Tightening Torque (N·m)

Steel

Internal General-purpose
Clamp-on

S-CTFP
Stop Boring

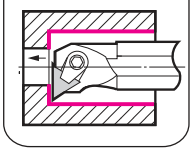


Fig 1

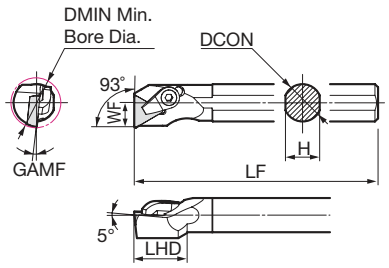


Figure shows right-hand (R) tool.

- USA Stocked Item
- ★ Worldwide Warehouse Item
- ▲ USA Limited Availability Item

Holder

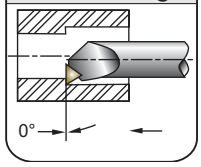
Parts

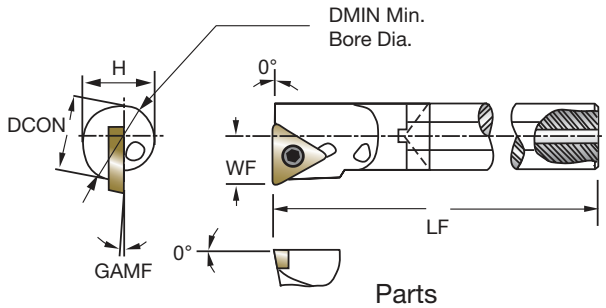
Dimensions (mm)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Clamp	Double Screw	Wrench
																 (For Hex Socket)
Steel	**S12M-CTFP R/L1103-16**	●	●	*16*	*12*	*11*	*150*	*8.0*	*17*	-6°	TP□□22□	**B113**	1	CCM5BSL/R*	WB5-10	LH025
	S16Q-CTFP R/L1103-20	●	●	*20*	*16*	*15*	*180*	*10.0*	*18*	-4°			1			
	S20R-CTFP R/L1103-25	●	●	*25*	*20*	*18*	*200*	*12.5*	*18*	-2°			1			
	S25S-CTFP R/L1603-32	●	●	*32*	*25*	*23*	*250*	*16.0*	*38*	-2°	TP□□32□	**B115**	1	CCM8UR/L	WB8R/L-16T	LT27

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
*The CCM5BSR clamp is made to order.

E-STFP
I.D. Turning





Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
E05STFP R/L 1.8	▲	▲	**0.415**	0.3125	—	—	5.00	0.219	—	-8°	TP□□1.81.5	B111	1	0.9	TRX08	ST21.5

Wrench for shim is sold separately from the main body.

T 60° | 93° | Carbide Coolant Hole

Internal Finishing to Medium Cutting
Screw-on

E-STUP
Stop Boring

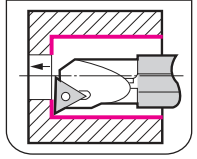
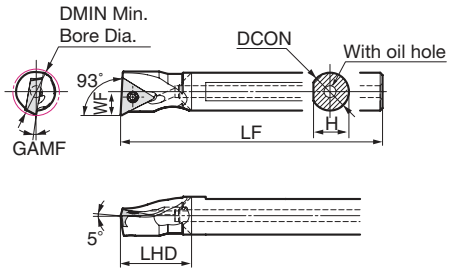


Fig 1



Holder

Parts

Dimensions (*mm*)

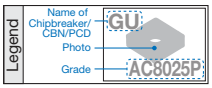
Holder Material	Cat. No.	Stock R	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Carbide with oil hole	**E08H-STUPR0802-10**	★	***10***	*8*	*7.5*	*100*	*5*	*18*	-10°	TP□□63□	**B110**	1	BFTX0204A	0.5	TRX06
	E10K-STUPR1103-12	★	***12***	*10*	*9.5*	*125*	*6*	*19*	-8°			1	BFTX0306A	2.0	
	E12M-STUPR1103-14	★	***14***	*12*	*11.5*	*150*	*7*	*25*	-7°			1			
	E12M-STUPR1103-16	★	***16***	*12*	*11.5*	*150*	*8*	*25*	-6°	TP□□22□	**B113**	1	BFTX0307A	2.0	TRX10
	E16R-STUPR1103-18	★	***18***	*16*	*15.5*	*200*	*9*	*30*	-4°			1	BFTX0306A	2.0	
	E16R-STUPR1103-20	★	***20***	*16*	*15.5*	*200*	*10*	*30*	-2°			1	BFTX0307A	2.0	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts ◂·· S-STUP / A-STUP / B-STUP / D-STUP / C-STUP / E-STUP Type

1st Recommended Insert

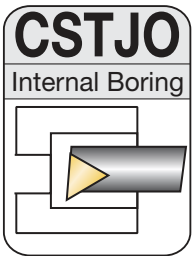
- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

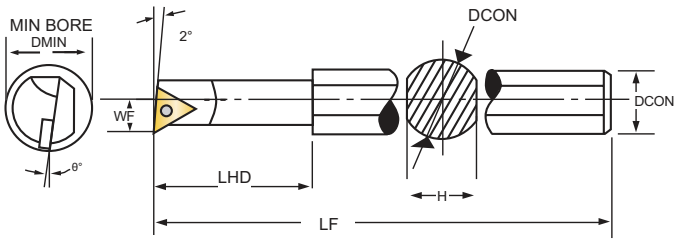


Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	P (Steel) Roughing	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material
General Cutting	EFB T1500Z	ESU AC8025P	EMU AC8025P	ELB AC6030M	ESU AC6030M	EMU AC6030M	SUMIBORON BN7000	EMU AC4015K	FX AC5015S	SUMIDIA DA1000	AY H1	SUMIBORON BNC2020	SUMIBORON BN2000	SUMIDIA DA90
High Precision	EFC T1500A	—	—	—	—	—	SUMIBORON BN7000	—	FX AC5015S	SUMIDIA DA1000	—	SUMIBORON BNC2010	SUMIBORON BN1000	SUMIDIA Binderless NPD10
Recommended Cutting Conditions	☞ A10 on			☞ A14 on			☞ A16 on		☞ A18 on	☞ A22 on		☞ A20 on		☞ M2 on

CSTJO / D-STUP Type

CSTJO
Internal Boring





Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Head Length LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
CSTJO R/L 065	▲	▲	**0.313**	0.375	—	—	5.00	0.156	0.336	1.781	-12°	TB□□52□	**B104**	1		TRX06	BFTX0204A
CSTJO R/L 066	▲	▲	**0.375**	0.375	—	—	5.00	0.188	0.336	1.781	-8°	TP□□63□	**B110**	1			
CSTJO R/L 062	▲	▲	**0.500**	0.375	—	—	7.00	0.250	0.336	—	-5°	TP□□22□	**B113**	1			BFTX0306A
CSTJO R/L 082	▲	▲	**0.625**	0.500	—	—	8.00	0.312	0.462	—	-2°			1		TRX10	BFTX0307A
CSTJO R/L 102	▲		**0.750**	0.625	—	—	10.00	0.375	0.586	—	-2°			1			
CSTJO R/L 123	▲	▲	**1.000**	0.750	—	—	10.00	0.500	0.672	—	-2°	TP□□33□	**B116**	1		TRX15	BFTX0410A

Wrench for shim is sold separately from the main body.

Maximum overhang = 3xD

T 60° | 93° | Steel with Anti-Vibration Mechanism | Coolant Hole

Internal Finishing to Medium Cutting
Screw-on

D-STUP
Stop Boring

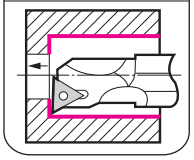


Fig 1

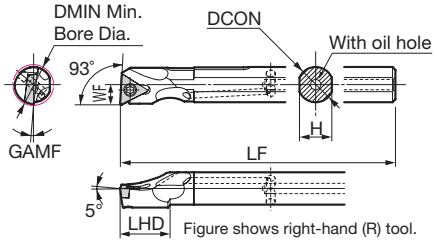


Figure shows right-hand (R) tool.

SumiTurn X-Bar

Holder

Parts

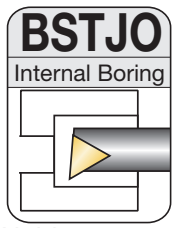
Dimensions (*mm*)

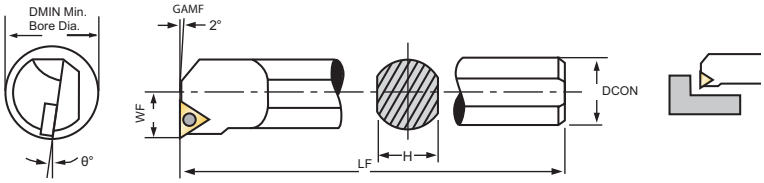
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism with Oil Hole	**D08RSTUP R/L 2**	•	•	**0.600**	0.500	0.500	8.00	0.300	—	-7°	TP□□22□	**B113**	1	BFTX0306A	**2.0**	TRX10
	D10SSTUP R/L 2	•	•	**0.770**	0.625	0.625	10.00	0.385	—	-4°			1			
	D12SSTUP R/L 2	•	•	**0.930**	0.750	0.750	10.00	0.465	—	-2°			1	BFTX0307A		
	D16TSTUP R/L 3	•	•	**1.200**	1.000	1.000	12.00	0.600	—	-2°	TP□□33□	**B116**	1	BFTX0410A	**3.4**	TRX15
Steel with Anti-Vibration Mechanism with Oil Hole	**D12M-STUP R/L1103-14**	★	★	***14***	*12*	*11*	*150*	*7*	*17*	-7°	TP□□22□	**B113**	1	BFTX0306A	**2.0**	TRX10
	D16R-STUP R/L1103-18	★	★	***18***	*16*	*15*	*200*	*9*	*18*	-4°			1			
	D20S-STUP R/L1103-22	★	★	***22***	*20*	*18*	*250*	*11*	*18*	-2°			1	BFTX0307A	**2.0**	

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

N·m Recommended Tightening Torque (N·m)

BSTJO
Internal Boring





Holder

Parts

Dimensions (inch)

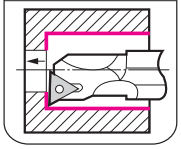
Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
BSTJO R/L 065	▲	▲	0.313	0.375	—	—	5.00	0.156	0.336	-12°	TB□□52□	**B104**	1		TRX06	BFTX0204A
BSTJO R/L 066	▲	▲	0.375	0.375	—	—	5.00	0.188	0.336	-8°	TP□□63□	**B110**	1			
BSTJO R/L 062	▲	▲	0.500	0.375	—	—	6.00	0.250	0.336	-5°	TP□□22□	**B113**	1		TRX10	BFTX0306A
BSTJO R/L 082	▲	▲	0.625	0.500	—	—	6.00	0.312	0.462	-4°			1			BFTX0307A
BSTJO R/L 102	▲	▲	0.750	0.625	—	—	6.50	0.375	0.586	-2°			1			
BSTJO R/L 123	▲	▲	1.000	0.750	—	—	10.00	0.500	0.672	-2°	TP□□33□	**B116**	1		TRX15	BFTX0410A
BSTJO R/L 163	▲	▲	1.125	1.000	—	—	12.00	0.563	0.882	0°			1			

Wrench for shim is sold separately from the main body.

T 60° | 93° | Steel with Anti-Vibration Mechanism

Internal Finishing to Medium Cutting
Screw-on

B-STUP
Stop Boring



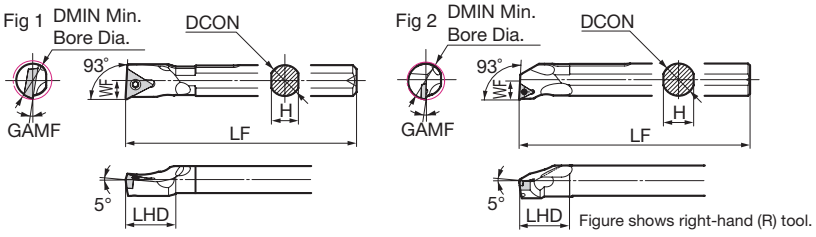


Figure shows right-hand (R) tool.

SumiTurn X Bar

Holder

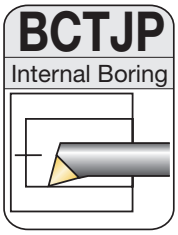
Parts

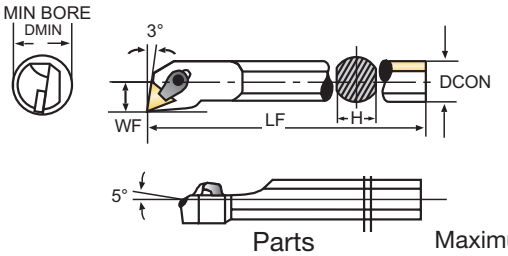
Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism	**B08H-STUP R/L0802-10**	★	★	*10*	*8*	*7*	*100*	*5.0*	*13*	-10°	TP□□63□	**B110**	1	BFTX0204A	0.5	TRX06
	B10K-STUP R/L1103-12	★	★	*12*	*10*	*9*	*125*	*6.0*	*15*	-8°	TP□□22□	**B113**	1	BFTX0306A	2.0	TRX10
	B12M-STUP R/L1103-14	★	★	*14*	*12*	*11*	*150*	*7.0*	*17*	-7°			1			
	B12M-STUP R/L1103-16	★	★	*16*	*12*	*11*	*150*	*8.0*	*17*	-6°			1	BFTX0307A	2.0	
	B16R-STUP R/L1103-18	★	★	*18*	*16*	*15*	*200*	*9.0*	*18*	-4°			1	BFTX0306A	2.0	
	B16R-STUP R/L1103-20	★	★	*20*	*16*	*15*	*200*	*10.0*	*18*	-2°			1			
	B20S-STUP R/L1103-22	★	★	*22*	*20*	*18*	*250*	*11.0*	*18*	-2°			1	BFTX0307A	2.0	
	B25T-STUP R/L1103-28	★	★	*28*	*25*	*22*	*300*	*14.0*	*18*	-2°			1			
	B32T-STUP R/L1103-40	★	★	*40*	*32*	*30*	*300*	*20.0*	*50*	-2°			2			
	B20S-STUP R/L1604-25	★	★	*25*	*20*	*18*	*250*	*12.5*	*18*	-3°	TP□□33□	**B116**	1	BFTX0410A	3.4	TRX15
	B25T-STUP R/L1604-28	★	★	*28*	*25*	*22*	*300*	*14.0*	*18*	-2°			1			
	B32T-STUP R/L1604-40	★	★	*40*	*32*	*30*	*300*	*20.0*	*53*	-2°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

BCTJP
Internal Boring





Holder

Parts

Maximum overhang = 3xD

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Width W	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Hex Socket)	Chip Breaker Piece	Shim	Seat Screw	Clamp	Clamp Bolt
BCTJP R/L 123	▲		1.000	0.750	—	—	12.00	0.500	0.770	—	TP□□32□	**B115**	1	2.0	LH030	CBT23	—	—	CCM6BR/L	WB6-13
BCTJP R/L 163	▲		1.156	1.000	—	—	12.00	0.578	0.980	—			1							WB616
BCTJP R/L 203	▲	▲	1.531	1.250	—	—	14.00	0.765	1.100	—			1	2.0		CBT43	STDP322	BF0308		
BCTJP R/L 243	▲		1.781	1.500	—	—	14.00	0.890	1.315	—			1		LH040				CCM8F	WB8F-30
BCTJP R/L 283	▲		2.031	1.750	—	—	14.00	1.015	1.570	—			1							
BCTJP R/L 404	▲		3.063	2.500	—	—	16.00	1.531	2.315	—	TP□□43□	**B119**	1			CBT44	STPD422			

Wrench for shim is sold separately from the main body.

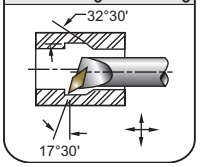
• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

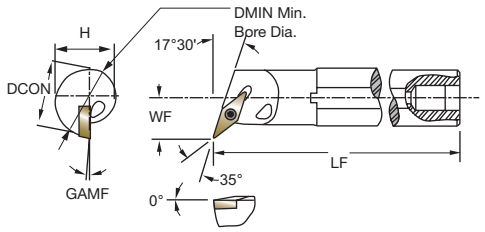
N·m Recommended Tightening Torque (N·m)

A-SVQB / A-SVUB Type

A-SVQB

Chamfering & Profiling





Holder

Parts

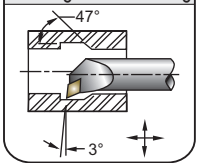
Dimensions (inch)

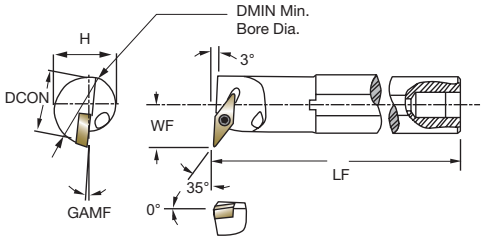
	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw	Hardware when Boring bar lot# begins with D### Wrench (For Torx Socket)	Hardware when Boring bar lot# begins with D### Screw
Inch	**A10SVQB R/L 2**	▲	▲	0.850	0.625	0.625	—	10.00	0.500	1.000	-6°	VB□□22□	**B121**	1	0.9	TRX08	ST-21.5	—	—
Inch	**A12SVQB R/L 2**	▲	▲	0.980	0.750	0.750	—	10.00	0.562	1.250	-5°			1	0.9	TRD07	ST-1425	TRX08	ST-21.5
Inch	**A16SVQB R/L 3**	▲		1.300	1.000	1.000	—	12.00	0.640	1.500	-5°	VB□□33□	**B123**	1	3.0	TRX15	BFTX0407N	TRX15	ST-32.5

Wrench for shim is sold separately from the main body.
Coolant Through

A-SVUB

Profiling & Back Boring





Holder

Parts

Dimensions (inch)

	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head LH	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw	Hardware when Boring bar lot# begins with D### Wrench (For Torx Socket)	Hardware when Boring bar lot# begins with D### Screw
Inch	**A12SVUB R/L 2**	▲	▲	0.980	0.750	—	—	10.00	0.562	—	-6°	VB□□22□	**B121**	1	0.9	TRD07	ST-1425	TRX08	ST-21.5
Inch	**A16SVUB R/L 3**	▲	▲	1.300	1.000	—	—	12.00	0.750	—	-6°			1			BFTX0407N	TRX15	ST-32.5
Inch	**A20SVUB R/L 3**	▲	▲	2.000	1.250	—	—	14.00	1.000	—	-6°	VB□□33□	**B123**	1	3.0	TRX15	ST-32.5	—	—
Inch	**A24SVUB R/L 3**	▲	▲	2.250	1.500	—	—	14.00	1.250	—	-6°			1					

Wrench for shim is sold separately from the main body.
Coolant Through

S-SVQB / S-SVUB Type



Steel

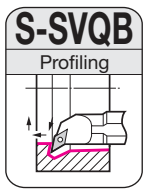


Fig 1

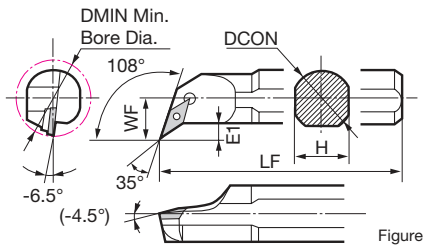


Figure shows right-hand (R) tool.

Internal Profiling
Screw-on

- USA Stocked Item
★ Worldwide Warehouse Item
▲ USA Limited Availability Item

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Bolt	Shim	Flat Screw	N·m	Wrench (For Torx Holes)	Bolt Wrench (For Hex Socket)
Steel	**S20R-SVQB R/L 1103-25**	★	★	*25*	*20*	*18*	*200*	*14.5*	*5.5*	VB□□22□	**B121**	1	—	—	—	BFTX02508NV	**1.5**	TRX08	—
	S25S-SVQB R/L 1103-32	★	★	*32*	*25*	*23*	*250*	*19.0*	*7.5*			1							
	S25S-SVQB R/L 1604-34	★	★	*34*	*25*	*23*	*250*	*20.5*	*9.0*	VB□□33□	**B123**	1	—	—	—	BFTX03508	**2.0**	TRX10	—
	S32T-SVQB R/L 1604-40	★	★	*40*	*32*	*30*	*300*	*22.0*	*9.0*			1	VP32B	BH03504	SVP32				LH020
	S40T-SVQB R/L 1604-50	★	★	*50*	*40*	*37*	*300*	*27.0*	*10.0*			1	VP40B						

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Steel

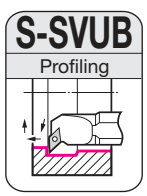


Fig 1

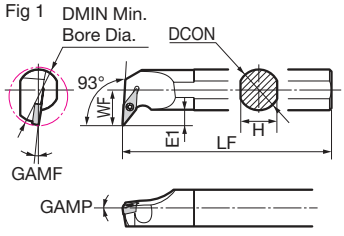
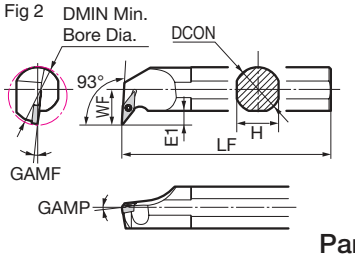
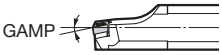


Fig 2



Internal Profiling
Screw-on

Fig 3



Holder

Parts

Figure shows right-hand (R) tool.
Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Rake Angle GAMP	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Pin	Bolt	Shim	Flat Screw	N·m	Wrench (For Torx Holes)	For Bolt Wrench (For Hex Socket)
Steel	**S20R-SVUB R/L1103-28**	★	★	***28***	*20*	*18*	*200*	*17.5*	*7.5*	*-7.5°*	*-3.0°*	VB□□22□	**B121**	1	—	—	—	BFTX02508NV	1.5	TRX08	—
	S25S-SVUB R/L1103-32	★	★	***32***	*25*	*23*	*250*	*19.0*	*7.5*	*-6.5°*	*-2.5°*			2							
	S25S-SVUB R/L1604-34	★	★	***34***	*25*	*23*	*250*	*20.5*	*9.0*	*-7.5°*	*-3.0°*	VB□□33□	**B123**	2	—	—	—	BFTX03508	2.0	TRX10	—
	S32T-SVUB R/L1604-40	★	★	***40***	*32*	*30*	*300*	*23.5*	*10.5*	*-7.5°*	*-3.0°*			3	VP32B	BH03504	SVP32				LH020
	S40T-SVUB R/L1604-50	★	★	***50***	*40*	*37*	*300*	*29.5*	*12.5*	*-7.5°*	*-3.0°*			3	VP40B						

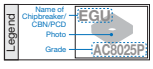
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts

S-SVJB / B-SVJB / S-SVQB / B-SVQB / C-SVQB / S-SVUB / B-SVUB / C-SVUB / S-SVZB / B-SVZB / C-SVZB Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC8025P**	**SUMIBORON** BN7000/BNC500	**No Chipbreaker** **AC4015K**	**MESI** **AC5015S**	**AY** **H1**	**SUMIBORON** **BNC2020**	**SUMIBORON** **BN2000**
High Precision	**FYS** **AC1030U**	**MESI** **AC1030U**	**FYS** **AC1030U**	**MESI** **AC1030U**	**SUMIBORON** BN7000/BNC500	–	**MESI** **AC5015S**	–	**SUMIBORON** **BNC2010**	**SUMIBORON** **BN1000**
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A16 on		☞ A18 on	☞ A22 on	☞ A20 on	

BNC500 is for ductile cast iron.

C-SVQB / C-SVUB / C-SVZB Type



Internal Profiling
Screw-on

C-SVQB

Profiling

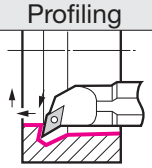


Fig 1

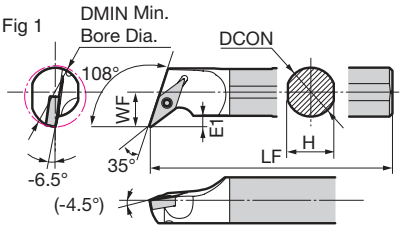


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Carbide	**C16R-SVQB R/L1103-20**	★		***20***	*16*	*15*	*200*	*11.5*	*4*	VB□□22	**B121**	1	BFTX02508NV	1.5	TRX08
	C20R-SVQB R/L1103-25	★		***25***	*20*	*18*	*200*	*14.5*	*5*			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

C-SVUB

Profiling

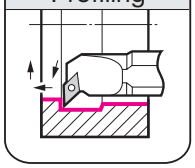


Fig 1

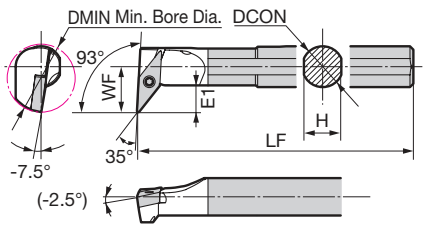


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Carbide	**C12M-SVUB R/L1103-20**	★		***20***	*12*	*11*	*150*	*13.5*	*8*	VB□□22□	**B121**	1	BFTX02508NV	1.5	TRX08
	C16R-SVUB R/L1103-25	★		***25***	*16*	*15*	*200*	*16.5*	*9*			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

C-SVZB

Profiling

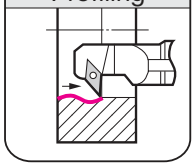


Fig 1

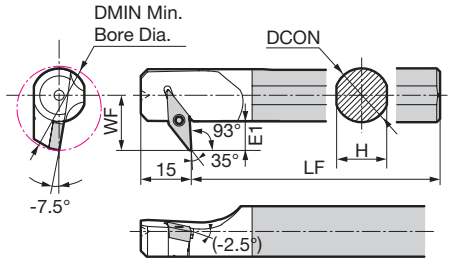


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Carbide	**C12M-SVZB R/L1103-20**	★		***20***	*12*	*11*	*150*	*13.5*	*8*	VB□□22□	**B121**	1	BFTX02508NV	1.5	TRX08
	C16R-SVZB R/L1103-25	★		***25***	*16*	*15*	*200*	*16.5*	*9*			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)

B-SVJB / B-SVQB Type



Internal Profiling
Screw-on

SumiTurn XBar

B-SVJB

Concave Facing and Bottom Facing

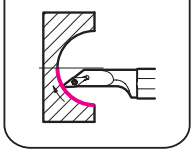


Fig 1

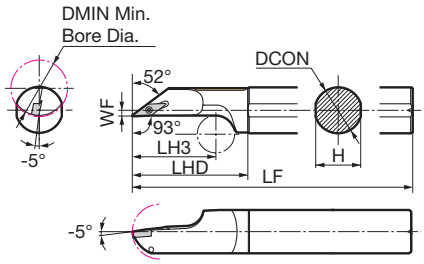


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Head LH3	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism	**B20R-SVJB R/L1103-25**	★	★	***25***	*20*	*19*	*200*	*2.0*	*55*	*37.5*	VB□□22□	**B121**	1	BFTX02508NV	**1.5**	TRX08
	B25S-SVJB R/L1103-30	★	★	***30***	*25*	*24*	*250*	*3.5*	*62*	*45*			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

SumiTurn XBar

B-SVQB

Profiling

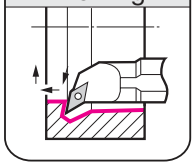


Fig 1

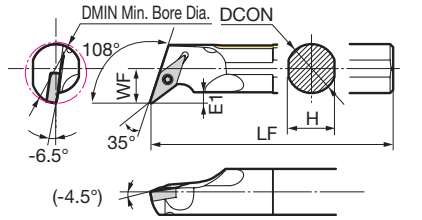


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism	**B16R-SVQB R/L 1103-20**	★		*20*	*16*	*15*	*200*	*11.5*	*4*	VB□□22□	**B121**	1	BFTX02508NV	**1.5**	TRX08
	B20R-SVQB R/L 1103-25	★		*25*	*20*	*18*	*200*	*14.5*	*5*			1			

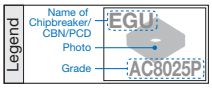
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts

◀·· S-SVJB / B-SVJB / S-SVQB / B-SVQB / C-SVQB / S-SVUB / B-SVUB / C-SVUB / S-SVZB / B-SVZB / C-SVZB Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Process \ Cutting Range	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC8025P**	**SUMIBORON** BN7000/BNC500	**No Chipbreaker** **AC4015K**	**MESI** **AC5015S**	**AY** **H1**	**SUMIBORON** **BNC2020**	**SUMIBORON** **BN2000**
High Precision	**FYS** **AC1030U**	**MESI** **AC1030U**	**FYS** **AC1030U**	**MESI** **AC1030U**	**SUMIBORON** BN7000/BNC500	–	**MESI** **AC5015S**	–	**SUMIBORON** **BNC2010**	**SUMIBORON** **BN1000**
Recommended Cutting Conditions	☞A10 on		☞A14 on		☞A16 on		☞A18 on	☞A22 on	☞A20 on	

BNC500 is for ductile cast iron.

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)



Internal Profiling
Screw-on

SumiTurn X-Bar

B-SVUB
Profiling

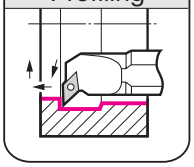


Fig 1

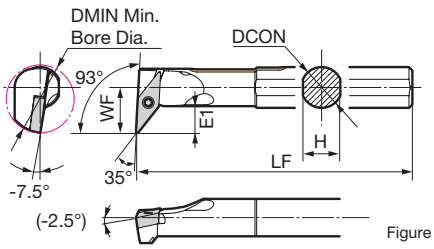


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism	**B12M-SVUB R/L1103-20**	★		***20***	*12*	*11*	*150*	*13.5*	*8*	VB□□22□	**B121**	1	BFTX02508NV	**1.5**	TRX08
	B16R-SVUB R/L1103-25	★		***25***	*16*	*15*	*200*	*16.5*	*9*			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

SumiTurn X-Bar

B-SVZB
Profiling

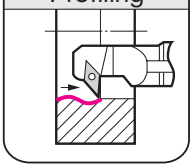


Fig 1

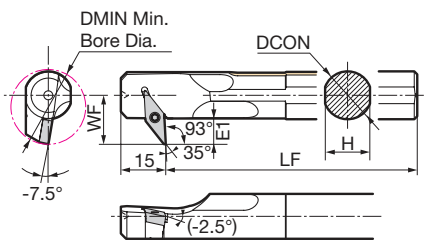


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Anti-Vibration Mechanism	**B12M-SVZB R/L1103-20**	★		***20***	*12*	*11*	*150*	*13.5*	*8*	VB□□22□	**B121**	1	BFTX02508NV	**1.5**	TRX08
	B16R-SVZB R/L1103-25	★		***25***	*16*	*15*	*200*	*16.5*	*9*			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts

◀·· S-SVJB / B-SVJB / S-SVQB / B-SVQB / C-SVQB / S-SVUB / B-SVUB / C-SVUB / S-SVZB / B-SVZB / C-SVZB Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — Photo — Grade (EGU / AC8025P)

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	K (Cast Iron) High-speed Finishing	K (Cast Iron) Finishing to Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC8025P**	**SUMIBORON** BN7000/BNC500	**No Chipbreaker** **AC4015K**	**MESI** **AC5015S**	**AY** **H1**	**SUMIBORON** **BNC2020**	**SUMIBORON** **BN2000**
High Precision	**FYS** **AC1030U**	**MESI** **AC1030U**	**FYS** **AC1030U**	**MESI** **AC1030U**	**SUMIBORON** BN7000/BNC500	–	**MESI** **AC5015S**	–	**SUMIBORON** **BNC2010**	**SUMIBORON** **BN1000**
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A16 on		☞ A18 on	☞ A22 on	☞ A20 on	

BNC500 is for ductile cast iron.

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)

A-SVQC / A-SVUC Type



Internal Profiling
Screw-on

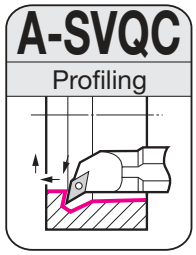


Fig 1

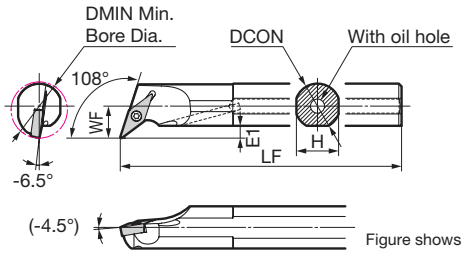


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Oil Hole	**A16Q-SVQC R/L1103-20**	★	★	***20***	*16*	*15*	*180*	*11.5*	*4.5*			1			
	A20R-SVQC R/L1103-25	★	★	***25***	*20*	*18*	*200*	*14.5*	*5.5*	VC□□22□	**B124**	1	BFTX02508NV	**1.5**	TRX08
	A25S-SVQC R/L1103-32	★	★	***32***	*25*	*23*	*250*	*19.0*	*7.5*			1			
	A25S-SVQC R/L1604-34	★	★	***34***	*25*	*23*	*250*	*20.5*	*9.0*	VC□□33□	**B126**	1	BFTX03508	**2.0**	TRX10

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

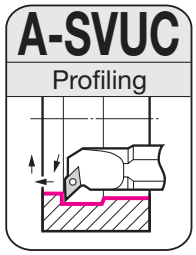


Fig 1

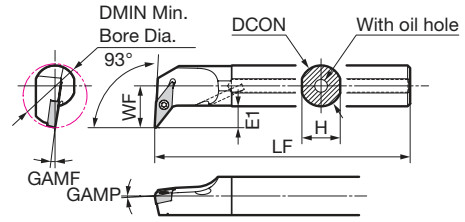


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

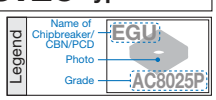
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Rake Angle GAMF	Rake Angle GAMP	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel with Oil Hole	**A16Q-SVUC R/L1103-25**	★	★	***25***	*16*	*15*	*180*	*16.5*	*8.5*	*-7.5°*	*-3.0°*			1			
	A20R-SVUC R/L1103-28	★	★	***28***	*20*	*18*	*200*	*17.5*	*7.5*	*-7.5°*	*-3.0°*	VC□□22□	**B124**	1	BFTX02508NV	**1.5**	TRX08
	A25S-SVUC R/L1103-32	★	★	***32***	*25*	*23*	*250*	*19.0*	*7.5*	*-6.5°*	*-2.5°*			1			
	A25S-SVUC R/L1604-34	★	★	***34***	*25*	*23*	*250*	*20.5*	*9.0*	*-7.5°*	*-3.0°*	VC□□33□	**B126**	1	BFTX03508	**2.0**	TRX10

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-SVJC / S-SVQC / A-SVQC / S-SVUC / A-SVUC / S-SVZC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC8025P**	**ESU** **AC5015S**	**ESU** **AC5025S**	**SUMIDIA** **DA1000**	**NAG** **H1**	**SUMIBORON** **BNC2020**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA90**
High Precision	**EFC** **T1500A**	**MESI** **AC1030U**	**EFC** **AC1030U**	**MESI** **AC1030U**	**EFC** **AC5015S**	**MESI** **AC5015S**	**SUMIDIA** **DA1000**	–	**SUMIBORON** **BNC2010**	**SUMIBORON** **BN1000**	**SUMIDIA Binderless** **NPD10**
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A18 on		☞ A22 on		☞ A20 on		☞ M2 on

N·m Recommended Tightening Torque (N·m) • USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

S-SVJC / A-SVQC Type



Internal Profiling
Screw-on



Fig 1

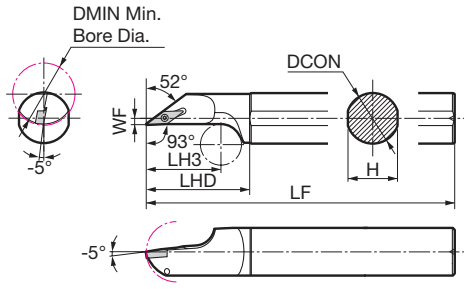


Figure shows right-hand (R) tool.

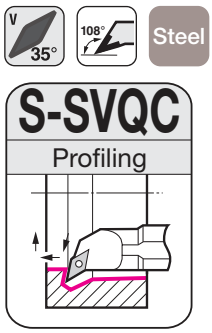
Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Head LH3	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Steel	**S12M-SVJC R/L 0802-16**	★	★	*16*	*12*	*11*	*150*	*2.0*	*30*	*21*	VC□□63	**B124**	1	BFTX0204N	**0.5**	TRX06
	S16Q-SVJC R/L 0802-20	★	★	*20*	*16*	*15*	*180*	*2.0*	*40*	*29*			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

Fig 1

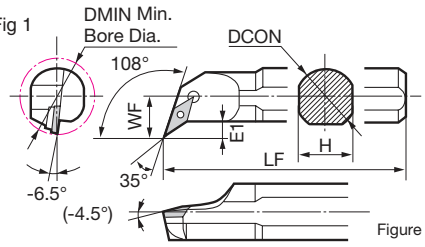


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

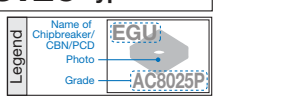
Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	Flat Screw N·m	Wrench (For Torx Holes)
Steel	**S10M-SVQC R/L0802-14**	★	★	***14***	*10*	*9*	*150*	*8.5*	*4.5*	VC□□63	**B124**	1	BFTX0204N	**0.5**	TRX06
	S12M-SVQC R/L0802-16	★	★	***16***	*12*	*11*	*150*	*9.5*	*4.5*			1			
	S16Q-SVQC R/L1103-20	★	★	***20***	*16*	*15*	*180*	*11.5*	*4.5*	VC□□22□		1	BFTX02508NV	**1.5**	TRX08

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· S-SVJC / S-SVQC / A-SVQC / S-SVUC / A-SVUC / S-SVZC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.



Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Medium Cutting	S (Exotic Alloy) Finishing to Medium Cutting	S (Exotic Alloy) Medium to Roughing	N (Non-ferrous) High-precision/Finishing	N (Non-ferrous) Finishing to Medium Cutting	H (Hardened Steel) Coated	H (Hardened Steel) Uncoated	Hard Brittle Material
General Cutting	**EFB T1500Z**	**ESU AC8025P**	**ELB AC6030M**	**ESU AC8025P**	**ESU AC5015S**	**ESU AC5025S**	**SUMIDIA DA1000**	**NAG H1**	**SUMIBORON BNC2020**	**SUMIBORON BN2000**	**SUMIDIA DA90**
High Precision	**EFC T1500A**	**MESI AC1030U**	**EFC AC1030U**	**MESI AC1030U**	**EFC AC5015S**	**MESI AC5015S**	**SUMIDIA DA1000**	–	**SUMIBORON BNC2010**	**SUMIBORON BN1000**	**SUMIDIA Binderless NPD10**
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A18 on		☞ A22 on		☞ A20 on		☞ M2 on

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)

S-SVUC / S-SVZC Type



Internal Profiling
Screw-on

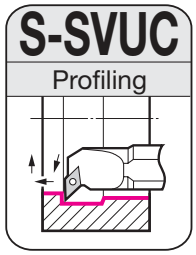


Fig 1

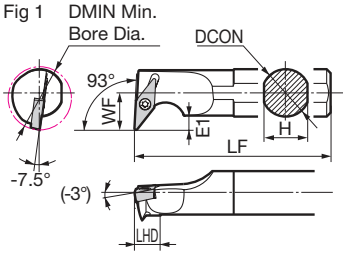


Fig 2

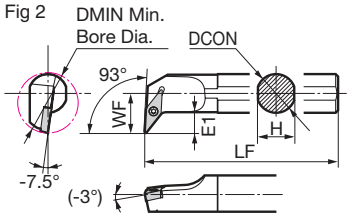


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel	**S12M-SVUC R/L0802-16**	★	★	***16***	*12*	*11*	*150*	*9.5*	*6.5*	*3.5*	VC□□63	**B124**	1	BFTX0204N	**0.5**	TRX06
	S16Q-SVUC R/L0802-20	★	★	***20***	*16*	*15*	*180*	*11.5*	-	*3.5*			2			
	S16Q-SVUC R/L1103-25	★	★	***25***	*16*	*15*	*180*	*16.5*	-	*8.5*	VC□□22□		2	BFTX02508NV	**1.5**	TRX08

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.



Internal Profiling
Screw-on

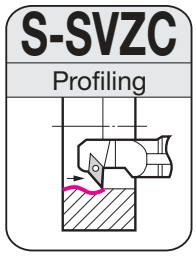


Fig 1

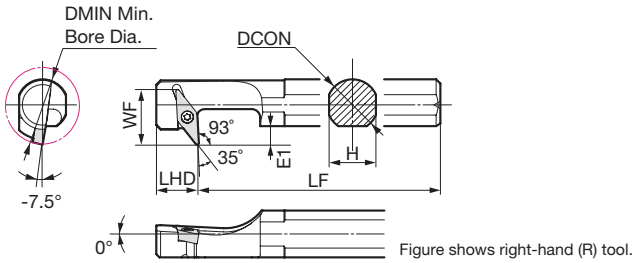


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Head LHD	Cutting Edge Distance WF	Offset E1	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel	**S12M-SVZC R/L0802-16**	★	★	***16***	*12*	*11*	*150*	*10*	*9.5*	*4.5*	VC□□63	**B124**	1	BFTX0204N	**0.5**	TRX06
	S16Q-SVZC R/L1103-20	★	★	***20***	*16*	*15*	*180*	*15*	*11.5*	*4.5*	VC□□22□		1	BFTX02508NV	**1.5**	TRX08

Right-handed (R) tool holders are compatible with right-handed (R) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with left-handed (L) or neutral (N) inserts.

Applicable Inserts ◂·· S-SVJC / S-SVQC / A-SVQC / S-SVUC / A-SVUC / S-SVZC Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — EGU; Photo; Grade — AC8025P

Process \ Cutting Range	P (Steel)		M (Stainless Steel)		S (Exotic Alloy)		N (Non-ferrous)		H (Hardened Steel)		Hard Brittle Material
	Finishing	Medium Cutting	Finishing	Medium Cutting	Finishing to Medium Cutting	Medium to Roughing	High-precision/Finishing	Finishing to Medium Cutting	Coated	Uncoated	—
General Cutting	**EFB** **T1500Z**	**ESU** **AC8025P**	**ELB** **AC6030M**	**ESU** **AC8025P**	**ESU** **AC5015S**	**ESU** **AC5025S**	**SUMIDIA** **DA1000**	**NAG** **H1**	**SUMIBORON** **BNC2020**	**SUMIBORON** **BN2000**	**SUMIDIA** **DA90**
High Precision	**EFC** **T1500A**	**MESI** **AC1030U**	**EFC** **AC1030U**	**MESI** **AC1030U**	**EFC** **AC5015S**	**MESI** **AC5015S**	**SUMIDIA** **DA1000**	–	**SUMIBORON** **BNC2010**	**SUMIBORON** **BN1000**	**SUMIDIA Binderless** **NPD10**
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A18 on		☞ A22 on		☞ A20 on		☞ M2 on

N·m Recommended Tightening Torque (N·m) • USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

W 80° | 93° | Steel

Internal Finishing (Small Diameter)
Screw-on

S-SWUB
Through Boring

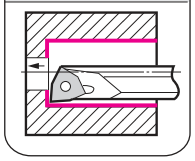


Fig 1

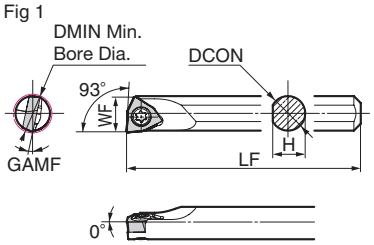


Fig 2

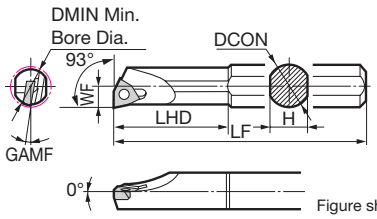


Figure shows right-hand (R) tool.

Holder

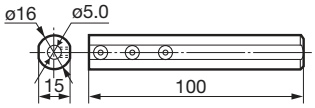
Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel	**S05H-SWUB R/L0601-06K**	★	★	*5.5*	*5*	*4.7*	*100*	*2.75*	-	-12°	WB□□52□	**B128**	1	BFTX0203N	0.5	TRX06
	S08H-SWUB R/L0601-06	★	★	*5.5*	*8*	*7.0*	*100*	*2.75*	*18*	-12°			2			
	S08H-SWUB R/L0601-08	★	★	*8.0*	*8*	*7.0*	*100*	*4.00*	*30*	-10°			2			
	S08H-SWUB R/L0802-10	★	★	*10.0*	*8*	*7.0*	*100*	*5.00*	*18*	-13°	WB□□63□		2	BFTX02205N	0.5	TRX06
	S10K-SWUB R/L0802-12	★	★	*12.0*	*10*	*9.0*	*125*	*6.00*	*20*	-10°			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
S05H-SWUB R/L0601-06K requires the separately sold HBB516 adapter sleeve.
Holders marked with * show an ISO type code.

Fig 1

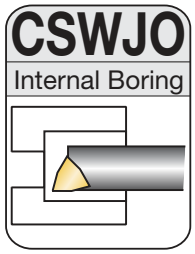


Adapter Sleeve

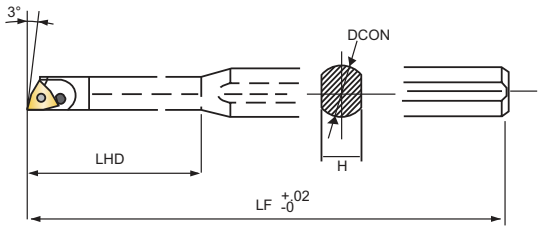
Cat. No.	Stock	Fig
HBB 516	●	1

Adapter sleeve is optional.

CSWJO
Internal Boring







Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Width W	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head Length LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
CSWJO R/L 055	▲	▲	0.234	0.375	—	—	5.00	0.117	1.18	-12°	WB□□52□	**B128**	1		TRX06	BFTX0203A

Wrench for shim is sold separately from the main body.
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Maximum overhang = 3xD

Applicable Inserts ◂·· S-SWUB / CSWJO Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD — EGU; Photo; Grade — AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) —	H (Hardened Steel) Uncoated
General Cutting	FW **T1500A**	FX **AC1030U**	FX **AC1030U**	FX **AC1030U**	SUMIBORON **BN7000**	FX **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNX20**
High Precision	FW **T1500A**	FX **AC1030U**	FX **AC1030U**	FX **AC1030U**	SUMIBORON **BN7000**	FX **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNX20**
Recommended Cutting Conditions	☛ A10 on		☛ A14 on		☛ A16 on	☛ A18 on	☛ A22 on	☛ A20 on

The FY Type chipbreaker and SUMIBORON and SUMIDIA inserts can also be used for stop-boring.

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)

C-SWUB / BSWJO Type

Internal Finishing (Small Diameter)
Screw-on

C-SWUB
Through Boring

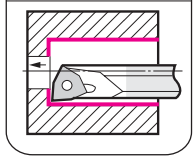


Fig 1

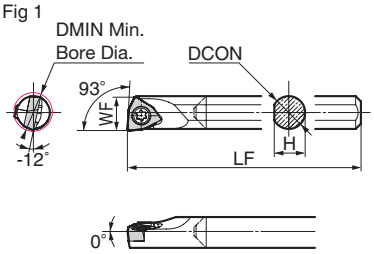


Fig 2

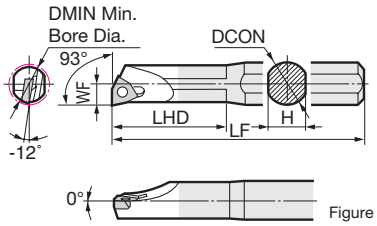


Figure shows right-hand (R) tool.

Holder

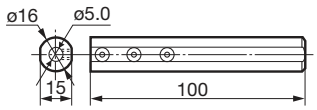
Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Carbide	**C05H-SWUB R/L0601-06K**	★	★	***5.5***	*5*	*4.7*	*100*	*2.75*	-	WB□□52□	**B128**	1	BFTX0203N	**0.5**	TRX06
	C08K-SWUB R/L0601-06	★	★	***5.5***	*8*	*7.0*	*125*	*2.75*	30			2			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.
C05H-SWUB R/L0601-06K requires the separately sold HBB516 adapter sleeve.
Holders marked with * show an ISO type code.

Fig 1

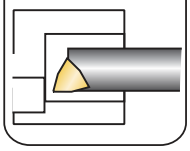


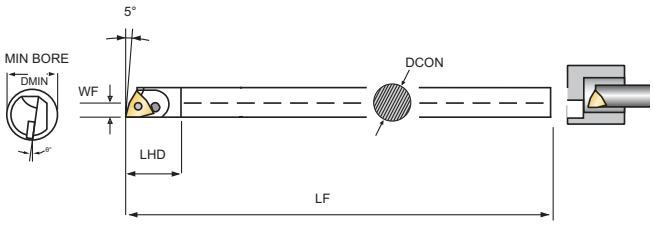
Adapter Sleeve

Cat. No.	Stock	Fig
HBB 516	●	1

Adapter sleeve is optional.

BSWJO
Internal Boring





Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Min. Bore Dia. DMIN	Diameter DCON	Height H	Cutting Edge Height HF	Overall Length LF	Cutting Edge Distance WF	Head Length LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Applicable Insert Ref. Page	Fig	N·m	Wrench (For Torx Socket)	Screw
BSWJOR035	▲	**0.228**	0.187	—	—	2.500	0.062	0.385	-12°	WB□□52□	**B128**	1	**1.0**	TRX06	BFTX0203A

Wrench for shim is sold separately from the main body.
Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◂·· C-SWUB / BSWJO Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD, Photo, Grade — EGU, AC8025P

Cutting Range / Process	P (Steel) Finishing	P (Steel) Medium Cutting	M (Stainless Steel) Finishing	M (Stainless Steel) Roughing	K (Cast Iron) High-speed Finishing	S (Exotic Alloy) Finishing to Medium Cutting	N (Non-ferrous) —	H (Hardened Steel) Uncoated
General Cutting	FW **T1500A**	FX **AC1030U**	FX **AC1030U**	FX **AC1030U**	SUMIBORON **BN7000**	FX **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNX20**
High Precision	FW **T1500A**	FX **AC1030U**	FX **AC1030U**	FX **AC1030U**	SUMIBORON **BN7000**	FX **AC5015S**	SUMIDIA **DA1000**	SUMIBORON **BNX20**
Recommended Cutting Conditions	☞ A10 on		☞ A14 on		☞ A16 on	☞ A18 on	☞ A22 on	☞ A20 on

The FY Type chipbreaker and SUMIBORON and SUMIDIA inserts can also be used for stop-boring.

N·m Recommended Tightening Torque (N·m) • USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

W 80° | 93° | Steel

Internal Finishing (Small Diameter)
Screw-on

S-SWUP
Through Boring

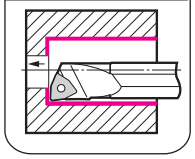


Fig 1

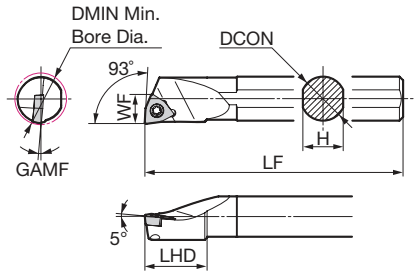


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Holder Material	Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Rake Angle GAMF	Applicable Insert Cat. No.	Ref. Page	Fig	Flat Screw	N·m	Wrench (For Torx Holes)
Steel	**S12M-SWUP R/L1102-14**	★	★	***14***	*12*	*11*	*150*	*7*	*17*	-6°	WP□□21.5□	**B129**	1	BFTX02505N	**1.1**	TRX08
	S16Q-SWUP R/L1102-18	★	★	***18***	*16*	*15*	*180*	*9*	*18*	-3°			1			
	S16Q-SWUP R/L1603-18	★	★	***18***	*16*	*15*	*180*	*9*	*18*	-3°	WP□□32□		1	BFTX0407N	**3.4**	TRX15
	S20R-SWUP R/L1603-22	★	★	***22***	*20*	*18*	*200*	*11*	*18*	-2°			1			

Right-handed (R) tool holders are compatible with left-handed (L) or neutral (N) inserts.
Left-handed (L) tool holders are compatible with right-handed (R) or neutral (N) inserts.

Applicable Inserts ◀·· S-SWUP Type

1st Recommended Insert

- Refer as well to the Insert Selection Guide (page A10 on).
- Some combinations need to be made to order or cannot be manufactured.

Legend: Name of Chipbreaker/ CBN/PCD → EGU; Photo; Grade → AC8025P

Cutting Range / Process	P (Steel)	M (Stainless Steel)
	Medium Cutting	Medium Cutting
General Cutting	LB **AC8025P**	LB **AC6030M**
Recommended Cutting Conditions	**A10 on**	**A14 on**

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

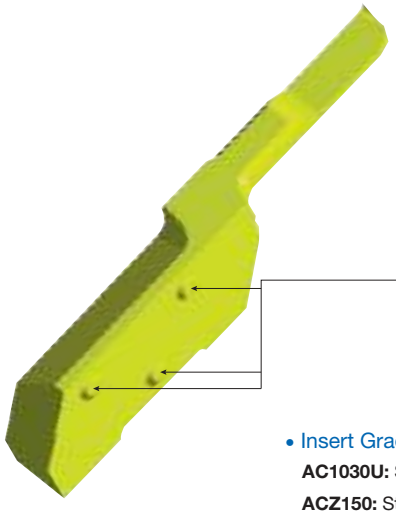
N·m Recommended Tightening Torque (N·m)



■ Features

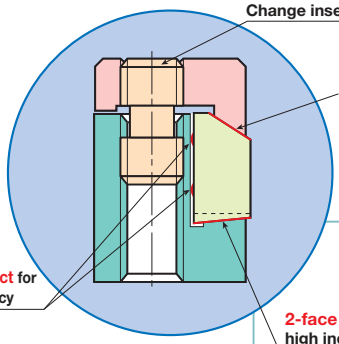
- Minimum machining diameters from ø0.04" to ø0.197" are now in stock.
- Maximum depth of cut of 0.787" (ø0.157", ø0.197").
- Can be used with various autolathe machines.
- Unique design ensures high index accuracy.
- Indexable inserts are easily handled.

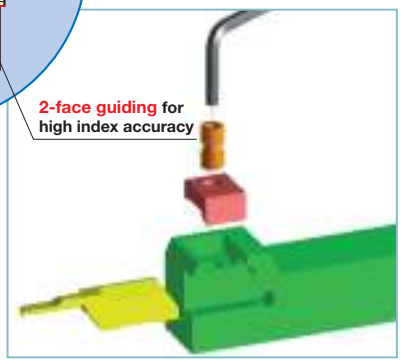
• High index accuracy



3 points of contact for high index accuracy

• Indexable inserts are easily handled.





• Insert Grades and Applications

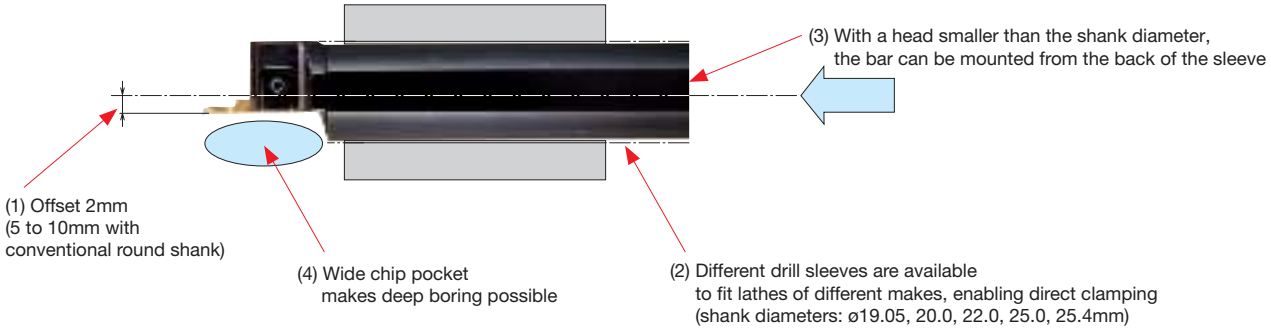
AC1030U: Stainless Steel, General Steel

ACZ150: Stainless Steel, General Steel

DA2200: Aluminum Alloy and Non-Ferrous Metals

■ Round Shank Holders (Small Offset) [S-CKB-S Type]

• 2mm offset bars expand application range



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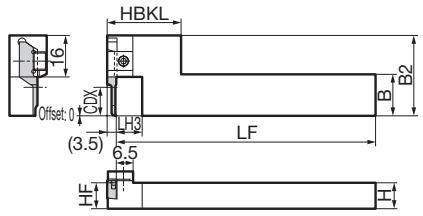
Very Small Diameter L Type
Clamp-on

Fig 1



H = HF (Cutting Edge Height)

Holder

Parts

Dimensions (*mm*)

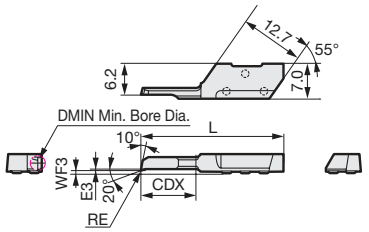
Cat. No.	Stock	Height H	Width B	Overall Length LF	Depth of Cut CDX	Width B2	Head HBKL	Head LH3	Applicable Insert	Fig	Clamp	Double Screw	Wrench (For Hex Socket)
CKBSR1016-16-06	★	*10*	*16*	*125*	*6*	*26*	*28.5*	*10*	KBMX L0206-○○R	1	CKBW16	WB4-8	LH020
CKBSR1016-16-11	★	*10*	*16*	*125*	*11*	*31*	*28.5*	*10*	KBMX L03,04,0511-○○R	1			
CKBSR1216-16-06	★	*12*	*16*	*150*	*6*	*26*	*28.5*	*10*	KBMX L0206-○○R	1			
CKBSR1216-16-11	★	*12*	*16*	*150*	*11*	*31*	*28.5*	*10*	KBMX L03,04,0511-○○R	1			
CKBSR1216-16-20	★	*12*	*16*	*150*	*20*	*40*	*28.5*	*10*	KBMX L04,0520-○○R	1			
CKBSR1616-16-06	★	*16*	*16*	*150*	*6*	*26*	*34.5*	*16*	KBMX L0206-○○R	1			
CKBSR1616-16-11	★	*16*	*16*	*150*	*11*	*31*	*34.5*	*16*	KBMX L03,04,0511-○○R	1			
CKBSR1616-16-20	★	*16*	*16*	*150*	*20*	*40*	*34.5*	*16*	KBMX L04,0520-○○R	1			

KBMX Type (For Very Small Diameter L Type Holder) (Coated Carbide)

Dimensions (*mm*)

Cat. No.	AC1030U	Min. Bore Dia. DMIN	Cutting Edge Position WF3	Offset E3	Corner Radius RE	Overall Length L	Boring Depth CDX
KBMXL0206-05R	★	*2.0*	*0.5*	*0.25*	*0.05*	*23.5*	*6*
KBMXL0206-20R	★				*0.20*		
KBMXL0311-05R	★	*3.0*	*0.5*	*0.30*	*0.05*	*28.5*	*11*
KBMXL0311-20R	★				*0.20*		
KBMXL0411-05R	★	*4.0*	*0.5*	*0.50*	*0.05*	*28.5*	*11*
KBMXL0411-20R	★				*0.20*		
KBMXL0420-05R	★	*4.0*	*0.5*	*0.50*	*0.05*	*37.5*	*20*
KBMXL0420-20R	★				*0.20*		
KBMXL0511-05R	★	*5.0*	*0.5*	*0.50*	*0.05*	*28.5*	*11*
KBMXL0511-20R	★				*0.20*		
KBMXL0520-05R	★	*5.0*	*0.5*	*0.50*	*0.05*	*37.5*	*20*
KBMXL0520-20R	★				*0.20*		

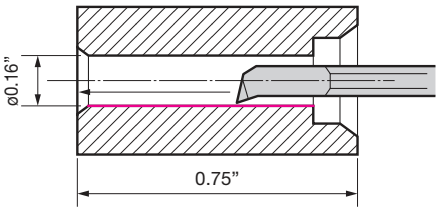
Fig 1



* Figure shows left hand insert with a right hand cutting edge

Application Example (1)

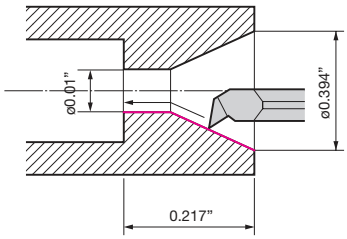
Electronic Component (Free Cutting Stainless Steel)



Holder: CKBR1212-16
Insert: **KBMXR 0420-05**
Cutting Speed: v_c=197 SFM
Feed Rate: f = 0.0004 IPR
Depth of Cut: a_p = 0.0012"
Coolant: Non water soluble coolant

Application Example (2)

Automotive Fuel Pump Component (SUS430)

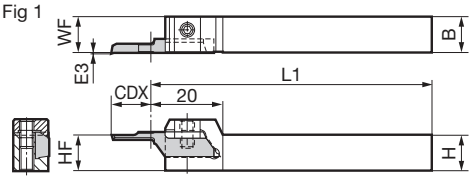


Holder: CKBR1616-16
Insert: **KBMXR 0206-05T**
Cutting Speed: v_c=262 sfm
Feed Rate: f = 0.0012 IPR
Depth of Cut: a_p = 0.002"
Coolant: Non water soluble coolant

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

Square Shank
Clamp-on

Fig 1



Refer to page E67 to E68 for CDX values.

Holder

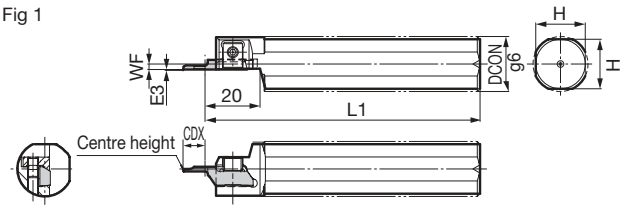
Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length L1	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Clamp	Double Screw	Wrench (For Hex Socket)
CKBR1010-16	★	*10*	*10*	*100*	*10*	*10*	1			
CKBR1212-16	★	*12*	*12*	*125*	*12*	*12*	1			
CKBR1616-16	★	*16*	*16*	*125*	*16*	*16*	1	CKBW16	WB4-8	LH020
CKBR2020-16	★	*20*	*20*	*125*	*20*	*20*	1			
CKBR2525-16		*25*	*25*	*150*	*25*	*25*	1			

Round Shank (Small Offset)
Clamp-on

Fig 1



Refer to page E67 to E68 for CDX values.

Holder

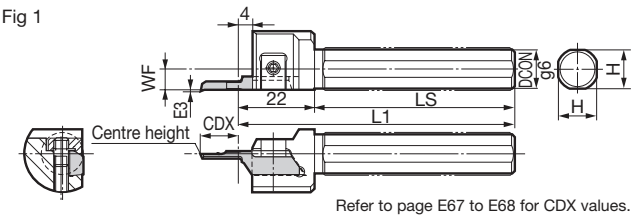
Parts

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length L1	Cutting Edge Distance WF	Fig	Clamp	Double Screw	Wrench (For Hex Socket)
S1905H-CKBRS-16	★	*19.05*	*17*	*100*	*2*	1			
S20H-CKBRS-16	★	*20*	*18*	*100*	*2*	1			
S22K-CKBRS-16	★	*22*	*19*	*125*	*2*	1	CKBW16	WB4-8	LH020
S25K-CKBRS-16	★	*25*	*23*	*125*	*2*	1			
S254K-CKBRS-16	★	*25.4*	*23*	*125*	*2*	1			

Round Shank
Clamp-on

Fig 1



Refer to page E67 to E68 for CDX values.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length L1	Length LS	Cutting Edge Distance WF	Fig	Clamp	Double Screw	Wrench (For Hex Socket)
S10F-CKBR-16	★	*10*	*9*	*80*	*58*	*5*	1			
S12F-CKBR-16	★	*12*	*11*	*80*	*58*	*6*	1			
S16H-CKBR-16	★	*16*	*15*	*100*	*78*	*8*	1	CKBW16	WB4-8	LH020
S19K-CKBR-16	★	*19.05*	*17*	*125*	*103*	*8*	1			
S20K-CKBR-16	★	*20*	*18*	*125*	*103*	*10*	1			

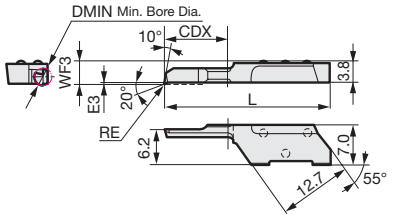
• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

(Coated Carbide)

KBMX Type (Internal Diameter Machining)

Dimensions (*mm*)

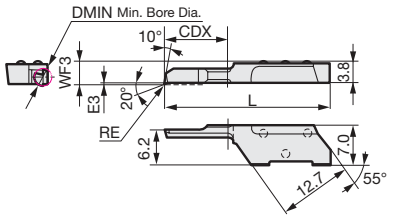
Cat. No.	AC1030U	Min. Bore Dia. DMIN	Cutting Edge position WF3	Offset E3	Corner Radius RE	Overall Length L	Boring Depth CDX
KBMXR0103-05	★	*1.0*	*4.00*	*0.20*	*0.05*	*20.5*	*3*
KBMXR0103-20	★				*0.20*		
KBMXR01506-05	★	*1.5*	*4.05*	*0.25*	*0.05*	*23.5*	*6*
KBMXR01506-20	★				*0.20*		
KBMXR0206-05	★	*2.0*	*4.05*	*0.25*	*0.05*	*23.5*	*6*
KBMXR0206-20	★				*0.20*		
KBMXR0311-05	★	*3.0*	*4.10*	*0.30*	*0.05*	*28.5*	*11*
KBMXR0311-20	★				*0.20*		
KBMXR0411-05	★	*4.0*	*4.30*	*0.50*	*0.05*	*28.5*	*11*
KBMXR0411-20	★				*0.20*		
KBMXR0420-05	★	*4.0*	*4.30*	*0.50*	*0.05*	*37.5*	*20*
KBMXR0420-20	★				*0.20*		
KBMXR0511-05	★	*5.0*	*4.50*	*0.70*	*0.05*	*28.5*	*11*
KBMXR0511-20	★				*0.20*		
KBMXR0520-05	★	*5.0*	*4.50*	*0.70*	*0.05*	*37.5*	*20*
KBMXR0520-20	★				*0.20*		



KBMX-T Type (Internal Diameter Machining)

Dimensions (*mm*)

Cat. No.	ACZ150	Min. Bore Dia. DMIN	Cutting Edge position WF3	Offset E3	Corner Radius RE	Overall Length L	Boring Depth CDX
KBMXR0103-05T	★	*1.0*	*4.00*	*0.20*	*0.05*	*20.5*	*3*
KBMXR0103-20T	★				*0.20*		
KBMXR01506-05T	★	*1.5*	*4.05*	*0.25*	*0.05*	*23.5*	*6*
KBMXR01506-20T	★				*0.20*		
KBMXR0206-05T	★	*2.0*	*4.05*	*0.25*	*0.05*	*23.5*	*6*
KBMXR0206-20T	★				*0.20*		
KBMXR0311-05T	★	*3.0*	*4.10*	*0.30*	*0.05*	*28.5*	*11*
KBMXR0311-20T	★				*0.20*		
KBMXR0411-05T	★	*4.0*	*4.30*	*0.50*	*0.05*	*28.5*	*11*
KBMXR0411-20T	★				*0.20*		
KBMXR0511-05T	★	*5.0*	*4.50*	*0.70*	*0.05*	*28.5*	*11*
KBMXR0511-20T	★				*0.20*		



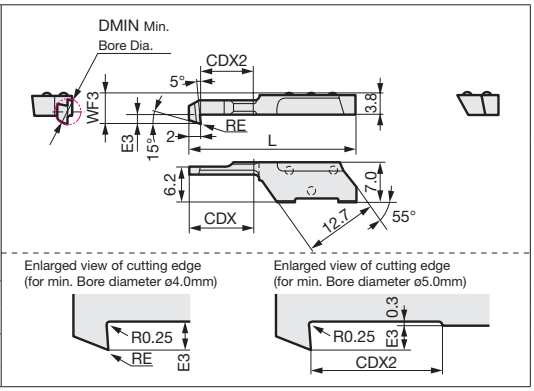
KBMX Type	KBMX-T Type
	
Compacts chip curl for evacuation.	Evacuates chips towards the back and lowers cutting force to prevent chattering.

(Coated Carbide / SUMIDIA)

KBMZ Type (Internal Back Turning)

Dimensions (*mm*)

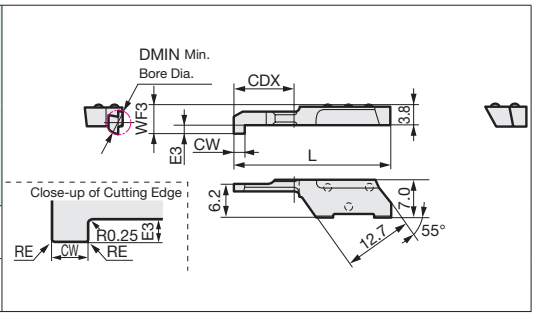
Cat. No.	AC1030U	Min. Bore Dia. DMIN	Cutting Edge position WF3	Offset E3	Corner Radius RE	Overall Length L	Max. Depth of Cut CDX	Boring Depth CDX2
KBMZR0411-05	★	***4.0***	*5.10*	*1.3*	*0.05*	*28.5*	*11*	*9*
KBMZR0411-20	★				*0.20*			
KBMZR0511-05	★	***5.0***	*5.10*	*1.3*	*0.05*	*28.5*	*11*	*9*
KBMZR0511-20	★				*0.20*			



KBMG Type (Internal Grooving)

Dimensions (*mm*)

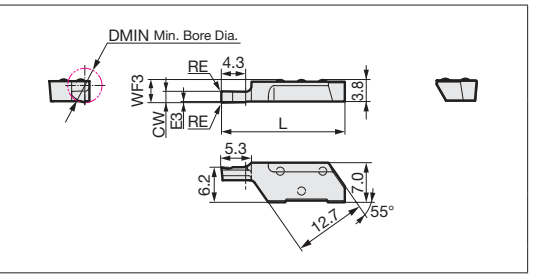
Cat. No.	AC1030U	Min. Bore Dia. DMIN	Cutting Edge position WF3	Offset E3	Width of Cut CW	Nose Radius RE	Overall Length L	Boring Depth CDX
KBMGR0411-05	★	***4.0***	*4.90*	*1.1*	*1.00*	*0.05*	*28.5*	*11*
KBMGR0411-10	★				*2.00*	*0.10*		
KBMGR0511-05	★	***5.0***	*5.10*	*1.3*	*1.00*	*0.05*	*28.5*	*11*
KBMGR0511-10	★				*2.00*	*0.10*		



KBMF Type (Face Grooving)

Dimensions (*mm*)

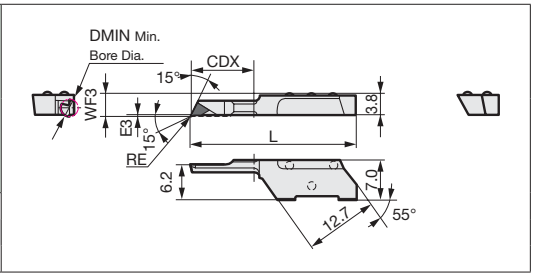
Cat. No.	ACZ150	Min. Bore Dia. DMIN	Cutting Edge position WF3	Offset E3	Width of Cut CW	Corner Radius RE	Overall Length L	Max. Groove Depth
KBMFR0615-05	★				*1.5*			
KBMFR0620-05	★	***6.0***	*4.0*	*0.2*	*2.0*	*0.05*	*21.8*	*4.0*
KBMFR0630-05	★				*3.0*			



KBMX Type (SUMIDIA/Internal Diameter Machining)

Dimensions (*mm*)

Cat. No.	DA2200	Min. Bore Dia. DMIN	Cutting Edge Position WF3	Offset E3	Nose Radius RE	Overall Length L	Maximum Depth of Cut CDX
KBMXR0311-10	★	***3.0***	*4.1*	*0.3*	*0.1*	*28.5*	*11*
KBMXR0411-10	★	***4.0***	*4.3*	*0.5*	*0.1*	*28.5*	*11*
KBMXR0511-10	★	***5.0***	*4.5*	*0.7*	*0.1*	*28.5*	*11*



• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item



■ Features

- Economical two-cornered insert
- Depth of cut 5D (5 times the shank diameter)
- Usable at any desired overhang
- Shank size = min. bore diameter for easy selection (Available from ø2 mm to ø5 mm in 0.5 mm increments)
- KBMX Type cutting edge used. Versions with no chipbreaker also available in stock

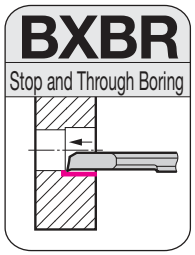
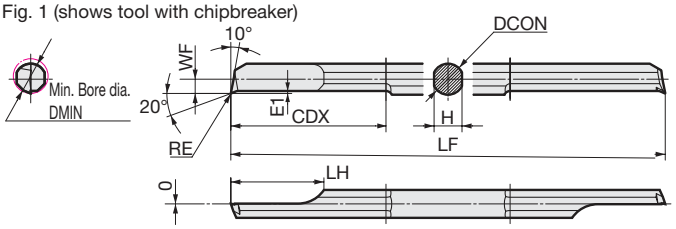


Fig. 1 (shows tool with chipbreaker)



Internal (Small Diameter) Finishing
Solid

Holder (Coated Carbide)

Dimensions (*mm*)

	Cat. No.	ACZ150	AC530U	*Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LH	Max. Boring Depth CDX	Offset E1	Nose Radius RE	Applicable Sleeve	Fig
With Chipbreaker	**BXBR02005R**	★		***2.0***	*2.0*	*1.8*	*50*	*0.80*	*6.0*	*10.0*	*0.20*	*0.05*	HBX 2016	1
	BXBR02020R	★		***2.0***	*2.0*	*1.8*	*50*	*0.80*	*6.0*	*10.0*	*0.20*	*0.20*	HBX 2016	1
	BXBR02505R	★		***2.5***	*2.5*	*2.2*	*50*	*1.05*	*7.5*	*12.5*	*0.20*	*0.05*	HBX 2516	1
	BXBR02520R	★		***2.5***	*2.5*	*2.2*	*50*	*1.05*	*7.5*	*12.5*	*0.20*	*0.20*	HBX 2516	1
	BXBR03005R	★		***3.0***	*3.0*	*2.7*	*50*	*1.30*	*9.0*	*15.0*	*0.25*	*0.05*	HBX 3016	1
	BXBR03020R	★		***3.0***	*3.0*	*2.7*	*50*	*1.30*	*9.0*	*15.0*	*0.25*	*0.20*	HBX 3016	1
	BXBR03505R	★		***3.5***	*3.5*	*3.1*	*60*	*1.55*	*10.5*	*17.5*	*0.25*	*0.05*	HBX 3516	1
	BXBR03520R	★		***3.5***	*3.5*	*3.1*	*60*	*1.55*	*10.5*	*17.5*	*0.25*	*0.20*	HBX 3516	1
	BXBR04005R	★		***4.0***	*4.0*	*3.6*	*60*	*1.80*	*12.0*	*20.0*	*0.35*	*0.05*	HBX 4016	1
	BXBR04020R	★		***4.0***	*4.0*	*3.6*	*60*	*1.80*	*12.0*	*20.0*	*0.35*	*0.20*	HBX 4016	1
	BXBR04505R	★		***4.5***	*4.5*	*4.1*	*70*	*2.05*	*13.5*	*22.5*	*0.35*	*0.05*	HBX 4516	1
	BXBR04520R	★		***4.5***	*4.5*	*4.1*	*70*	*2.05*	*13.5*	*22.5*	*0.35*	*0.20*	HBX 4516	1
	BXBR05005R	★		***5.0***	*5.0*	*4.5*	*70*	*2.30*	*15.0*	*25.0*	*0.40*	*0.05*	HBX 5016	1
	BXBR05020R	★		***5.0***	*5.0*	*4.5*	*70*	*2.30*	*15.0*	*25.0*	*0.40*	*0.20*	HBX 5016	1
No Chipbreaker	**BXBR02005R-NB**	★		***2.0***	*2.0*	*1.8*	*50*	*0.80*	*6.0*	*10.0*	*0.20*	*0.05*	HBX 2016	1
	BXBR02020R-NB	★		***2.0***	*2.0*	*1.8*	*50*	*0.80*	*6.0*	*10.0*	*0.20*	*0.20*	HBX 2016	1
	BXBR02505R-NB	★		***2.5***	*2.5*	*2.2*	*50*	*1.05*	*7.5*	*12.5*	*0.20*	*0.05*	HBX 2516	1
	BXBR02520R-NB	★		***2.5***	*2.5*	*2.2*	*50*	*1.05*	*7.5*	*12.5*	*0.20*	*0.20*	HBX 2516	1
	BXBR03005R-NB	★		***3.0***	*3.0*	*2.7*	*50*	*1.30*	*9.0*	*15.0*	*0.25*	*0.05*	HBX 3016	1
	BXBR03020R-NB	★		***3.0***	*3.0*	*2.7*	*50*	*1.30*	*9.0*	*15.0*	*0.25*	*0.20*	HBX 3016	1
	BXBR03505R-NB	★		***3.5***	*3.5*	*3.1*	*60*	*1.55*	*10.5*	*17.5*	*0.25*	*0.05*	HBX 3516	1
	BXBR03520R-NB	★		***3.5***	*3.5*	*3.1*	*60*	*1.55*	*10.5*	*17.5*	*0.25*	*0.20*	HBX 3516	1
	BXBR04005R-NB	★		***4.0***	*4.0*	*3.6*	*60*	*1.80*	*12.0*	*20.0*	*0.35*	*0.05*	HBX 4016	1
	BXBR04020R-NB	★		***4.0***	*4.0*	*3.6*	*60*	*1.80*	*12.0*	*20.0*	*0.35*	*0.20*	HBX 4016	1
	BXBR04505R-NB	★		***4.5***	*4.5*	*4.1*	*70*	*2.05*	*13.5*	*22.5*	*0.35*	*0.05*	HBX 4516	1
	BXBR04520R-NB	★		***4.5***	*4.5*	*4.1*	*70*	*2.05*	*13.5*	*22.5*	*0.35*	*0.20*	HBX 4516	1
	BXBR05005R-NB	★		***5.0***	*5.0*	*4.5*	*70*	*2.30*	*15.0*	*25.0*	*0.40*	*0.05*	HBX 5016	1
	BXBR05020R-NB	★		***5.0***	*5.0*	*4.5*	*70*	*2.30*	*15.0*	*25.0*	*0.40*	*0.20*	HBX 5016	1

* Boring depth CDX or less.

Sleeve

Dimensions (*mm*)

Cat. No.	Stock	Bore Dia. DCB	Applicable Bar
HBX2016	★	*2.0*	BXBR 020○○R(-NB)
HBX2516	★	*2.5*	BXBR 025○○R(-NB)
HBX3016	★	*3.0*	BXBR 030○○R(-NB)
HBX3516	★	*3.5*	BXBR 035○○R(-NB)
HBX4016	★	*4.0*	BXBR 040○○R(-NB)
HBX4516	★	*4.5*	BXBR 045○○R(-NB)
HBX5016	★	*5.0*	BXBR 050○○R(-NB)

BXBR bars can also be used with HBB type sleeves.
Commercially available sleeves may also be used.
Refer to page E72 for details on HBX type sleeves.

Spare Parts (for Adapter Sleeve)

Applicable Sleeve	Flat Screw		Set Screw	Wrench
		N·m		 (For Torx Holes)
HBX○○○○	BFTX0409N	3.4	BT06035T	TRD15

Sleeve is optional.

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)



■ Features

- Achieves the minimum bore diameter of ø2.5mm in boring of hardened steel
- Achieves high-precision cutting edge positioning thanks to the newly developed clamp mechanism
- Expands the range of small hole boring to achieve more high-efficiency machining requiring no grinding
- BSME Type (Brazed Type)
  Can be used with work diameters from ø2.5 to 5.0mm
- SEXC Type (Indexable Insert Type)
  Can be used with work diameters from ø4.0 to 6.0mm

Expansion | Carbide (Coolant Hole) | CBN

SUMIBORON
Brazed

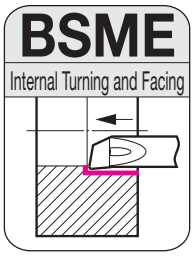


Fig 1

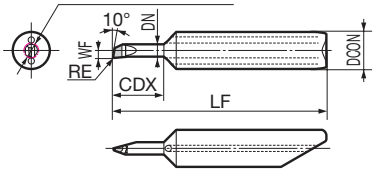
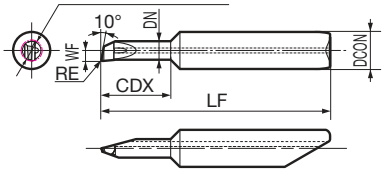


Fig 2



Holder (SUMIBORON)

Dimensions (*mm*)

Cat. No.	BN2000 R	BN2000 L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Max. Boring Depth CDX	Corner Radius RE	Applicable Sleeve	Fig
BSME R/L 25020D2S6	★	★	***2.5***	*6.0*	*2.0*	*32.0*	*1.20*	*5.3*	*0.2*		1
BSME R/L 25020D3S6	★	★	***2.5***	*6.0*	*2.0*	*34.5*	*1.20*	*7.8*	*0.2*		1
BSME R/L 25020D4S6			***2.5***	*6.0*	*2.0*	*37.0*	*1.20*	*10.3*	*0.2*		1
BSME R/L 30020D2S6	★	★	***3.0***	*6.0*	*2.5*	*32.8*	*1.45*	*6.3*	*0.2*		2
BSME R/L 30020D3S6	★	★	***3.0***	*6.0*	*2.5*	*35.8*	*1.45*	*9.3*	*0.2*		2
BSME R/L 30020D4S6			***3.0***	*6.0*	*2.5*	*38.8*	*1.45*	*12.3*	*0.2*		2
BSME R/L 35020D2S6	★	★	***3.5***	*6.0*	*3.0*	*33.5*	*1.70*	*7.3*	*0.2*		2
BSME R/L 35020D3S6	★	★	***3.5***	*6.0*	*3.0*	*37.0*	*1.70*	*10.8*	*0.2*		2
BSME R/L 35020D4S6			***3.5***	*6.0*	*3.0*	*40.5*	*1.70*	*14.3*	*0.2*	HBSM6020	2
BSME R/L 40020D2S6	★	★	***4.0***	*6.0*	*3.5*	*33.9*	*1.95*	*8.3*	*0.2*	HBSM6020A	2
BSME R/L 40020D3S6	★	★	***4.0***	*6.0*	*3.5*	*37.9*	*1.95*	*12.3*	*0.2*		2
BSME R/L 40020D4S6			***4.0***	*6.0*	*3.5*	*41.9*	*1.95*	*16.3*	*0.2*		2
BSME R/L 45020D2S6	★	★	***4.5***	*6.0*	*4.0*	*35.0*	*2.20*	*9.3*	*0.2*		2
BSME R/L 45020D3S6	★	★	***4.5***	*6.0*	*4.0*	*39.5*	*2.20*	*13.8*	*0.2*		2
BSME R/L 45020D4S6			***4.5***	*6.0*	*4.0*	*44.0*	*2.20*	*18.3*	*0.2*		2
BSME R/L 50020D2S6	★	★	***5.0***	*6.0*	*4.5*	*35.8*	*2.45*	*10.3*	*0.2*		2
BSME R/L 50020D3S6	★	★	***5.0***	*6.0*	*4.5*	*40.8*	*2.45*	*15.3*	*0.2*		2
BSME R/L 50020D4S6			***5.0***	*6.0*	*4.5*	*45.8*	*2.45*	*20.3*	*0.2*		2

The BSME Type requires HBSM6020 (A) adapter sleeve (sold separately).

Fig 1

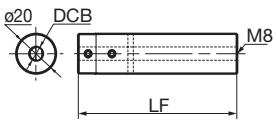
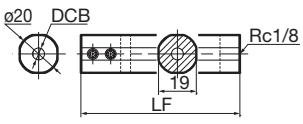
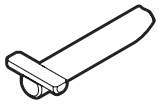


Fig 2



Alignment Jig

Cat. No.	Stock	
AFBSM60	●	

This jig is used for centring sleeves when setting them into holders.

Sleeve

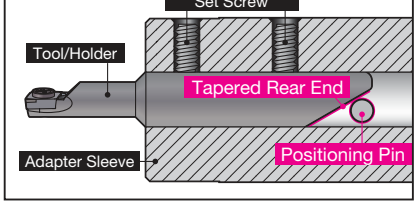
Dimensions (*mm*)

Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM6020	★	*6.0*	*80*	1	BT0506	TH025
HBSM6020A	★	*6.0*	*80*	2		

Adapter sleeve is optional.

Newly Developed Clamp Mechanism

Achieves high-precision cutting edge positioning by combining a tool/holder that has a tapered rear end with a sleeve having an internal positioning pin.
(common to BSME and SEXC types)



• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

SEXC Type

Expansion | Carbide (Coolant Hole) | CBN

SUMIBORON
Screw-on

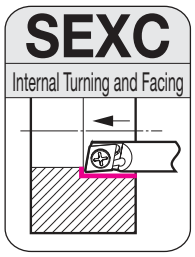
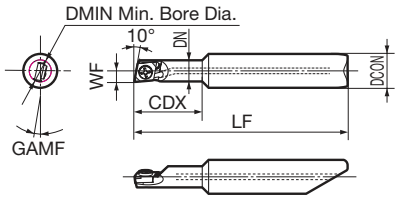


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Max. Boring Depth CDX	Rake Angle GAMF	Applicable Sleeve	Fig	Bolt	Bolt N·m	Wrench
E06D2-SEXC R/L03-04P	★	★	***4.0***	*6.0*	*3.75*	*33.75*	*1.95*	*8*	-13°	HBSM6020 HBSM6020A	1	MIB1.6-2	**0.2**	SDBSM
E06D3-SEXC R/L03-04P	★	★	***4.0***	*6.0*	*3.75*	*37.75*	*1.95*	*12*	-13°		1			
E06D2-SEXC R/L03-05P	★	★	***5.0***	*6.0*	*4.75*	*35.25*	*2.45*	*10*	-12°		1	MIB1.6-2.5	**0.2**	
E06D3-SEXC R/L03-05P	★	★	***5.0***	*6.0*	*4.75*	*40.25*	*2.45*	*15*	-12°		1			
E06D2-SEXC R/L03-06P	★	★	***6.0***	*6.0*	*5.75*	*36.75*	*2.95*	*12*	-11°		1	MIB1.6-3	**0.2**	
E06D3-SEXC R/L03-06P	★	★	***6.0***	*6.0*	*5.75*	*42.75*	*2.95*	*18*	-11°		1			

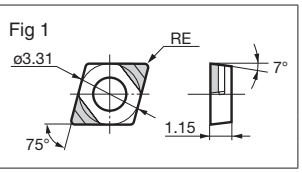
The SEXC Type needs the HBSM6020 (A) adapter sleeve (sold separately).

Insert (SUMIBORON)

Dimensions (*mm*)

Cat. No.	BN2000	BN7000	Nose Radius RE	Fig
2NU-ECXA030X02LE	★		0.2	1
2NU-ECXA030X02LF	★	★	0.2	1

Fig 1



Part Number Suffix: LE: Honing, LF: Sharp Edge

Fig 1

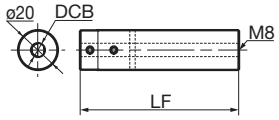
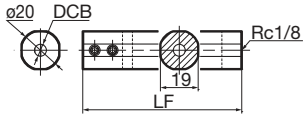


Fig 2

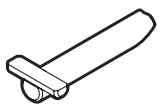


Sleeve

Dimensions (*mm*)

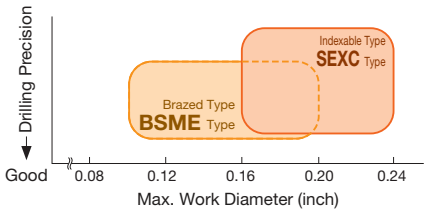
Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM6020	★	*6.0*	*80*	1	BT0506	TH025
HBSM6020A	★	*6.0*	*80*	2		

Alignment Jig

Cat. No.	Stock	
AFBSM60	★	

This jig is used for centring sleeves when setting them into holders.

Application Range



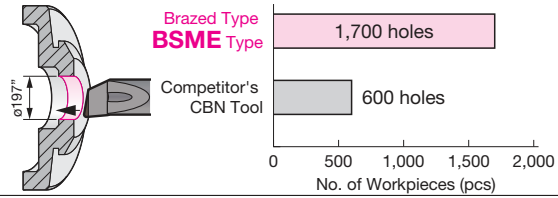
Recommended Cutting Conditions

Spindle Speed *n*	Above 2,000 RPM	May cause chattering or chipping at the cutting edge in low-speed machining.
Depth of Cut a_p	0.0004" to 0.006"	Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.
Feed Rate *f*	0.0004 to 0.004 IPR	–

Application Examples

Hardened Alloy Steel Valve Component — BSME

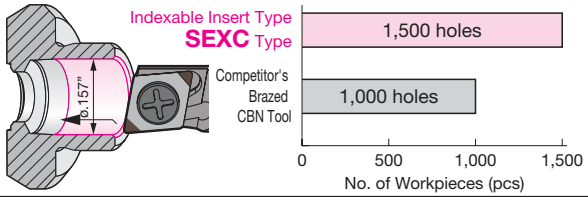
The BSME type provides stable machining and a tool life that is over 2 times longer than our competitors' CBN tools.



Work Material: Hardened Alloy Steel Valve Component (Automotive Component)
Tool: BSME R50020D2S6 Grade: BN2000
Cutting Conditions: v_c = 387 SFM (7,500 RPM), *f* = 0.0008 IPR, a_p = 0.004" Dry

Bearing Steel: Small Automotive Component — SEXC

The SEXC type provides drastically reduced tool costs and a tool life that is 1.5 times longer than our competitors' brazed CBN tools.



Work Material: Bearing Steel Small Automotive Component (60HRC)
Holder: E06D2-SEXC R/L03-04P Insert: 2NU-ECXA 030X02LF (BN2000)
Cutting Conditions: v_c = 164 SFM (4,000 RPM), *f* = 0.008 IPR, a_p = 0.0008" Wet



SUMIBORON
Brazed

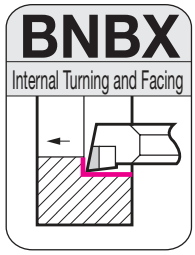
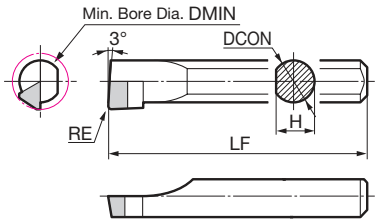


Fig 1



Holder (SUMIBORON)

Dimensions (*mm*)

Cat. No.	BN2000	BN7000	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Nose Radius RE	Applicable Sleeve	Fig
BNBX020R	★	★	***2.5***	*2.0*	*1.8*	*40*	*0.2*	HBX2016	1
BNBX025R	★	★	***3.0***	*2.5*	*2.2*	*40*	*0.2*	HBX2516	1
BNBX030R	★	★	***3.5***	*3.0*	*2.7*	*40*	*0.2*	HBX3016	1
BNBX035R	★	★	***4.0***	*3.5*	*3.2*	*40*	*0.2*	HBX3516	1
BNBX040R	★	★	***4.5***	*4.0*	*3.7*	*40*	*0.2*	HBX4016	1
BNBX045R	★	★	***5.0***	*4.5*	*4.2*	*40*	*0.2*	HBX4516	1
BNBX050R	★	★	***5.5***	*5.0*	*4.7*	*60*	*0.2*	HBX5016	1
BNBX055R	★	★	***6.0***	*5.5*	*5.2*	*60*	*0.2*	HBX5516	1
BNBX060R	★	★	***6.5***	*6.0*	*5.7*	*60*	*0.2*	HBX6016	1
BNBX065R	★		***7.0***	*6.5*	*6.2*	*60*	*0.2*	HBB6516	1
BNBX070R	★		***7.5***	*7.0*	*6.7*	*80*	*0.2*	HBB716	1
BNBX075R	★		***8.0***	*7.5*	*7.2*	*80*	*0.2*	HBB7516	1
BNBX080R	★		***8.5***	*8.0*	*7.7*	*80*	*0.2*	HBB816	1

BNBX bars can be used with HBB type sleeves, but HBX type sleeves are recommended for bars below ø6mm.

Fig 1

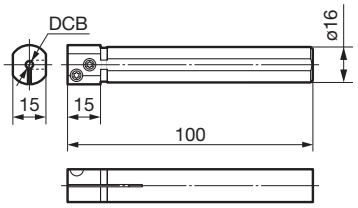
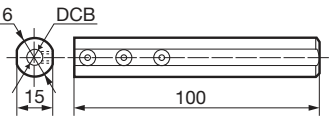


Fig 1



Sleeve (HBX Type)

Dimensions (*mm*)

Cat. No.	Stock	Bore Dia. DCB	Applicable Bar	Fig
HBX2016	★	*2.0*	BNBX020R	1
HBX2516	★	*2.5*	BNBX025R	1
HBX3016	★	*3.0*	BNBX030R	1
HBX3516	★	*3.5*	BNBX035R	1
HBX4016	★	*4.0*	BNBX040R	1
HBX4516	★	*4.5*	BNBX045R	1
HBX5016	★	*5.0*	BNBX050R	1
HBX5516	★	*5.5*	BNBX055R	1
HBX6016	★	*6.0*	BNBX060R	1

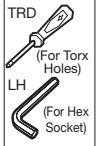
Sleeve (HBB Type)

Dimensions (*mm*)

Cat. No.	Stock	Bore Dia. DCB	Applicable Bar	Fig
HBB6516	★	*6.5*	BNBX065R	1
HBB716	★	*7.0*	BNBX070R	1
HBB7516	★	*7.5*	BNBX075R	1
HBB816	★	*8.0*	BNBX080R	1

HBB Type sleeve can also be used with ø2.5 to 6.0mm holders.

Spare Parts (for Adapter Sleeve)

Applicable Sleeve	Flat Screw		Set Screw	Wrench
				
HBX2○○○	BFTX0409N	**1.5**	BT06035T	TRD15
HBX3○○○ HBX4○○○ HBX5○○○ HBX6○○○	BFTX0409N	**3.0**	BT06035T	TRD15
HBB○○○○	-	-	BT0404	LH020

N·m Recommended Tightening Torque (N·m)

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

T 60° | 91° | CBN

SUMIBORON
Screw-on

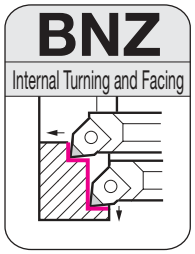
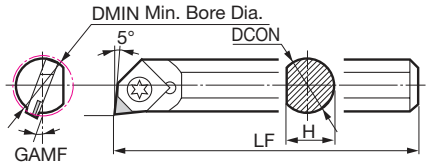


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Flat Screw		Wrench	Adapter Sleeve
									N·m	(For Torx Holes)	
BNZ606R	★	***7.0***	*6.0*	*5.5*	*80*	-14°	1	BFTX0204N	**0.5**	TRX06	HBB616
BNZ608R	★	***9.0***	*8.0*	*7.5*	*100*	-12°	1				HBB816
BNZ610R	★	***11.0***	*10.0*	*9.5*	*125*	-10°	1				Q
BNZ612R	★	***13.0***	*12.0*	*11.0*	*130*	-8°	1				
BNZ616R	★	***17.0***	*16.0*	*15.0*	*145*	-6°	1				
BNZ620R	★	***21.0***	*20.0*	*19.0*	*160*	-5°	1				

Insert (SUMIBORON)

Dimensions (*mm*)

Quantity	Cat. No.	BNC2010	BNC2020	BN1000	BN2000	BN7000	Nose Radius RE
Single pack	**NU-ZNEX040102**	-	-	●	●	●	*0.2*
	NU-ZNEX040104	-	-	●	●	●	*0.4*
	NC-ZNEX040102LE	●	-	-	-	-	*0.2*
	NC-ZNEX040104LE	●	-	-	-	-	*0.4*
	NC-ZNEX040102LT	-	●	-	-	-	*0.2*
	NC-ZNEX040104LT	-	●	-	-	-	*0.4*
10 pack	**T-NU-ZNEX040102**	-	-		●		*0.2*
	T-NU-ZNEX040104	-	-		●		*0.4*

Fig 1

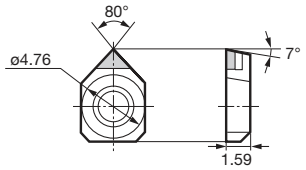
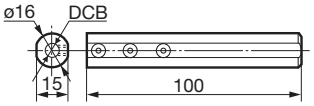


Fig 1



Sleeve

Dimensions (*mm*)

Cat. No.	Stock	Bore Dia. DCB	Applicable Holders	Fig
HBB616	★	*6.0*	BNZ606R	1
HBB816	★	*8.0*	BNZ608R	1

HBX Type sleeve (HBX6016) can also be used with BNZ606R.

T 60° | 92° | CBN | PCD

SUMIBORON
Clamp-on

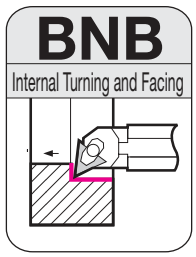


Fig 1

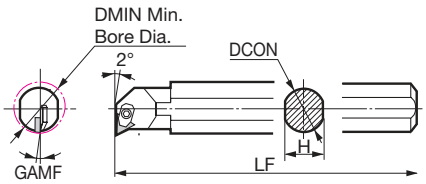


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

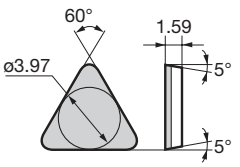
Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Clamp	Bolt	Nut	Wrench
											 (For Hex Socket)
BNB508R	★	**0.394" (10.0)**	0.315" (8.0)	0.276" (7.0)	5.512" (140)	-9°	1	BNBC	BH0306	BNBW-2	TH020
BNB510R	★	**0.472" (12.0)**	0.394" (10.0)	0.354" (9.0)	5.512" (140)	-8°	1				
BNB512R	★	**0.551" (14.0)**	0.472" (12.0)	0.433" (11.0)	6.299" (160)	-6°	1		FBUP3-A0-9	BNBW-4	
BNB516R	★	**0.708" (18.0)**	0.630" (16.0)	0.551" (14.0)	7.086" (180)	-5°	1				
BNB520R	★	**0.866" (22.0)**	0.787" (20.0)	0.708" (18.0)	7.086" (180)	-4°	1		BH0310	BNBW-7	

Insert (SUMIBORON, SUMIDIA)

Dimensions (*mm*)

Cat. No.	SUMIBORON BNX10	BNX20	BN2000	BN350	BN500	BN7000	SUMIDIA DA150	DA1000	Nose Radius RE
TBGN060102B		★	★				★	★	*0.2*
TBGN060104B	★	★	★	★	★	★	★	★	*0.4*
TBGN060108B		★	★	★	★	★			*0.8*
TBGN060102-BSTN[*1]	-	★	-	-	-	-	-	-	*0.2*
TBGN060104-BSTN[*1]	-	★	-	-	-	-	-	-	*0.4*
TBGN060108-BSTN[*1]	-	★	-	-	-	-	-	-	*0.8*
NF-TBGN060102[*2]	-	-	-	-	-	-	-	★	*0.2*
NF-TBGN060104[*2]	-	-	-	-	-	-	-	★	*0.4*

Fig 1



*1 TBGN ○○○○○○-BSTN is only available in BNX20 grade and has a smaller negative land angle.
(BSTN: -15°, B: -25°. However, the negative land angle is uniquely configured for each grade.)
*2 NF-TBGN is a single corner insert. (This is not a Full-Top insert)

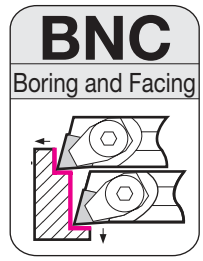


Fig 1

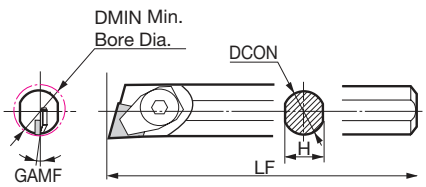


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Clamp	Bolt	Nut	Wrench
											 (For Hex Socket)
BNC508R	★	**0.394" (10.0)**	0.315" (8.0)	0.276" (7.0)	5.512" (140)	-9°	1	BNBC	BH0306	BNBW-2	TH020
BNC510R	★	**0.472" (12.0)**	0.394" (10.0)	0.354" (9.0)	5.512" (140)	-8°	1				
BNC512R	★	**0.591" (15.0)**	0.472" (12.0)	0.433" (11.0)	6.299" (160)	-6°	1		FBUP3-A0-9	BNBW-4	
BNC516R	★	**0.787" (20.0)**	0.630" (16.0)	0.551" (14.0)	7.086" (180)	-5°	1				
BNC520R	★	**0.984" (25.0)**	0.787" (20.0)	0.708" (18.0)	7.086" (180)	-4°	1		BH0310	BNBW-7	

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

DABB Type

PCD

SUMIDIA
Brazed

DABB-C

Stop-Boring, Through-Boring and Back Chamfering

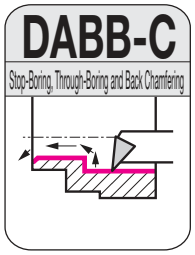
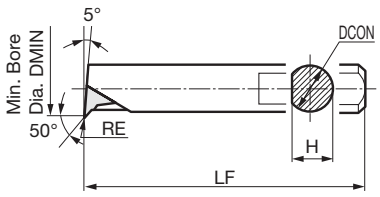


Fig 1



Holder (SUMIDIA)

Dimensions (*mm*)

Cat. No.	DA2200	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Nose Radius RE	Applicable Sleeve	Fig
DABB025CR	★	***3.0***	*2.5*	*2.2*	*60*	*0.1*	HBB2516	1
DABB035CR	★	***4.0***	*3.5*	*3.2*	*60*	*0.1*	HBB3516	1
DABB045CR	★	***5.0***	*4.5*	*4.1*	*80*	*0.1*	HBB4516	1
DABB060CR	★	***7.0***	*6.0*	*5.2*	*80*	*0.1*	HBB616	1

PCD

SUMIDIA
Brazed

DABB-N

Stop-Boring, Through-Boring and Necking

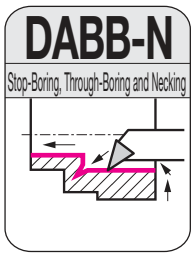
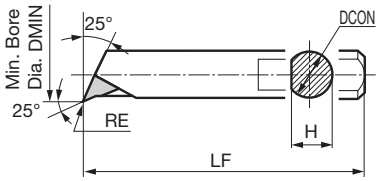


Fig 1

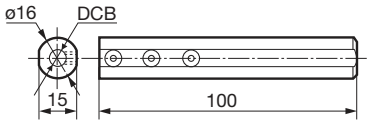


Holder (SUMIDIA)

Dimensions (*mm*)

Cat. No.	DA2200	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Nose Radius RE	Applicable Sleeve	Fig
DABB025NR	★	***3.0***	*2.5*	*2.2*	*60*	*0.1*	HBB2516	1
DABB035NR	★	***4.0***	*3.5*	*3.2*	*60*	*0.1*	HBB3516	1
DABB045NR	★	***5.0***	*4.5*	*4.1*	*80*	*0.1*	HBB4516	1
DABB060NR	★	***7.0***	*6.0*	*5.2*	*80*	*0.1*	HBB616	1

Fig 1



Sleeve

Dimensions (*mm*)

Cat. No.	Stock	Bore Dia. DCB	Fig	Set Screw	Wrench
					 (For Hex Socket)
HBB2516	★	*2.5*	1	BT0404	LH020
HBB3516	★	*3.5*	1		
HBB4516	★	*4.5*	1		
HBB616	★	*6.0*	1		

HBX Type sleeve can also be used.

MEMO

Grooving / Cut-Off Threading Tools

F

F1 to F76



Grooving Tools

Grooving Tool Series Selection Guide F2
GND Holders F4
GND Chipbreakers F6
GND Nomenclature F8
GND Recommended Cutting Conditions F10
Inserts for GND F11
GNDM F13
GNDL F17
PSC GND (Polygon Shank) F20
GNDS (for Shallow Grooves) F23
GNDN (For Necking) F24
GNDF (Face Grove) F25
GNDFS (Face Grove) F27
GNDI (For General-purpose Internal Grooves) F28
GND Special Grooving Insert Request Form F29
GNDIS (For General-purpose Internal Grooves) F30
GND Key Points (Facing, I.D. Machining & Necking) ... F31
GWC (Shallow Grooves) F33
GWCS (Shallow Grooves) F34
GWCI (Internal Shallow Grooves) F34
TGA Grooving Insert F35
TGA Insert / TGA PSC F36
SumiTurn B-Groove Triangular Insert with Chipbreaker for Grooving F37
CKB Type (For Very Small Diameter Grooves) ... F39
SSH (For Small Diameters) F41
SGIT (For Small Diameters) F43
SumiNotch F44
CBN GWB (For Hardened Steel, Shallow Grooves) F46
CGA PSC / CBN BNGG (For Hardened Steel, Shallow Grooves) ... F47

F Cut-Off Tools ···F48 on

Cut-Off Tool Holder Series Selection Guide ····· F49
SumiGrip Introduction ····· F50
SumiGrip ····· F51
Small Diameter Cut-Off Tool Holders ····· F56

F Threading Tools ···F58 on

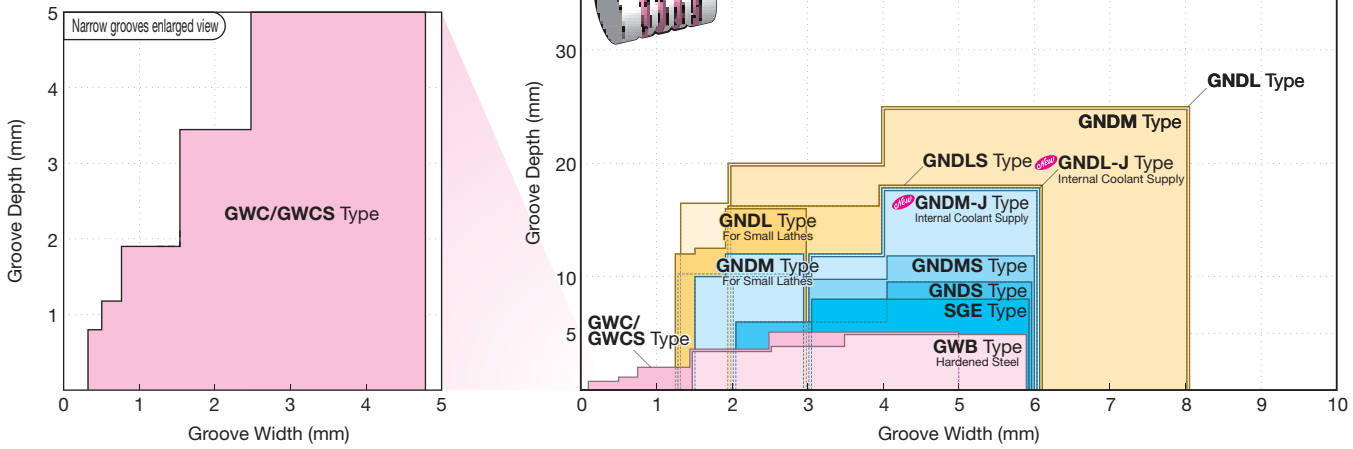
Threading Tool Series Selection Guide ····· F59
Basics of Threads ····· F62
For External / Internal Diameters ····· F63
Threading Inserts ····· F67

Stock Markings and Symbols

●: Standard stocked item
★: Worldwide Warehouse Item
▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

External Grooving



■ External Grooving Tools

* mark: For groove depths and width combinations, refer to the above figures or the relevant page.

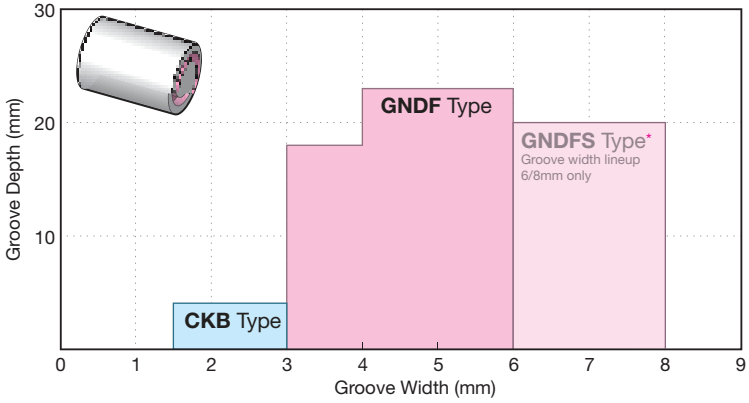
Applications	Series	Shape	Structure: Screw-on	Structure: Clamp-on	Structure: Double Clamp	Insert Shape ( ): indicates no. of cutting edges	Groove Depth* / Groove Width*	Features
For Shallow Grooves	**GWC**	→ F33	●		●	(3) (Standard, with Chipbreaker)	Depth 5.0; Width 0.33–4.8	· High rigidity double clamping (Screw-on for MINI Holders) · Triangular type insert with 3 usable corners · Inserts with chipbreakers now in stock
	GWCS	→F34			●		Depth 5.0; Width 0.33–4.8	· "L-shaped" (side cut) GWC holder
	GWB Hardened Steel	→F46			●	(1) Enables Traverse Cutting	Depth 5.0; Width 1.5–6.0	· High rigidity double clamping · Employs Coated SUMIBORON for interrupted cutting of hardened steel
For Shallow Grooves to General Grooves	**GNDS**	→F23		●			Depth 10.0; Width 2.0–6.0	· High-rigidity design reduces vibration. · Enables high-efficiency grooving and traverse cutting thanks to its short tool overhang length
	GNDM For Small Lathes	→F14		●		(2)	Depth 12.0; Width 1.25–3.0	· High-rigidity design reduces vibration. · 16mm square shank is available.
	GNDM	→F13		●		(2) Enables Traverse Cutting	Depth 18.0; Width 1.25–8.0	· High-rigidity design reduces vibration. · Perfect for traverse cutting and profiling.
	GNDM-J Internal Coolant Supply New	→F15		●			Depth 18.0; Width 2.0–6.0	· GNDM type internal coolant supply
	GNDMS	→F14		●			Depth 23.0; Width 3.0–6.0	· "L-shaped" (side cut) GNDM type
For Deep Grooves	**GNDL** For Small Lathes	→F18		●			Depth 16.0; Width 1.25–3.0	· High-rigidity design reduces vibration. · □10 x 10, 12 x 12, 16 x 16mm shank lineup available
	GNDL	→F17		●		(2)	Depth 25.0; Width 1.25–8.0	· High-rigidity design reduces vibration. · Perfect for grooving, deep grooving and cut-off applications.
	GNDL-J Internal Coolant Supply New	→F19		●		(2)	Depth 25.0; Width 2.0–6.0	· GNDL type internal coolant supply
	GNDLS	→F18		●			Depth 25.0; Width 2.0–6.0	· "L-shaped" (side cut) GNDL type

For hardened steel, refer to page F46 for SUMIBORON Grooving Holder BNGG Type.

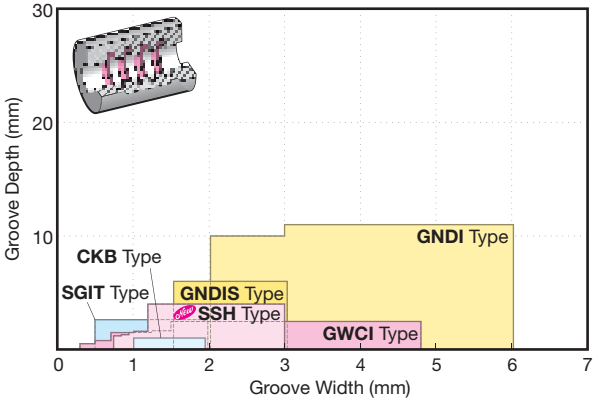
Selection Guide

Face Grooving

Note: * mark: Made-to-order item.



Internal Grooving



■ Face Grooving Tools

Note: * mark: For groove depths and width combinations, refer to the above figures or the relevant page.

Applications	Series	Shape	Structure: Screw-on	Structure: Clamp-on	Structure: Double Clamp	Insert Shape ( ): indicates no. of cutting edges	Groove Depth* / Groove Width*	Work Diameter (mm)	Features
Very Small Diameter	**CKB**	→F39		●		(1)	Depth* 4.0 / Width* 1.5–3.0	ø6 to	· Face grooving for small lathes
For General Grooves to Deep Grooves	**GNDF**	→F25		●		(2)	Depth* 23 / Width* 3.0–6.0	ø35 to ø1,000	· High-rigidity design reduces vibration.
For General Grooves to Deep Grooves	**GNDFS** Made-to-order item	→F27		●		Enables Traverse Cutting	Depth* 20 / Width* 6.0–8.0	ø70 to	· L-shape (horizontal) type · For wide grooves

■ Internal Grooving Tools

* mark: For groove depths and width combinations, refer to the above figures or the relevant page.

Applications	Series	Shape	Structure: Screw-on	Structure: Clamp-on	Structure: Double Clamp	Insert Shape ( ): indicates no. of cutting edges	Groove Depth* / Groove Width*	Min. bore diameter (mm)	Features
For Small Diameter Grooves	**CKB**	→F40		●		(1)	Depth* 1.0 / Width* 1.0–2.0	ø4	· Very small diameter grooving · High clamping force · Wide variety of tool holders
For Small Diameter Grooves	**SGIT**	→F43	●			(3)	Depth* 3.2 / Width* 0.5–2.0	ø10	· 3-cornered type
For Small Diameter Grooves	**SSH** New	→ F41	●			(1) Enables Traverse Cutting	Depth* 4.0 / Width* 0.74–3.0	ø8	· Internal coolant supply specification for outstanding chip evacuation · Wide variety of grooving widths · Tough carbide body for stable machining
For Shallow Grooves	**GWCI**	→F34	●			(3) (Standard, with Chipbreaker)	Depth* 2.5 / Width* 0.33–4.8	ø35	· Using same inserts as GWC type holders · Inserts with chipbreakers now in stock
For General Grooves to Deep Grooves	**GNDIS**	→F30		●		(2) Enables Traverse Cutting	Depth* 6.6 / Width* 2.0–3.0	ø14	· Supports machining with minimum bore diameter from ø14
For General Grooves to Deep Grooves	**GNDI**	→F28		●		(2) Enables Traverse Cutting	Depth* 11.0 / Width* 2.0–6.0	ø32	· High-rigidity design reduces vibration.

■ Necking Tools

Applications	Series	Shape	Structure: Screw-on	Structure: Clamp-on	Structure: Double Clamp	Insert Shape ( ): indicates no. of cutting edges	Groove Depth* / Groove Width*	Work Diameter (mm)	Features
Face Undercutting	**GNDN**	→F24		●		(2)	Depth* 4.0 / Width* 2.0–6.0	ø20 to	· Necking at corners possible



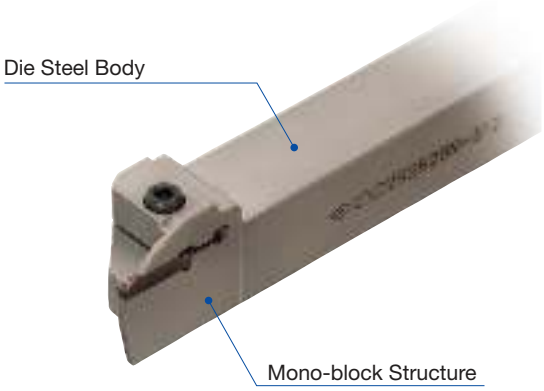
■ Features

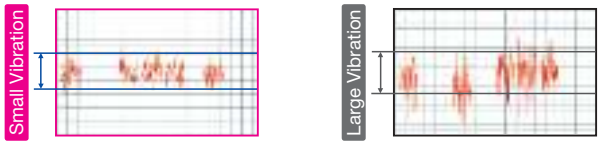
- **Wide application range**
  Applicable for grooving, traverse cutting, profiling, necking, facing and internal boring.
- **Stable tool life**
  A variety of chipbreakers improve chip control in various applications. Prevents sudden breakages due to chip clogging.
- **Achieving high efficiency machining with reduced chattering**
  The mono-block structure and die steel body reduce vibration during machining around 30% compared to conventional tools
- **Higher edge width precision even with unground inserts**
  High-precision sintering technology achieves cutting edge width precision of ±0.03mm for widths from 1.25 to 6.0mm (front cutting edge angle of 0° or 5°)

■ Cutting Performance

Reduce Chattering

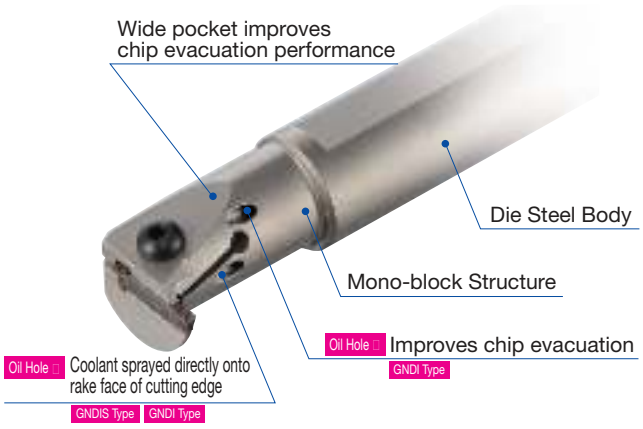
High rigidity design reduces chattering by up to 30% as compared to conventional tools.

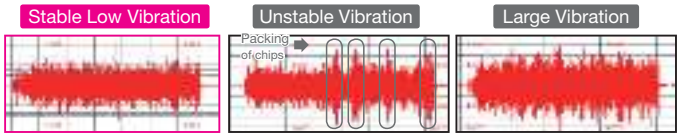




Part Material: Structural Steel
Holder: GNDL R2525M-220 Insert: GCM N2002-GG
Cutting Conditions: v_c = 330 SFM, f = 0.0039 IPR, a_p = 0.79" Wet

Both high rigidity and good chip evacuation performance Internal



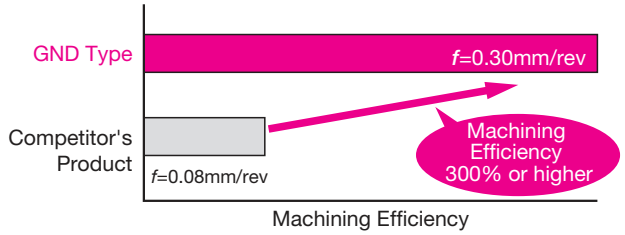


Part Material: Structural Steel
Holder: GNDI R2532-T306 Insert: GCM N3002-GG
Cutting Conditions: v_c = 330 SFM, f = 0.0019 IPR, a_p = 0.118" Wet

■ Application Examples

Substantially improved machining efficiency

High-rigidity holder enables machining at high feed rates.



Part Material: Cr–Mo Alloy Steel
Holder: GNDL R2525M-320 Insert: GCM N3002-GG (AC530U)
Cutting Conditions: v_c=430 SFM, f =0.012 IPR Wet

Long, stable tool life ensures reliable functionality even on automatic production lines!

Reduction of chattering prevents unexpected breakage.



Part Material: Medium Carbon Steel
Holder: GNDM L2525M-618 Insert: GCM N6030-RG (AC530U)
Cutting Conditions: v_c=430 SFM, f =0.012 IPR Wet

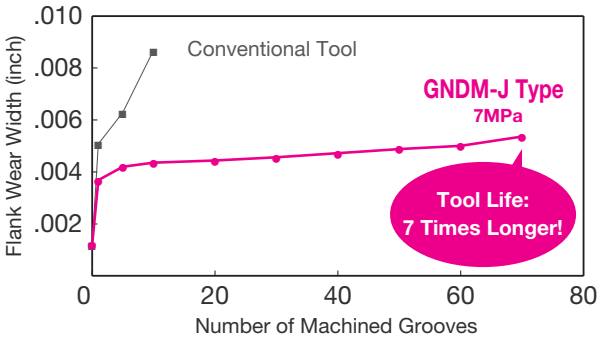
■ Internal Coolant Holder GNDM-J Type / GNDL-J Type

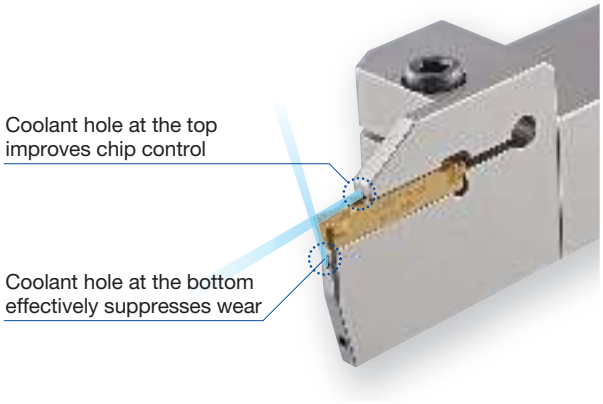
New

- Series expansion of SEC-Grooving Tool GND Type with internal coolant holder series
- Available seat sizes / grooving widths from .079" (2.0) to .236" (6.0mm)
- Effective coolant supply to the cutting edge during grooving, achieving both high-efficiency high-speed machining and longer insert tool life
- Improved chip control through direct coolant supply around the cutting edge



- Wear Resistance





- Chip control



Coolant Pressure: 7MPa



Coolant Pressure: 1MPa



External Coolant Supply

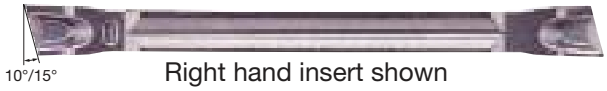
Part Material: Titanium Alloy Holder: GNDM R2525K-312J Insert: GCMN3002-GG (AC530U) Cutting Conditions: v_c = 200 SFM, f = 0.0039 IPR, a_p = .197" Wet

■ CF Type Chipbreakers for Cut-Off Machining

New



- Chipbreakers with front cutting edge angles 10°/15° for cut-off machining now available
- Asymmetric breaker design demonstrates outstanding chip control even on inserts with front cutting edge angles, where chip control is typically difficult



Right hand insert shown



GCMR20003-CF-10



GCMR20003-CF-15



Competitor's Product

Part Material: Structural Steel Holder: GNDM R2525M-220 Insert: GCMR20003-CF-10,15 (AC1030U) Cutting Conditions: n = 2000 RPM, f = 0.0031" Wet

GND Type

■ Large Selection of chipbreakers ensure outstanding chip control performance in many different types of applications.



*Items in grey are not available

■ Improved chip control

Grooving



GND Type
(GG Type Chipbreaker)

Conventional Tool

Part Material: Structural Steel
Holder: GNDL R2525M-320, Insert: GCM N3002-GG
Cutting Conditions: v_c = 330 SFM, f = 0.0059 IPR, a_p = 0.472" Wet

Traverse cutting



GND Type
(ML Type Chipbreaker)

Conventional Tool

Part Material: Structural SteelHolder: GNDM R2525M-312, Insert: GCM N3002-ML
Cutting Conditions: v_c = 330 SFM,, f = 0.0039 IPR, a_p = 0.0197" Wet

Cut-off



GND Type
(CG Type Chipbreaker)

Competitor's Product

Part Material: Stainless Steel (ø30mm)
Holder: GNDL R2525M-220, Insert: GCM R2002-CG-05
Cutting Conditions: v_c = 330 SFM, f = 0.0059 IPR Wet

Profiling



GND Type
(RG Type Chipbreaker)

Conventional Tool

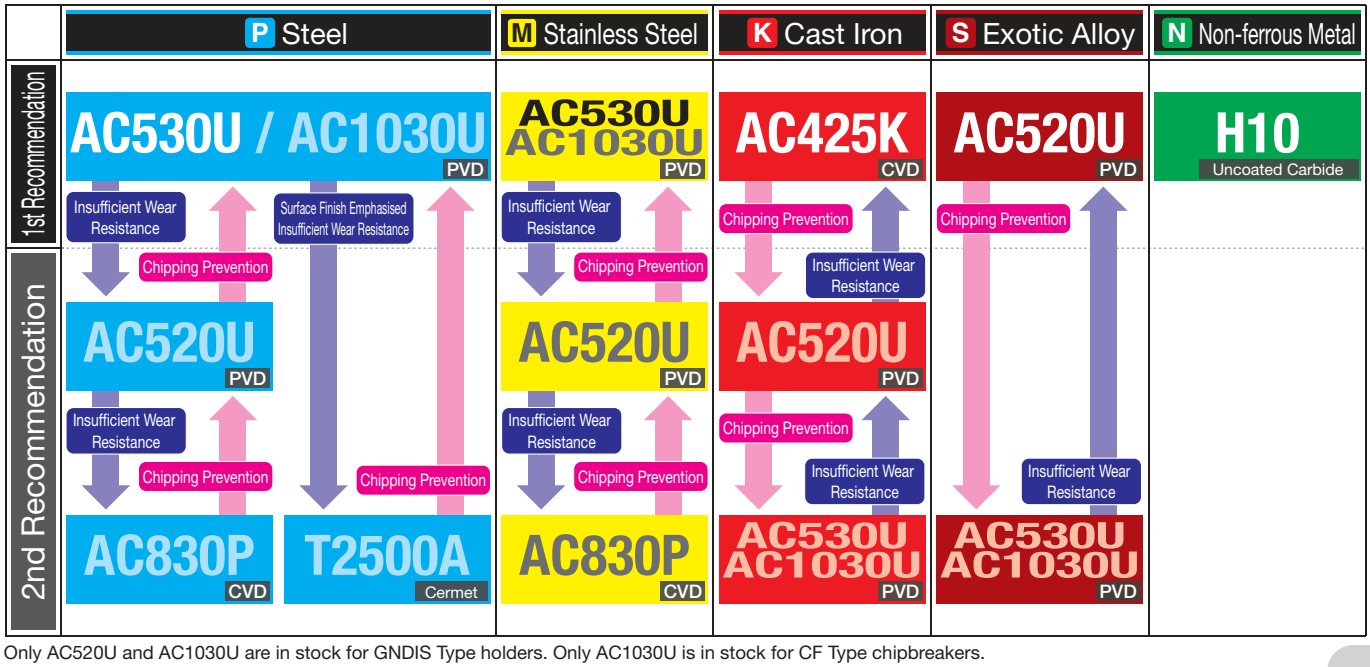
Part Material: Structural Steel
Holder: GNDM R2525M-312, Insert: GCM N3015-RG
Cutting Conditions: v_c = 330 SFM, f = 0.0019 IPR, a_p = 0.0039" Wet

■ Chipbreaker Selection





■ Insert Grade Selection



Only AC520U and AC1030U are in stock for GNDIS Type holders. Only AC1030U is in stock for CF Type chipbreakers.

■ Nomenclature for OD Groover GND Series

GND M R/L 16 3 M -075 J

#1- 3 #4 #5 #6 #7 #8 #9 #10

Series Name
#1 Groove
#2 New
#3 Depth

#4 Application
M: Multi-function
L: Deep Groove
MS: 90° Multi
LS: 90° Deep

#5 Handedness
R: Right Handed
L: Left Handed

#6 Shank Size*16
12: 0.750 x 0.750"
16: 1.000 x 1.000"
20: 1.250 x 1.250"

#7 Seat Size
1.25
1.5
2
3
4
5
6
7
8

#8 Overall Length
K: 5.0"
M: 6.0"
P: 7.0"
JX: for Small lathes

#9 Max Groove Depth*100
050: 0.50"
070: 0.70"
075: 0.75"
090: 0.90"
100: 1.00"

#10 Coolant Specification
J: Coolant Through / Internal Coolant

■ Nomenclature for Face Grooving Holders

GND F R/L 16 3 M -075 -035

#1- 3 #4 #5 #6 #7 #8 #9 #10

Series Name
#1 Groove
#2 New
#3 Depth

#4 Application
F: Face Groover
FS: 90° Face

#5 Handedness
R: Right Handed
L: Left Handed

#6 Shank Size*16
12: 0.750 x 0.750"
16: 1.000 x 1.000"
20: 1.250 x 1.250"

#7 Seat Size
2
3
4
5
6
7
8

#8 Overall Length
K: 5.0"
M: 6.0"
P: 7.0"

#9 Max Groove Depth*100
050: 0.50"
070: 0.70"
075: 0.75"
090: 0.90"

#10 Min.Part Diam. mm (Inch)
035: 35mm (1.378")
040: 40mm (1.575")
045: 45mm (1.772")
050: 50mm (1.969")
065: 65mm (2.559")
085: 85mm (3.346")
090: 90mm (3.543")
100: 100mm (3.937")
125: 125mm (4.921")
140: 140mm (5.512")
180: 180mm (7.087")
280: 280mm (11.024")

For Metric Nomenclature please contact engineering department

■ Insert Nomenclature

GCM N 3 125 R0.5 -GG -AC530U

#1- 3 #4 #5 #6 #7 #8 #9

#1-3 Series Name
#1 G: Grooving Insert
#2 C: 7° Relief Angle
#3 M: Molded Tolerance

#4 Handedness
R: Right Handed
L: Left Handed
N: Neutral

#5 Seat Size
1.25
1.5
2
3
4
5
6
7
8

#6 Groove Width*100
094: 0.094"
125: 0.125"
187: 0.187"
250: 0.250"

#7 Corner Radius in 64ths
R0.5: 0.5/64 = 0.0078"
R1.0: 1/64 = 0.0156"
R2.0: 2/64 = 0.0312"

#8 Chipbreaker
GG: Std. Feed Deep Groove
GL: Low Feed Deep Groove
MG: Std. Feed Traverse
ML: Low Feed Traverse
RG: Full Radius Profiling
RN: For profiling with undercut
GF: Low Cutting Force
GA: Non-ferrous grooving
CG: General Cutoff
CF: High Shear Cutoff

*Note: Items with the RG chipbreaker have a radius equal to 1/2 the width (Ex: GCMN3125-RG = 0.0625"

#9: Grade
AC520U: Universal Grade for most materials
AC530U: Universal Grade for most materials
AC1030U: Grade for precision machining
AC830P: Tough CVD Grade for steels
AC425K: CVD Grade for Cast and Ductile Irons
T2500A: finishing of steels and stainless steels
H10: for non-ferrous materials

Nomenclature for OD Groover GND Series (METRIC)

GND M R/L 2525 M - 3 12 J

#1-3 #4 #5 #6 #7 #8 #9 #10

#1-3 Series Name
#1 Groove
#2 New
#3 Depth

#4 Application
M: Multi-function
L: Deep Groove
MS: 90° Multi
LS: 90° Deep
S: Shallow Groove

#5 Handedness
R: Right Handed
L: Left Handed

#6 Shank Size (mm)
1010: 10 x 10 mm
1212: 12 x 12 mm
1616: 16 x 16 mm
2020: 20 x 20 mm
2525: 25 x 25 mm
3232: 32 x 32 mm

#7 Overall Length
JX: 120 mm
K: 125 mm
M: 150 mm
P: 170 mm

#8 Seat Size
1.25
1.5
2
3
4
5
6
7
8

#9 Max Groove Depth (mm)
10
12
12.5
14
16
18
20
23
25

#10 Coolant Specification
J: Coolant Through / Internal Coolant

Nomenclature for Face Grooving Holders

GND F R/L 2525 M - 3 18 - 090

#1-3 #4 #5 #6 #7 #8 #9 #10

#1-3 Series Name
#1 Groove
#2 New
#3 Depth

#4 Application
F: Face Groover
FS: 90° Face

#5 Handedness
R: Right Handed
L: Left Handed

#6 Shank Size (mm)
2020: 20 x 20 mm
2525: 25 x 25 mm
3232: 32 x 32 mm

#7 Overall Length
K: 125 mm
M: 150 mm
P: 170 mm

#8 Seat Size
2
3
4
5
6
8

#9 Max Groove Depth (mm)
12
18
23

#10 Min.Part Diam. mm (Inch)
090: 90mm (3.543")
100: 100mm (3.937")
125: 125mm (4.921")
140: 140mm (5.512")
180: 180mm (7.087")
280: 280mm (11.024")
090: 90mm (3.543")
100: 100mm (3.937")
125: 125mm (4.921")
140: 140mm (5.512")
180: 180mm (7.087")
280: 280mm (11.024")

Insert Nomenclature (METRIC)

GCM N 30 02 -GG -AC530U

#1-3 #4 #5 #6 #7 #8

#1-3 Series Name
#1 G: Grooving Insert
#2 C: 7° Relief Angle
#3 M: Molded Tolerance

#4 Handedness
R: Right Handed
L: Left Handed
N: Neutral

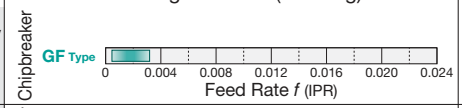
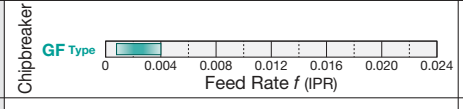
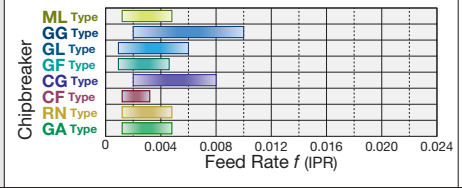
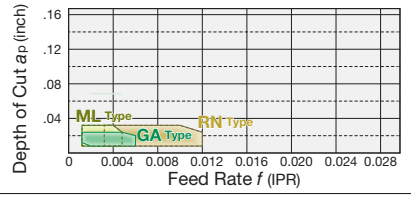
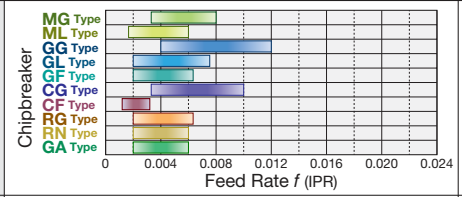
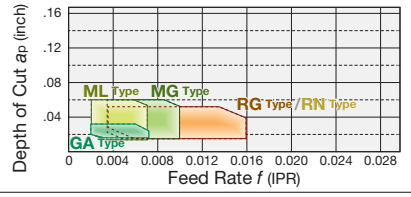
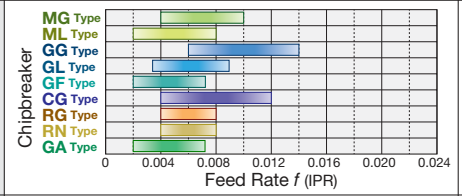
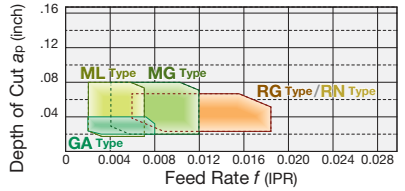
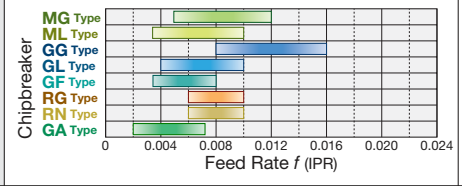
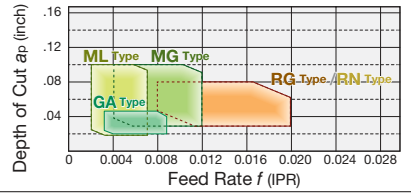
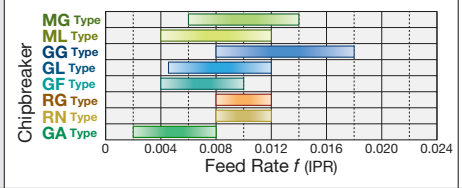
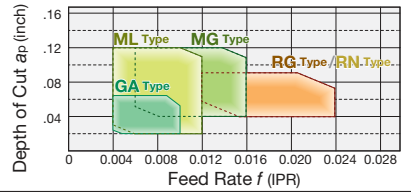
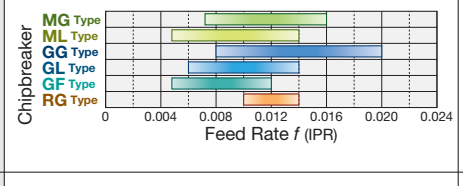
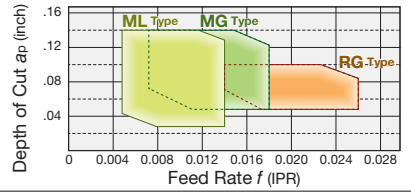
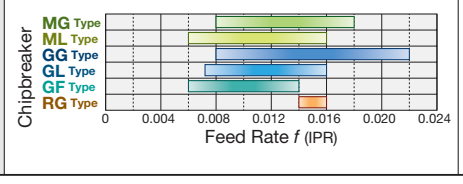
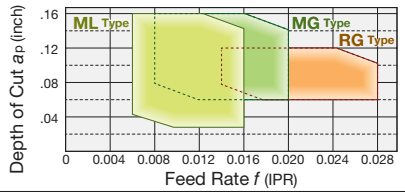
#5 Seat Size & Groove Width		
#	Seat	Groove Width
125	1.25	1.25 mm
15	1.5	1.5 mm
20	2	2.0 mm
30	3	3.0 mm
40	4	4.0 mm
50	5	5.0 mm
60	6	6.0 mm
70	7	7.0 mm
80	8	8.0 mm

#6 Corner Radius *10
02 =0.2mm
04 =0.4mm
08 =0.8mm

#7 Chipbreaker
GG: Std. Feed Deep Groove
GL: Low Feed Deep Groove
MG: Std. Feed Traverse
ML: Low Feed Traverse
RG: Full Radius Profiling
RN: For profiling with undercut
GF: Low Cutting Force
GA: Non-ferrous grooving
CG: General Cutoff
CF: High Shear Cutoff

#8: Grade
AC520U: Universal Grade for most materials
AC530U: Universal Grade for most materials
AC1030U: Grade for precision machining
AC830P: Tough CVD Grade for steels
AC425K: CVD Grade for Cast and Ductile Irons
T2500A: finishing of steels and stainless steels
H10: for non-ferrous materials

GND Type - Recommended Cutting Conditions

Grooving Width (inch/ mm)	Recommended Cutting Condition	
	Grooving / Cut-Off (Necking)	Traverse Cutting
.049 / 1.25		—
.059 / 1.50		—
.079 / 2.0		
.118 / 3.0		
.157 / 4.0		
.197 / 5.0		
.236 / 6.0		
.275 / 7.0		
.315 / 8.0		

For face grooving, use cutting conditions closer to the lower limit of the recommended cutting conditions to ensure that chips are long.
In cut-off applications, reduce the feed rate to around 30% to 50% near the center of the workpiece.
As there is less space for chip evacuation when machining internal diameters (particularly small bore diameters), ML/GL/GF Type chipbreakers are recommended.
Modifications to inserts and holders are required to perform machining such as radius grooving when using the RG type chipbreaker with the GNDF type holder for f

■ Recommended Cutting Conditions

Work Material	P Carbon Steel / Alloy Steel				M Stainless Steel			K Cast Iron			S Exotic Alloy		N Non-ferrous Metal
Insert Grade	AC830P	AC520U	AC530U AC1030U	T2500A	AC830P	AC520U	AC530U AC1030U	AC425K	AC520U	AC530U AC1030U	AC520U	AC530U AC1030U	H10
Cutting Speed V_c (SFM)	260 to 650	260 to 650	165 to 650	165 to 650	230 to 500	230 to 500	165 to 500	260 to 650	200 to 650	165 to 650	65 to 260	65 to 200	500 to 1000

GCMN Inserts		Cat. No.	Coated Carbide					Cermet	Uncoated Carbide	Dimensions (inch / *mm*)					Fig.
			Precision Machining	S		K	P		N	Insert Seat Size	Grooving Width	Nose Radius	Overall Length	Thickness	
			AC1030U	AC520U	AC530U	AC425K	AC830P	T2500A	H10		CW	RE	L	S	
Low Cutting Force	GF Type	**GCMN125005-GF**			●					*1.25*	.049	.0020	.685	.126	
		GCMN150005-GF			●					*1.5*	.059	.0020	.685	.146	
		GCMN2002-GF			★			★		*2*	.078	.0078	.831	.142	
		GCMN3002-GF		★	★		★	★		*3*	.118	.0078	.831	.150	
		GCMN4002-GF		★	★		★	★		*4*	.157	.0078	1.039	.157	
		GCMN5002-GF		★	★		★			*5*	.197	.0078	1.039	.161	
		GCMN6002-GF		★	★		★			*6*	.236	.0078	1.039	.177	
		GCMN7002-GF		★	★		★			*7*	.276	.0078	1.132	.217	
		GCMN8002-GF		★	★		★			*8*	.315	.0078	1.132	.236	
		GCMN7004-GF		★	★		★			*7*	.276	.0158	1.132	.217	
		GCMN8004-GF		★	★		★			*8*	.315	.0158	1.132	.236	
Deep Grooving Cut Off	General Feed GG Type	**GCMN2002-GG**		●	●	●	●			*2*	.078	.0078	.831	.142	
		GCMN2094R0.5-GG		●	●	●	●			*2*	.094	.0078	.831	.142	
		GCMN3002-GG		●	●	●	●			*3*	.118	.0078	.831	.150	
		GCMN3004-GG		●	●	●	●			*3*	.118	.0156	.831	.150	
		GCMN3125R0.5-GG		●	●	●	●			*3*	.125	.0078	.831	.150	
		GCMN4002-GG		●	●	●	●			*4*	.157	.0078	1.039	.157	
		GCMN4004-GG		●	●	●	●			*4*	.157	.0156	1.039	.157	
		GCMN5187R0.5-GG		●	●	●	●			*5*	.187	.0078	1.039	.161	
		GCMN5002-GG		●	●	●	●			*5*	.197	.0078	1.039	.161	
		GCMN5004-GG		●	●	●	●			*5*	.197	.0156	1.039	.161	
		GCMN6002-GG		●	●	●	●			*6*	.236	.0078	1.039	.177	
		GCMN6004-GG		●	●	●	●			*6*	.236	.0156	1.039	.177	
		GCMN6250R0.5-GG		●	●	●	●			*6*	.250	.0078	1.039	.177	
		GCMN6250R1.0-GG		●	●	●	●			*6*	.250	.0156	1.039	.177	
		GCMN7004-GG		●	●		●			*7*	.276	.0156	1.132	.217	
		GCMN8004-GG		●	●		●			*8*	.315	.0156	1.132	.236	
	Low Feed GL Type	**GCMN2002-GL**		●	●	●	●	●		*2*	.078	.0078	.831	.142	1
		GCMN2094R0.5-GL		●	●	●	●			*2*	.094	.0078	.831	.142	
		GCMN3002-GL		●	●	●	●	●		*3*	.118	.0078	.831	.150	
		GCMN3125R0.5-GL		●	●	●	●			*3*	.125	.0078	.831	.150	
		GCMN4002-GL		●	●	●	●	●		*4*	.157	.0078	1.039	.157	
		GCMN5187R0.5-GL		●	●	●	●			*5*	.187	.0078	1.039	.161	
		GCMN5002-GL		●	●	●	●			*5*	.197	.0078	1.039	.161	
		GCMN6002-GL		●	●	●	●			*6*	.236	.0078	1.039	.177	
		GCMN6250R0.5-GL		●	●	●	●			*6*	.250	.0078	1.039	.177	
		GCMN7004-GL		●	●		●			*7*	.276	.0156	1.132	.217	
		GCMN8004-GL		●	●		●			*8*	.315	.0156	1.132	.236	
Multi function (traversing)	General Feed MG Type	**GCMN3004-MG**		●	●	●	●			*3*	.118	.0156	.831	.150	
		GCMN3125R1.0-MG		●	●	●	●			*3*	.125	.0156	.831	.150	
		GCMN4008-MG		●	●	●	●			*4*	.157	.0312	1.039	.157	
		GCMN5187R2.0-MG		●	●	●	●			*5*	.187	.0312	1.039	.161	
		GCMN5008-MG		●	●	●	●			*5*	.197	.0312	1.039	.161	
		GCMN6008-MG		●	●	●	●			*6*	.236	.0312	1.039	.177	
		GCMN6250R2.0-MG		●	●	●	●			*6*	.250	.0312	1.039	.177	
		GCMN7008-MG		●	●	●	●			*7*	.276	.0313	1.132	.217	
		GCMN8008-MG		●	●	●	●			*8*	.315	.0313	1.132	.236	
	Low Feed ML Type	**GCMN3002-ML**		●	●	●	●	●		*3*	.118	.0078	.831	.150	
		GCMN3125R0.5-ML		●	●	●	●			*3*	.125	.0078	.831	.150	
		GCMN4004-ML		●	●	●	●	●		*4*	.157	.0156	1.039	.157	
		GCMN5187R1.0-ML		●	●	●	●			*5*	.187	.0156	1.039	.161	
		GCMN5004-ML		●	●	●	●			*5*	.197	.0156	1.039	.161	
		GCMN6004-ML		●	●	●	●			*6*	.236	.0156	1.039	.177	
		GCMN6250R1.0-ML		●	●	●	●			*6*	.250	.0156	1.039	.177	
		GCMN7004-ML		●	●	●	●			*7*	.276	.0156	1.132	.217	
		GCMN8004-ML		●	●	●	●			*8*	.315	.0156	1.132	.236	
Profiling	General Feed RG Type	**GCMN3015-RG**		●	●	●	●	●		*3*	.118	.059	.831	.150	
		GCMN3125-RG		●	●	●	●			*3*	.125	.0625	.831	.150	
		GCMN4020-RG		●	●	●	●	●		*4*	.157	.0785	1.039	.157	
		GCMN5187-RG		●	●	●	●			*5*	.187	.0935	1.039	.161	
		GCMN5025-RG		●	●	●	●			*5*	.197	.0985	1.039	.161	2
		GCMN6030-RG		●	●	●	●			*6*	.236	.118	1.039	.177	
		GCMN6250-RG		●	●	●	●			*6*	.250	.125	1.039	.177	
		GCMN7035-RG		●	●	●	●			*7*	.276	.138	1.144	.217	
		GCMN8040-RG		●	●	●	●			*8*	.315	.1575	1.152	.236	
For Non Ferrous Materials	GA Type	**GCGN2002-GA**							●	*2*	.078	.0078	.831	.142	1
		GCGN3002-GA							●	*3*	.118	.0078	.831	.150	
		GCGN4004-GA							●	*4*	.157	.0156	1.039	.157	
		GCGN5004-GA							●	*5*	.197	.0156	1.039	.161	
		GCGN6004-GA							●	*6*	.236	.0156	1.039	.177	

Type		Lead Angle	Cat. No.	R	L	R	L	R	L	R	L	R	L	R	L	Dimensions (inch / *mm*)					Fig.
Cut-off (Handed)	CG Type	5°	**GCM_2002-CG-05**			●	●	●	●	●	●	●	●			*2*	.078	.0078	.831	.142	
			GCM_3002-CG-05			●	●	●	●	●	●	●	●			*3*	.118	.0078	.831	.150	
			GCM_4002-CG-05			●	●	●	●	●	●	●	●			*4*	.157	.0078	1.039	.157	
	CF Type	10°	**GCM_20003-CF-10**	●	●											*2*	.078	.0012	.882	.142	1
		15°	**GCM_20003-CF-15**	●	●											*2*	.078	.0012	.882	.142	
		10°	**GCM_30003-CF-10**	●	●											*3*	.118	.0012	.882	.150	
		15°	**GCM_30003-CF-15**	●	●											*3*	.118	.0012	.882	.150	

Profiling / Radius Grooving	RN Type	**GCMN2010-RN**			●	●				*2*	.078	.039	.854	.142	3
		GCMN3015-RN			●	●	●	●		*3*	.118	.059	.882	.150	
		GCMN4020-RN			●	●	●	●		*4*	.157	.079	1.102	.157	
		GCMN5025-RN			●	●	●	●		*5*	.197	.098	1.106	.161	
		GCMN6030-RN			●	●	●	●		*6*	.236	.118	1.106	.177	

●= USA Stocked item ★= World Wide Warehouse Item

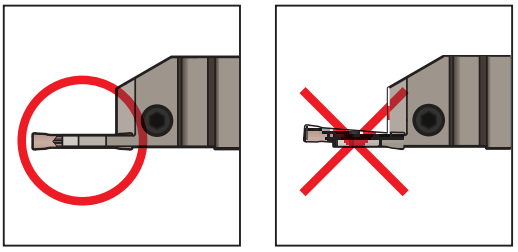
Recommended Cutting Conditions F10

Precautions for Grooving Tool Holders GND Type

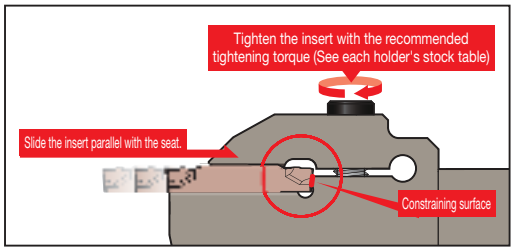
■ Insert Mounting Precautions

1.Remove any dust and oil from the insert seat before attaching the insert.
2. If there are scratches or burrs on the insert seat, scrape them away.
3. Mount the insert by sliding it parallel to the seat.
4. Clamp the insert with the opposite side (holder side) of the cutting edge secured on the constraining surface.
5. Tighten the insert with the recommended tightening torque. If the insert is tightened with excessive torque, it may be damaged, leading to injury.

Mount the insert parallel to the seat



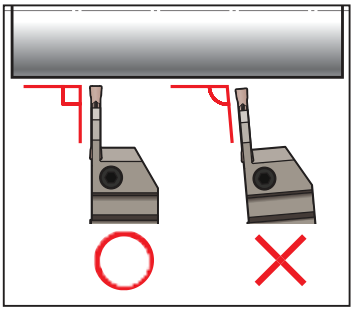
Be sure to push the insert to the end



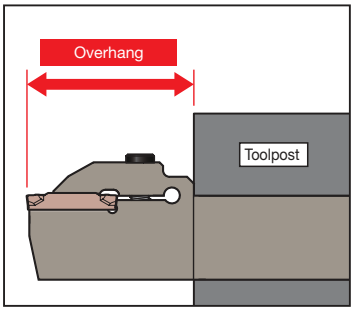
■ Precautions when Mounting Holders

1. Remove any dust and oil from the toolpost before setting the holder.
2. If there are scratches or burrs on the toolpost, scrape them away.
3. Place the holder so that the insert is perpendicular to the workpiece. Failure to do so may bend the machined surface or cause chattering.
4. The overhang of the holder should be as short as possible.
5. When grooving or traverse cutting, adjust the center height of the cutting edge to as close to ±0mm as possible. (Within ±0.1mm is recommended.) Incorrect center height adjustment may cause chattering. In cut-off applications, adjust the center height of the cutting edge to a value from 0 to +0.2mm. A lower center height will result in a larger pip at the center.

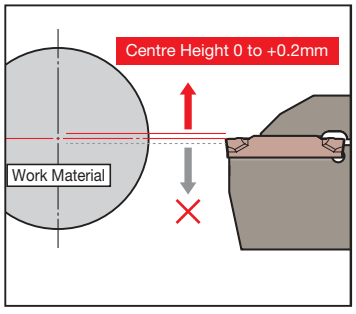
Mount the holder perpendicular to the workpiece.



The overhang should be short.



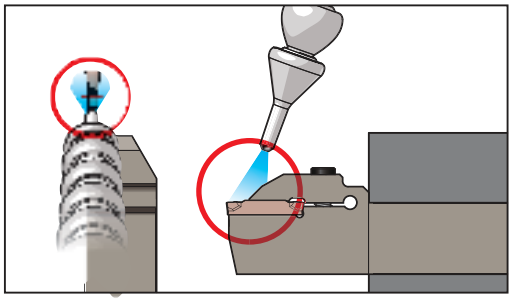
Center height adjustment in cut-off applications



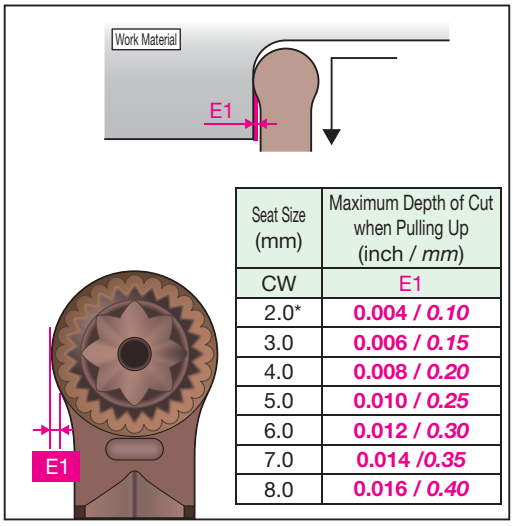
■ Precautions when Mounting the Oil Supply Nozzle

1. Set the oil supply nozzle so that coolant can be supplied from the top of the upper clamp unit.

Supply coolant to the top of the upper clamp unit



■ Depth of Cut when Pulling Up with RG/RN Type Chipbreakers



Seat Size (mm)	Maximum Depth of Cut when Pulling Up (inch / *mm*)
CW	E1
2.0*	**0.004 / *0.10***
3.0	**0.006 / *0.15***
4.0	**0.008 / *0.20***
5.0	**0.010 / *0.25***
6.0	**0.012 / *0.30***
7.0	**0.014 /*0.35***
8.0	**0.016 / *0.40***

*: CW = 2.0 is RN type chipbreakers only

External

* For traverse cutting (groove expansion), use a multifunctional insert for profiling.

External Multi-Function Clamp-on (Grooving, Traverse Cutting and Profiling)

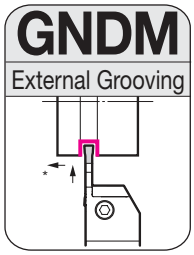


Fig 1

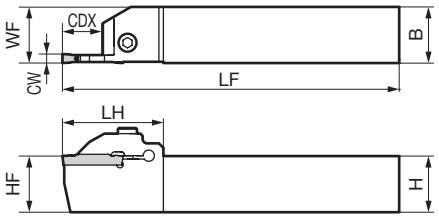


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Seat Size	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw (BX0520 / BX0620)	Cap Screw N·m	Wrench
Inch	**GNDM R/L122K-050**	●	●	.750	.750	5.000	.750	.750	1.441	2	.500	GC□ □20○○-□□	1			
	GNDM R/L123K-050	●	●	.750	.750	5.000	.750	.750	1.441	3	.500	GC□ □30○○-□□	1			
	GNDM R/L124K-070	●	●	.750	.750	5.000	.750	.750	1.772	4	.700	GC□ □40○○-□□	1	BX0520	5.0	LH040
	GNDM R/L125K-070	●	●	.750	.750	5.000	.750	.750	1.772	5	.700	GC□ N50○○-□□	1			
	GNDM R/L126K-070	●	●	.750	.750	5.000	.750	.750	1.772	6	.700	GC□ N60○○-□□	1			
	GNDM R/L162M-050	●	●	1.000	1.000	6.000	1.000	1.000	1.441	2	.500	GC□ □20○○-□□	1			
	GNDM R/L163M-050	●	●	1.000	1.000	6.000	1.000	1.000	1.441	3	.500	GC□ □30○○-□□	1			
	GNDM R/L164M-070	●	●	1.000	1.000	6.000	1.000	1.000	1.772	4	.700	GC□ □40○○-□□	1	BX0520	5.0	LH040
	GNDM R/L165M-070	●	●	1.000	1.000	6.000	1.000	1.000	1.772	5	.700	GC□ N50○○-□□	1			
	GNDM R/L166M-070	●	●	1.000	1.000	6.000	1.000	1.000	1.772	6	.700	GC□ N60○○-□□	1			
	GNDM R/L203P-050	●	●	1.250	1.250	7.000	1.250	1.250	1.441	3	.500	GC□ □30○○-□□	1			
	GNDM R/L204P-070	●	●	1.250	1.250	7.000	1.250	1.250	1.772	4	.700	GC□ □40○○-□□	1			
	GNDM R/L205P-070	●	●	1.250	1.250	7.000	1.250	1.250	1.772	5	.700	GC□ N50○○-□□	1	BX0620	6.0	LH050
	GNDM R/L206P-070	●	●	1.250	1.250	7.000	1.250	1.250	1.772	6	.700	GC□ N60○○-□□	1			
	GNDM R/L207P-070	●	●	1.250	1.250	7.000	1.250	1.250	2.000	7	.700	GCM N70○○-□□	1			
	GNDM R/L208P-070	●	●	1.250	1.250	7.000	1.250	1.250	2.000	8	.700	GCM N80○○-□□	1			
Metric	**GNDM R/L2020K-1.2510**	★	★	*20*	*20*	*125*	*20*	*20*	*34.0*	1.25	*10*	GCM N125005-GF	1			
	GNDM R/L2020K-1.510	★	★	*20*	*20*	*125*	*20*	*20*	*34.0*	1.5	*10*	GCM N150005-GF	1			
	GNDM R/L2020K-210	★	★	*20*	*20*	*125*	*20*	*20*	*33.6*	2	*10*	GC□ □20○○-□□	1			
	GNDM R/L2020K-312	★	★	*20*	*20*	*125*	*20*	*20*	*36.6*	3	*12*	GC□ □30○○-□□	1	BX0520	5.0	LH040
	GNDM R/L2020K-418	★	★	*20*	*20*	*125*	*20*	*20*	*45.0*	4	*18*	GC□ □40○○-□□	1			
	GNDM R/L2020K-518	★	★	*20*	*20*	*125*	*20*	*20*	*45.0*	5	*18*	GC□ N50○○-□□	1			
	GNDM R/L2020K-618	★	★	*20*	*20*	*125*	*20*	*20*	*45.0*	6	*18*	GC□ N60○○-□□	1			
	GNDM R/L2525M-1.2510	★	★	*25*	*25*	*150*	*25*	*25*	*36.0*	1.25	*10*	GCM N125005-GF	1			
	GNDM R/L2525M-1.510	★	★	*25*	*25*	*150*	*25*	*25*	*36.0*	1.5	*10*	GCM N150005-GF	1			
	GNDM R/L2525M-210	★	★	*25*	*25*	*150*	*25*	*25*	*33.6*	2	*10*	GC□ □20○○-□□	1			
	GNDM R/L2525M-312	★	★	*25*	*25*	*150*	*25*	*25*	*36.6*	3	*12*	GC□ □30○○-□□	1	BX0520	5.0	LH040
	GNDM R/L2525M-418	★	★	*25*	*25*	*150*	*25*	*25*	*45.0*	4	*18*	GC□ □40○○-□□	1			
	GNDM R/L2525M-518	★	★	*25*	*25*	*150*	*25*	*25*	*45.0*	5	*18*	GC□ N50○○-□□	1			
	GNDM R/L2525M-618	★	★	*25*	*25*	*150*	*25*	*25*	*45.0*	6	*18*	GC□ N60○○-□□	1			
	GNDM R/L3225P-312			*32*	*25*	*170*	*25*	*32*	*36.6*	3	*12*	GC□ □30○○-□□	1			
	GNDM R/L3225P-418			*32*	*25*	*170*	*25*	*32*	*45.0*	4	*18*	GC□ □40○○-□□	1			
	GNDM R/L3225P-518			*32*	*25*	*170*	*25*	*32*	*45.0*	5	*18*	GC□ N50○○-□□	1	BX0520	5.0	LH040
	GNDM R/L3225P-618			*32*	*25*	*170*	*25*	*32*	*45.0*	6	*18*	GC□ N60○○-□□	1			
	GNDM R/L3225P-718			*32*	*25*	*170*	*25*	*32*	*50.0*	7	*18*	GCM N70○○-□□	1			
	GNDM R/L3225P-818			*32*	*25*	*170*	*25*	*32*	*50.0*	8	*18*	GCM N80○○-□□	1	BX0620	6.0	LH050
	GNDM R/L3232P-312	★	★	*32*	*32*	*170*	*32*	*32*	*36.6*	3	*12*	GC□ □30○○-□□	1			
	GNDM R/L3232P-418	★	★	*32*	*32*	*170*	*32*	*32*	*45.0*	4	*18*	GC□ □40○○-□□	1			
	GNDM R/L3232P-518	★	★	*32*	*32*	*170*	*32*	*32*	*45.0*	5	*18*	GC□ N50○○-□□	1			
	GNDM R/L3232P-618	★	★	*32*	*32*	*170*	*32*	*32*	*45.0*	6	*18*	GC□ N60○○-□□	1	BX0620	6.0	LH050
	GNDM R/L3232P-718	★	★	*32*	*32*	*170*	*32*	*32*	*50.0*	7	*18*	GCM N70○○-□□	1			
	GNDM R/L3232P-818	★	★	*32*	*32*	*170*	*32*	*32*	*50.0*	8	*18*	GCM N80○○-□□	1			

Combine the insert with a holder such that the Seat Size matches. Refer to F11 for applicable inserts

See GNDM-JX (holders for small lathes) on next page F14)

★: Worldwide Warehouse Item ●: USA Stocked Item

Recommended Cutting Conditions F10

N·m Recommended Tightening Torque (N·m)

GNDM-JX Type / GNDMS Type

External | Zero Offset

* For traverse cutting (groove expansion), use a multifunctional insert for profiling.

External Multi-Function Clamp-on for Small Lathes (Grooving, Traverse Cutting and Profiling)

GNDM

For External Grooving (for Small Lathes)

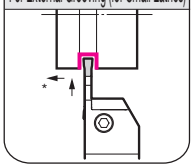


Fig 1

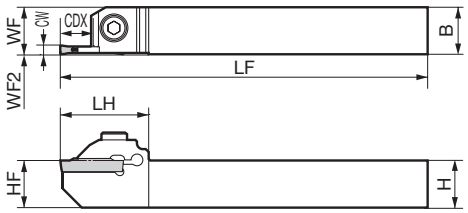


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Off Set WF2	Seat Size CW	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Wrench
Inch	**GNDM R/L101.5JX-038**	●	●	.625	.625	4.75	.625	–	1.024	0	1.5	.375	GCM N150005-GF	1	BX0515	4.0	LH040
	GNDM R/L102JX-047	●	●	.625	.625	4.75	.625	–	1.181	0	2	.472	GC□ □20○○-□□	1			
	GNDM R/L103JX-047	●	●	.625	.625	4.75	.625	–	1.181	0	3	.472	GC□ □30○○-□□	1			
Metric	**GNDM R/L1616JX-1.2508**	★	★	*16*	*16*	*120*	*(16)*	*16*	*26*	*0*	1.25	*8.0*	GCM N125005-GF	1	BX0515	4.0	LH040
	GNDM R/L1616JX-1.510	★	★	*16*	*16*	*120*	*(16)*	*16*	*26*	*0*	1.5	*10.0*	GCM N150005-GF	1			
	GNDM R/L1616JX-212	★	★	*16*	*16*	*120*	*(16)*	*16*	*30*	*0*	2	*12.0*	GC□ □20○○-□□	1			
	GNDM R/L1616JX-312	★	★	*16*	*16*	*120*	*(16)*	*16*	*30*	*0*	3	*12.0*	GC□ □30○○-□□	1			

Combine the insert with a holder such that the Seat Size matches. Refer to F11 for applicable inserts

External

* For traverse cutting (groove expansion), use a multifunctional insert for profiling.

External L-Shaped (Side Cut) Multi-Function Clamp-on (Grooving, Traverse Cutting and Profiling)

GNDMS

External Grooving

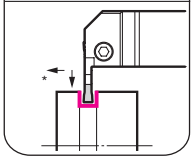


Fig 1

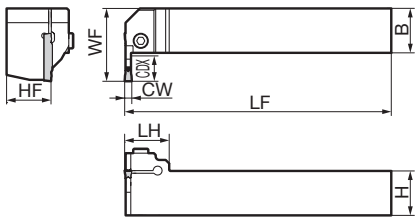


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Seat Size	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Wrench
Inch	**GNDMS R/L123K-040**	●	●	.750	.750	5.000	1.222	.750	1.000	3	.400	GC□ □30○○-□□	1	BX0520	5.0	LH040
	GNDMS R/L124K-050	●	●	.750	.750	5.000	1.300	.750	1.000	4	.500	GC□ □40○○-□□	1			
	GNDMS R/L125K-050	●	●	.750	.750	5.000	1.300	.750	1.000	5	.500	GC□ N50○○-□□	1			
	GNDMS R/L163M-050	●	●	1.000	1.000	6.000	1.551	1.000	1.000	3	.500	GC□ □30○○-□□	1	BX0520	5.0	LH040
	GNDMS R/L164M-055	●	●	1.000	1.000	6.000	1.630	1.000	1.000	4	.550	GC□ □40○○-□□	1			
	GNDMS R/L165M-055	●	●	1.000	1.000	6.000	1.630	1.000	1.000	5	.550	GC□ N50○○-□□	1			
	GNDMS R/L166M-055	●	●	1.000	1.000	6.000	1.630	1.000	1.000	6	.550	GC□ N60○○-□□	1			
Metric	**GNDMS R/L2020K-310**	★	★	*20*	*20*	*125*	*32*	*20*	*25.0*	3	*10*	GC□ □30○○-□□	1	BX0520	5.0	LH040
	GNDMS R/L2020K-412	★	★	*20*	*20*	*125*	*34*	*20*	*25.0*	4	*12*	GC□ □40○○-□□	1			
	GNDMS R/L2020K-512	★	★	*20*	*20*	*125*	*34*	*20*	*25.0*	5	*12*	GC□ N50○○-□□	1			
	GNDMS R/L2525M-312	★	★	*25*	*25*	*150*	*39*	*25*	*25.0*	3	*12*	GC□ □30○○-□□	1	BX0520	5.0	LH040
	GNDMS R/L2525M-414	★	★	*25*	*25*	*150*	*41*	*25*	*25.0*	4	*14*	GC□ □40○○-□□	1			
	GNDMS R/L2525M-514	★	★	*25*	*25*	*150*	*41*	*25*	*25.0*	5	*14*	GC□ N50○○-□□	1			
	GNDMS R/L2525M-614	★	★	*25*	*25*	*150*	*41*	*25*	*25.0*	6	*14*	GC□ N60○○-□□	1			

Combine the insert with a holder such that the Seat Size matches. Refer to F11 for applicable inserts

GNDM-J Type

New | External | Internal Coolant

* For traverse cutting (groove expansion), use a multifunctional insert for profiling.

External Multi-Function
Internal Coolant Supply Clamp-on
(Grooving, Traverse Cutting and Profiling)

GNDM-J
External Grooving

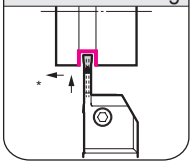


Fig 1

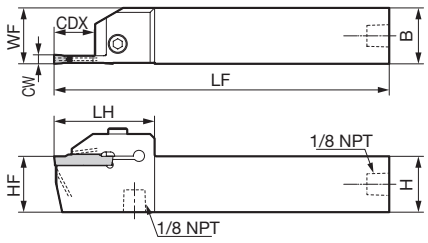


Figure shows right hand (R) tool.

Fig 2

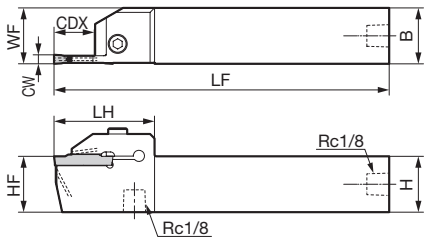


Figure shows right hand (R) tool.

Holder

Parts

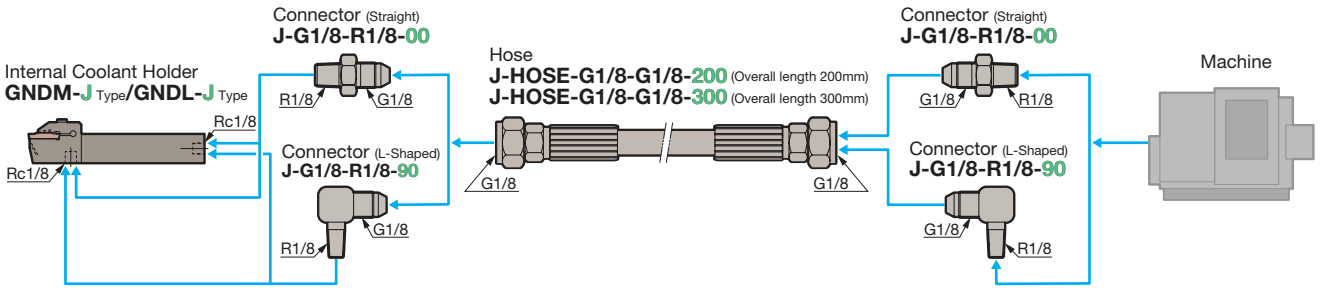
Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Seat Size	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Insert Wrench	Plug	Wrench
Inch	**GNDM R/L102JX-047J**	●	●	0.625	0.625	4.750	0.625	0.625	1.181	2	0.472	GC□ □20○○-□□	1	CP-M5-20-1	2.0	LH025	XP03	LH040
	GNDM R/L103JX-047J	●	●	0.625	0.625	4.750	0.625	0.625	1.181	3	0.472	GC□ □30○○-□□	1		3.0			
	GNDM R/L122K-050J	●	●	0.750	0.750	5.000	0.750	0.750	1.323	2	0.500	GC□ □20○○-□□	1					
	GNDM R/L123K-050J	●	●	0.750	0.750	5.000	0.750	0.750	1.441	3	0.500	GC□ □30○○-□□	1					
	GNDM R/L124K-070J	●	●	0.750	0.750	5.000	0.750	0.750	1.772	4	0.700	GC□ □40○○-□□	1	BX0520	6.0	-	XP03	LH040
	GNDM R/L125K-070J	●	●	0.750	0.750	5.000	0.750	0.750	1.772	5	0.700	GC□ N50○○-□□	1					
	GNDM R/L126K-070J	●	●	0.750	0.750	5.000	0.750	0.750	1.772	6	0.700	GC□ N60○○-□□	1					
	GNDM R/L162K-050J	●	●	1.000	1.000	5.000	1.000	1.000	1.323	2	0.500	GC□ □20○○-□□	1					
	GNDM R/L163K-050J	●	●	1.000	1.000	5.000	1.000	1.000	1.441	3	0.500	GC□ □30○○-□□	1					
	GNDM R/L164K-070J	●	●	1.000	1.000	5.000	1.000	1.000	1.772	4	0.700	GC□ □40○○-□□	1	BX0520	6.0	-	XP03	LH040
	GNDM R/L165K-070J	●	●	1.000	1.000	5.000	1.000	1.000	1.772	5	0.700	GC□ N50○○-□□	1					
	GNDM R/L166K-070J	●	●	1.000	1.000	5.000	1.000	1.000	1.772	6	0.700	GC□ N60○○-□□	1					
Metric	**GNDM R/L2020K-210J**	★	★	*20*	*20*	*125*	*20*	*20*	*33.6*	2	*10*	GC□ □20○○-□□	2					
	GNDM R/L2020K-312J	★	★	*20*	*20*	*125*	*20*	*20*	*36.6*	3	*12*	GC□ □30○○-□□	2					
	GNDM R/L2020K-418J	★	★	*20*	*20*	*125*	*20*	*20*	*45*	4	*18*	GC□ □40○○-□□	2	BX0520	6.0	-	XP02	LH040
	GNDM R/L2020K-518J	★	★	*20*	*20*	*125*	*20*	*20*	*45*	5	*18*	GC□ N50○○-□□	2					
	GNDM R/L2020K-618J	★	★	*20*	*20*	*125*	*20*	*20*	*45*	6	*18*	GC□ N60○○-□□	2					
	GNDM R/L2525K-210J	★	★	*25*	*25*	*125*	*25*	*25*	*33.6*	2	*10*	GC□ □20○○-□□	2					
	GNDM R/L2525K-312J	★	★	*25*	*25*	*125*	*25*	*25*	*36.6*	3	*12*	GC□ □30○○-□□	2					
	GNDM R/L2525K-418J	★	★	*25*	*25*	*125*	*25*	*25*	*45*	4	*18*	GC□ □40○○-□□	2	BX0520	6.0	-	XP02	LH040
	GNDM R/L2525K-518J	★	★	*25*	*25*	*125*	*25*	*25*	*45*	5	*18*	GC□ N50○○-□□	2					
	GNDM R/L2525K-618J	★	★	*25*	*25*	*125*	*25*	*25*	*45*	6	*18*	GC□ N60○○-□□	2					

Combine the insert with a holder such that the Seat Size matches. Refer to F11 for applicable inserts

GND-J Type - Parts & Connection Methods

Piping Method for Hoses and Connectors



· Apply sealant such as commercial sealing tape to the piping connection parts.

· GNDM-J/GNDL-J Type holders have a plug (XP02) mounted on the holder back end at shipping. (See Fig. 1)
When piping from the holder back end, mount a plug (XP02) on the bottom of the holder for use. (See Fig. 2)

Fig. 1 Piping from bottom (at shipping)

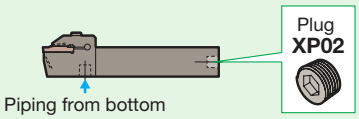
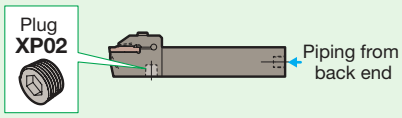


Fig. 2 Piping from back end



Parts (Plugs)

Dimensions (mm)

Cat. No.	Stock	Description	Thread Pitch	Fig
XP02	●	Plug	BSPT 1/8"	1
XP03	●	Plug	NPT 1/8"	2

Connectors are sold separately.

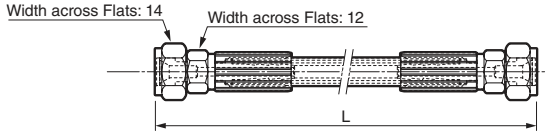
Parts (Cap Screw/ Wrench)

Dimensions (mm)

Cat. No.	Stock	Description	Wrench Size	Fig
BX0520	●	Cap Screw	5mm Hex	1
LH040	●	Wrench	5mm Hex	

Connectors are sold separately.

Fig 1



Parts (Hose)

Dimensions (inch/ *mm*)

Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-MJIC1/4-NPT1/8-8.0	●	8.0	1/4" MJIC	NPT 1/8"	1
J-HOSE-MJIC1/4-NPT1/8-10.0	●	10.0	1/4" MJIC	NPT 1/8"	1
J-HOSE-G1/8-G1/8-200	●	*200*	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	●	*300*	G1/8	G1/8	1
J-HOSE-R1/8-G1/8-200	●	*200*	R1/8	G1/8	1
J-HOSE-R1/8-G1/8-300	●	*300*	R1/8	G1/8	1

Hoses are sold separately.

Fig 1

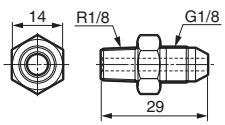
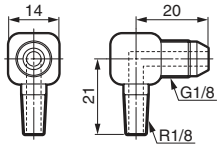


Fig 2



Parts (Connector)

Dimensions (mm)

Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	●	G1/8	R1/8	1
J-G1/8-R1/8-90	●	G1/8	R1/8	2
J-NPT1/8-R1/8-00	●	NPT 1/8"	R1/8	
J-NPT1/8-G1/8-00	●	NPT 1/8"	G1/8	

Connectors are sold separately.

●: USA Stocked Item

GNDL Type

External

Clamp-on
for External Deep Grooving & Cut-Off

GNDL
External Grooving

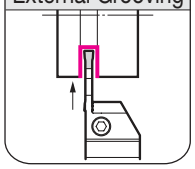


Fig 1

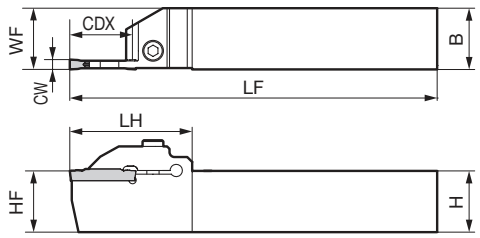


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Seat Size	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Wrench
Inch	**GNDL R/L122K-075**	●	●	.750	.750	5.00	.750	.750	1.752	2	.750	GC□ □20○○-□□	1			
	GNDL R/L123K-075	●	●	.750	.750	5.00	.750	.750	1.752	3	.750	GC□ □30○○-□□	1			
	GNDL R/L124K-100	●	●	.750	.750	5.00	.750	.750	1.969	4	1.000	GC□ □40○○-□□	1	BX0520	5.0	LH040
	GNDL R/L125K-100	●	●	.750	.750	5.00	.750	.750	1.969	5	1.000	GC□ N50○○-□□	1			
	GNDL R/L126K-100	●	●	.750	.750	5.00	.750	.750	1.969	6	1.000	GC□ N60○○-□□	1			
	GNDL R/L162M-075	●	●	1.00	1.00	6.00	1.00	1.00	1.752	2	.750	GC□ □20○○-□□	1			
	GNDL R/L163M-075	●	●	1.00	1.00	6.00	1.00	1.00	1.752	3	.750	GC□ □30○○-□□	1			
	GNDL R/L164M-100	●	●	1.00	1.00	6.00	1.00	1.00	1.969	4	1.000	GC□ □40○○-□□	1	BX0520	5.0	LH040
	GNDL R/L165M-100	●	●	1.00	1.00	6.00	1.00	1.00	1.969	5	1.000	GC□ N50○○-□□	1			
	GNDL R/L166M-100	●	●	1.00	1.00	6.00	1.00	1.00	1.969	6	1.000	GC□ N60○○-□□	1			
	GNDL R/L203P-090	●	●	1.25	1.25	6.75	1.25	1.25	1.875	3	0.900	GC□ □30○○-□□	1			
	GNDL R/L204P-100	●	●	1.25	1.25	6.75	1.25	1.25	2.000	4	1.000	GC□ □40○○-□□	1			
	GNDL R/L205P-100	●	●	1.25	1.25	6.75	1.25	1.25	2.000	5	1.000	GC□ N50○○-□□	1	BX0520	5.0	LH040
	GNDL R/L206P-100	●	●	1.25	1.25	6.75	1.25	1.25	2.000	6	1.000	GC□ N60○○-□□	1			
	GNDL R/L207P-100	●	●	1.25	1.25	6.75	1.25	1.25	2.000	7	1.000	GCM N70○○-□□	1			
	GNDL R/L208P-100	●	●	1.25	1.25	6.75	1.25	1.25	2.000	8	1.000	GCM N80○○-□□	1	BX0620	6.0	LH050
Metric	**GNDL R/L2020K-1.2516**	★	★	*20*	*20*	*125*	*20*	*20*	*38.0*	1.25	*16*	GCM N125005-GF	1			
	GNDL R/L2020K-1.516	★	★	*20*	*20*	*125*	*20*	*20*	*38.0*	1.5	*16*	GCM N150005-GF	1			
	GNDL R/L2020K-220	★	★	*20*	*20*	*125*	*20*	*20*	*44.5*	2	*20(18)*	GC□ □20○○-□□	1			
	GNDL R/L2020K-320	★	★	*20*	*20*	*125*	*20*	*20*	*44.5*	3	*20(18)*	GC□ □30○○-□□	1	BX0520	5.0	LH040
	GNDL R/L2020K-425	★	★	*20*	*20*	*125*	*20*	*20*	*50.0*	4	*25(23)*	GC□ □40○○-□□	1			
	GNDL R/L2020K-525	★	★	*20*	*20*	*125*	*20*	*20*	*50.0*	5	*25(23)*	GC□ N50○○-□□	1			
	GNDL R/L2020K-625	★	★	*20*	*20*	*125*	*20*	*20*	*50.0*	6	*25(23)*	GC□ N60○○-□□	1			
	GNDL R/L2525M-1.2516	★	★	*25*	*25*	*150*	*25*	*25*	*40.0*	1.25	*16*	GCM N125005-GF	1			
	GNDL R/L2525M-1.516	★	★	*25*	*25*	*150*	*25*	*25*	*40.0*	1.5	*16*	GCM N150005-GF	1			
	GNDL R/L2525M-220	★	★	*25*	*25*	*150*	*25*	*25*	*44.5*	2	*20(18)*	GC□ □20○○-□□	1			
	GNDL R/L2525M-320	★	★	*25*	*25*	*150*	*25*	*25*	*44.5*	3	*20(18)*	GC□ □30○○-□□	1	BX0520	5.0	LH040
	GNDL R/L2525M-425	★	★	*25*	*25*	*150*	*25*	*25*	*50.0*	4	*25(23)*	GC□ □40○○-□□	1			
	GNDL R/L2525M-525	★	★	*25*	*25*	*150*	*25*	*25*	*50.0*	5	*25(23)*	GC□ N50○○-□□	1			
	GNDL R/L2525M-625	★	★	*25*	*25*	*150*	*25*	*25*	*50.0*	6	*25(23)*	GC□ N60○○-□□	1			
	GNDL R/L3225P-320			*32*	*25*	*170*	*25*	*32*	*44.5*	3	*20(18)*	GC□ □30○○-□□	1			
	GNDL R/L3225P-425			*32*	*25*	*170*	*25*	*32*	*50.0*	4	*25(23)*	GC□ □40○○-□□	1			
	GNDL R/L3225P-525			*32*	*25*	*170*	*25*	*32*	*50.0*	5	*25(23)*	GC□ N50○○-□□	1	BX0520	5.0	LH040
	GNDL R/L3225P-625			*32*	*25*	*170*	*25*	*32*	*50.0*	6	*25(23)*	GC□ N60○○-□□	1			
	GNDL R/L3225P-725			*32*	*25*	*170*	*25*	*32*	*50.0*	7	*25(23)*	GCM N70○○-□□	1			
	GNDL R/L3225P-825			*32*	*25*	*170*	*25*	*32*	*50.0*	8	*25(23)*	GCM N80○○-□□	1	BX0620	6.0	LH050
	GNDL R/L3232P-320	★	★	*32*	*32*	*170*	*32*	*32*	*44.5*	3	*20(18)*	GC□ □30○○-□□	1			
	GNDL R/L3232P-425	★	★	*32*	*32*	*170*	*32*	*32*	*50.0*	4	*25(23)*	GC□ □40○○-□□	1			
	GNDL R/L3232P-525	★	★	*32*	*32*	*170*	*32*	*32*	*50.0*	5	*25(23)*	GC□ N50○○-□□	1			
	GNDL R/L3232P-625	★	★	*32*	*32*	*170*	*32*	*32*	*50.0*	6	*25(23)*	GC□ N60○○-□□	1	BX0620	6.0	LH050
	GNDL R/L3232P-725	★	★	*32*	*32*	*170*	*32*	*32*	*50.0*	7	*25(23)*	GCM N70○○-□□	1			
	GNDL R/L3232P-825	★	★	*32*	*32*	*170*	*32*	*32*	*50.0*	8	*25(23)*	GCM N80○○-□□	1			

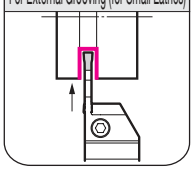
Dimensions in parentheses under maximum groove depth are for profiling inserts (RG type/RN type chipbreakers).
Combine the insert with a holder such that the Seat Size matches. Refer to F11 for applicable inserts
See GNDL-JX (holders for small lathes) on next page F18)

GNDL-JX Type / GNDLS Type

External | Zero Offset

GNDL

For External Grooving (for Small Lathes)



External Grooving & Cut-Off Clamp-on for Small Lathes

Fig 1

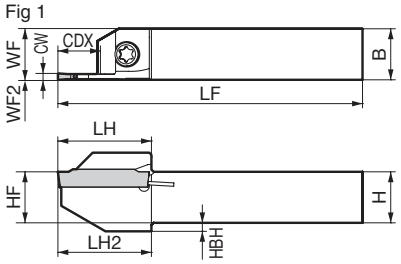


Fig 2

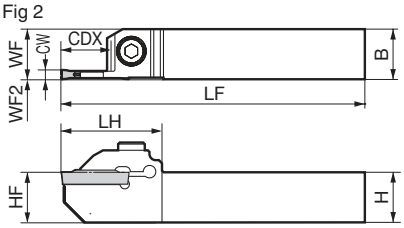


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

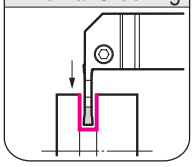
	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Step HBH	Head LH	Head LH2	Off Set WF2	Seat Size CW	Max. Groove Depth CDX	Applicable Insert	Fig	Flat Screw/ Cap Screw (BFTX0412N / BX0515)	N·m	Wrench (LT15-10 / LH040)
Inch	**GNDL R/L061.25JX-038**	●	●	.375	.375	4.75	.375	.375	.079	.709	.720	0	1.25	.375	GCM N125005-GF	1	BFTX0412N	3.0	LT15-10
	GNDL R/L061.5JX-038	●	●	.375	.375	4.75	.375	.375	.079	.709	.720	0	1.5	.375	GCM N150005-GF	1			
	GNDL R/L062JX-038	●	●	.375	.375	4.75	.375	.375	.079	.866	.878	0	2	.375	GC□ □20○○-□□	1			
	GNDL R/L063JX-038	●	●	.375	.375	4.75	.375	.375	.079	.866	.878	0	3	.375	GC□ □30○○-□□	1			
	GNDL R/L081.25JX-047	●	●	.500	.500	4.75	.500	.500	.079	.748	.760	0	1.25	.472	GCM N125005-GF	1	BFTX0412N	3.0	LT15-10
	GNDL R/L081.5JX-047	●	●	.500	.500	4.75	.500	.500	.079	.748	.760	0	1.5	.472	GCM N150005-GF	1			
	GNDL R/L082JX-050	●	●	.500	.500	4.75	.500	.500	.079	.866	.878	0	2	.500	GC□ □20○○-□□	1			
	GNDL R/L083JX-050	●	●	.500	.500	4.75	.500	.500	.079	.866	.878	0	3	.500	GC□ □30○○-□□	1			
	GNDL R/L101.5JX-050	★	★	.625	.625	4.75	.625	.625	–	1.102	–	0	1.5	.500	GCM N150005-GF	1	BX0515	4.0	LH040
	GNDL R/L102JX-063	★	★	.625	.625	4.75	.625	.625	–	1.26	–	0	2	.625	GC□ □20○○-□□	1			
	GNDL R/L103JX-063	★	★	.625	.625	4.75	.625	.625	–	1.26	–	0	3	.625	GC□ □30○○-□□	1			
Metric	**GNDL R/L1010JX-1.2510**	★	★	*10*	*10*	*120*	*(10)*	*10*	*2.0*	*18*	*18.3*	*0*	1.25	*10.0*	GCM N125005-GF	1	BFTX0412N	3.0	LT15-10
	GNDL R/L1010JX-1.510	★	★	*10*	*10*	*120*	*(10)*	*10*	*2.0*	*18*	*18.3*	*0*	1.5	*10.0*	GCM N150005-GF	1			
	GNDL R/L1010JX-210	★	★	*10*	*10*	*120*	*(10)*	*10*	*2.0*	*22*	*22.3*	*0*	2	*10.0*	GC□ □20○○-□□	1			
	GNDL R/L1010JX-310	★	★	*10*	*10*	*120*	*(10)*	*10*	*2.0*	*22*	*22.3*	*0*	3	*10.0*	GC□ □30○○-□□	1			
	GNDL R/L1212JX-1.2512	★	★	*12*	*12*	*120*	*(12)*	*12*	*2.0*	*19*	*19.3*	*0*	1.25	*12.0*	GCM N125005-GF	1	BFTX0412N	3.0	LT15-10
	GNDL R/L1212JX-1.512	★	★	*12*	*12*	*120*	*(12)*	*12*	*2.0*	*19*	*19.3*	*0*	1.5	*12.0*	GCM N150005-GF	1			
	GNDL R/L1212JX-212.5	★	★	*12*	*12*	*120*	*(12)*	*12*	*2.0*	*22*	*22.3*	*0*	2	*12.5*	GC□ □20○○-□□	1			
	GNDL R/L1212JX-312.5	★	★	*12*	*12*	*120*	*(12)*	*12*	*2.0*	*22*	*22.3*	*0*	3	*12.5*	GC□ □30○○-□□	1			
	GNDL R/L1616JX-1.2512.5	★	★	*16*	*16*	*120*	*(16)*	*16*	–	*28*	–	*0*	1.25	*12.5*	GCM N125005-GF	2	BX0515	4.0	LH040
	GNDL R/L1616JX-1.512.5	★	★	*16*	*16*	*120*	*(16)*	*16*	–	*28*	–	*0*	1.5	*12.5*	GCM N150005-GF	2			
	GNDL R/L1616JX-216	★	★	*16*	*16*	*120*	*(16)*	*16*	–	*32*	–	*0*	2	*16.0*	GC□ □20○○-□□	2			
	GNDL R/L1616JX-316	★	★	*16*	*16*	*120*	*(16)*	*16*	–	*32*	–	*0*	3	*16.0*	GC□ □30○○-□□	2			

Combine the insert with a holder such that the Seat Size matches. Refer to F11 for applicable inserts

External

GNDLS

External Grooving



Clamp-on for External L-Shaped (Side Cut) Grooving

Fig 1

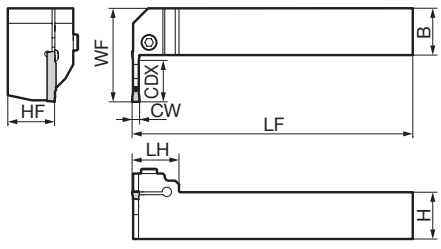


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Seat Size	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Wrench
Inch	**GNDLS R/L122K-060**	●	●	.750	.750	5.00	1.459	.750	-	2	.600	GC□ □20○○-□□	1	BX0520	5.0	LH040
	GNDLS R/L123K-060	●	●	.750	.750	5.00	1.459	.750	-	3	.600	GC□ □30○○-□□	1			
	GNDLS R/L124K-070	●	●	.750	.750	5.00	1.787	.750	-	4	.700	GC□ □40○○-□□	1			
	GNDLS R/L162M-070	●	●	1.00	1.00	6.00	1.787	1.00	-	2	.700	GC□ □20○○-□□	1	BX0520	5.0	LH040
	GNDLS R/L163M-070	●	●	1.00	1.00	6.00	1.787	1.00	-	3	.700	GC□ □30○○-□□	1			
	GNDLS R/L164M-090	●	●	1.00	1.00	6.00	1.984	1.00	-	4	.900	GC□ □40○○-□□	1			
	GNDLS R/L165M-090	●	●	1.00	1.00	6.00	1.984	1.00	-	5	.900	GC□ N50○○-□□	1			
	GNDLS R/L166M-090	●	●	1.00	1.00	6.00	1.984	1.00	-	6	.900	GC□ N60○○-□□	1			
Metric	**GNDLS R/L2020K-216**	★	★	*20*	*20*	*125*	*38*	*20*	*25*	2	*16*	GC□ □20○○-□□	1	BX0520	5.0	LH040
	GNDLS R/L2020K-316	★	★	*20*	*20*	*125*	*38*	*20*	*25*	3	*16*	GC□ □30○○-□□	1			
	GNDLS R/L2525M-218	★	★	*25*	*25*	*150*	*45*	*25*	*25*	2	*18*	GC□ □20○○-□□	1	BX0520	5.0	LH040
	GNDLS R/L2525M-318	★	★	*25*	*25*	*150*	*45*	*25*	*25*	3	*18*	GC□ □30○○-□□	1			
	GNDLS R/L2525M-423	★	★	*25*	*25*	*150*	*50*	*25*	*25*	4	*23*	GC□ □40○○-□□	1			
	GNDLS R/L2525M-523	★	★	*25*	*25*	*150*	*50*	*25*	*25*	5	*23*	GC□ N50○○-□□	1			
	GNDLS R/L2525M-623	★	★	*25*	*25*	*150*	*50*	*25*	*25*	6	*23*	GC□ N60○○-□□	1			

Combine the insert with a holder such that the Seat Size matches. Refer to F11 for applicable inserts

Recommended Cutting Conditions F9

★: Worldwide Warehouse Item ●: USA Stocked Item

GNDL-J Type

New | External | Internal Coolant

Internal Coolant Supply
Clamp-on
for External Deep Grooving & Cut-Off

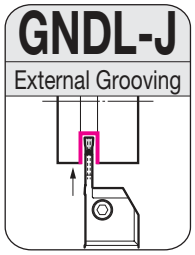


Fig 1

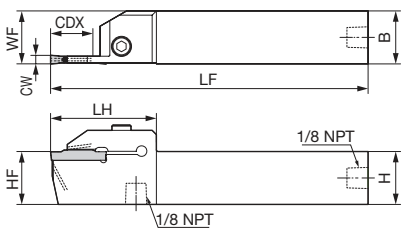


Figure shows right hand (R) tool.

Fig 2

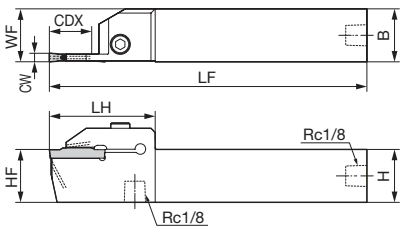


Figure shows right hand (R) tool.

Holder

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Seat Size	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Insert Wrench	Plug	Wrench
Inch	**GNDL R/L082JX-050J**	●	●	0.500	0.500	4.750	0.500	0.500	0.866	2	0.500	GC□ □20○○-□□	1	BFTX0415T8R	2.0	—	XP03	LT08-06
	GNDL R/L083JX-050J	●	●	0.500	0.500	4.750	0.500	0.500	0.866	3	0.500	GC□ □30○○-□□	1		3.0			
	GNDL R/L102JX-063J	●	●	0.625	0.625	4.750	0.625	0.625	1.260	2	0.625	GC□ □20○○-□□	1	CP-M5-20-1	2.0	LH025	XP03	LH040
	GNDL R/L103JX-063J	●	●	0.625	0.625	4.750	0.625	0.625	1.260	3	0.625	GC□ □30○○-□□	1		3.0			
	GNDL R/L122K-075J	●	●	0.750	0.750	5.000	0.750	0.750	1.752	2	0.750	GC□ □20○○-□□	1	BX0520	6.0	—	XP03	LH040
	GNDL R/L123K-075J	●	●	0.750	0.750	5.000	0.750	0.750	1.752	3	0.750	GC□ □30○○-□□	1					
	GNDL R/L124K-100J	●	●	0.750	0.750	5.000	0.750	0.750	1.969	4	1.000	GC□ □40○○-□□	1					
	GNDL R/L125K-100J	●	●	0.750	0.750	5.000	0.750	0.750	1.969	5	1.000	GC□ N50○○-□□	1					
	GNDL R/L126K-100J	●	●	0.750	0.750	5.000	0.750	0.750	1.969	6	1.000	GC□ N60○○-□□	1					
	GNDL R/L162K-075J	●	●	1.000	1.000	5.000	1.000	1.000	1.752	2	0.750	GC□ □20○○-□□	1	BX0520	6.0	—	XP03	LH040
	GNDL R/L163K-075J	●	●	1.000	1.000	5.000	1.000	1.000	1.752	3	0.750	GC□ □30○○-□□	1					
	GNDL R/L164K-100J	●	●	1.000	1.000	5.000	1.000	1.000	1.969	4	1.000	GC□ □40○○-□□	1					
	GNDL R/L165K-100J	●	●	1.000	1.000	5.000	1.000	1.000	1.969	5	1.000	GC□ N50○○-□□	1					
	GNDL R/L166K-100J	●	●	1.000	1.000	5.000	1.000	1.000	1.969	6	1.000	GC□ N60○○-□□	1					
Metric	**GNDL R/L2020K-220J**	★	★	*20*	*20*	*125*	*20*	*20*	*44.5*	2	*20(18)*	GC□ □20○○-□□	2	BX0520	6.0	—	XP02	LH040
	GNDL R/L2020K-320J	★	★	*20*	*20*	*125*	*20*	*20*	*44.5*	3	*20(18)*	GC□ □30○○-□□	2					
	GNDL R/L2020K-425J	★	★	*20*	*20*	*125*	*20*	*20*	*50*	4	*25(23)*	GC□ □40○○-□□	2					
	GNDL R/L2020K-525J	★	★	*20*	*20*	*125*	*20*	*20*	*50*	5	*25(23)*	GC□ N50○○-□□	2					
	GNDL R/L2020K-625J	★	★	*20*	*20*	*125*	*20*	*20*	*50*	6	*25(23)*	GC□ N60○○-□□	2					
	GNDL R/L2525K-220J	★	★	*25*	*25*	*125*	*25*	*25*	*44.5*	2	*20(18)*	GC□ □20○○-□□	2	BX0520	6.0	—	XP02	LH040
	GNDL R/L2525K-320J	★	★	*25*	*25*	*125*	*25*	*25*	*44.5*	3	*20(18)*	GC□ □30○○-□□	2					
	GNDL R/L2525K-425J	★	★	*25*	*25*	*125*	*25*	*25*	*50*	4	*25(23)*	GC□ □40○○-□□	2					
	GNDL R/L2525K-525J	★	★	*25*	*25*	*125*	*25*	*25*	*50*	5	*25(23)*	GC□ N50○○-□□	2					
	GNDL R/L2525K-625J	★	★	*25*	*25*	*125*	*25*	*25*	*50*	6	*25(23)*	GC□ N60○○-□□	2					

Combine the insert with a holder such that the Seat Size matches. Refer to F11 for applicable inserts. Dimensions in parentheses under maximum groove depth are for profiling inserts (RG type/RN type chipbreakers).

Parts (Plugs)

Dimensions (mm)

Cat. No.	Stock	Description	Thread Pitch	Fig
XP02	●	Plug	BSPT 1/8"	1
XP03	●	Plug	NPT 1/8"	2

Connectors are sold separately.

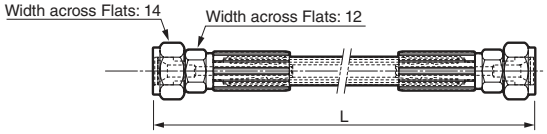
Parts (Cap Screw/ Wrench)

Dimensions (mm)

Cat. No.	Stock	Description	Wrench Size	Fig
BX0520	●	Cap Screw	5mm Hex	1
LH040	●	Wrench	5mm Hex	1

Connectors are sold separately.

Fig 1



Parts (Hose)

Dimensions (inch/ *mm*)

Cat. No.	Stock	L	Screw Standard	Screw Standard	Fig
J-HOSE-MJIC1/4-NPT1/8-8.0	●	8.0	1/4" MJIC	NPT 1/8"	1
J-HOSE-MJIC1/4-NPT1/8-10.0	●	10.0	1/4" MJIC	NPT 1/8"	1
J-HOSE-G1/8-G1/8-200	●	*200*	G1/8	G1/8	1
J-HOSE-G1/8-G1/8-300	●	*300*	G1/8	G1/8	1
J-HOSE-R1/8-G1/8-200	●	*200*	R1/8	G1/8	1
J-HOSE-R1/8-G1/8-300	●	*300*	R1/8	G1/8	1

Hoses are sold separately.

See page F16 for GND-J Type connecting method

Fig 1

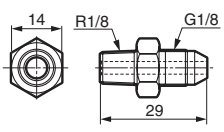
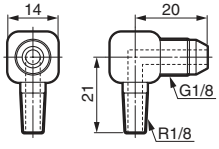


Fig 2



Parts (Connector)

Dimensions (mm)

Cat. No.	Stock	Screw Standard	Screw Standard	Fig
J-G1/8-R1/8-00	●	G1/8	R1/8	1
J-G1/8-R1/8-90	●	G1/8	R1/8	2
J-NPT1/8-R1/8-00	●	NPT 1/8"	R1/8	1
J-NPT1/8-G1/8-00	●	NPT 1/8"	G1/8	1

Connectors are sold separately.

N·m Recommended Tightening Torque (N·m)

●: USA Stocked Item

GND Type - Polygon Shank Style

Features and Benefits

- ISO Polygon shank holder
- Economic cassettes
- Compact and stable construction
- Repeatability of ± 2 µm interface
- Internal coolant supply directly from the holder to the cutting edge



Product Range - Holders

Application	Series	Shape	Grooving Width (mm) 2	3	4	5	6	Grooving Depth (mm)
External Grooving	PSC_0M00R/L Straight		2	3				12
					4	5	6	18
	PSC_0M90R/L L-Style		2	3				12
					4	5	6	18

Note: 2mm Grooving width - please use only for grooving not for turning!

Identification Details - Polygon-Toolholder

PSC	40	-	G	M	00	R
Polygonshank	Shank Diameter (Ø D)		Series Symbol GND	Application External Multi-Purpose	Style 00 = Straight 90 = L-Style	Holder Design R = Right L = Left



Identification Details - Cassette

GND	C	M	L	3	12
Series Symbol GND	Cassette	Application External Multi-Purpose	Holder Design R = Right L = Left	Grooving Width	Max. Grooving Depth

Selection Chart

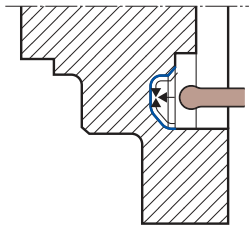
Cassette	Grooving Width (mm) 2	3	4	5	6	Max. Grooving Depth	Chipbreaker MG	ML	GG	GL	GF	RG	CG	GA
GNDCM R	■					12		○	○ ○	○	○		○	○
GNDCM L	■						○	○	○	○	○		○	○
GNDCM R		■				12	○	○	○	○	○	○	○	○
GNDCM L		■					○	○	○	○	○	○	○	○
GNDCM R			■			18	○	○	○	○	○	○	○	○
GNDCM L			■				○	○	○	○	○	○	○	○
GNDCM R				■	■	18	○	○	○	○	○	○		○
GNDCM L				■	■		○	○	○	○	○	○		○

■ Stock ○ Recommendation

GND Type - Polygon Shank Style

Application Examples

4120 Steel, Automotive Part, Face Profiling

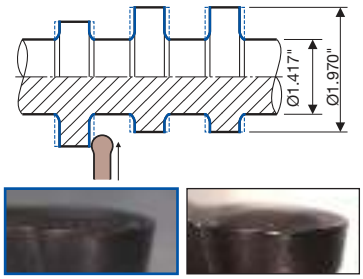


Target:
- Higher rigidity
- Vibration reduction
- Chip control
- Wear resistance performance

Holder: GNDF R2525M 423-125
Insert: GCM N4020 RG
Grooving width: 0.16“ (4mm)
Cutting conditions: v_c= 650 SFM
f = .006 IPR
wet

Stable machining free of vibration!
Excellent chip control using the GND type.

1053 Steel, Cam Shaft Grooving / Finishing (Contin. to Heavy Interrupted)

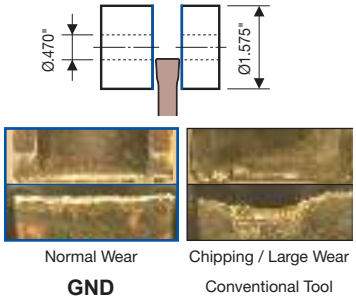


Target:
- Higher rigidity
- Vibration reduction
- Chip control
- Fracture resistance

Holder: GNDM L2525M 618
Insert: GCM N6030 RG
Grooving width: 0.24“ (6mm)
Cutting conditions: v_c= 430 SFM
f = .014 IPR
wet

Stable machining free of vibration!
Excellent fracture resistance
Stable chip control

1048 Steel, Machine Part, Cut-Off

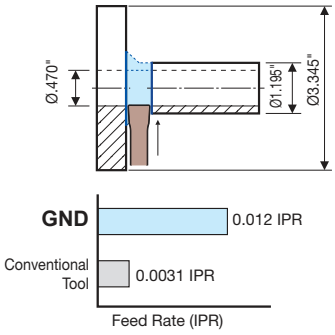


Target:
- Higher rigidity
- Vibration reduction
- Fracture resistance

Holder: GNDL R2525M 320
Insert: GCM N3002 GG
Grooving width: 0.12“ (3mm)
Cutting conditions: n = 1600min^{-1}
v_c= 650 SFM
f = .002 IPR
wet

Stable machining free of vibration!
Excellent fracture resistance
Stable fracture resistance

4137 Steel, Crank, Cut-Off

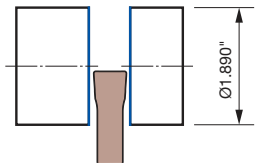


Target:
- Higher rigidity
- Vibration reduction
- Chip control

Holder: GNDL R2525M 320
Insert: GCM N3002 GG
Grooving width: 0.12“ (3mm)
Cutting conditions: v_c= 380 SFM
f = .012 IPR
wet

Improved efficiency
Stable machining free of vibration!
Stable chip control

Hardened Steel (45-48HRC), Machine Part, Cut-Off

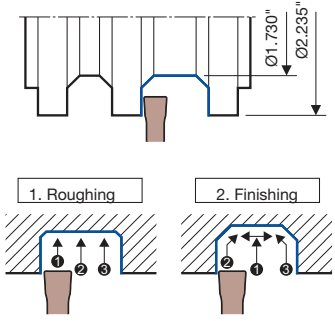


Target:
- Higher rigidity
- Vibration reduction
- Chip control

Holder: GNDL R2525M 425
Insert: GCM N4002 GG
Grooving width: .16“ (4mm)
Cutting conditions: v_c= 170 SFM
f = .0012 IPR
wet

Stable machining free of vibration!
Excellent chip control using the GND type.
No more unexpected breakage!

5120 Steel, Gear Shaft, Grooving / Pocketing



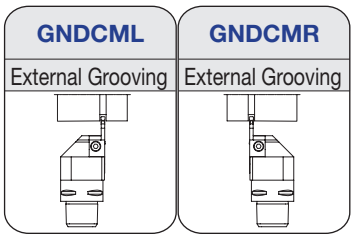
Target:
- Higher rigidity
- Vibration reduction
- Chip control

Holder: GNDM R2020K 518
Insert: GCM N5008 MG
Grooving width: .20“ (5mm)
Cutting conditions: v_c= 500 SFM
f = .004 IPR
wet

Stable machining free of vibration!
Excellent chip control using the GND type.

GND Type - Polygon Shank Style

External Multi-Purpose Type (Grooving, Turning, Profiling)

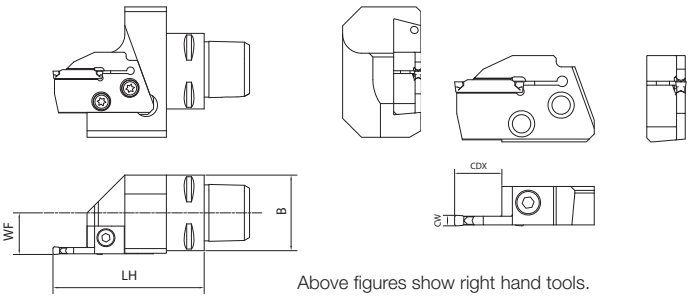




Use for multi-purpose or profiling insert for turning (wide grooves).

Right handed Cassette goes with right handed holder

Left handed Cassette goes with left handed holder

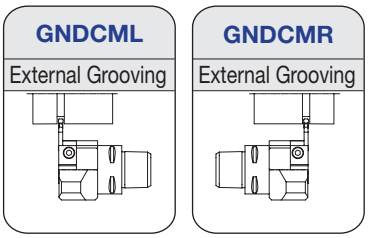


Above figures show right hand tools.

	Catalog Number	Stock	Seat Size CW	Grooving Depth CDX	Inserts	Cap Screw	Tightening Torque (N·m)	Wrench
Cassette (R/L)	**GNDCM R/L 212**	★★	2	12	GCM □2002-□□	BX0512	5.0	LH040
	GNDCM R/L 312	★★	3	12	GCM □30□□-□□			
	GNDCM R/L 418	★★	4	18	GCM □40□□-□□		6.0	
	GNDCM R/L 518	★★	5	18	GCM □50□□-□□			
	GNDCM R/L 618	★★	6	18	GCM □60□□-□□			

	Catalog Number	Stock	B	WF	LH	Torx Screw	Tightening Torque (N·m)	Wrench
Holder (R/L)	**PSC40GM00 R/L**	★★	*40 mm*	*22 mm*	*80 mm*	BFTX0619N	7.5	TRD25
	PSC50GM00 R/L	★★	*50mm*	*27 mm*	*80 mm*			

External Multi-Purpose Type (Grooving, Turning, Profiling)

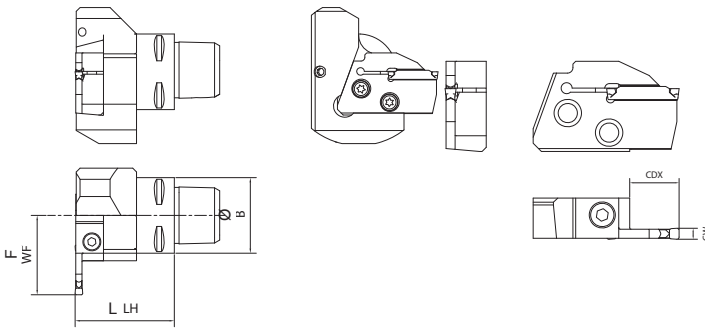




Use for multi-purpose or profiling insert for turning (wide grooves).

Right handed Cassette goes with left handed holder

Left handed Cassette goes with right handed holder



Above figures show right handed holder with a left handed cassette.

	Catalog Number	Stock	Seat Size CW	Grooving Depth CDX	Inserts	Cap Screw	Tightening Torque (N·m)	Wrench
Cassette (R/L)	**GNDCM L/R 212**	★★	2	12 mm	GCM □2002-□□	BX0512	5.0	LH040
	GNDCM L/R 312	★★	3	12 mm	GCM □30□□-□□			
	GNDCM L/R 418	★★	4	18 mm	GCM □40□□-□□		6.0	
	GNDCM L/R 518	★★	5	18 mm	GCM □50□□-□□			
	GNDCM L/R 618	★★	6	18 mm	GCM □60□□-□□			

	Catalog Number	Stock	B	WF	LH	Torx Screw	Tightening Torque (N·m)	Wrench
Holder (R/L)	**PSC40GM90 R/L**	★★	*40 mm*	*43 mm*	*52.5 mm*	BFTX0619N	7.5	TRD25
	PSC50GM90 R/L	★★	*50 mm*	*48 mm*	*55 mm*			

★: Worldwide Warehouse item

GNDS Type

External

* For traverse cutting (groove expansion), use a multifunctional insert for profiling.

External Multi-Function Clamp-on for Shallow Grooves (Grooving, Traverse Cutting and Profiling)

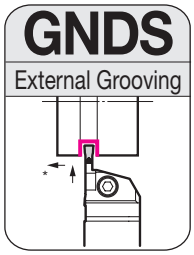


Fig 1

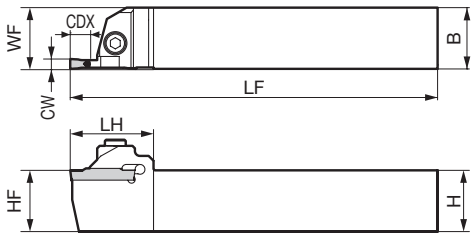


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge Distance	Cutting Edge Height	Head	Seat Size	Max. Groove Depth	Applicable Insert	Fig	Cap Screw		Wrench
	R	L	H	B	LF	WF	HF	LH	CW	CDX				N·m	
GNDS R/L2020K-206	★	★	*20*	*20*	*125*	*20*	*20*	*30*	*2*	*6*	GC□ □20○○-□□	1			
GNDS R/L2020K-306	★	★	*20*	*20*	*125*	*20*	*20*	*30*	*3*	*6*	GC□ □30○○-□□	1			
GNDS R/L2020K-410	★	★	*20*	*20*	*125*	*20*	*20*	*34*	*4*	*10*	GC□ □40○○-□□	1	BX0520	5.0	LH040
GNDS R/L2020K-510	★	★	*20*	*20*	*125*	*20*	*20*	*34*	*5*	*10*	GC□ N50○○-□□	1			
GNDS R/L2020K-610	★	★	*20*	*20*	*125*	*20*	*20*	*34*	*6*	*10*	GC□ N60○○-□□	1			
GNDS R/L2525M-206	★	★	*25*	*25*	*150*	*25*	*25*	*30*	*2*	*6*	GC□ □20○○-□□	1			
GNDS R/L2525M-306	★	★	*25*	*25*	*150*	*25*	*25*	*30*	*3*	*6*	GC□ □30○○-□□	1			
GNDS R/L2525M-410	★	★	*25*	*25*	*150*	*25*	*25*	*34*	*4*	*10*	GC□ □40○○-□□	1	BX0520	5.0	LH040
GNDS R/L2525M-510	★	★	*25*	*25*	*150*	*25*	*25*	*34*	*5*	*10*	GC□ N50○○-□□	1			
GNDS R/L2525M-610	★	★	*25*	*25*	*150*	*25*	*25*	*34*	*6*	*10*	GC□ N60○○-□□	1			

Combine the insert with a holder such that the width of cut (CW) matches. Refer to F11 for applicable inserts.

★: Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

GNDN Type

Necking

Clamp-on
for Necking

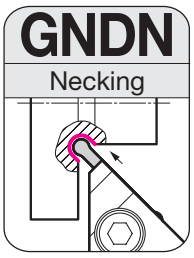
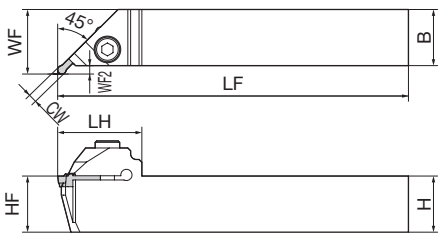


Fig 1



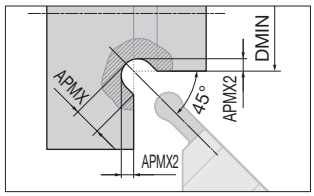


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Off Set WF2	Min. Work Diameter DMIN	Seat Size CW	APMX	APMX2	Applicable Insert	Fig	Cap Screw	Cap Screw N·m	Wrench
GNDN R/L2020K-215-020	★	★	20	20	125	23	20	35	3.0	20	2.0	1.5	0.64	GCM N2010-RN	1			
GNDN R/L2020K-320-020	★	★	20	20	125	23	20	35	3.0	20	3.0	2.0	0.79	GCM N3015-RN	1			
GNDN R/L2020K-430-030	★	★	20	20	125	24	20	37	4.0	30	4.0	3.0	1.29	GCM N4020-RN	1	BX0520	5.0	LH040
GNDN R/L2020K-535-030	★	★	20	20	125	25	20	40	5.0	30	5.0	3.5	1.44	GCM N5025-RN	1			
GNDN R/L2020K-640-030	★	★	20	20	125	25	20	40	5.0	30	6.0	4.0	1.59	GCM N6030-RN	1			
GNDN R/L2525M-215-020	★	★	25	25	150	28	25	35	3.0	20	2.0	1.5	0.64	GCM N2010-RN	1			
GNDN R/L2525M-320-020	★	★	25	25	150	28	25	35	3.0	20	3.0	2.0	0.79	GCM N3015-RN	1			
GNDN R/L2525M-430-030	★	★	25	25	150	29	25	37	4.0	30	4.0	3.0	1.29	GCM N4020-RN	1	BX0520	5.0	LH040
GNDN R/L2525M-535-030	★	★	25	25	150	30	25	40	5.0	30	5.0	3.5	1.44	GCM N5025-RN	1			
GNDN R/L2525M-640-030	★	★	25	25	150	30	25	40	5.0	30	6.0	4.0	1.59	GCM N6030-RN	1			

Combine the insert with a holder such that the width of cut (CW) matches.

See F32 for Key Points for Necking

Identification Code

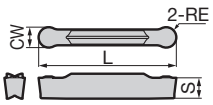
GND N R 20 20 K - 2 15 - 020

Series	Application Symbol: Necking	Feed Direction	Shank Height (mm)	Shank Width (mm)	Shank Length	Seat Size (mm)	APMX ×10 (mm)	Min. bore diameter (mm)

GNDN Type Inserts

(Coated Carbide)

Fig 1



Profiling / Radius Grooving / Necking

Dimensions (mm)

Appearance	Cat. No.	AC830P	AC425K	AC520U	AC530U	Width of Cut CW: Width of Cut	Width of Cut CW: Tolerance	Nose Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
RN	**GCMN2010-RN**	-	-	●	●	2.0	±0.03	1.0	21.7	3.6		1
	GCMN3015-RN	●	●	●	●	3.0	±0.03	1.5	22.4	3.8		1
	GCMN4020-RN	●	●	●	●	4.0	±0.03	2.0	28.0	4.0	5	1
	GCMN5025-RN	●	●	●	●	5.0	±0.03	2.5	28.1	4.1		1
General-purpose	**GCMN6030-RN**	●	●	●	●	6.0	±0.03	3.0	28.1	4.5		1

●: USA Stocked Item
★: Worldwide Warehouse item

GNDF Type - Inch Type

Facing

* For traverse cutting (groove expansion), use a multifunctional insert for profiling.

Clamp-on
for Face Grooving

GNDF
Face Grooving

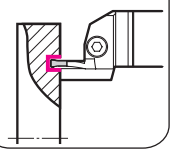
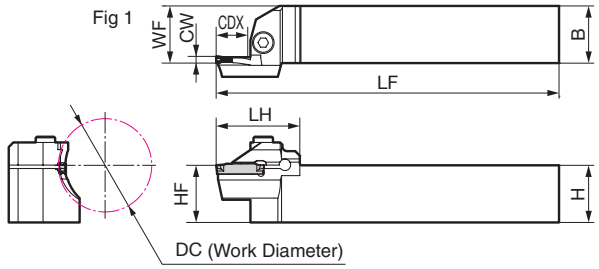


Fig 1



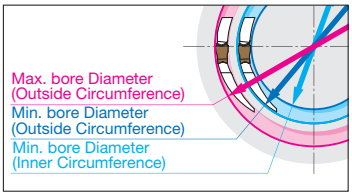


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (inch)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Work Diameter DC	Seat Size CW	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Wrench
GNDF R/L123K-050-035	•	•	.750	.750	5.000	.750	.750	1.402	1.378 - 1.772	3.0	.500		1			
GNDF R/L123K-050-040	•	•	.750	.750	5.000	.750	.750	1.402	1.575 - 2.165	3.0	.500		1			
GNDF R/L123K-070-050	•	•	.750	.750	5.000	.750	.750	1.638	1.969 - 2.756	3.0	.700		1			
GNDF R/L123K-070-065	•	•	.750	.750	5.000	.750	.750	1.638	2.559 - 3.937	3.0	.700	GC□ N30○○-□□	1	BX0520	5.0	LH040
GNDF R/L123K-070-090	•	•	.750	.750	5.000	.750	.750	1.638	3.543 - 5.906	3.0	.700		1			
GNDF R/L123K-070-140	•	•	.750	.750	5.000	.750	.750	1.638	5.512 - 7.874	3.0	.700		1			
GNDF R/L123K-070-180	•	•	.750	.750	5.000	.750	.750	1.638	7.087 - 11.811	3.0	.700		1			
GNDF R/L124K-070-040	•	•	.750	.750	5.000	.750	.750	1.638	1.575 - 2.165	4.0	.700		1			
GNDF R/L124K-090-050	•	•	.750	.750	5.000	.750	.750	1.835	1.969 - 2.756	4.0	.900		1			
GNDF R/L124K-090-065	•	•	.750	.750	5.000	.750	.750	1.835	2.559 - 3.543	4.0	.900		1			
GNDF R/L124K-090-085	•	•	.750	.750	5.000	.750	.750	1.835	3.346 - 5.118	4.0	.900	GC□ N40○○-□□	1	BX0520	5.0	LH040
GNDF R/L124K-090-125	•	•	.750	.750	5.000	.750	.750	1.835	4.921 - 7.874	4.0	.900		1			
GNDF R/L124K-090-180	•	•	.750	.750	5.000	.750	.750	1.835	7.087 - 11.811	4.0	.900		1			
GNDF R/L124K-090-280	•	•	.750	.750	5.000	.750	.750	1.835	11.024 - 39.370	4.0	.900		1			
GNDF R/L125K-090-050	•	•	.750	.750	5.000	.750	.750	1.835	1.969 - 2.756	5.0	.900		1			
GNDF R/L125K-090-065	•	•	.750	.750	5.000	.750	.750	1.835	2.559 - 3.543	5.0	.900		1			
GNDF R/L125K-090-085	•	•	.750	.750	5.000	.750	.750	1.835	3.346 - 5.118	5.0	.900		1			
GNDF R/L125K-090-125	•	•	.750	.750	5.000	.750	.750	1.835	4.921 - 7.874	5.0	.900	GC□ N50○○-□□	1	BX0520	5.0	LH040
GNDF R/L125K-090-180	•	•	.750	.750	5.000	.750	.750	1.835	7.087 - 11.811	5.0	.900		1			
GNDF R/L125K-090-280	•	•	.750	.750	5.000	.750	.750	1.835	11.024 - 39.370	5.0	.900		1			
GNDF R/L126K-090-050	•	•	.750	.750	5.000	.750	.750	1.835	1.969 - 2.953	6.0	.900		1			
GNDF R/L126K-090-070	•	•	.750	.750	5.000	.750	.750	1.835	2.756 - 4.331	6.0	.900		1			
GNDF R/L126K-090-100	•	•	.750	.750	5.000	.750	.750	1.835	3.397 - 7.874	6.0	.900	GC□ N60○○-□□	1	BX0520	5.0	LH040
GNDF R/L126K-090-180	•	•	.750	.750	5.000	.750	.750	1.835	7.087 - 11.811	6.0	.900		1			
GNDF R/L126K-090-280	•	•	.750	.750	5.000	.750	.750	1.835	11.024 - 39.370	6.0	.900		1			
GNDF R/L163M-050-035	•	•	1.000	1.000	6.000	1.000	1.000	1.402	1.378 - 1.772	3.0	.500		1			
GNDF R/L163M-050-040	•	•	1.000	1.000	6.000	1.000	1.000	1.402	1.575 - 2.165	3.0	.500		1			
GNDF R/L163M-070-050	•	•	1.000	1.000	6.000	1.000	1.000	1.638	1.969 - 2.756	3.0	.700		1			
GNDF R/L163M-070-065	•	•	1.000	1.000	6.000	1.000	1.000	1.638	2.559 - 3.937	3.0	.700	GC□ N30○○-□□	1	BX0520	5.0	LH040
GNDF R/L163M-070-090	•	•	1.000	1.000	6.000	1.000	1.000	1.638	3.543 - 5.906	3.0	.700		1			
GNDF R/L163M-070-140	•	•	1.000	1.000	6.000	1.000	1.000	1.638	5.512 - 7.874	3.0	.700		1			
GNDF R/L163M-070-180	•	•	1.000	1.000	6.000	1.000	1.000	1.638	7.087 - 11.811	3.0	.700		1			
GNDF R/L164M-070-040	•	•	1.000	1.000	6.000	1.000	1.000	1.638	1.575 - 2.165	4.0	.700		1			
GNDF R/L164M-090-050	•	•	1.000	1.000	6.000	1.000	1.000	1.835	1.969 - 2.756	4.0	.900		1			
GNDF R/L164M-090-065	•	•	1.000	1.000	6.000	1.000	1.000	1.835	2.559 - 3.543	4.0	.900		1			
GNDF R/L164M-090-085	•	•	1.000	1.000	6.000	1.000	1.000	1.835	3.346 - 5.118	4.0	.900		1			
GNDF R/L164M-090-125	•	•	1.000	1.000	6.000	1.000	1.000	1.835	4.921 - 7.874	4.0	.900	GC□ N40○○-□□	1	BX0520	5.0	LH040
GNDF R/L164M-090-180	•	•	1.000	1.000	6.000	1.000	1.000	1.835	7.087 - 11.811	4.0	.900		1			
GNDF R/L164M-090-280	•	•	1.000	1.000	6.000	1.000	1.000	1.835	11.024 - 39.370	4.0	.900		1			
GNDF R/L165M-090-050	•	•	1.000	1.000	6.000	1.000	1.000	1.835	1.969 - 2.756	5.0	.900		1			
GNDF R/L165M-090-065	•	•	1.000	1.000	6.000	1.000	1.000	1.835	2.559 - 3.543	5.0	.900		1			
GNDF R/L165M-090-085	•	•	1.000	1.000	6.000	1.000	1.000	1.835	3.346 - 5.118	5.0	.900		1			
GNDF R/L165M-090-125	•	•	1.000	1.000	6.000	1.000	1.000	1.835	4.921 - 7.874	5.0	.900	GC□ N50○○-□□	1	BX0520	5.0	LH040
GNDF R/L165M-090-180	•	•	1.000	1.000	6.000	1.000	1.000	1.835	7.087 - 11.811	5.0	.900		1			
GNDF R/L165M-090-280	•	•	1.000	1.000	6.000	1.000	1.000	1.835	11.024 - 39.370	5.0	.900		1			
GNDF R/L166M-090-050	•	•	1.000	1.000	6.000	1.000	1.000	1.835	1.969 - 2.953	6.0	.900		1			
GNDF R/L166M-090-070	•	•	1.000	1.000	6.000	1.000	1.000	1.835	2.756 - 4.331	6.0	.900		1			
GNDF R/L166M-090-100	•	•	1.000	1.000	6.000	1.000	1.000	1.835	3.937 - 7.874	6.0	.900	GC□ N60○○-□□	1	BX0520	5.0	LH040
GNDF R/L166M-090-180	•	•	1.000	1.000	6.000	1.000	1.000	1.835	7.087 - 11.811	6.0	.900		1			
GNDF R/L166M-090-280	•	•	1.000	1.000	6.000	1.000	1.000	1.835	11.024 - 39.370	6.0	.900		1			

Combine the insert with a holder such that the width of cut (CW) matches. Refer to F11 for applicable inserts. Recommended Cutting Conditions F10

N·m Recommended Tightening Torque (N·m)

●: USA Stocked Item

GNDF Type - Metric

Facing

* For traverse cutting (groove expansion), use a multifunctional insert for profiling.

Clamp-on
for Face Grooving

GNDF
Face Grooving

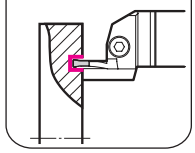
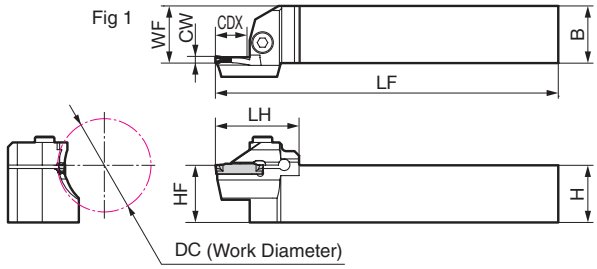


Fig 1



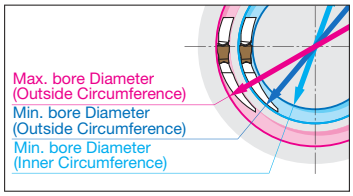


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Work Diameter DC	Seat Size CW	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw	N·m	Wrench
GNDF R/L2020K-312-035	★	★	*20*	*20*	*125*	*20*	*20*	*35.6*	*35 to 45*	*3.0*	*12*		1			
GNDF R/L2020K-312-040	★	★	*20*	*20*	*125*	*20*	*20*	*35.6*	*40 to 55*	*3.0*	*12*		1			
GNDF R/L2020K-318-050	★	★	*20*	*20*	*125*	*20*	*20*	*41.6*	*50 to 70*	*3.0*	*18*		1			
GNDF R/L2020K-318-065	★	★	*20*	*20*	*125*	*20*	*20*	*41.6*	*65 to 100*	*3.0*	*18*	GC□ N30○○-□□	1	BX0520	5.0	LH040
GNDF R/L2020K-318-090	★	★	*20*	*20*	*125*	*20*	*20*	*41.6*	*90 to 150*	*3.0*	*18*		1			
GNDF R/L2020K-318-140	★	★	*20*	*20*	*125*	*20*	*20*	*41.6*	*140 to 200*	*3.0*	*18*		1			
GNDF R/L2020K-318-180	★	★	*20*	*20*	*125*	*20*	*20*	*41.6*	*180 to 300*	*3.0*	*18*		1			
GNDF R/L2020K-418-040	★	★	*20*	*20*	*125*	*20*	*20*	*41.6*	*40 to 55*	*4.0*	*18*		1			
GNDF R/L2020K-423-050	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*50 to 70*	*4.0*	*23*		1			
GNDF R/L2020K-423-065	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*65 to 90*	*4.0*	*23*		1			
GNDF R/L2020K-423-085	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*85 to 130*	*4.0*	*23*	GC□ N40○○-□□	1	BX0520	5.0	LH040
GNDF R/L2020K-423-125	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*125 to 200*	*4.0*	*23*		1			
GNDF R/L2020K-423-180	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*180 to 300*	*4.0*	*23*		1			
GNDF R/L2020K-423-280	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*280 to 1000*	*4.0*	*23*		1			
GNDF R/L2020K-523-050	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*50 to 70*	*5.0*	*23*		1			
GNDF R/L2020K-523-065	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*65 to 90*	*5.0*	*23*		1			
GNDF R/L2020K-523-085	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*85 to 130*	*5.0*	*23*		1			
GNDF R/L2020K-523-125	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*125 to 200*	*5.0*	*23*	GC□ N50○○-□□	1	BX0520	5.0	LH040
GNDF R/L2020K-523-180	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*180 to 300*	*5.0*	*23*		1			
GNDF R/L2020K-523-280	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*280 to 1000*	*5.0*	*23*		1			
GNDF R/L2020K-623-050	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*50 to 75*	*6.0*	*23*		1			
GNDF R/L2020K-623-070	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*70 to 110*	*6.0*	*23*		1			
GNDF R/L2020K-623-100	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*100 to 200*	*6.0*	*23*		1			
GNDF R/L2020K-623-180	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*180 to 300*	*6.0*	*23*	GC□ N60○○-□□	1	BX0520	5.0	LH040
GNDF R/L2020K-623-280	★	★	*20*	*20*	*125*	*20*	*20*	*46.6*	*280 to 1000*	*6.0*	*23*		1			
GNDF R/L2525M-312-035	★	★	*25*	*25*	*150*	*25*	*25*	*35.6*	*35 to 45*	*3.0*	*12*		1			
GNDF R/L2525M-312-040	★	★	*25*	*25*	*150*	*25*	*25*	*35.6*	*40 to 55*	*3.0*	*12*		1			
GNDF R/L2525M-318-050	★	★	*25*	*25*	*150*	*25*	*25*	*41.6*	*50 to 70*	*3.0*	*18*		1			
GNDF R/L2525M-318-065	★	★	*25*	*25*	*150*	*25*	*25*	*41.6*	*65 to 100*	*3.0*	*18*	GC□ N30○○-□□	1	BX0520	5.0	LH040
GNDF R/L2525M-318-090	★	★	*25*	*25*	*150*	*25*	*25*	*41.6*	*90 to 150*	*3.0*	*18*		1			
GNDF R/L2525M-318-140	★	★	*25*	*25*	*150*	*25*	*25*	*41.6*	*140 to 200*	*3.0*	*18*		1			
GNDF R/L2525M-318-180	★	★	*25*	*25*	*150*	*25*	*25*	*41.6*	*180 to 300*	*3.0*	*18*		1			
GNDF R/L2525M-418-040	★	★	*25*	*25*	*150*	*25*	*25*	*41.6*	*40 to 55*	*4.0*	*18*		1			
GNDF R/L2525M-423-050	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*50 to 70*	*4.0*	*23*		1			
GNDF R/L2525M-423-065	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*65 to 90*	*4.0*	*23*		1			
GNDF R/L2525M-423-085	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*85 to 130*	*4.0*	*23*	GC□ N40○○-□□	1	BX0520	5.0	LH040
GNDF R/L2525M-423-125	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*125 to 200*	*4.0*	*23*		1			
GNDF R/L2525M-423-180	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*180 to 300*	*4.0*	*23*		1			
GNDF R/L2525M-423-280	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*280 to 1000*	*4.0*	*23*		1			
GNDF R/L2525M-523-050	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*50 to 70*	*5.0*	*23*		1			
GNDF R/L2525M-523-065	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*65 to 90*	*5.0*	*23*		1			
GNDF R/L2525M-523-085	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*85 to 130*	*5.0*	*23*		1			
GNDF R/L2525M-523-125	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*125 to 200*	*5.0*	*23*	GC□ N50○○-□□	1	BX0520	5.0	LH040
GNDF R/L2525M-523-180	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*180 to 300*	*5.0*	*23*		1			
GNDF R/L2525M-523-280	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*280 to 1000*	*5.0*	*23*		1			
GNDF R/L2525M-623-050	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*50 to 75*	*6.0*	*23*		1			
GNDF R/L2525M-623-070	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*70 to 110*	*6.0*	*23*		1			
GNDF R/L2525M-623-100	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*100 to 200*	*6.0*	*23*		1			
GNDF R/L2525M-623-180	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*180 to 300*	*6.0*	*23*	GC□ N60○○-□□	1	BX0520	5.0	LH040
GNDF R/L2525M-623-280	★	★	*25*	*25*	*150*	*25*	*25*	*46.6*	*280 to 1000*	*6.0*	*23*		1			

Combine the insert with a holder such that the width of cut (CW) matches. Refer to F11 for applicable inserts. Recommended Cutting Conditions F10

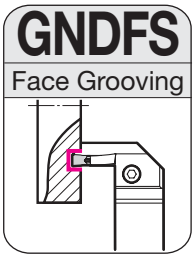
★: Worldwide Warehouse Item

GNDFS Type

Facing

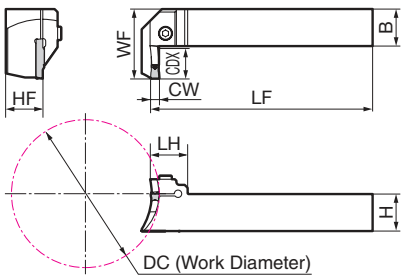
* For traverse cutting (groove expansion), use a multifunctional insert for profiling.

Clamp-on
for Face L-Shaped (Side Cut) Deep Grooving



GNDFS PRODUCTS ARE MADE TO ORDER

Fig 1



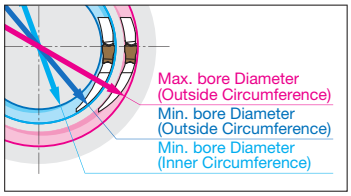


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Work Diameter DC	Seat Size CW	Max. Groove Depth CDX	Applicable Insert	Fig	Cap Screw BX0520 / BX0620	Cap Screw N·m	Wrench
GNDFS R/L2525M-620-070			*25*	*25*	*150*	*47*	*25*	*25*	*70 to 100*	*6.0*	*20*		1			
GNDFS R/L2525M-620-100			*25*	*25*	*150*	*47*	*25*	*25*	*100 to 200*	*6.0*	*20*		1			
GNDFS R/L2525M-620-180			*25*	*25*	*150*	*47*	*25*	*25*	*180 to 300*	*6.0*	*20*	GC□ N60○○-□□	1	BX0520	5.0	LH040
GNDFS R/L2525M-620-280			*25*	*25*	*150*	*47*	*25*	*25*	*280 to 1000*	*6.0*	*20*		1			
GNDFS R/L2525M-620-450			*25*	*25*	*150*	*47*	*25*	*25*	*450 up*	*6.0*	*20*		1			
GNDFS R/L3232P-620-070			*32*	*32*	*170*	*54*	*32*	*25*	*70 to 100*	*6.0*	*20*		1			
GNDFS R/L3232P-620-100			*32*	*32*	*170*	*54*	*32*	*25*	*100 to 200*	*6.0*	*20*		1			
GNDFS R/L3232P-620-180			*32*	*32*	*170*	*54*	*32*	*25*	*180 to 300*	*6.0*	*20*	GC□ N60○○-□□	1	BX0620	6.0	LH050
GNDFS R/L3232P-620-280			*32*	*32*	*170*	*54*	*32*	*25*	*280 to 1000*	*6.0*	*20*		1			
GNDFS R/L3232P-620-450			*32*	*32*	*170*	*54*	*32*	*25*	*450 up*	*6.0*	*20*		1			
GNDFS R/L2525M-820-070			*25*	*25*	*150*	*47*	*25*	*30*	*70 to 100*	*8.0*	*20*		1			
GNDFS R/L2525M-820-100			*25*	*25*	*150*	*47*	*25*	*30*	*100 to 200*	*8.0*	*20*		1			
GNDFS R/L2525M-820-180			*25*	*25*	*150*	*47*	*25*	*30*	*180 to 300*	*8.0*	*20*	GCM N80○○-□□	1	BX0620	6.0	LH050
GNDFS R/L2525M-820-280			*25*	*25*	*150*	*47*	*25*	*30*	*280 to 1000*	*8.0*	*20*		1			
GNDFS R/L2525M-820-450			*25*	*25*	*150*	*47*	*25*	*30*	*450 up*	*8.0*	*20*		1			
GNDFS R/L3232P-820-070			*32*	*32*	*170*	*54*	*32*	*30*	*70 to 100*	*8.0*	*20*		1			
GNDFS R/L3232P-820-100			*32*	*32*	*170*	*54*	*32*	*30*	*100 to 200*	*8.0*	*20*		1			
GNDFS R/L3232P-820-180			*32*	*32*	*170*	*54*	*32*	*30*	*180 to 300*	*8.0*	*20*	GCM N80○○-□□	1	BX0620	6.0	LH050
GNDFS R/L3232P-820-280			*32*	*32*	*170*	*54*	*32*	*30*	*280 to 1000*	*8.0*	*20*		1			
GNDFS R/L3232P-820-450			*32*	*32*	*170*	*54*	*32*	*30*	*450 up*	*8.0*	*20*		1			

Combine the insert with a holder such that the width of cut (CW) matches.

GNDI Type

Internal

Clamp-on
for Internal Diameter Grooving



Fig 1

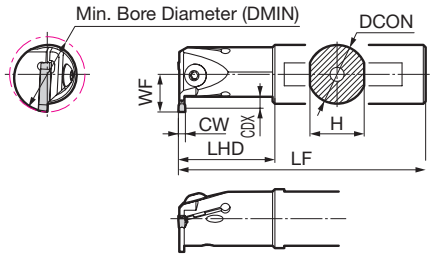


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Diameter DCON	Height H	Head LHD	Overall Length LF	Cutting Edge Distance WF	Min. Bore Diameter DMIN	Seat Size CW	Max. Groove Depth CDX	Applicable Insert	Fig	Screw	N·m	Wrench
GNDI R/L162T-25	●	●	1.000	0.906	1.575	8.000	0.623	1.250	2	0.250	GC□ N20○○-□□	1			
GNDI R/L163T-25	●	●	1.000	0.906	1.575	8.000	0.623	1.250	3	0.250	GC□ N30○○-□□	1			
GNDI R/L164T-25	●	●	1.000	0.906	1.575	8.000	0.748	1.250	4	0.250	GC□ N40○○-□□	1	BH0516	**5.0**	LH030
GNDI R/L165T-25	●	●	1.000	0.906	1.575	8.000	0.748	1.250	5	0.250	GC□ N50○○-□□	1			
GNDI R/L166T-25	●	●	1.000	0.906	1.575	8.000	0.748	1.250	6	0.250	GC□ N60○○-□□	1			
GNDI R/L202T-40	●	●	1.250	1.181	1.969	10.000	1.024	1.575	2	0.400	GC□ N20○○-□□	1			
GNDI R/L203T-40	●	●	1.250	1.181	1.969	10.000	1.024	1.575	3	0.400	GC□ N30○○-□□	1			
GNDI R/L204T-40	●	●	1.250	1.181	1.969	10.000	1.024	1.575	4	0.400	GC□ N40○○-□□	1			
GNDI R/L205T-40	●	●	1.250	1.181	1.969	10.000	1.024	1.575	5	0.400	GC□ N50○○-□□	1			
GNDI R/L206T-40	●	●	1.250	1.181	1.969	10.000	1.024	1.575	6	0.400	GC□ N60○○-□□	1	BH0616	**6.0**	LH040
GNDI R/L243T-43	●	●	1.500	1.421	2.362	12.000	1.142	2.000	3	0.430	GC□ N30○○-□□	1			
GNDI R/L244T-43	●	●	1.500	1.421	2.362	12.000	1.142	2.000	4	0.430	GC□ N40○○-□□	1			
GNDI R/L245T-43	●	●	1.500	1.421	2.362	12.000	1.142	2.000	5	0.430	GC□ N50○○-□□	1			
GNDI R/L246T-43	●	●	1.500	1.421	2.362	12.000	1.142	2.000	6	0.430	GC□ N60○○-□□	1			
GNDI R/L2532-T206	★	★	*25*	*23*	*40*	*200*	*16*	*32*	*2*	*6*	GC□ N20○○-□□	1			
GNDI R/L2532-T306	★	★	*25*	*23*	*40*	*200*	*16*	*32*	*3*	*6*	GC□ N30○○-□□	1	BH0516	**5.0**	LH030
GNDI R/L2532-T406	★	★	*25*	*23*	*40*	*200*	*19*	*32*	*4*	*6*	GC□ N40○○-□□	1			
GNDI R/L2532-T506	★	★	*25*	*23*	*40*	*200*	*19*	*32*	*5*	*6*	GC□ N50○○-□□	1			
GNDI R/L3240-T210	★	★	*32*	*30*	*50*	*250*	*26*	*40*	*2*	*10*	GC□ N20○○-□□	1			
GNDI R/L3240-T310	★	★	*32*	*30*	*50*	*250*	*26*	*40*	*3*	*10*	GC□ N30○○-□□	1	BH0616	**6.0**	LH040
GNDI R/L3240-T410	★	★	*32*	*30*	*50*	*250*	*26*	*40*	*4*	*10*	GC□ N40○○-□□	1			
GNDI R/L3240-T510	★	★	*32*	*30*	*50*	*250*	*26*	*40*	*5*	*10*	GC□ N50○○-□□	1			
GNDI R/L4050-T311	★	★	*40*	*38*	*60*	*300*	*31*	*50*	*3*	*11*	GC□ N30○○-□□	1			
GNDI R/L4050-T411	★	★	*40*	*38*	*60*	*300*	*31*	*50*	*4*	*11*	GC□ N40○○-□□	1	BH0616	**6.0**	LH040
GNDI R/L4050-T511	★	★	*40*	*38*	*60*	*300*	*31*	*50*	*5*	*11*	GC□ N50○○-□□	1			
GNDI R/L4050-T611	★	★	*40*	*38*	*60*	*300*	*31*	*50*	*6*	*11*	GC□ N60○○-□□	1			

Combine the insert with a holder such that the Seat Sze matches. Refer to F11 for applicable inserts

Combine the insert with a holder such that the width of cut (CW) matches. Not usable with GNDIS type holders. Recommended Cutting Conditions ☞ F10

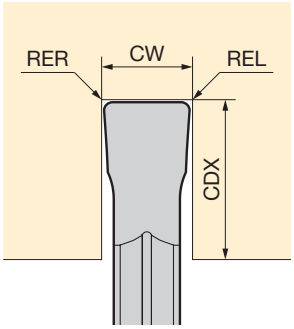
★: Worldwide Warehouse Item ●: USA Stocked Item

Grooving Tool GND Type Special Grooving Insert Request Form

Applicable Tool Holders (Width of Cut 2 to 6mm)
External Diameter Machining: GNDS Type, GNDM Type, GNDMS Type, GNDL Type, GNDLS Type, GNDCM Type
Internal Diameter Machining: GNDI Type *GNDIS types cannot be used as the insert shape is different
Facing: GNDF Type , GNDFS Type

Special inserts with ground chipbreaker (customized width of cut and insert nose radius) can be made-to-order. To order, fill out the form below (indicate preference by circling the item or specify dimensions), and send it to a Sumitomo Sales Representative or distributor. (Make a copy of this form.) For grooving inserts with shape, width of cut or grade other than those listed below, contact Sumitomo Electric Carbide, Inc. USA Headquarters.

Your Company / Contact Information (Phone / Fax / Address, etc.)

Shape	Items	Description
	Width of Cut CW (mm) (2.00 to 6.59mm)	
	Nose Radius RER (mm)	
	Nose Radius REL (mm)	
	Grade (Select from right)*1	AC530U / AC520U / EH520 / H10 / KH03
	Grooving Depth CDX (mm)*2	

*1 If H10 is selected as the grade, the cutting edge will have a sharp edge.
*2 Set the breaker width based on CDX. The actual groove depth can only be less than or equal to the maximum groove depth configurable by each holder.

Form instructions

1. The applicable standard holder depends on the width of cut. Refer to the chart on the right for manufacturable widths of cut and nose radius range for facing. (If using a nose radius exceeding this for facing, modification is required to prevent the holder from interfering with the part material.)
2. The nose radius maximum value for external/internal diameter machining is 1/2 the width of cut.
3. Width of cut (CW) tolerance is ±0.025mm when manufactured.
4. WF dimensions for each holder are the CWS value for the applicable holder standard insert width of cut as follows.
   (Standard holder dimension WF) + (WF - CWS) / 2
5. For inch widths of cut, inserts can also be supplied partially unground.

Contact your sales representative for details.

Width of Cut CW (Nominal Value)	Applicable Standard Holder	Nose radius (RER, REL) maximum value when used for facing (standard holder applicable)
2.00 to 2.59mm	2mm Width Holder	0.2mm
2.60 to 3.59mm	3mm Width Holder	0.4mm
3.60 to 4.59mm	4mm Width Holder	0.8mm
4.60 to 5.59mm	5mm Width Holder	
5.60 to 6.59mm	6mm Width Holder	

GNDIS Type

Internal

Clamp-on
for Internal Diameter Grooving

GNDIS
Internal Grooving

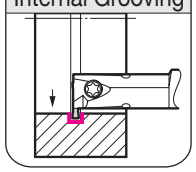


Fig 1

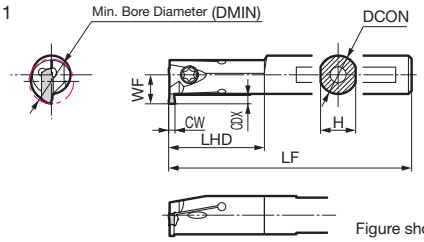


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Diameter DCON	Height H	Overall Length LF	Head LHD	Cutting Edge Distance WF	Min. Bore Diameter DMIN	Seat Size CW	Max. Groove Depth CDX	Applicable Insert	Fig	Flat Screw	Flat Screw N·m	Wrench
GNDIS R/L1214-T1526	★	★	*12*	*11*	*150*	*30*	*9.0*	*14*	*1.5*	*2.6*		1			
GNDIS R/L1214-T1536	★	★	*12*	*11*	*150*	*30*	*10.0*	*14*	*1.5*	*3.6*		1	BFTX0409N	**3.4**	LT15
GNDIS R/L1616-T1536	★	★	*16*	*15*	*160*	*35*	*11.5*	*16*	*1.5*	*3.6*	GXM N150005S-GF	1			
GNDIS R/L1620-T1546	★	★	*16*	*15*	*160*	*40*	*14.5*	*20*	*1.5*	*4.6*		1	BFTX0511N	**5.0**	LT20
GNDIS R/L2025-T1566	★	★	*20*	*19*	*180*	*40*	*19.0*	*25*	*1.5*	*6.6*		1			
GNDIS R/L1214-T2026	★	★	*12*	*11*	*150*	*30*	*9.0*	*14*	*2.0*	*2.6*		1			
GNDIS R/L1214-T2036	★	★	*12*	*11*	*150*	*30*	*10.0*	*14*	*2.0*	*3.6*		1	BFTX0409N	**3.4**	LT15
GNDIS R/L1616-T2036	★	★	*16*	*15*	*160*	*35*	*11.5*	*16*	*2.0*	*3.6*	GXM N2002S-□□	1			
GNDIS R/L1620-T2046	★	★	*16*	*15*	*160*	*40*	*14.5*	*20*	*2.0*	*4.6*		1	BFTX0511N	**5.0**	LT20
GNDIS R/L2025-T2066	★	★	*20*	*19*	*180*	*40*	*19.0*	*25*	*2.0*	*6.6*		1			
GNDIS R/L1214-T3026	★	★	*12*	*11*	*150*	*30*	*9.0*	*14*	*3.0*	*2.6*		1			
GNDIS R/L1214-T3036	★	★	*12*	*11*	*150*	*30*	*10.0*	*14*	*3.0*	*3.6*		1	BFTX0409N	**3.4**	LT15
GNDIS R/L1616-T3036	★	★	*16*	*15*	*160*	*35*	*11.5*	*16*	*3.0*	*3.6*	GXM N3002S-□□	1			
GNDIS R/L1620-T3046	★	★	*16*	*15*	*160*	*40*	*14.5*	*20*	*3.0*	*4.6*		1	BFTX0511N	**5.0**	LT20
GNDIS R/L2025-T3066	★	★	*20*	*19*	*180*	*40*	*19.0*	*25*	*3.0*	*6.6*		1			

Combine the insert with a holder such that the width of cut (CW) matches. Only GXM inserts can be used.

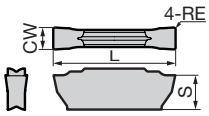
Identification Code

GND IS R 12 14 - T 15 26

Series	Application Symbol: Internal Diameter Machining	Feed Direction	Shank Dia. (mm)	Min. Bore Diameter (mm)	For Internal Diameter Machining	Seat Size x 10 (mm)	Maximum Groove Depth x 10 (mm)

GNDIS Type Inserts

Fig 1



(Coated Carbide)

Grooving / Traverse Cutting

Dimensions (mm)

Appearance	Cat. No.	AC520U	AC1030U	Width of Cut CW: Width of Cut	Width of Cut CW: Tolerance	Nose Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
ML	**GXM N2002S-ML**	★	★	**2.0**	±0.03	0.2	11.1	3.1	5	1
	N3002S-ML	★	★	**3.0**	±0.03	0.2	11.1	3.1		1
Low Feed										

Grooving / Cut-Off Machining

Dimensions (mm)

Appearance	Cat. No.	AC520U	AC1030U	Width of Cut CW: Width of Cut	Width of Cut CW: Tolerance	Nose Radius RE	Overall Length L	Thickness S	Pcs/Pack	Fig
GF	**GXM N150005S-GF**	-	★	**1.5**	±0.03	0.05	11.1	3.1		1
	GXM N2002S-GF	★	★	**2.0**	±0.03	0.2	11.1	3.1	5	1
Low Resistance	**N3002S-GF**	★	★	**3.0**	±0.03	0.2	11.1	3.1		1

Combine the insert with a holder such that the width of cut (CW) matches. GCM/GCG inserts are not mutually compatible.

■ Recommended Cutting Conditions (GNDIS)

Part Material	P Carbon Steel / Alloy Steel		M Stainless Steel		K Cast Iron		S Exotic Alloy	
Insert Grade	AC520U	AC1030U	AC520U	AC1030U	AC520U	AC1030U	AC520U	AC1030U
Cutting Speed v_c (SFM)	250-650	150-650	230-500	150-500	200-650	150-650	65-250	65-200

■ Grooving / Cut-Off / Necking

Chipbreaker		Feed Rate *f* (IPR) ML	Feed Rate *f* (IPR) GF
Width of Cut CW (mm)	**1.5**	–	0.001 to 0.004
	2.0	0.001 to 0.005	0.001 to 0.005
	3.0	0.002 to 0.006	0.002 to 0.006

■ Traverse Cutting

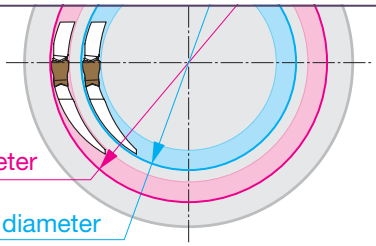
Chipbreaker		ML Feed Rate *f* (IPR)	ML Depth of Cut a_p (Inch)
Width of Cut CW (mm)	**2.0**	0.001 to 0.005	0.008 to 0.030
	3.0	0.002 to 0.006	0.012 to 0.050

★: Worldwide Warehouse Item

Combine the insert with a holder such that the width of cut (CW) matches. Not usable with GNDIS type holders. Recommended Cutting Conditions F10

Key Points for Facing

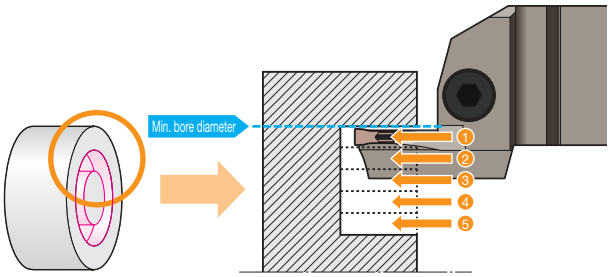
Holder Selection



· Select a holder with which the outer diameter of the first groove to be machined is between the maximum and minimum grooving diameters of the holder.
· If the machining start point is within the effective work diameter range, the diameter will not be limited for subsequent passes.

Precautions for Groove Expansion

Recommended Chipbreakers MG ML GG GL GF GA



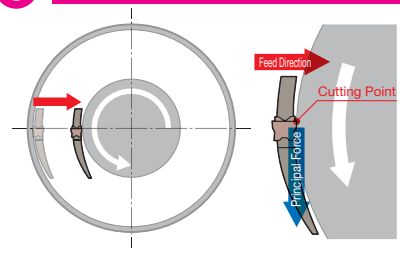
· If the first groove is within the effective work diameter range during groove expansion via plunging, the diameter will not be limited for subsequent passes.

Precautions for Traverse Cutting

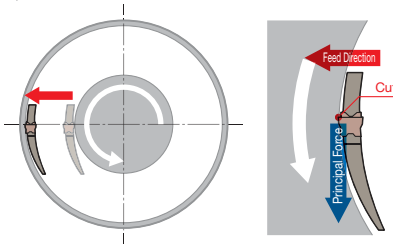
Recommended Chipbreakers MG ML RN

Considering the rigidity of the holder, we recommend machining from the outside to the inside.

○ External → Internal



× Internal → External



If machining is performed from the inner to the outer diameter, the wall thickness remaining on the principal force side will become thinner, reducing the rigidity of the holder.

· If the machining start point for traverse face cutting operation is within the effective work diameter range, the work diameter will not be limited for subsequent passes.
· Select the lower limit of the recommended cutting conditions for the chipbreaker and lengthen the chips for evacuation. (In face grooving, broken chips easily get stuck in grooves, which causes problems.)
· When breaking chips, step feed is required.

Key Points in Internal Diameter Machining

Precautions for Internal Diameter Machining

Recommended Chipbreakers ML GL GF

If the prepared hole diameter is small, use an ML type or GL type low-feed chipbreaker, both of which reduce chip curl diameter, to ensure adequate chip evacuation.



GCMN3004-MG



GCMN3002-ML



GCMN3002-GG



GCMN3002-GL

Part Material: Structural Steel Prepared Hole Diameter: ø25mm Holder: GNDI R2532-T306 Insert: GCM N300○-○○
Cutting Conditions: v_c = 330 SFM, f = 0.004 IPR, a_p = 0.118" Wet

Internal Diameter Machining



External Machining



GCMN3002-GG

⚠ Chip shapes differ between internal and external machining even under the same cutting conditions.

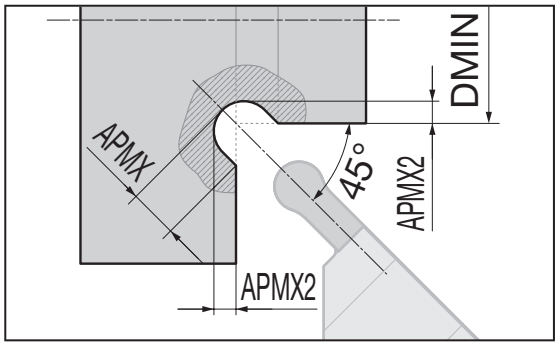
Part Material: Structural Steel
Holder: GNDL R2525M-320, Insert: GCM N3002-GG
Cutting Conditions: v_c = 330 SFM, f = 0.004 IPR, a_p = .197" Wet

Key Points for Necking

Precautions for Necking

Recommended Chipbreaker RN

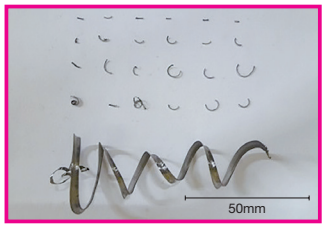
Distance from Work Material to Necking Depth

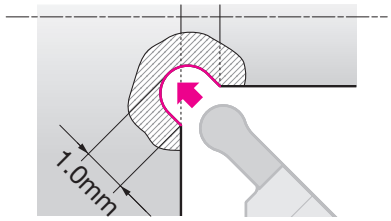


Seat Size CW (mm)	Necking Depth APMX (inch/*mm*)	Distance from Work Material to Necking Depth APMX2 (inch/*mm*)
2	.059 / *1.5*	.025 / *0.64*
3	.079 / *2.0*	.030 / *0.79*
4	.118 / *3.0*	.050 / *1.29*
5	.138 / *3.5*	.055 / *1.44*
6	.157 / *4.0*	.060 / *1.59*

· For necking, these conditions are recommended for each width of cut when grooving with RN type chipbreakers.
· To prevent interference with the work material, the work diameter for each GNDN type holder should be set to the minimum machining diameter (DMIN) or less.

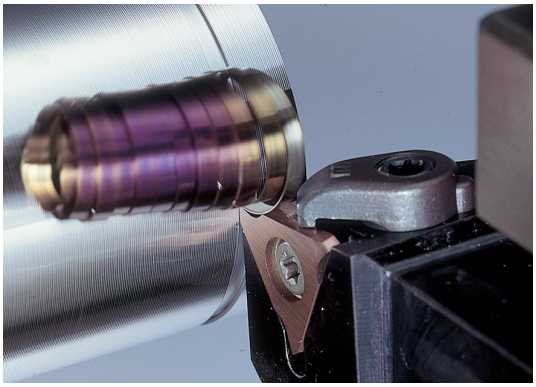
Chip Shape





Part Material : Cr–Mo Alloy Steel, Seat Size: 3
Holder : GNDN R2020K-325-020 Insert: GCMN3015-RN
Cutting Conditions: v_c= 330 SFM, f =0.004 IPR
Undercut Depth = 0.039” Wet

GWC Type



Features of GWC Type Series for Shallow Groove

- The same insert can be used for both external and internal grooving
- Full range of insert grades to cover a wide range of work materials
  Coated Carbide AC530U, Carbide H1, Coated Cermet T3000Z, Cermet T1500A, CBN BN2000, and PCD DA2200 are now in stock.
- A wide variety of grooving widths from (.060 - .090" & 0.33mm to 4.8mm
- SumiTurn B-Groove inserts with chipbreaker are now in stock
- Customers can modify the width of cut, nose radius and rake angle according to their own requirements with the blank inserts in stock.
  Customized edge shapes can be made-to-order.
  (Sumitomo Electric Carbide, Inc. also accepts such orders)

External

Double Clamp / Screw-on
for External Shallow Grooves

GWC
External Grooving

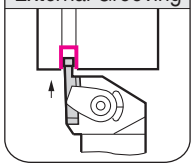


Fig 1

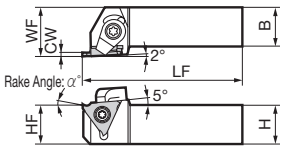


Fig 2

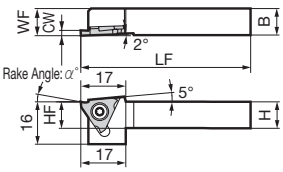


Fig 3

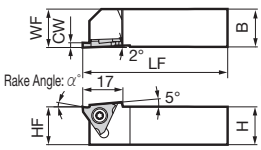
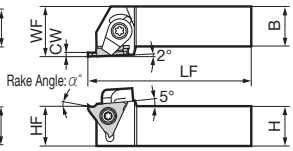
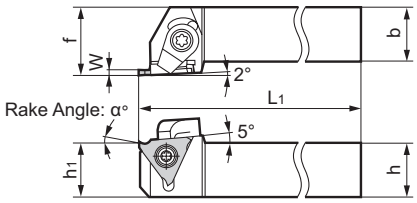


Fig 4



Note 1: Rake angle α° varies depending on the insert grade. Refer to the insert table on page F34 for details.
Note 2: Figures show right hand (R) tools.

Fig. 5



Holder

Parts

Dimensions (inch / *mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Max. Groove Depth	Applicable Number	Fig	Flat Screw	N·m	Wrench	Clamp	Double Screw	N·m	Wrench
GWC R/L083 New	●	●	.500	.500	5.00	.500	.500	*.33 to 2.80*	*.8 to 2.5*	1	2	BFTX0409N	3.4	TRX15	—	—	—	—
GWC R/L103 New	●	●	.625	.625	5.00	.625	.625	*.33 to 2.80*	*.8 to 2.5*	1	3							
GWC R/L124C-25	●	●	.750	.750	5.00	.938	.750	.060 - .090	.1378	3	5	BFTX0511N	5.0	TRX20	CCM8U R/L	WB8-22 TL/T	5.0*	LT27
GWC R/L124C-35	●	●	.750	.750	5.00	.938	.750	.100 - .189	.1969	4	5							
GWC R/L164D-25	●	●	1.000	1.000	6.00	1.18	1.000	.060 - .090	.1378	3	5							
GWC R/L164D-35	●	●	1.000	1.000	6.00	1.18	1.000	.100 - .189	.1969	4	5							
GWC R/L1010-3	★	★	*10*	*10*	*125*	*10*	*10*	*.33 to 2.80*	*.8 to 2.5*	1	2	BFTX0409N	3.4	TRX15	—	—	—	—
GWC R/L1212-3	★	★	*12*	*12*	*125*	*12*	*12*	*.33 to 2.80*	*.8 to 2.5*	1	2							
GWC R/L1616-3	★	★	*16*	*16*	*125*	*16*	*16*	*.33 to 2.80*	*.8 to 2.5*	1	3							
GWC R/L2020-3	★	★	*20*	*20*	*125*	*25*	*20*	*.33 to 2.80*	*.8 to 2.5*	1	1				CCM6B R/L	WB6-20 TL/T	5.0*	LT20
GWC R/L2525-3	★	★	*25*	*25*	*150*	*30*	*25*	*.33 to 2.80*	*.8 to 2.5*	1	1							
GWC R/L2020-15	★	★	*20*	*20*	*125*	*25*	*20*	*1.00 to 1.45*	*2.0*	2	4	BFTX0511N	5.0	TRX20	CCM8U R/L	WB8-22 TL/T	5.0*	LT27
GWC R/L2020-25	★	★	*20*	*20*	*125*	*25*	*20*	*1.50 to 2.30*	*3.5*	3	1							
GWC R/L2020-35	★	★	*20*	*20*	*125*	*25*	*20*	*2.50 to 4.80*	*5.0*	4	1							
GWC R/L2525-15	★	★	*25*	*25*	*150*	*30*	*25*	*1.00 to 1.45*	*2.0*	2	4							
GWC R/L2525-25	★	★	*25*	*25*	*150*	*30*	*25*	*1.50 to 2.30*	*3.5*	3	1							
GWC R/L2525-35	★	★	*25*	*25*	*150*	*30*	*25*	*2.50 to 4.80*	*5.0*	4	1							

* mark: Cermet inserts have a recommended tightening torque of 4N·m.
Right-handed (R) tool holders can be used with right-handed (R) inserts.

* Refer to TGA type insert group numbers on pages F35 & F36 for applicable inserts. Select applicable inserts for the holders by using matching group numbers.

* Right-handed (R) tool holders are compatible with left-handed clamps (CCM○□L) and right-handed double screws (WB○-2○T)
Left-handed (L) tool holders are compatible with right-handed clamps (CCM○□R) and left-handed double screws (WB○-2○TL).

N·m Recommended Tightening Torque (N·m)

●= USA Stocked item ★= World Wide Warehouse Item

GWCS Type / GWCI Type

External

Double Clamp for External L-Shaped (Side Cut) Shallow Grooves

GWCS

External Grooving

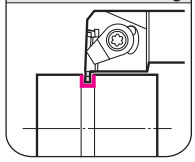
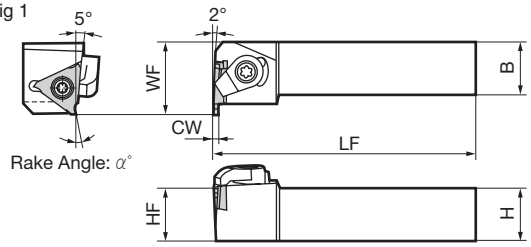


Fig 1



Note 1: Rake angle α° varies depending on the insert grade.
Refer to the insert table at the bottom of this page for details.
Note 2: Figure shows right hand (R) tool.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Max. Groove Depth	Applicable Number	Fig	Flat Screw	N·m	Wrench	Clamp	Double Screw	N·m	Wrench
GWCS R/L2020-3	★	★	20	20	125	25	20	0.33 to 2.80	0.8 to 2.5	1	1	BFTX0409N	3.4	TRX15	CCM6B R/L	WB6-20 TL/T	5.0*	LT20
GWCS R/L2525-3	★	★	25	25	150	30	25	0.33 to 2.80	0.8 to 2.5	1	1							
GWCS R/L2020-15	★	★	20	20	125	27	20	1.00 to 1.45	2.0	2	1	BFTX0511N	5.0	TRX20	CCM8U R/L	WB8-22 TL/T	5.0*	LT27
GWCS R/L2020-25	★	★	20	20	125	27	20	1.50 to 2.30	3.5	3	1							
GWCS R/L2020-35	★	★	20	20	125	27	20	2.50 to 4.80	5.0	4	1							
GWCS R/L2525-15	★	★	25	25	150	32	25	1.00 to 1.45	2.0	2	1							
GWCS R/L2525-25	★	★	25	25	150	32	25	1.50 to 2.30	3.5	3	1							
GWCS R/L2525-35	★	★	25	25	150	32	25	2.50 to 4.80	5.0	4	1							

* mark: Cermet inserts have a recommended tightening torque of 4N·m.
Right-handed (R) tool holders can be used with left-handed (L) inserts.

* Refer to TGA type insert group numbers on pages F35 and F36 for GWCS type holder applicable inserts. Select applicable inserts for the holders by using matching group numbers.

* Right-handed (R) tool holders are compatible with right-handed clamps (CCM○□R) and left-handed double screws (WB○-2○TL).
Left-handed (L) tool holders are compatible with left-handed clamps (CCM○□L) and right-handed double screws (WB○-2○T).

Internal

Screw-on for Internal Diameter Shallow Grooving

GWCI

Internal Grooving

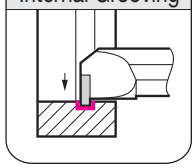
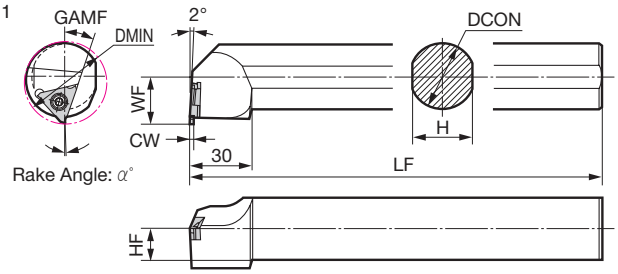


Fig 1



Note 1: Rake angle α° varies depending on the insert grade.
Refer to the insert table at the bottom of this page for details.
Note 2: Figure shows right hand (R) tool.

Holder

Parts

Dimensions (inch / *mm*)

Cat. No.	Stock R	Stock L	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Min. Bore Diameter DMIN	Rake Angle GAMF	Width of Cut CW	Max. Groove Depth	Applicable Number	Fig	Flat Screw	N·m	Wrench
GWCI R/L204	●	●	1.250	1.181	10.0	.890	.590	1.580	16°	.050-.189	.070-.100	2/3/4	1	BFTX0511N	5.0	TRX20
GWCI R/L325	●	●	*25*	*23*	*220*	*17.5*	*11.5*	*35*	*14°*	*0.33 to 2.80*	*0.5 to 2.0*	1	1	BFTX0409N	3.4	TRX15
GWCI R/L432	●	●	*32*	*30*	*250*	*23.0*	*15.0*	*40*	*16°*	*1.25 to 4.80*	*1.7 to 2.5*	2/3/4	1	BFTX0511N	5.0	TRX20

Right-handed (R) tool holders can be used with left-handed (L) inserts.
*Refer to TGA type insert group numbers on pages F35 and F36 for GWCI type holder applicable inserts.

● Rake angle when fitted on a holder (E)

	Coated Carbide AC530U	Carbide H1	Coated Cermet T3000Z	Cermet T1500A	SUMIBORON BN2000	SUMIDIA DA2200
External Grooving GWC GWCS	10°	20°	10°	5°	0°	10°
Internal Grooving GWCI R/L325	1°	11°	1°	-4°	-9°	1°
Internal Grooving GWCI R/L432	-1°	9°	-1°	-6°	-11°	-1°

●= USA Stocked item ★= World Wide Warehouse Item

N·m Recommended Tightening Torque (N·m)

TGA Inserts

(Coated Carbide / Cermet / Carbide / SUMIBORON / SUMIDIA)

Fig 1

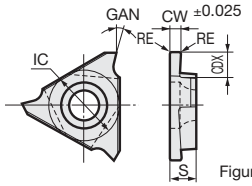


Figure shows right hand (R) tool.

Grade		Cutting Edge	GAN
Coated Carbide	AC530U	Honing	15°
Carbide	H1	Sharp Edge	25°
Coated Cermet	T3000Z	Honing	15°
Coated Cermet	T2500Z	Honing	15°
Cermet	T1500A	Sharp Edge	10°
SUMIBORON	BN2000	Negative Land	5°
SUMIDIA	DA2200	Sharp Edge	15°

* For the rake angle when fitted on the holder, refer to page F34.

Square Edged Grooving Insert

Dimensions (mm)

Cat. No.	AC530U		H1		T2500Z		T3000Z		T1500A		BN2000		DA2200		Width of Cut CW	Maximum Depth of Cut		Maximum Groove Depth (mm)	Nose Radius	Inscribed Circle	Thickness	*Group No.	Fig
	R	L	R	L	R	L	R	L	R	L	R	L	R	L		O.D.	Internal Diameter	CDX	RE	IC	S		
TGA R/L3033(E)	★	★	★	★	★	●	★	★	★	★	—	—	—	—	0.33	0.8	0.5	1.0	0.05	9.525	3.18	1	1
TGA R/L3050(E)	★	★	★	★	★	★	★	★	★	★	—	—	—	—	0.50	1.2	0.8	1.4	0.05	9.525	3.18	1	1
TGA R/L3075(E)	★	★	★	★	★	★	★	★	★	★					0.75								1
TGA R/L3095(E)	★	★	★	★	★	★	★	★	★	★					0.95								1
TGA R/L3100(E)	★	★	★	★	★	★	★	★	★	★					1.00								1
TGA R/L3110(E)	★	★			★	★	★	★	★	★					1.10								1
TGA R/L3125(E)	★	★	★	★	★	★	★	★	★	★					1.25								1
TGA R/L3135(E)	★	★			★	★	★	★	★	★					1.35	2.0	1.5	2.5	*3 0.1	9.525	3.18	1	1
TGA R/L3145(E)	★	★	★	★	★		★	★	★	★					1.45								1
TGA R/L3150(E)	★	★	★	★	★	★	★	★	★	★					1.50								1
TGA R/L3165(E)	★	★				★	★	★	★	★					1.65								1
TGA R/L3175(E)	★	★			★	★	★	★	★	★					1.75								1
TGA R/L3185(E)	★	★	★	★		★	★	★	★	★					1.85								1
TGA R/L3200(E)	★	★	★	★	★	★	★	★	★	★					2.00								1
TGA R/L3220(E)	★	★				★	★	★	★	★					2.20								1
TGA R/L3230(E)	★	★	★	★	★	★	★	★	★	★					2.30								1
TGA R/L3250(E)	★	★	★	★	★	★	★	★	★	★					2.50	2.5	2.0	3.0	*3 0.1	9.525	3.18	1	1
TGA R/L3265(E)	★	★			★		★	★	★	★					2.65								1
TGA R/L3270(E)	★	★			★		★	★	★	★					2.70								1
TGA R/L3280(E)	★	★			★	★	★	★	★	★					2.80								1
TGA R/L4125(E)	★	★	★	★	★	★	★	★	★	★	★		★		1.25	2.0	1.7	2.5	*2 0.2	12.70	4.76	2	1
TGA R/L4145(E)	★	★	★	★	★		★	★	★	★					1.45								1
TGA R/L4150(E)	★	★	★	★	★	★	★	★	★	★	★		★		1.50								1
TGA R/L4165(E)	★	★			★	★	★	★	★	★					1.65								1
TGA R/L4175(E)	★	★	★	★	★	★	★	★	★	★					1.75								1
TGA R/L4185(E)	★	★	★	★	★	★	★	★	★	★					1.85	3.5	2.5	3.9	*2 0.2	12.70	4.76	3	1
TGA R/L4200(E)	★	★	★	★	★	★	★	★	★	★	★		★		2.00								1
TGA R/L4220(E)	★	★			★		★	★	★	★					2.20								1
TGA R/L4230(E)	★	★	★	★	★	★	★	★	★	★					2.30								1
TGA R/L4250(E)	★	★	★	★	★	★	★	★	★	★	★		★		2.50								1
TGA R/L4265(E)	★	★	★	★	★	★	★	★	★	★					2.65	*1 5.0	2.5	*1 5.4	*2 0.3	12.70	4.76	4	1
TGA R/L4270(E)	★	★				★	★	★	★	★					2.70								1
TGA R/L4280(E)	★	★	★	★	★	★	★	★	★	★					2.80	*1 5.0	2.5	*1 5.4	*2 0.3	12.70	4.76	4	1
TGA R/L4300(E)	★	★	★	★	★	★	★	★	★	★	★		★		3.00								1
TGA R/L4320(E)	★	★			★		★	★	★	★					3.20	*1 5.0	2.5	5.4	*2 0.3	12.70	4.76	4	1
TGA R/L4330(E)	★	★	★	★	★	★	★	★	★	★					3.30								1
TGA R/L4350(E)	★	★	★	★	★		★	★	★	★	★		★		3.50								1
TGA R/L4370(E)	★	★					★	★	★	★					3.70				*2 0.3				1
TGA R/L4390(E)	★	★			★	★	★	★	★	★					3.90								1
TGA R/L4400(E)	★	★	★	★	★		★	★	★	★	★		★		4.00								1
TGA R/L4410(E)	★	★			★		★	★	★	★					4.10								1
TGA R/L4420(E)	★	★			★		★	★	★	★					4.20	5.0	2.5	5.4		12.70	4.76	4	1
TGA R/L4430(E)	★	★	★	★			★	★	★	★					4.30				*2 0.4				1
TGA R/L4440(E)	★	★					★	★	★	★					4.40								1
TGA R/L4450(E)	★	★	★	★	★	★	★	★	★	★					4.50								1
TGA R/L4480(E)	★	★	★	★	★		★	★	★	★					4.80						5.00		1

* Add E as the part number suffix for T1500A.
Select applicable inserts for the holders by using matching group numbers.
*1: CDX = 4.4 (maximum groove depth 4.0) for SUMIBORON and SUMIDIA (2.5 for internal diameter machining)
*2: RE = 0.2 for SUMIBORON; RE = 0.1 for SUMIDIA
*3: T1500A is RE = 0.2

TGA / TGA PSC

Fig 1

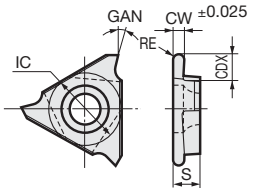


Figure shows right hand (R) tool.

(Coated Carbide / Cermet / Carbide)

Grade		Cutting Edge	GAN
Coated Carbide	AC530U	Honing	15°
Carbide	H1	Sharp Edge	25°
Coated Cermet	T3000Z	Honing	15°
Coated Cermet	T2500Z	Honing	15°
Cermet	T1500A	Sharp Edge	10°
SUMIBORON	BN2000	Negative Land	5°
SUMIDIA	DA2200	Sharp Edge	15°

* For the rake angle when fitted on the holder, refer to page F34.

Round Edged Grooving Insert

Dimensions (mm)

Cat. No.	AC530U		H1		T2500Z		T3000Z		Width of Cut CW	Maximum Depth of Cut		Maximum Groove Depth (mm) CDX	Nose Radius RE	Inscribed Circle IC	Thickness S	*Group No.	Fig
	R	L	R	L	R	L	R	L		O.D.	Internal Diameter						
TGA R/L4050R	★	★	★	★	★		★		1.00	**2.0**	**1.7**	2.5	0.50	12.70	4.76	2	1
TGA R/L4075R	★	★	★	★	★		★		1.50	**3.5**	**2.5**	3.9	0.75	12.70	4.76	3	1
TGA R/L4100R	★	★	★	★	★		★		2.00				1.00				1
TGA R/L4125R	★	★	★	★	★		★		2.50	**5.0**	**2.5**	5.4	1.25	12.70	4.76	4	1
TGA R/L4150R	★	★	★	★	★		★		3.00				1.50				1
TGA R/L4200R	★	★	★	★	★		★		4.00				2.00				1

* Refer to pages F33 and F34 for group numbers of holders that can be used with the GWC, GWCS and GWCI types.
Select applicable inserts for the holders by using matching group numbers.

Recommended Cutting Conditions

Work Material	P General Steel			M Stainless Steel			N Non-ferrous Metal		H Hardened Steel
Insert Grade	AC530U	T2500Z/T3000Z	T1500A	AC530U	T2500Z/T3000Z	T1500A	H1	DA2200	BN2000
Cutting Speed v_c (SFM)	160 to 650	330 to 600	330 to 600	160 to 650	260 to 500	260 to 400	650 to 1000	650 to 1000	260 to 400
Feed Rate f (IPR)	.001 to .004	.002 to .004	.002 to .003	.001 to .004	.002 to .003	.002 to .003	.002 to .006	.002 to .006	.001 to .003

● Ordering TGA Type Special Inserts

Use the "Special Grooving Insert Request Form" when ordering special inserts (with different shapes, widths of cut, and cutting edge lengths).

Make a copy of the form, fill it out and send it to a Sumitomo Electric Carbide, Inc. Sales Representative or distributor.

■ TGA PSC

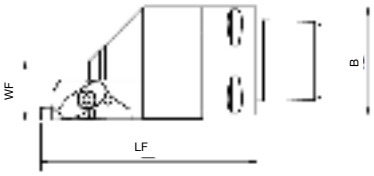
Characteristics of GWC PSC Series

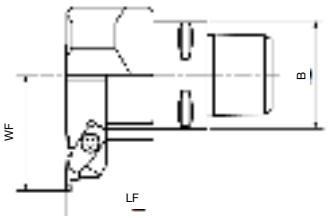
- Similar insert can be use for both external and internal grooving
- Full range of insert grades to cover a wide range of work materials available:

Coated Carbide: AC530U
Uncoated Carbide: H1
Coated Cermet: T3000Z
Cermet :T1500A/T1200A
SUMIBORON: BN2000/BN250
SUMIDIA: DA2200

- A wide variation of grooving widths from 1.5mm to 4.8mm







■ Cassette

Cat. No. R / L	Stock R	Stock L	Grooving Width w (mm)	Grooving Depth a_r (mm)	Insert	Insert Screw	Tightening Torque (N·m)	Insert Wrench	Clamp	Cap Screw	Tightening Torque (N·m)	Clamp Wrench
GWCCM□25	★	★	*1.5 - 2.3*	*3.9*	TGA □4□□□	BFTX0511N	5.0	TRX20	CLWN01	BX0414	3.0	LH030
GWCCM□35	★	★	*2.5 - 4.8*	*5.4*	TGA □4□□□							

■ Holder

Holder (R/L)	Catalog Number	Stock		B	WF	LH	Torx Screw	Tightening Torque (N·m)	Wrench	Note
	PSC40GM00 R/L	★	★	*40 mm*	*22 mm*	*80 mm*	BFTX0619N	7.5	TRD25	Right handed Cassette goes with right handed holder
	PSC50GM00 R/L	★	★	*50mm*	*27 mm*	*80 mm*				Left handed Cassette goes with left handed holder
	PSC40GM90 R/L	★	★	*40 mm*	*42 mm*	*52.50 mm*				Right handed Cassette goes with left handed holder
	PSC50GM90 R/L	★	★	*50 mm*	*47 mm*	*55 mm*				Left handed Cassette goes with right handed holder

SumiTurn B-Groove



B-Groove

■ General Features

SumiTurn B-Groove (BF Type) inserts with chipbreaker have been added to the TGA Type grooving insert lineup to solve chip control problems.

■ Features

- Achieves good chip control in a wide range of grooving processes
- Good chip control during final wide groove touch-up with traverse cutting
- Series expansion of 14 items for circlip groove machining, covering grooving widths from 1.4mm to 4.5mm for a total of 60 stocked items.
- The AC530U grade with Super ZX Coat for a longer tool life is now in stock to cover various materials from steel and stainless steel to non-ferrous metals

Fig 1

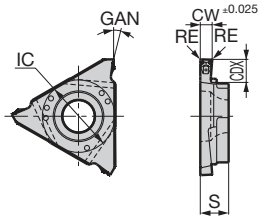
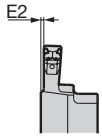


Fig 2



Grade		Cutting Edge	GAN
Coated Carbide	AC530U	Honing	15°

* For the rake angle when fitted on the holder, refer to page F34.

Note 1: Please note that inserts with edge width (CW) less than 1.85mm have different cutting edge distance (E2).
Note 2: Figure shows right hand (R) tool.

Recommended Cutting Conditions

Work Material	Machining Details	Cutting Conditions		Groove Width CW (mm) 1.4 to 2.3	2.5 to 3.3	3.5 to 4.5
General Steel P	Cutting Speed v_c (m/min)			50 to 180	50 to 180	50 to 180
	Grooving	Feed Rate f (mm/rev)		0.03 to 0.12	0.04 to 0.12	0.05 to 0.12
		Depth of Cut a_p (mm)	O.D.	up to 3.5	up to 5.0	up to 5.0
			Internal Diameter	up to 2.5	up to 2.5	up to 2.5
	Traverse Cutting	Feed Rate f (mm/rev)		0.03 to 0.10	0.05 to 0.10	0.07 to 0.12
		Depth of Cut a_p (mm)		up to 0.3	up to 0.5	up to 0.7
Stainless Steel M	Cutting Speed v_c (m/min)			50 to 160	50 to 160	50 to 160
	Grooving	Feed Rate f (mm/rev)		0.03 to 0.12	0.04 to 0.12	0.05 to 0.12
		Depth of Cut a_p (mm)	O.D.	up to 3.5	up to 5.0	up to 5.0
			Internal Diameter	up to 2.5	up to 2.5	up to 2.5
	Traverse Cutting	Feed Rate f (mm/rev)		0.03 to 0.10	0.05 to 0.10	0.07 to 0.12
		Depth of Cut a_p (mm)		up to 0.3	up to 0.5	up to 0.7

* Refer to pages F33 and F34 for group numbers of holders that can be used with the GWC, GWCS and GWCI types.
Select applicable inserts for the holders by using matching group numbers.

(Coated Carbide)

Chipbreaker Insert for Square Grooves BF Type

Dimensions (inch/*mm*)

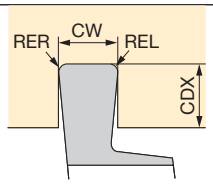
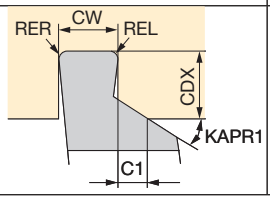
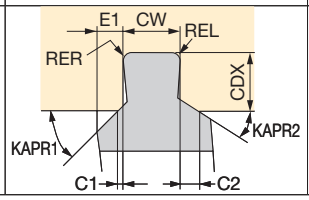
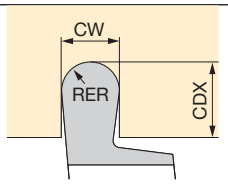
Cat. No.	AC530U R	AC530U L	Width of Cut CW	Maximum Depth of Cut O.D.	Maximum Depth of Cut Internal Diameter	Maximum Groove Depth (mm) CDX	Nose Radius RE	Inscribed Circle IC	Thickness S	Cutting Edge Distance E2	Group No.	Fig
TGA R/L40062BF	●	●	.062	.138	.098	.154	.008	.500	.187	.016	3	2
TGA R/L40072BF	●	●	.072							.010	3	2
TGA R/L40088BF	●	●	.088							.003	3	2
TGA R/L40094BF	●	●	.094							0	4	1
TGA R/L40097BF	●	●	.097								4	1
TGA R/L40105BF	●	●	.105	.197		.213	.012				4	1
TGA R/L40110BF	●	●	.110								4	1
TGA R/L40122BF	●	●	.122								4	1
TGA R/L40125BF	●	●	.125								4	1
TGA R/L40142BF	●	●	.142								4	1
TGA R/L40156BF	●	●	.156				.016				4	1
TGA R/L4140BF01	★	★	*1.40*	*2.0*	*1.7*	*2.5*	*0.1*	*12.70*	*4.76*	*0.300*	2	2
TGA R/L4165BF01	★	★	*1.65*	*3.5*	*2.5*	*3.9*	*0.1*	*12.70*	*4.76*	*0.175*	3	2
TGA R/L4190BF01	★	★	*1.90*							*0*		1
TGA R/L4220BF01	★	★	*2.20*									1
TGA R/L4270BF02	★	★	*2.70*	*5.0*	*2.5*	*5.4*	*0.1*	*12.70*	*4.76*	*0*	4	1
TGA R/L4320BF02	★	★	*3.20*									1
TGA R/L4420BF02	★	★	*4.20*									1
TGA R/L4150BF	★	★	*1.50*	*3.5*	*2.5*	*3.9*	*0.2*	*12.70*	*4.76*	*0.250*	3	2
TGA R/L4165BF	★	★	*1.65*							*0.175*		2
TGA R/L4175BF	★	★	*1.75*							*0.125*		2
TGA R/L4185BF	★	★	*1.85*							*0.075*		2
TGA R/L4200BF	★	★	*2.00*							*0*		1
TGA R/L4220BF	★	★	*2.20*									1
TGA R/L4230BF	★	★	*2.30*									1
TGA R/L4250BF	★	★	*2.50*	*5.0*	*2.5*	*5.4*	*0.3*	*12.70*	*4.76*	*0*	4	1
TGA R/L4265BF	★	★	*2.65*									1
TGA R/L4270BF	★	★	*2.70*									1
TGA R/L4280BF	★	★	*2.80*									1
TGA R/L4300BF	★	★	*3.00*									1
TGA R/L4320BF	★	★	*3.20*									1
TGA R/L4330BF	★	★	*3.30*									1
TGA R/L4350BF	★	★	*3.50*									1
TGA R/L4370BF	★	★	*3.70*									1
TGA R/L4390BF	★	★	*3.90*									1
TGA R/L4400BF	★	★	*4.00*	*5.0*	*2.5*	*5.4*	*0.4*	*12.70*	*4.76*	*0*	4	1
TGA R/L4410BF	★	★	*4.10*									1
TGA R/L4420BF	★	★	*4.20*									1
TGA R/L4430BF	★	★	*4.30*									1
TGA R/L4440BF	★	★	*4.40*									1
TGA R/L4450BF	★	★	*4.50*									1

Special Grooving Insert Request Form

This form applies to the GWC Type (page F4), GWCS Type (page F5) and GWCI Type (page F5) inserts.

To order special grooving inserts, fill out the form below (indicate preference by circling the item or specify dimensions), and send it to a Sumitomo Sales Representative or distributor. (Make a copy of this form.) For grooving insert shapes, widths of cut, cutting edge lengths and grades not listed below, contact your Sumitomo Sales Representative or distributor.

Your Company / Contact Information (Phone / Fax / Address, etc.)

Cat. No.	①	②	③	④
Shape				
Uses	Internal Grooving / External Grooving			
Holders	GWC Type (page F4) / GWCS Type (page F5) / GWCI Type (page F5)			
Direction	Right Hand (R) / Left Hand (L)			
Insert Size	"3": ø9.525 "4": ø12.70			
CW				
CDX				
C1				
C2				
E1				
RER				
REL				
KAPR1				
KAPR2				
Grade				
Quantity				
Remarks				

Form instructions

1. The above illustration shows only external right-hand and internal left-hand inserts.
   (The external left-hand and internal right-hand inserts will be opposite to the above illustration.)
2. The following two insert sizes are available.
   3: Inscribed circle 9.525mm
   4: Inscribed circle 12.70mm
3. Dimension limits for groove width and groove depth.
   (1) Maximum Width of Cut (CW): 4.8mm
   - For Models ① and ④ : CW ≤ 4.8 (SumiTurn B-Groove (BF Type) is 4.5mm)
   - For Model ② : CW + C1 ≤ 4.8 (SumiTurn B-Groove (BF Type) is 4.5mm)
   - For Model ③ : CW + E1 (or C1) + C2 ≤ 4.8 (SumiTurn B-Groove (BF Type) is 4.5mm)

   (2) Minimum Width of Cut (CW) · For Insert Size "3": CW ≥ 0.33mm
   · For Insert Size "4": CW ≥ 0.75mm

   (3) Groove Depth (CDX) · For Insert Size "3": CDX ≤ 0.8 to CDX ≤ 2.5mm (For I.D.: CDX ≤ 0.8 to CDX ≤ 2.0)
   · For Insert Size "4": CDX ≤ 2.0 to CDX ≤ 5.0mm (For I.D.: CDX ≤ 2.0 to CDX ≤ 2.5)
4. SumiTurn B-Groove (BF Type) grooving inserts with chipbreaker are limited to insert size 4 and AC530U grade.
   For shape details, please contact us directly.
5. The following shows the standard tolerance for inserts.

Symbol	Standard Tolerance
CW	±0.025mm
CDX	±0.05mm
KAPR1, KAPR2	±1°

   Unless otherwise specified, inserts are made to standard tolerances.
6. Insert grades are based on the catalogue numbers in stock.
7. The applicable tool holders for Models ①, ② and ④ should match the CW dimension. Contact us for Model ③.

Facing

Clamp-on
for Very Small Diameter Face Grooving

CKB
Face Grooving

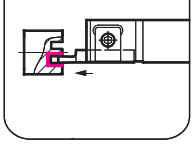
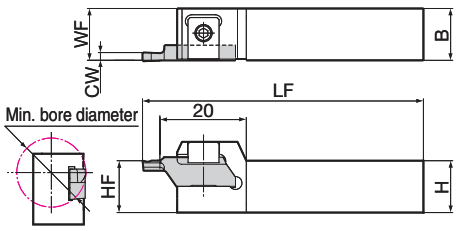


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Clamp	Double Screw	Wrench
CKBR1010-16	●	*10*	*10*	*111*	*10*	*10*	1			
CKBR1212-16	●	*12*	*12*	*136*	*12*	*12*	1			
CKBR1616-16	●	*16*	*16*	*136*	*16*	*16*	1	CKBW16	WB4-8	LH020
CKBR2020-16	●	*20*	*20*	*136*	*20*	*20*	1			
CKBR2525-16		*25*	*25*	*161*	*25*	*25*	1			

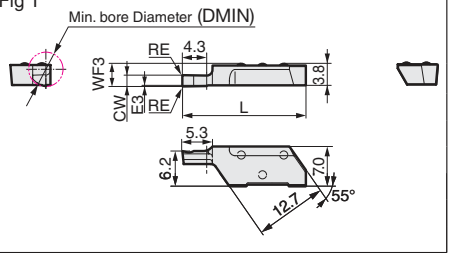
*For round shank holders, refer to page E64.

Insert (Coated Carbide)

Dimensions (*mm*)

Cat. No.	AC7150	Min. Work Diameter DMIN	Cutting Edge Distance WF3	Cutting Edge Distance E3	Width of Cut CW	Nose Radius RE	Overall Length L	Max. Groove Depth CDX	Fig
KBMFR0615-05	●	*6.0*	*4.0*	*0.2*	*1.5*	*0.05*	*21.8*	*4.0*	1
KBMFR0620-05	●	*6.0*	*4.0*	*0.2*	*2.0*	*0.05*	*21.8*	*4.0*	1
KBMFR0630-05	●	*6.0*	*4.0*	*0.2*	*3.0*	*0.05*	*21.8*	*4.0*	1

Fig 1



●: USA Stocked Item

★: Worldwide Warehouse Item

▲: USA Limited Availability Item

Internal

Clamp-on
for Internal Diameter Narrow Grooving

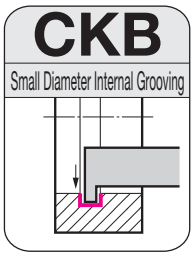
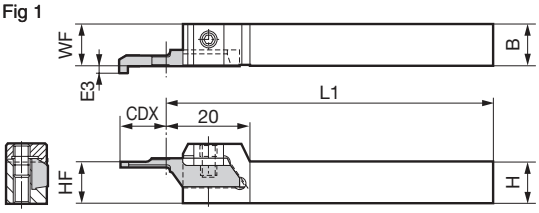


Fig 1



Refer to the insert table for E3 and CDX values.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length L1	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Clamp	Double Screw	Wrench
CKB R1010-16	●	10	10	100	10	10	1			
CKB R1212-16	●	12	12	125	12	12	1			
CKB R1616-16	●	16	16	125	16	16	1	CKBW16	WB4-8	LH020
CKB R2020-16	●	20	20	125	20	20	1			
CKB R2525-16		25	25	150	25	25	1			

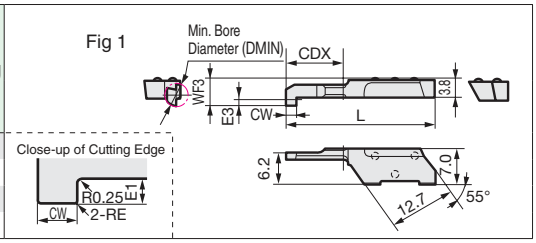
Refer to the insert table for E3 and CDX values.

Insert (Coated Carbide)

Dimensions (mm)

Cat. No.	AC1030U	Min. Bore Diameter DMIN	Width of Cut CW	Cutting Edge Distance WF3	Cutting Edge Distance E3	Nose Radius RE	Overall Length L	Maximum Groove Depth (mm) CDX	Fig
KBMG R0411-05	●	4.0	1.00	4.90	1.1	0.05	28.5	11	1
KBMG R0411-10	●	4.0	2.00	4.90	1.1	0.10	28.5	11	1
KBMG R0511-05	●	5.0	1.00	5.10	1.3	0.05	28.5	11	1
KBMG R0511-10	●	5.0	2.00	5.10	1.3	0.10	28.5	11	1

Fig 1



●: USA Stocked Item

★: Worldwide Warehouse Item

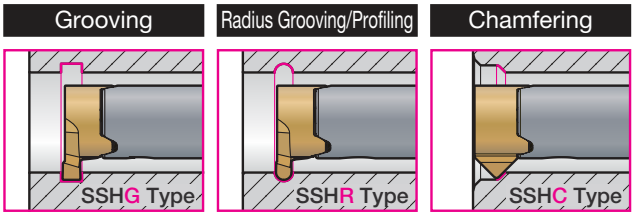
▲: USA Limited Availability Item

SSH Type



■ Features

- Internal coolant supply for outstanding chip evacuation
- Tough carbide body for stable machining even with small diameters
- Adopts AC1030U for excellent machined surface quality
- Min. bore diameter of ø8mm and up supported
- Wide variety of widths of cut
  In addition to grooving applications, we have a lineup of 12 catalog items for c-clip groove machining

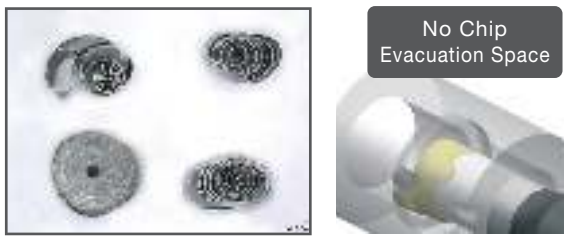


■ Chip Control



Stable and smooth evacuation of curled chips even on small bore diameters

SSH Type



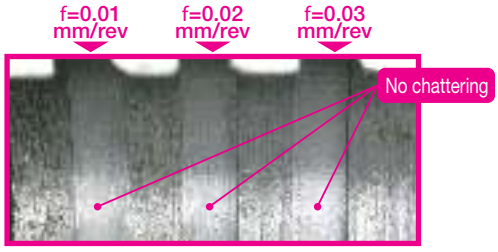
Evacuation from grooves is poor, inviting sudden breakage

Competitor's Product

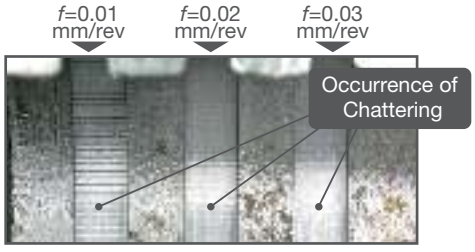
Part Material: Medium Strength Steel (S45C) Diameter: ø13mm Cutting Conditions: v_c=50m/min, f=0.02mm/rev, a_p=1.0mm Wet (Oil-based)

■ SSH Type Chatter Resistance

Outstanding sharpness and carbide shank suppress chatter



SSH Type



Competitor's Product

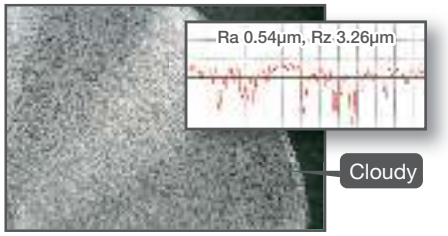
Part Material: edium Strength Steel (S45C) Diameter: ø13mm Cutting Conditions: v_c=100m/min, f=0.01, 0.02, 0.03mm/rev, a_p=0.2mm Wet (Oil-based)

■ SSH Type Machined Surface Quality

Glossy, Beautiful Surface Finish



SSH Type



Competitor's Product

Part Material: Alloy Steel (SCM440) Diameter: ø30mm Cutting Conditions: v_c=180m/min, f=0.02mm/rev, a_p=0.2mm Wet (Oil-based)

New Internal

SSH
Internal Grooving

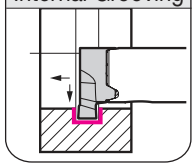


Fig 1

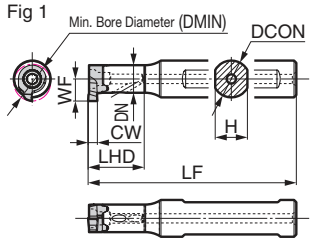
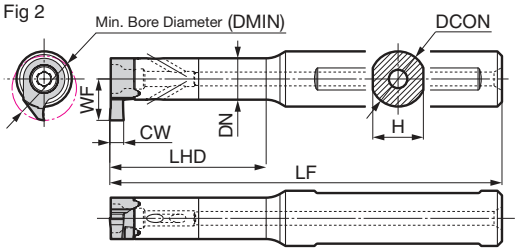


Fig 2



Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Diameter DCON	Head Dia. DN	Height H	Overall Length LF	Head LHD	Min. Bore Diameter DMIN	Width of Cut CW	Applicable Insert	Fig	Flat Screw	N·m	Wrench
E08D-SSHM N125-08	★	8	6	7	60	12.5	8	**0.74 to 2.00**	SSH□ R/L 08...	1	BFTX02608IPS	1.2	TRX08IP
E08E-SSHM N210-08	★	8	6	7	70	21.0	8	**0.74 to 2.00**		1			
E12E-SSHM N125-08	★	12	6	11	70	12.5	8	**0.74 to 2.00**		1	BFTX02608IPS	1.2	TRX08IP
E12F-SSHM N210-08	★	12	6	11	80	21.0	8	**0.74 to 2.00**		1			
E12G-SSHM N300-08	★	12	6	11	90	30.0	8	**0.74 to 2.00**		1			
E12H-SSHM N420-08	★	12	6	11	100	42.0	8	**0.74 to 2.00**		1			
E12X-SSHM N195-14	★	12	9	11	75	19.5	14	**0.74 to 3.00**	SSH□ R/L 14...	2	BFTX0412IPS	5.0	LT15IP
E12H-SSHM N340-14	★	12	9	11	100	34.0	14	**0.74 to 3.00**		2			
E12J-SSHM N450-14	★	12	9	11	110	45.0	14	**0.74 to 3.00**		2			
E12X-SSHM N640-14	★	12	9	11	130	64.0	14	**0.74 to 3.00**		2			
E16F-SSHM N195-14	★	16	9	14	80	19.5	14	**0.74 to 3.00**		2	BFTX0412IPS	5.0	LT15IP
E16H-SSHM N340-14	★	16	9	14	100	34.0	14	**0.74 to 3.00**		2			
E16J-SSHM N450-14	★	16	9	14	110	45.0	14	**0.74 to 3.00**		2			
E16X-SSHM N640-14	★	16	9	14	130	64.0	14	**0.74 to 3.00**		2			

*The LF dimensions above are dimensions with SSHG/SSHR type insert mounted. For WF dimensions, see the table below.

Insert (Coated Carbide)

Dimensions (mm)

Applications	Cat. No.	AC1030U R	AC1030U L	Width of Cut CW	Max. Groove Depth CDX	Nose Radius RE	Cutting Edge Distance WF3	Cutting Edge Distance WF	Thickness S	Cutting Edge Distance E2	Applicable Holder	Fig
Grooving	**SSHG R/L 0807400**	★	★	**0.74**	**1.0**	-	3.2	4.80	3.6	0.4	E08□-SSHMN○○○-08 E12□-SSHMN○○○-08	1
	R/L 0808400	★	★	**0.84**	**1.0**	-	3.2	4.80	3.6	0.4		1
	R/L 0809400	★	★	**0.94**	**1.0**	-	3.2	4.80	3.6	0.4		1
	R/L 0810000	★	★	**1.00**	**1.0**	-	3.2	4.80	3.1	-		1
	R/L 0811900	★	★	**1.19**	**1.0**	-	3.2	4.80	3.1	-		1
	R/L 0813900	★	★	**1.39**	**1.0**	-	3.2	4.80	3.0	-		1
	R/L 0815000	★	★	**1.50**	**1.0**	-	3.2	4.80	3.0	-		1
	R/L 0816900	★	★	**1.69**	**1.0**	-	3.2	4.80	3.0	-		1
	R/L 0820000	★	★	**2.00**	**1.0**	-	3.2	4.80	3.0	-		1
Radius Grooving/ Profiling	**SSHR R/L 08080**	★	★	**0.80**	**1.0**	0.40	3.2	4.80	3.1	-		2
	R/L 08120	★	★	**1.20**	**1.0**	0.60	3.2	4.80	3.1	-		2
	R/L 08180	★	★	**1.80**	**1.0**	0.90	3.2	4.80	3.0	-		2
Chamfering	**SSHC R/L 08454502**	★	★	-	**1.4**	0.20	1.8	4.65	3.6	-		3
Grooving	**SSHG R/L 1407400**	★	★	**0.74**	**1.2**	-	5.3	9.00	5.5	0.2	E12□-SSHMN○○○-14 E16□-SSHMN○○○-14	1
	R/L 1408400	★	★	**0.84**	**1.3**	-	5.3	9.00	5.5	0.2		1
	R/L 1409400	★	★	**0.94**	**1.5**	-	5.3	9.00	5.5	0.2		1
	R/L 1410000	★	★	**1.00**	**1.6**	-	5.3	9.00	5.5	0.2		1
	R/L 1411900	★	★	**1.19**	**4.0**	-	5.3	9.00	5.2	-		1
	R/L 1413900	★	★	**1.39**	**4.0**	-	5.3	9.00	5.1	-		1
	R/L 1415000	★	★	**1.50**	**4.0**	-	5.3	9.00	5.1	-		1
	R/L 1416900	★	★	**1.69**	**4.0**	-	5.3	9.00	5.1	-		1
	R/L 1420000	★	★	**2.00**	**4.0**	-	5.3	9.00	5.1	-		1
	R/L 1425000	★	★	**2.50**	**4.0**	-	5.3	9.00	5.1	-		1
	R/L 1430000	★	★	**3.00**	**4.0**	-	5.3	9.00	5.1	-		1
Radius Grooving/ Profiling	**SSHR R/L 14120**	★	★	**1.20**	**4.0**	0.60	5.3	9.00	5.2	-		2
	R/L 14180	★	★	**1.80**	**4.0**	0.90	5.3	9.00	5.1	-		2
	R/L 14200	★	★	**2.00**	**4.0**	1.00	5.3	9.00	5.1	-		2
	R/L 14220	★	★	**2.20**	**4.0**	1.10	5.3	9.00	5.1	-		2
	R/L 14300	★	★	**3.00**	**4.0**	1.50	5.3	9.00	5.1	-		2

Fig 1 (For Grooving)

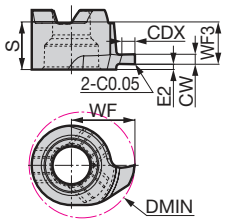


Fig 2 (For Radius Grooving/Profiling)

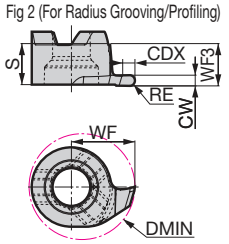


Fig 3 (For Chamfering)

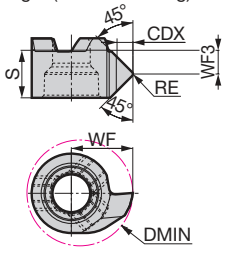


Figure shows right hand (R) tool.

■ Recommended Cutting Conditions

Part Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed v_c (SFM)	65-650	50-265	65-525
Feed Rate f (IPR)	0.0004-0.0012	0.0004-0.0012	0.0004-0.0012

N·m Recommended Tightening Torque (N·m) ★: Worldwide Warehouse Item

Internal

Screw-on
for Internal Diameter Narrow Grooving

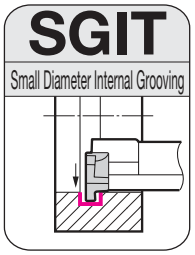
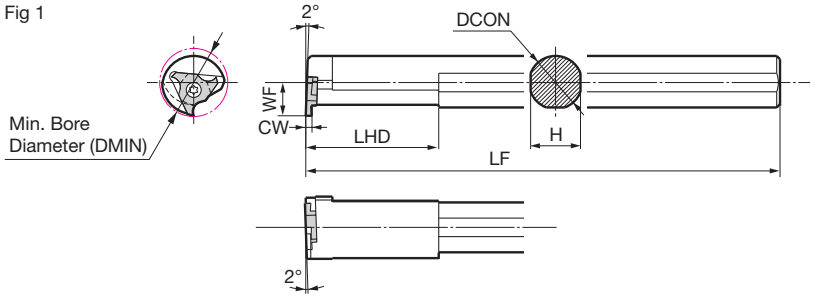


Fig 1



Holder

Parts Dimensions (mm)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Head LHD	Min. Bore Diameter	Width of Cut CW	Max. Groove Depth	Applicable Insert	Fig	Flat Screw	Wrench
SGIT R08	★	8	7.0	125	5.0	20	10.0	0.50 to 2.00	0.8*	GITL3○○○	1	BFTX02506NS	RT08
SGIT R10	★	10	9.0	150	6.0	25	12.0	0.50 to 2.00	0.8*		1		
SGIT R12	★	12	11.0	180	7.0	30	14.0	1.00 to 2.00	1.8	GITL5○○○	1	BFTX0307NS	RT10
SGIT R14	★	14	13.0	180	8.0	35	16.0	1.00 to 2.00	1.8		1		
SGIT R16	★	16	15.0	200	10.0	40	20.0	1.50 to 2.00	2.8	GITL6○○○	1	BFTX0307NS	RT10
SGIT R20	★	20	19.0	200	12.0	40	25.0	1.50 to 2.00	2.8		1		

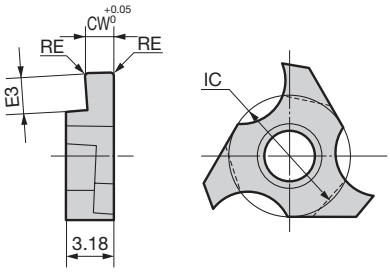
* The maximum groove depth is 0.5mm when GITL3050 is set. (Cutting edge CW = 0.5mm)

Insert (Coated Carbide)

Dimensions (mm)

Cat. No.	ACZ150	Width of Cut CW	Cutting Edge Distance E3	Nose Radius RE	Inscribed Circle IC	Applicable Holder	Fig
GIT L3050	★	0.50	1.2	0.05	5.56	SGIT R08 SGIT R10	1
GIT L3065	★	0.65	1.2	0.05	5.56		1
GIT L3075	★	0.75	1.2	0.05	5.56		1
GIT L3100	★	1.00	1.2	0.05	5.56		1
GIT L3125	★	1.25	1.2	0.20	5.56		1
GIT L3145	★	1.45	1.2	0.20	5.56		1
GIT L3150	★	1.50	1.2	0.05	5.56		1
GIT L3200	★	2.00	1.2	0.10	5.56		1
GIT L5100	★	1.00	2.2	0.05	7.94	SGIT R12 SGIT R14	1
GIT L5145	★	1.45	2.2	0.20	7.94		1
GIT L5150	★	1.50	2.2	0.05	7.94		1
GIT L5175	★	1.75	2.2	0.20	7.94		1
GIT L5200	★	2.00	2.2	0.10	7.94		1
GIT L6150	★	1.50	3.2	0.20	9.525	SGIT R16 SGIT R20	1
GIT L6175	★	1.75	3.2	0.20	9.525		1
GIT L6200	★	2.00	3.2	0.20	9.525		1

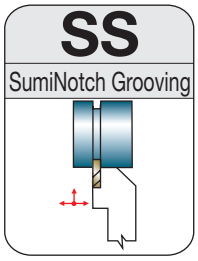
Fig 1

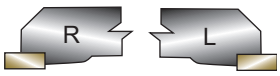


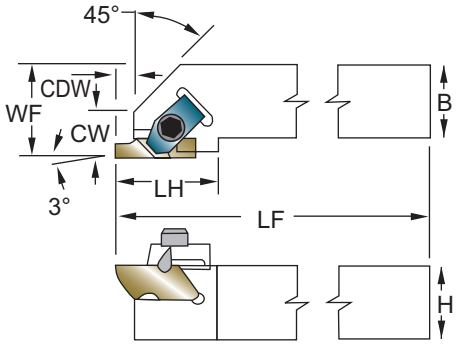
SumiNotch Type

SS

SumiNotch Grooving



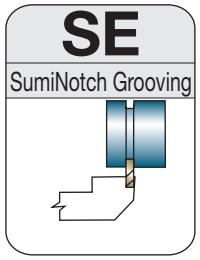


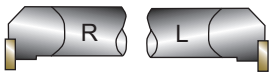


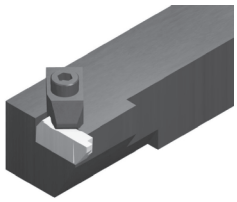
Catalog Number		Stock		B	H	LF	CDW	LH	WF	CW	Applicable Insert		Right Hand Clamp	Left Hand Clamp	Screw
Right	Left	R	L												
SSR062	**SSL062**	★	★	.375	.375	2.5	.138	1.25	.562	.50	SG-2R	SG-2L	TF74	TF75	S-310 / ST1291
SSR-82V	**SSL-82V**	★	★	.500	.500	3.5	.138	1.25	.750	.50					
SSR-102B	**SSL-102B**	★	★	.625	.625	4.5	.138	1.25	.875	.50					
SSR-122B	**SSL-122B**	★	★	.750	.750	4.5	.138	1.25	1.000	.50					
SSR-162C	**SSL-162C**	★	★	1.000	1.000	5.0	.138	1.25	1.250	.50					
SSR-123A	**SSL-123A**	★	★	.750	.750	4.0	.210	1.25	1.000	.50	SG-3R	SG-3L	TF72	TF73	S-412 / ST-1297
SSR-123B	**SSL-123B**	★	★	.750	.750	4.5	.210	1.25	1.000	.50					
SSR-163C	**SSL-163C**	★	★	1.000	1.000	5.0	.210	1.25	1.250	.50					
SSR-163D	**SSL-163D**	★	★	1.000	1.000	6.0	.210	1.25	1.250	.50					
SSR-203D	**SSL-203D**	★	★	1.250	1.250	6.0	.210	1.25	1.500	.50					

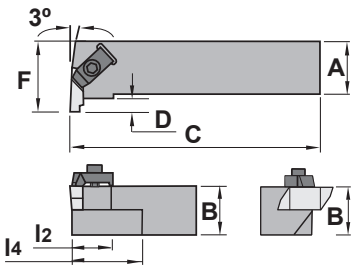
SE

SumiNotch Grooving





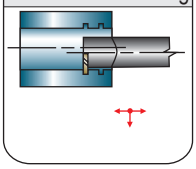




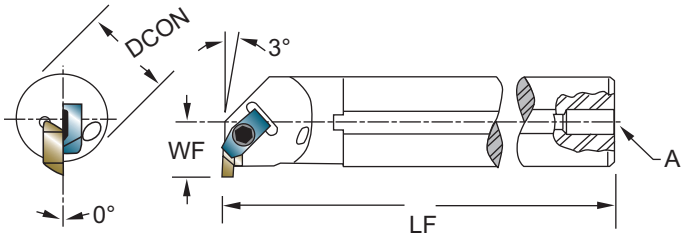
Catalog Number		Stock		H	B	LH	LF	LH	D	WF	Applicable Insert		Right Hand Clamp	Left Hand Clamp	Screw
Right	Left	R	L												
SER062	**SEL062**	★	★	.375	.375	.500	2.5	1.000	.138	.750	SG-2R	SG-2L	TF74	TF75	ST-1291
SER082J	**SEL082J**	★	★	.500	.500	.500	3.5	1.000	.138	.750					
SER102B	**SEL102B**	★	★	.625	.625	-	4.5	1.000	.138	.750					
SER122B	**SEL122B**	★	★	.750	.750	.500	4.5	1.000	.138	1.000					
SER123B	**SEL123B**	★	★	.750	.750	.750	4.5	2.000	.210	1.125	SG-3R	SG-3L	TF72	TF73	ST-1297
SER163D	**SEL163D**	★	★	1.000	1.000	.750	6.0	2.000	.210	1.250					
SER203D	**SEL203D**	★	★	1.250	1.250	.750	6.0	2.000	.210	1.500					

A-SE

SumiNotch Grooving





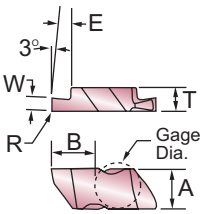


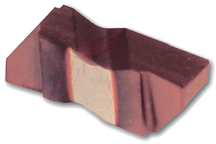
Catalog Number		Stock		DCON	LF	WF	Min. Bore	D	A	Applicable Insert		Right Hand Clamp	Left Hand Clamp	Screw
Right	Left	R	L											
A08-SER2	**A08-SEL2**	★	★	.500	8.000	.437	.730	.138	1/4-18 NPT	SG-2R	SG-2L	TF74	TF75	S-310
A10-SER2	**A10-SEL2**	★	★	.625	10.000	.500	1.000	.138	1/4-18 NPT					
A12-SER2	**A12-SEL2**	★	★	.750	10.000	.562	1.125	.138	1/4-18 NPT					
A16-SER2	**A16-SEL2**	★	★	1.000	12.000	.688	1.375	.138	1/4-18 NPT					
A16-SER3	**A16-SEL3**	★	★	1.000	12.000	.688	1.375	.210	1/4-18 NPT	SG-3R	SG-3L	TF72	TF73	S-412
A20-SER3	**A20-SEL3**	★	★	1.250	14.000	.875	1.750	.210	1/4-18 NPT					
A24-SER3	**A24-SEL3**	★	★	1.500	14.000	1.000	2.000	.210	1/4-18 NPT					

★: Worldwide Warehouse Item

Note: Right-hand boring bars use left-hand inserts. Left-hand boring bars use right-hand inserts.

SumiNotch Type - Inserts





Left				Dimensions (in)							Right			
	Coated	CBN										Coated	CBN	
SG	EH520V	BN250	BN350	W ±.001	R	E ±.001	T	A	B	Gage Dia.	**SG**	EH520V	BN250	BN350
SG-2031L	•			.031	.002/.005	.050					**SG-2031R**	•		
SG-2041L	•			.041	.002/.005	.050					**SG-2041R**	•		
SG-2047L	•			.047	.002/.005	.050					**SG-2047R**	•		
SG-2058L	•			.058	.005/.010	.050	.150	.219	.2700	.1875	**SG-2058R**	•		
SG-2062L	•			.062	.005/.010	.110					**SG-2062R**	•		
SG-2094L	•			.094	.005/.010	.110					**SG-2094R**	•		
SG-2125L	•			.125	.005/.010	.110					**SG-2125R**	•		
SG-3047L	•			.047	.005/.010	.120					**SG-3047R**	•	•	•
SG-3062L	•	•	•	.062	.005/.010	.120					**SG-3062R**	•	•	•
SG-3072L	•			.072	.005/.010	.120					**SG-3072R**	•		
SG-3088L	•			.088	.005/.010	.180					**SG-3088R**	•		
SG-3094L	•	•	•	.094	.005/.010	.180					**SG-3094R**	•	•	•
SG-3097L	•			.097	.005/.010	.180					**SG-3097R**	•		
SG-3105L	•			.105	.005/.010	.180					**SG-3105R**	•		
SG-3110L	•			.110	.005/.010	.180	.195	.344	.4050	.3750	**SG-3110R**	•		
SG-3122L	•			.122	.005/.010	.180					**SG-3122R**	•		
SG-3125L	•	•	•	.125	.005/.010	.180					**SG-3125R**	•	•	•
SG-3142L	•			.142	.005/.010	.180					**SG-3142R**	•		
SG-3156L	•			.156	.005/.010	.180					**SG-3156R**	•		
SG-3178L	•			.178	.005/.010	.180					**SG-3178R**	•		
SG-3185L	•			.185	.020/.025	.180					**SG-3185R**	•		
SG-3189L	•			.189	.020/.025	.180					**SG-3189R**	•		•

Left		Dimensions (in)							Right	
	Coated									Coated
SG-CB	EH520V	W ±.001	R	E ±.001	T	A	B	Gage Dia.	**SG-CB**	EH520V
SG-2047L-CB	•	.047	.002/.005	.050					**SG-2047R-CB**	•
SG-2062L-CB	•	.062	.005/.010	.110					**SG-2062R-CB**	•
SG-2078L-CB	•	.078	.005/.010	.110	.150	.219	.2700	.1875	**SG-2078R-CB**	•
SG-2094L-CB	•	.094	.005/.010	.110					**SG-2094R-CB**	•
SG-2125L-CB	•	.125	.005/.010	.110					**SG-2125R-CB**	•
SG-3047L-CB	•	.047	.005/.010	.075					**SG-3047R-CB**	•
SG-3062L-CB	•	.062	.005/.010	.120					**SG-3062R-CB**	•
SG-3072L-CB	•	.072	.005/.010	.120					**SG-3072R-CB**	•
SG-3078L-CB	•	.078	.005/.010	.120	.195	.344	.4050	.3750	**SG-3078R-CB**	•
SG-3088L-CB	•	.088	.005/.010	.180					**SG-3088R-CB**	•
SG-3094L-CB	•	.094	.005/.010	.180					**SG-3094R-CB**	•
SG-3125L-CB	•	.125	.005/.010	.180					**SG-3125R-CB**	•
SG-3189L-CB	•	.189	.020/.025	.180					**SG-3189R-CB**	•

• = USA Stocked Item

Recommended Cutting Conditions

Cutting Conditions below reflect EH520V grade

Material		Speed (SFM)	Feed Rate (in/rev)
Steels	free-machining carbon alloys plain carbon steels alloy steels 190-330HB alloy steels 330-450HB	450-750 400-700 400-700 350-600	.004 - .012
Stainless Steels	martensitic/ferritic stainless steel austenitic stainless steel	250-650 175-700	.004 - .009
Cast Iron	gray cast iron 190-330HB gray cast iron 330-450HB alloy/ductile irons	400-700 350-600 250-650	.004 - .015
High Temperature Alloys	high temp alloys 200-260HB high temp alloys 260-450HB titanium alloys Ti 6Al-4V	60-250 30-175 90-250	.003 - .008
Non-Ferrous Materials	free-machining aluminum alloys copper/zinc/brass non-metallics	600-2500 300-900 350-1200	.004 - .012

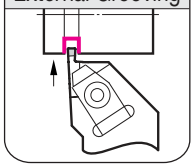
GWB Type



■ Features

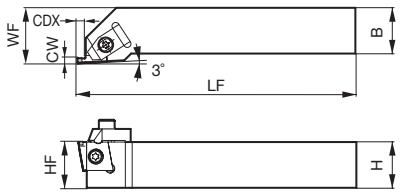
- Vertically-mounted insert enhances tool rigidity
- Double clamping holder design improves stability during continuous and interrupted cutting. Can also be used for traverse cutting
- Long tool life for interrupted cutting applications with the Coated CBN - SUMIBORON BNC30G grade for grooving (BN2000 recommended for continuous cutting)
- Suited for grooving hardened steel, powdered metals, and cast irons. Variety of widths available from .059 to .236" and 1.5 to 6.0mm

GWB
External Grooving



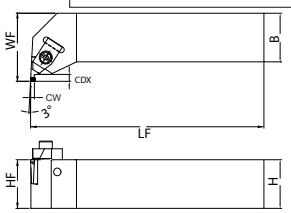
External | CBN

Fig 1



Double Clamp
for Hardened Steel Shallow Grooves

Fig. 2



Holder

Dimensions (inch / *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Max. Groove Depth CDX	Group No.	Fig	Clamp	Cap Screw	N·m	Flat Screw	Spring	Wrench
Inch	**GWB R/L 165D4**	●	●	1.00	1.00	6.000	1.181	1.0	.059 ≤ CW ≤ .177	.138 to .197	1	1	TF72 (Right Hand) / TF73 (Left Hand)	BX0520T	5.0	BFTX0511N	GSP06	TRX20
	GWB R/L 165D6	●	●	1.00	1.00	6.039	1.181	1.0	.059 ≤ CW ≤ .236	.197	2	1						
Inch 90° Series	**GWBS R/L 125D4**	●	●	.750	.750	6.000	.880	.750	.059 ≤ CW ≤ .177	.138 to .197	1	2						
	GWBS R/L 165D4	●	●	1.00	1.00	6.000	1.167	1.0	.059 ≤ CW ≤ .177	.138 to .197	1	2						
	GWBS R/L 165D6	●	●	1.00	1.00	6.000	1.167	1.0	.177 ≤ CW ≤ .236	.197	2	2						
	GWBS R/L 205D4	●	●	1.25	1.25	6.000	1.75	1.25	.059 ≤ CW ≤ .177	.138 to .197	1	2						
Metric	**GWB R/L 2525-45**	★	★	*25*	*25*	*151 (150)*	*30*	*25*	*1.5 ≤ CW ≤ 4.5*	*3.5 to 5.0*	1	1						
	GWB R/L 2525-60	★	★	*25*	*25*	*151*	*30*	*25*	*4.5 < CW ≤ 6.0*	*5.0*	2	1						

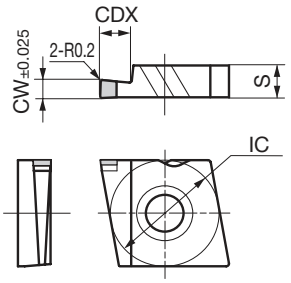
Dimensions in ( ) are for width of cut (CW) of 3.0 or less. GWBR holders take Right-Handed insert – GWBL take Left-Handed inserts. GWBSR takes Left-Handed insert and clamp, GWBSL take Right-Handed insert and clamp.

Insert (□SUMIBORON)

Dimensions (inch / *mm*)

Cat. No.	BN7000 R	BN7000 L	BN7500 R	BN7500 L	BN2000 R	BN2000 L	BNC30G R	BNC30G L	Width of Cut CW	Groove Depth CDX	Inscribed Circle IC	Thickness S	Group No.	Applicable Holder	Fig
CGA R/L 4062					●	●	●	●	.062	.1378	.625	.1875	1	GWB R/L 1□□D4	1
CGA R/L 4094					●	●	●	●	.094	.1575	.625	.1875	1	GWB R/L 2525-45	1
CGA R/L 4125					●	●	●	●	.125	.1969	.625	.1875	1		1
CGA R/L 6189					●	●	●	●	.189	.1969	.625	.250	2	GWB R/L 2525-60 / GWB R/L 1□□D6	1
CGA R/L 1504150	●	●	●	●	●	●	●	●	*1.5*	*3.5*	*15.875*	*4.76*			1
CGA R/L 1504200	●	●	●	●	●	●	●	●	*2.0*	*3.5*	*15.875*	*4.76*			1
CGA R/L 1504250					●	●	●	●	*2.5*	*4.0*	*15.875*	*4.76*		GWB R/L 1□□D4	1
CGA R/L 1504300	●	●	●	●	●	●	●	●	*3.0*	*4.0*	*15.875*	*4.76*	1	GWB R/L 2525-45	1
CGA R/L 1504350					●	●	●	●	*3.5*	*5.0*	*15.875*	*4.76*			1
CGA R/L 1504400	●	●	●	●	●	●	●	●	*4.0*	*5.0*	*15.875*	*4.76*			1
CGA R/L 1504450					●	●	●	●	*4.5*	*5.0*	*15.875*	*4.76*			1
CGA R/L 1506500					●	●	●	●	*5.0*	*5.0*	*15.875*	*6.35*			1
CGA R/L 1506550					●	●	●	●	*5.5*	*5.0*	*15.875*	*6.35*	2	GWB R/L 2525-60 GWB R/L 1□□D6	1
CGA R/L 1506600					●	●	●	●	*6.0*	*5.0*	*15.875*	*6.35*			1

Fig 1



* It is also possible to manufacture widths of cut other than those listed above (CW = 1.5 to 6.0mm).

Grade Features (See page L9 for details on BN7000 & BN7500)

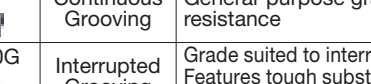
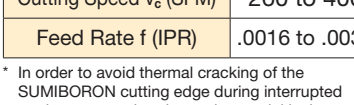
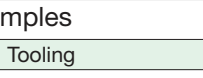
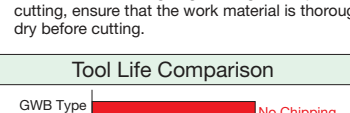
Grade	Application Range	Features	HV(GPa)	TRS(GPa)
BN2000	Continuous Grooving	General-purpose grade with superior wear resistance	31 to 34	1.0 to 1.1
BNC30G	Interrupted Grooving	Grade suited to interrupted grooving. Features tough substrate and special ceramic coating that exhibits both peel-off and wear resistance.	33 to 35	1.1 to 1.2

Recommended Cutting Conditions

Cutting Conditions	H Hardened Steel
Cutting Speed v_c (SFM)	260 to 400
Feed Rate f (IPR)	.0016 to .0032

* In order to avoid thermal cracking of the SUMIBORON cutting edge during interrupted cutting, ensure that the work material is thoroughly dry before cutting.

Application Examples

Tooling	Work Material	Tool Cat. No.	Cutting Condition	Tool Life Comparison
Shaft Grooving: Continuous  Required Surface Roughness for Groove Sides: Ra0.4μm	Carburized steel 58 to 62HRC	CGAR1504200 BN2000	v_c: 120m/min f : 0.05mm/rev Groove Depth: 2mm Dry	
Spline Grooving: Interrupted 	Carburized steel 58 to 62HRC	CGAR1504200 BNC30G	v_c: 100m/min f : 0.05mm/rev Groove Depth: 1.6mm Dry	

N·m Recommended Tightening Torque (N·m)

CGA PSC / BNGG

CGA PSC

■ Features & Benefits

- New double clamping system provides reliable grooving of hardened steel
- 80° tangentially mounted CGA style insert for improved rigidity
- Wide range of widths and grades for continuous and interrupted grooving operations
- New special coated CBN grade BNC30G extends tool life of insert





■ Cassette

Cat. No. R / L	Stock R	Stock L	Grooving Width w (mm)	Grooving Depth a_r (mm)	Insert	Insert Screw	Tightening Torque (N·m)	Insert Wrench	Clamp	Cap Screw	Tightening Torque (N·m)	Clamp Wrench
GWBCM□45	★	★	1.5 - 2.0	3.5	CGA1504□□0 CGA4□□□	BFTX0511N	5.0	TRX20	CLWN01	BX0414	3.0	LH030
			2.5 - 3.0	4.0								
GWBCM□60	★	★	3.5 - 6.0	5.0	CGA1506□□0 CGA6□□□							

■ Holder

Holder (R/L)	Catalog Number	Stock	Stock	B	WF	LH	Torx Screw	Tightening Torque (N·m)	Wrench	Note
	PSC40GM00 R/L	★	★	40 mm	22 mm	82 mm	BFTX0619N	7.5	TRD25	Right handed Cassette goes with right handed holder
	PSC50GM00 R/L	★	★	50mm	27 mm	82 mm				Left handed Cassette goes with left handed holder
	PSC40GM90 R/L	★	★	40 mm	43 mm	52.5 mm				Right handed Cassette goes with left handed holder
	PSC50GM90 R/L	★	★	50 mm	48 mm	55 mm				Left handed Cassette goes with right handed holder

BNGG



External CBN

Top Clamp
for Hardened Steel Shallow Grooves

■ Features & Benefits

- Improved rigidity for longer tool life
  Strong clamping reduces insert breakage and holder chatter
- Enhanced tooling for 2mm fine grooves or threading
  Grooving and threading can be done by changing the support



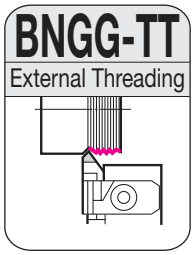


Fig 1 (Grooving)

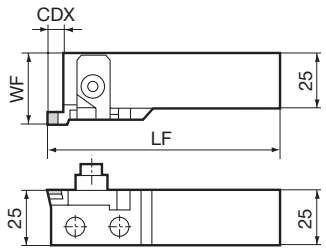
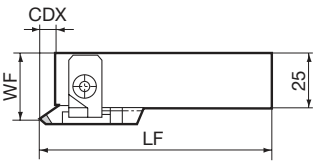


Fig. 2 (Threading)



Holder

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Cutting Edge Distance WF	Groove Depth CDX	Overall Length LF	Applicable Insert	Shank Size	Fig
Grooving	BNGG R/L 160	●		1.250	.200	6.000	BNGNT	1.00 x 1.00	1
	BNGG R/L2525-200	★		*30.5*	*4*	*150*	BNGNT0200 R/L	25mm x 25mm	1
	BNGG R/L2525-250	★		*30.5*	*4*	*150*	BNGNT0250 R/L		1
	BNGG R/L2525-300	★		*30.5*	*5*	*150*	BNGNT0300 R/L		1
	BNGG R/L2525-400	★		*30.5*	*6*	*151*	BNGNT0400 R/L		1
	BNGG R/L2525-500	★		*30.5*	*6*	*151*	BNGNT0500 R/L		1
	BNGG R/L2525-600	★		*30.5*	*7*	*152*	BNGNT0600 R/L		1
	BNGG R/L2525-TT	★		*28.5*	*5*	*150*	BNTT1020 R/L, BNTT1530 R/L		2

Inserts are not embedded into tool holders.

* Holder body is universal. The anvil can be configured for different groove widths or threading by changing the support.

Insert (□SUMIBORON)

Dimensions (mm)

	Cat. No.	BN250 R	BN250 L	BNX20 R	BNX20 L	BN350 R	BN350 L	BNX25 R	BNX25 L	Width of Cut CW	Groove Depth CDX	Nose Radius RE	Overall Length L	Cutting Edge Distance WF3	Applicable Holder	Fig
Grooving	BNGNT0200 R/L	●				●				**2.0**	4.0	0.2	25	6.0	BNGG R/L 2525-200	1
	BNGNT0250 R/L	●				●				**2.5**	4.0	0.2	25	6.0	BNGG R/L 2525-250	1
	BNGNT0300 R/L	●				●				**3.0**	5.0	0.4	25	6.0	BNGG R/L 2525-300	1
	BNGNT0400 R/L	●				●				**4.0**	6.0	0.4	26	6.0	BNGG R/L 2525-400	1
	BNGNT0500 R/L	●				●				**5.0**	6.0	0.4	26	6.0	BNGG R/L 2525-500	1
	BNGNT0600 R/L	●				●				**6.0**	7.0	0.4	27	6.0	BNGG R/L 2525-600	1
Threading	BNTT1020 R/L	●								Pitch 1.0 to 2.0		0.14	25	4.0	BNGG R/L 2525-TT	2
	BNTT1530 R/L	●								Pitch 1.5 to 3.0		0.2	25	4.0		2

Fig. 1 (Grooving)

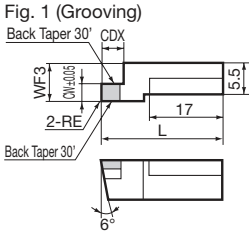
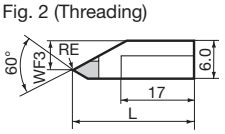


Fig. 2 (Threading)



Parts

Anvil Sold Separately

Applicable Holder	Anvil	Clamp	Adjustment Screw	Spring	Cap Screw	Wrench	
BNGG R/L 160	BNGS R/L	BNGC R/L	FMJ	GSP06	BX0615 (For Clamp) BX0414 (For Support)	LH050 (For Clamp) LH030 (For Support)	1.8×45
BNGG R/L2525-200	BNGS R/L 200						
BNGG R/L2525-250	BNGS R/L 250						
BNGG R/L2525-300	BNGS R/L 300						
BNGG R/L2525-400	BNGS R/L 400						
BNGG R/L2525-500	BNGS R/L 500						
BNGG R/L2525-600	BNGS R/L 600						
BNGG R/L2525-TT	BNGS R/L TT						

Recommended Cutting Conditions

• Grooving

Cutting Conditions	H Hardened Steel
Cutting Speed v_c (SFM)	250 – 400
Feed Rate *f* (ipr)	.001 - .0025

• Threading

Cutting Conditions	H Hardened Steel
Cutting Speed v_c (m/min)	250 – 400
Feed Rate *f* (in.)	Maximum Pitch .118

Cut-Off Tools F

F48 to F57



Cut-Off Tools

SumiGrip Jr.
SumiGrip
SEC-Small Diameter Cut-Off Tool Holders

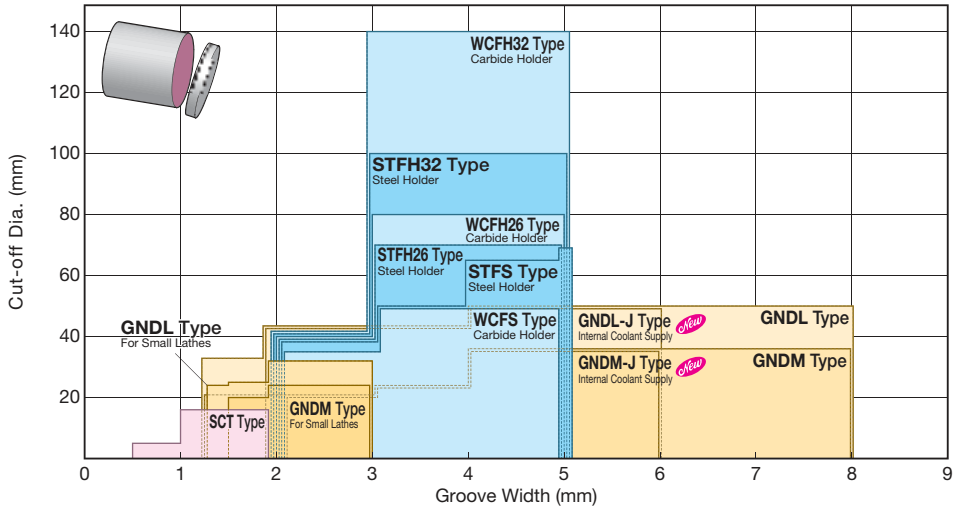
SEC-Cut-Off Tool Series Selection Guide F49
SumiGrip Introduction F50
WCF Inserts F51
STFH Type F52
STFS Type F53
WCFH Type F54
WCFS Type F55
SCT Type F56

Stock Markings and Symbols

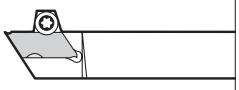
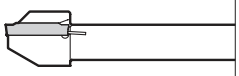
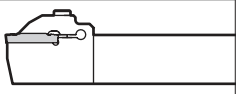
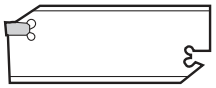
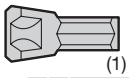
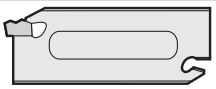
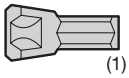
●: Standard stocked item
★: Worldwide Warehouse Item
▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

Cut-off



■ Range of Tool Applications (For Solid Workpieces)

Applications	Series	Shape	Insert Shape (): indicates no. of cutting edges	Cut-off Dia. / Groove Width	Features
For Small Lathes	**SCT**		 (2) In Stock: Right Left Neutral	16.0 / 2.0 / 0.5	· Ground insert with good sharpness · Can clamp even from behind · 2-cornered type
For Small to Medium Diameters	**GNDM/ GNDL** For Small Lathes		 (2) In Stock: Right Left Neutral	32.0 / 1.25 / 3.0	· High-rigidity design and outstanding chip control · Unground 2-cornered type Available with widths starting at 1.25mm
	GNDM(-J)/ GNDL(-J)			50.0 / 2.0 / 8.0	· High-rigidity body, rigid clamping · Outstanding chip control · Unground 2-cornered type
For Medium to Large Diameters	**STFH/ STFS** (SumiGrip Jr.)		 (1) In Stock: Right Left Neutral	100.0 / 2.0 / 5.0	· Can be used for large diameter machining up to ø100mm · Economical steel shank · 1-cornered self-grip type
	WCFH/ WCFS (SumiGrip)		 (1) In Stock: Right Left Neutral	140.0 / 2.0 / 5.0	· Can be used for large diameter machining up to ø140mm · High-rigidity carbide shank · 1-cornered self-grip type

■ Cut-Off Tool Series

Small Diameter Cut-Off Tool Holders **SCT Type**		· Our first recommendation for small lathes · Excellent sharpness reduces cutting resistance and central pips!	
Cut-off Tool Holders **GND Type** (GNDM(-J) Type / GNDL(-J) Type)		· Our first recommendation for small to medium diameters · Enables stable cutting off due to high-rigidity body and rigid clamping	
Cut-off Tool Holders **SumiGrip Jr.** Steel Shank **SumiGrip** Carbide Shank		· Our first recommendation for medium to large diameters · Blade type is also available for cutting off up to ø140mm	

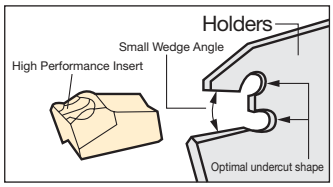


■ Features

- Available in carbide blade (SumiGrip) and steel blade (SumiGrip Jr.)
- Capable of interrupted machining.
- Can be used for cutting off, grooving, chamfering, etc.

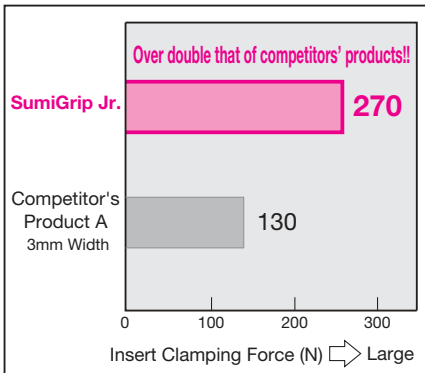
■ Types

1. Tool Block Type
   STFH Type (Steel)/WCFH Type (Carbide)
2. Shank Type
   STFS Type (Steel)/WCFS Type (Carbide)

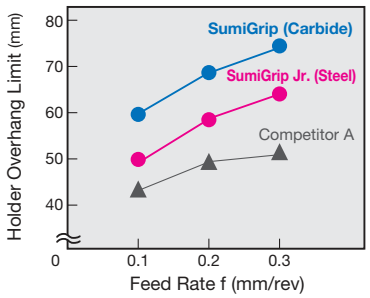


■ Cutting Performance (Holder)

● Insert Clamping Force

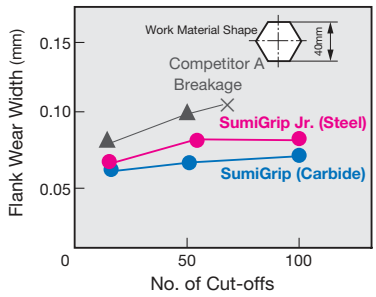


● Holder Overhang



Part Material: Medium Strength Steel S45C (ø50mm, 250HB)
Cutting Conditions: v_c=80m/min Dry

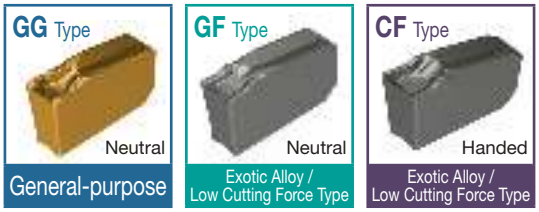
● Wear Resistance



Part Material: Medium Strength Steel S45C(Hex), Insert: 3mm Width Coated
Cutting Conditions: v_c=150m/min, f=0.15mm/rev
Wet (Water Soluble)

■ GG Type/GF Type/CF Type Chipbreaker, New Grade AC1030U

- Utilizing grooving tool GND type chipbreaker series for excellent chip control.
- Low cutting force chipbreaker GF type (neutral) or CF type (handed) inserts, coupled with a carbide blade enable stable machining and prevents chattering even when machining stainless steel.
- Achieving stable and long tool life with the new AC1030U grade.



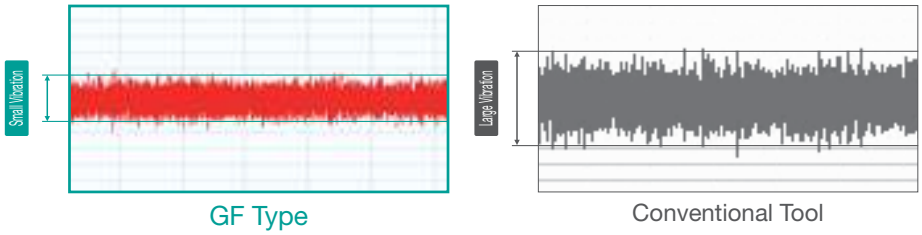
■ Cutting Performance (Chipbreaker)

● Chip Control (Performance)



Work Material: S45C (ø40mm)
3.0mm Width Cut-Off
Cutting Conditions: v_c=100m/min
f=0.1mm/rev
Wet

● Anti-Vibration Performance



Work Material: SUS316 (ø40mm)
3.0mm Width Cut-Off
Cutting Conditions: v_c=100m/min
f=0.1mm/rev
Wet

WCF Inserts

Fig. 1 (Neutral (N))

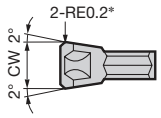


Fig. 2 (Right Hand (R))

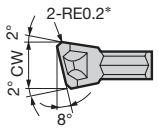
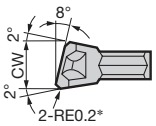


Fig. 3 (Left Hand (L))



*WCF□ 2T: 2-RE0.15

STFH Insert (SumiGrip/SumiGrip Jr. Common Insert) (Coated Carbide / Cermet / Carbide)

Dimensions (*mm*)

Appearance	Cat. No.	AC830P	AC225	AC1030U	T1500A	A30	G10E	Width of Cut CW	Applicable Holder	Fig
WCF N○-GG General-purpose	**WCFN2-GG**	●	-		-	-	-	***2.0***	STFH ○○-2 /STFS R/L / WCFH / WCFS R/L	1
	WCFN3-GG	●	-		-	-	-	***3.0***	STFH ○○-3 /STFS R/L / WCFH / WCFS R/L	1
	WCFN4-GG	●	-		-	-	-	***4.0***	STFH ○○-4 /STFS R/L / WCFH / WCFS R/L	1
	WCFN5-GG	★	-		-	-	-	***5.0***	STFH ○○-5 /STFS R/L / WCFH / WCFS R/L	1
WCF N○-GF Exotic Alloy Low Feed	**WCFN2-GF**		-	●	-	-	-	***2.0***	STFH ○○-2 /STFS R/L / WCFH / WCFS R/L	1
	WCFN3-GF		-	●	-	-	-	***3.0***	STFH ○○-3 /STFS R/L / WCFH / WCFS R/L	1
	WCFN4-GF		-	●	-	-	-	***4.0***	STFH ○○-4 /STFS R/L / WCFH / WCFS R/L	1
	WCFN5-GF		-	●	-	-	-	***5.0***	STFH ○○-5 /STFS R/L / WCFH / WCFS R/L	1
WCF □○-CF Exotic Alloy Low Feed (With Feed Direction)	**WCFR3-CF**		-	●	-	-	-	***3.0***	STFH ○○-3 /STFS R/L / WCFH / WCFS R/L	2
	WCFL3-CF		-	●	-	-	-	***3.0***		3
	WCFR4-CF		-	★	-	-	-	***4.0***	STFH ○○-4 /STFS R/L / WCFH / WCFS R/L	2
	WCFL4-CF		-	★	-	-	-	***4.0***		3
WCF □2T Small Diameter Low Resistance	**WCFN2T**	▲	-	-	-	-	-	***2.0***	STFH ○○-2 /STFS R/L / WCFH / WCFS R/L	1
	WCFR2T	▲	-	-	-	-	-	***2.0***		2
	WCFL2T	▲	-	-	-	-	-	***2.0***		3
WCF □○ No Chipbreaker For General Steel	**WCFN3**	▲	-	-	-	-	-	***3.0***	STFH ○○-3 /STFS R/L / WCFH / WCFS R/L	1
	WCFR3	▲	-	-	-	-	-	***3.0***		2
	WCFL3	▲	-	-	-	-	-	***3.0***		3
	WCFN4	▲	-	-	-	-	-	***4.0***	STFH ○○-4 /STFS R/L / WCFH / WCFS R/L	1
	WCFR4	▲	-	-	-	-	-	***4.0***		2
	WCFL4	▲	-	-	-	-	-	***4.0***		3
	WCFN5	▲	-	-	-	-	-	***5.0***	STFH ○○-5 /STFS R/L / WCFH / WCFS R/L	1
	WCFR5	▲	-	-	-	-	-	***5.0***		2
	WCFL5	▲	-	-	-	-	-	***5.0***		3
WCF □○A Exotic Alloy Low Feed	**WCFN2A**		▲	-	-			***2.0***	STFH ○○-2 /STFS R/L / WCFH / WCFS R/L	1
	WCFN3A		▲	-	▲	▲	▲	***3.0***	STFH ○○-3 /STFS R/L / WCFH / WCFS R/L	1
	WCFR3A		▲	-		▲		***3.0***		2
	WCFL3A		▲	-	-			***3.0***		3
	WCFN4A		▲	-	▲			***4.0***	STFH ○○-4 /STFS R/L / WCFH / WCFS R/L	1
	WCFR4A		▲	-	-			***4.0***		2
	WCFL4A		▲	-	-			***4.0***		3
	WCFN5A		▲	-	-			***5.0***	STFH ○○-5 /STFS R/L / WCFH / WCFS R/L	1
	WCFR5A		-	-	-			***5.0***		2
	WCFL5A		-	-	-			***5.0***		3
WCF □○B Cast Iron Light Alloys	**WCFN3B**		-	-	-	-	▲	***3.0***	STFH ○○-3 /STFS R/L / WCFH / WCFS R/L	1
	WCFR3B		-	-	-	-	▲	***3.0***		2
	WCFL3B		-	-	-	-	▲	***3.0***		3
	WCFN4B		-	-	-	-	▲	***4.0***	STFH ○○-4 /STFS R/L / WCFH / WCFS R/L	1
	WCFR4B		-	-	-	-	▲	***4.0***		2
	WCFL4B		-	-	-	-		***4.0***		3
*Same breaker shape as the type for general steel (WCF□○), but with smaller cutting edge treatment.	**WCFN5B**		-	-	-	-	▲	***5.0***	STFH ○○-5 /STFS R/L / WCFH / WCFS R/L	1
	WCFR5B		-	-	-	-		***5.0***		2
	WCFL5B		-	-	-	-	▲	***5.0***		3

Recommended Cutting Conditions

Part Material		Cutting Speed v_c (SFM)					
		Coated Carbide			Cermet	Carbide	
		AC830P	AC225	AC1030U	T1500A	A30	G10E
P Steel	General Steel	260-660	160-660	260-660	260-660	150-400	-
	Mild Steel	330-750	160-750	330-750	330-750	230-500	-
	Die Steel	200-500	160-500	200-500	200-500	150-400	-
M Stainless Steel		230-500	160-500	200-500	-	230-450	-
K Cast Iron		-	160-660	-	-	-	160-400
N Non-ferrous Metal		-	-	-	-	-	660-1650

Breaker & Type		Feed f (IPR)										
		Neutral						Handed				
		GG	GF	none	T	A	B	none	CF	T	A	B
Width (mm)	2	.002-.008	.0012-.005	-	.0012-.004	.0012-.005	-	-	-	.0012-.004	-	-
	3	.003-.010	.0015-.006	.003-.010	-	.0015-.006	.002-.006	.003-.010	.002-.005	-	.0015-.006	.002-.006
	4	.004-.012	.002-.007	.004-.012	-	.002-.007	.002-.007	.004-.012	.002-.005	-	.002-.007	.002-.007
	5	.004-.014	.002-.008	.004-.012	-	.002-.008	.0025-.008	.004-.012	-	-	-	.0025-.008

★ Worldwide Warehouse Item
▲ USA Limited Availability Item

STFH Type

Cut-off

Cut-off
(Steel Holder/Tool Block Type)

STFH
Cut-off

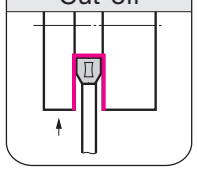
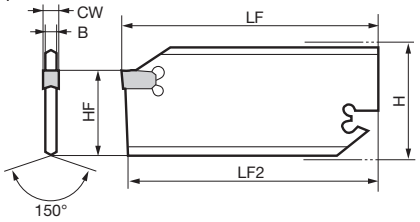
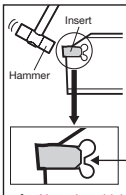


Fig 1



● Insert Mounting Method



Mount the insert by lightly knocking it in with a wooden or plastic hammer.

(Check that the insert cannot be pulled out by hand.)

There is no need to force the insert back end against the holder.

⚠ Note that driving in the insert too far may cause damage to the insert or holder.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Reference Length LF2	Width of Cut CW	Max. Cut-Off Diameter	Applicable Insert	Applicable Tool Block	Fig	Wrench
STFH26-2	●	26	1.6	109	21.4	108	**2.0**	**40**	WCF○2□		1	
STFH26-3	●	26	2.4	109	21.4	108	**3.0**	**70**	WCF○3□	SBN 20-26	1	
STFH26-4	★	26	3.4	109	21.4	108	**4.0**	**70**	WCF○4□	SBU 20-26	1	SL-4
STFH26-5	★	26	4.3	109	21.4	108	**5.0**	**70**	WCF○5□		1	
STFH32-2	●	32	1.6	149	25.0	148	**2.0**	**40**	WCF○2□	SBN 20-32	1	
STFH32-3	●	32	2.4	149	25.0	148	**3.0**	**100**	WCF○3□	SBN 25-32	1	
STFH32-4	★	32	3.4	149	25.0	148	**4.0**	**100**	WCF○4□	SBU 20-32	1	SL-4
STFH32-5	★	32	4.3	149	25.0	148	**5.0**	**100**	WCF○5□	SBU 25-32	1	

*The shape of STFH32-2 is slightly different from the above figure. Refer to F51 for applicable inserts.

Fig 1

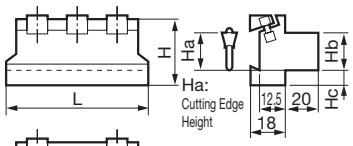


Fig 2

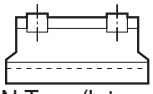


Fig 1

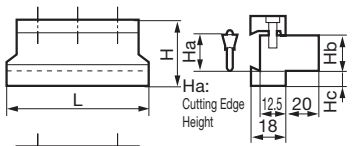


Fig 2



Tool Lock SBN Type (Integrated)

Parts

Dimensions (*mm*)

Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting position Hc	Height H	Overall Length L	Fig	Clamp	Double Screw	Wrench
SBN063-26	●	.625	.625	.500	1.719	3.000	1			
SBN075-26	●	.750	.750	.375	1.719	3.156	1			
SBN100-32	●	1.000	1.000	.3125	2.000	4.500	1	BWS30	WB8-20	LH040
SBN20-26	★	20	20	10.0	45	80	2			
SBN20-32	★	20	20	13.5	50	100	1			
SBN25-32	★	25	25	8.5	50	110	1			

Tool Lock SBU Type (Split Type)

Parts

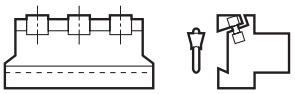
Dimensions (inch/ *mm*)

Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting position Hc	Height H	Overall Length L	Fig	Clamp Wedge (BCS15 BCS20 BCS25)	Cap Screw	Wrench
SBU075-26	●	.750	.750	.4375	1.781	3.156	1	BCS15		
SBU075-32	●	.750	.750	.531	2.000	4.000	1	BCS20		
SBU100-32	●	1.000	1.000	.344	2.000	4.344	1	BCS25	BX0622	LH050
SBU20-26	★	20	20	10.0	45	80	2	BCS15		
SBU20-32	★	20	20	13.5	50	100	1	BCS20		
SBU25-32	★	25	25	8.5	50	110	1	BCS25		

Tool Block Type Selection Guide

Integrated type

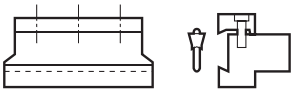
SBN Type Ex.: SBN20-32



· Applicable to toolpost **A** shown on the right.

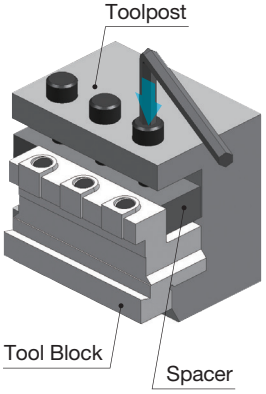
Split type

SBU Type Ex.: SBU20-32



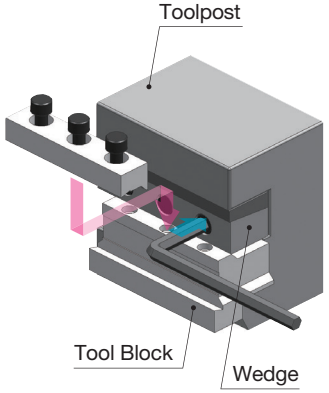
· Applicable to toolpost **A** or **B** shown on the right.
· Large clamp ensures a wide clamp area that enables long holder overhang.

A General-purpose Lathe, etc.
SBN Type | SBU Type



(Clamp from above)

B Turret Type Toolpost, etc.
SBU Type



(Clamp from the side)

STFS Type

Cut-off

For Cut-off
(Steel Holder/Shank Type)

STFS
Cut-off

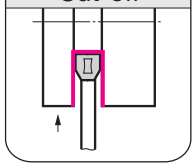


Fig 1

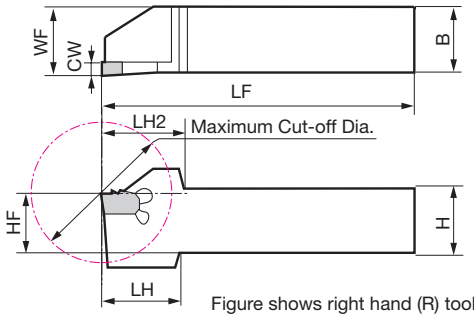
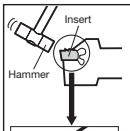


Figure shows right hand (R) tool.

● Insert Mounting Method



Mount the insert by lightly knocking it in with a wooden or plastic hammer.

(Check that the insert cannot be pulled out by hand.)



There is no need to force the insert back end against the holder.

⚠ Note that driving in the insert too far may cause damage to the insert or holder.

Holder

Parts Dimensions (inch/*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Head LH2	Width of Cut CW	Max. Cut-Off Diameter	Applicable Insert	Fig	Wrench
STFS R/L-063-2			.625	.625	4.000	.625	.625	-	-	.080	.650	WCF○2□	1	SL-4
STFS R/L-075-2	●	●	.750	.750	5.000	.750	.750	-	-	.080	.840		1	
STFS R/L-063-3	●		.625	.625	4.000	.625	.625	-	-	.120	.750	WCF○3□	1	
STFS R/L-075-3	●	●	.750	.750	5.000	.750	.750	-	-	.120	1.000		1	
STFS R/L-100-3	●	●	1.000	1.000	6.000	1.000	1.000	-	-	.120	1.000		1	
STFS R/L1010-2	★	★	*10*	*10*	*86*	*10*	*10*	*17*	*17*	*2.0*	*28*	WCF○2□	1	SL-4
STFS R/L1212-2	★	★	*12*	*12*	*110*	*12*	*12*	*18*	*18*	*2.0*	*30*		1	
STFS R/L1616-2	★	★	*16*	*16*	*110*	*16*	*16*	-	*19*	*2.0*	*32*		1	
STFS R/L2020-2	★	★	*20*	*20*	*125*	*20*	*20*	-	*24*	*2.0*	*40*		1	
STFS R/L1616-3	★	★	*16*	*16*	*110*	*16*	*16*	*20*	*22*	*3.0*	*35*	WCF○3□	1	SL-4
STFS R/L2012-3	★	★	*20*	*12*	*110*	*12*	*20*	-	*24*	*3.0*	*40*		1	
STFS R/L2020-3	★	★	*20*	*20*	*125*	*20*	*20*	-	*30*	*3.0*	*50*		1	
STFS R/L2525-3	★	★	*25*	*25*	*150*	*25*	*25*	-	*30*	*3.0*	*50*		1	
STFS R/L2020-4	★	★	*20*	*20*	*125*	*20*	*20*	-	*33*	*4.0*	*55*	WCF○4□	1	SL-4
STFS R/L2525-4	★	★	*25*	*25*	*150*	*25*	*25*	-	*38*	*4.0*	*65*		1	
STFS R/L2020-5	★	★	*20*	*20*	*125*	*20*	*20*	-	*35*	*5.0*	*60*	WCF○5□	1	SL-4
STFS R/L2525-5	★	★	*25*	*25*	*150*	*25*	*25*	-	*40*	*5.0*	*70*		1	

Refer to F51 for applicable inserts.

• USA Stocked Item ★ Worldwide Warehouse Item

STFH Type

Cut-off

Cut-off
(Steel Holder/Tool Block Type)

STFH
Cut-off

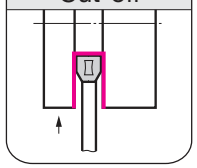
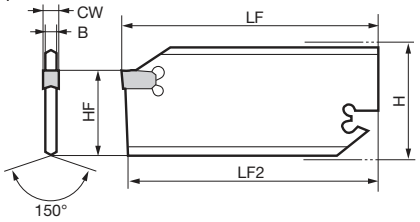
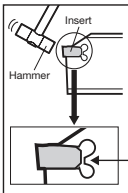


Fig 1



● Insert Mounting Method



Mount the insert by lightly knocking it in with a wooden or plastic hammer.

(Check that the insert cannot be pulled out by hand.)

There is no need to force the insert back end against the holder.

⚠ Note that driving in the insert too far may cause damage to the insert or holder.

Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Reference Length LF2	Width of Cut CW	Max. Cut-Off Diameter	Applicable Insert	Applicable Tool Block	Fig	Wrench
STFH26-2	●	26	1.6	109	21.4	108	**2.0**	**40**	WCF○2□		1	
STFH26-3	●	26	2.4	109	21.4	108	**3.0**	**70**	WCF○3□	SBN 20-26	1	
STFH26-4	★	26	3.4	109	21.4	108	**4.0**	**70**	WCF○4□	SBU 20-26	1	SL-4
STFH26-5	★	26	4.3	109	21.4	108	**5.0**	**70**	WCF○5□		1	
STFH32-2	●	32	1.6	149	25.0	148	**2.0**	**40**	WCF○2□	SBN 20-32	1	
STFH32-3	●	32	2.4	149	25.0	148	**3.0**	**100**	WCF○3□	SBN 25-32	1	
STFH32-4	★	32	3.4	149	25.0	148	**4.0**	**100**	WCF○4□	SBU 20-32	1	SL-4
STFH32-5	★	32	4.3	149	25.0	148	**5.0**	**100**	WCF○5□	SBU 25-32	1	

*The shape of STFH32-2 is slightly different from the above figure. Refer to F51 for applicable inserts.

Fig 1

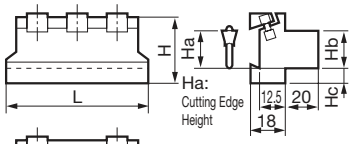


Fig 2

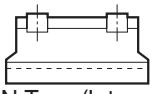


Fig 1

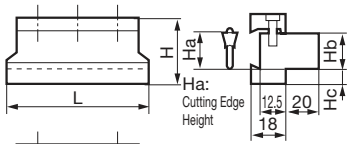


Fig 2



Tool Lock SBN Type (Integrated)

Parts

Dimensions (*mm*)

Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting position Hc	Height H	Overall Length L	Fig	Clamp	Double Screw	Wrench
SBN063-26	●	.625	.625	.500	1.719	3.000	1			
SBN075-26	●	.750	.750	.375	1.719	3.156	1			
SBN100-32	●	1.000	1.000	.3125	2.000	4.500	1	BWS30	WB8-20	LH040
SBN20-26	★	20	20	10.0	45	80	2			
SBN20-32	★	20	20	13.5	50	100	1			
SBN25-32	★	25	25	8.5	50	110	1			

Tool Lock SBU Type (Split Type)

Parts

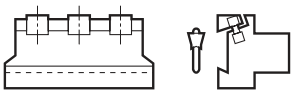
Dimensions (inch/ *mm*)

Cat. No.	Stock	Cutting Edge Height Ha	Mounting Length Hb	Mounting position Hc	Height H	Overall Length L	Fig	Clamp Wedge (BCS15 / BCS20 / BCS25)	Cap Screw	Wrench
SBU075-26	●	.750	.750	.4375	1.781	3.156	1	BCS15		
SBU075-32	●	.750	.750	.531	2.000	4.000	1	BCS20		
SBU100-32	●	1.000	1.000	.344	2.000	4.344	1	BCS25	BX0622	LH050
SBU20-26	★	20	20	10.0	45	80	2	BCS15		
SBU20-32	★	20	20	13.5	50	100	1	BCS20		
SBU25-32	★	25	25	8.5	50	110	1	BCS25		

Tool Block Type Selection Guide

Integrated type

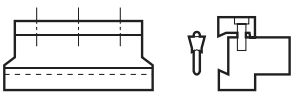
SBN Type Ex.: SBN20-32



· Applicable to toolpost **A** shown on the right.

Split type

SBU Type Ex.: SBU20-32



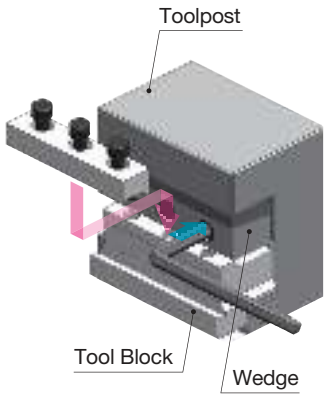
· Applicable to toolpost **A** or **B** shown on the right.
· Large clamp ensures a wide clamp area that enables long holder overhang.

A General-purpose Lathe, etc.
SBN Type | SBU Type



(Clamp from above)

B Turret Type Toolpost, etc.
SBU Type



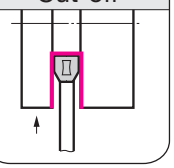
(Clamp from the side)

WCFS Type

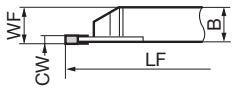
Cut-off

For Cut-off
(Carbide Holder/Shank Type)

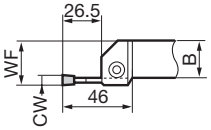
WCFS
Cut-off



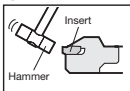
Brazed Blade Type



Blade Clamp Type



● Insert Mounting Method



Mount the insert by lightly knocking it in with a wooden or plastic hammer. (Check that the insert cannot be pulled out by hand.)

⚠ Note that driving in the insert too far may cause damage to the insert or holder.

Fig 1

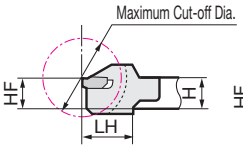


Fig 2

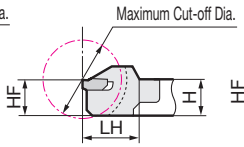


Fig 3

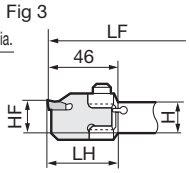


Fig 4

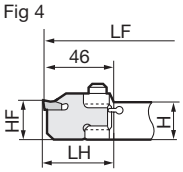


Figure shows right hand (R) tool.

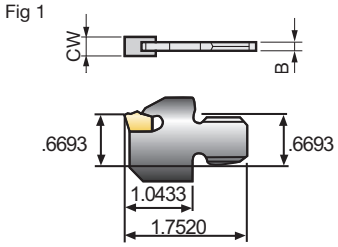
Holder

Parts Dimensions (mm)

Type	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Head LH	Width of Cut CW	Max. Cut-Off Diameter	Applicable Blade	Applicable Insert	Fig	Wrench
Clamp type	**WCFS R/L 063-3**	●	●	.625	.625	4.000	.625	.625	**.1181**	2.000	WCFH17-3	WCF□3○		SL-1
	WCFS R/L 075-3	●	●	.750	.750	4.500	.750	.750	**.1181**	2.000	WCFH17-3	WCF□3○		
	WCFS R/L 075-4	●	●	.750	.750	4.500	.750	.750	**.1575**	2.000	WCFH17-4	WCF□4○		
	WCFS R/L 075-5	●	●	.750	.750	4.500	.750	.750	**.1969**	2.000	WCFH17-5	WCF□5○		
	WCFS R/L 100-3	●	●	1.000	1.000	6.000	1.000	1.000	**.1181**	2.000	WCFH17-3	WCF□3○		
	WCFS R/L 100-4	●	●	1.000	1.000	6.000	1.000	1.000	**.1575**	2.000	WCFH17-4	WCF□4○		
	WCFS R/L 100-5	●		1.000	1.000	6.000	1.000	1.000	**.1969**	2.000	WCFH17-5	WCF□5○		
Brazed Type	**WCFS R/L1010-2**	★	★	*10*	*10*	*86*	*10*	*10*	***2.0***	*28*	-	WCF□2○	1	SL-2
	WCFS R/L1212-2	★	★	*12*	*12*	*110*	*12*	*18*	***2.0***	*30*	-	WCF□2○	1	
	WCFS R/L1616-2	★	★	*16*	*16*	*100*	*16*	*25*	***2.0***	*35*	-	WCF□2○	2	
	WCFS R/L1616-3	★	★	*16*	*16*	*100*	*16*	*25*	***3.0***	*35*	-	WCF□3○	2	SL-1
Clamp type	**WCFS R/L20-3**	★	★	*20*	*20*	*125*	*20*	*46*	***3.0***	*50*	WCFH17-3	WCF□3○	3	
	WCFS R/L20-4	★	★	*20*	*20*	*125*	*20*	*46*	***4.0***	*50*	WCFH17-4	WCF□4○	3	SL-1
	WCFS R/L20-5	★		*20*	*20*	*125*	*20*	*46*	***5.0***	*50*	WCFH17-5	WCF□5○	3	
	WCFS R/L25-3	★	★	*25*	*25*	*150*	*25*	*46*	***3.0***	*50*	WCFH17-3	WCF□3○	4	
	WCFS R/L25-4	★	★	*25*	*25*	*150*	*25*	*46*	***4.0***	*50*	WCFH17-4	WCF□4○	4	SL-1
	WCFS R/L25-5	★		*25*	*25*	*150*	*25*	*46*	***5.0***	*50*	WCFH17-5	WCF□5○	4	

Refer to below for applicable blade. Blade is included with the holder.

Fig 1



Blade

Dimensions (inch / *mm*)

Cat. No.	Stock	Width of Cut CW	Width B	Applicable Holder
WCFH 17-3	●	**.118 / *3***	.094 / *2.4*	WCFS R/L20-3,25-3
WCFH 17-4	●	**.157 / *4***	.134 / *3.4*	WCFS R/L20-4,25-4
WCFH 17-5	●	**.197 / *5***	.169 / *4.3*	WCFS R/L20-5,25-5

Parts

Applicable Holder	Cap Screw	Wrench
WCFS R/L-063-○, WCFS R/L-075○, WCFS R/L-100○	BX0622	LH050
WCFS R/L20-○, WCFS R/L25-○	BX0622	LH050

SCT Type

Cut-off

For Cut-off
(Carbide Holder/Tool Block Type)

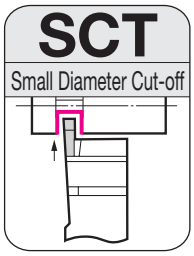


Fig 1

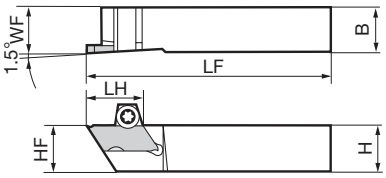


Fig 2

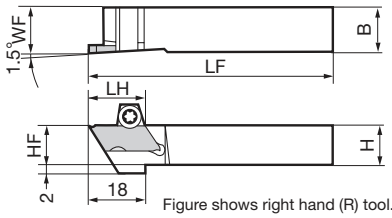


Figure shows right hand (R) tool.

Holder (Right Handed)

Parts Dimensions (inch/*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Flat Screw	Wrench
SCT R08	●	.500	.500	6.0	.500	.500	.591	CT R05○○○○(-NB) CT R12○○○○(-NB)	1		
SCT R10	●	.625	.625	6.0	.625	.625	.591		1	BFTX0410T8L	TRX08
SCT R12	●	.750	.750	6.0	.750	.750	.591		1		
SCT R1010	★	*10*	*10*	*120*	*10*	*10*	*15*	CT R05○○○○(-NB) CT R12○○○○(-NB)	1		
SCT R1212	★	*12*	*12*	*120*	*12*	*12*	*15*		1	BFTX0410T8L	TRX08
SCT R1616	★	*16*	*16*	*120*	*16*	*16*	*15*		1		
SCT R1010-16	★	*10*	*10*	*120*	*10*	*10*	*18*		2		
SCT R1212-16	★	*12*	*12*	*120*	*12*	*12*	*18*	CT R16○○○○(-NB)	1	BFTX0410T8L	TRX08
SCT R1616-16	★	*16*	*16*	*120*	*16*	*16*	*18*		1		

Holder (Left Handed)

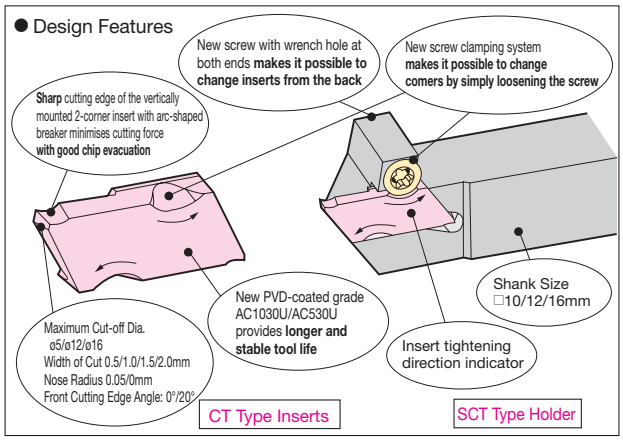
Parts Dimensions (inch/*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Flat Screw	Wrench
SCT L08	●	.500	.500	6.0	.500	.500	.591	CT L05○○○○(-NB) CT L12○○○○(-NB)	1		
SCT L10	●	.625	.625	6.0	.625	.625	.591		1	BFTX0410T8R	TRX08
SCT L12	●	.750	.750	6.0	.750	.750	.591		1		
SCT L1010	★	*10*	*10*	*120*	*10*	*10*	*15*	CT L05○○○○(-NB) CT L12○○○○(-NB)	1		
SCT L1212	★	*12*	*12*	*120*	*12*	*12*	*15*		1	BFTX0410T8R	TRX08
SCT L1616	★	*16*	*16*	*120*	*16*	*16*	*15*		1		
SCT L1010-16	★	*10*	*10*	*120*	*10*	*10*	*18*		2		
SCT L1212-16	★	*12*	*12*	*120*	*12*	*12*	*18*	CT L16○○○○(-NB)	1	BFTX0410T8R	TRX08
SCT L1616-16	★	*16*	*16*	*120*	*16*	*16*	*18*		1		

Features

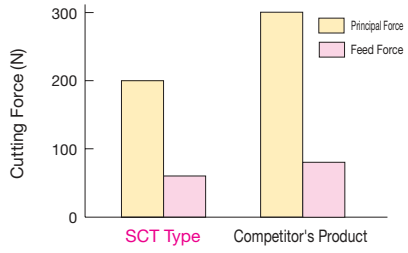
- Simple Indexable Inserts
  New clamping system makes it possible to change corners simply by loosening the screw from the back
- High quality surface finish
  Excellent chip removal with good surface finish even at the centre of the work material end face.
- Long, stable tool life with PVD-coated AC1030U/AC530U

● Design Features



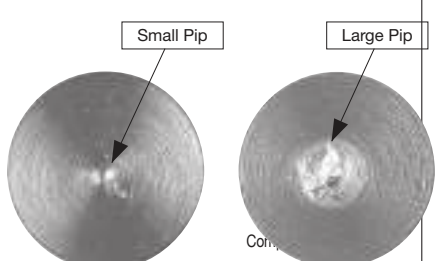
Performance

● Cutting Force



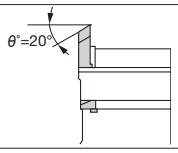
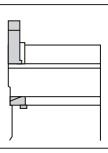
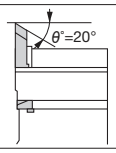
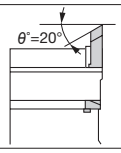
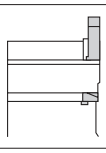
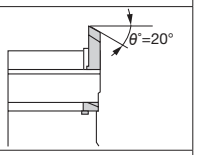
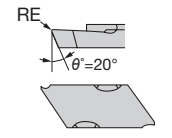
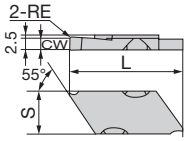
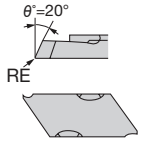
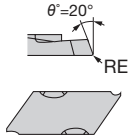
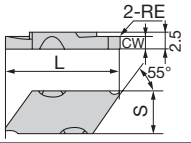
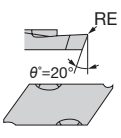
Work Material: S45C (ø10mm), Width of Cut: 1.5mm
v_c=60m/min, f=0.06mm/rev Wet

● Surface Finish



Work Material: SUS430 (ø8mm), Width of Cut: 1.0mm (With Feed Direction)
v_c=45m/min, f=0.02mm/rev Wet

Insert Mounting Status and Dimensions (Figure shows insert with chipbreaker)

Holder Feed Direction	For Right-handed Holder (SCTR)			For Left-handed Holder (SCTL)		
Insert Cat. No.	CTR○○R	CTR○○N	CTR○○L	CTL○○R	CTL○○N	CTL○○L
Holder Mounting Status						
Insert Shape and Dimensions						

Inserts (For Right-handed Holders) (Coated Carbide)

Dimensions (*mm*)

Cat. No.	AC1030U			AC530U			Max. Cut-off Dia.	Width of Cut	Nose Radius	Overall Length	Thickness	Chipbreaker	Applicable Holder
	R	N	L	R	N	L		CW	RE	L	S		
CTR 050505 R/N/L	★	★	★	★	★	★	5	0.5	0.05	19	7	Yes	SCT R08 SCT R10 SCT R12 SCT R1010 SCT R1212 SCT R1616
CTR 050500 R/N/L	★	★		★	★		5	0.5	0				
CTR 121005 R/N/L	★	★	★	★	★	★	12	1.0	0.05	19	7	Yes	
CTR 121505 R/N/L	★	★	★	★	★	★	12	1.5					
CTR 122005 R/N/L	★	★		★	★		12	2.0					
CTR 121000 R/N/L	★	★		★	★		12	1.0	0				
CTR 121500 R/N/L	★	★		★	★		12	1.5					
CTR 122000 R/N/L	★	★		★	★		12	2.0					
CTR 161005 R/N/L							16	1.0	0.05	23.1	8.3	Yes	SCT R1010-16 SCT R1212-16 SCT R1616-16
CTR 161505 R/N/L	★	★		★	★		16	1.5					
CTR 162005 R/N/L	★	★	★	★	★	★	16	2.0					
CTR 161000 R/N/L							16	1.0	0				
CTR 161500 R/N/L	★	★		★	★		16	1.5					
CTR 162000 R/N/L	★	★	★	★	★	★	16	2.0					
CTR 050500 R/N/L-NB							5	0.5	0	19	7	No	SCT R08 SCT R10 SCT R12 SCT R1010 SCT R1212 SCT R1616
CTR 121000 R/N/L-NB	★			★			12	1.0	0	19	7	No	
CTR 121500 R/N/L-NB	★			★			12	1.5					
CTR 122000 R/N/L-NB	★			★			12	2.0					
CTR 161000 R/N/L-NB							16	1.0	0	23.1	8.3	No	SCT R1010-16 SCT R1212-16 SCT R1616-16
CTR 161500 R/N/L-NB							16	1.5					
CTR 162000 R/N/L-NB	★			★			16	2.0					

Inserts (For Left-handed Holders) (Coated Carbide)

Dimensions (*mm*)

Cat. No.	AC1030U			AC530U			Max. Cut-off Dia.	Width of Cut	Nose Radius	Overall Length	Thickness	Chipbreaker	Applicable Holder
	R	N	L	R	N	L		CW	RE	L	S		
CTL 050505 R/N/L	★	★		★	★		5	0.5	0.05	19	7	Yes	SCT L08 SCT L10 SCT L12 SCT L1010 SCT L1212 SCT L1616
CTL 050500 R/N/L	★	★		★	★		5	0.5	0				
CTL 121005 R/N/L	★	★	★	★	★	★	12	1.0	0.05	19	7	Yes	
CTL 121505 R/N/L	★	★	★	★	★	★	12	1.5					
CTL 122005 R/N/L	★	★		★	★		12	2.0					
CTL 121000 R/N/L	★	★		★	★		12	1.0	0				
CTL 121500 R/N/L	★	★		★	★		12	1.5					
CTL 122000 R/N/L	★	★		★	★		12	2.0					
CTL 161005 R/N/L							16	1.0	0.05	23.1	8.3	Yes	SCT L1010-16 SCT L1212-16 SCT L1616-16
CTL 161505 R/N/L	★	★		★	★		16	1.5					
CTL 162005 R/N/L	★	★	★	★	★	★	16	2.0					
CTL 161000 R/N/L							16	1.0	0				
CTL 161500 R/N/L	★	★		★	★		16	1.5					
CTL 162000 R/N/L	★	★		★	★		16	2.0					
CTL 050500 R/N/L-NB							5	0.5	0	19	7	No	SCT L08 SCT L10 SCT L12 SCT L1010 SCT L1212 SCT L1616
CTL 121000 R/N/L-NB							12	1.0	0	19	7	No	
CTL 121500 R/N/L-NB							12	1.5					
CTL 122000 R/N/L-NB							12	2.0					
CTL 161000 R/N/L-NB							16	1.0	0	23.1	8.3	No	SCT L1010-16 SCT L1212-16 SCT L1616-16
CTL 161500 R/N/L-NB							16	1.5					
CTL 162000 R/N/L-NB							16	2.0					

Threading Tools F

F58 to F76



Threading Tools

For Externall Diameters

Internal Diameters

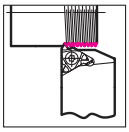
Threading Tool Series Selection Guide **F59**
Basics of Threads **F62**
SSTE Type/ SSTI Type **F63**
LTE Type **F64**
STE / SSTE Type **F65**
STI / SSTI Type **F66**
SSTE / SSTI Inserts **F67**
SSTE/SSTI Type Guidelines for Depth of Cut and No. of Passes ... **F71**
TME /TMI Threading Inserts **F73**
TME/TMI Type Tool Guidelines for Depth of Cut and No. of Passes **F74**
STH Type (General Purpose) **F76**

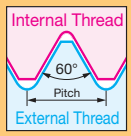
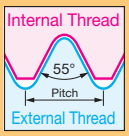
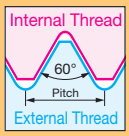
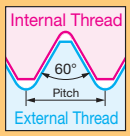
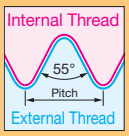
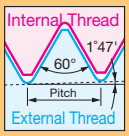
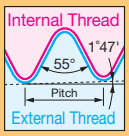
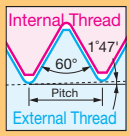
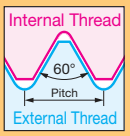
Stock Markings and Symbols

●: Standard stocked item
★: Worldwide Warehouse Item
▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).

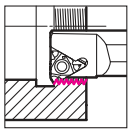
Blank: Made-to-order item
— mark: Not available

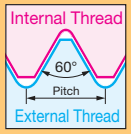
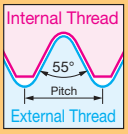
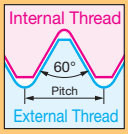
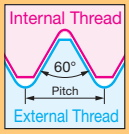
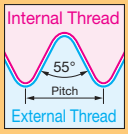
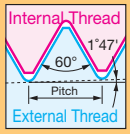
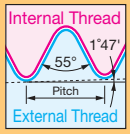
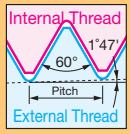
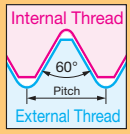
■ External Threading



Applications / Thread Ridge Shape	General Industrial Use				Pipe Couplings for Gas, Water and Water Faucets		Pipe Threads for Steam, Gas and Water Supply Pipes		Aerospace Equipment
									
Type	60° General-purpose Thread	55° General-purpose Thread (Whitworth)	60° ISO Metric Thread	60° Unified Thread	55° Parallel Thread for Pipe/Whitworth	60° American NPT	55° Taper Thread for Pipe BSPT	60° American NPTF	60° UNJ
Symbol	M / UNC/UNF	W	M	UNC/UNF	G/Rp/W	NPT	R/Rc	NPTF	UNJ
Pitch	mm / Threads/Inch	Threads/Inch	mm	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch
Wiper Edge	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
 **SSTE** Type	0.50 to 3.00 / 48 to 8	48 to 8	0.75, 1.00, 1.25 1.50, 1.75, 2.00 2.50, 3.00	32, 28, 24 20, 18, 16 14, 13, 12 10, 8	36, 32, 28 24, 20, 19 18, 16, 14 12, 11, 10 8	27, 18, 14 11.5, 8	28, 19 14, 11	27, 18, 14 11.5	32, 28, 24 20, 18, 16 14, 12, 10
 **LTE** Type	1.00 to 3.00 / 24 to 8	24 to 10	1.00, 1.25, 1.50 1.75, 2.00, 2.50 3.00, 3.50, 4.00	24, 20, 18 16, 14, 12 8	–	–	28, 19 14, 11	–	–
 **STE** Type	1.00 to 3.00 / 24 to 8	24 to 10	1.00, 1.25, 1.50 1.75, 2.00, 2.50 3.00	24, 20, 18 16, 14, 12 8	–	–	28, 19 14, 11	–	–
 **STH** Type	0.20 to 1.50	48 to 16	–	–	–	–	–	–	–

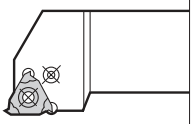
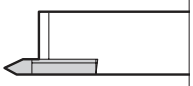
■ Internal Threading



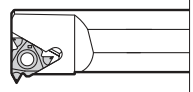
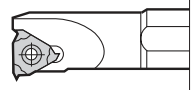
Applications	General Industrial Use				Pipe Couplings for Gas, Water and Water Faucets		Pipe Threads for Steam, Gas and Water Supply Pipes		Aerospace Equipment
Thread Ridge Shape									
Type	60° General-purpose Thread	55° General-purpose Thread (Whitworth)	60° ISO Metric Thread	60° Unified Thread	55° Parallel Thread for Pipe/Whitworth	60° American NPT	55° Taper Thread for Pipe BSPT	60° American NPTF	60° UNJ
Symbol	M / UNC/UNF	W	M	UNC/UNF	G/Rp/W	NPT	R/Rc	NPTF	UNJ
Pitch	mm / Threads/Inch	Threads/Inch	mm	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch	Threads/Inch
Wiper Edge	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
 **SSTI** Type	0.50 to 3.00 / 48 to 8	48 to 8	0.75, 1.00, 1.25 1.50, 1.75, 2.00 2.50, 3.00	32, 28, 24 20, 18, 16 14, 13, 12 10, 8	28, 24 20, 19	27, 18, 14 11.5, 8	28, 19	27, 18, 14 11.5, 8	32, 28, 24 20, 18, 16 14, 12, 10
 **STI** Type	1.00 to 3.00 / 24 to 8	—	1.00, 1.25, 1.50 1.75, 2.00, 2.50 3.00	—	—	—	—	—	—

Product Range

■ External Threading Tools

Series	Appearance	Structure: Screw-on	Clamp-on	Lever Lock	Drawing Pin	Features	Applicable Thread Symbol
SSTE	 →F63	●				· Adopts a flat 3-corner insert. Ground cutting edge flank produces superior machined surface with sharp cutting edge · Stable chip control through use of a 3D moulded breaker · Large lineup of inserts with a wiper edge	M W UNC/UNF G/Rp/W NPT R/Rc NPTF UNJ
LTE/ STE	 →F64, F65	●		●		· Range of lever lock holders with strong clamping force (shank size □25 to 32mm) and screw-on type holders (shank size □12 to 16mm) · M-Class flat-mounted 3-corner insert is economical · Range of cermet grades · Stable chip control with incorporated chipbreaker	M W UNC/UNF G/Rp/W NPT R/Rc NPTF UNJ
STH	 →F76	●				· For a small lathe with a shank size of □20mm or less · 2-corner vertically-mounted insert enables space-saving threading · Can also be used for back-turning threading with bar feeder · Can also be used for small-pitch (min. 0.2mm) threading	M W UNC/UNF G/Rp/W NPT R/Rc NPTF UNJ

■ Internal Threading Tools

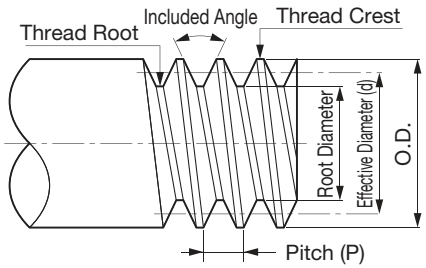
Series	Appearance	Structure: Screw-on	Clamp-on	Lever Lock	Drawing Pin	Features	Min. bore diameter (mm)	Applicable Thread Symbol
SSTI	 →F66	●				· Adopts a flat 3-corner insert. Ground cutting edge flank produces superior machined surface with sharp cutting edge · Stable chip control through use of a 3D molded breaker · Large lineup of inserts with a wiper edge	ø18	M W UNC/UNF G/Rp/W NPT R/Rc NPTF UNJ
STI	 →F66	●				· M-Class flat-mounted 3-corner insert is economical · Stable chip control with incorporated chipbreaker · Range of cermet grades	ø20	M W UNC/UNF G/Rp/W NPT R/Rc NPTF UNJ

Note: The minimum machining diameter is the diameter of the screw prepared hole.

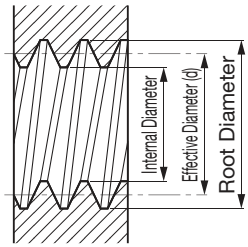
M : 60° ISO General-purpose Metric Thread
W : 55° General-purpose Thread (Whitworth)
UNC/UNF : 60° Unified Thread
G/Rp/W : 55° Parallel Thread for Pipe
NPT : 60° American NPT
R/Rc : 55° Taper Thread for Pipe BSPT
NPTF : 60° American NPTF
UNJ : 60° UNJ

Basics of Threading

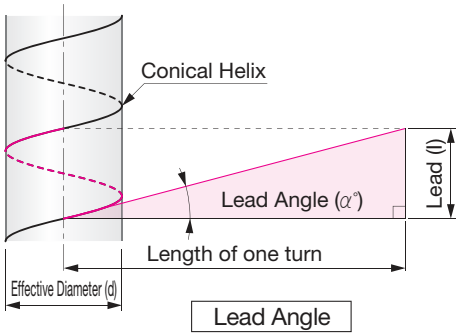
■ Parts of a Screw



External Thread



Internal Thread



Lead Angle

Effective Diameter (d) : Diameter of imaginary cylinder that passes through the thread at the point where the groove and ridge widths are equal
Pitch (P) : Distance between two ridges adjacent to each other
Lead (l) : Distance the screw thread moves axially in one turn
(On a single threaded screw, the lead and pitch are identical.)
Lead Angle (α) : Angle made by the conical helix of the thread ridge at a pitch diameter with a plane perpendicular to the axis

● Lead Angle Calculation

$$\tan\alpha^\circ = \frac{l}{\pi \times d} = \frac{n \times P}{\pi \times d}$$

α° : Lead Angle
l : Lead
n : No. of Threads
P : Pitch
d : Effective Screw Diameter

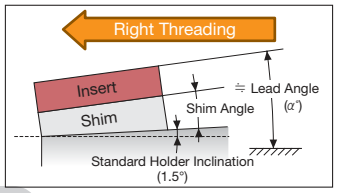
■ Main Screw Types and Standard Thread Patterns

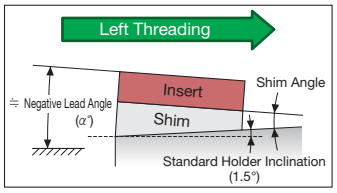
Applications	Symbol	Basic Profile
Metric Thread	M	Internal Thread, 1/4P, 60°, h, 1/8P, External Thread
Parallel Thread for Pipe	Internal Thread: G(PF), Rp(PS); External Thread: G(PF)	Internal Thread, R0.137P, 55°, h, R0.137P, External Thread
Taper Thread for Pipe	Internal Thread: Rc(PT), (BSPT); External Thread: R(PT), (BSPT)	R0.137P, Internal Thread, 27.5°, 27.5°, 90°, 1°47', R0.137P, External Thread
Unified Thread	UN, UNC, UNF, UNEF	Internal Thread, 1/4P, 60°, h, 1/8P, External Thread
Whitworth Thread	W, BSW, BSP	Internal Thread, R0.137P, 55°, h, R0.137P, External Thread
Thread for Aerospace Instruments	UNJ	Internal Thread, 5/16P, 60°, h, R, External Thread
American Taper Thread for Pipe	NPT	Internal Thread, 30°, 30°, h, 1°47', 90°, External Thread
American Taper Thread for Pipe	NPTF	Internal Thread, 30°, 30°, h, 1°47', 90°, External Thread

■ Tool Holder and Insert Selection Guide (SSTE Type/SSTI Type)

	External Diameter (Spindle Rotation Forward)	Internal Diameter (Forward Spindle Rotation)	External Diameter (Spindle Rotation Backward)
Right Threading	External Holder (SSTE Type), External Diameter Insert (16ER Type), Shim (YE3-3P/YE3-2P, YE3-1P/YE3/YE3-1N)	Internal Holder (SSTI Type), Internal Diameter Insert (16IR Type), Shim (YI3-3P/YI3-2P, YI3-1P/YI3/YI3-1N)	External Holder (SSTE Type), External Diameter Insert (16ER Type), Shim (YE3-3P/YE3-2P, YE3-1P/YE3/YE3-1N)
Left Threading	External Holder (SSTE Type), External Diameter Insert (16ER Type), Shim (YE3-2N/YE3-3N)	Internal Holder (SSTI Type), Internal Diameter Insert (16IR Type), Shim (YI3-2N/YI3-3N)	External Holder (SSTE Type), External Diameter Insert (16ER Type), Shim (YE3-2N/YE3-3N)

■ Threading Method and Angle of Insert





SSTE Type / SSTI Type



■ Features

- High-precision inserts with wiper edge for threading, supporting a wide range of applications from general industrial machinery to pipes and aerospace devices
- Stable chip control through use of a 3D molded chipbreaker
- Ground cutting edge flank for improved cutting edge sharpness, resulting in high quality threads



Ground flank periphery around cutting edge

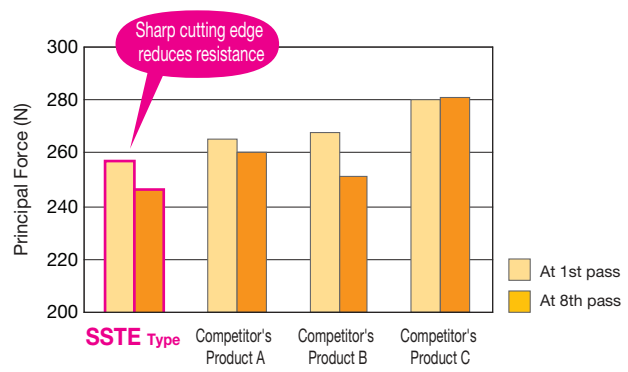
■ Product Range

Applications	Type	Wiper Edge	External/ Internal	Pitch (mm)	TPI (Threads/Inch)	Insert Cat. No. (Example)
General Industrial Use	60° General-purpose Thread	No	External	0.5 – 3.0	48 to 8	16ER A60-CB
			Internal	0.5 – 3.0	48 to 8	16IR A60-CB
	55° General-purpose Thread		External		48 to 8	16ER A55-CB
			Internal		48 to 8	16IR A55-CB
	60° ISO Metric Thread	Yes	External	0.75 1.0 1.25 1.5 1.75 2.0 2.5 3.0		16ER 075ISO-CB
			Internal	0.75 1.0 1.25 1.5 1.75 2.0 2.5 3.0		16IR 075ISO-CB
	60° Unified Thread		External		32 28 24 20 18 16 14 13 12 11.5 11 10 8	16ER 32UN-CB
			Internal		32 28 24 20 18 16 14 13 12 11.5 11 10 8	16IR 32UN-CB
Pipe Coupling for Gas, Water and Water Faucets	55° Parallel Thread for Pipe/Whitworth		External		36 28 24 20 19 18 16 14 12 11 10 8	16ER 36W-CB
			Internal		28 24 20 19 18 16 14	16IR 28W-CB
	60° American NPT		External		27 18 14 11.5 8	16ER 27NPT-CB
			Internal		27 18 14 11.5 8	16IR 27NPT-CB
Steam, Gas and Water Supply Pipes	55° Taper Thread for Pipe BSPT		External		28 19 14 11	16ER 28BSPT-CB
			Internal		28 19 14 11	16IR 28BSPT-CB
	60° American NPTF		External		27 18 14 11.5 8	16ER 27NPTF-CB
			Internal		27 18 14 11.5 8	16IR 27NPTF-CB
Aerospace Equipment	60° UNJ		External		32 28 24 20 18 16 14 12 11 10 8	16ER 32UNJ-CB
			Internal		32 28 24 20 18 16 14 12 11 10 8	16IR 32UNJ-CB

For inch holders, the STH and STI holders will also fit these products

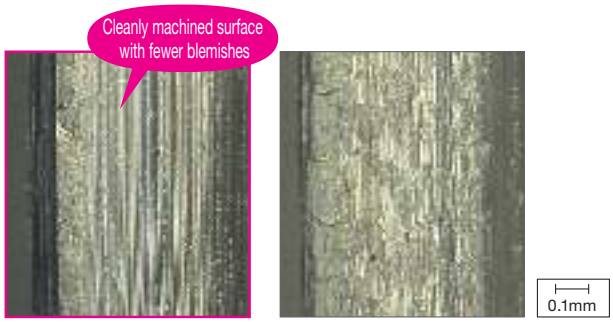
■ Application Examples

● Comparison of Cutting Force



Part Material: Medium Carbon Steel (S45C), M30 × 1.5
Cutting Conditions: v_c=150m/min Wet 8 passes Thread infeed method: Radial infeed

● Machined Surface Comparison



Part Material: Medium Carbon Steel (S45C), M30 × 1.5
Cutting Conditions: v_c=150m/min Wet 8 passes Thread infeed method: Radial infeed

LTE Type

External

Screw-on / Lever Lock
for External Diameter

M Metric Thread
W Whitworth Thread
UNC/UNF Unified Thread
R/Rc Taper Thread for Pipe

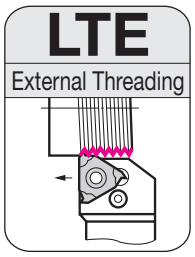
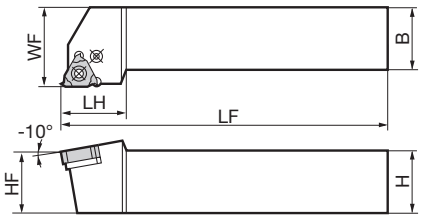


Fig 1



Holder

Dimensions (inch / *mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Head LH	Fig	Parts: Lever Pin	Bolt	Shim	Shim Retainer	Wrench
LTER123C	●	.750	.750	5.000	1.000	.750	1.000	1	LCL3S	LCS3TE	LSTE31-0	LSP3	LH025
LTER163D	●	1.000	1.000	6.000	1.250	1.000	1.000	1					
LTE R2020	★	*20*	*20*	*125*	*25*	*20*	*25*	1					
LTE R2525	★	*25*	*25*	*150*	*32*	*25*	*25*	1					
LTE R2525M22	★	*25*	*25*	*150*	*32*	*25*	*28*	1	LCL4S	LCS4	LSTE42-0	LSP4	LH030
LTE R3232P22	★	*32*	*32*	*170*	*40*	*32*	*28*	1					

Refer to below for shim selection.

Holder Identification Code

(Example) **S S T E R 25 25 M 16**

① Series

SST Type

② External/Internal

Symbol	Distinction
E	External
I	Internal

③ Feed Direction

Symbol	Feed Direction
R	Right Hand

④ Shank Height/Work Dia.

	Symbol	(mm)
External (Shank Height)	16	16
	20	20
	25	25
Internal (Min. bore diameter)	18	18
	20	20
	24	24
	31	31
	37	37

⑤ Shank Width/ Diameter

	Symbol	(mm)
External (Shank Width)	16	16
	20	20
	25	25
Internal (Shank Diameter)	12	12
	16	16
	20	20
	25	25
	32	32

⑥ Overall Length Symbol

Symbol	(mm)
H	100
K	125
M	150
Q	180
S	250

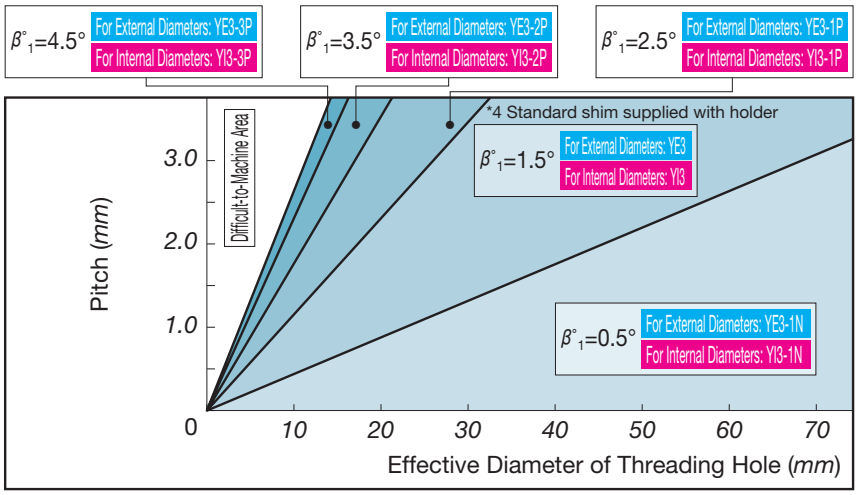
⑦ Insert Size

Symbol	Inscribed Circle (mm)
16	9.525

Shim and Selection Criteria

Applications	Recommended Lead Angle (β)	External Cat. No.	External Stock	Internal Cat. No.	Internal Stock
Right-hand Thread	**4.5°**	**YE3-3P**	★	**YI3-3P**	★
	3.5°	**YE3-2P**	★	**YI3-2P**	★
	2.5°	**YE3-1P**	★	**YI3-1P**	★
	1.5°	**YE3***4	★	**YI3***4	★
	0.5°	**YE3-1N**	★	**YI3-1N**	★
Left-hand Thread	**-0.5°**	**YE3-2N**	★	**YI3-2N**	★
	-1.5°	**YE3-3N**	★	**YI3-3N**	★

*4 Standard shim supplied with holder.



★ Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

STE Type / SSTE Type

External

STE

External Threading

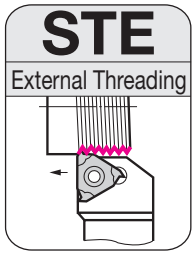
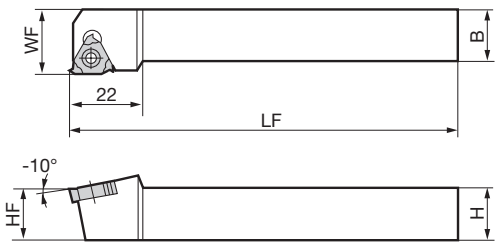


Fig 1



Screw-on / Lever Lock
for External Diameter

M Metric Thread
W Whitworth Thread
UNC/UNF Unified Thread
R/Rc Taper Thread for Pipe

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Flat Screw	N·m	Wrench
STE R1212	★	*12*	*12*	*100*	*16*	*12*	1	BFTX03508	2.0	TRX10
STE R1616	★	*16*	*16*	*100*	*20*	*16*	1			

External

SSTE

External Threading

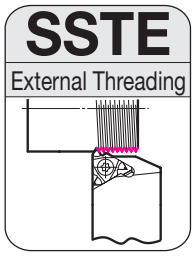
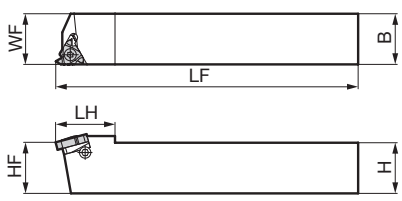
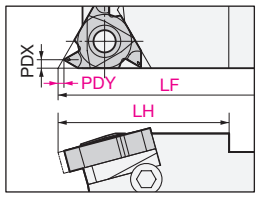


Fig 1





The values for dimensions LF and LH below are only for reference.
The actual value is the value on page F67 minus the PDY insert dimension.

Screw-on
for External Diameter

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Head LH	Cutting Edge Distance WF	Cutting Edge Height HF	Fig	Flat Screw	N·m	Shim Screw	Flat Washer	Shim	Wrench
SSTE R1616H16	★	*16*	*16*	*100*	*20.5*	*16*	*16*	1						
SSTE R2020K16	★	*20*	*20*	*125*	*30.0*	*20*	*20*	1	BFTX0312N	**2.0**	BX0304*1	PW3	YE3	TRX10
SSTE R2525M16	★	*25*	*25*	*150*	*30.0*	*25*	*25*	1						

*1 Shim screw wrench is sold separately.

★ Worldwide Warehouse Item
N·m Recommended Tightening Torque (N·m)

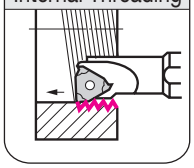
Holder Identification F64
Details of Shim Selection F64

STI Type / SSTI Type

Internal

STI

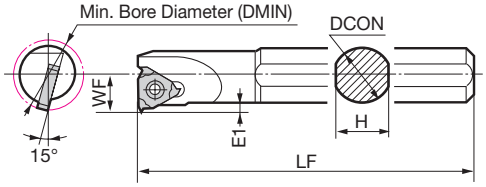
Internal Threading



Screw-on
for Internal Diameter

M Metric Thread
UNC/UNF Unified Thread

Fig 1



Holder

Parts

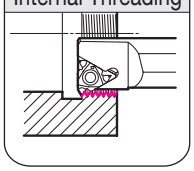
Dimensions (inch / *mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Distance E1	Min. Bore Diameter DMIN	Fig	Flat Screw	N·m	Wrench
STIR103	•	.625	.590	6.000	.406	.1080	.750	1	BFTX03508	2.0	TRX10
STIR123	•	.750	.670	7.000	.492	.1525	1.000	1			
STIR163	•	1.000	.905	8.000	.600	.1375	1.150	1			
STIR203	•	1.250	1.142	10.000	.724	.1415	1.400	1			
STIR243	•	1.500	1.378	12.000	.897	.1560	1.700	1			
STIR316	★	*16*	*15*	*150*	*11*	*3.5*	*20*	1			
STIR320	★	*20*	*18*	*180*	*14*	*5.0*	*25*	1			

Internal

SSTI

Internal Threading



Screw-on
for Internal Diameter

Fig 1

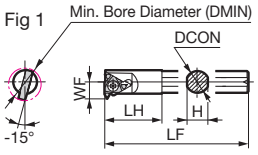


Fig 2

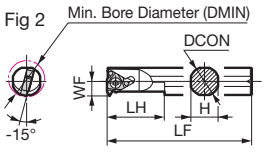
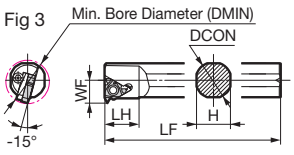
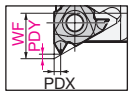


Fig 3





The values for dimension WF below are only for reference.
The actual value is the value on page F68
minus the PDY insert dimension.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Diameter DCON	Height H	Overall Length LF	Head LH	Cutting Edge Distance WF	Min.Bore Diameter DMIN*2	Fig	Flat Screw	N·m	Shim Screw	Flat Washer	Shim	Wrench
SSTI R1812M16*3	★	*12*	*11.0*	*150*	*32.0*	*10.2*	*18*	1	BFTX03085N	2.0	-	-	-	TRX10
SSTI R2016M16*3	★	*16*	*15.0*	*150*	*63.5*	*9.2*	*20*	2						
SSTI R2420Q16	★	*20*	*18.0*	*180*	*19.0*	*13.5*	*24*	3	BFTX0312N	2.0	BX0304*1	PW3	YI3	
SSTI R3125S16	★	*25*	*23.0*	*250*	*14.3*	*16.5*	*31*	3						
SSTI R3732S16	★	*32*	*30.0*	*250*	*14.3*	*20.0*	*37*	3						

*1 Shim screw wrench is sold separately. *2 The minimum bore diameter is the diameter of the prepared hole. *3 Left-hand threads are not available.

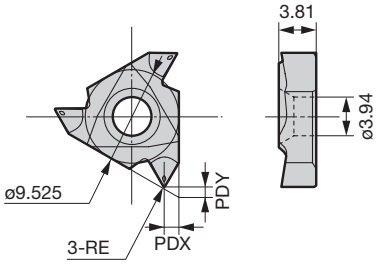
★ Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

SSTE / SSTI Inserts

External

Fig 1



SSTE Type Guidelines for Depth of Cut and No. of Passes F71

(Coated Carbide)

60°/55° General-purpose Threads (Partial Profile)

Dimensions (mm)

Thread Ridge Angle	Cat. No.	AC530U	Pitch mm	Pitch Threads/Inch	X direction PDX	Y direction PDY	Nose Radius RE	Pcs/ Pack	Fig
60°	**16ER A60-CB**	★	0.5-1.5	16 - 48	0.8	0.6	0.09		1
	16ER AG60-CB	★	0.5-3.0	8 - 48	1.5	1.1	0.10	5	1
	16ER G60-CB	★	2.0-3.0	8 - 14	1.5	1.1	0.20		1
55°	**16ER A55-CB**	★	-	16 - 48	0.8	0.5	0.05		1
	16ER AG55-CB	★	-	8 - 48	1.5	1.1	0.08	5	1
	16ER G55-CB	★	-	8 - 14	1.5	1.1	0.22		1

60° ISO Metric Thread (Full Profile)

Dimensions (mm)

Thread Ridge Angle	Cat. No.	AC530U	Pitch mm	Pitch Threads/Inch	X direction PDX	Y direction PDY	Nose Radius RE	Pcs/ Pack	Fig
60°	**16ER 075 ISO-CB**	★	0.75	-	0.5	1.0	0.09		1
	16ER 100 ISO-CB	★	1.00	-	0.8	0.6	0.14		1
	16ER 125 ISO-CB	★	1.25	-	0.8	0.7	0.15		1
	16ER 150 ISO-CB	★	1.50	-	0.8	0.7	0.20		1
	16ER 175 ISO-CB	★	1.75	-	1.5	1.0	0.23	5	1
	16ER 200 ISO-CB	★	2.00	-	1.5	1.1	0.26		1
	16ER 250 ISO-CB	★	2.50	-	1.5	1.2	0.33		1
	16ER 300 ISO-CB	★	3.00	-	1.5	1.1	0.41		1

60° Unified Thread (Full Profile)

Dimensions (mm)

Thread Ridge Angle	Cat. No.	AC530U	Pitch mm	Pitch Threads/Inch	X direction PDX	Y direction PDY	Nose Radius RE	Pcs/ Pack	Fig
60°	**16ER 32UN-CB**	★	-	32	0.5	1.0	0.10		1
	16ER 28UN-CB	★	-	28	0.8	0.7	0.11		1
	16ER 24UN-CB	★	-	24	0.8	0.7	0.13		1
	16ER 20UN-CB	★	-	20	0.8	0.7	0.16		1
	16ER 18UN-CB	★	-	18	0.8	0.7	0.18		1
	16ER 16UN-CB	★	-	16	0.8	0.8	0.20	5	1
	16ER 14UN-CB	★	-	14	1.5	1.2	0.23		1
	16ER 13UN-CB	★	-	13	1.5	1.1	0.26		1
	16ER 12UN-CB	★	-	12	1.5	1.0	0.27		1
	16ER 10UN-CB	★	-	10	1.5	1.2	0.33		1
	16ER 08UN-CB	★	-	8	1.5	1.2	0.42		1

55° Parallel Thread for Pipe / Whitworth (Full Profile)

Dimensions (mm)

Thread Ridge Angle	Cat. No.	AC530U	Pitch mm	Pitch Threads/Inch	X direction PDX	Y direction PDY	Nose Radius RE	Pcs/ Pack	Fig
55°	**16ER 36W-CB**	★	-	36	0.5	1.0	0.10		1
	16ER 32W-CB	★	-	32	0.5	1.0	0.11		1
	16ER 28W-CB	★	-	28	0.8	0.6	0.12		1
	16ER 24W-CB	★	-	24	0.8	0.6	0.15		1
	16ER 20W-CB	★	-	20	0.8	0.6	0.18		1
	16ER 19W-CB	★	-	19	0.8	0.6	0.18		1
	16ER 18W-CB	★	-	18	0.8	0.6	0.19	5	1
	16ER 16W-CB	★	-	16	0.8	0.6	0.22		1
	16ER 14W-CB	★	-	14	1.5	1.0	0.25		1
	16ER 12W-CB	★	-	12	1.5	1.1	0.29		1
	16ER 11W-CB	★	-	11	1.5	1.1	0.32		1
	16ER 10W-CB	★	-	10	1.5	1.1	0.35		1
	16ER 08W-CB	★	-	8	1.5	1.1	0.43		1

★ Worldwide Warehouse Item

60° American NPT (Full Profile)

Dimensions (mm)

Thread Ridge Angle	Cat. No.	AC530U	Pitch mm	Pitch Threads/Inch	X direction PDX	Y direction PDY	Nose Radius RE	Pcs/ Pack	Fig
60°	**16ER 27NPT-CB**	★	-	27	0.8	0.6	0.06		1
	16ER 18NPT-CB	★	-	18	0.8	0.6	0.06		1
	16ER 14NPT-CB	★	-	14	1.5	1.0	0.08	5	1
	16ER 115NPT-CB	★	-	11.5	1.5	1.0	0.08		1
	16ER 08NPT-CB	★	-	8	1.5	1.1	0.13		1

55° Taper Thread for Pipe / BSPT (Full Profile)

Dimensions (mm)

Thread Ridge Angle	Cat. No.	AC530U	Pitch mm	Pitch Threads/Inch	X direction PDX	Y direction PDY	Nose Radius RE	Pcs/ Pack	Fig
55°	**16ER 28BSPT-CB**	★	-	28	0.8	0.6	0.13		1
	16ER 19BSPT-CB	★	-	19	0.8	0.6	0.18		1
	16ER 14BSPT-CB	★	-	14	1.5	1.3	0.25	5	1
	16ER 11BSPT-CB	★	-	11	1.5	1.0	0.31		1

60° American NPTF (Full Profile)

Dimensions (mm)

Thread Ridge Angle	Cat. No.	AC530U	Pitch mm	Pitch Threads/Inch	X direction PDX	Y direction PDY	Nose Radius RE	Pcs/ Pack	Fig
60°	**16ER 27NPTF-CB**	★	-	27	0.8	0.6	0.06		1
	16ER 18NPTF-CB	★	-	18	0.8	0.6	0.06		1
	16ER 14NPTF-CB	★	-	14	1.5	1.0	0.13	5	1
	16ER 115NPTF-CB	★	-	11.5	1.5	1.0	0.12		1

60° UNJ (Full Profile)

Dimensions (mm)

Thread Ridge Angle	Cat. No.	AC530U	Pitch mm	Pitch Threads/Inch	X direction PDX	Y direction PDY	Nose Radius RE	Pcs/ Pack	Fig
60°	**16ER 32UNJ-CB**	★	-	32	0.5	1.0	0.13		1
	16ER 28UNJ-CB	★	-	28	0.8	0.6	0.15		1
	16ER 24UNJ-CB	★	-	24	0.8	0.6	0.18		1
	16ER 20UNJ-CB	★	-	20	0.8	0.7	0.21		1
	16ER 18UNJ-CB	★	-	18	0.8	0.6	0.23	5	1
	16ER 16UNJ-CB	★	-	16	0.8	0.6	0.25		1
	16ER 14UNJ-CB	★	-	14	1.5	1.1	0.29		1
	16ER 12UNJ-CB	★	-	12	1.5	1.1	0.34		1
	16ER 10UNJ-CB	★	-	10	1.5	1.1	0.40		1

Insert Cat. No. Nominal

(Example) **16 E R 150 ISO - CB**

① Insert Size

Symbol	Inscribed Circle (mm)
16	9.525

② External/Internal

Symbol	Distinction
E	External
I	Internal

③ Feed Direction

Symbol	Feed Direction
R	Right Hand

④ Pitch or TPI

With Wiper Edge: Metric = Pitch x 100; Inch= TPI (115 only for 11.5)
(Example) 075: Pitch 0.75mm; 150: Pitch 1.5mm; 20: 20TPI

Without Wiper Edge:

Symbol	Pitch/TPI
A	Pitch : 0.5 to 1.5mm TPI : 16 to 48
AG	Pitch : 0.5 to 3.0mm TPI : 8 to 48
G	Pitch : 2.0 to 3.0mm TPI : 8 to 14

⑤ Thread Type

Wiper Edge	Symbol	Type
Yes	ISO	Metric Thread
	UN	Unified Thread
	W	Whitworth
	NPT	American Taper Thread for Pipe
	BSPT	Taper Thread for Pipe
	NPTF	American Taper Thread for Pipe
	UNJ	For Aerospace Equipment
No	60	60° General-purpose Thread
	55	55° General-purpose Thread

⑥ Chipbreaker

Symbol	Description
CB	With Chipbreaker

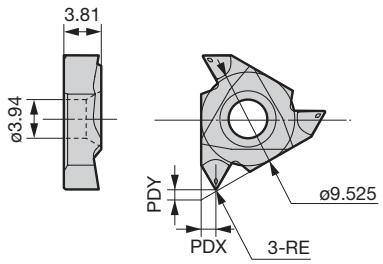
SSTE / SSTI Inserts

Internal

SSTI Type Guidelines for Depth of Cut and No. of Passes F72

(Coated Carbide)

Fig 1



60°/55° General-purpose Threads (Partial Profile)

Dimensions (*mm*)

Thread Ridge Angle	Cat. No.	AC530U	Pitch		X direction	Y direction	Nose Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR A60-CB**	★	0.5-1.5	16 - 48	0.8	0.5	0.09	5	1
	16IR AG60-CB	★	0.5-3.0	8 - 48	1.5	1.1	0.10		1
	16IR G60-CB	★	2.0-3.0	8 - 14	1.5	1.1	0.18		1
55°	**16IR A55-CB**	★	-	16 - 48	0.8	0.5	0.05	5	1
	16IR AG55-CB	★	-	8 - 48	1.5	1.1	0.08		1
	16IR G55-CB	★	-	8 - 14	1.5	1.1	0.20		1

60° ISO Metric Thread (Full Profile)

Dimensions (*mm*)

Thread Ridge Angle	Cat. No.	AC530U	Pitch		X direction	Y direction	Nose Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 075 ISO-CB**	★	0.75	-	0.5	0.9	0.04	5	1
	16IR 100 ISO-CB	★	1.00	-	0.8	0.6	0.06		1
	16IR 125 ISO-CB	★	1.25	-	0.8	0.6	0.07		1
	16IR 150 ISO-CB	★	1.50	-	0.8	0.6	0.09		1
	16IR 175 ISO-CB	★	1.75	-	1.5	1.0	0.10		1
	16IR 200 ISO-CB	★	2.00	-	1.5	1.1	0.13		1
	16IR 250 ISO-CB	★	2.50	-	1.5	1.1	0.15		1
	16IR 300 ISO-CB	★	3.00	-	1.5	1.1	0.19		1

60° Unified Thread (Full Profile)

Dimensions (*mm*)

Thread Ridge Angle	Cat. No.	AC530U	Pitch		X direction	Y direction	Nose Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 32UN-CB**	★	-	32	0.5	0.9	0.04	5	1
	16IR 28UN-CB	★	-	28	0.8	0.6	0.06		1
	16IR 24UN-CB	★	-	24	0.8	0.7	0.06		1
	16IR 20UN-CB	★	-	20	0.8	0.6	0.08		1
	16IR 18UN-CB	★	-	18	0.8	0.6	0.08		1
	16IR 16UN-CB	★	-	16	0.8	0.7	0.09		1
	16IR 14UN-CB	★	-	14	1.5	1.1	0.13		1
	16IR 13UN-CB	★	-	13	1.5	1.1	0.11		1
	16IR 12UN-CB	★	-	12	1.5	1.1	0.13		1
	16IR 10UN-CB	★	-	10	1.5	1.1	0.15		1
	16IR 08UN-CB	★	-	8	1.5	1.1	0.20		1

55° Parallel Thread for Pipe / Whitworth (Full Profile)

Dimensions (*mm*)

Thread Ridge Angle	Cat. No.	AC530U	Pitch		X direction	Y direction	Nose Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
55°	**16IR 28W-CB**	★	-	28	0.8	0.6	0.12	5	1
	16IR 24W-CB	★	-	24	0.8	0.6	0.14		1
	16IR 20W-CB	★	-	20	0.8	0.6	0.18		1
	16IR 19W-CB	★	-	19	0.8	0.6	0.18		1

60° American NPT (Full Profile)

Dimensions (*mm*)

Thread Ridge Angle	Cat. No.	AC530U	Pitch		X direction	Y direction	Nose Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 27NPT-CB**	★	-	27	0.8	0.6	0.06	5	1
	16IR 18NPT-CB	★	-	18	0.8	0.6	0.06		1
	16IR 14NPT-CB	★	-	14	1.5	1.1	0.08		1
	16IR 115NPT-CB	★	-	11.5	1.5	1.0	0.08		1
	16IR 08NPT-CB	★	-	8	1.5	1.0	0.13		1

55° Taper Thread for Pipe / BSPT (Full Profile)

Dimensions (*mm*)

Thread Ridge Angle	Cat. No.	AC530U	Pitch		X direction	Y direction	Nose Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
55°	**16IR 28BSPT-CB**	★	-	28	0.8	0.6	0.13	5	1
	16IR 19BSPT-CB	★	-	19	0.8	0.6	0.18		1

60° American NPTF (Full Profile)

Dimensions (*mm*)

Thread Ridge Angle	Cat. No.	AC530U	Pitch		X direction	Y direction	Nose Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 27NPTF-CB**	★	-	27	0.8	0.6	0.06	5	1
	16IR 18NPTF-CB	★	-	18	0.8	0.6	0.08		1
	16IR 14NPTF-CB	★	-	14	1.5	1.0	0.13		1
	16IR 115NPTF-CB	★	-	11.5	1.5	1.0	0.08		1
	16IR 08NPTF-CB	★	-	8	1.5	1.1	0.13		1

60° UNJ (Full Profile)

Dimensions (*mm*)

Thread Ridge Angle	Cat. No.	AC530U	Pitch		X direction	Y direction	Nose Radius	Pcs/ Pack	Fig
			mm	Threads/Inch	PDX	PDY	RE		
60°	**16IR 32UNJ-CB**	★	-	32	0.5	0.9	0.04	5	1
	16IR 28UNJ-CB	★	-	28	0.8	0.6	0.05		1
	16IR 24UNJ-CB	★	-	24	0.8	0.6	0.06		1
	16IR 20UNJ-CB	★	-	20	0.8	0.6	0.06		1
	16IR 18UNJ-CB	★	-	18	0.8	0.6	0.06		1
	16IR 16UNJ-CB	★	-	16	0.8	0.6	0.09		1
	16IR 14UNJ-CB	★	-	14	1.5	1.1	0.09		1
	16IR 12UNJ-CB	★	-	12	1.5	1.1	0.11		1
	16IR 10UNJ-CB	★	-	10	1.5	1.1	0.15		1

Insert Cat. No. Nominal

(Example) **16 I R 150 ISO - CB**

① Insert Size

Symbol	Inscribed Circle (mm)
16	9.525

② External/Internal

Symbol	Ex/In
E	O.D.
I	Internal Diameter

③ Feed Direction

Symbol	Feed Direction
R	Right Hand

④ Pitch or TPI

Metre= Pitch x 100
Inch= TPI
(115 only for 11.5)
(Example) 075: Pitch 0.75mm
150: Pitch 1.5mm
20: 20TPI

	Symbol	Pitch/TPI
With Wiper Edge	A	Pitch : 0.5 to 1.5mm TPI : 16 to 48
	AG	Pitch : 0.5 to 3.0mm TPI : 8 to 48
Without Wiper Edge	G	Pitch : 2.0 to 3.0mm TPI : 8 to 14

⑤ Thread Type

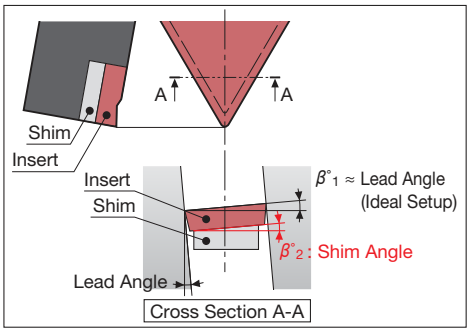
Wiper Edge	Symbol	Type
Yes	ISO	Metric Thread
	UN	Unified Thread
	W	Whitworth
	NPT	American Taper Thread for Pipe
	BSPT	Taper Thread for Pipe
	NPTF	American Taper Thread for Pipe
	UNJ	For Aerospace Equipment
No	60	60° General-purpose Thread
	55	55° General-purpose Thread

⑥ Chipbreaker

Symbol	Description
CB	With Chipbreaker

■ Shim Selection

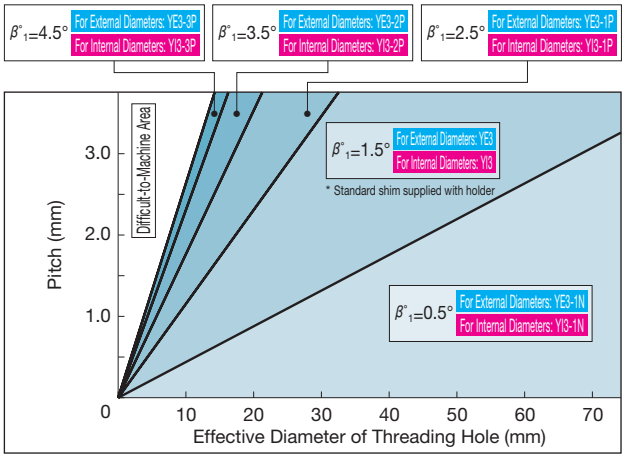
If the pitch is large or the threading diameter is small, the threading lead angle will become large and the effective relief angle will become small.
It is ideal to set the threading insert so that both right and left relief angles are equal.
Therefore, it is necessary to select an appropriate shim based on the thread pitch and effective diameter using the table below.



■ Shim Selection Procedure

1. Choose from [Right-Hand Thread / Left-Hand Thread] in the table.
2. Locate the required threading "pitch".
3. Locate the cell with the required "Effective Diameter" range.
4. Confirm the part no. at the "Shim" row above the corresponding "Effective Diameter" cell located previously. If the shim part no. is different from the one currently in use, change to the correct one.

Example: When machining a M16x2.0 external right-hand thread, the pitch diameter is 14.701mm. In the table below, locate [2.0]mm under the "Pitch" column then move along the row to the right to locate the required "Effective Diameter" range [11.4 - 17.4]mm.
As such, the correct shim should be [YE3-1P], shown in the corresponding cell under the "External" row above.



● Pitch (mm)

Right-hand/Left-hand Thread		For Right-hand Thread					For Left-hand Thread	
Lead Angle		4.5°	3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°
Shim	External	YE3-3P	YE3-2P	YE3-1P	YE3*	YE3-1N	YE3-2N	YE3-3N
	Internal	YI3-3P	YI3-2P	YI3-1P	YI3*	YI3-1N	YI3-2N	YI3-3N
	Shim Angle (β_1)	3°	2°	1°	0°	-1°	-2°	-3°
Pitch (*mm*)		Effective Diameter (*mm*)						
0.5		*1.9 - 2.2*	*2.2 - 2.8*	*2.8 - 4.3*	*4.3 - 11.4*	*> 11.4*	*> 11.4*	*11.4 - 4.3*
0.75		*2.8 - 3.3*	*3.3 - 4.3*	*4.3 - 6.5*	*6.5 - 17.1*	*> 17.1*	*> 17.1*	*17.1 - 6.5*
1.0		*3.8 - 4.3*	*4.3 - 5.7*	*5.7 - 8.7*	*8.7 - 22.8*	*> 22.8*	*> 22.8*	*22.8 - 8.7*
1.25		*4.7 - 5.4*	*5.4 - 7.1*	*7.1 - 10.9*	*10.9 - 28.5*	*> 28.5*	*> 28.5*	*28.5 - 10.9*
1.5		*5.7 - 6.5*	*6.5 - 8.5*	*8.5 - 13.0*	*13.0 - 34.2*	*> 34.2*	*> 34.2*	*34.2 - 13.0*
1.75		*6.6 - 7.6*	*7.6 - 10.0*	*10.0 - 15.2*	*15.2 - 39.9*	*> 39.9*	*> 39.9*	*39.9 - 15.2*
2.0		*7.6 - 8.7*	*8.7 - 11.4*	*11.4 - 17.4*	*17.4 - 45.6*	*> 45.6*	*> 45.6*	*45.6 - 17.4*
2.5		*9.5 - 10.8*	*10.8 - 14.2*	*14.2 - 21.7*	*21.7 - 57.0*	*> 57.0*	*> 57.0*	*57.0 - 21.7*
3.0		*11.4 - 13.0*	*13.0 - 17.1*	*17.1 - 26.0*	*26.0 - 68.4*	*> 68.4*	*> 68.4*	*68.4 - 26.0*

● TPI (threads/inch)

Right-hand/Left-hand Thread		For Right-hand Thread					For Left-hand Thread	
Lead Angle		4.5°	3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°
Shim	External	YE3-3P	YE3-2P	YE3-1P	YE3*	YE3-1N	YE3-2N	YE3-3N
	Internal	YI3-3P	YI3-2P	YI3-1P	YI3*	YI3-1N	YI3-2N	YI3-3N
	Shim Angle (β_1)	3°	2°	1°	0°	-1°	-2°	-3°
TPI (Threads/Inch)		Effective Diameter (*mm*)						
32		*3.0 - 3.3*	*3.3 - 4.6*	*4.6 - 6.9*	*6.9 - 18.0*	*> 18.0*	*> 18.0*	*18.0 - 6.9*
28		*3.0 - 3.8*	*3.8 - 5.1*	*5.1 - 7.9*	*7.9 - 20.8*	*> 20.8*	*> 20.8*	*20.8 - 7.9*
27		*3.6 - 4.1*	*4.1 - 5.3*	*5.3 - 8.1*	*8.1 - 21.3*	*> 21.3*	*> 21.3*	*21.3 - 8.1*
24		*4.1 - 4.6*	*4.6 - 6.1*	*6.1 - 9.1*	*9.1 - 24.4*	*> 24.4*	*> 24.4*	*24.4 - 9.1*
20		*4.8 - 5.6*	*5.6 - 7.1*	*7.1 - 10.9*	*10.9 - 29.0*	*> 29.0*	*> 29.0*	*29.0 - 10.9*
18		*5.3 - 6.1*	*6.1 - 8.1*	*8.1 - 12.4*	*12.4 - 32.5*	*> 32.5*	*> 32.5*	*32.5 - 12.4*
16		*5.8 - 6.9*	*6.9 - 8.9*	*8.9 - 13.7*	*13.7 - 35.8*	*> 35.8*	*> 35.8*	*35.8 - 13.7*
14		*6.9 - 7.9*	*7.9 - 10.2*	*10.2 - 15.7*	*15.7 - 41.1*	*> 41.1*	*> 41.1*	*41.1 - 15.7*
13		*7.4 - 8.4*	*8.4 - 11.2*	*11.2 - 17.0*	*17.0 - 44.7*	*> 44.7*	*> 44.7*	*44.7 - 17.0*
12		*8.1 - 9.1*	*9.1 - 12.2*	*12.2 - 18.5*	*18.5 - 48.8*	*> 48.8*	*> 48.8*	*48.8 - 18.5*
11.5		*8.4 - 9.7*	*9.7 - 12.4*	*12.4 - 19.3*	*19.3 - 50.3*	*> 50.3*	*> 50.3*	*50.3 - 19.3*
11		*8.9 - 9.9*	*9.9 - 13.2*	*13.2 - 20.1*	*20.1 - 52.6*	*> 52.6*	*> 52.6*	*52.6 - 20.1*
10		*9.7 - 10.9*	*10.9 - 14.5*	*14.5 - 22.1*	*22.1 - 57.9*	*> 57.9*	*> 57.9*	*57.9 - 22.1*
9		*10.7 - 12.2*	*12.2 - 16.0*	*16.0 - 24.4*	*24.4 - 64.3*	*> 64.3*	*> 64.3*	*64.3 - 24.4*
8		*11.9 - 13.7*	*13.7 - 18.0*	*18.0 - 27.7*	*27.7 - 72.4*	*> 72.4*	*> 72.4*	*72.4 - 27.7*

* SSTE Type/SSTI Type holders are shipped with shims for lead angle of β_1 = 1.5° (SSTE Type: YE3, SSTI Type: YI3).
Shims for lead angles of β_1 = -1.5°, -0.5°, 0.5°, 2.5°, 3.5°, and 4.5° are sold separately.
* Shims are not needed for SSTI R1812M16 and SSTI R2016M16. (The holders are already provided with the standard holder inclination of 1.5°.)

SSTE / SSTI Inserts

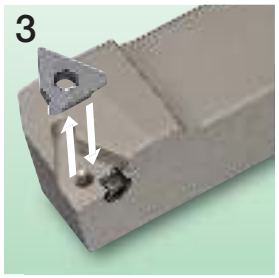
■ Shim Replacement



Remove the insert to expose the shim.



Loosen the shim set screw by one to two turns.

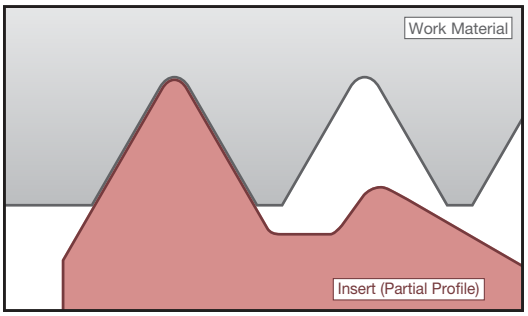
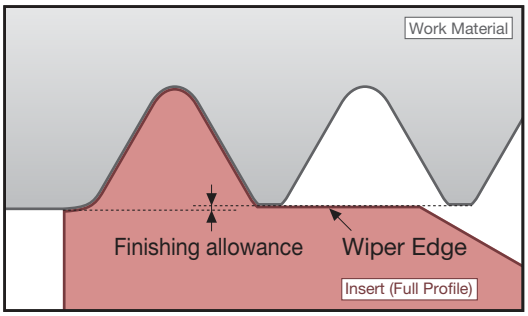


Remove the shim and mount a different shim that matches the lead edge angle.



Tighten the shim set screw. (Recommended Tightening Torque 1.0 to 1.5N·m)

■ Wiper Edge (Partial Profile & Full Profile)

Partial Profile	Full Profile
	
· Performs threading without machining thread ridges (the machined surface from the previous process is left unworked.) · Enables machining of threads with different pitch widths with the same insert · Finishing of the internal (or external) diameter is required before the threading process. · Fine burrs are easily formed on edges of ridges	· Enables machining of workpieces into shapes compliant with thread standards · Only specific thread specifications and pitch can be machined · In order to finish a thread with the wiper edge, a finishing allowance of 0.1mm on each side is required · Edges of ridges can be rounded off.

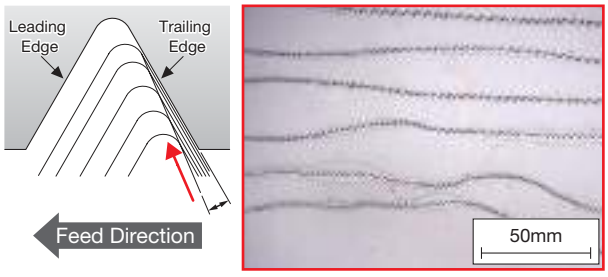
■ Infeed Method

The modified flank infeed is recommended for the SSTE Type/SSTI Type.
This infeed method, which features reduced chip curl diameters and stable chip control, can also decrease chipping on trailing edges that often occurs in radial infeed machining. (1° is recommended for the modification angle.)

● Impact of Infeed Method on Chip Shapes

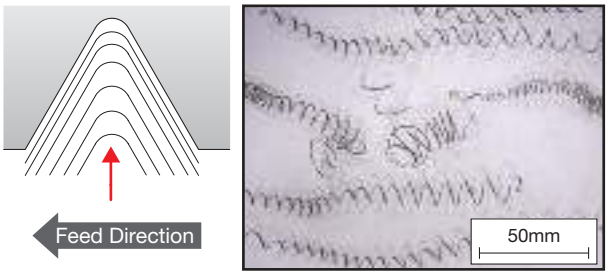
Work Material: SUS316, M30 x 1.5 Cutting Conditions: v_c=60mm/min Wet, 8 Passes

Modified Flank Infeed



Reduced curl diameters ensure smooth, stable chip control (performance)

Radial Infeed Machining



Large curl diameters cause unstable chip control

Guide to Depth of Cut and No. of Passes

SSTE Type Guidelines for Depth of Cut

■ External Metric Threads (Depth of cut per pass: *mm*)

Pitch (*mm*)	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Overall Depth of Cut (*mm*)	0.48	0.64	0.80	0.92	1.10	1.26	1.57	1.87
No. of Passes	4	5	7	8	10	12	14	16
1	0.24	0.25	0.25	0.28	0.28	0.30	0.38	0.40
2	0.12	0.15	0.15	0.15	0.15	0.16	0.19	0.22
3	0.07	0.11	0.12	0.12	0.12	0.13	0.15	0.15
4	0.05	0.08	0.09	0.10	0.10	0.10	0.10	0.13
5		0.05	0.08	0.09	0.10	0.09	0.10	0.12
6			0.06	0.07	0.09	0.09	0.09	0.10
7			0.05	0.06	0.08	0.08	0.09	0.10
8				0.05	0.07	0.07	0.08	0.09
9					0.06	0.07	0.08	0.09
10					0.05	0.06	0.07	0.08
11						0.06	0.07	0.08
12						0.05	0.06	0.07
13							0.06	0.07
14							0.05	0.06
15								0.06
16								0.05

■ External Unified Threads (Depth of cut per pass: mm)

Threads/Inch	32	28	24	20	18	16	14	13	12	11	10	9	8
Overall Depth of Cut (*mm*)	0.50	0.57	0.67	0.80	0.89	1.00	1.15	1.23	1.34	1.46	1.60	1.78	2.00
No. of Passes	4	4	5	7	8	10	11	12	12	14	14	16	16
1	0.24	0.25	0.25	0.26	0.26	0.28	0.28	0.30	0.30	0.30	0.38	0.38	0.40
2	0.14	0.17	0.19	0.15	0.15	0.15	0.15	0.18	0.18	0.18	0.20	0.20	0.25
3	0.07	0.10	0.12	0.10	0.12	0.10	0.12	0.13	0.13	0.13	0.15	0.13	0.19
4	0.05	0.05	0.06	0.09	0.10	0.09	0.10	0.10	0.12	0.12	0.12	0.12	0.16
5			0.05	0.08	0.08	0.08	0.10	0.08	0.11	0.11	0.10	0.11	0.14
6				0.07	0.07	0.07	0.09	0.08	0.10	0.10	0.09	0.10	0.12
7				0.05	0.06	0.07	0.08	0.07	0.09	0.08	0.09	0.10	0.11
8					0.05	0.06	0.07	0.07	0.08	0.08	0.08	0.09	0.10
9						0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.09
10						0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08
11							0.05	0.05	0.05	0.06	0.07	0.08	0.07
12								0.05	0.05	0.06	0.06	0.07	0.07
13										0.05	0.06	0.07	0.06
14										0.05	0.05	0.06	0.06
15												0.05	0.05
16												0.05	0.05

No. of passes and depths of cut in the table above are general guidelines only. Increase or decrease depending on conditions. However, the maximum depth of cut should be kept to 0.5mm or less.
When using an insert with a wiper edge, add machining allowance to the total depth of cut.

■ Recommended Cutting Conditions

Work Material	P Carbon Steel	P Alloy Steel (up to 330HB)	M Stainless Steel	K Gray Cast Iron (up to 330HB)	K Ductile Cast Iron	S Titanium Alloy
Cutting Speed v_c (m/min)	75 to 150	75 to 135	60 to 120	90 to 180	75 to 135	24 to 90

Guide to Depth of Cut and No. of Passes

SSTI Type Guidelines for Depth of Cut

■ Internal Metric Threads (Depth of cut per pass: mm)

Pitch (mm)	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00
Overall Depth of Cut (mm)	0.49	0.58	0.74	0.89	1.04	1.18	1.47	1.76
No. of Passes	4	5	8	10	11	12	14	16
1	0.20	0.22	0.22	0.25	0.25	0.25	0.30	0.30
2	0.12	0.14	0.14	0.12	0.17	0.18	0.19	0.20
3	0.12	0.10	0.09	0.08	0.10	0.12	0.15	0.17
4	0.05	0.07	0.07	0.08	0.08	0.10	0.12	0.14
5		0.05	0.06	0.07	0.08	0.09	0.10	0.12
6			0.06	0.07	0.07	0.08	0.09	0.11
7			0.05	0.06	0.07	0.07	0.08	0.10
8			0.05	0.06	0.06	0.07	0.08	0.10
9				0.05	0.06	0.06	0.07	0.08
10				0.05	0.05	0.06	0.07	0.08
11					0.05	0.05	0.06	0.07
12						0.05	0.06	0.07
13							0.05	0.06
14							0.05	0.06
15								0.05
16								0.05

■ Internal Unified Threads (Depth of cut per pass: mm)

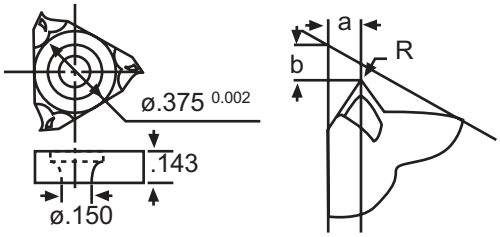
Threads/Inch	32	28	24	20	18	16	14	13	12	11	10	9	8
Overall Depth of Cut (mm)	0.43	0.49	0.57	0.69	0.76	0.86	0.98	1.06	1.15	1.25	1.37	1.53	1.72
No. of Passes	4	4	5	7	8	10	11	12	12	14	14	16	16
1	0.20	0.20	0.20	0.22	0.22	0.22	0.25	0.25	0.27	0.27	0.27	0.30	0.30
2	0.10	0.16	0.16	0.12	0.13	0.13	0.15	0.15	0.16	0.16	0.18	0.18	0.22
3	0.08	0.08	0.09	0.09	0.10	0.08	0.10	0.10	0.12	0.12	0.16	0.16	0.18
4	0.05	0.05	0.07	0.08	0.08	0.08	0.08	0.08	0.10	0.10	0.12	0.11	0.15
5			0.05	0.07	0.07	0.07	0.07	0.08	0.09	0.08	0.10	0.09	0.12
6				0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.11
7				0.05	0.05	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.10
8					0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.09
9						0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.08
10						0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.07
11							0.04	0.05	0.05	0.05	0.05	0.06	0.06
12								0.04	0.04	0.05	0.05	0.06	0.06
13										0.04	0.04	0.05	0.05
14										0.04	0.04	0.05	0.05
15												0.04	0.04
16												0.04	0.04

No. of passes and depths of cut in the table above are general guidelines only. Increase or decrease depending on conditions. However, the maximum depth of cut should be kept to 0.5mm or less.
When using an insert with a wiper edge, add machining allowance to the total depth of cut.

■ Recommended Cutting Conditions

Work Material	P Carbon Steel	P Alloy Steel (up to 330HB)	M Stainless Steel	K Gray Cast Iron (up to 330HB)	K Ductile Cast Iron	S Titanium Alloy
Cutting Speed v_c (m/min)	75 to 150	75 to 135	60 to 120	90 to 180	75 to 135	24 to 90

Threading Inserts



▲ USA Limited Availability Item

External Laydown - Full Profile (ISO Metric)

Catalog Number	Pitch (mm)	Threads /in	Stock Grade				R	Included Angle θ°	a	b
			Uncoated	Coated		Cermet				
			A30	EH20Z	AC225	T130A				
TME100R	1.00	-		▲	▲		.0050		.031	
TME125R	1.25	-	▲	▲	▲	▲	.0067			
TME150R	1.50	-	▲	▲	▲	▲	.0080		.039	
TME175R	1.75	-			▲		.0094	60	.047	.047
TME200R	2.00	-	▲	▲	▲	▲	.0106		.055	
TME250R	2.50	-	▲	▲	▲	▲	.0140			
TME300R	3.00	-		▲	▲		.0165		.071	

Full Profile (Inch)

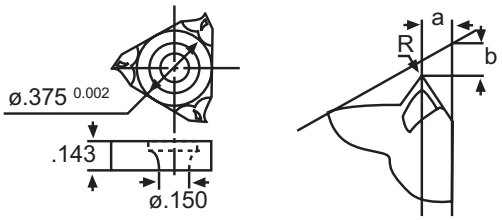
Catalog Number	Pitch (mm)	Threads /in	Stock Grade					R	Included Angle θ°	a	b
			Uncoated	Coated			Cermet				
			A30	EH20Z	AC225	T1500A	T130A				
TUE24R	-	24	▲		▲		▲	.0047		.031	
TUE20R	-	20	▲	▲	▲		▲	.0059			
TUE18R	-	18	▲	▲	▲		▲	.0067		.039	
TUE16R	-	16	▲	▲	▲		▲	.0079	60	.047	.047
TUE14R	-	14	▲	▲	▲	▲	▲	.0091			
TUE12R	-	12	▲	▲	▲	▲	▲	.0110		.055	
TUE08R	-	8		▲	▲			.0169		.071	

Partial Profile (55°)

Catalog Number	Pitch (mm)	Threads /in	Stock Grade			R	Included Angle θ°	a	b
			Uncoated	Coated	Cermet				
			A30	AC225	T130A				
TWE1410R	-	14~10	▲	▲	▲	.009	55	.055	.047
TWE2416R	-	24~16	▲	▲	▲	.005			

Partial Profile (60°)

Catalog Number	Pitch (mm)	Threads /in	Stock Grade				R	Included Angle θ°	a	b
			Uncoated	Coated		Cermet				
			A30	EH20Z	AC225	T130A				
TME1020R	1.0~2.0	24~12	▲	▲	▲	▲	.005	60	.043	.047
TME1530R	1.50~3.0	16~8	▲	▲	▲	▲	.008		.063	.039



Internal Laydown - Full Profile (ISO Metric)

Catalog Number	Pitch (mm)	Threads /in	Stock Grade				R	Included Angle θ°	a	b
			Uncoated	Coated		Cermet				
			A30	EH20Z	AC225	T130A				
TMI100R	1.00	-	▲	▲	▲	▲	.0024		.031	
TMI125R	1.25	-	▲		▲		.0030			
TMI150R	1.50	-			▲	▲	.0035		.039	
TMI175R	1.75	-	▲	▲	▲		.0043	60	.047	.047
TMI200R	2.00	-	▲		▲	▲	.0050		.055	
TMI250R	2.50	-	▲		▲		.0063			
TMI300R	3.00	-		▲	▲		.0080		.071	

Partial Profile (60°)

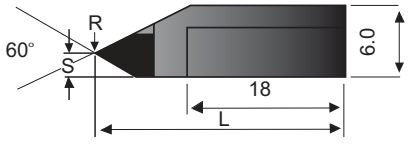
Catalog Number	Pitch (mm)	Threads /in	Stock Grade					R	Included Angle θ°	a	b
			Uncoated	Coated			Cermet				
			A30	EH20Z	AC225	T1500A	T130A				
TMI1020R	1.0~2.0	24~12	▲	▲	▲	▲	▲	.0024	60	.039	.047
TMI1530R	1.5~3.0	16~8	▲	▲	▲	▲	▲	.0035		.060	

Partial Profile (NPT)

Catalog Number	Pitch (mm)	Threads /in	Stock Grade			R	Included Angle θ°	a	b
			Uncoated	Coated	Cermet				
			A30	EH20Z	T130A				
TNPTI115R	-	11.5	▲	▲	▲	.0004	60	.059	.043

Threading Inserts for BNGG Holders

Catalog Number	Pitch (*mm*)	Threads /in	Grade	R (*mm*)	Included Angle θ°	S (*mm*)	L (*mm*)
			CBN BN250				
BNTT1020R	*1.0 ~ 2.0*	28-12	▲	*.14*	60	-	*25*
BNTT1530R	*1.50 ~ 3.00*	18-8	▲	*.20*		*.060*	



Guide to Depth of Cut and No. of Passes

External Threading Tool Depth of Cut Guide

■ With Wiper Edge

Applications		Cat. No.	Reference Cat. No.	Pitch	Depth of Cut	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14
60° Metric Thread	External	**TME 100R**	16ER 100ISO-TE	1.00mm	0.68	5	0.20	0.16	0.14	0.11	0.07									
		TME 125R	16ER 125ISO-TE	1.25	0.83	6	0.20	0.18	0.15	0.12	0.11	0.07								
		TME 150R	16ER 150ISO-TE	1.50	0.96	7	0.22	0.18	0.14	0.13	0.12	0.10	0.07							
		TME 175R	16ER 175ISO-TE	1.75	1.12	8	0.22	0.19	0.16	0.14	0.13	0.12	0.09	0.07						
		TME 200R	16ER 200ISO-TE	2.00	1.25	8	0.25	0.21	0.18	0.16	0.15	0.13	0.10	0.07						
		TME 250R	16ER 250ISO-TE	2.50	1.55	10	0.27	0.24	0.20	0.18	0.16	0.13	0.11	0.10	0.09	0.07				
		TME 300R	16ER 300ISO-TE	3.00	1.85	12	0.28	0.25	0.20	0.19	0.17	0.15	0.13	0.12	0.10	0.10	0.09	0.07		
		TME 350R	22ER 350ISO-TE	3.50	2.25	13	0.30	0.27	0.24	0.22	0.20	0.18	0.16	0.15	0.14	0.12	0.11	0.09	0.07	
		TME 400R	22ER 400ISO-TE	4.00	2.57	14	0.35	0.32	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10	0.09	0.08	0.07
	Internal	**TMI 100R**	16IR 100ISO-TI	1.00mm	0.63	5	0.18	0.16	0.12	0.10	0.07									
		TMI 125R	16IR 125ISO-TI	1.25	0.77	6	0.18	0.16	0.14	0.12	0.10	0.07								
		TMI 150R	16IR 150ISO-TI	1.50	0.90	7	0.20	0.16	0.14	0.13	0.11	0.09	0.07							
		TMI 175R	16IR 175ISO-TI	1.75	1.03	8	0.20	0.18	0.15	0.14	0.11	0.10	0.08	0.07						
		TMI 200R	16IR 200ISO-TI	2.00	1.18	8	0.22	0.19	0.17	0.15	0.14	0.13	0.11	0.07						
		TMI 250R	16IR 250ISO-TI	2.50	1.44	10	0.25	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.09	0.07				
		TMI 300R	16IR 300ISO-TI	3.00	1.70	12	0.27	0.24	0.20	0.17	0.14	0.12	0.12	0.10	0.10	0.09	0.08	0.07		
60° Unified Thread	External	**TUE 24R**	16ER 24UN-TE	24TPI	0.72	5	0.20	0.18	0.15	0.12	0.07									
		TUE 20R	16ER 20UN-TE	20	0.85	6	0.21	0.18	0.16	0.13	0.10	0.07								
		TUE 18R	16ER 18UN-TE	18	0.95	6	0.22	0.20	0.18	0.16	0.12	0.07								
		TUE 16R	16ER 16UN-TE	16	1.05	7	0.22	0.20	0.17	0.15	0.13	0.11	0.07							
		TUE 14R	16ER 14UN-TE	14	1.20	8	0.22	0.20	0.18	0.16	0.14	0.12	0.11	0.07						
		TUE 12R	16ER 12UN-TE	12	1.38	9	0.25	0.22	0.19	0.17	0.15	0.13	0.11	0.09	0.07					
		TUE 08R	16ER 08UN-TE	8	2.05	12	0.28	0.25	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.07		
55° Taper Thread for Pipe	External	**TPE 28R**	16ER 28BSPT-TE	28TPI	0.62	5	0.18	0.15	0.13	0.10	0.06									
		TPE 19R	16ER 19BSPT-TE	19	0.92	6	0.22	0.20	0.17	0.15	0.11	0.07								
		TPE 14R	16ER 14BSPT-TE	14	1.04	7	0.22	0.20	0.17	0.15	0.13	0.10	0.07							
		TPE 11R	16ER 11BSPT-TE	11	1.50	9	0.25	0.22	0.21	0.19	0.17	0.15	0.13	0.11	0.07					

*When pitch becomes smaller, decrease the cutting speed. In the case of inserts for internal threading without wiper edge, the number of passes should be increased.

■ Recommended Cutting Speeds

(Units: m/min)

Work Material \ Tool Grade		T1500A / T130A	A30	ST10P
P	Mild Steel	100 - 150	70 - 120	120 - 180
P	Low-carbon Steel	80 - 130	70 - 100	90 - 150
P	Alloy Steel	80 - 120	70 - 100	80 - 130
M	Stainless Steel	-	70 - 100	-

Guide to Depth of Cut and No. of Passes

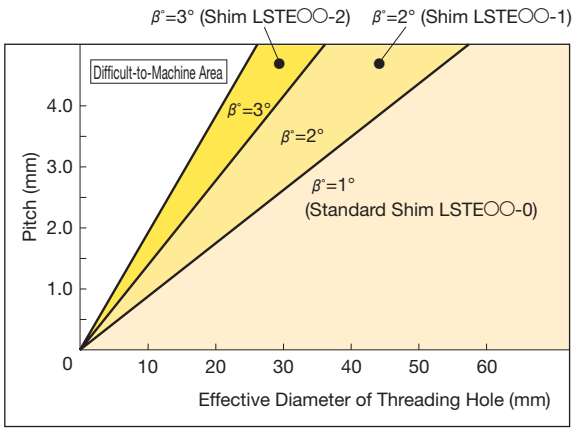
External Threading Tool Depth of Cut Guide

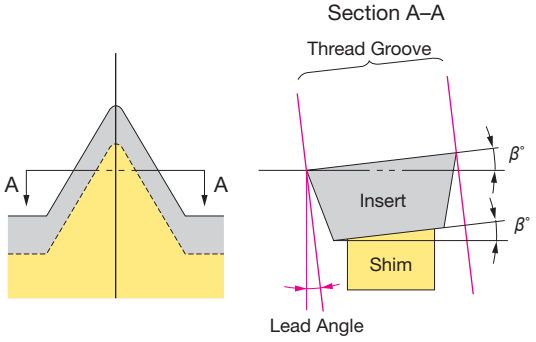
■ Without Wiper Edge

Applications		Cat. No.	Reference Cat. No.	Nose Radius	Pitch	Depth of Cut	No. of Passes	1	2	3	4	5	6	7	8	9	10	11	12	13	14
60° Metric Thread	External	**TME 1020R**	16ER 102060-TE	0.13	1.00mm	0.65	5	0.20	0.16	0.12	0.10	0.07									
					1.25	0.84	6	0.20	0.18	0.16	0.13	0.10	0.07								
					1.50	1.03	7	0.22	0.20	0.17	0.15	0.12	0.10	0.07							
					1.75	1.22	8	0.22	0.21	0.18	0.16	0.15	0.13	0.10	0.07						
					2.00	1.41	10	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.10	0.09	0.07				
		TME 1530R	16ER 153060-TE	0.20	1.50mm	0.95	7	0.22	0.17	0.14	0.13	0.12	0.10	0.07							
					1.75	1.14	8	0.22	0.18	0.16	0.15	0.14	0.12	0.10	0.07						
					2.00	1.33	9	0.25	0.20	0.18	0.16	0.15	0.13	0.10	0.09	0.07					
					2.50	1.71	12	0.25	0.22	0.19	0.17	0.15	0.14	0.13	0.12	0.10	0.09	0.08	0.07		
					3.00	2.09	14	0.25	0.22	0.20	0.20	0.18	0.17	0.15	0.14	0.14	0.10	0.10	0.09	0.08	0.07
	Internal	**TMI 1020R**	16IR 102060-TI	0.06	1.00mm	0.59	6	0.16	0.12	0.10	0.08	0.08	0.05								
					1.25	0.75	7	0.16	0.14	0.12	0.10	0.10	0.08	0.05							
					1.50	0.92	8	0.18	0.15	0.14	0.12	0.10	0.10	0.08	0.05						
					1.75	1.08	9	0.18	0.16	0.14	0.13	0.12	0.12	0.10	0.08	0.05					
					2.00	1.24	10	0.20	0.18	0.15	0.14	0.12	0.12	0.10	0.10	0.08	0.05				
		TMI 1530R	16IR 153060-TI	0.09	1.50mm	0.91	8	0.18	0.14	0.14	0.12	0.10	0.10	0.08	0.05						
					1.75	1.07	9	0.18	0.16	0.13	0.13	0.12	0.12	0.10	0.08	0.05					
					2.00	1.23	10	0.20	0.18	0.14	0.14	0.12	0.12	0.10	0.10	0.08	0.05				
					2.50	1.56	12	0.20	0.18	0.16	0.16	0.15	0.13	0.13	0.11	0.11	0.10	0.08	0.05		
					3.00	1.88	14	0.22	0.20	0.18	0.18	0.16	0.16	0.14	0.14	0.10	0.10	0.10	0.08	0.07	0.05
55° Whitworth Thread	External	**TWE 2416R**	16ER 241655-TE	0.13	20TPI	0.80	6	0.20	0.17	0.15	0.12	0.09	0.07								
					19	0.84	6	0.20	0.18	0.16	0.13	0.10	0.07								
					18	0.90	7	0.20	0.18	0.15	0.12	0.10	0.08	0.07							
					16	1.03	7	0.22	0.20	0.17	0.15	0.12	0.10	0.07							
					14TPI	1.07	8	0.20	0.17	0.15	0.14	0.13	0.12	0.09	0.07						
		TWE 1410R	16ER 141055-TE	0.23	12	1.29	9	0.22	0.20	0.17	0.15	0.14	0.13	0.12	0.09	0.07					
					11	1.43	10	0.22	0.21	0.18	0.16	0.14	0.13	0.12	0.11	0.09	0.07				
					10	1.60	11	0.22	0.21	0.18	0.17	0.16	0.14	0.13	0.12	0.11	0.09	0.07			

*When pitch becomes smaller, decrease the cutting speed. In the case of inserts for internal threading without wiper edge, the number of passes should be increased.

■ Shim Selection for External Threading Tool LTE Type Holder





Standard shim that comes with LTE has β=1°.
β=2°, 3° shims are sold separately.
STE and STI Type holders do not come with shims.

External

Screw-on
for External Diameter

M Metric Thread
W Whitworth Thread

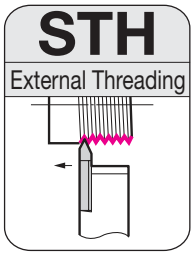


Fig 1

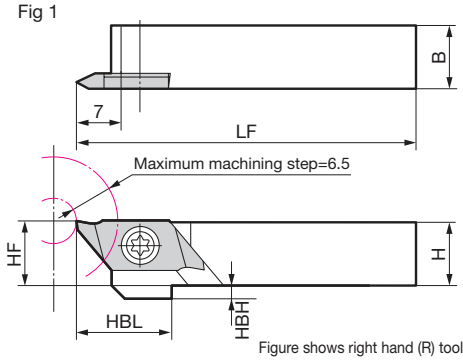


Figure shows right hand (R) tool.

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Step HBH	Bottom Offset HBL	Applicable Insert	Fig	Flat Screw	Wrench
STH R/L0810	★	★	*8*	*10*	*120*	*8*	*4*	*15*	TH R/L Type	1	BFTX0410NTW	RT08
STH R/L1010	★	★	*10*	*10*	*120*	*10*	*2*	*15*		1		
STH R/L1212F	★	★	*12*	*12*	*85*	*12*	-	*15*		1	BFTX0412NTW	
STH R/L1212	★	★	*12*	*12*	*120*	*12*	-	*15*		1		
STH R/L1616H	★	★	*16*	*16*	*100*	*16*	-	*15*		1		
STH R/L1616	★	★	*16*	*16*	*120*	*16*	-	*15*		1		
STH R/L2020	★	★	*20*	*20*	*80*	*20*	-	*15*		1	BFTX0410NT	LT25NT

Insert (Coated Carbide)

Dimensions (*mm*)

Cat. No.	ACZ150 R	ACZ150 L	Pitch mm	Pitch Threads/Inch	Overall Length L	Height W1	Nose Radius RE	X direction PDX	Thread Ridge Angle PNA	Cutting Edge Shape	Applicable Holder	Fig
TH R/L6002075A	★	★	*0.20 to 0.75*	-	*20*	*8*	-	*0.40*	*60*	(A)	STH Type	1
TH R/L6002075B	★	★	*0.20 to 0.75*	-	*20*	*8*	-	*0.40*	*60*	(A)		2
TH R/L6005125A	★	★	*0.50 to 1.25*	-	*20*	*8*	*0.05*	*0.80*	*60*	(B)		1
TH R/L6005125B	★	★	*0.50 to 1.25*	-	*20*	*8*	*0.05*	*0.80*	*60*	(B)		2
TH R/L601015N	★	★	*1.00 to 1.50*	-	*20*	*8*	*0.10*	*1.25*	*60*	(B)		3
TH R/L550515A	★	★	*0.529 to 1.58*	*48 to 16*	*20*	*8*	*0.05*	*0.80*	*55*	(B)		1
TH R/L550515B	★	★	*0.529 to 1.58*	*48 to 16*	*20*	*8*	*0.05*	*0.80*	*55*	(B)		2

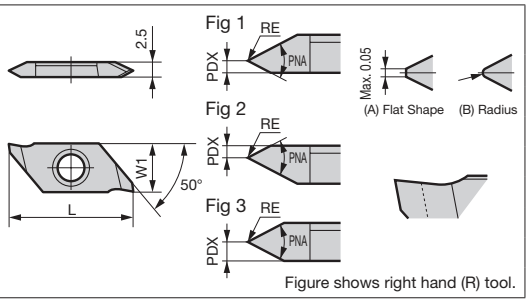
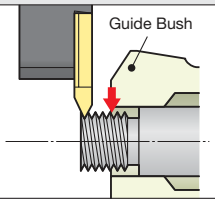
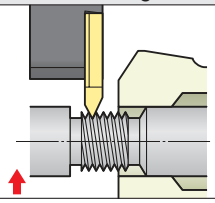
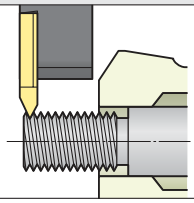
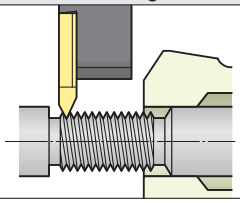


Figure shows right hand (R) tool.

Holder/Insert Combinations

Feed Direction	Right Hand		Left Hand	
Cutting Edge Position	Guide Bush Side	Back Turning Side	Guide Bush Side	Back Turning Side
Threading Illustration				
Holders	STH R (Right Hand)	STH R (Right Hand)	STH L (Left Hand)	STH L (Left Hand)
Insert	TH R····A	TH R····B	TH L····B	TH L····A
Features	It is often used in common tooling for workpieces that have a thread at their top end. In this type of tooling, the undercutting width indicated with the arrow can be reduced since the cutting edge point is placed closer to the guide bush side.	Often used when a thread is at the middle of the workpiece or at the rear. In this type of tooling, the undercutting width indicated with the arrow can be reduced since the cutting edge point is placed closer to the back turning side.	With a left hand holder used, a sufficient cutting distance can be kept since the cutting edge position is separate from the guide bush. For the left-hand holder, the selection of A type and B type is the reverse of the right-hand holder. (B indicates the guide bush side while A indicates the back turning side.)	

Tooling Systems
Polygon Shank Style & Cartridges
G1 to G23

G



Polygonal Shank Style (PSC) Overview ····· G2
Polygonal Shank Style (PSC) Nomenclature ····· G4
DCLN / DCRN / DDHN PSC Toolholder Type ····· G6
DDJN / DDNN / DRSN PSC Toolholder Type ····· G7
DTFN / DVJN / DVVN PSC Toolholder Type ····· G8
DWLN / SCLC / SDJC PSC Toolholder Type ····· G9
PRSC / SRSC PSC Toolholder Type ····· G10
SVHB / SVJB / SVJC Toolholder Type ····· G11
DCLN / DWLN Boring Bar Type ····· G12
SCLC / SSKC Boring Bar Type ····· G13
STFC Boring Bar Type ····· G14
PSC Adaptors ····· G15
Damper Arbors ····· G18
Micro Units / Cartridge Units ····· G20
Boring Quills / Carbide Line Boring Bars ····· G23

Stock Markings and Symbols

★ Worldwide Warehouse Item
Blank: Made-to-order item
- mark: Not available

Polygon Shank Toolholders



■ General Features

SumiPolygon shanks feature keyless couplings with the characteristic polygonal shape, which bear cutting torque evenly on three surfaces, providing high rigidity and high index accuracy.

For support with non-standard design specifications, contact us directly.

■ Features

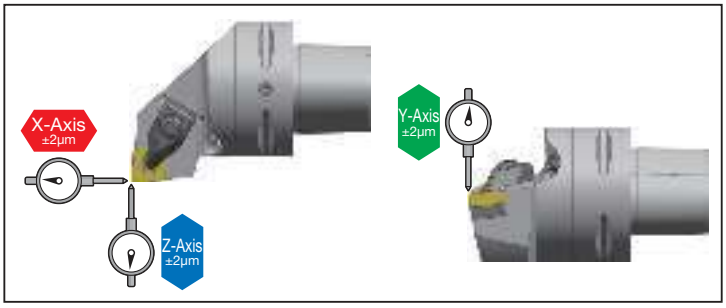
- Sizes
  - Shank size PSC32 (DCSFMS = 32mm) to PSC80 (DCSFMS = 80mm) supported
- High Rigidity/High Precision
  - 1/20 polygon tapered shape supported on 2 faces for high rigidity
  - Keyless coupling distributes cutting torque uniformly to 3 faces, reducing fluctuations in cutting edge height
  - Repeatability when tools are changed is within ±2μm on all 3 axes
- Reduced Tool Change Time
  - Changing inserts on the machine is not needed so the tool change time is significantly reduced
- Coolant supported (up to 1MPa)

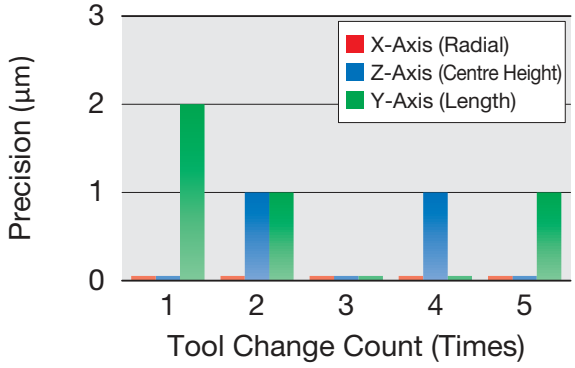
■ Coupling Structure



■ Repeat Accuracy

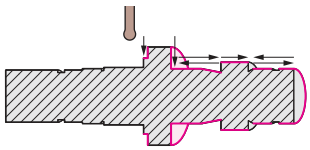
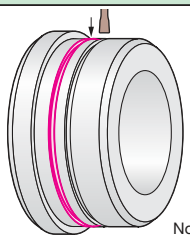
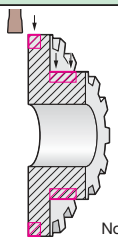
Repeatability when tools are changed is within ±2μm on all 3 axes X-Axis (Radial Direction) Y-Axis (Centre Height Direction), Z-Axis (Lengthwise Direction)





Polygon Shank Toolholders

Application Examples

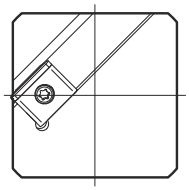
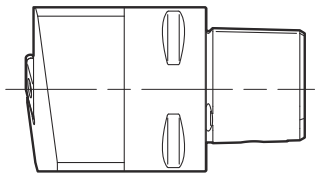
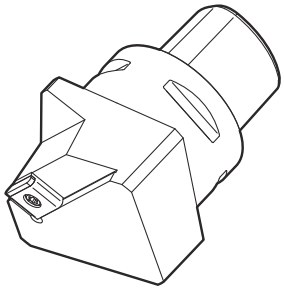
Nickel-Chromium Molybdenum Alloy Output Shaft Grooving	Stainless Steel Socket Joint Grooving	Powdered Metal Sprocket Grooving/Facing
 No Abnormal Chatter or Vibration	 No Abnormal Chatter or Vibration	 No Abnormal Chatter or Vibration
Holders : PSC40 Special Type Insert : GCMN4020-RG (AC425K) Cutting Conditions : v_c = 400 to 460 SFM, f = 0.079 to 0.014 IPR a_p = .079" Wet	Holders : PSC40 Special Type Insert : GCMN4008-MG (AC530U) Cutting Conditions : v_c=330 SFM, f=0.0039 IPR a_p = .112" Wet	Holders : PSC40 Special Type Insert : Special Insert (Blade Diameter .25") MG (AC530U) Cutting Conditions : Grooving v_c=600 SFM, f=0.0063 IPR, a_p=.157" x 2 passes Wet Facing v_c=625 SFM, f=0.0071 IPR, a_p=0.0079" Wet

Made-to-Order Product Design Example

For support with non-standard design specifications, contact us directly.

Hard Skiving Tool

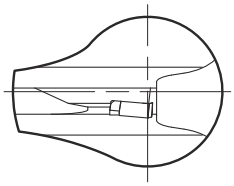
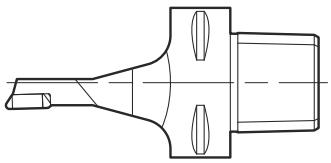
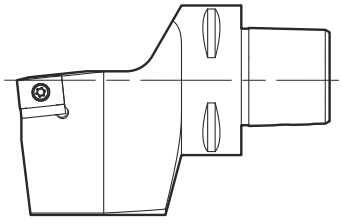
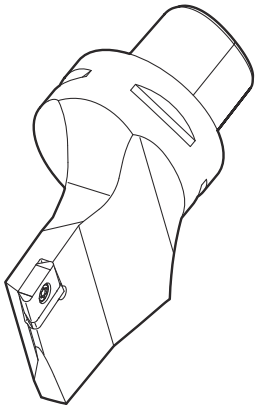
High-Efficiency Hardened Steel Machining Tool


XD Type Holders

For details on SEC-XD Type Tool Holders (holders and inserts), see the separate "Tools for Machining Automotive Engine Parts" catalogue.

Tools for Crank Shaft Machining


Polygon Shank Nomenclature

PSC
Polygon Shank Type

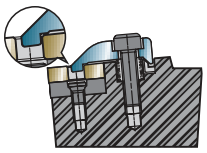
40-
Polygon Shank Size

Sizes:

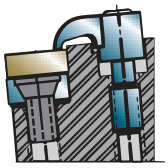
- 32 mm
- 40 mm
- 50 mm
- 63 mm
- 80 mm

D
Insert Holding

D Clamp Mechanism



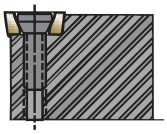
C Clamp



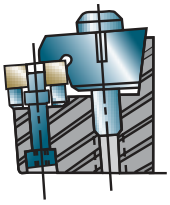
M Clamp and Lock Pin



S Screw Only



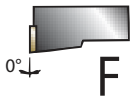
W Wedge Clamp*



D
Insert Shape

C	Diamond	80°
D	Diamond	55°
R	Round	360°
S	Square	90°
T	Triangle	60°
V	Diamond	35°
W	Trigon	80°

J
Holder / Boring Bar Style



0° end cutting offset shank



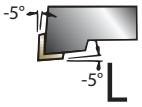
-17.5° end cutting offset shank



-3° side cutting offset shank



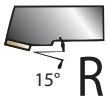
15° end cutting offset shank



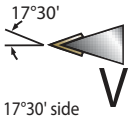
5° side & end cutting offset shank



27.5° cutting shank



15° side cutting offset shank



17°30' side cutting straight shank

All lead angles are ±1°

Polygon Shank Nomenclature

N

Insert Relief Angle

B


C

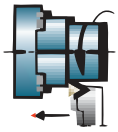

N

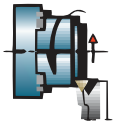

P


R

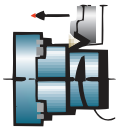
Hand

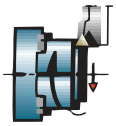
R
Right Hand



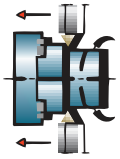


L
Left Hand





N
Neutral Hand



27

Distance from center (mm)

Holder Sizes:

22 mm
27 mm
35 mm
45 mm
55 mm

Boring Bar Sizes:

11 mm
13 mm
17 mm
22 mm
27 mm
35 mm

Neutral Holders WF: 0.5 mm

050

Holder Length (mm)

Holder Sizes:

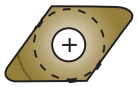
40 mm
45 mm
50 mm
60 mm
62 mm
65 mm
80 mm

Boring Bar Sizes:

65 mm
70 mm
75 mm
80 mm
90 mm
100 mm
110 mm
140 mm

33

Insert Size

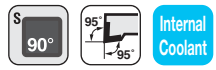


Inscribed Circle

&

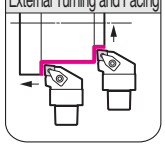
Thickness

Polygon Toolholders



DCLN

External Turning and Facing



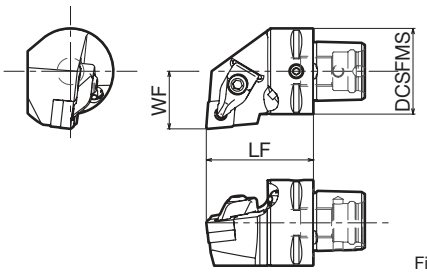


Figure shows right hand (R) tool.

External Turning
Double Clamp

Holder

Parts

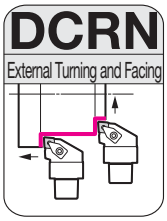
Dimensions (inch)

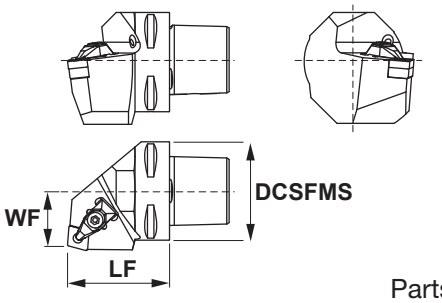
Catalog Number	Stock R	Stock L	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench	Optional Hardware For Clamp	Optional Hardware for CBN
PSC32-DCLN R/L -22040-32	★	★	1.260	0.866	1.575	-6°	-6°	CN□□32	ST-1764	ICSN-332	CL-2708	CLB-1695	SP-4294	LH030	–	–
PSC40-DCLN R/L -27050-32	★	★	1.575	1.063	1.969	-6°	-6°									
PSC32-DCLN R/L -22045-43	★	★	1.260	0.866	1.772	-6°	-6°									
PSC40-DCLN R/L -27050-43	★	★	1.575	1.063	1.969	-6°	-6°	CN□□ 43	ST-1766	ICSN-442	CL-2712	CLB-1696	SP-4295	LH040	CL-2435	ST-1086
PSC50-DCLN R/L -35060-43	★	★	1.969	1.378	2.362	-6°	-6°									
PSC63-DCLN R/L -45065-43	★	★	2.480	1.772	2.559	-6°	-6°									
PSC80-DCLN R/L -55080-43	★	★	3.150	2.165	3.150	-6°	-6°									
PSC40-DCLN R/L -27055-54	★	★	1.575	1.063	2.165	-6°	-6°									
PSC50-DCLN R/L -35060-54	★	★	1.969	1.378	2.362	-6°	-6°	CN□□ 54	ST-1768	ICSN533	CL-2716	CLB-1696	SP-4295	LH040	–	–
PSC63-DCLN R/L -45065-54	★	★	2.480	1.772	2.559	-6°	-6°									
PSC80-DCLN R/L -55080-54	★	★	3.150	2.165	3.150	-6°	-6°									
PSC50-DCLN R/L -35060-64	★	★	1.969	1.378	2.362	-6°	-6°									
PSC63-DCLN R/L -45065-64	★	★	2.480	1.772	2.559	-6°	-6°	CN□□ 64	ST-1770	ICSN633	CL-2719	CLB-1696	SP-4295	LH040	–	–
PSC80-DCLN R/L -55080-64	★	★	3.150	2.165	3.150	-6°	-6°									



DCRN

External Turning and Facing





External Turning
Double Clamp

Holder

Parts

Dimensions (inch)

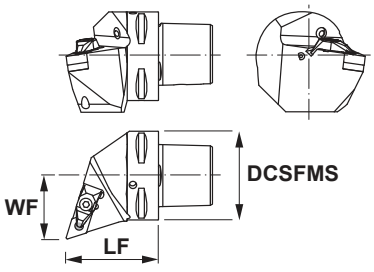
Catalog Number	Stock R	Stock L	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
PSC40-DCRN R/L -22050-43	★	★	1.575	1.969	0.866	-6°	-6°							
PSC50-DCRN R L -27060-43	★	★	1.969	2.362	1.063	-6°	-6°	CN□□43	ST-1766	ICSN-442	CL-2712			
PSC63-DCRN R/L -35065-43	★	★	2.480	2.559	1.378	-6°	-6°							
PSC50-DCRN R/L -27060-54	★	★	1.969	2.362	1.063	-6°	-6°							
PSC63-DCRN R/L -35065-54	★	★	2.480	2.559	1.378	-6°	-6°	CN□□ 54	ST-1768	ICSN-553	CL-2716	CLB-1696	SP-4295	LH040
PSC80-DCRN R/L -55080-54	★	★	3.150	3.150	2.165	-6°	-6°							
PSC50-DCRN R/L -27060-64	★	★	1.969	2.362	1.063	-6°	-6°							
PSC63-DCRN R/L -35065-64	★	★	2.480	2.559	1.378	-6°	-6°	CN□□ 64	ST-1770	ICSN633	CL-2719			
PSC80-DCRN R/L -55080-64	★	★	3.150	3.150	2.165	-6°	-6°							



DDHN

Turning & Profiling





External Turning
Double Clamp

Holder

Parts

Dimensions (inch)

Catalog Number	Stock R	Stock L	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
PSC40-DDHN R/L -27055-44	★	★	1.575	1.063	2.165	-6°	-7°							
PSC50-DDHN R/L -35060-44	★	★	1.969	1.378	2.362	-6°	-7°	DN□□ 44	ST-1766	IDSN-432	CL-2712	CLB-1696	SP-4295	LH040
PSC63-DDHN R/L -45065-44	★	★	2.480	1.772	2.559	-6°	-7°							
PSC80-DDHN R/L -55080-44	★	★	3.150	2.165	3.150	-6°	-7°							

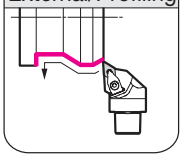
★ Worldwide Warehouse Item

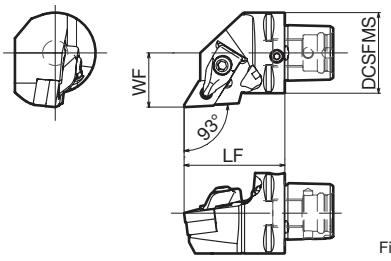
Polygon Toolholders



DDJN

External/Profiling





External Turning
Double Clamp

Figure shows right hand (R) tool.

Holder

Parts

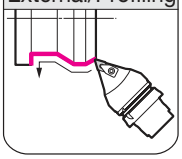
Dimensions (inch)

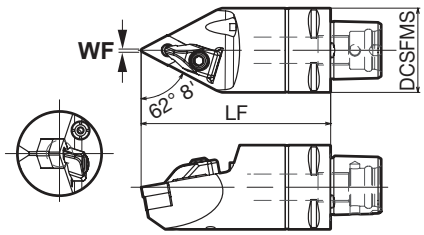
Catalog Number	Stock		Mounting	Cutting Edge	Overhang	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
	R	L	DCSFMS	WF	LF									
PSC32-DDJN R/L -22045-33	★	★	1.260	0.866	1.772	-6°	-7°	DN□□ 33	ST-1764	IDSN-322	CL-2708	CLB-1695	SP-4294	LH030
PSC40-DDJN R/L -27050-33	★	★	1.575	1.063	1.969	-6°	-7°							
PSC50-DDJN R/L -35060-33	★	★	1.969	1.378	2.362	-6°	-7°							
PSC63-DDJN R/L -45065-33	★	★	2.480	1.772	2.559	-6°	-7°							
PSC40-DDJN R/L -27055-43	★	★	1.575	1.063	2.165	-6°	-7°	DN□□ 43	ST-1766	IDSN432	CL-2712	CLB-1696	SP-4295	LH040
PSC50-DDJN R/L -35060-43	★	★	1.969	1.378	2.362	-6°	-7°							
PSC63-DDJN R/L -45065-43	★	★	2.480	1.772	2.559	-6°	-7°							
PSC80-DDJN R/L -55080-43	★	★	3.150	2.165	3.150	-6°	-7°							



DDNN

External/Profiling





External Turning
Double Clamp

Holder

Parts

Dimensions (inch)

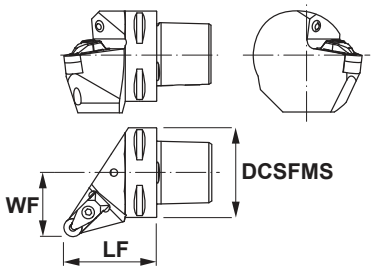
Catalog Number	Stock	Mounting	Cutting Edge	Overhang	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
	N	DCSFMS	WF	LF									
PSC40-DDNNN00050-33	★	1.575	0.020	1.969	-5°	-9°	DN□□ 33	ST-1764	IDSN-322	CL-2708	CLB-1695	SP-4294	LH040
PSC50-DDNNN00060-33	★	1.969	0.020	2.362	-5°	-9°							
PSC40-DDNNN00055-43	★	1.575	0.020	2.165	-5°	-9°	DN□□ 43	ST-1766	IDSN434	CL-2712	CLB-1696	SP-4295	
PSC50-DDNNN00060-43	★	1.969	0.020	2.362	-5°	-9°							
PSC63-DDNNN00065-43	★	2.480	0.020	2.559	-5°	-9°							
PSC80-DDNNN00080-43	★	3.150	0.020	3.15	-5°	-9°							

Internal Coolant

DRSN

Face Turning





External Turning
Double Clamp

Holder

Parts

Dimensions (inch)

Catalog Number	Stock		Mounting	Cutting Edge	Overhang	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
	R	L	DCSFMS	WF	LF									
PSC40-DRSN R/L -27050-43	★	★	1.575	1.063	1.969	-6°	-6°	RN□□ 43	ST-1766	IRSN-44	CL-2712	CLB-1696	SP-4295	LH040
PSC50-DRSN R/L -35060-43	★	★	1.969	1.378	2.362	-6°	-6°							
PSC63-DRSN R/L -45065-43	★	★	2.480	1.772	2.559	-6°	-6°							

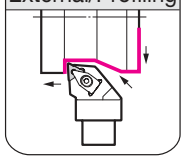
★ Worldwide Warehouse Item

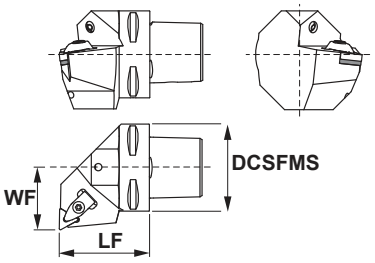
Polygon Toolholders



DTFN

External/Profiling





External Turning
Double Clamp

Holder / Parts

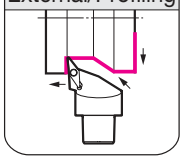
Dimensions (inch)

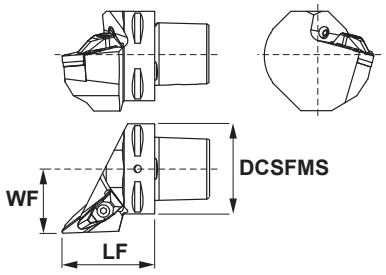
Catalog Number	Stock R	Stock L	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
PSC32-DTFN R/L -22040-33	★	★	1.260	0.866	1.575	-6°	-6°	TN□□ 33	ST-1764	ITSN-342	CL-2708	CLB-1695	SP-4294	LH040
PSC40-DTFN R/L -27050-33	★	★	1.575	1.063	1.969	-6°	-6°							
PSC50-DTFN R/L -35060-33	★	★	1.969	1.378	2.362	-6°	-6°							
PSC50-DTFN R/L -35060-33	★	★	2.480	1.772	2.559	-6°	-6°							
PSC40-DTFN R/L -27050-43	★	★	1.575	1.063	1.969	-6°	-6°	TN□□ 43	ST-1766	ITSN443	CL-2712	CLB-1696	SP-4295	
PSC50-DTFN R/L -35060-43	★	★	1.969	1.378	2.362	-6°	-6°							
PSC63-DTFN R/L -45065-43	★	★	2.480	1.772	2.559	-6°	-6°							



DVJN

External/Profiling





External Turning
Screw-on

Holder / Parts

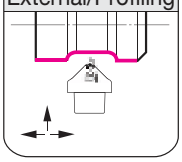
Dimensions (inch)

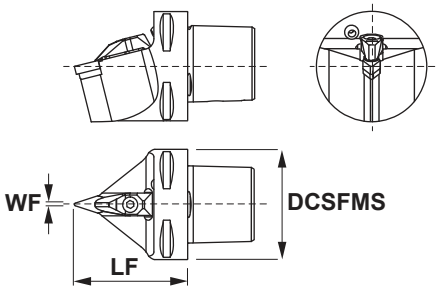
Catalog Number	Stock R	Stock L	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
PSC40-DVJN R/L -27062-33	★	★	1.575	1.063	2.441	-4°	-13°	VN□□ 33	ST-1764	IVSN-322	CL-2708	CLB-1695	SP-4294	LH040
PSC50-DVJN R/L -35065-33	★	★	1.969	1.378	2.559	-4°	-13°							
PSC63-DVJN R/L -45065-33	★	★	2.480	1.772	2.559	-4°	-13°							
PSC80-DVJN R/L -55080-33	★	★	3.150	2.165	3.150	-4°	-13°							



DVVN

External/Profiling





External Turning
Screw-on

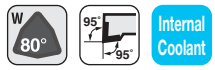
Holder / Parts

Dimensions (inch)

Catalog Number	Stock N	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
PSC40-DVVNN00062-33	★	1.575	0.866	2.441	-6°	-6°	VN□□ 33	ST-1764	IVSN-322	CL-2708	CLB-1695	SP-4294	LH040
PSC50-DVVNN00065-33	★	1.969	1.063	2.559	-6°	-6°							
PSC63-DVVNN00065-33	★	2.480	1.378	2.559	-6°	-6°							
PSC80-DVVNN00080-33	★	3.150	1.772	3.150	-6°	-6°							

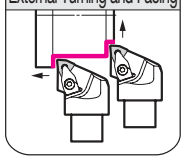
★ Worldwide Warehouse Item

Polygon Toolholders



DWLN

External Turning and Facing



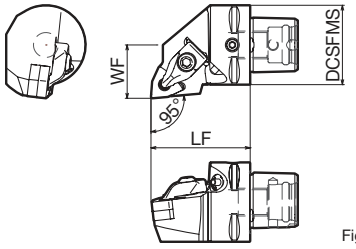


Figure shows right hand (R) tool.

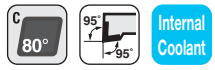
External Turning
Double Clamp

Holder

Parts

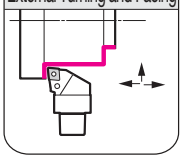
Dimensions (inch)

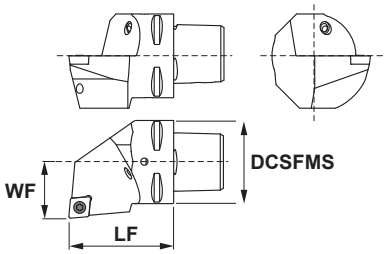
Catalog Number	Stock R	Stock L	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
PSC32-DWLN R/L -22040-33	★	★	1.260	0.866	1.575	-6°	-6°	WN□□ 33	ST-1764	IWSN-322	CL-2708	CLB-1695	SP-4294	LH040
PSC40-DWLN R/L -27050-33	★	★	1.575	1.063	1.969	-6°	-6°							
PSC50-DWLN R/L -35060-33	★	★	1.969	1.378	2.362	-6°	-6°							
PSC63-DWLN R/L -45065-33	★	★	2.480	1.772	2.559	-6°	-6°							
PSC40-DWLN R/L -27050-43	★	★	1.575	1.063	1.969	-6°	-6°	WN□□ 43	ST-1766	IWSN433	CL-2712	CLB-1696	SP-4295	LH040
PSC50-DWLN R/L -35060-43	★	★	1.969	1.378	2.362	-6°	-6°							
PSC63-DWLN R/L -45065-43	★	★	2.480	1.772	2.559	-6°	-6°							
PSC80-DWLN R/L -55080-43	★	★	3.150	2.165	3.150	-6°	-6°							



SCLC

External Turning and Facing





External Turning
Lever Lock

Holder

Parts

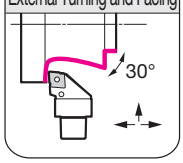
Dimensions (inch)

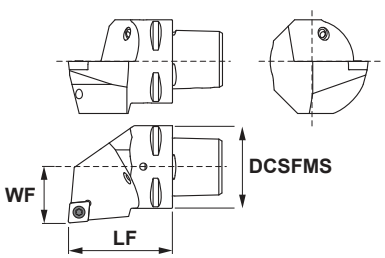
Catalog Number	Stock R	Stock L	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Wrench	Shim	Shim Screw
PSC32-SCLC R/L -22040-32.5	★	★	1.260	0.866	1.575	-0°	-0°	CC□□ 32.5	BFTX0407N	TRX15	-	-
PSC40-SCLC R/L -27050-32.5	★	★	1.575	1.063	1.969	-0°	-0°					
PSC50-SCLC R/L -35060-32.5	★	★	1.969	1.378	2.362	-0°	-0°					
PSC63-SCLC R/L -45065-32.5	★	★	2.480	1.772	2.559	-0°	-0°					
PSC32-SCLC R/L -22040-43	★	★	1.260	0.866	1.575	-0°	-0°	CC□□ 43	BFTX0405	TRX15040	SH-3614	ST-1540
PSC40-SCLC R/L -27050-43	★	★	1.575	1.063	1.969	-0°	-0°					
PSC50-SCLC R/L -35060-43	★	★	1.969	1.378	2.362	-0°	-0°					
PSC63-SCLC R/L -45065-43	★	★	2.480	1.772	2.559	-0°	-0°					



SDJC

External Turning and Facing





External Turning
Lever Lock

Holder

Dimensions (inch)

Catalog Number	Stock R	Stock L	Mounting DCSFMS	Cutting Edge WF	Overhang LF	Rake Angle	Incline Angle	Applicable Insert	Screw	Wrench	Shim	Shim Screw
PSC32-SDJC R/L -22040-21.5	★	★	1.260	0.866	1.575	-0°	-0°	DC□□ 21.5	BFTX02506N	TRX08	-	-
PSC40-SDJC R/L -27050-21.5	★	★	1.575	1.063	1.969	-0°	-0°					
PSC32-SDJC R/L -22040-32.5	★	★	1.260	0.866	1.575	-0°	-0°	DC□□ 32.5	BFTX03515	TRX15	SH-3714	ST-1750
PSC40-SDJC R/L -27050-32.5	★	★	1.575	1.063	1.969	-0°	-0°					
PSC50-SDJC R/L -35060-32.5	★	★	1.969	1.378	2.362	-0°	-0°					
PSC63-SDJC R/L -45065-32.5	★	★	2.480	1.772	2.559	-0°	-0°					

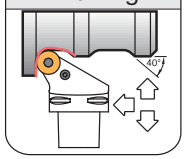
★ Worldwide Warehouse Item

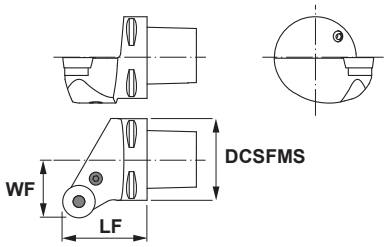
Polygon Toolholders

T 60° | 90° | Internal Coolant

Multi-purpose Boring
Screw-on

PRSC
Profiling





Holder

Parts

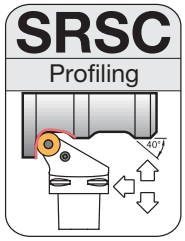
Dimensions (inch)

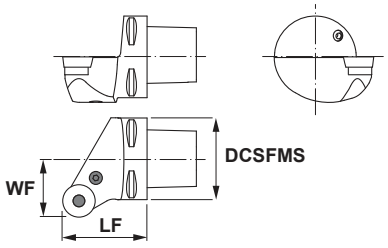
Catalog Number	Stock		Mounting	Cutting Edge	Overhang	Rake Angle	Incline Angle	Applicable Insert	Lever Pin	Insert Screw	Wrench	Shim	Hardware	Pin
	R	L	DCSFMS	WF	LF									
PSC80-PRSC R/L -55080-20	★	★	3.150	2.165	3.150	0°	0°	RC□□ 20	LCL-8120	ST-1708	LH030	SH-3820	H-4115	LP-0015
PSC63-PRSC R/L -45065-25	★	★	2.480	1.772	2.559	0°	0°	RC□□ 25	LCL-8125	ST-1710	LH040	SH-3825	H-4119	LP-0019
PSC80-PRSC R/L -55080-25	★	★	3.150	2.165	3.150	0°	0°							
PSC80-PRSC R/L -55080-32	★	★	3.150	2.165	3.150	0°	0°	RC□□ 32	LCL-8132	ST-1612	LH050	SH-3832	H-4125	LP-0025

T 60° | 90° | Internal Coolant

Multi-purpose Boring
Screw-on

SRSC
Profiling





Holder

Dimensions (inch)

Catalog Number	Stock		Mounting	Cutting Edge	Overhang	Rake Angle	Incline Angle	Applicable Insert	Insert Screw	Wrench	Shim	Shim Screw
	R	L	DCSFMS	WF	LF							
PSC32-SRSC R/L -22040-10	★	★	1.260	0.866	1.575	0°	0°	RC□□10	ST-1335	TRX-5516	SH-3811	ST-1750
PSC40-SRSC R/L -27050-10	★	★	1.575	1.063	1.969	0°	0°					
PSC50-SRSC R/L -35060-10	★	★	1.969	1.378	2.362	0°	0°					
PSC63-SRSC R/L -45065-10	★	★	2.480	1.772	2.559	0°	0°					
PSC40-SRSC R/L -27050-12	★	★	1.575	1.063	1.969	0°	0°	RC□□12		TRX-5516	SH-3814	ST-1750
PSC50-SRSC R/L -35060-12	★	★	1.969	1.378	2.362	0°	0°					
PSC63-SRSC R/L -45065-12	★	★	2.480	1.772	2.559	0°	0°					
PSC50-SRSC R/L -35060-16	★	★	1.969	1.378	2.362	0°	0°	RC□□16	ST-1540	TRX-5517	SH-3816	ST-1765
PSC63-SRSC R/L -45065-16	★	★	2.480	1.772	2.559	0°	0°					
PSC50-SRSC R/L -35060-20	★	★	1.969	1.378	2.362	0°	0°	RC□□20	ST-1260	TRX-5520	SH-3919	ST-1059
PSC63-SRSC R/L -45065-20	★	★	2.480	1.772	2.559	0°	0°					

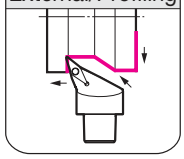
★ Worldwide Warehouse Item

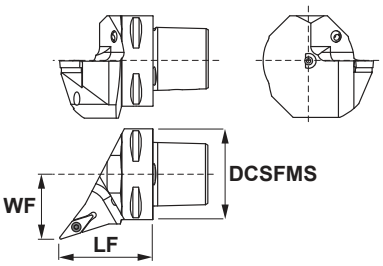
Polygon Toolholders



External Turning
Screw-on

SVHB
External/Profiling





Holder

Parts

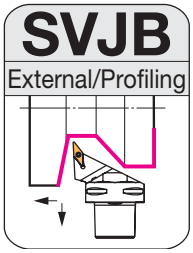
Dimensions (inch)

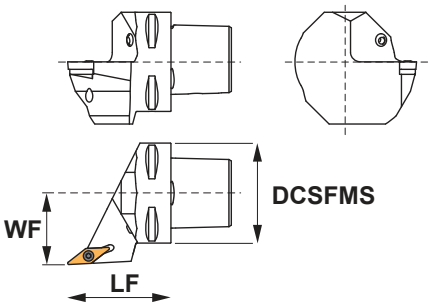
Catalog Number	Stock		Mounting	Cutting Edge	Overhang	Rake Angle	Incline Angle	Applicable Insert	Insert Screw	Wrench	Shim	Shim Screw
	R	L	DCSFMS	WF	LF							
PSC40-SVHB R/L -27050-33	★	★	1.575	1.063	1.969	-4°	-13°	VB□□ 33	ST-1335	TRX15	SH-3718	ST-1750
PSC50-SVHB R/L -35060-33	★	★	1.969	1.378	2.362	-4°	-13°					
PSC63-SVHB R/L -45065-33	★	★	2.480	1.772	2.559	-4°	-13°					



External Turning
Screw-on

SVJB
External/Profiling





Holder

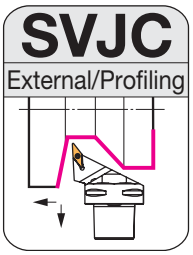
Dimensions (inch)

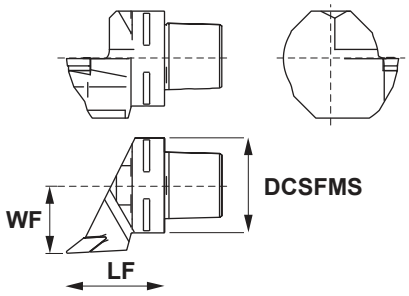
Catalog Number	Stock		Mounting	Cutting Edge	Overhang	Rake Angle	Incline Angle	Applicable Insert	Insert Screw	Wrench	Shim	Shim Screw
	R	L	DCSFMS	WF	LF							
PSC40-SVJB R/L -27050-33	★	★	1.575	1.063	1.969	0°	0°	VB□□ 33	ST-1335	TRX15	SH-3718	ST-1750
PSC50-SVJB R/L -35060-33	★	★	1.969	1.378	2.362	0°	0°					
PSC63-SVJB R/L -45065-33	★	★	2.480	1.772	2.559	0°	0°					



External Turning
Screw-on

SVJC
External/Profiling





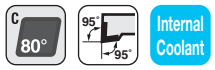
Holder

Dimensions (inch)

Catalog Number	Stock		Mounting	Cutting Edge	Overhang	Rake Angle	Incline Angle	Applicable Insert	Insert Screw	Wrench	Shim	Shim Screw
	R	L	DCSFMS	WF	LF							
PSC32-SVJC R/L -22040-22	★	★	1.260	0.866	1.575	0°	0°	VC□□ 22	ST-1225	TRX15040	-	-
PSC40-SVJC R/L -27050-22	★	★	1.575	1.063	1.969	0°	0°					
PSC50-SVJC R/L -35060-22	★	★	1.969	1.378	2.362	0°	0°					
PSC40-SVJC R/L -27050-33	★	★	1.575	1.063	1.969	0°	0°	VC□□ 33	ST-1335	TRX15	SH-3718	ST-1750
PSC50-SVJC R/L -35060-33	★	★	1.969	1.378	2.362	0°	0°					
PSC63-SVJC R/L -45065-33	★	★	2.480	1.772	2.559	0°	0°					

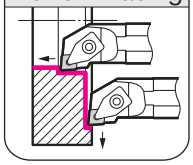
★ Worldwide Warehouse Item

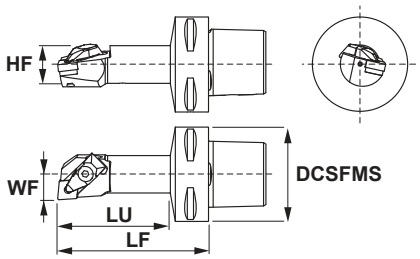
Polygon Boring Bars



Internal Turning
Double Clamp

DCLN
Bottom Facing





Holder

Parts

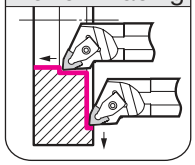
Dimensions (inch)

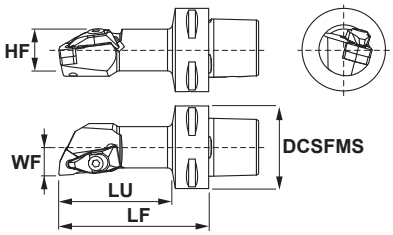
Catalog Number	Stock		Mounting	Height	Cutting Edge	Overhang	Usable Length	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
	R	L	DCSFMS	HF	WF	LF	LU									
PSC40-DCLN R/L -13080-32	★	★	0.984	0.787	0.512	3.150	2.244	-6°	-14°	CN□□32	-	-	CL-2708	CLB-1695	SP-4294	LH040
PSC50-DCLN R/L -13080-32	★	★	0.984	0.787	0.512	3.150	2.205	-6°	-14°							
PSC40-DCLN R/L -17090-43	★	★	1.260	0.984	0.669	3.543	2.677	-6°	-12°	CN□□43	ST-1766	ICSN-442	CL-2712	CLB-1696	SP-4295	
PSC50-DCLN R/L -17090-43	★	★	1.260	0.984	0.669	3.543	2.598	-6°	-12°							
PSC63-DCLN R/L -17100-43	★	★	1.260	0.984	0.669	3.937	2.835	-6°	-12°							
PSC63-DCLN R/L -27140-54	★	★	1.969	1.575	1.063	5.512	4.488	-6°	-16°	CN□□54	ST-1768	ICSN-533	CL-2716	CLB-1696	SP-4295	



Medium Diameter General-purpose
Double Clamp

DWLN
Bottom Facing





Holder

Parts

Dimensions (inch)

Catalog Number	Stock		Mounting	Height	Cutting Edge	Overhang	Usable Length	Rake Angle	Incline Angle	Applicable Insert	Screw	Shim	Clamp	Clamp Bolt	Spring	Wrench
	R	L	DCSFMS	HF	WF	LF	LU									
PSC40-DWLN R/L -13075-33	★	★	1.299	0.787	0.512	2.953	2.047	-6°	-17°	WN□□33	ST-1764	IWSN-322	CL-2708	CLB-1695	SP-4294	LH040
PSC40-DWLN R/L -17090-43	★	★	1.378	0.984	0.669	3.543	2.677	-6°	-12°	WN□□43	ST-1766	IWSN-433	CL-2712	CLB-1696	SP-4295	
PSC50-DWLN R/L -17090-43	★	★	1.378	0.984	0.669	3.543	2.598	-6°	-12°							

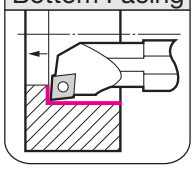
★ Worldwide Warehouse Item

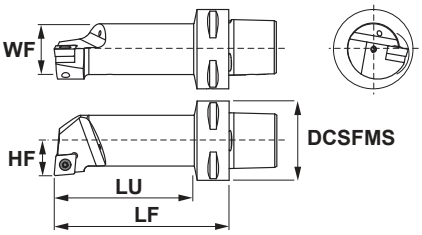
Polygon Boring Bars



Internal Finishing to Medium Cutting
Screw-on

SCLC
Bottom Facing





Holder

Parts

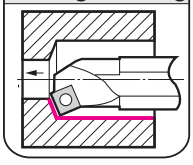
Dimensions (inch)

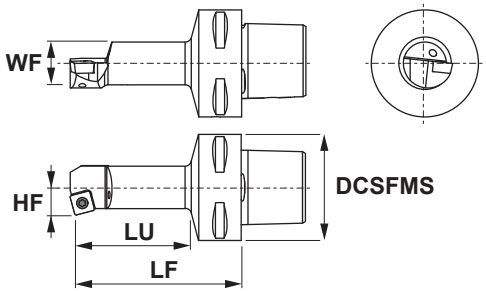
Catalog Number	Stock		Mounting	Height	Cutting Edge	Overhang	Usable Length	Rake Angle	Incline Angle	Applicable Insert	Screw	Wrench	Shim	Screw
	R	L	DCSFMS	HF	WF	LF	LU							
PSC32-SCLC R/L -11065-32.5	★	★	0.787	0.630	0.433	2.559	1.890	0°	-12°	CC□□32.5	BFTX0407N	TRX15	-	-
PSC32-SCLC R/L -13075-32.5	★	★	0.984	0.787	0.512	2.953	2.323	0°	-8°					
PSC32-SCLC R/L -17090-32.5	★	★	1.260	0.984	0.669	3.543	2.953	0°	-6°					
PSC40-SCLC R/L -11070-32.5	★	★	0.787	0.630	0.433	2.756	1.850	0°	-12°					
PSC40-SCLC R/L -13080-32.5	★	★	0.984	0.787	0.512	3.150	2.283	0°	-8°					
PSC40-SCLC R/L -17090-32.5	★	★	1.260	0.984	0.669	3.543	2.717	0°	-6°					
PSC40-SCLC R/L -27080-32.5	★	★	1.969	1.562	1.063	3.150	2.362	0°	-6°					
PSC50-SCLC R/L -11070-32.5	★	★	0.787	0.630	0.433	2.756	1.811	0°	-12°					
PSC50-SCLC R/L -13080-32.5	★	★	0.984	0.787	0.512	3.150	2.205	0°	-8°					
PSC50-SCLC R/L -17090-32.5	★	★	1.260	0.984	0.669	3.543	2.638	0°	-6°					
PSC50-SCLC R/L -35100-32.5	★	★	2.480	1.956	1.378	3.937	3.189	0°	-4°					
PSC32-SCLC R/L -17090-43	★	★	1.260	0.984	0.669	3.543	2.953	0°	-6°	CC□□43	BFTX0511N	TRX20	SH-3614	ST-1760
PSC32-SCLC R/L -22064-43	★	★	1.575	1.248	0.866	2.520	1.969	0°	-10°			TRX-5517		
PSC32-SCLC R/L -22096-43	★	★	1.575	1.366	0.866	3.780	3.228	0°	-10°					
PSC40-SCLC R/L -17090-43	★	★	1.260	0.984	0.669	3.543	2.717	0°	-6°			TRX20	-	-
PSC40-SCLC R/L -22110-43	★	★	1.575	1.260	0.866	4.331	3.504	0°	-10°			TRX-5517	SH-3614	ST-1760
PSC40-SCLC R/L -27080-43	★	★	1.969	1.562	1.063	3.150	2.362	0°	-8°					
PSC50-SCLC R/L -17090-43	★	★	1.260	0.984	0.669	3.543	2.638	0°	-6°			TRX20	-	-
PSC50-SCLC R/L -22110-43	★	★	1.575	1.260	0.866	4.331	3.465	0°	-10°					
PSC50-SCLC R/L -27140-43	★	★	1.969	1.575	1.063	5.512	4.685	0°	-8°			TRX-5517	SH-3614	ST-1760
PSC50-SCLC R/L- 35100-43	★	★	2.480	1.956	1.378	3.937	3.150	0°	-5°					



Internal General
Screw-on

SSKC
Through Boring





Holder

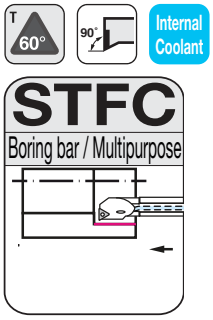
Parts

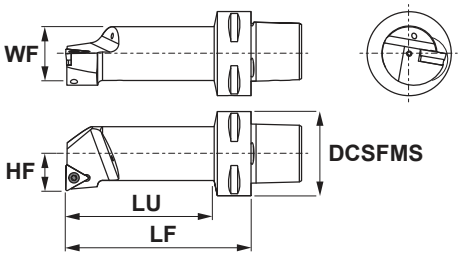
Dimensions (inch)

Catalog Number	Stock		Mounting	Height	Cutting Edge	Overhang	Usable Length	Rake Angle	Incline Angle	Applicable Insert	Screw	Wrench
	R	L	DCSFMS	HF	WF	LF	LU					
PSC40-SSKC R/L -13080-32.5	★	★	0.984	0.787	0.512	3.150	2.283	0°	-6°	SC□□32.5	BFTX0511N	TRX-5517
PSC50-SSKC R/L -13080-32.5	★	★	0.984	0.787	0.512	3.150	2.205	0°	-6°			

★ Worldwide Warehouse Item

Polygon Boring Bars





Multi-purpose Boring
Screw-on

Holder

Parts

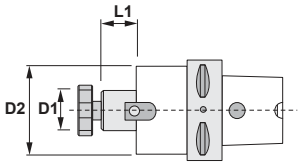
Dimensions (inch)

Catalog Number	Stock		Mounting	Height	Cutting Edge	Overhang	Usable Length	Rake Angle	Incline Angle	Applicable Insert	Screw	Wrench	Shim	Screw
	R	L	DCSFMS	HF	WF	LF	LU							
PSC32-STFC R/L -11065-21.5	★	★	0.787	0.630	0.433	2.559	1.890	0°	-4°	TC□□21.5	BFTX02507	TRX15040	-	-
PSC32-STFC R/L -13075-21.5	★	★	0.984	0.787	0.512	2.953	2.323	0°	-3°					
PSC40-STFC R/L -11070-21.5	★	★	0.787	0.630	0.433	2.756	1.850	0°	-4°					
PSC40-STFC R/L -13080-21.5	★	★	0.984	0.787	0.512	3.150	2.244	0°	-3°					
PSC50-STFC R/L -11070-21.5	★	★	0.787	0.630	0.433	2.756	1.811	0°	-4°					
PSC50-STFC R/L -13080-21.5	★	★	0.984	0.787	0.512	3.150	2.205	0°	-3°					
PSC32-STFC R/L -17090-32.5	★	★	1.260	0.984	0.669	3.543	2.913	0°	-3.5°	TC□□32.5	BFTX0407N	TRX15	-	ST-1750
PSC40-STFC R/L -17090-32.5	★	★	1.260	0.984	0.669	3.543	2.717	0°	-6°					
PSC40-STFC R/L -22110-32.5	★	★	1.575	1.260	0.866	4.331	3.504	0°	-10°		BFTX0315	TRX-5516	SH-3414	
PSC50-STFC R/L -17090-32.5	★	★	1.260	0.984	0.669	3.543	2.638	0°	-6°		BFTX0407N	TRX15	-	
PSC50-STFC R/L -22110-32.5	★	★	1.575	1.260	0.866	4.331	3.465	0°	-10°		BFTX0315	TRX-5516	SH-3414	

★ Worldwide Warehouse Item

PSC Adaptors

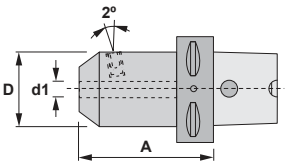




PSC Shell Mill Holders

Catalog Number	Dimensions					Cap	Drive Key	Screw
	PSC	D1	L	L1	D2			
PSC50-0.75SMH	50	.750	2.756	0.709	1.693	CAP-10107	DRKEY-86207	ST-11103
PSC50-1.00SMH	50	1.000	0.984	0.709	2.126	CAP-10110	DRKEY-86210	ST-11004
PSC50-1.50SMH	50	1.50	1.772	0.906	3.150	CAP-10115	DRKEY-86215	ST-11006
PSC63-0.75SMH	63	.750	1.181	0.709	2.047	CAP-10107	DRKEY-86207	ST-11103
PSC63-1.00SMH	63	1.000	1.181	0.709	2.480	CAP-10110	DRKEY-86210	ST-11004
PSC63-1.50SMH	63	1.50	1.772	0.906	3.150	CAP-10115	DRKEY-86215	ST-11006





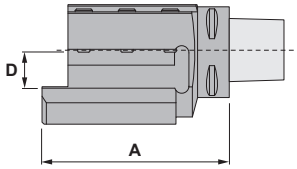
PSC Boring Bar Adapters

Catalog Number	Dimensions				2 x Bolt
	PSC	D1	WF	L	
PSC40-0.75BBA	40	.750	1.752	2.362	BOLT-15407
PSC50-0.75BBA	50	.750	1.752	2.362	BOLT-15407
PSC50-1.00BBA	50	1.000	2.248	3.346	BOLT-15410*
PSC50-1.25BBA	50	1.250	2.480	3.347	BOLT-15410*
PSC63-0.75BBA	63	.7500	1.752	2.560	BOLT-15407
PSC63-1.00BBA	63	1.000	2.248	3.347	BOLT-15410*
PSC63-1.25BBA	63	1.250	2.480	3.347	BOLT-15410*

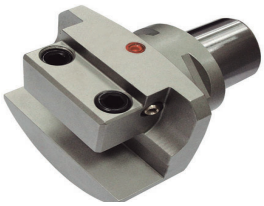
* has 4 bolts instead of standard 2

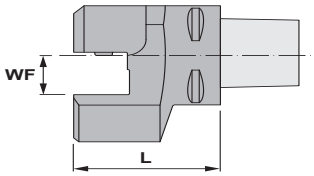
PSC Adaptors





PSC Straight Square Shank Toolholder Adaptor							
Catalog Number		Dimensions					
Right	Left	PSC	Type	D	L	Clamp Bolt	Coolant Bolt
PSC50-0.75THR	PSC50-0.75THL	50	Turning toolholder for square tool left/right hand	.750	3.858	CLB-17207	COB-29708
PSC63-0.75THR	PSC63-0.75THL	63		.750	3.937	CLB-17207	COB-29708
PSC63-1.00THR	PSC63-1.00THL	63		1.000	5.118	CLB-17210	COB-29708

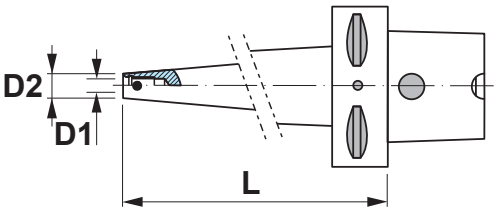




PSC 90° Square Shank Toolholder Adaptor						
Catalog Number	Dimensions					
	PSC	Type	WF	L	Clamp Bolt	Coolant Bolt
PSC50-0.75STH	50	Multi-purpose adaptor for square toolholders	.750	2.244	CLB-17307	COB-29708
PSC63-0.75STH	63		.750	2.323	CLB-17307	COB-29708

PSC Adaptors

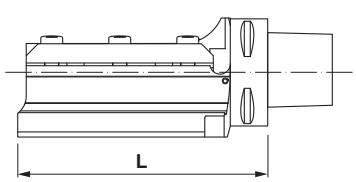


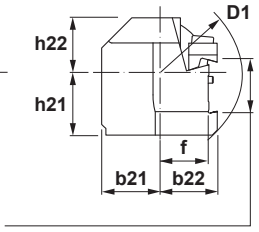


PSC Modular Endmill Adapters

Catalog Number	PSC	Dimensions		
		L	D1	D2
PSC40-MA08	40	2.756	M8	0.512
PSC40-MA10	40	3.15	M10	0.709
PSC40-MA12	40	3.15	M12	0.827
PSC50-MA08	50	2.756	M8	0.512
PSC50-MA10	50	3.15	M10	0.709
PSC50-MA12	50	3.15	M12	0.827
PSC50-MA16	50	3.15	M16	1.142
PSC63-MA08	63	2.756	M8	0.512
PSC63-MA10	63	3.543	M10	0.709
PSC63-MA12	63	3.937	M12	0.827
PSC63-MA16	63	3.937	M16	1.142
PSC80-MA12	80	3.937	M12	0.827
PSC80-MA16	80	3.937	M16	1.142
PSC100-MA12	100	4.724	M12	0.827
PSC100-MA16	100	4.724	M16	1.142



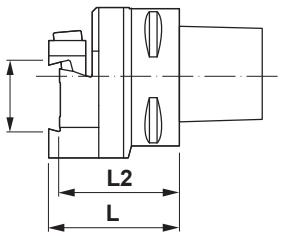


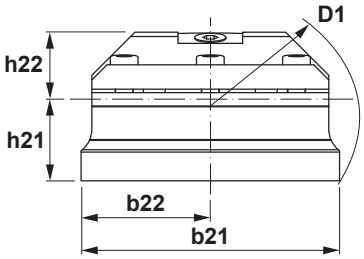


PSC Tool Mount for Cutoff Blades

Catalog Number	Stock		Dimensions										
	R	L	PSC	Blade Size	D1	b21	b22	f	h21	h22	L	Cap	Screw
PSC50-SBN26 R/L	★	★	50	26	3.465	0.984	1.260	1.063	1.181	1.024	3.74	CAP-80526	ST-11008
PSC63-SBN32 R/L	★	★	63	32	4.173	1.260	1.555	1.260	1.496	1.260	5.787	CAP-80632	ST-11108
PSC80-SBN32 R/L	★	★	80	32	4.961	1.594	1.890	1.594	1.594	1.594	6.102	CAP-80632	ST-11108
PSC100-SBN32 R/L	★	★	100	32	5.709	1.969	2.283	1.988	1.988	1.969	6.299	CAP-80632	ST-11108







PSC Radial Mount for Blades Adaptor

Catalog Number	Stock	Dimensions										
	Neutral	PSC	Blade Size	D1	b21	b22	h21	h22	L	L2	Cap	Screw
PSC50-RMA26	★	50	26	3.937	3.150	1.575	1.181	0.992	2.283	2.087	CAP-80526	ST-11008
PSC63-RMA32	★	63	32	5.551	4.724	2.362	1.457	1.260	2.480	2.186	CAP-81632	ST-11108
PSC80-RMA32	★	80	32	5.709	4.724	2.362	1.594	1.575	2.795	2.500	CAP-81632	ST-11108
PSC100-RMA32	★	100	32	5.709	4.724	2.362	1.988	1.969	2.953	2.657	CAP-81632	ST-11108

Damper Arbors



■ General Features

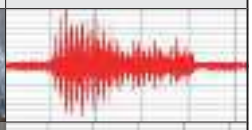
Dampers are arbors equipped with a special anti-vibration mechanism that has both counter damping and friction damping effects.
This suppresses chatter and prevents decreased machined surface quality and tool life when machining with a large overhang.

■ Features



· Using a basic holder and damper head in combination
· Basic holder lineup supports **BBT50** arbor and **HSK-A100** arbors in different lengths.
· Through-centre coolant compatible.

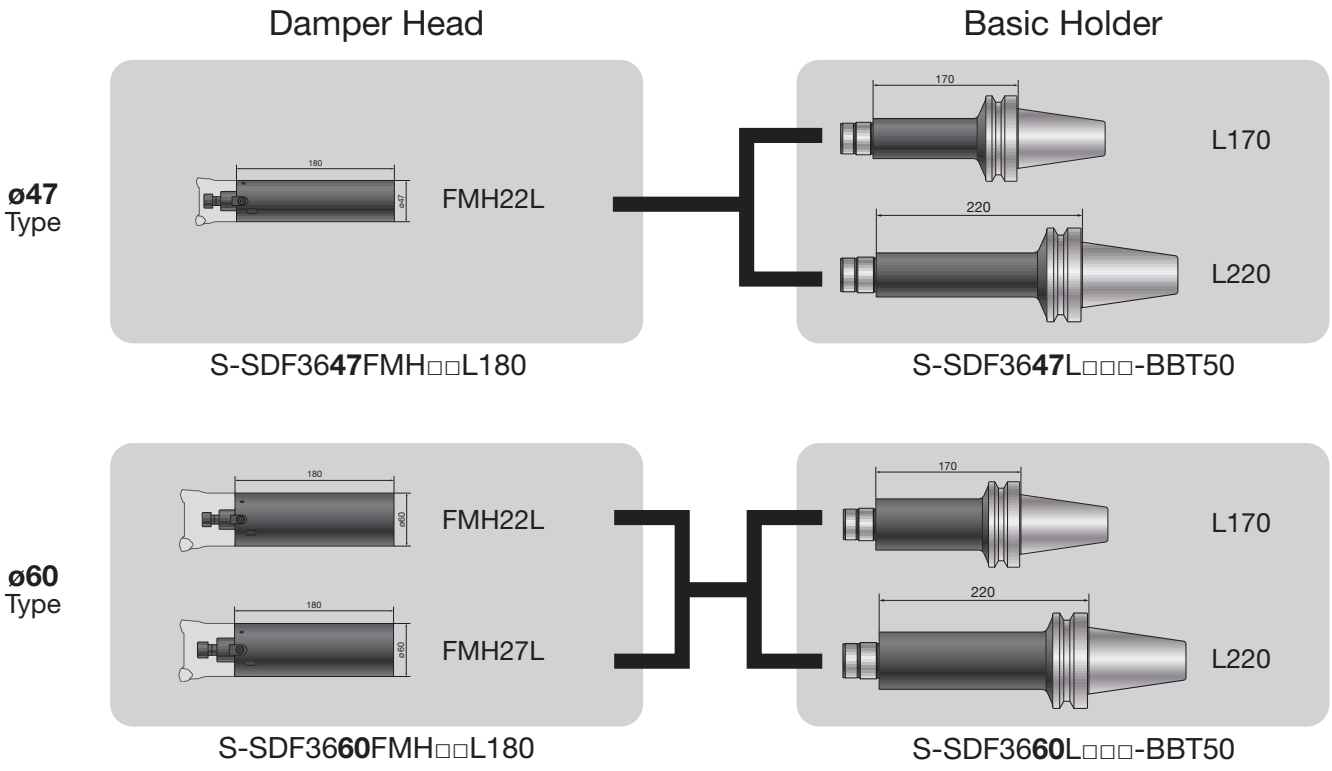
Surface Milling Example with 347mm Overhang Length

Arbor	Results	
	Machined Surface	Vibration
Competitor's Arbor No vibration control mechanism		
Damper With Vibration Control Mechanism		

Suppress chatter by using a smart damper!!

Work Material: S50C
Tool: Tool Diameter ø63 (5-Flute)
Cutting Conditions: v_c = 100m/min, f_z = 1.0mm/t, a_p = 1.4mm, a_e = 30mm

■ Combination Example (**BBT50** Type)

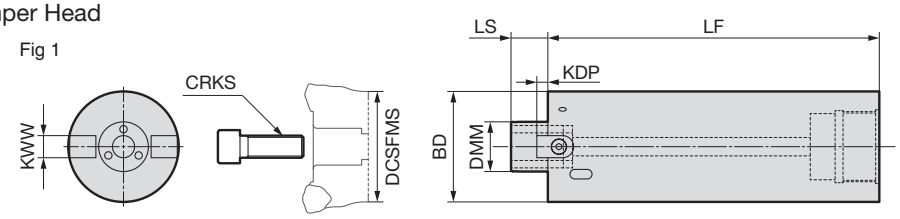


★ Worldwide Warehouse Item

Damper Arbors

Damper Head

Fig 1



Stock Table

Dimensions (mm)

Cat. No.	Stock	Shank Dia. DMM	Body Dia. BD	Overhang LF	Shank Length LS	Groove Width KWW	Groove Depth KDP	Screw CRKS	Weight (kg)	Mounting DCSFMS	Fig
S-SDF3647FMH22L180	★	22	47	180	18	10	5	M10	3.0	36 up	1
S-SDF3660FMH22L180	★	22	60	180	18	10	5	M10	4.5	49 up	1
S-SDF3660FMH27L180	★	27	60	180	20	12	6	M12	4.5	46 up	1

Refer to the user's manual for methods of mounting to basic tool holders.
The cutter is not included in the weight.
A hook wrench and clamp bolt for tightening the cutter are included.
DCSFMS shows the cutter mounting surface diameter. Take care if the mounting surface diameter is small relative to the cutter outer diameter.

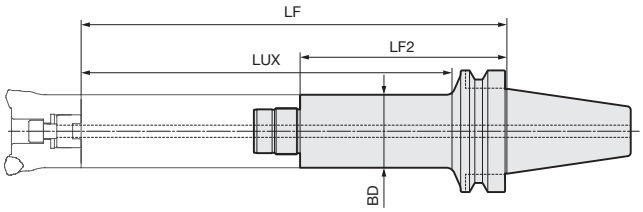
Identification Code

S-SDF36 47 FMH 22 L180

S-SDF36: Connection Method
47: Body Dia.
FMH: Series Code
22: Shank Dia.
L180: Overhang

Basic Holder BBT50 Type

Fig 1



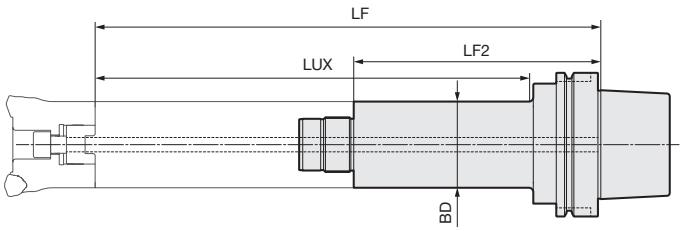
Stock Table

Dimensions (mm)

Cat. No.	Stock	Body Dia. BD	Overhang LF	Min. Clamping Length LF2	Effective Overhang LUX	Weight (kg)	Applicable Damper Head	Fig
S-SDF3647L170-BBT50	★	47	350	170	297	5.6	S-SDF3647FMH○○L○○○	1
S-SDF3647L220-BBT50	★	47	400	200	347	6.3	S-SDF3647FMH○○L○○○	1
S-SDF3660L170-BBT50	★	60	350	170	297	6.7	S-SDF3660FMH○○L○○○	1
S-SDF3660L220-BBT50	★	60	400	200	347	7.8	S-SDF3660FMH○○L○○○	1

Basic Holder HSK-A100 Type

Fig 1



Stock Table

Dimensions (mm)

Cat. No.	Stock	Body Dia. BD	Overhang LF	Min. Clamping Length LF2	Effective Overhang LUX	Weight (kg)	Applicable Damper Head	Fig
S-SDF3647L170-HSKA100	★	47	350	170	310	4.4	S-SDF3647FMH○○L○○○	1
S-SDF3647L220-HSKA100	★	47	400	220	360	5.0	S-SDF3647FMH○○L○○○	1
S-SDF3660L170-HSKA100	★	60	350	170	310	5.5	S-SDF3660FMH○○L○○○	1
S-SDF3660L220-HSKA100	★	60	400	220	360	6.0	S-SDF3660FMH○○L○○○	1

Identification Code

S-SDF36 47 L170 - BBT50

S-SDF36: Connection Method
47: Body Dia.
L170: Min. Clamping Length
BBT50: Shank type

*Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

★ Worldwide Warehouse Item

Micro Units

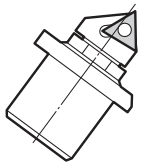
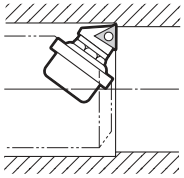
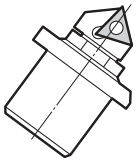
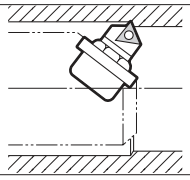
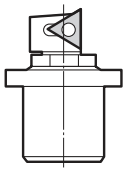
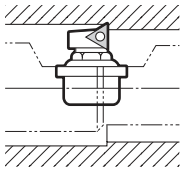
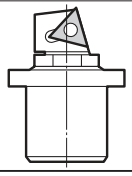
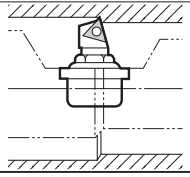
This section introduces an overview of the series.
Refer to the separate "SEC-Cartridge Unit / Micro Unit" catalog for details on Micro Units (holders, inserts, spare parts) and quill unit seat machining.

Note: Use MUP type micro units when designing new tooling. Conventional tool types (MUN type) are manufactured only as replacement parts.

■ Micro Unit Cat. No. by Model / Tooling Type





Illustrations	Tooling	MUP Type Cat. No.	Min. Bore Dia. (mm)	Stock	MUN Type Cat. No.	Min. Bore Dia. (mm)	Stock
		MUP1-A0	25	★	MUN2 -A0	36	
		MUP2-A0	36	★	MUN3 -A0	47	
		MUP3-A0	47	★	MUN3L-A0	54	
		MUP4-A0	73		MUN4 -A0	73	
					MUN4L-A0	78	
		MUP1-A15	25		MUN2 -A15	36	
		MUP2-A15	36		MUN3 -A15	47	
		MUP3-A15	47		MUN3L-A15	54	
		MUP4-A15	73		MUN4 -A15	73	
					MUN4L-A15	78	
		MUP1-V0	25	★	MUN2 -V0	36	
		MUP2-V0	36	★	MUN3 -V0	47	
		MUP3-V0	47	★	MUN3L-V0	54	
		MUP4-V0	73		MUN4 -V0	73	
					MUN4L-V0	78	
		MUP1-V15	25		MUN2 -V15	36	
		MUP2-V15	36		MUN3 -V15	47	
		MUP3-V15	47		MUN3L-V15	54	
		MUP4-V15	73		MUN4 -V15	73	
					MUN4L-V15	78	

*If a left hand unit is required, include "LH" after the catalogue number. (Ex.: MUP1-A0-LH, MUP1-V0-LH)
*Inserts and wrenches are not included with Micro Units.

★ Worldwide Warehouse Item

Cartridge Units

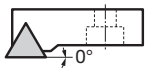
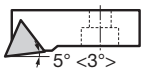
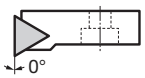
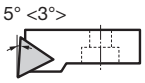
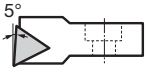
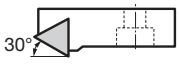
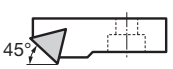
This section introduces an overview of the series.
Refer to the separate "Cartridge Unit / Micro Unit" catalog for details on Micro Units (holders, inserts, spare parts) and quill unit seat machining.

■ Features of Each Model

Classification	Standard Type	MINIT Type		ISO Type			
Type / Shape / Items	BU Type	MINIT P24 Type	MINIT N38 Type	SP Type	CP Type	CE Type	PN Type
	The most common type of cartridge units 	Mini type with good edge sharpness and chip control 	Compact type for multi-tooling configurations 	Positive type insert screw-lock type with good edge sharpness and chip control 	Positive edge type for low-rigidity work 	High rake edge type for non-ferrous metal machining 	Economical type using common negative inserts 
Clamp Mechanism	Pin Lock	Screw-on	Pin Lock	Screw-on	Clamp-on	Clamp-on	Pin Lock
Adjustability	Yes	Axial: No Radial: Yes	No (By using shims)	Yes	Yes	Yes	Yes
Rake Angle	Neg.	Pos.	Neg.	Pos.	Pos.	Pos.	Neg.
Usable Insert Relief Angle	0°	11°	0°	11°	11°	20°	0°
Cutting Edge Position	Above Centre	Above Centre	Above Centre	On Centre	On Centre	On Centre	On Centre
Min. Bore Dia. (mm)	ø24	ø24	ø38	ø30	ø30	ø30	ø38

■ Cartridge Unit Cat. No. (For Triangular Inserts) by Model / Tooling Type

( ) shows the min. bore diameter (mm).

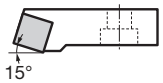
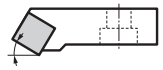
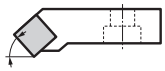
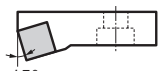
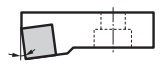
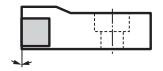
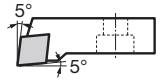
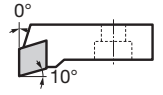
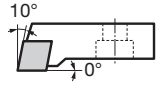
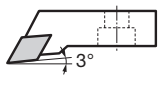
Configuration	BU Type	Stock R	Stock L	MINIT P24 Type	Stock R	Stock L	MINIT N38 Type	Stock R	Stock L	SP Type	Stock R	Stock L	CP Type	Stock R	Stock L	CE Type	Stock R	Stock L	PN Type	Stock R	Stock L
							MTGN3 R/L(38)	★	★	STGP R/L-10CA(38)	★	★	CTGP R/L10CA(38)	★	★	CTGE R/L10CA(38)			PTGN R/L10CA(38)	★	★
										STGP R/L-12CA(50)	★	★	CTGP R/L12CA(50)	★	★	CTGE R/L12CA(50)			PTGN R/L12CA(50)	★	★
										STGP R/L-16CA(60)	★	★	CTGP R/L16CA(60)	★	★				PTGN R/L16CA(60)	★	★
																			PTGN R/L20CA(70)		★
 < >: MINIT P24	BU224 R/L(48)	★		MTJP22 R/L(24)	★	★	MTJN3 R/L(38)	★		STJP R/L-10CA(38)	★	★	CTJP R/L10CA(38)	★		CTJE R/L10CA(38)	★				
	BU225 R/L(60)	★								STJP R/L-12CA(50)	★	★	CTJP R/L12CA(50)	★		CTJE R/L12CA(50)	★				
										STJP R/L-16CA(55)	★	★	CTJP R/L16CA(55)								
	BU252 R/L(24)	★	★	MTFP22 R/L(24)	★	★	MTFN3 R/L(38)	★	★	STFP R/L- 8CA(30)	★	★	CTFP R/L 8CA(30)	★	★	CTFE R/L 8CA(30)	★	★	PTFN R/L10CA(38)	★	★
	BU253 R/L(30)	★								STFP R/L-10CA(38)	★	★	CTFP R/L10CA(38)	★	★	CTFE R/L10CA(38)	★	★	PTFN R/L12CA(50)	★	★
	BU254 R/L(38)	★								STFP R/L-12CA(50)	★	★	CTFP R/L12CA(50)	★	★	CTFE R/L12CA(50)	★	★	PTFN R/L16CA(55)	★	★
	BU255 R/L(48)	★	★							STFP R/L-16CA(55)	★	★	CTFP R/L16CA(55)	★	★	CTFE R/L16CA(55)	★		PTFN R/L20CA(70)	★	★
	BU256 R/L(55)	★											CTFP R/L20CA(70)	★	★	CTFE R/L20CA(70)	★				
 < >: MINIT P24/N38	BU293 R/L(30)	★		MTUP22 R/L(24)	★	★	MTUN3 R/L(38)	★	★	STUP R/L-10CA(38)	★	★	CTUP R/L10CA(38)	★	★	CTUE R/L10CA(38)	★				
	BU294 R/L(38)	★								STUP R/L-12CA(50)	★	★	CTUP R/L12CA(50)	★		CTUE R/L12CA(50)					
	BU295 R/L(48)	★	★							STUP R/L-16CA(55)	★	★	CTUP R/L16CA(55)	★							
	BU295ER/L(48)		★																		
										STTP R/L- 8CA(30)	★	★	CTTP R/L 8CA(30)	★		CTTE R/L 8CA(30)	★		PTTN R/L10CA(38)	★	
										STTP R/L-10CA(38)	★	★	CTTP R/L10CA(38)	★	★	CTTE R/L10CA(38)	★		PTTN R/L12CA(50)	★	★
										STTP R/L-12CA(50)	★	★	CTTP R/L12CA(50)	★	★	CTTE R/L12CA(50)	★		PTTN R/L16CA(60)	★	
										STTP R/L-16CA(60)	★	★	CTTP R/L16CA(60)	★		CTTE R/L16CA(60)					
										STSP R/L-10CA(38)	★	★	CTSP R/L10CA(38)	★		CTSE R/L 8CA(30)	★				
										STSP R/L-12CA(50)	★	★	CTSP R/L12CA(50)	★		CTSE R/L10CA(38)	★				
										STSP R/L-16CA(55)	★	★	CTSP R/L16CA(55)	★		CTSE R/L12CA(50)	★				
																CTSE R/L16CA(55)					
				MTWP22 R/L(24)	★	★	MTWN3 R/L(38)	★		STWP R/L- 8CA(30)	★	★	CTWP R/L 8CA(30)	★		CTWE R/L 8CA(30)	★				
										STWP R/L-10CA(38)	★	★	CTWP R/L10CA(38)	★	★	CTWE R/L10CA(38)	★				
										STWP R/L-12CA(50)	★	★	CTWP R/L12CA(50)	★	★	CTWE R/L12CA(50)	★				
										STWP R/L-16CA(55)	★	★	CTWP R/L16CA(55)			CTWE R/L16CA(55)					

*Inserts and wrenches are not included with Cartridge Units.

★ Worldwide Warehouse Item

■ Tool Holder Cat. No. (For Square Inserts, 55°/80° Diamond Type Inserts) by Model / Tooling Type

( ) shows the min. bore diameter (mm).

Configuration	BU Type	Stock R	Stock L	MINIT P24 Type	Stock R	Stock L	MINIT N38 Type	Stock R	Stock L	SP Type	Stock R	Stock L	CP Type	Stock R	Stock L	CE Type	Stock R	Stock L	PN Type	Stock R	Stock L
 15°	BU113 R/L(30)	★					MSRN4 R/L(38)	★	★	SSRP R/L-10CA(38)	★	★	CSRP R/L10CA(38)	★		CSRE R/L10CA(38)	★				
	BU114 R/L(38)	★											CSRP R/L12CA(50)	★		CSRE R/L12CA(50)	★				
	BU115 R/L(48)	★											CSRP R/L16CA(55)	★							
 30°	BU133 R/L(30)	★		MSTP04 R/L(24)	★	★	MSTN4 R/L(38)	★	★												
	BU134 R/L(38)	★	★																		
	BU135 R/L(48)	★	★																		
 30°	BU134E R/L(30)		★																		
	BU135E R/L(38)		★																		
 45°	BU142 R/L(24)	★	★	MSSP04 R/L(24)	★	★	MSSN4 R/L(38)	★	★	SSSP R/L- 8CA(30)	★	★	CSSP R/L 8CA(30)	★		CSSE R/L 8CA(30)	★		PSSN R/L10CA(38)	★	★
	BU143 R/L(30)	★								SSSP R/L-10CA(38)	★	★	CSSP R/L10CA(38)	★	★	CSSE R/L10CA(38)	★	★	PSSN R/L12CA(50)	★	★
	BU144 R/L(38)	★	★										CSSP R/L12CA(50)	★	★	CSSE R/L12CA(50)			PSSN R/L16CA(55)	★	★
	BU145 R/L(48)	★	★										CSSP R/L16CA(55)	★		CSSE R/L16CA(55)					
 15°	BU152 R/L(24)	★	★				MSKN4 R/L(38)	★	★	SSKP R/L- 8CA(30)	★	★	CSKP R/L 8CA(30)	★		CSKE R/L 8CA(30)	★	★	PSKN R/L10CA(38)	★	
	BU153 R/L(30)	★	★							SSKP R/L-10CA(38)	★	★	CSKP R/L10CA(38)	★	★	CSKE R/L10CA(38)	★	★	PSKN R/L12CA(50)	★	★
	BU154 R/L(38)	★	★										CSKP R/L12CA(50)	★		CSKE R/L12CA(50)	★		PSKN R/L16CA(55)	★	
	BU155 R/L(48)	★	★										CSKP R/L16CA(55)	★		CSKE R/L16CA(55)	★		PSKN R/L20CA(70)	★	
 5°	BU183 R/L(30)	★		MSYP04 R/L(24)	D	D	MSYN4 R/L(38)	★	★	SSYP R/L- 8CA(30)	★	★	CSYP R/L 8CA(30)	★		CSYE R/L 8CA(30)	★		PSYN R/L10CA(38)	★	
	BU184 R/L(38)	★								SSYP R/L-10CA(38)	★	★	CSYP R/L10CA(38)	★		CSYE R/L10CA(38)	★		PSYN R/L12CA(50)	★	★
	BU185 R/L(48)	★											CSYP R/L12CA(50)	★		CSYE R/L12CA(50)	★		PSYN R/L16CA(55)	★	★
													CSYP R/L16CA(55)			CSYE R/L16CA(55)			PSYN R/L20CA(70)	★	
 0°	BU194 R/L(30)		★																		
	BU195 R/L(38)		★																		
 5° 5°							MCLN4 R/L(38)	★	★										PCLN R/L12CA(50)	★	★
																			PCLN R/L16CA(55)	★	★
																			PCLN R/L20CA(70)	★	★
 0° 10°							MCFN4 R/L(38)	★	★												
 10° 0°							MCGN4 R/L(38)	★	★												
 3°							MDJN4 R/L(38)	★	★												

*Inserts and wrenches are not included with Cartridge Units.

★ Worldwide Warehouse Item

Boring Quill / Carbide Line Boring Bar

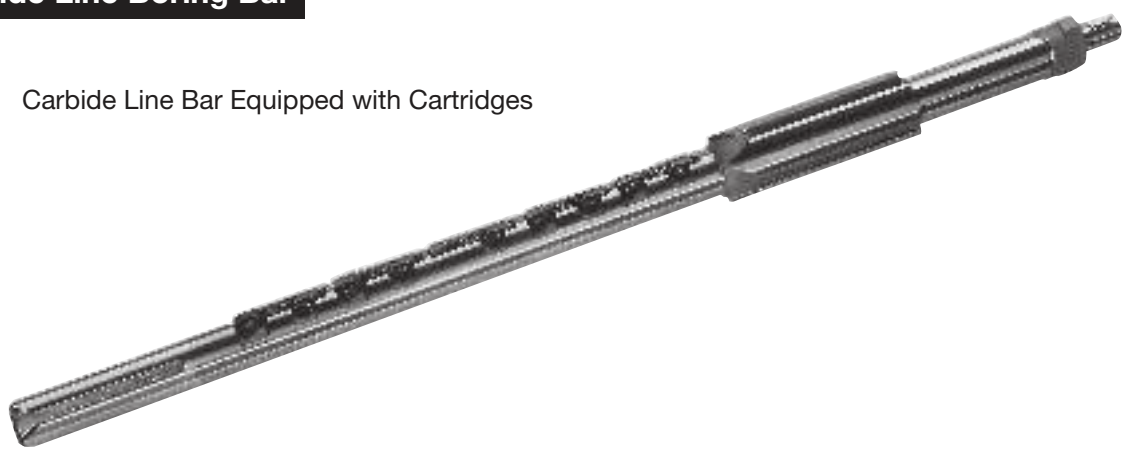
This section introduces an overview of the series.
Please inquire with Sumitomo Engineering for more details on these products.

Indexable Cartridges and Boring Quills



Carbide Line Boring Bar

Carbide Line Bar Equipped with Cartridges



MEMO

Milling Cutters H

H1 to H243



Cutter (Indexable Endmill) Selection Guide H2
Selection Guide for Modular Tools H7
Selection Guide for Cast Iron High-feed and Milling Cutters (Special Purpose) ... H8
Indexable Endmill Selection Guide H9
Grades for Milling H12
Cutter Identification Table H14
Insert Identification Table H15

Face Milling	For General Steel, Cast Iron, Exotic Alloy and Non-Ferrous Metal	**WGX** H16
	For General Steel, Cast Iron, Exotic Alloy and Non-Ferrous Metal	**DGC** H28
	For High-efficiency Cast Iron / Cast Steel Milling	**DNX(F) / DNH, DNHS** H40
Shoulder Milling	For High-precision Milling of Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal (New)	**WEZ** H46
	For High-precision Milling of Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	**WEX** H64
	For High-efficiency Deep-Step Shoulder Milling	**WRX** H78
	For High-feed Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	**WFX** H84
	For General Steel and Cast Iron	**DFC** H96
	For High-efficiency Milling of Steel, Cast Iron and Stainless Steel	**TSX** H108
	For Steel, Cast Iron and Stainless Steel	**PWS(F) / PWSR** H134
High Feed	For High-speed, High-efficiency Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	**WFXH** H137
	For High Feed Machining of Steel, Cast Iron and Stainless Steel	**MSX** H142
Multi-Purpose		**WMM** H146
Radius	For Steel, Die Steel, Cast Iron, Stainless Steel and Exotic Alloy	**RSX** H150
	For Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	**WRCX** H160
R / 3D Profiling	For Roughing	**WBMR** H167
	For Finishing	**WBMF** H170
Groove / T-Slot	For T-Slot Endmilling	**T-Slot Endmill TSE** H172
	For Groove Milling of Steel and Cast Iron	**Slitting Cutter TSM** H173
Chamfering	For Chamfering	**WFXC** H174
	For Chamfering	**Chamfering Endmill SMC** H177
Non-ferrous Metal	For High-speed, High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal	**ALNEX ANX** H178
	For High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal	**HF** H186
	For High-speed Milling of Aluminum Alloy and Non-Ferrous Metal	**RF** H192
	For Small Diameter Milling of Aluminum Alloy and Non-Ferrous Metal	**SRF** H194
	For High-speed, High-efficiency Milling for Non-Ferrous Metal	**WAX** H196
High-speed Cast Iron	For High-speed Finishing of Cast Iron	**CBN BN Finish Mill EASY (FMU / FMU-E)** H201
	For High-speed, High-efficiency Milling of Cast Iron	**Cutter RM for High-speed Milling of CBN Cast Iron** H202

H Modular Tools ···H203

H Special Purpose Cutters ···H217
Goalmill

H Discontinued Milling Cutters ···H236

Stock Markings and Symbols

●: USA Standard stocked item
▲: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

Indexable Milling Selection Guide

◎: 1st Recommendation ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm)	Shank Dia. (mm)	Series (Page)	Milling Cutter (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Cartoon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Face Milling	.236" 45°	ø2.000" to ø10.00" ø40 to ø250 mm	–	WGX →H20	WGX40000R WGXM40000R WGXF40000R WGX13000R(S) WGXM13000R(S) WGXF13000R(S)	SEMT13T3AGSR–G	20° to 22°	–20° to –24°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	.236" 45°	ø2.000" to ø2.500" ø32 to ø63 mm	ø1.25" ø32	WGX–EW →H23	WGX40000EW WGX13000EW	SEMT13T3AGSR–G	20° to 22°	–20° to –24°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	.236" 45° .118" 45°	ø2.000" to ø10.000" ø40 to ø250 mm	–	DGC →H32	DGC40000R DGCM40000R DGCF40000R DGC13000R(S) DGCM13000R(S) DGCF13000R(S)	SNMT13T6ANER–G	–5°	–10°	◎	○									◎	◎	◎	◎	◎	◎	○	
	.236" 45° .118" 45°	ø2.000" to ø2.500" ø40 to ø63 mm	ø1.25" ø32	DGC–EW →H35	DGC40000EW DGC13000EW	SNMT13T6ANER–G	–5°	–10°	◎	○									◎	◎	◎	◎	◎	◎	○	
	.315" 25°	ø3.000" to ø8.000" ø80 to ø250 mm	–	DNX →H42	DNX40000 DNXF40000 DNX12000 DNXF12000	SNMT1205ZNEN	–5°	–6°	○										○			◎				
	.118" 66° .197" 66°	ø80 to ø160 mm	–	DNH(S) →H44	DNH12000 DNHS12000	SNMT1205ZNEN	–5°	–6°			○								○			◎				
Shoulder Milling / Semi-Shoulder Milling	.394" 90°	ø1.5 - ø2.5" ø40 - ø100 mm	–	WEZ →H52	WEZ20000R WEZ11000R(S)	(For 20000 / 11000 Type) AOMT11T302PEER-G	14° to 15°	–7° to –11°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø2.00 - ø6.00" ø40 - ø160 mm	–		WEZ30000R WEZ17000R(S)		–10° to –15°	–4° to –9°																		
	.394" 90°	ø0.5 - ø1.25" ø14 - ø80mm	ø16 to ø32	WEZ–E →H56	WEZ20000EW / EMW WEZ20000ELC WEZ11000E WEZ11000EL	(For 30000 / 17000 Type) AOMT170502PEER-G	6° to 15°	–7° to –18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø1.00 - ø2.00" ø25 - ø80mm	ø25 to ø42		WEZ30000EW / EMW WEZ30000ELC WEZ17000E WEZ17000EL		6° to 15°	–6° to –12°																		
	.236" 90°	ø32 to ø63mm	–	WEX–F/R →H70	WEX1000F	(For 3000 Type) AXMT170508PEER-G	9° to 17°	7° to 17°																		
	.394" 90°	ø1.50 - ø2.50" ø40 - ø63mm	–		WEX20000R WEX2000F		23° to 25°	16° to 18°	○	○		◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.551" 90°	ø2.00 - ø8.00" ø40 - ø125mm	–		WEX3000F WEX30000R WEXF3000R	see H3 for AXMT11	19° to 24°	12° to 15°																		

*Use a chamfering tool for chamfering operations.

■ Precautions when Using Wiper Inserts with Holes

- When assembling the wiper insert, attach it as shown in Fig. 1. When attached as shown in Fig. 2, normal machined surface roughness cannot be obtained.
- The wiper insert has a single corner specification.
- Refer to page N19 of Technical Guidance for details about milling with wiper inserts.

Fig 1

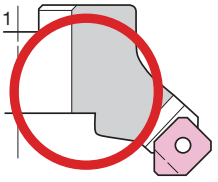
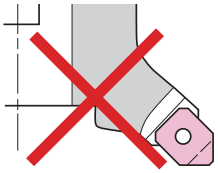


Fig 2



Indexable Milling Selection Guide

◎: 1st Recommendation ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Face Milling: Finishing	Application: Face Milling: High Feed	Application: Shoulder Milling	Application: Slot Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material: P: General Steel / Carbon Steel / Alloy Steel	Work Material: P: Tempered Steel / Die Steel	Work Material: M: Stainless Steel	Work Material: K: Cast Iron / Ductile Cast Iron	Work Material: N: Non-ferrous Metal	Work Material: N: Aluminum Alloy	Work Material: S: Ti Alloy / Heat-Resistant Alloy	Work Material: H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Semi-Shoulder Milling	.236" 90°	ø32 to ø63mm	ø10 to ø20	WEX–E →H74	*WEX1000E* *WEX1000EL*	(For 2000 Type) AXMT123504PEER–G	9° to 17°	7° to 17°	○	○		◎	◎	○					◎	◎	◎	◎	◎	◎	◎	◎
	.394" 90°	ø0.500" to ø1.250" ø14 to ø63mm	ø.75 - ø1.25" ø16 - ø32mm		WEX20000EW/EMW WEX20000ELC *WEX2000E/EL*		14° to 25°	10° to 18°																		
	.551" 90°	ø1.000" to ø2.000" ø25 to ø63mm	ø1.0 - ø1.25" ø20 - ø42mm		WEX30000EW/EMW WEX30000ELC *WEX3000E(–C)* *WEX3000ES(–C)* *WEX3000EL*		16° to 24°	8° to 15°																		
	.709" to 1.417" 90°	ø40 to ø50	–	WRX–R →H80	*WRX20000RS*	(For 3000 Type) AXMT170508PEER–G	24°	16° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.866" to 1.575" 90°	ø2.5" to ø3.0" ø50 to ø100	–		WRX30000R *WRX3000RS*		22° 24°	13° 15°																		
	.709" to 1.417" 90°	ø1.000" to ø1.500" ø20 to ø40	ø1.0 - ø1.25" ø20 - ø42	WRX–E →H82	WRX20000E *WRX2000E*	(For 2000 Type) AXMT123504PEER–G	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	1.06-2.09" 90°	ø2.000" ø40 to ø50	ø1.25" ø32 - ø42		WRX30000E *WRX3000E*		20° to 22°	12° to 13°																		
	.236" 90°	ø40 to ø100	–	WFX →H87	*WFX08000R(S)* *WFXM08000R(S)* *WFXF08000R(S)*	(For *08000* Type) SOMT080304PZER	12°	–6°																		
	.394" 90°	ø2.000" to ø8.000" ø50 to ø250	–		WFX40000R WFXF40000R WFXX40000R *WFX12000R(S)* *WFXF12000R(S)*	(See below 40000/ *12000* Type)	8°	–8°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	.236" 90°	ø20 to ø63	ø16 to ø32	WFX–E →H94	*WFX08000E* *WFXM08000E*	(For 40000/ *12000* Type) SOMT120408PDER	12°	–6°																		
	.394" 90°	ø40 to ø80	ø32		*WFX12000E* *WFXF12000E*		8°	–8°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	.236" 90°	ø2.000" to ø8.000" ø50 to ø160	–	DFC →H101	DFC20000R DFCM20000R DFCF20000R *DFC09000R(S)* *DFCM09000R(S)* *DFCF09000R(S)*	XNMU060608PNER–G	–5°	–9°																		
	.236" 90°	ø1.000" to ø2.500" ø25 to ø80mm	ø1.0 - 1.25" ø25 - ø42 mm	DFC–E →H107	DFC20000EW DFCM2000EW *DFC09000E* *DFCM09000E*		–5°	–9°	◎	◎		◎	○						◎	◎	○	◎			○	
	.315" 90°	ø1.5"to ø2.5" ø40 to ø80	–	TSX →H113	TSX30000R TSXF30000R *TSX08000R(S)* *TSXF08000R(S)*		–6°	–20°																		
	.472" 90°	ø1.5" to ø6.0"	–		TSX40000R TSXF40000R			–23° to –15°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
		ø1.5" to ø4.0" ø40 to ø315mm	–		*TSX13000R(S)* *TSXM13000R(S)* *TSXF13000R(S)*																					
	.315" 90°	ø0.625" to ø1.5" ø16 to ø80mm	ø.625 - ø1.25" ø16 - ø32mm	TSX–E →H120	TSX30000EW *TSX08000E* TSXF30000EW *TSXF08000E*	(For 08000 Type) LNEX080404PNER–G	–6° to –3°	–36° to –20°																		
		ø0.750" to ø1.5" ø20 to ø80mm	ø.750 - ø1.25" ø20 - ø32mm																							
	.472" 90°	ø1.0" to ø1.5" ø25 to ø80mm	ø1.0 - ø1.25" ø25 - ø32mm		TSX40000EW TSXF40000EW			–31° to –15°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
		ø32 to ø80mm	ø1.0"		*TSX13000E* *TSXM13000E* *TSXF13000E*	(For 13000 Type) LNEX130604PNER–L																				
		ø1.25" to ø1.5" ø40 to ø80mm	ø32 mm																							
	1.614" to 2.362" 90°	ø32 to ø63mm	–	TSXR →H124	*TSXR08000RS*		–6° to –3°	–20° to –15°	○			◎							◎	◎	◎	◎	◎	◎	◎	
	1.614" to 2.362" 90°	ø40 to ø125mm			*TSXR13000RS*			–23° to –15°																		
	.827" to 1.575" 90°	ø20 to ø40mm	ø20 to ø32mm	TSXR–E →H128	*TSXR08000E*		–6° to –3°	–33° to –18°	○			◎							◎	◎	◎	◎	◎	◎	◎	
	1.614" to 2.362" 90°	ø40 to ø50mm	ø32 to ø42mm		*TSXR13000E*			–23° to –18°																		

Indexable Milling Selection Guide

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Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm))	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Finishing	Application: Face Milling: High Feed	Application: Shoulder Milling	Application: Slot Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material: P: General Steel / Carbon Steel / Alloy Steel	Work Material: P: Tempered Steel / Die Steel	Work Material: M: Stainless Steel	Work Material: K: Cast Iron / Ductile Cast Iron	Work Material: N: Non-ferrous Metal	Work Material: N: Aluminum Alloy	Work Material: S: Ti Alloy / Heat-Resistant Alloy	Work Material: H: Hardened Steel 45 to 55 HRC
High Feed / Face Milling / Shoulder Milling	.591" 90°	ø3.0 - 10.0" / ø80 - ø250 mm	–	PWS →H135	PWS4000 PWSF4000	LNMX170808PNSR-G	–6°	–15°	○		◎	◎							◎	○	○	○				
High Feed / Face Milling / Shoulder Milling	0.059" 75°	ø40 to ø63mm	–	WFXH →H140	WFXH08000RS	(For 12000 Type) SOMT120408PDER	–6°	6°			◎	○		○					◎	◎	◎	◎	◎	◎	○	
High Feed / Face Milling / Shoulder Milling	0.098" 75°	ø50 to ø63mm	–		WFXH12000RS		–6°	6°			◎	○		○					◎	◎	◎	◎	◎	◎	○	
High Feed / Face Milling / Shoulder Milling	.059" to .098" 70°	ø1.500" to ø6.000" / ø40 to ø100	–	MSX–R →H144	MSX30000R MSX40000R MSX50000R MSX08000R MSX12000R MSX14000R	WDMT0603ZDTR (IC=6.35) WDMT0804ZDTR (IC=8.5) WDMT1204ZDTR (IC=12)	8°	–3° to –8°			◎	○		○					◎	◎	◎	◎				○
High Feed / Face Milling / Shoulder Milling	.039" to .098" 70°	ø0.750" to ø1.500" / ø16 to ø63mm	ø16 to ø42	MSX–E →H145	MSX20000EW/ELC MSX30000EW/ELC MSX40000EW/ELC MSX06000E MSX08000E MSX12000E		8°	–3° to –8°			◎	○		○					◎	◎	◎	◎				○
Multi-Purpose / Face Milling / Shoulder Milling / Slot Milling / Ramping / Drilling	.669 - 1.378" 90°	ø1.000" to ø1.50" / ø20 to ø30mm	ø1.0 - ø1.25" / ø20 - ø25 mm	WMM →H147	WMM10000M WMM2000E/EL WMM2000ELH	APMT103504PDER APMT160508PDER	7° to 11°	15° to 16°	◎			◎	◎	◎		◎			◎	◎	◎	◎	◎	◎	◎	
Multi-Purpose / Face Milling / Shoulder Milling / Slot Milling / Ramping / Drilling	1.54" 90°	ø1.500" / ø32 to ø40mm	ø1.25 / ø32mm		WMM16000M WMM3000E/EL WMM3000ELH		7° to 11°	17° to 19°																		
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.197"	ø2.000" / ø40 to ø52	–	RSX →H153	RSX30000 RSX10000 RSXF10000	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12)	10°	–5°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			◎	
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.236"	ø2.000" ~6.000" / ø40 to ø100			RSX40000 RSX12000 RSXF12000		10°	–5°																		
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.315"	ø2.500" ~6.000" / ø63 to ø160			RSX50000 RSX16000 RSXF16000		10°	–5°																		
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	0.394"	ø80 to ø160			RSX20000 RSXF20000		10°	–5°																		
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.157"	ø20 to ø25	ø20 - ø25mm	RSX–ES →H159	RSX08000ES RSXF08000ES	(For 10000 Type) RDET10T3M0EN	10°	–8°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			◎	
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.197"	ø1.000" to ø1.500" / ø25 to ø32	ø1.25" / ø25 - ø32mm		RSX30000EW RSX30000ELC RSX10000ES RSXF10000ES		10°	–5°																		
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.236"	ø1.250" to ø1.500" / ø32mm	ø32		RSX40000EW RSX40000ELC RSX12000ES RSXF12000ES		10°	–5°																		
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.236"	ø2.000" / ø2.000" ~ø4.000" / ø40 to ø80mm	–	WRCX →H161	WRCX30000 WRCX40000 WRCX16000 WRCXF16000	QPMT120440PPEN (IC=12) QPMT160660PPEN (IC=16) QPMT200670PPEN (IC=20)	–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			○	○
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.315"	ø3.000" ~ø6.000" / ø63 to ø100mm	–		WRCX60000 WRCX16000 WRCXF16000		–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	0.394"	ø4.000" ~ø6.000" / ø125 to ø160mm	–		WRCX80000 WRCX20000		–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			○	○
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.157"	ø20 to ø25mm	ø20 to ø25	WRCX–E →H161	WRCX08000E	QPMT080330PPEN (IC=8) QPMT10T335PPEN (IC=10) QPMT160660PPEN (IC=16)	–3°	0°																		
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.197"	ø1.000" to ø1.500" / ø25 to ø32	ø1.000 - ø1.500" / ø25 - ø32mm		WRCX30000E WRCX30000E WRCX10000E		–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
Radius / Face Milling / Shoulder Milling / Slot Milling / Ramping / Profiling	.315"	ø1.250" to ø1.500" / ø40 to ø50	ø1.000 - ø1.500" / ø32 mm		WRCX40000E WRCX40000E WRCX16000E		–3°	0°																		

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R / 3D Profiling	.787" to 1.693"	ø0.750" to ø2.000" R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H168	**WBMR** **WBMR**2000 **WBMR**2000L	ZNMT1804100–C 10 9.76 18.00	–10°	-					◎				◎		◎	◎	◎	◎			○	○
	.0039" to .016"	ø0.500" to ø1.250" R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H171	**WBMF** **WBMF**1000	ZPGU1551050 RE±0.015 9 15.6	0°	-					◎				◎	◎	◎	◎	◎	◎				○
T–Slot	.354" to .866" 90°	ø21 to ø50	ø25 to ø32	TSE →H172	**TSE**	CPMT060204N–US RE 6.35	0°	0°					○						○	○	○					
Groove	.157" to .315" 88°30'	ø100 to ø160	–	TSM →H173	**TSM**	SNHG121 12.70 12.70	–2°	–12°					○						○	○	○	○				
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC–E →H175	**WFXC**08000E	(For 12000 Type) SOMT120308PDER 12.7 12.7	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32		**WFXC**12000E																					
	45°	ø7 to ø35	ø32	SMC →H177	**SMC**	SPMN422 RE 12.70	0°	0°							◎				○	○	○	○				
Non–ferrous Metal	.118" 90°	ø40 to ø125	–	ANX →H180	**ANXS**16000R(S)	ANB1600R–L 16 6.0	5°	5°	○	◎	◎	◎											◎	◎		
		ø80 to ø160			**ANXA**16000R(S)		5°	5°																		
		ø32 to ø40	ø20		**ANXS**16002E		5°	–2° to 0°																		
	.118" 90°	ø2.500" ~6.000" ø80 to ø125	–	HF →H188	**HFMH**40000 **HFM**12000 **HFF**12000	NF–LDEN12T3ZDFR 12.7 6.0 9.525	10°	4°	◎	◎	○	○							X	X	X	X	○	◎		X
	.118" 90°	ø3.000" ~6.000" ø80 to ø125	–		**HFFH**40000 **HFFH**12000																					
	.118" 90°	ø80 to ø125	–		**HFFH**12000R–BBT30																					
	.118" 90°	ø80 to ø200	–	RF →H193	**RF**4000	NF–SNEW1204ADFR 4.7 12.70	10°	4°	◎	◎	○	○							X	X	X	X	○	◎		X
	.197" 90°	ø30 to ø63	–	SRF →H195	**SRF**	NF–SNEW09T3ADTR 9.525 6 C0.5 9.525	6°	–2° to 4°	◎	◎	○	○							X	X	X	X	○	◎		X
			ø20		**SRF–ST**																					

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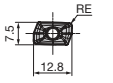
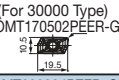
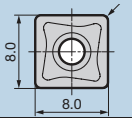
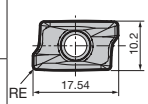
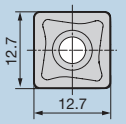
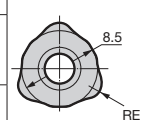
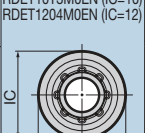
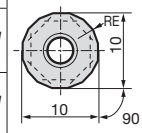
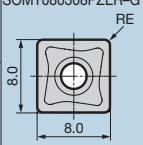
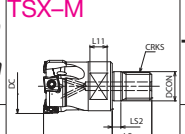
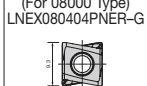
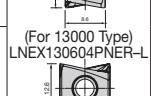
◎: Best ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Face Milling: Finishing	Application: Face Milling: High Feed	Application: Shoulder Milling	Application: Slot Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material: P: General Steel / Carbon Steel / Alloy Steel	Work Material: P: Tempered Steel / Die Steel	Work Material: M: Stainless Steel	Work Material: K: Cast Iron / Ductile Cast Iron	Work Material: N: Non-ferrous Metal	Work Material: N: Aluminum Alloy	Work Material: S: Ti Alloy / Heat-Resistant Alloy	Work Material: H: Hardened Steel 45 to 55 HRC
Non–ferrous Metal	.63 - .71" 90°	ø2.000" to ø5.000"	–	WAX	**WAX**30000 **WAX**40000	(For 3000 Type) AECT160404PEFRA	19° to 25°	6°	○			◎	◎	◎			◎		X	X	X	X	○	◎		X
	.866" to .945" 90°	*ø50 to ø125*	–	→H197	***WAX**3000* ***WAX**4000*																					
	.63 - .71" 90°	ø.750" to ø1.500" *ø20 to ø40mm*	ø.750"-ø1.500" *ø20 - ø32 mm*	WAX–E	**WAX**30000EW **WAX**30000ELC ***WAX**3000E* ***WAX**3000EL*	(For 4000 Type) AECT220604PEFRA	19° to 25°	6°	○			◎	◎	◎			◎		X	X	X	X	○	◎		X
	.866" to .945" 90°	ø1.000" to ø1.500" *ø25 to ø40mm*	ø.750"-ø1.500" *ø25 - ø32 mm*	→H199	**WAX**40000EW **WAX**40000ELC ***WAX**4000E* ***WAX**4000EL*																					
High–speed Cast Iron	.019" 90°	*ø37 to ø200*	–	FMU	***FMU*** ***FMU–E***	SNEW1203ADTR	8°	2°		◎									X	X	X	◎ (FC)	X	X	X	X
	.118" 15°	*ø80 to ø160*	–	→H201	***RM***	SNGN0903	–5° 45'	–6° 45'	○	◎									X	X	X	◎ (FC)	X	X	X	X
				RM																						
				→H202																						

Selection Guide for Modular Tools

◎: Best ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in / mm)	Shank Dia. (mm)	Series	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Finishing	Application: High Feed	Application: Shoulder Milling	Application: Slot Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material: P General Steel / Cartom Steel / Alloy Steel	Work Material: P Tempered Steel / Die Steel	Work Material: M Stainless Steel	Work Material: K Cast Iron / Ductile Cast Iron	Work Material: N Non-ferrous Metal	Work Material: N Aluminum Alloy	Work Material: S Ti Alloy / Heat-Resistant Alloy	Work Material: H Hardened Steel
	.394" 90°	ø0.750-ø1.500" ø20-ø40mm	ø18 to ø32 mm	WEZ–M Modular  →H206	WEZ20000M WEZ11000M	(For 20000 Type) AOMT11T302PEER-G 	14° to 15°	–7° to –11°	○	◎		◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø1.00-ø1.500" ø25-ø40mm	ø18 to ø32 mm		WEZ30000M WEZ17000M	(For 30000 Type) AOMT170502PEER-G 	–10° to –15°	–4° to –9°																	
Shoulder Milling	.236" 90°	ø20 to ø40 mm	ø18 to ø32 mm	WFX–M Modular  →H208	WFX08000M	SOMT080304PZER-G 	12°	–6°	○	◎		◎	◎						◎	◎	◎	◎	◎	◎	○	
	.394" 90°	ø0.750" to ø1.500" ø16 to ø40mm	ø15 to ø32 mm	WEX–M Modular  →H209	WEX20000M WEX2000M	(For 3000 Type) AXMT170504PEER-G 	14° to 25°	10° to 18°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.551" 90°	ø1.000" to ø1.500" ø25 to ø40mm	ø23 to ø32 mm		WEX30000M WEX3000M		16° to 24°	8° to 15°																		
High Feed	0.059" 75°	ø25 to ø32 mm	ø23 to ø32 mm	WFXH–M Modular  →H211	WFXH08000M	(For 12000 Type) SOMT120308PDER 	6°	–6°			◎	○	○	○					◎	◎	◎	◎	◎	◎	○	
	0.098" 75°	ø40 mm	ø28 to ø32 mm		WFXH12000M		6°	–6°																		
	.039" 70°	ø0.750" to ø1.000" ø16 to ø25mm	ø15 to ø25	MSX–M Modular  →H212	MSX20000M MSX06000M	(For 08000 Type) WDMT0804ZDTR 	8°	–3° to –6°			◎	○	○	○					◎	◎	◎	◎				○
	.059" 70°	ø1.000-ø1.250" ø25 to ø35mm	ø23-ø32 mm		MSX30000M MSX08000M																					
	.079" 70°	ø32-ø40 mm	ø28-ø32 mm		MSX12000M																					
Radius	.157"	ø20-ø32 mm	ø18-ø32 mm	RSX–M Modular  →H213	RSX08000M	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12) 	10°	–8°	◎		○	○	○	◎			◎				◎				◎		
	.197"	ø1.000" to ø1.250" ø25 to ø32mm	ø23 to ø32 mm		RSX30000M RSX10000M RSXF10000M		10°	–5°																		
	.236"	ø1.250" to ø1.500" ø32 to ø40mm	ø28 to ø32 mm		RSX40000M RSX12000M RSXF12000M		10°	–5°																		
	.157"	ø20-ø25 mm	ø18 to ø25	WRCX–M Modular  →H214	WRCX08000M	(For 10000 Type) QPMT10T335PPEN 	–3°	0°	◎		○	○	○	◎				◎		◎	◎	◎	◎		◎	○	○
	.197"	ø25-ø32 mm	ø23 to ø32		WRCX10000M																					
	.236"	ø40 mm	ø28 to ø32		WRCX12000M																					
Chamfering	45°	ø16 mm	ø15-ø16 mm	WFXC–M Modular  →H215	WFXC08000M	(For 08000 Type) SOMT080308PZER-G 	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
		ø25 to ø32 mm	ø23-ø32 mm		WFXC12000M		0°	0°																		
Tangential	.315" 90°	ø0.750" to ø1.500"	ø18 to ø32 mm	TSX–M 	TSXF30000M	(For 08000 Type) LNEX080404PNER–G 	–6° to –3°	–36° to –20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
	.472" 90°	ø1.000" to	ø23 to ø32		TSX40000M	(For 13000 Type) LNEX130604PNER–L 		–31° to																		

Selection Guide for Cast Iron High-feed and Milling Cutters (Special Purpose)

◎: Best ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Face Milling: Finishing	Application: Face Milling: High Feed	Application: Shoulder Milling	Application: Slot Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material: P: General Steel / Carbon Steel / Alloy Steel	Work Material: P: Tempered Steel / Die Steel	Work Material: M: Stainless Steel	Work Material: K: Cast Iron / Ductile Cast Iron	Work Material: N: Non-ferrous Metal	Work Material: N: Aluminum Alloy	Work Material: S: Ti Alloy / Heat-Resistant Alloy	Work Material: H: Hardened Steel
High Feed Cast Iron Machining	1 mm, 89°~89°30'	ø80 to ø315	–	GFX →H222	***GFX(C)*13000**	(For 16000 Type) LNGX160516PNFN–W	–5°	–8°		◎	◎								X	X	X	◎	X	X	X	X
					***GFX*16000**																					
High Feed Cast Iron Machining	.394", 90°	ø80 to ø160	–	GFS →H224	***GFS*13000**	LNGX130508PNFN–W	–3°	–11°		◎	◎	○							X	X	X	◎	X	X	X	X
High Feed Cast Iron Machining	.236", 30°	ø80 to ø315	–	GRHN →H225 & 226	***GRHNF*17000**	HNEF100608DNEN–G	–6°	–6.5° to –5°			◎								X	X	X	◎	X	X	X	X
					***GRHNM*17000**		–6°	–6.5° to –5°																		
Cast Iron Machining		ø3.000" to ø8.000"	-	GFV →H227	**GFV**5000	LNGX16	–5°	–8°	◎	◎									X	X	X	◎	X	X	X	X
Milling Cutters (Special Purpose)	.216", 45°*	ø100 to ø450	–	NRV →H230	***NRV*4000**	SNMN433 SNC535	–5°	–6°			◎								X	X	X	◎	X	X	X	X
	.335", 45°*		–		***NRV*5000**																					
	.275", 25°	ø100 to ø450	–	DPV →H231	***DPV*4000**	SDCN42R (IC=12.70) SDCN53R (IC=15.875)	10°	5°		○	◎								X	X	X	◎	X	X	X	X
	.295", 25°	ø100 to ø450	–		***DPV*5000**		10°	5°																		
	.019", 90°	ø100 to ø450	–	NFV →H232	***NFV*4000**	SNEF43W (IC=12.70) SNEF53W (IC=15.875)	–5°	–6°		◎	◎								X	X	X	◎	X	X	X	X
	.019", 90°	ø100 to ø450	–		***NFV*5000**		–5°	–6°		◎	◎								X	X	X	◎	X		X	X
	.394", 25°	ø200 to ø450	–	APV →H233	***APV*5000**	SDC53R	18°	–2°		◎	◎								X	X	X		◎	○		X

*Use a chamfering tool for chamfering operations.

Indexable Endmill Selection Guide

◎: Best ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in / mm)	Shank Dia. (mm)	Series (inch / metric)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: Face Milling General-purpose	Face Milling Finishing	Face Milling High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Carbon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel
Face Milling	.236" 90°	ø1.000" to ø2.500" ø25 to ø80mm	ø1.0 - 1.25" ø25 - ø42 mm	DFC–E →H107	**DFC**20000EW **DFCM**2000EW **DFC**09000E **DFCM**09000E	XNMU060608PNER–G	–5°	–9°	◎	○		◎	○						◎	◎	○	◎			○	
Shoulder Milling	.394" 90°	ø0.5 - ø1.25" ø14 - ø80mm	ø16 to ø32	WEZ–E →H56	***WEZ**11000E* ***WEZ**11000EL*	AOMT11T302PEER–G	6° to 15°	–7° to –18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø1.00 - ø2.00" ø25 - ø80mm	ø25 to ø42		***WEZ**17000E* ***WEZ**17000EL*		6° to 15°	–6° to –12°																		
	.236" 90°	ø20 to ø63	ø16 to ø32	WFX–E →H94	***WFX**08000E* ***WFXM**08000E*	(For 12000 Type) SOMT120408PDER	12°	–6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎		
	.394" 90°	ø40 to ø80	ø32		***WFX**12000E* ***WFXF**12000E*		8°	–8°																		
	.315" 90°	ø0.625" to ø1.5" ø16 to ø80mm	ø.625 - ø1.25" ø16 - ø32mm	TSX–E →H120	**TSX**30000EW **TSXF**30000EW ***TSX**08000E* ***TSXF**08000E*	(For 08000 Type) LNEX080404PNER–G	–6° to –3°	–36° to –20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
		ø0.750" to ø1.5" ø20 to ø80mm	ø.750 - ø1.25" ø20 - ø32mm																							
	.473" 90°	ø1.0" to ø1.5" ø25 to ø80mm	ø1.0 - ø1.25" ø25 - ø32mm		**TSX**40000EW **TSXF**40000EW ***TSX**13000E* ***TSXM**13000E* ***TSXF**13000E*	(For 13000 Type) LNEX130604PNER–L		–31° to –15°																		
		ø32 to ø80mm	ø1.0"																							
		ø1.25" to ø1.5" ø40 to ø80mm	ø32 mm																							
	.827" to 1.575" 90°	ø20 to ø40mm	ø20 to ø32mm	TSXR–E →H128	***TSXR**08000E*		–6° to –3°	–33° to –18°	○			◎							◎	◎	◎	◎	◎	◎	◎	
	1.614" to 2.362" 90°	ø40 to ø50mm	ø32 to ø42mm		***TSXR**13000E*			–23° to –18°																		
	.236" 90°	ø32 to ø63mm	ø10 to ø20	WEX–E →H74	***WEX**1000E* ***WEX**1000EL*	(For 2000 Type) AXMT123504PEER–G	9° to 17°	7° to 17°																		
	.394" 90°	ø0.500" to ø1.250" ø14 to ø63mm	ø.75 - ø1.25" ø16 - ø32mm		WEX20000EW/EMW WEX20000ELC ***WEX**2000E/EL*		14° to 25°	10° to 18°	○	○		◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.551" 90°	ø1.000" to ø2.000" ø25 to ø63mm	ø1.0 - ø1.25" ø20 - ø42mm		WEX30000EW/EMW WEX30000ELC ***WEX**3000E(–C)* ***WEX**3000ES(–C)* ***WEX**3000EL*		16° to 24°	8° to 15°																		
	18 to 36mm 90°	ø1.000" to ø1.500" ø20 to ø40	ø1.0 - ø1.25" ø20 - ø42	WRX–E →H82	**WRX**20000E ***WRX**2000E*	(For 2000 Type) AXMT123504PEER–G	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	1.06-2.09" 90°	ø2.000" ø40 to ø50	ø1.25" ø32 - ø42		**WRX**30000E ***WRX**3000E*		20° - 22°	12° - 13°																		
High Feed	.039" to .098" 70°	ø0.750" to ø1.500" ø16 to ø63mm	ø16 to ø42	MSX–E →H145	**MSX**20000EW/ELC **MSX**30000EW/ELC **MSX**40000EW/ELC ***MSX**06000E* ***MSX**08000E* ***MSX**12000E*	WDMT0603ZDTR (IC=6.35) WDMT0804ZDTR (IC=8.5) WDMT1204ZDTR (IC=12)	8°	–3° to –8°			◎	○	○	○					◎	◎	◎	◎				○
Multi-Purpose	.669 - 1.378" 90°	ø1.000" to ø1.50" ø20 to ø30mm	ø1.0 - ø1.25" ø20 - ø25 mm	WMM →H147	**WMM**10000M ***WMM**2000E/EL* ***WMM**2000ELH*	APMT103504PDER APMT160508PDER	7° to 11°	15° to 16°	◎			◎	◎	◎		◎	◎		◎	◎	◎	◎	◎	◎	◎	
	1.54" 90°	ø1.500" ø32 to ø40mm	ø1.25 ø32mm		**WMM**16000M ***WMM**3000E/EL* ***WMM**3000ELH*		7° to 11°	17° to 19°																		
Radius	.157"	ø20 to ø25mm	ø20 - ø25mm	RSX–ES →H159	***RSX**08000ES* ***RSXF**08000ES*	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12)	10°	–8°																		
	.197"	ø1.000" to ø1.500" ø25 to ø32mm	ø1.25" ø25 - ø32mm		**RSX**30000EW **RSX**30000ELC ***RSX**10000ES* ***RSXF**10000ES*		10°	–5°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			◎	
	.236"	ø1.250" to ø1.500" ø32mm	ø32		**RSX**40000EW **RSX**40000ELC ***RSX**12000ES* ***RSXF**12000ES*		10°	–5°																		

*Use a chamfering tool for chamfering operations.

Indexable Endmill Selection Guide

◎: Best ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Carbon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Radius	.157"	ø20 to ø25mm	ø20 to ø25	WRCX–E	WRCX08000E	QPMT080330PPEN (IC=8) QPMT10T335PPEN (IC=10) QPMT160660PPEN (IC=16)	–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
	.197"	ø1.000" to ø1.500" ø25 to ø32	ø1.000 - ø1.500" ø25 - ø32mm		WRCX30000E WRCX30000E WRCX10000E		–3°	0°																		
	.315"	ø1.250" to ø1.500" ø40 to ø50	ø1.000 - ø1.500" ø32 mm	→H161	WRCX40000E WRCX40000E WRCX16000E		–3°	0°																		
R / 3D Profiling	.787" to 1.693"	ø0.750" to ø2.000" R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR	WBMR WBMR2000 WBMR2000L	ZNMT1804100–C	–10°	-					◎				◎		◎	◎	◎	◎			○	○
	.0039" to .016"	ø0.500" to ø1.250" R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H168 →H171	WBMF WBMF1000	ZPGU1551050	0°	-					◎				◎	◎	◎	◎	◎	◎				○
T–Slot	.354" to .866" 90°	ø21 to ø50	ø25 to ø32	TSE →H172	TSE	CPMT060204N–US	0°	0°					○						○	○	○					
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC–E	WFXC08000E	(For 12000 Type) SOMT120308PDER	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32	→H175	WFXC12000E																					
	45°	ø7 to ø35	ø32	SMC →H177	SMC	SPMN422	0°	0°							◎				○	○	○	○				
Non-ferrous Metal	.63 - .71" 90°	ø.750" to ø1.500" ø20 to ø40mm	ø.750" - ø1.500" ø20 - ø32 mm	WAX–E	WAX30000EW WAX30000ELC WAX3000E WAX3000EL	(For 4000 Type) AECT220604PEFRA	19° to 25°	6°	○			◎	◎	◎			◎		X	X	X	X	○	◎		X
	.866" to .945" 90°	ø1.000" to ø1.500" ø25 to ø40mm	ø.750" - ø1.500" ø25 - ø32 mm	→H199	WAX40000EW WAX40000ELC WAX4000E WAX4000EL																					

MEMO

Grades for Milling

Work Material	P General Steel (Carbon Steel, Alloy Steel), Mild Steel	M Stainless Steel	K Cast Iron
Classification	Wear Resistance ← → Fracture Resistance	Wear Resistance ← → Fracture Resistance	Wear Resistance ← → Fracture Resistance
	– P01 P10 P20 P30 P40	– M01 M10 M20 M30 M40	– K01 K10 K20 K30
Coated Carbide A26	New ACP2000 New ACP3000 New ACU2500 ACP100 ACP200 ACP300	ACM100 ACM200 ACM300 New ACU2500 ACK300 ACP300	New ACK2000 New ACK3000 New ACU2500 ACK100 ACK200 ACK300
Cermet A29	New T2500A T250A T4500A	New T2500A T250A T4500A	
Carbide A30	A30N	A30N	G10E
Uncoated CBN A32			BN7000 BNS800

Work Material	S Exotic Alloy	H Hardened Steel	N Non-Ferrous Metal
Classification	Wear Resistance ← → Fracture Resistance	Wear Resistance ← → Fracture Resistance	Wear Resistance ← → Fracture Resistance
	– S01 S10 S20 S30 S40	– H01 H10 H20 H30	– N01 N10 N20 N30
Coated Carbide A26	ACM100 ACM200 ACM300 New ACU2500 ACK300		DL1000 New DL2000
Carbide A30	EH520		H1 New H20
Uncoated CBN A32		BN350 BN7000	
PCD A34			DA1000

: 1st Recommended Grade : 2nd Recommended Grade : CVD Coating, : PVD Coating, Blank: Uncoated

Grades for Milling / Characteristic Values

CVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	**ACP100**	89.3	3.1	Super FF Coat	6	· For high-speed machining of steel · Grade emphasizing wear resistance for high-speed machining	AC230
	ACP2000	89.5	3.2	Absotech	10	· For high-speed machining of steel · Stable long tool life with high-speed machining is realized by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
M Stainless Steel	**ACM200**	89.8	3.4	Super FF Coat	6	· For machining high-hardness stainless steel · Adopts newly developed high-strength cemented carbide with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	**ACK100**	92.0	2.4	Super FF Coat	6	· For high-speed cast iron milling · Adopts a high-hardness substrate as a grade with high wear resistance	—
	ACK200	91.7	2.5	Super FF Coat	6	· For high-speed cast iron milling · Adopts a tough carbide substrate as a grade with excellent wear resistance and thermal crack resistance	AC211
	ACK2000	91.7	3.1	Absotech	10	· For high-speed cast iron milling · Stable long tool life with high-speed machining is realized by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200

PVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	**ACU2500**	91.6	3.8	Absotech	3	· General-purpose grade supporting steel, stainless steel, and cast iron machining · Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, providing stable long tool life with various work material grades	—
	ACP200	89.5	3.2	Super ZX Coat	3	· Our 1st recommended grade for steel applications · General-purpose grade with an excellent balance of wear and fracture resistance · Also suitable for machining stainless steel	ACZ330
	ACP300	89.3	3.1	Super ZX Coat	3	· For interrupted machining of steel · Tough grade with an emphasis on fracture resistance · Also suitable for interrupted machining of stainless steel	ACZ350
	ACP3000	89.5	3.2	Absotech	3	· Our 1st recommended grade for interrupted or unstable work holding conditions for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	**ACM100**	91.4	3.3	Super ZX Coat	3	· For high-speed machining of stainless steel · Adopts high-hardness micro-grain carbide substrate and super multi-layered coating to realise outstanding wear resistance	ACZ310
	ACM300	89.8	3.4	Super ZX Coat	3	· Our 1st recommended grade for milling stainless steel · Adopts high-strength carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	—
K Cast Iron	**ACK300**	91.4	3.3	Super ZX Coat	3	· General-purpose grade with an excellent balance of wear and fracture resistance	ACZ310
	ACK3000	91.7	3.1	Absotech	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	**DL1000**	92.9	2.1	AURORA Coat (DLC)	0.5	· For milling non-ferrous metal, utilizing DLC coat with a low coefficient of friction and excellent adhesion resistance	—
	DL2000	91.6	3.8	AURORA Coat (DLC)	0.5	· For milling non-ferrous metal, utilizing DLC coat with a low coefficient of friction and excellent adhesion resistance	—

Cermet

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	**T1500A**	92.0	2.2	—	—	· For finishing of steel and stainless steel · Excellent balance of wear and fracture resistance, achieving excellent machined surface quality over a wide range of cutting conditions	T1200A
	T250A	91.4	2.1	—	—	· For finishing of steel and stainless steel · Tough grade with enhanced crack spread resistance	—
M Stainless Steel	**T2500A**	91.8	2.4	—	—	· For finishing of steel and stainless steel · Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A
	T4500A	91.0	2.3	—	—	· For finishing of steel and stainless steel · Tough grade with excellent fracture resistance and reduced thermal cracking	—

CBN

Classification	Grade	Binder	Carbon Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
K Cast Iron	**BNS800**	Al Alloy	85 to 90	8	39 to 42	0.9 to 1.1	—	—	Grade with 100% solid CBN structure and excellent thermal shock resistance.
	BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade exhibiting wear and fracture resistance in cutting of cast iron and exotic alloys.
	BN500	TiC	65 to 70	6	32 to 34	1.0 to 1.1	—	—	Grade optimized for cast iron cutting. Provides superior wear and fracture resistance.
H Hardened Steel	**BN350**	TiN	60 to 65	1	33 to 35	1.5 to 1.6	—	—	Grade with ultimate cutting edge strength, suitable for heavy interrupted cutting.

Polycrystalline Diamond

Classification	Grade	Binder	Carbon Content (%)	Grain Size (μm)	Hardness HK (GPa)	TRS (GPa)	Features
N Non-Ferrous Metal	**DA1000**	Co	90 to 95	up to 0.5	50 to 60	≈ 2.60	High-density sintered material made of ultra-fine grain diamond that demonstrates optimum wear and fracture resistance and excellent edge sharpness.

Carbide A30 Ceramics A36

Cutter Identification Table

Standard Type

DFC (F) 2 2000 R (S)

(1) (2) (3) (4) (5) (6)

- (1) Cutter Series — Refer to Table 1
- (2) Additional Symbols — Refer to Table 2
- (3) Insert Inscribed Circle Size — Refer to Table 3
- (4) Cutter Diameter — Refer to Table 4
- (5) Feed Direction — Refer to Table 5
- (6) Mounting — Refer to Table 6

Table 1: (1) Cutter Series

Series Code
DFC
DGC
TSX
WGX
WGC
UFO
FPG
EHG
DNX
APG
WRCX
MSX
PWC
PWS
WFX
WEX
WEZ
WRX

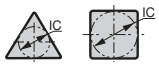
(Table 2) (2) Additional Symbols

Fine-Pitch Indication	
M	Fine pitch
F	Extra Fine Pitch

Table 3 (3) Insert Inscribed Circle Size

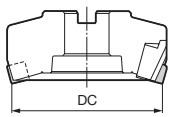
Inch	IC Dimensions (mm)
3	9.525
4	12.70
5	15.875
6	20.0
Millimeter	**IC Dimensions (mm)**
12	12.7
13	13.5
14	14.0
16	16.0
20	20.0

Inscribed Circle Example

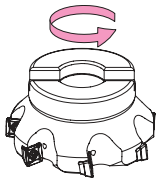
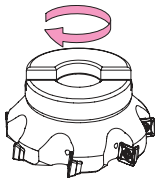


(Table 4) (4) Cutter Diameter

inch & mm



(Table 5) (5) Feed Direction

Left Hand (L)	Right Hand (R)
	

(Table 6) (6) Mounting

Bore Size Dimension	
S	Metric

High Feed Cutter Type

DPV (Z) 4 100 (Q) R

(1) (7) (3) (4) (8) (5)

- (1) Cutter Series: DPV, GRV, GSV, GFX, GFS, NRV, NFV, APV
- (7) 2-Piece Set Indication: Z
- (3) (4) (5): Same as above
- (8) Quick Change Type: Q

Insert Identification Table

(Ex.) **S E M T 13 T3 A G S N-H**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Insert Shape Refer to Table 1	(2) Relief Angle Refer to Table 2	(3) Tolerance Refer to Table 3	(4) Insert Hole Refer to Table 4	(5) Cutting Edge Length Refer to Table 5	(6) Thickness Refer to Table 6	(7) Cutting Edge Angle Refer to Table 7	(8) Wiper Edge Relief Angle Refer to Table 8	(9) Edge Treatment Refer to Table 9	(10) Feed Direction Refer to Table 10	(11) Additional Information Refer to Table 11

Table 1: (1) Insert Shape

Symbol	Insert Shape	Angle
A	Parallelogram Type	85°
H	Trigon Type	120°
L	Rectangular Type	90°
O	Octagonal Type	135°
P	Pentagonal Type	108°
R	Round Type	-
S	Square Type	90°
T	Triangular Type	60°
Q	Special	-
X	Special	-

Table 2: (2) Relief Angle

Symbol	Relief Angle
N	0°
A	3°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°
G	30°
O	Special

Table 3: (3) Tolerance (mm)

Symbol	Inscribed Circle (mm)	Thickness (mm)
A	±0.025	±0.025
C	±0.025	±0.025
E	±0.025	±0.025
K	±0.05 to ±0.15	±0.025
M	±0.05 to ±0.15	±0.13

Table 4: (4) Insert Hole

Symbol	Shape (Cross Section)
W	
M	
R	
N	
T	

Table 5: (5) Cutting Edge Length

Shape	Cutting Edge Length (L)
S	
T	
R	
H	
A	
O	

Table 6: (6) Thickness

Symbol	Thickness (mm)
02	2.38
03	3.18
T3	3.97
04	4.76
06	6.35

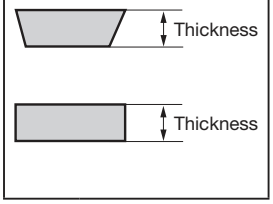


Table 7: (7) Cutting Edge Angle

Symbol	Cutting edge angle
A	45°
D	60°
E	75°
F	85°
H	87°
P	90°
Z	Special

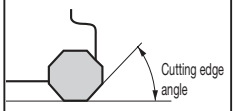


Table 8 (8) Wiper Edge Relief Angle

Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
Z	Special



Table 9: (9) Edge Treatment

Symbol	Shape
F	 Sharp Edge
E	 Round Honing
T	 Negative Land
S	 Negative Land + Round Honing

Table 10 (10) Feed Direction

Symbol	Feed Direction
N	No
R	Right Hand
L	Left Hand

Table 11 (11) Additional Information (Ex.)

Symbol	Code Description
A	Sharp Edge
H	Strong Edge
W	Large Edge Treatment
S	For WBMR Insert Main Blade

* Exceptions

The above table does not apply to the following insert codes: SPCH42TR, SPCH42R, SPCH53TR, SPCH53R, SDKN42MT, SDKN42M, SDKN53MT, SDKN53M, SEKN42MT, SEKN42M, SEKN53MT and SEKN53M.

For example,

· although "H" and "K" indicate precision tolerances, the main cutting edges have general precision.

· "M" in this instance represents the Neutral Hand insert.

· "T" in this instance represents negative land edge treatment.

· "R" indicates the feed direction (right hand).



■ General Features

SEC-WaveMill WGX Type employs a unique chipbreaker design to provide lower resistance and higher-quality finished surface roughness than conventional tools.
Lineup of insert grades and chipbreakers has been significantly expanded, and employment of the ACM series enables machining of stainless steel and exotic alloys.

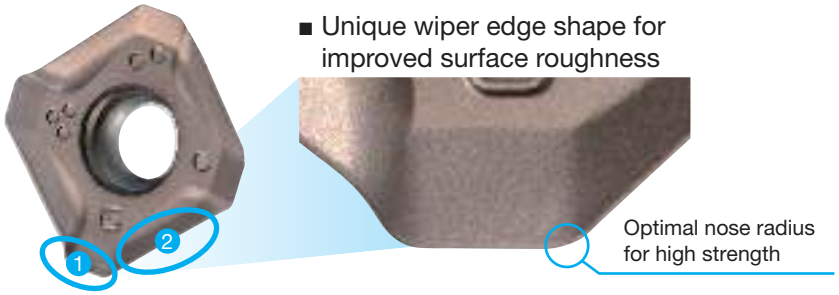


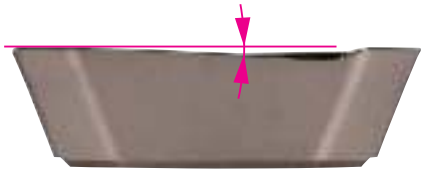
■ Features

- Reduced Cutting Force
  - · High-rake chipbreaker designed for use with the WGX type achieves low resistance
- High Quality
  - · Improved runout precision and unique wiper edge shape ensure excellent surface finish quality
  - · Addition of chamfer reduces burrs and edge chipping
- New Grade Coating
  - · Features high-precision technology that reduces insert runout variation and a new coating to provide long, stable tool life
  - · The new ACM200 and ACM300 grades for stainless steel/exotic alloy machining further expand the range of applications

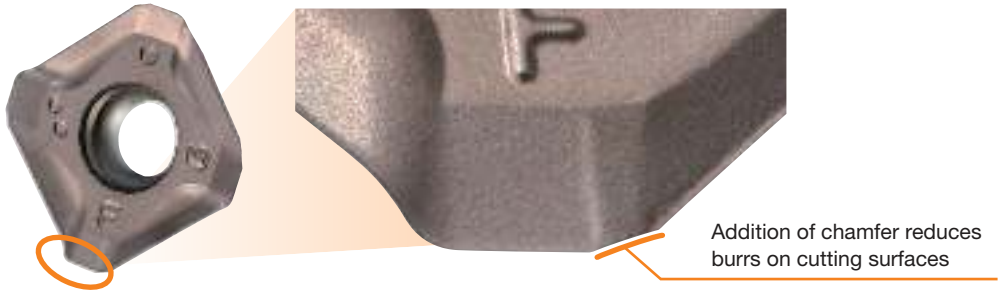
■ Insert Shape Features

- General-purpose G Type Chipbreaker





- FG Type Chipbreaker with Low-Burr Design

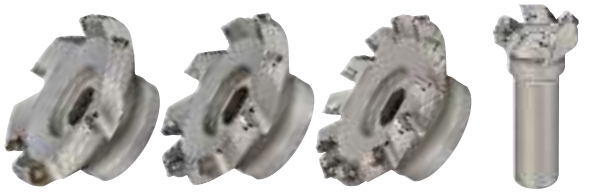


■ Product Range

Type	**Inch Type**	Cutter Dia.	Number of Teeth	Mounting
Standard Pitch	WGX4000R	ø2.0" to ø10.0"	3 to 10	Inch
Fine pitch	WGXM4000R	ø2.0" to ø8.0"	4 to 12	Inch
Extra Fine Pitch	WGXF4000R	ø2.0" to ø8.0"	5 to 20	Inch
Endmill Type	WGX4000EW	ø2.0" to ø2.5"	4 to 5	Inch

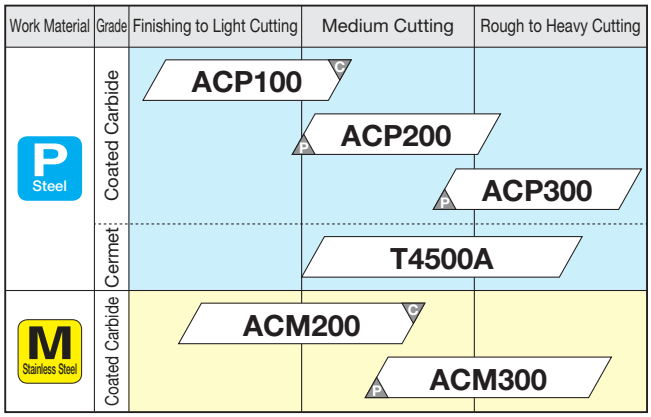
Type	**Metric Type**	Cutter Dia.	Number of Teeth	Mounting
Standard Pitch	WGX13000R(S)	ø40 to ø250	3 to 10	Inch/Metric
Fine pitch	WGXM13000R(S)	ø50 to ø250	4 to 14	Inch/Metric
Extra Fine Pitch	WGXF13000R(S)	ø50 to ø250	5 to 24	Inch/Metric
Endmill Type	WGX13000EW	ø32 to ø63	3 to 5	Metric

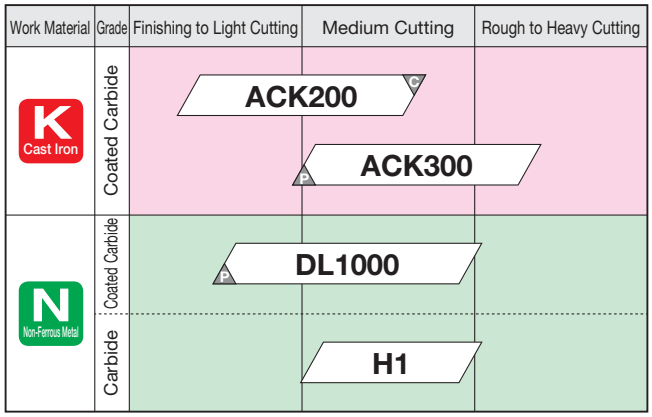
Sizes of ø125mm and below have a coolant hole



WGX4000R WGX13000R(S)	WGXM4000R WGXM13000R(S)	WGXF4000R WGXF13000R(S)	WGX4000EW WGX13000EW
Standard Pitch	Fine Pitch	Extra Fine Pitch	Endmill Type

■ Grade Application Range





The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD, P: PVD, Blank: Uncoated

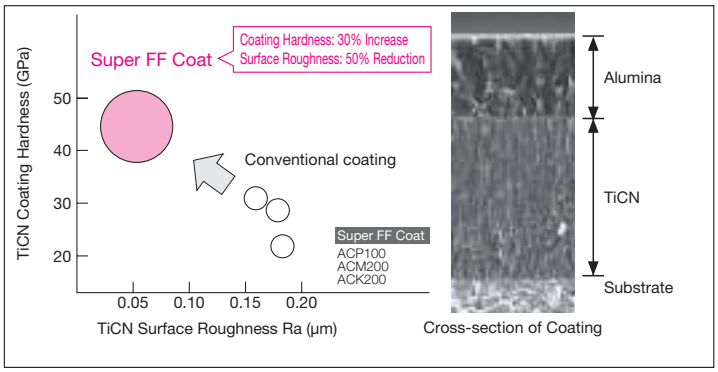
■ Coating Features

C Super FF Coat (CVD: Chemical Vapor Deposition)

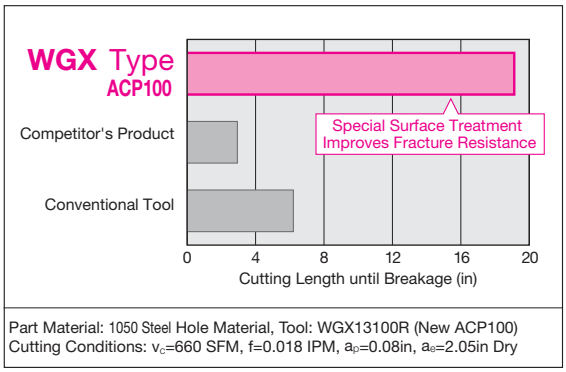
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology.

- Achieves excellent chipping resistance with smooth coating and our coating stress control technology.
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer.
- Achieves more than double the tool life of conventional tools under the same cutting conditions.

Characteristics of the Coating Layer



Fracture Resistance



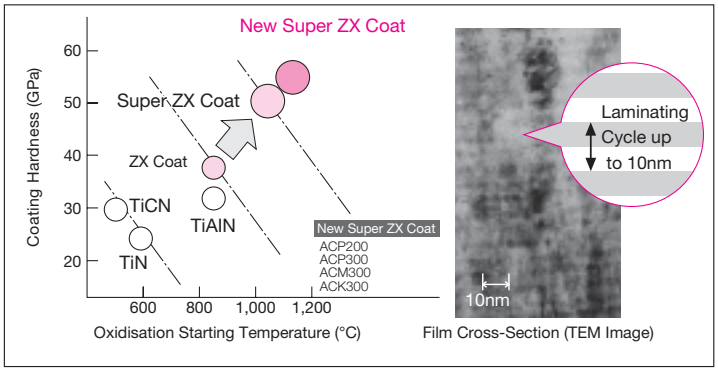
Part Material: 1050 Steel Hole Material, Tool: WGX13100R (New ACP100)
Cutting Conditions: v_c=660 SFM, f=0.018 IPM, a_p=0.08in, a_e=2.05in Dry

P New Super ZX Coat (PVD: Physical Vapor Deposition)

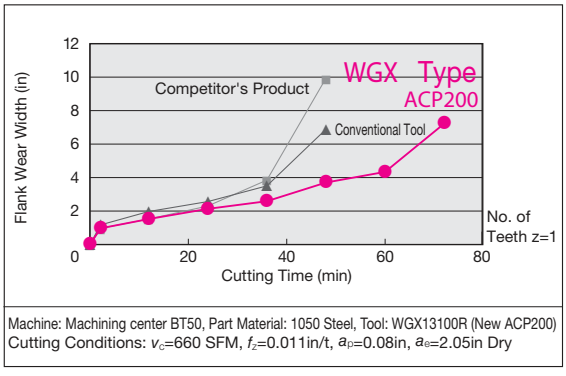
Employs our super multi-layered New Super ZX Coat, which utilizes our proprietary thin-layer coating technology and advanced nanotechnology. The coating consists of thousands of alternating, nanometer-thin (1 nanometer=1 billionth of a meter) layers.

- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidization starting temperature has been increased by 200°C.
- Enables more than 1.5 times the machining speed and efficiency of conventional tools.
- Achieves more than double the tool life of conventional tools under the same cutting conditions.

Characteristics of the Coating Layer

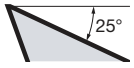
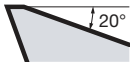
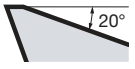
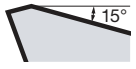


Wear Resistance

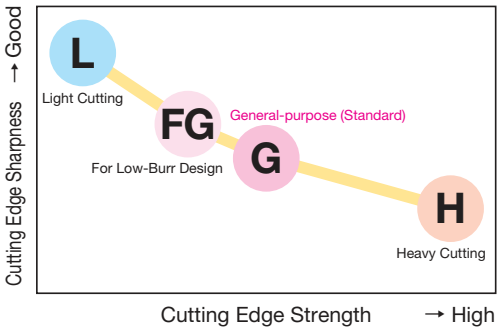


Machine: Machining center BT50, Part Material: 1050 Steel, Tool: WGX13100R (New ACP200)
Cutting Conditions: v_c=660 SFM, f_z=0.011in/t, a_p=0.08in, a_e=2.05in Dry

■ Chipbreaker Selection

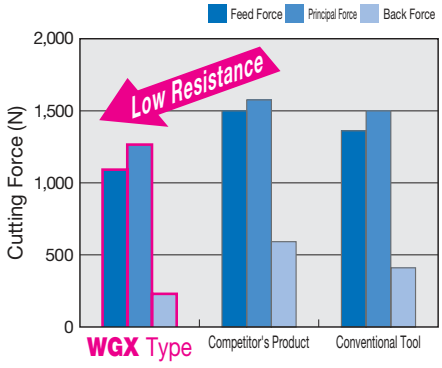
Work Material	P M K S N	P M K S	P K
Chipbreaker	L Type	FG Type	G Type	H Type	W Type
Appearance					
Cutting Edge Cross Section					
Features	Low Resistance	Standard / With Wiper Edge	Standard	High Strength	Wiper
Applications	Light Cutting	General-purpose / Burr Prevention	General-purpose	Heavy Cutting	Finishing Surface Roughness Emphasised

■ Chipbreaker Selection Guide



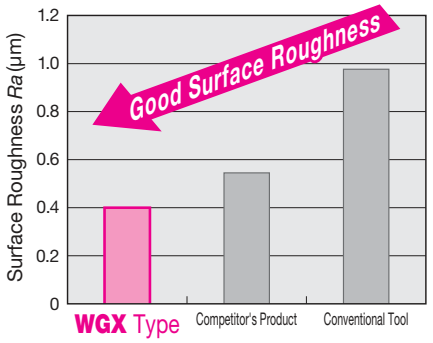
■ General-purpose G Type Chipbreaker

● Comparison of Cutting Force



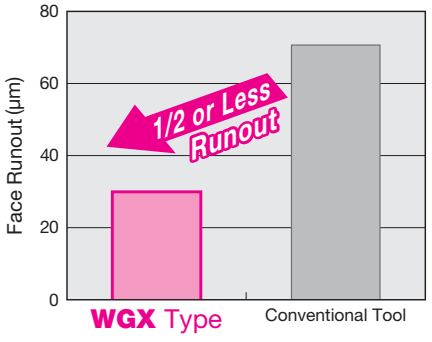
Work Material: 1050 Steel, Tool: ø100
Cutting Conditions: v_c=660 SFM, f_z=0.008 IPT, a_p=0.12in

● Finishing Surface Roughness Comparison



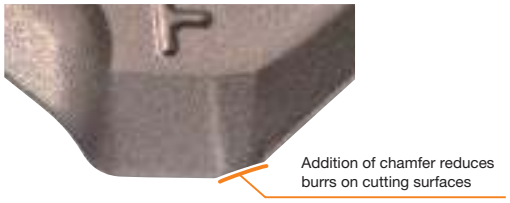
Work Material: 1050 Steel, Tool: ø100
Cutting Conditions: v_c=660 SFM, f_z=0.008 IPT, a_p=0.12in

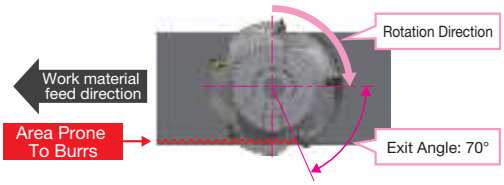
● Runout with Insert Attached



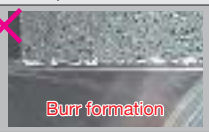
Tool: WGXM13100R (ø100)
Number of Teeth: 7

■ FG Type Chipbreaker with Low-Burr Design





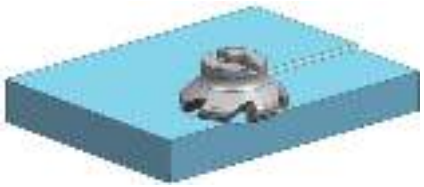
● Machined Surface Comparison

Work Material	FG Type	G Type	Conventional Tool	Competitor's Product
1050	○ 	○ 	○ 	×  Burr formation
304	○ 	○ 	×  Burr formation	×  Burr formation
4140	○ 	×  Burr formation	×  Burr formation	×  Burr formation

Machine: Machining Center BT50, Tool: WGX13100R (ø100), Insert Grade: ACP200
Cutting Conditions: v_c=660 SFM, f_z=0.008 IPT, a_p=0.12in, a_e=3.15in Dry

■ Application Examples

● 4130 Block Material

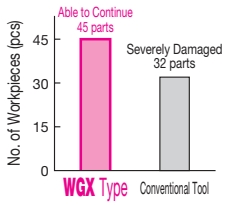


Surface roughness greatly improved compared to competitors' products.
Superior sharpness and reduced cutting force. Stable cutting can be performed with a low cutting load.

Tool: WGX13125R (ø125) Insert: SEMT13T3AGSR-G (ACP200)
Cutting Conditions: v_c=720 SFM, f_z=0.01 IPT, a_p=0.08", a_e=5.0" Dry

● ST-52 Pipe Steel

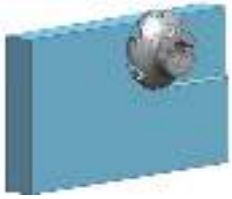




The conventional tool suffered severe damages after 32 parts,
while the WGX Type only had minor wear after 45 parts and was able to continue.

Tool: WGXM13125R (ø125) Insert: SEMT13T3AGSR-G (ACP200)
Cutting Conditions: v_c=984 SFMn, f_z=0.005 IPT, a_p=0.16", a_e=4.0" Wet

● A36 Machine Components



For low-rigidity machines, chattering occurred with conventional tools,
but the WGX Type reduces chattering, as well as the occurrence of exit burrs.

Tool: WGX13125R (ø125) Insert: SEMT13T3AGSR-FG (ACP200)
Cutting Conditions: v_c=660 SFM, f_z=0.008 IPT, a_p=0.04", a_e=4.0" Wet

● 4140 Machine Components



In heavy interrupted cutting of pocketed plates, the WGX Type achieves a longer tool life
with no breakages and a more favourable surface roughness than our competitors' products.

Tool: WGX13080R (ø80) Insert: SEMT13T3AGSR-H (ACP200)
Cutting Conditions: v_c=660 SFM, f_z=0.006 IPT, a_p=0.12" Dry

● 304 Stainless Machine Components

Cutting Distance: 27ft | Cutting Distance: 12ft



WGX Type | WGX Type | Competitor's Product

PVD coating, which has high hardness and excellent oxidation resistance,
provides stable tool wear and a tool life that is over twice as long as that of our competitors.

Tool
Cutter: WGX13100RS (ø100)
Insert: SEMT13T3AGSR-G (ACM300)
Cutting Conditions: v_c=492 SFM
f_z=0.006 IPT
a_p=0.08"
a_e=0.8in Dry

● 17-4PH Machine Components

Cutting Distance: 50ft | Cutting Distance: 25ft

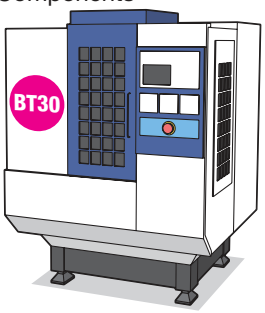


WGX Type | WGX Type | Competitor's Product

The high wear resistance of CVD coating provides stable tool wear and
at least double the tool life of our competitors' products.

Tool
Cutter: WGX13100RS (ø100)
Insert: SEMT13T3AGSR-G (ACM200)
Cutting Conditions: v_c=492 SFM
f_z=0.004 IPT
a_p=0.04"
a_e=3.0in Dry

● 1050 Machine Components



Stable cutting is achieved even with compact machines.

Comparison of Cutting Force

	Cutting Width a_e			
	0.4in	0.8in	0.12in	0.16in
WGX Type	○	○	○	○
Competitor's Product	○	○	Spindle stoppage	Spindle stoppage

Machine: Machining center BT30
Tool: WGX13063RS (ø63) Insert: SEMT13T3AGSR-L (ACP200)
Cutting Conditions: v_c=984 SFM, f_z=0.004 IPT, a_p=0.16" Dry

WGX Shellmill Inch Type

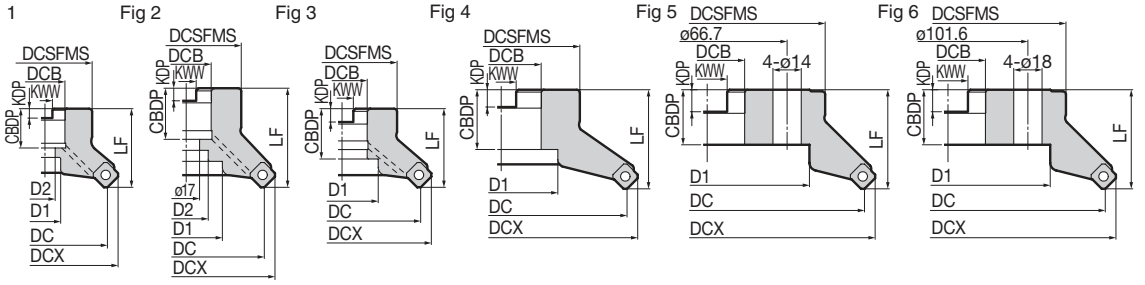
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	–20° to –24°
	Axial	20° to 22°

.236" 45°



Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6



Body (Standard Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	**WGX42000R**	●	**2.000**	2.461	1.500	1.750	**.750**	.312	.190	.750	.609	.406	3	.9	1
	WGX42500R	●	**2.500**	3.008	1.750	1.750	**1.000**	.375	.220	.750	.797	.531	4	1.3	1
	WGX43000R	●	**3.000**	3.504	2.250	1.750	**1.000**	.375	.220	.750	.787	.531	4	2.2	1
	WGX44000R	●	**4.000**	4.500	2.870	2.000	**1.250**	.500	.280	.750	1.000	1.000	5	3.5	2
	WGX44000R-1.50	●	**4.000**	4.500	3.750	2.500	**1.500**	.625	.380	1.000	2.000	1.181	5	4.5	2
	WGX45000R	●	**5.000**	5.496	3.750	2.500	**1.500**	.625	.380	1.000	2.000	0.781	6	7.2	1
	WGX46000R	●	**6.000**	6.496	4.380	2.500	**1.500**	.625	.380	1.060	2.000	-	7	9.5	4
	WGX48000R	●	**8.000**	8.496	5.906	2.500	**2.500**	1.000	.560	1.594	5.118	-	8	15.6	6
	WGX410000R	●	**10.000**	10.492	7.480	2.756	**2.500**	1.000	.531	1.575	6.299	-	10	23.5	6

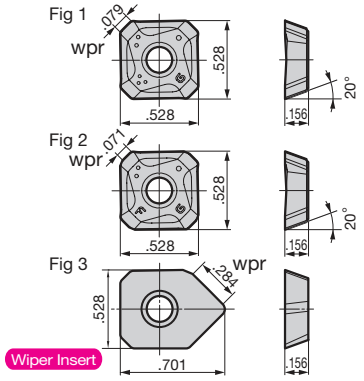
Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø6.000" and above do not have coolant holes.

● USA stocked item

Insert

Dimensions (inch/ *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N	P		
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L									●	●		Light Cutting (Non-Ferrous)	-	1
SEET13T3AGSR-L		●	●	●	●	●	●	●			●	Light Cutting	-	1
SEET13T3AGSR-G		●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L		●	●	●	●	●	●	●				Light Cutting	-	1
SEMT13T3AGSR-G		●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H		●	●	●	●	●	●	●				Heavy Cutting	-	1
SEMT13T3AGSR-FG		●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR			●			●					●	Wiper Insert	.284" / *7.2*	3
XEEW13T3AGER-WR			★			★					★	Wiper Insert	.284" / *7.2*	3

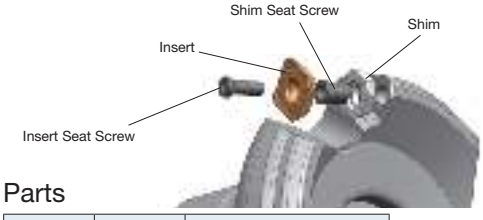


The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Identification Code

WGX 4 2000 R

Cutter Series | Insert Series | Cutter Dia. 2.000" | Feed Direction



Parts

Shim	Shim Screw	Insert Screw	
WGCS13R	BW0507F	BFTX03512IP	3.0 N·m

Wrench	Wrench (For Shims)	Anti-seize Cream
TRDR15IP	LH035	SUMI-P

Note The cutting conditions to the right are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WGX Recommended Cutting Conditions

	Material	Hardness	Grade	Depth of Cut .002 -.050	Depth of Cut .050 - .125	Depth of Cut .125 & over	Feed per Tooth
P	Low and Medium Carbon Steels	<250 Bhn	ACP100	775-1300	725-1250	675-1200	.006-.015
			ACP200	725-1200	675-1150	600-1125	.006-.015
			ACP300	675-1075	650-1025	525-925	.006-.015
	Medium Carbon Alloy Steels	<250 Bhn	ACP100	600-975	575-950	550-900	.006-.015
			ACP200	550-900	525-900	500-875	.006-.015
			ACP300	525-875	500-825	475-800	.006-.015
	Medium-High Carbon Steels	<250 Bhn	ACP100	600-975	575-950	550-900	.006-.015
			ACP200	575-950	550-925	500-875	.006-.015
			ACP300	550-925	525-900	525-850	.006-.015
	Free Machining Steels and Alloys	<250 Bhn	ACP100	775-1300	700-1250	675-1200	.006-.015
			ACP200	750-1275	675-1225	650-1150	.006-.015
			ACP300	675-1075	650-1050	650-1025	.006-.015
	Tool Steels	<250 Bhn	ACP100	475-820	450-790	425-750	.006-.012
			ACP200	450-800	435-775	400-725	.006-.012
			ACP300	435-785	425-760	400-715	.006-.012
		Bhn 220 - 350	ACP100	425-775	400-735	400-700	.004-.012
			ACP200	415-750	400-725	375-690	.004-.012
			ACP300	405-700	410-690	375-680	.004-.012
		>33 Hrc	ACP100	325-650	300-630	300-590	.004-.012
			ACP200	315-640	300-625	300-580	.004-.012
M	Martensitic and Ferritic Stainless Steels	<250 Bhn	ACM300	535-850	520-820	275-800	.004-.012
			ACM300	525-825	515-800	250-775	.004-.012
		>250 Bhn	ACM200	350-800	325-775	300-750	.004-.012
			ACM300	300-750	275-725	250-700	.004-.012
	Austenitic and Precipitation Hardending Stainless Steels	<250 Bhn	ACM300	500-740	475-720	450-675	.004-.012
		>250Bhn	ACM200	250-750	225-725	200-700	.004-.012
K	Grey Cast Iron	>250 Bhn	ACK200	600-950	525-825	490-800	.004-.012
			ACK300	500-850	475-775	450-750	.004-.012
		<250 Bhn	ACK200	700-1050	625-925	590-900	.004-.015
			ACK300	600-950	575-875	550-850	.004-.015
	Ductile Iron	>250 Bhn	ACK200	600-925	550-875	490-800	.004-.012
			ACK300	550-825	500-775	450-750	.004-.012
S	Exotic Alloys: Inconel, Hastalloy, Waspalloy, etc.	>300Bhn	ACM200	125-550	110-500	95-450	.004-.010
			ACM300	100-160	70-150	60-135	.004-.010
N	Non-Ferrous Material		H1 / DL1000	1000-4000	1000-4000	1000-4000	.006-.015

WGXM Shellmill Inch Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	–20° to –24°
	Axial	20° to 22°

.236" 45°



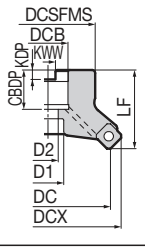
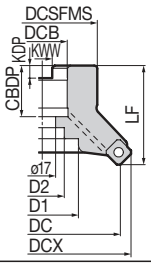
Fig 1


Fig 2


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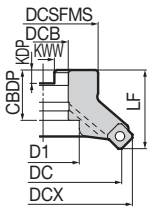

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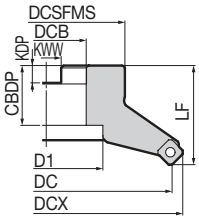

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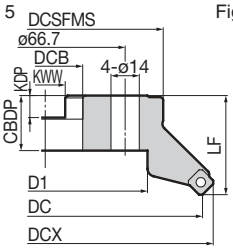
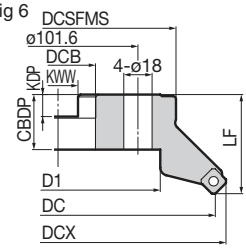


Fig 6


Body (Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**WGXM42000R**	●	**2.000**	2.461	1.500	1.750	**.750**	.312	.190	.750	.609	.406	4	0.9	1
	WGXM42500R	●	**2.500**	3.008	1.750	1.750	**1.000**	.375	.220	.750	.797	.531	5	1.9	1
	WGXM43000R	●	**3.000**	3.504	2.250	1.750	**1.000**	.375	.220	.750	.787	.531	6	3.1	1
	WGXM44000R	●	**4.000**	4.500	2.870	2.000	**1.250**	.500	.280	.750	1.000	1.000	7	4.8	2
	WGXM44000R-1.50	●	**4.000**	4.500	3.750	2.500	**1.500**	.625	.380	1.000	2.000	1.181	7	5.5	2
	WGXM45000R	●	**5.000**	5.496	3.750	2.500	**1.500**	.625	.380	1.000	2.000	0.781	8	7.2	1
	WGXM46000R	●	**6.000**	6.496	4.380	2.500	**1.500**	0.625	.380	1.060	2.000	-	10	9.5	4
	WGXM48000R	●	**8.000**	8.496	5.906	2.500	**2.500**	1.000	.560	1.594	5.118	-	12	15.6	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø6.000" and above do not have coolant holes.

● USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light	P			K		MS		KN	N				
	General-purpose		PM	PM	K		MS	MS		N	P			
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L									●	●		Light Cutting (For Non-Ferrous Metals)	-	1
SEET13T3AGSR-L		●	●	●	●	●	●	●			●	Light Cutting	-	1
SEET13T3AGSR-G		●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L		●	●	●	●	●	●	●				Light Cutting	-	1
SEMT13T3AGSR-G		●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H		●	●	●	●	●	●	●				Heavy Cutting	-	1
SEMT13T3AGSR-FG		●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR			●			●					●	Wiper Insert	.284" / *7.2*	3
XEEW13T3AGER-WR			★			★					★	Wiper Insert	.284" / *7.2*	3

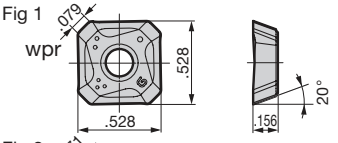
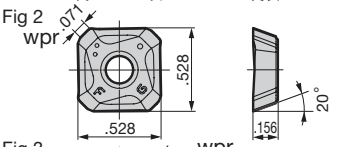
Fig 1


Fig 2


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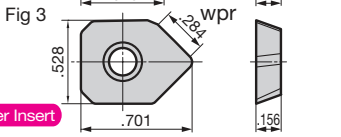
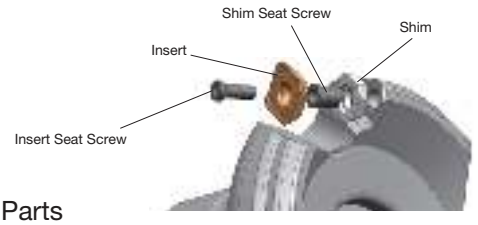


Wiper Insert

The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.

Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Identification Code

WGX **M** **4** **2000** **R**

WGX	M	4	2000	R
Cutter Series	Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seize Cream
WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

See Page H20 for Cutting Condition Recommendations

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WGXF Shellmill Inch Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	–20° to –24°
	Axial	20° to 22°

.236" 45°



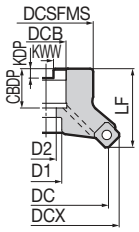
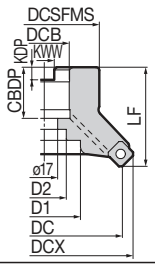
Fig 1


Fig 2


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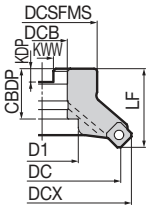

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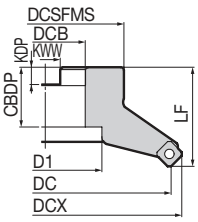


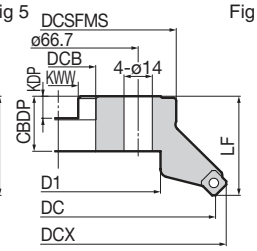
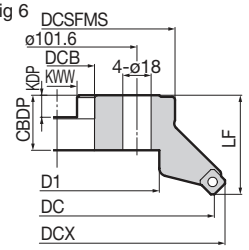
Fig 5


Fig 6


Body (Extra Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	**WGXF42000R**	●	**2.000**	2.461	1.500	1.750	**0.750**	.312	.190	.750	.609	.406	5	0.9	1
	WGXF42500R	●	**2.500**	3.008	1.750	1.750	**1.000**	.375	.220	.750	.797	.531	6	1.5	1
	WGXF43000R	●	**3.000**	3.504	2.250	1.750	**1.000**	.375	.220	.750	.787	.531	8	3.1	1
	WGXF44000R	●	**4.000**	4.500	2.870	2.000	**1.250**	.500	.280	.750	1.000	1.000	10	4.7	2
	WGXF44000R-1.50	●	**4.000**	4.500	3.750	2.500	**1.500**	.625	.380	1.000	2.000	1.181	10	6.5	2
	WGXF45000R	●	**5.000**	5.496	3.750	2.500	**1.500**	.625	.380	1.000	2.000	0.781	12	8.2	1
	WGXF46000R	●	**6.000**	6.496	4.380	2.500	**1.500**	.625	.380	1.060	2.000	-	16	10.5	4
	WGXF48000R	●	**8.000**	8.496	5.906	2.500	**2.500**	1.000	.560	1.594	5.118	-	20	15.2	6

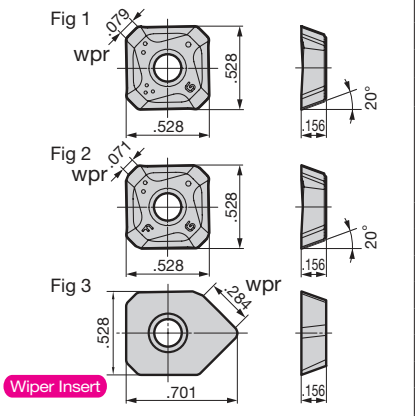
Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø6.000" and above do not have coolant holes.

● USA stocked item

Insert

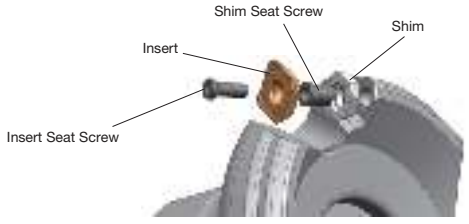
Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N	P		
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L									●	●		Light Cutting (For Non-Ferrous Metals)	-	1
SEET13T3AGSR-L		●	●	●	●	●	●	●			●	Light Cutting	-	1
SEET13T3AGSR-G		●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L		●	●	●	●	●	●	●				Light Cutting	-	1
SEMT13T3AGSR-G		●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H		●	●	●	●	●	●	●				Heavy Cutting	-	1
SEMT13T3AGSR-FG		●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR			●			●					●	Wiper Insert	.284" / *7.2*	3
XEEW13T3AGER-WR			★			★					★	Wiper Insert	.284" / *7.2*	3



The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.

Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Identification Code - Inch

WGX	F	4	2000	R
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seize Cream
WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P

See Page H20 for Cutting Condition Recommendations

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WGX Endmill Inch Type

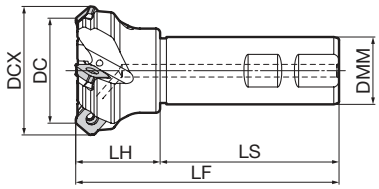
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	–20° to –24°
	Axial	20° to 22°

.236" 45°

Fig 1





Body (Shank Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
Inch	**WGX42000EW**	●	**2.000**	2.461	1.250	1.591	2.379	3.970	4	1
	WGX42500EW	●	**2.500**	3.008	1.250	1.591	2.379	3.970	5	1

Inserts are sold separately. ø32 mm size does not have seats.

● USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N	P		
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L									●	●		Light Cutting (For Non-Ferrous Metals)	-	1
SEET13T3AGSR-L		●	●	●	●	●	●	●			●	Light Cutting	-	1
SEET13T3AGSR-G		●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L		●	●	●	●	●	●	●				Light Cutting	-	1
SEMT13T3AGSR-G		●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H		●	●	●	●	●	●	●				Heavy Cutting	-	1
SEMT13T3AGSR-FG		●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR			●			●					●	Wiper Insert	.284" / *7.2*	3
XEEW13T3AGER-WR			★			★					★	Wiper Insert	.284" / *7.2*	3

Fig 1

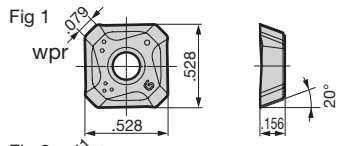


Fig 2

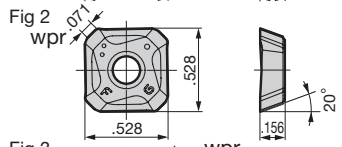
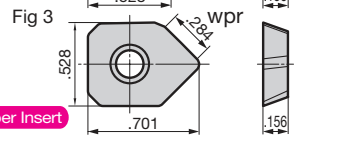


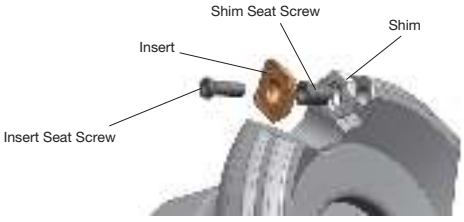
Fig 3



Wiper Insert

The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.

Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Identification Code - Inch

WGX 4 2000 EW

Cutter Series | Insert Series | Cutter Dia. | Endmill Type

Parts

Applicable Cutter	Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seize Cream
Other than those below WGX13000EW Type	WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P
WGX13032EW Type	-	-	BFTX03512IP	N·m 3.0	TRDR15IP	-	SUMI-P

See Page H20 for Cutting Condition Recommendations

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Rake Angle	
Radial	–20° to –24°
Axial	20° to 22°

6mm 45° | .236" 45°



Fig 1 DCSFMS, DCB, KDP, KWW, CBDP, LF, D2, D1, DC, DCX

Fig 2 DCSFMS, DCB, KDP, KWW, CBDP, LF, ø17, D2, D1, DC, DCX

Fig 3 DCSFMS, DCB, KDP, KWW, CBDP, LF, D1, DC, DCX

Fig 4 DCSFMS, DCB, KDP, KWW, CBDP, LF, D1, DC, DCX

Fig 5 DCSFMS ø66.7, DCB, KDP, KWW, 4-ø14, CBDP, LF, D1, DC, DCX

Fig 6 DCSFMS ø101.6, DCB, KDP, KWW, 4-ø18, CBDP, LF, D1, DC, DCX

Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGX13040RS**	★	*40*	*52*	*32*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	3	*0.3*	1
	WGX13050RS	★	*50*	*62*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	3	*0.4*	1
	WGX13063RS	★	*63*	*76*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.6*	1
	WGX13080RS	★	**80*	*93*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*13.5*	4	*1.2*	1
	WGX13100RS	★	*100*	*113*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	5	*1.6*	3
	WGX13125RS	★	*125*	*138*	*80*	*63*	*40*	*16.4*	*9.5*	*29*	*52*	*29*	6	*2.8*	1
	WGX13160RS	★	*160*	*173*	*130*	*63*	*40*	*16.4*	*9.5*	*29*	*88*	-	7	*4.5*	5
	WGX13200RS	★	*200*	*213*	*150*	*63*	*60*	*25.7*	*14*	*35*	*130*	-	8	*7.1*	6
	WGX13250RS	★	*250*	*263*	*190*	*63*	*60*	*25.7*	*14*	*35*	*160*	-	10	*11.2*	6
	WGX13080R	★	**80*	*93*	*60*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*13*	4	*1.2*	1
	WGX13100R	★	**100*	*113*	*70*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	5	*2.3*	2
	WGX13125R	★	*125*	*138*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	6	*2.9*	1
	WGX13160R	★	*160*	*173*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	7	*4.5*	4
	WGX13200R	★	*200*	*213*	*150*	*63*	*47.625*	*25.4*	*14*	*35*	*130*	-	8	*7.1*	6
	WGX13250R	★	*250*	*263*	*190*	*63*	*47.625*	*25.4*	*14*	*35*	*150*	-	10	*11.2*	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø160 mm and above do not have coolant holes.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		M S		K N	N	
	General-purpose		P M	P M	K		M S	M S		N	P
	Roughing		P M	P M		K		M S			

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L								●	●		Light Cutting (For Non-Ferrous Metals)	-	1
SEET13T3AGSR-L	●	●	●	●	●	●	●			●	Light Cutting	-	1
SEET13T3AGSR-G	●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L	●	●	●	●	●	●	●				Light Cutting	-	1
SEMT13T3AGSR-G	●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H	●	●	●	●	●	●	●				Heavy Cutting	-	1
SEMT13T3AGSR-FG	●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR		●			●					●	Wiper Insert	.284" / *7.2*	3
XEEW13T3AGER-WR		★			★					★	Wiper Insert	.284" / *7.2*	3

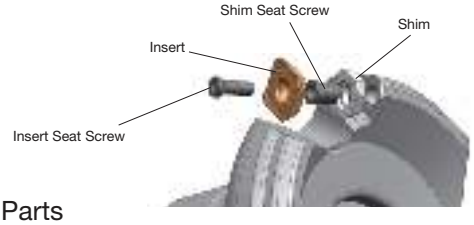
Fig 1 wpr .079, .528, .528, .156, 20°

Fig 2 wpr .071, .528, .528, .156, 20°

Fig 3 wpr .284, .528, .701, .156

Wiper Insert

The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Identification Code

WGX 13 040 R S

WGX	13	040	R	S
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seize Cream
WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P

Recommended Cutting Conditions

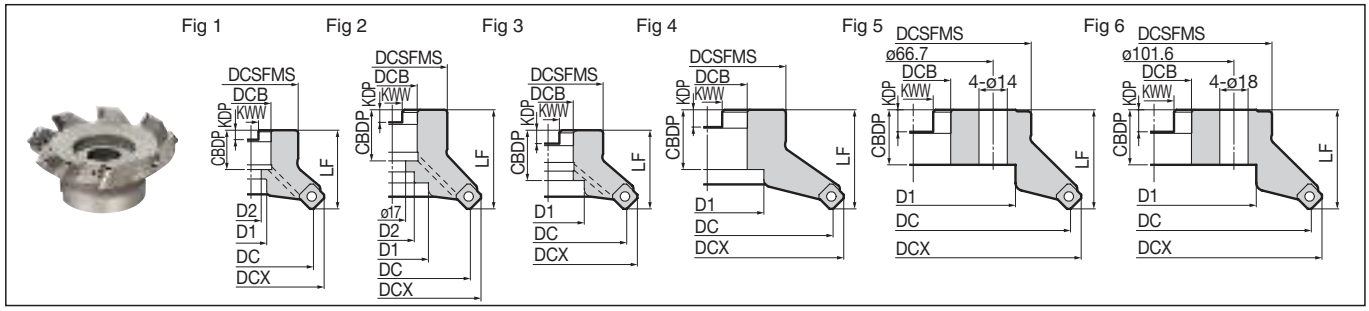
ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	–	160-**210**-250	0.15-**0.23**-0.30	ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	–	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	–	30- **50** -80	0.10-**0.20**-0.30	ACM300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

Rake Angle	
Radial	–20° to –24°
Axial	20° to 22°

6mm 45° .236" 45°



Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGXM13050RS**	★	*50*	*62*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.4*	1
	WGXM13063RS	★	*63*	*77*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.6*	1
	WGXM13080RS	★	**80*	*94*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*13.5*	6	*1.1*	1
	WGXM13100RS	★	*100*	*114*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	7	*1.6*	3
	WGXM13125RS	★	*125*	*139*	*80*	*63*	*40*	*16.4*	*9.5*	*29*	*52*	*29*	8	*2.8*	1
	WGXM13160RS	★	*160*	*174*	*130*	*63*	*40*	*16.4*	*9.5*	*29*	*88*	-	10	*4.5*	5
	WGXM13200RS	★	*200*	*214*	*150*	*63*	*60*	*25.7*	*14*	*35*	*130*	-	12	*7.0*	6
	WGXM13250RS	★	*250*	*264*	*190*	*63*	*60*	*25.7*	*14*	*35*	*160*	-	14	*11.1*	6
	WGXM13080R	★	**80*	*94*	*60*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*13*	6	*1.1*	1
	WGXM13100R	★	**100*	*114*	*70*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	7	*2.2*	2
	WGXM13125R	★	*125*	*139*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	8	*2.9*	1
	WGXM13160R	★	*160*	*174*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	10	*4.5*	4
	WGXM13200R	★	*200*	*214*	*150*	*63*	*47.625*	*25.4*	*14*	*35*	*130*	-	12	*7.0*	6
	WGXM13250R	★	*250*	*264*	*190*	*63*	*47.625*	*25.4*	*14*	*35*	*150*	-	14	*11.1*	6

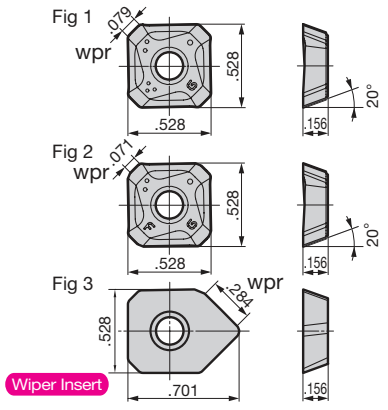
Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø160 mm and above do not have coolant holes.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

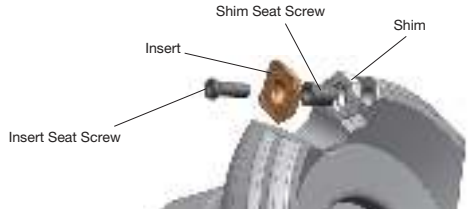
Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet												
Process	High-speed / Light	P			K		M S		K N	N													
	General-purpose		P M	P M	K		M S	M S		N	P												
	Roughing		P M	P M		K		M S															
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig									
SEET13T3AGFR-L									●	●		Light Cutting (For Non-Ferrous Metals)	-	1									
SEET13T3AGSR-L		●	●	●	●	●	●	●			●	Light Cutting	-	1									
SEET13T3AGSR-G		●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1									
SEMT13T3AGSR-L		●	●	●	●	●	●	●				Light Cutting	-	1									
SEMT13T3AGSR-G		●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1									
SEMT13T3AGSR-H		●	●	●	●	●	●	●				Heavy Cutting	-	1									
SEMT13T3AGSR-FG		●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2									
XEEW13T3AGER-AWR			●			●					●	Wiper Insert	.284" / *7.2*	3									
XEEW13T3AGER-WR			★			★					★	Wiper Insert	.284" / *7.2*	3									



The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Identification Code

WGX Cutter Series | **M** Fine Pitch | **13** Insert Size | **050** Cutter Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seize Cream
WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
P	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	–	160-**210**-250	0.15-**0.23**-0.30	ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	–	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	–	30- **50** -80	0.10-**0.20**-0.30	ACM300

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WGXF Shellmill Metric Type

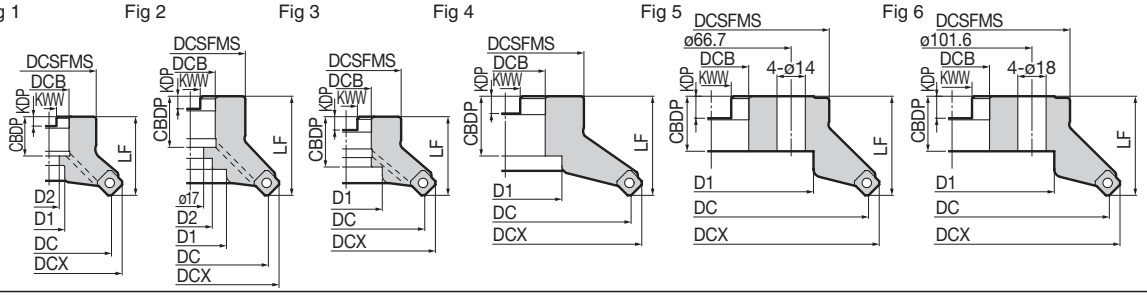
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	–20° to –24°
	Axial	20° to 22°

6mm, 45°



Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6



Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGXF13050RS**	★	*50*	*62*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.4*	1
	WGXF13063RS	★	*63*	*77*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.6*	1
	WGXF13080RS	★	**80*	*94*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*13.5*	8	*1.1*	1
	WGXF13100RS	★	*100*	*114*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	10	*1.5*	3
	WGXF13125RS	★	*125*	*139*	*80*	*63*	*40*	*16.4*	*9.5*	*29*	*52*	*29*	12	*2.7*	1
	WGXF13160RS	★	*160*	*174*	*130*	*63*	*40*	*16.4*	*9.5*	*29*	*88*	-	16	*4.5*	5
	WGXF13200RS	★	*200*	*214*	*150*	*63*	*60*	*25.7*	*14*	*35*	*130*	-	20	*6.9*	6
	WGXF13250RS	★	*250*	*264*	*190*	*63*	*60*	*25.7*	*14*	*35*	*160*	-	24	*11.0*	6
	WGXF13080R	★	**80*	*94*	*60*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*13*	8	*1.1*	1
	WGXF13100R	★	**100*	*114*	*70*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	10	*2.1*	2
	WGXF13125R	★	*125*	*139*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	12	*2.8*	1
	WGXF13160R	★	*160*	*174*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	16	*4.5*	4
	WGXF13200R	★	*200*	*214*	*150*	*63*	*47.625*	*25.4*	*14*	*35*	*130*	-	20	*6.9*	6
	WGXF13250R	★	*250*	*264*	*190*	*63*	*47.625*	*25.4*	*14*	*35*	*150*	-	24	*11.0*	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø160 mm and above do not have coolant holes.

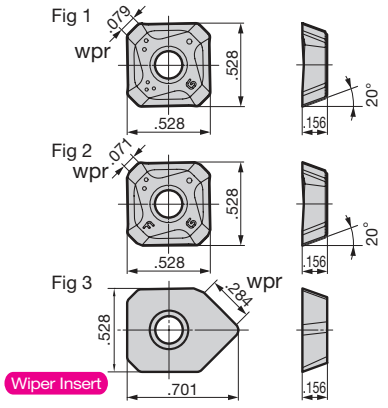
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

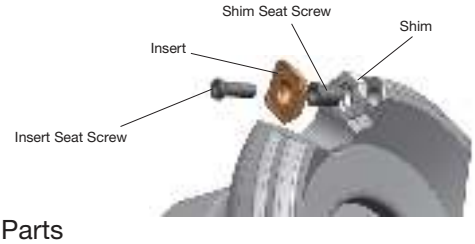
Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		MS		KN	N	
	General-purpose		PM	PM	K		MS	MS		N	P
	Roughing		PM	PM		K		MS			

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L								●	●		Light Cutting (For Non-Ferrous Metals)	-	1
SEET13T3AGSR-L	●	●	●	●	●	●	●			●	Light Cutting	-	1
SEET13T3AGSR-G	●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L	●	●	●	●	●	●	●				Light Cutting	-	1
SEMT13T3AGSR-G	●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H	●	●	●	●	●	●	●				Heavy Cutting	-	1
SEMT13T3AGSR-FG	●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR		●			●					●	Wiper Insert	.284" / *7.2*	3
XEEW13T3AGER-WR		★			★					★	Wiper Insert	.284" / *7.2*	3



The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Identification Code

WGX Cutter Series | **F** Extra Fine Pitch | **13** Insert Size | **050** Cutter Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seize Cream
WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
P	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	–	160-**210**-250	0.15-**0.23**-0.30	ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	–	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	–	30- **50** -80	0.10-**0.20**-0.30	ACM300

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WGX Endmill Metric Type

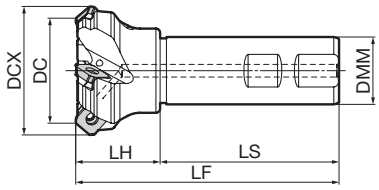
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	–20° to –24°
	Axial	20° to 22°

6mm, 45°

Fig 1





Body (Shank Type)

Dimensions (*mm*)

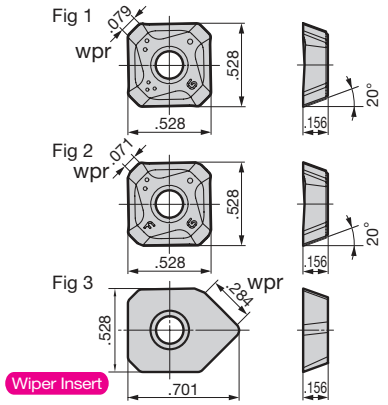
Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WGX13032EW	★	*32*	*44*	*32*	*40*	*85*	*125*	3	*1*
WGX13040EW	★	*40*	*52*	*32*	*40*	*85*	*125*	3	*1*
WGX13050EW	★	*50*	*62*	*32*	*40*	*85*	*125*	4	*1*
WGX13063EW	★	*63*	*76*	*32*	*40*	*85*	*125*	5	*1*

Inserts are sold separately. ø32 mm size does not have seats.

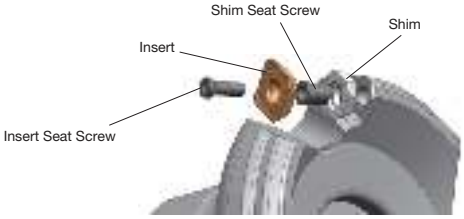
Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L									●	●		Light Cutting (For Non-Ferrous Metals)	-	1
SEET13T3AGSR-L		●	●	●	●	●	●	●			●	Light Cutting	-	1
SEET13T3AGSR-G		●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L		●	●	●	●	●	●	●				Light Cutting	-	1
SEMT13T3AGSR-G		●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H		●	●	●	●	●	●	●				Heavy Cutting	-	1
SEMT13T3AGSR-FG		●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR			●			●					●	Wiper Insert	.284" / *7.2*	3
XEEW13T3AGER-WR			★			★					★	Wiper Insert	.284" / *7.2*	3



The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Parts

Applicable Cutter	Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seize Cream
Other than those below WGX13000EW Type	WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P
WGX13032EW Type	–	–	BFTX03512IP	N·m 3.0	TRDR15IP	–	SUMI-P

Identification Code

WGX 13 032 EW

Cutter Series | Insert Size | Cutter Dia. | Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
P	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	–	160-**210**-250	0.15-**0.23**-0.30	ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	–	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	–	30- **50** -80	0.10-**0.20**-0.30	ACM300

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)



■ General Features

SEC-Sumi Dual Mill DGC Type employs double-sided inserts with up to 16 corners for excellent economy. This is a general-purpose cutter featuring high cutting edge strength for high efficiency milling and a low-burr chipbreaker design that provides high machined surface quality.



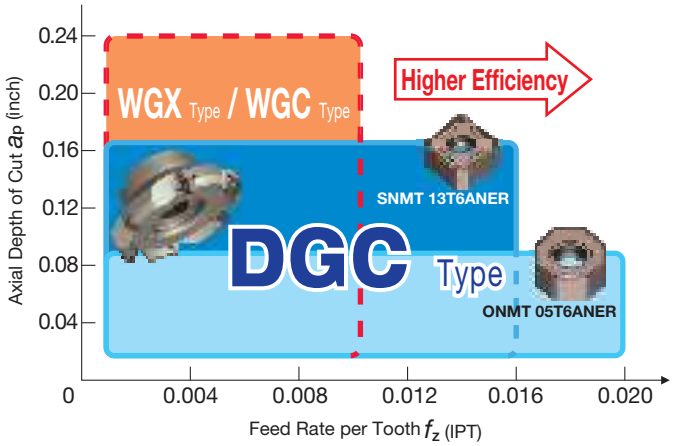
The DGC Type insert lineup includes double-sided SNMT/SNET and ONMT/ONET types. Up to 16 corners can be used for improved economy.

■ Features

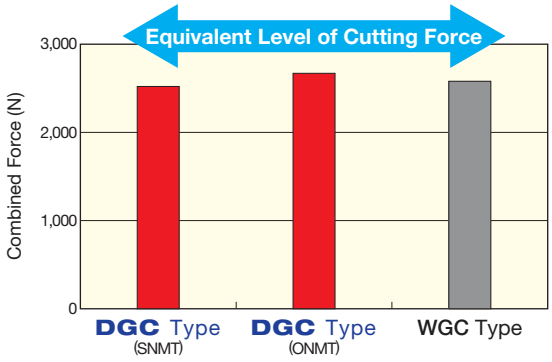
● Same cutting performance as single-sided inserts plus superior economy

Achieves levels of cutting edge sharpness and machined surface quality equivalent to single-sided cutters at a maximum depth of cut of a_p = 0.12".

● Recommended Cutting Conditions for General Steel



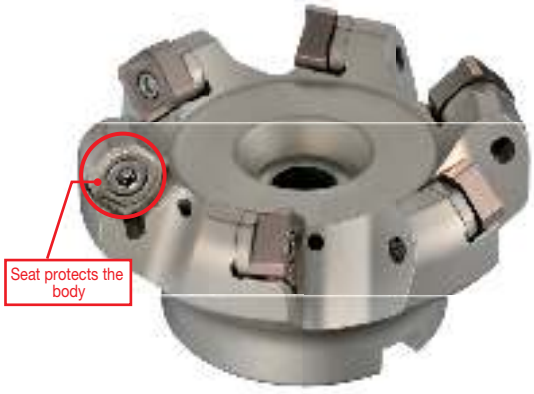
● Comparison of Cutting Force



Work Material: 4130 Structural Steel Tool: ø4.000"
Cutting Conditions: V_c = 650 SFM, f_z = 0.012 IPR, a_p = 0.12", a_e = 3.35"

● Common Body Features

Two types of inserts can be used with a single body depending on the milling application, to help reduce tool costs.



Use two types of insert for different applications





● Choose a tool to suit your application from a comprehensive lineup

Standard Pitch	Fine Pitch	Extra Fine Pitch	Endmill Type
Cutter Diameter: ø2.000" to ø10.000" ø40mm to ø250mm	Cutter Diameter: ø2.000" to ø8.000" ø50mm to ø250mm	Cutter Diameter: ø2.000" to ø8.000" ø50mm to ø250mm	Cutter Diameter: ø2.000" to ø2.500" ø40mm to ø63mm
No. of Teeth: 3 to 10	No. of Teeth: 4 to 14	No. of Teeth: 5 to 18	No. of Teeth: 3 to 4
Mounting: Metric/Inch	Mounting: Metric/Inch	Mounting: Metric/Inch	Mounting: Metric






DGC40000R DGC13000R(S)	DGCM40000R DGCM13000R(S)	DGCF40000R DGCF13000R(S)	DGC 40000EW DGC 13000EW

■ Grade Application Range

Work Material	Grade	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	Coated Carbide	ACP100	ACP200	ACP300
	Cermet		T4500A	
M Stainless Steel	Coated Carbide	ACM200		ACM300

Work Material	Grade	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
K Cast Iron	Coated Carbide	ACK200	ACK300	
N Non-Ferrous Metal	Coated Carbide		DL1000	
	Carbide			EH520

The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD, P: PVD, Blank: Uncoated

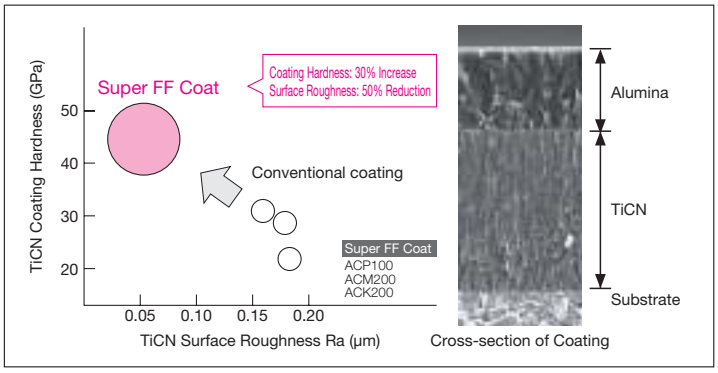
■ Coating Features

C Super FF Coat (CVD: Chemical Vapor Deposition)

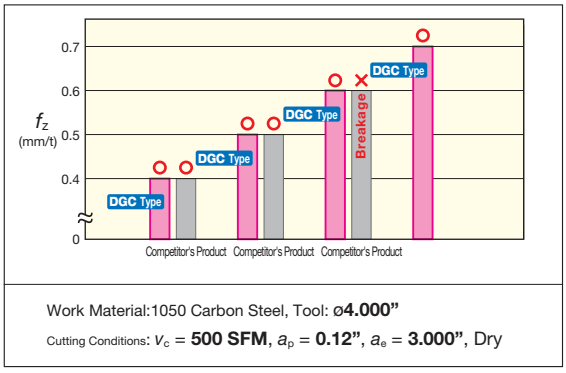
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology

- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional tools under the same cutting conditions

Characteristics of the Coating Layer



Fracture Resistance



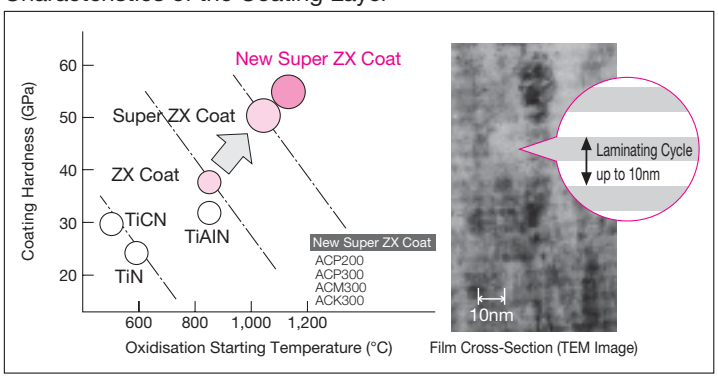
Work Material:1050 Carbon Steel, Tool: ø4.000"
Cutting Conditions: V_c = **500 SFM**, a_p = **0.12"**, a_e = **3.000"**, Dry

P New Super ZX Coat (PVD: Physical Vapor Deposition)

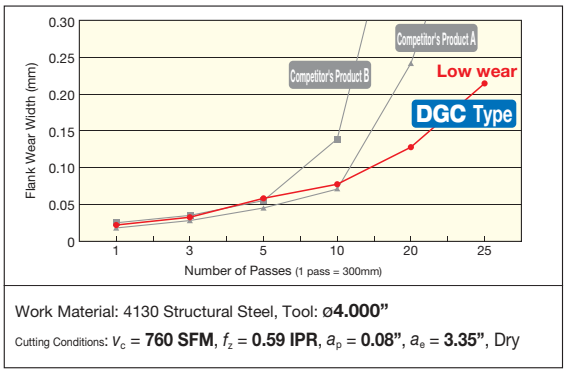
Employs our super multi-layered New Super ZX Coat, which utilizes our proprietary thin-layer coating technology and advanced nanotechnology. The coating consists of thousands of alternating, nanometer-thin (1 nanometer = 1 billionth of a meter) layers.

- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidation starting temperature has been increased by 200°C.
- Enables more than 1.5 times the machining speed and efficiency of conventional tools.
- Achieves more than double the tool life of conventional tools under the same cutting conditions

Characteristics of the Coating Layer

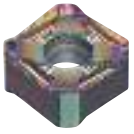
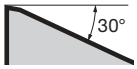
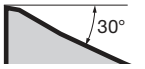
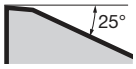
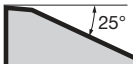
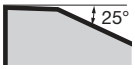
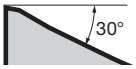
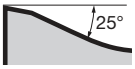
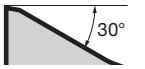
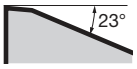


Wear Resistance



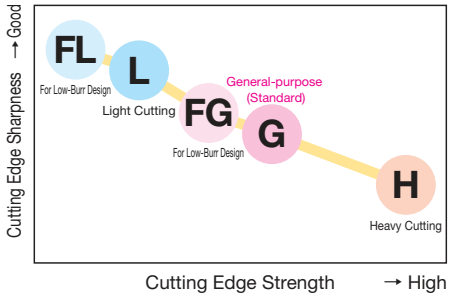
Work Material: 4130 Structural Steel, Tool: ø4.000"
Cutting Conditions: V_c = **760 SFM**, f_z = **0.59 IPR**, a_p = **0.08"**, a_e = **3.35"**, Dry

■ Chipbreaker Selection

Work Material	P M K S					N	P K
Chipbreaker	FL Type	L Type	FG Type	G Type	H Type	S Type	W Type
Appearance							
Cutting Edge Cross Section	 30°	 30°	 25°	 25°	 25°	 30°	 25°
8 / 16	Not Available	 30°	Not Available	 23°	Not Available	Not Available	Double-Sided, 2 Corners (*)
Features	Low Resistance / With Wiper Edge	Low Resistance	Standard / With Wiper Edge	Standard	High Strength	High Rake	Wiper
Applications	Light Cutting / Burr Prevention	Light Cutting	General-purpose / Burr Prevention	General-purpose	Heavy Cutting	Non-ferrous Metal	Finishing Surface Roughness Emphasised

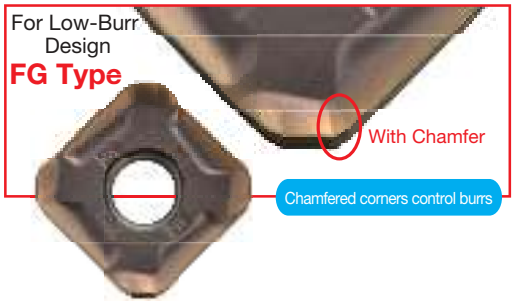
*Can only be used in conjunction with 8 corner inserts

■ Chipbreaker Selection Guide

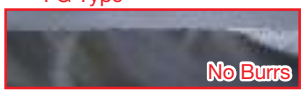


● Improved Milling Quality

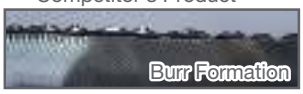
· FG type chipbreakers feature a chamfered corner to minimise burrs and provide excellent milling quality.



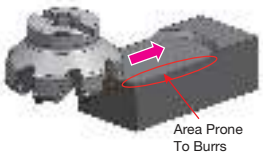
● FG Type



● Competitor's Product

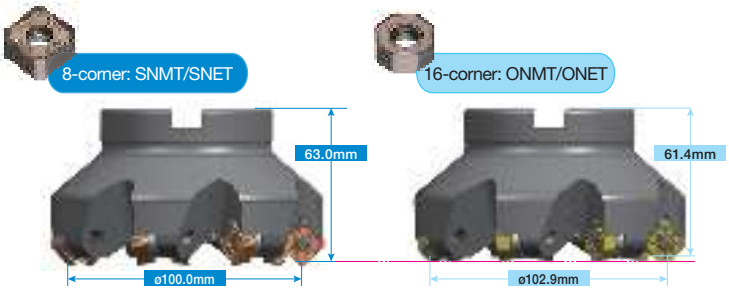


FG type inserts with low-burr design enable high-quality milling with few burrs and minimal edge chipping



Work Material : 4135
Tool : ø100
Cutting Conditions : V_c=660 SFM, f_z =0.008 IPT
a_p=0.12in, a_e=3.35in

Cutter Diameter And Cutting Edge Height

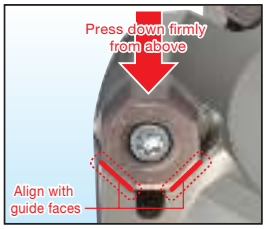


⚠ Note that while the 8-corner and 16-corner types can be used interchangeably on the same body, they have different cutter diameters, cutting edge heights and maximum cutting depths.

Body Shape (Example: With Cutter Diameter of 100mm)

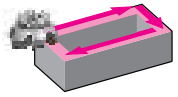
Insert	Cutter Dia. DC (mm)	Cutting Edge Height LF (mm)	Maximum Depth of Cut APMX (mm)
SNMT / SNET	100.0	63.0	6.0
ONMT / ONET	102.9	61.4	3.0

16-corner Mounting Method



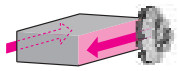
⚠ Firmly align insert with guide faces, press down in the direction of the arrow, and tighten the screw to fix the insert.

■ Application Examples



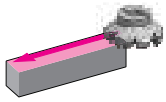
Part/ Work Material		Machine Components / 1050	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13080R (ø80)	ø80
	Insert	SNET13T6ANER-G (8 Corners)	Single-Sided Specification (4 Corners)
	Number of Teeth	6	6
	Insert Grade	ACP200	PVD Grade
Cutting Conditions	Cutting Speed (SFM)	525	525
	Feed Rate per Tooth (IPT)	0.012	0.012
	Feed Rate (IPM)	47	47
	Axial Depth of Cut (in)	0.12	0.12
	Number of Workpieces (pcs/corner)	2	2
	Dry/Wet	Wet	Wet

Can be used under the same conditions as the single-sided inserts. Improves tool economy by doubling the number of cutting edges.



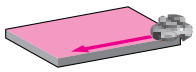
Part/ Work Material		Machine Components / 1050	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13160R (ø160)	ø160
	Insert	SNET13T6ANER-G (8 Corners)	Single-Sided Specification (8 Corners)
	Number of Teeth	10	10
	Insert Grade	ACP200	PVD Grade
Cutting Conditions	Cutting Speed (SFM)	440	440
	Feed Rate per Tooth (IPT)	0.005	0.005
	Feed Rate (IPM)	14	14
	Axial Depth of Cut (in)	0.1	0.1
	Cutting Time	287 min	287 min
	Dry/Wet	Dry	Dry

Reduces burrs and achieves higher milling quality compared to conventional tools



Part/ Work Material		Machine Components / 1050	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13125R (ø100)	ø125
	Insert	SNET13T6ANER-G (16 Corners)	Single-Sided Specification (8 Corners)
	Number of Teeth	8	8
	Insert Grade	ACM300	PVD Grade
Cutting Conditions	Cutting Speed (SFM)	525	525
	Feed Rate per Tooth (IPT)	0.01	0.01
	Feed Rate (IPM)	37	37
	Axial Depth of Cut (in)	0.1	0.1
	Cutting Time	-	-
	Dry/Wet	Dry	Dry

Reduces tool cost by doubling the number of cutting edges



Part/ Work Material		Machine Components / 1050	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13100R (ø100)	ø100
	Insert	SNET13T6ANER-G (8 Corners)	Single-Sided Specification (4 Corners)
	Number of Teeth	5	5
	Insert Grade	ACM300	PVD Grade
Cutting Conditions	Cutting Speed (SFM)	492	492
	Feed Rate per Tooth (IPT)	0.006	0.006
	Feed Rate (IPM)	14	14
	Axial Depth of Cut (in)	0.08	0.08
	Cutting Time	-	-
	Dry/Wet	Wet	Wet

Doubles the number of cutting edges and provides over 3 times longer tool life per corner compared to conventional tools.

Recommended Cutting Conditions (SNMT / SNET)

ISO	Material	Hardness	Cutting Speed V_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Depth of Cut a_p (inch)	Insert Grade
P	General Steel	180 to 280 HB	490 - 820	.0039 - .016	< .16	ACP200 ACP300
P	Mild Steel	≤ 180HB	590 - 1150	.0039 - .018	< .16	ACP200 ACP300
P	Die Steel	200 to 220 HB	490 - 660	.0059 - .014	< .16	ACP200 ACP300
M	Stainless Steel	-	160 - 820	.0059 - .012	< .12	ACM300
K	Cast Iron	250HB	490 - 820	.0039 - .016	< .20	ACK200 ACK300
S	Titanium	-	100 - 250	.003 - .0075	< .12	ACM300
S	Exotic Material	-	100 - 230	.003 - .0008	< .12	ACM300
S	Exotic Material	-	60 - 135	.003 - .0006	< .12	ACK300
N	Non-ferrous Metal	-	1640 - 3300	.0059 - .014	< .12	DL1000

Recommended Cutting Conditions (ONMT / ONET)

ISO	Material	Hardness	Cutting Speed V_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Depth of Cut ap (inch)	Insert Grade
P	General Steel	180 to 280 HB	490 - 820	.0039 - .016	< .078	ACP200 ACP300
P	Mild Steel	≤ 180HB	180 - 1150	.0039 - .018	< .078	ACP200 ACP300
P	Die Steel	200 to 220 HB	100 - 660	.0059 - .014	< .078	ACP200 ACP300
M	Stainless Steel	-	160 - 820	.0059 - .012	< .078	ACM300
K	Cast Iron	250HB	100 - 820	.0039 - .016	< .078	ACK200 ACK300
S	Titanium	-	100 - 250	.003 - .0075	< .078	ACM300
S	Exotic Material	-	100 - 230	.003 - .0008	< .078	ACM300
S	Exotic Material	-	60 - 135	.003 - .0006	< .078	ACK300

Recommended Cutting Conditions (SNMT / SNET)

ISO	Work Material	Hardness	Cutting Speed V_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.25**-0.40	< 4	ACP200 ACP300
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.30**-0.45	< 4	ACP200 ACP300
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.25**-0.35	< 4	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 3	ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.25**-0.40	< 5	ACK200 ACK300
N	Non-ferrous Metal	—	500-**750**-1,000	0.15-**0.23**-0.30	< 3	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Recommended Cutting Conditions (ONMT / ONET)

ISO	Work Material	Hardness	Cutting Speed V_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.30**-0.50	< 2	ACP200 ACP300
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.50**-0.50	< 2	ACP200 ACP300
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.25**-0.30	< 2	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 2	ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.30**-0.50	< 2	ACK200 ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

DGC Shellmill Inch Type

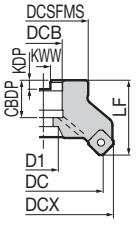
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

.236" 45° (SNMT / SNET)

.118" 45° (ONMT / ONET)



Fig 1


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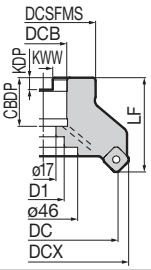

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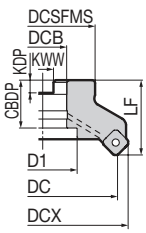

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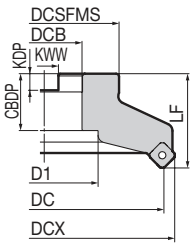

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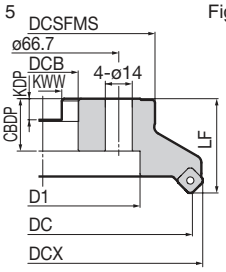

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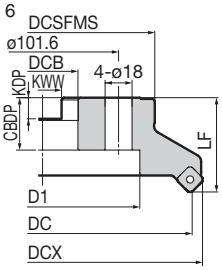


Body (Standard Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (lbs)	Fig
Inch	**DGC42000R**	●	2.000 (2.114)	2.567	1.500	1.750 (1.689)	0.750	0.312	0.190	0.750	0.609	3	0.904	1
	DGC42500R	●	2.500 (2.614)	3.067	1.750	1.750 (1.689)	1.000	0.375	0.220	0.750	0.797	4	1.279	1
	DGC43000R	●	3.000 (3.114)	3.567	2.250	1.750 (1.689)	1.000	0.375	0.220	0.750	0.787	4	1.918	1
	DGC44000R	●	4.000 (4.114)	4.567	2.870	2.000 (1.939)	1.250	0.500	0.280	0.750	1.000	5	3.968	1
	DGC44000R-1.50	●	4.000 (4.114)	4.000	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	5	5.688	3
	DGC45000R	●	5.000 (5.114)	5.567	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	6	7.893	1
	DGC46000R	●	6.000 (6.114)	6.567	4.380	2.500 (2.439)	1.500	0.625	0.380	1.060	2.000	7	11.530	5
	DGC48000R	●	8.000 (8.114)	8.567	5.906	2.500 (2.439)	2.500	1.000	0.560	1.594	5.118	8	15.895	6
	DGC410000R	●	10.000 (10.114)	10.567	7.480	2.500 (2.439)	2.500	1.000	0.531	1.575	6.299	10	29.189	6

( ) indicates value for ONMT / ONET type inserts.

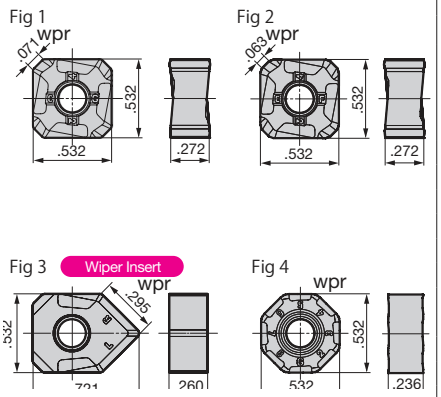
● USA stocked item

Inserts are sold separately. * Sizes ø6.000" and above do not have coolant holes.

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide		DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN		N	PM		
	General-purpose		PM	PM	K		MS	MS		KS	N	P		
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●							-	1
SNMT13T6ANER-FL		●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W			●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4



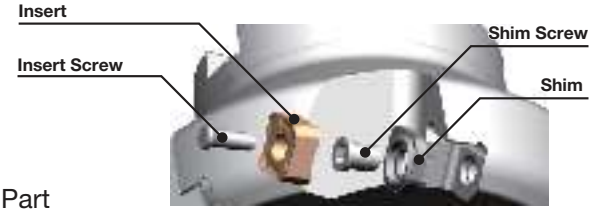
Wiper inserts can only be used in combination with 8-cornered inserts.

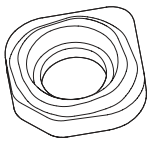
The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.

Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31

● USA stocked item ★ Worldwide Warehouse item





DGC Seat

Identification Code - Inch

DGC	4	2000	R
Cutter Series	Insert Series	Cutter Dia. 2.000"	Feed Direction

Part

(Optional)

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-Seize Cream	Insert Screw (*)	
DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	TRDR15IP	SUMI-P	BFTX0418IP	N·m 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC / DGCM types.

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

N·m Recommended Tightening Torque (N·m)

DGCM Shellmill Inch Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

.118" 45° (ONMT / ONET)

.236" 45°



Fig 1

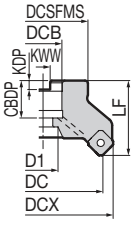


Fig 2

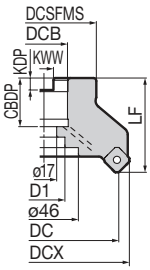


Fig 3

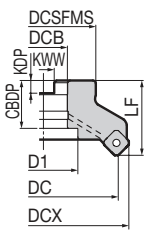


Fig 4

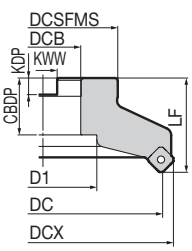


Fig 5

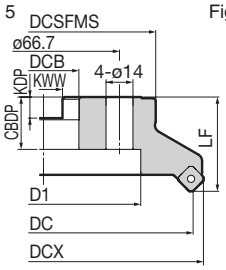
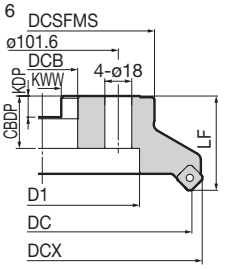


Fig 6



Body (Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**DGCM42000R**	●	2.000 (2.114)	2.567	1.500	1.750 (1.689)	0.750	0.312	0.190	0.750	0.609	4	0.794	1
	DGCM42500R	●	2.500 (2.614)	3.067	1.750	1.750 (1.689)	1.000	0.375	0.220	0.750	0.797	5	1.257	1
	DGCM43000R	●	3.000 (3.114)	3.567	2.250	1.750 (1.689)	1.000	0.375	0.220	0.750	0.787	6	1.742	1
	DGCM44000R	●	4.000 (4.114)	4.567	2.870	2.000 (1.939)	1.250	0.500	0.280	0.750	1.000	7	3.682	3
	DGCM44000R-1.50	●	4.000 (4.114)	4.000	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	7	5.401	1
	DGCM45000R	●	5.000 (5.114)	5.567	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	8	7.474	5
	DGCM46000R	●	6.000 (6.114)	6.567	4.380	2.500 (2.439)	1.500	0.625	0.380	1.060	2.000	10	10.957	6
	DGCM48000R	●	8.000 (8.114)	8.567	5.906	2.500 (2.439)	2.500	1.000	0.560	1.594	5.118	12	15.432	6

( ) indicates value for ONMT / ONET type inserts.
Inserts are sold separately. * Sizes ø6.000" and above do not have coolant holes.

● USA stocked item

Insert

Dimensions (inch " / *mm*)

Grade		Coated Carbide							Carbide		DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N		N	P M		
	General-purpose		P M	P M	K		M S	M S		K S	N	P		
	Roughing		P M	P M		K		M S						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●							-	1
SNMT13T6ANER-FL		●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W			●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4

Fig 1

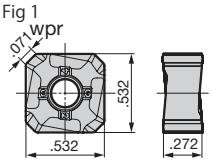


Fig 2

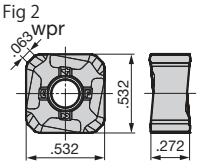


Fig 3 Wiper Insert

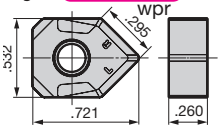
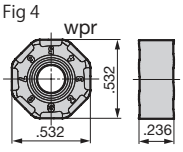


Fig 4

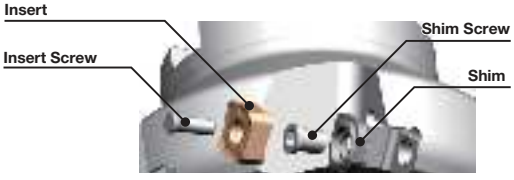


Wiper inserts can only be used in combination with 8-cornered inserts.

The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31

● USA stocked item ★ Worldwide Warehouse item



Identification Code

DGC	M	4	2000	R
Cutter Series	Fine Pitch	Insert Series	Cutter Dia 2.000".	Feed Direction

Part

(Optional)

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-Seize Cream	Insert Screw (*)	
DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	TRDR15IP	SUMI-P	BFTX0418IP	N·m 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC / DGCM types.

N·m Recommended Tightening Torque (N·m)

DGCF Shellmill Inch Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

.236" 45° (SNMT / SNET)

.118" 45° (ONMT / ONET)



Fig 1

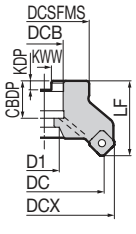


Fig 2

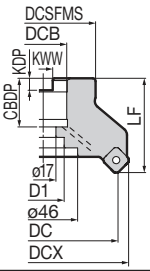


Fig 3

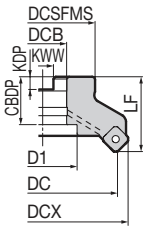


Fig 4

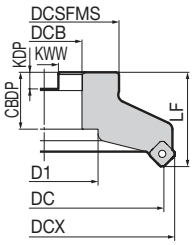


Fig 5

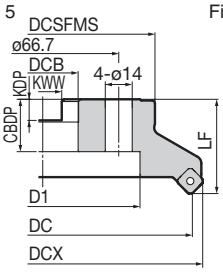
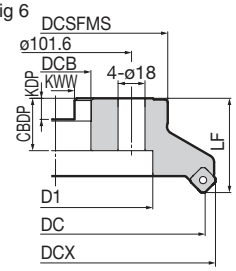


Fig 6



Body (Extra Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (lbs)	Fig
Inch	**DGCF42000R**	●	2.000 (2.114)	2.567	1.500	1.750 (1.689)	0.750	0.312	0.190	0.750	0.609	5	0.838	1
	DGCF42500R	●	2.500 (2.614)	3.067	1.750	1.750 (1.689)	1.000	0.375	0.220	0.750	0.797	6	1.190	1
	DGCF43000R	●	3.000 (3.114)	3.567	2.250	1.750 (1.689)	1.000	0.375	0.220	0.750	0.787	8	1.786	1
	DGCF44000R	●	4.000 (4.114)	4.567	2.870	2.000 (1.939)	1.250	0.500	0.280	0.750	1.000	10	3.836	3
	DGCF44000R-1.50	●	4.000 (4.114)	4.000	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	10	5.534	1
	DGCF45000R	●	5.000 (5.114)	5.567	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	12	7.804	5
	DGCF46000R	●	6.000 (6.114)	6.567	4.380	2.500 (2.439)	1.500	0.625	0.380	1.060	2.000	14	11.310	6
	DGCF48000R	●	8.000 (8.114)	8.567	5.906	2.500 (2.439)	2.500	1.000	0.560	1.594	5.118	16	15.653	6

( ) indicates value for ONMT / ONET type inserts.
Inserts are sold separately. * Sizes ø6.000" and above do not have coolant holes.

● USA stocked item

Insert

Dimensions (inch " / *mm*)

Grade		Coated Carbide							Carbide		DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN		N	PM		
	General-purpose		PM	PM	K		MS	MS		KS	N	P		
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●							-	1
SNMT13T6ANER-FL		●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W			●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4

Fig 1

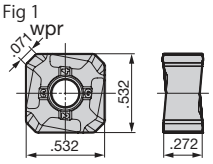


Fig 2

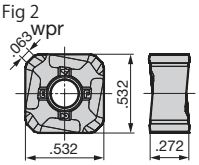


Fig 3 Wiper Insert

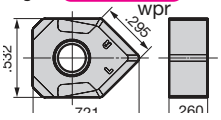
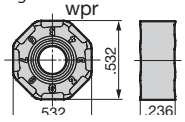


Fig 4



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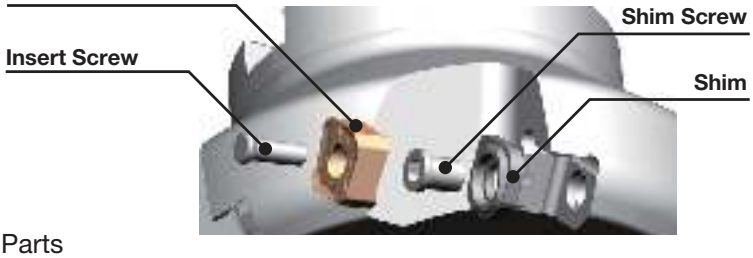
The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31

● USA stocked item ★ Worldwide Warehouse item



Identification Code - Inch

DGC	F	4	2000	R
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Parts

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-Seize Cream
DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

DGC Endmill Inch Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

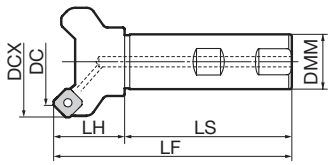
Rake Angle		
	Radial	-10°
	Axial	-5°

.236" 45° (SNMT / SNET)

.118" 45° (ONMT / ONET)

Fig 1





Body (Shank Type)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs)	Fig
DGC42000EW	●	2.000	2.567	1.250	1.591	2.379	3.970	4	1.54	1
DGC42500EW	●	2.500	2.567	1.250	1.591	2.379	3.970	5	2.43	1

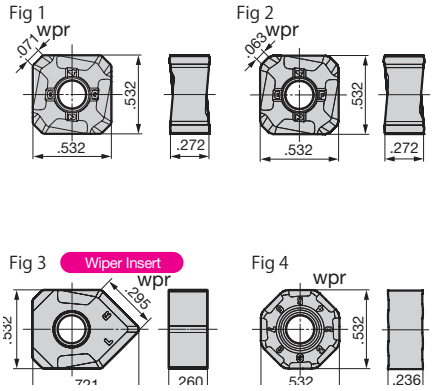
( ) indicates value for ONMT / ONET type inserts.
Inserts are sold separately.

● USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide		DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N		N	P M		
	General-purpose		P M	P M	K		M S	M S		K S	N	P		
	Roughing		P M	P M		K		M S						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●							-	1
SNMT13T6ANER-FL		●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W			●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●							.059"/ *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4

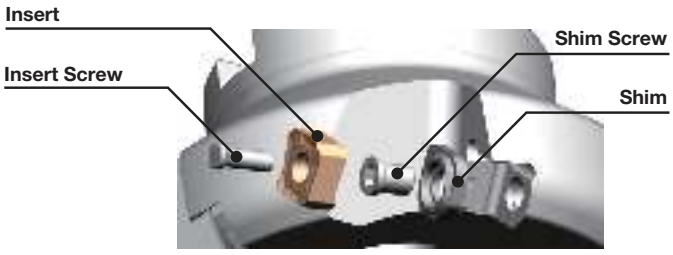


Wiper inserts can only be used in combination with 8-cornered inserts.

The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31

● USA stocked item ★ Worldwide Warehouse item



Identification Code - Inch

DGC 4 2000 EW

Cutter Series	Insert Series	Cutter Dia. 2.000"	Endmill Type

Parts

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-Seize Cream
				N·m		
DGCS13R	BW0609F	LH040	BFTX0412IP	**3.0**	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

DGC Shellmill Metric Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)



Fig 1

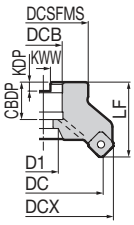


Fig 2

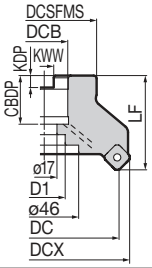


Fig 3

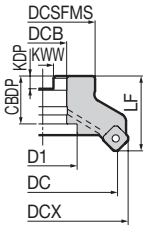


Fig 4

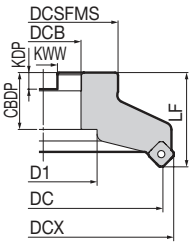


Fig 5

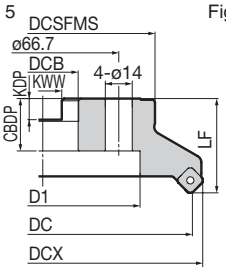
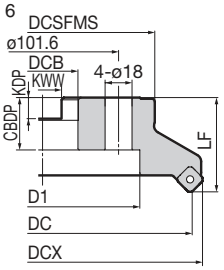


Fig 6



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	DGC13040RS	★	40(42.9)	54	36	40(38.44)	16	8.4	5.6	18	13.5	3	0.3	1
	DGC13050RS	★	50(52.9)	64	40	40(38.44)	22	10.4	6.3	20	18	3	0.4	1
	DGC13063RS	★	63(65.9)	77	50	40(38.44)	22	10.4	6.3	20	18	4	0.5	1
	DGC13080RS	★	*80(82.9)	94	60	50(48.44)	27	12.4	7	25	20	4	1.2	1
	DGC13100RS	★	100(102.9)	114	70	50(48.44)	32	14.4	8.5	32	46	5	1.6	3
	DGC13125RS	★	125(127.9)	139	80	63(61.44)	40	16.4	9.5	29	52	6	2.8	1
	DGC13160RS	★	160(162.9)	174	130	63(61.44)	40	16.4	9.5	29	88	7	4.5	5
	DGC13200RS	★	200(202.9)	214	150	63(61.44)	60	25.7	14	35	130	8	7.1	6
	DGC13250RS	★	250(252.9)	264	190	63(61.44)	60	25.7	14	35	160	10	11.2	6
	DGC13080R	★	*80(82.9)	94	60	50(48.44)	25.4	9.5	6	25	20	4	1.2	1
	DGC13100R	★	*100(102.9)	114	70	63(61.44)	31.75	12.7	8	32.5	28	5	2.2	2
	DGC13125R	★	125(127.9)	139	80	63(61.44)	38.1	15.9	10	35.5	55	6	2.8	1
	DGC13160R	★	160(162.9)	174	100	63(61.44)	50.8	19.1	11	38	72	7	4.5	4
	DGC13200R	★	200(202.9)	214	150	63(61.44)	47.625	25.4	14	35	130	8	7.1	6
	DGC13250R	★	250(252.9)	264	190	63(61.44)	47.625	25.4	14	35	150	10	11.2	6

( ) indicates value for ONMT / ONET type inserts.

★ Worldwide Warehouse item

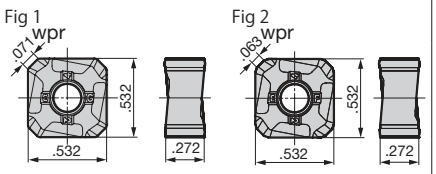
Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

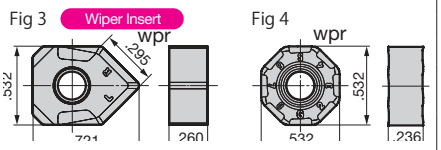
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch " / *mm*)

Grade		Coated Carbide							Carbide		DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N		N	P M		
	General-purpose		P M	P M	K		M S	M S		K S	N	P		
	Roughing		P M	P M		K		M S						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●							-	1
SNMT13T6ANER-FL		●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W			●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4





Wiper inserts can only be used in combination with 8-cornered inserts.

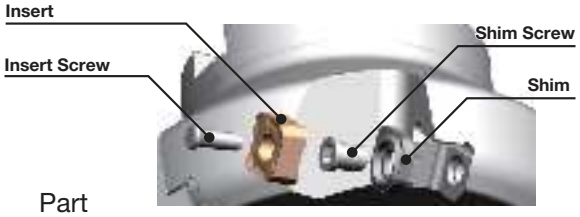
The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.

Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31

● USA stocked item

★ Worldwide Warehouse item



Identification Code - Metric

DGC	13	040	R	S
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Part

(Optional)

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-Seize Cream	Insert Screw (*)	
DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	TRDR15IP	SUMI-P	BFTX0418IP	N·m 3.0

N·m Recommended Tightening Torque (N·m)

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC / DGCM types.

DGCM Shellmill Metric Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

3mm 45° | 6mm 45°

(ONMT / ONET)



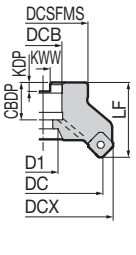
Fig 1


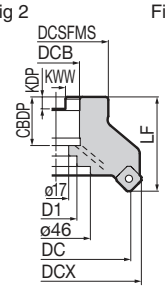
Fig 2


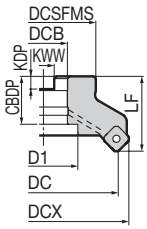
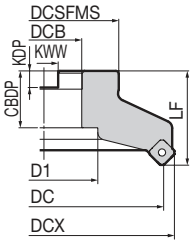
Fig 3


Fig 4


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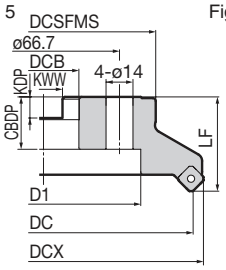
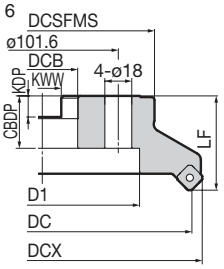


Fig 6


Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGCM13050RS**	★	*50(52.9)*	*64*	*40*	*40(38.44)*	*22*	*10.4*	*6.3*	*20*	*18*	4	*0.3*	1
	DGCM13063RS	★	*63(65.9)*	*77*	*50*	*40(38.44)*	*22*	*10.4*	*6.3*	*20*	*18*	5	*0.5*	1
	DGCM13080RS	★	**80(82.9)*	*94*	*60*	*50(48.44)*	*27*	*12.4*	*7*	*25*	*20*	6	*1.1*	1
	DGCM13100RS	★	*100(102.9)*	*114*	*70*	*50(48.44)*	*32*	*14.4*	*8.5*	*32*	*46*	7	*1.5*	3
	DGCM13125RS	★	*125(127.9)*	*139*	*80*	*63(61.44)*	*40*	*16.4*	*9.5*	*29*	*52*	8	*2.8*	1
	DGCM13160RS	★	*160(162.9)*	*174*	*130*	*63(61.44)*	*40*	*16.4*	*9.5*	*29*	*88*	10	*4.6*	5
	DGCM13200RS	★	*200(202.9)*	*214*	*150*	*63(61.44)*	*60*	*25.7*	*14*	*35*	*130*	12	*7*	6
	DGCM13250RS	★	*250(252.9)*	*264*	*190*	*63(61.44)*	*60*	*25.7*	*14*	*35*	*160*	14	*11.1*	6
	DGCM13080R	★	**80(82.9)*	*94*	*60*	*50(48.44)*	*25.4*	*9.5*	*6*	*25*	*20*	6	*1.1*	1
	DGCM13100R	★	**100(102.9)*	*114*	*70*	*63(61.44)*	*31.75*	*12.7*	*8*	*32.5*	*28*	7	*2.2*	2
	DGCM13125R	★	*125(127.9)*	*139*	*80*	*63(61.44)*	*38.1*	*15.9*	*10*	*35.5*	*55*	8	*2.8*	1
	DGCM13160R	★	*160(162.9)*	*174*	*100*	*63(61.44)*	*50.8*	*19.1*	*11*	*38*	*72*	10	*4.6*	4
	DGCM13200R	★	*200(202.9)*	*214*	*150*	*63(61.44)*	*47.625*	*25.4*	*14*	*35*	*130*	12	*7*	6
	DGCM13250R	★	*250(252.9)*	*264*	*190*	*63(61.44)*	*47.625*	*25.4*	*14*	*35*	*150*	14	*11.1*	6

( ) indicates value for ONMT / ONET type inserts. Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

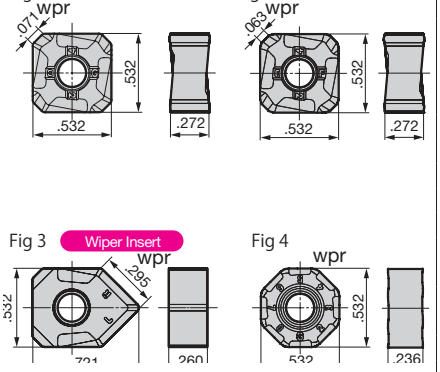
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

★ Worldwide Warehouse item

Insert

Dimensions (inch " / *mm*)

Grade		Coated Carbide							Carbide		DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N		N	P M		
	General-purpose		P M	P M	K		M S	M S		K S	N	P		
	Roughing		P M	P M		K		M S						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●							-	1
SNMT13T6ANER-FL		●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W			●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4



Wiper inserts can only be used in combination with 8-cornered inserts.

The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31

● USA stocked item ★ Worldwide Warehouse item



Part

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-Seize Cream	Insert Screw (*)	
DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	TRDR15IP	SUMI-P	BFTX0418IP	N·m 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC / DGCM types.

Identification Code - Metric

DGC	M	13	050	R	S
Cutter Series	Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

N·m Recommended Tightening Torque (N·m)

DGCF Shellmill Inch Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)



Fig 1

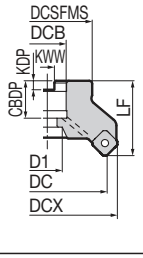


Fig 2

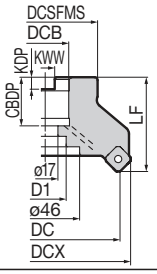


Fig 3

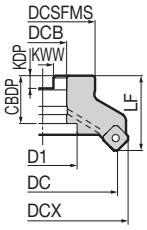


Fig 4

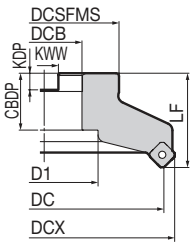


Fig 5

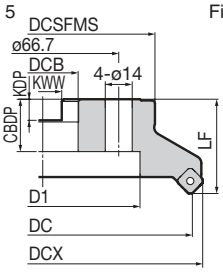
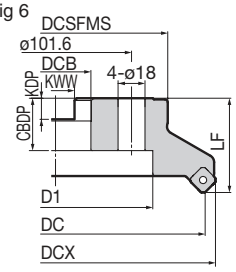


Fig 6



Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGCF13050RS**	●	*50(52.9)*	*64*	*40*	*40(38.44)*	*22*	*10.4*	*6.3*	*20*	*18*	5	*0.3*	1
	DGCF13063RS	●	*63(65.9)*	*77*	*50*	*40(38.44)*	*22*	*10.4*	*6.3*	*20*	*18*	6	*0.5*	1
	DGCF13080RS	●	**80(82.9)*	*94*	*60*	*50(48.44)*	*27*	*12.4*	*7*	*25*	*20*	8	*1.1*	1
	DGCF13100RS	●	*100(102.9)*	*114*	*70*	*50(48.44)*	*32*	*14.4*	*8.5*	*32*	*46*	10	*1.4*	3
	DGCF13125RS	●	*125(127.9)*	*139*	*80*	*63(61.44)*	*40*	*16.4*	*9.5*	*29*	*52*	12	*2.7*	1
	DGCF13160RS	●	*160(162.9)*	*174*	*130*	*63(61.44)*	*40*	*16.4*	*9.5*	*29*	*88*	14	*4.4*	5
	DGCF13200RS	●	*200(202.9)*	*214*	*150*	*63(61.44)*	*60*	*25.7*	*14*	*35*	*130*	16	*6.9*	6
	DGCF13250RS	●	*250(252.9)*	*264*	*190*	*63(61.44)*	*60*	*25.7*	*14*	*35*	*160*	18	*11*	6
	DGCF13080R	●	**80(82.9)*	*94*	*60*	*50(48.44)*	*25.4*	*9.5*	*6*	*25*	*20*	8	*1.1*	1
	DGCF13100R	●	**100(102.9)*	*114*	*70*	*63(61.44)*	*31.75*	*12.7*	*8*	*32.5*	*28*	10	*2.1*	2
	DGCF13125R	●	*125(127.9)*	*139*	*80*	*63(61.44)*	*38.1*	*15.9*	*10*	*35.5*	*55*	12	*2.7*	1
	DGCF13160R	●	*160(162.9)*	*174*	*100*	*63(61.44)*	*50.8*	*19.1*	*11*	*38*	*72*	14	*4.4*	4
	DGCF13200R	●	*200(202.9)*	*214*	*150*	*63(61.44)*	*47.625*	*25.4*	*14*	*35*	*130*	16	*6.9*	6
	DGCF13250R	●	*250(252.9)*	*264*	*190*	*63(61.44)*	*47.625*	*25.4*	*14*	*35*	*150*	18	*11*	6

( ) indicates value for ONMT / ONET type inserts. Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide							Carbide		DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N		N	P M		
	General-purpose		P M	P M	K		M S	M S		K S	N	P		
	Roughing		P M	P M		K		M S						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●							-	1
SNMT13T6ANER-FL		●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W			●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4

Fig 1

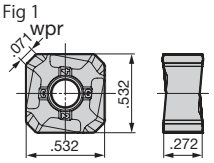


Fig 2

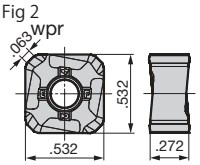


Fig 3 Wiper Insert

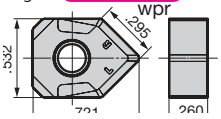
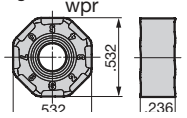


Fig 4



Wiper inserts can only be used in combination with 8-cornered inserts.

The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31

● USA stocked item



Identification Code

DGC	F	13	050	R	S
Cutter Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Parts

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-Seize Cream
DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

DGC Endmill Metric Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

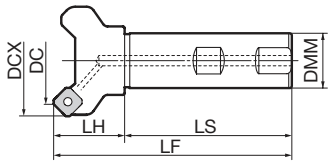
Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)

Fig 1





Body (Shank Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DGC13040EW	●	*40(42.9)*	*54*	*32*	*40(38.44)*	*85*	*125*	3	*0.7*	1
DGC13050EW	●	*50(52.9)*	*64*	*32*	*40(38.44)*	*85*	*125*	3	*0.9*	1
DGC13063EW	●	*63(65.9)*	*77*	*32*	*40(38.44)*	*85*	*125*	4	*1.1*	1

( ) indicates value for ONMT / ONET type inserts.
Inserts are sold separately.

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide		DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN		N	PM		
	General-purpose		PM	PM	K		MS	MS		KS	N	P		
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●							-	1
SNMT13T6ANER-FL		●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W			●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4

Fig 1 / Fig 2

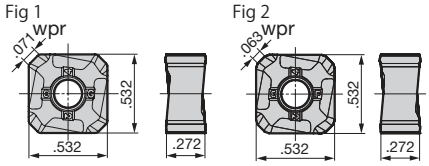
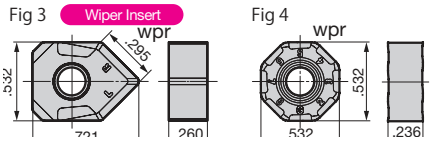


Fig 3 Wiper Insert / Fig 4

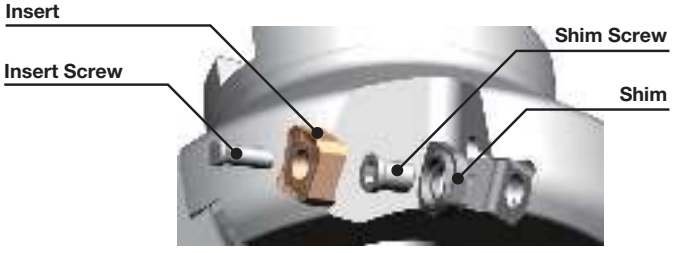


Wiper inserts can only be used in combination with 8-cornered inserts.

The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31

● USA stocked item



Identification Code

DGC 13 040 EW

DGC	13	040	EW
Cutter Series	Insert Size	Cutter Dia.	Endmill Type

Parts

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-Seize Cream
DGCS13R	BW0609F	LH040	BFTX0412IP	3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

High-efficiency Face Milling Cutters for Cast Iron and Cast Steel



■ Features

- Achieves high efficiency milling with a max. 0.31" depth of cut
- Employs negative inserts with chipbreakers that have a strong cutting edge on the double negative type body. Economical design using 8 corners
- Supports general to high-efficiency high-feed milling with three body types Inserts can be used with all types

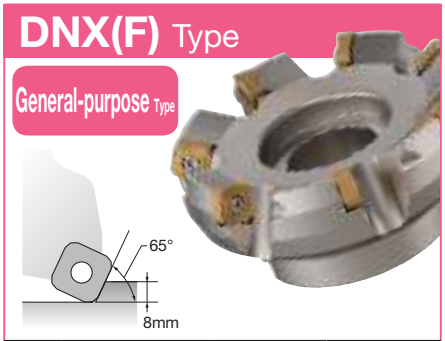


Negative inserts with a rake angle achieve low resistance and high feed milling

■ Product Range

DNX(F) Type

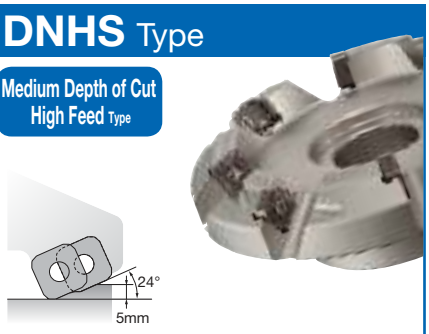
General-purpose Type



Maximum Depth of Cut		0.3"	8mm
Cutting edge angle		65°	
Cutter Dia.	DNX General-purpose type	ø3.0" to ø8.0"	ø80 to ø250mm
	DNXF General-purpose Fine-pitch Type	ø3.0" to ø8.0"	ø80 to ø160mm

DNHS Type

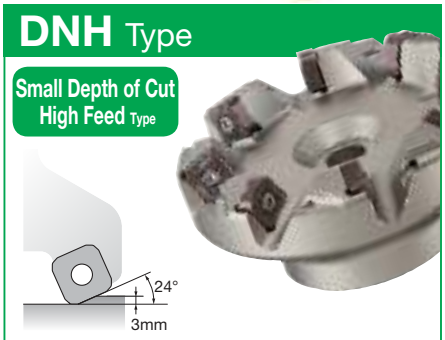
Medium Depth of Cut High Feed Type



Maximum Depth of Cut		5mm
Cutting edge angle		24°
Cutter Dia.	DNHS 12000R Medium Depth of Cut High Feed Type	ø80 to ø160mm

DNH Type

Small Depth of Cut High Feed Type

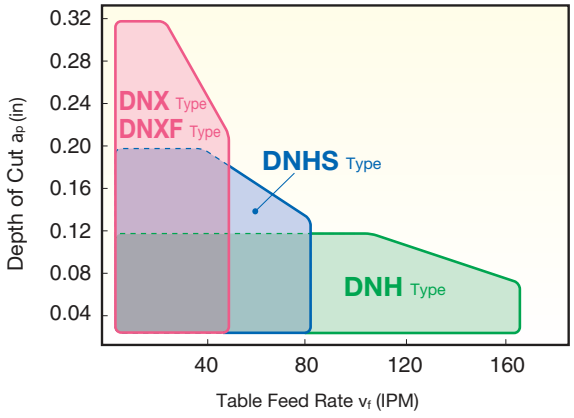


Maximum Depth of Cut		3mm
Cutting edge angle		24°
Cutter Dia.	DNH 12000R Small Depth of Cut High Feed Type	ø80 to ø160mm

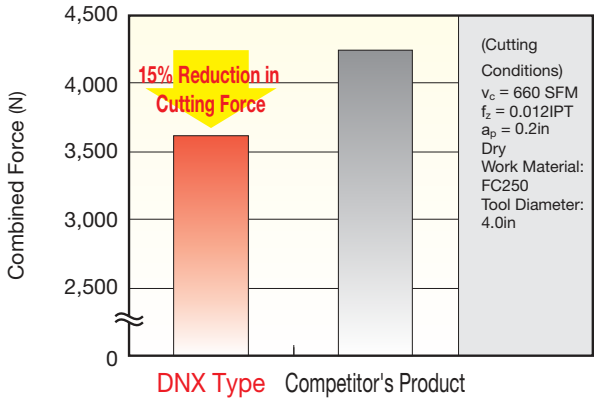
Large ← Depth of Cut — Feed Rate → Large

■ Usage Region (Cutting Cast Iron) Cut carbon steel at 20 to 30% reduction.

* The following conditions are provided as a general guide. Actual conditions will need to be adjusted according to tool overhang, machine rigidity, depth of cut and other factors.



■ Comparison of Cutting Force



■ Recommended Cutting Conditions (See page H42 for Inch Parameters)

DNX Type / DNXF Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	150-**225**-300	0.10-**0.20**-0.30	ACK200 ACK300
	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.18**-0.25	ACK200 ACK300
P	Carbon Steel	180to 280 HB	150-**175**-200	0.10-**0.15**-0.20	ACP200
	Alloy Steel	180to 280 HB	150-**175**-200	0.10-**0.15**-0.20	ACP200

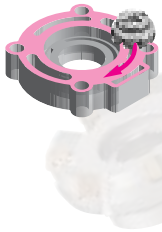
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

DNHS Type / DNH Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	150-**225**-300	0.10-**0.55**-1.00	ACK200 ACK300
	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.55**-1.00	ACK200 ACK300
P	Carbon Steel	180to 280 HB	150-**175**-200	0.10-**0.45**-0.80	ACP200
	Alloy Steel	180to 280 HB	150-**175**-200	0.10-**0.35**-0.60	ACP200

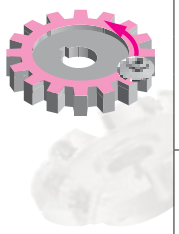
Note For DNHS Type, insert heights are alternatively placed, so the actual feed rate per tooth is double. Use with f_z = 0. 5 mm/t (actual feed rate 1.0 mm/t) as the upper limit.
The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Application Examples



Part Material		Automotive Components Grey Cast Iron	
Used Equipment		Machining Centre (BT30)	
Tool	Type	DNXF Type	Conventional Tool
	Body	DNXF 43000R	Cutter for FC
	Insert	G Type	Negative Insert
	Tool Dia. (in)	3	3
	Number of Teeth	8	8
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (SFM)	656	656
	Feed Rate per Tooth (IPT)	0.03 (v_f = 16.5 IPM)	0.03 (v_f = 16.5 IPM)
	Axial Depth of Cut (mm)	0.06	0.06
	Cutting Width (in)	2.4	2.4
	Dry/Wet	Wet	Wet

Double the tool life of conventional tools under the same conditions.



Part Material		Construction Machine Component / Cast Steel	
Used Equipment		Machining Centre (BT50)	
Tool	Type	DNHS Type	Conventional Tool
	Body	DNHS 12100R	General-purpose Cutter
	Insert	H Type	Negative Insert
	Tool Dia. (mm)	100	100
	Number of Teeth	8 (4)*	7
	Insert Grade	ACP200	P Class CVD
Cutting Conditions	Cutting Speed (SFM)	560	560
	Feed Rate per Tooth (IPTt)	0.01 (v_f = 17.7 IPM)	0.004 (v_f = 11.8 IPM)
	Axial Depth of Cut (in)	0.12" to 0.16"	0.12" to 0.16"
	Cutting Width (in)	1.97	1.97
	Dry/Wet	Dry	Dry

Enables 1.5 times the efficiency of conventional tools.

*( ) indicates effective no. of teeth



Part Material		Electrical Appliance Component Grey Cast Iron	
Used Equipment		Machining Centre (BT50)	
Tool	Type	DNXF Type	Conventional Tool
	Body	DNXF 44000R	Cutter for FC
	Insert	H Type	Negative Insert
	Tool Dia. (in)	4	4
	Number of Teeth	10	10
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (SFM)	1030	1030
	Feed Rate per Tooth (IPT)	0.006 (v_f = 60 IPM)	0.004 (v_f = 43.3 IPT)
	Axial Depth of Cut (in)	0.06	0.06
	Cutting Width (in)	3	3
	Dry/Wet	Wet	Wet

1.4 times the milling efficiency and 1.3 times the tool life of conventional tools.



Part Material		Housing - Grey Cast Iron	
Used Equipment		Machining Centre (BT50)	
Tool	Type	DNX Type	Conventional Tool
	Body	DNX 46000R	General-purpose Cutter
	Insert	G Type	Positive Insert
	Tool Dia. (inch)	6	6
	Number of Teeth	10	10
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (SFM)	790	790
	Feed Rate per Tooth (IPT)	0.006 (v_f = 23.5 IPM)	0.004 (v_f = 15.6 IPM)
	Axial Depth of Cut (in)	0.12	0.12
	Cutting Width (in)	5.3	5.3
	Dry/Wet	Wet	Wet

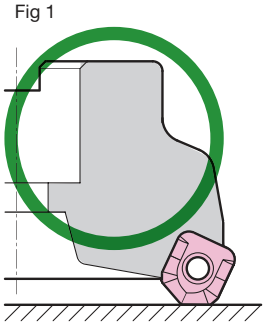
1.5 times longer tool life than conventional tools.

■ Precautions when Using Wiper Inserts with Holes

- When assembling the wiper insert, attach it as shown in Fig. 1. When attached as shown in Fig. 2, normal machined surface roughness cannot be obtained.
- Wiper inserts are single-cornered and double-sided.
- Refer to Technical Guidance page N19 in the General Catalogue for details about wiper inserts.
- Do not use with DNHS and DNH types.

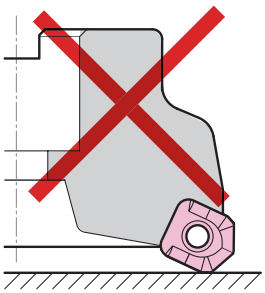
DNX(F) Type

Fig 1



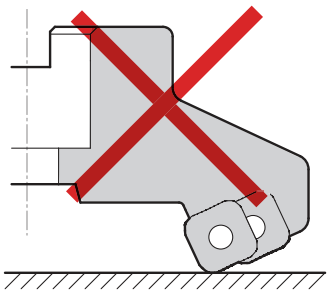
Correct Mounting

Fig 2



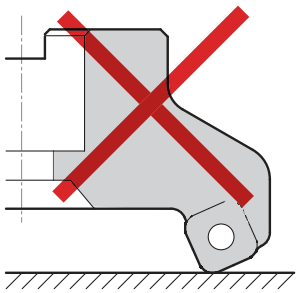
Incorrect Mounting

DNHS Type



Inappropriate

DNH Type



Inappropriate

DNX(F) Shellmill Inch Type

P Steel K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

Maximum Depth of Cut: .315" / 25°

Fig 1



Fig 2

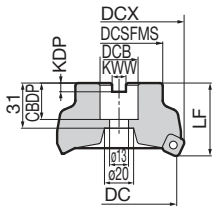


Fig 3

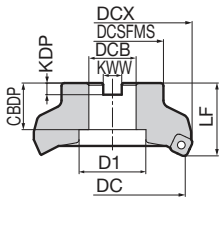
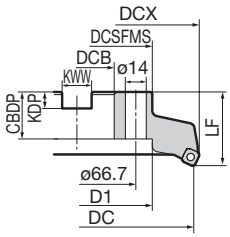


Fig 4



Body (DNX40000R) Lead Angle 25° General-purpose Type

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (lbs)	Fig
Inch	**DNX43000R**	●	3.000	3.303	2.250	0.797	1.750	1.000	0.375	0.220	1.020	6	6	2.65	1
	DNX44000R	●	4.000	4.315	2.870	1.000	2.000	1.250	0.500	0.280	1.020	7	7	3.53	1
	DNX44000R-1.50	●	4.000	4.303	3.750	2.000	2.500	1.500	0.625	0.380	1.000	7	7	3.53	5
	DNX45000R	●	5.000	5.303	3.750	2.000	2.500	1.500	0.625	0.380	1.060	8	8	6.17	2
	DNX46000R	●	6.000	6.303	4.380	2.000	2.500	1.500	0.625	0.380	1.060	10	10	9.70	2
	DNX48000R	●	8.000	8.303	5.120	5.118	2.500	2.500	1.000	0.560	1.595	12	12	18.75	4

● USA stocked item

Body (DNXF40000R) Lead Angle 25° Fine Pitch Type

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (lbs)	Fig
Inch	**DNXF43000R**	●	3.000	3.303	2.250	0.797	1.750	1.000	0.375	0.220	1.020	8	8	2.65	1
	DNXF44000R	●	4.000	4.315	2.870	1.000	2.000	1.250	0.500	0.280	1.020	10	10	3.53	1
	DNXF44000R-1.50	●	4.000	4.303	3.750	2.000	2.500	1.500	0.625	0.380	1.000	10	10	3.53	5
	DNXF45000R	●	5.000	5.303	3.750	2.000	2.500	1.500	0.625	0.380	1.060	11	11	6.17	2
	DNXF46000R	●	6.000	6.303	4.380	2.000	2.500	1.500	0.625	0.380	1.060	12	12	9.70	2
	DNXF48000R	●	8.000	8.303	5.120	5.118	2.500	2.500	1.000	0.560	1.595	14	14	18.75	4

Inserts are sold separately. ● USA stocked item

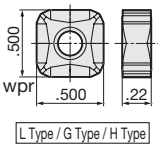
Insert

Dimensions (inch"/ *mm*)

Grade		Coated Carbide				
Process	High-speed / Light	K	K			
	General-Purpose	K	K		P M	P M
	Roughing			K	P M	P M

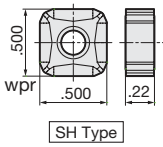
Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Wiper Facet Length wpr	Fig
SNMT1205ZNEN-L		●	●	●		V-shaped Blade Type	Light Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-G	●	●	●	●			General-purpose	.039"/ *1.0*	1
SNMT1205ZNEN-H	●	●	●	●			Heavy Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-SH	●	●	●	●	●	Straight Type	Improved Chip Control	.039"/ *1.0*	2
XNGT1205ZNEN-W		●	●			Wiper Type	Improved Surface Roughness	.197"/ *5.0*	3

Fig 1



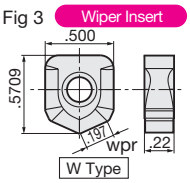
L Type / G Type / H Type

Fig 2



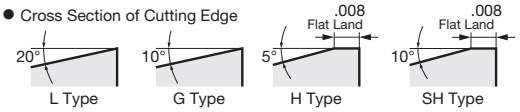
SH Type

Fig 3 Wiper Insert



W Type

● Cross Section of Cutting Edge



Refer to H41 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions (see below)

Parts

Locator	Cap Screw	L-Wrench	Insert Screw		Wrench	Anti-Seize Cream
				N·m		
DNXK12R	BX0515	LH040	BFTX0412IP	3.0	TRDR15IP	SUMI-P

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

Identification Code -Inch

DNX	F	4	3000	R
Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 3.000"	Feed Direction

■ Recommended Cutting Conditions

	Cast Iron				Steel	
	Gray Cast Iron		Ductile Cast Iron		Carbon Steel	Alloy Steel
Grade	ACK200	ACK300	ACK100	ACK200	ACP200	ACP200
SFM	400 ~ 1100	400 ~ 950	350 ~ 950	350 ~ 850	350 ~ 875	350 ~ 950
IPT	.004 ~ .014	.004 ~ .014	.004 ~ .012	.004 ~ .012	.004 ~ .010	.004 ~ .010
Max. D.O.C.	~ 0.314	~ 0.314	~ 0.314	~ 0.314	~ 0.314	~ 0.314

N·m Recommended Tightening Torque (N·m)

DNX(F) Shellmill Metric Type

P Steel K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

Maximum Depth of Cut .315" / 25°



Fig 1

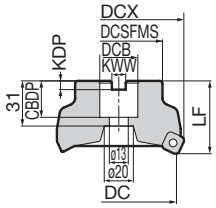


Fig 2

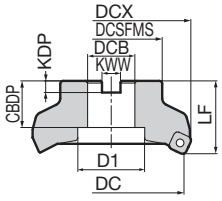


Fig 3

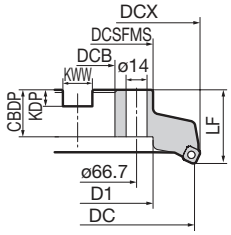
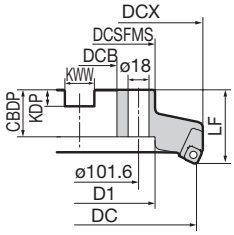


Fig 4



Body (DNX 12000R) Lead Angle 25° General-purpose Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**DNX12080RS**	★	**80*	*88*	*60*	*13.5*	*50*	*27*	*12.4*	*7*	*25*	6	6	*1.2*	1
	DNX12100RS	★	*100*	*108*	*80*	*46*	*50*	*32*	*14.4*	*8.5*	*29*	7	7	*1.6*	2
	DNX12125RS	★	*125*	*133*	*80*	*56*	*63*	*40*	*16.4*	*9.5*	*29*	8	8	*2.8*	2
	DNX12160RS	★	*160*	*168*	*100*	*88*	*63*	*40*	*16.4*	*9.5*	*29*	10	10	*4.4*	3
	DNX12080R	★	**80*	*88*	*60*	*13*	*50*	*25.4*	*9.5*	*6*	*25*	6	6	*1.2*	1
	DNX12100R	★	*100*	*108*	*70*	*46*	*50*	*31.75*	*12.7*	*8*	*32*	7	7	*1.6*	2
	DNX12125R	★	*125*	*133*	*80*	*56*	*63*	*38.1*	*15.9*	*10*	*38*	8	8	*2.8*	2
	DNX12160R	★	*160*	*168*	*100*	*72*	*63*	*50.8*	*19.1*	*11*	*38*	10	10	*4.4*	2

★ Worldwide Warehouse item

Body (DNXF 12000R) Lead Angle 25° Fine Pitch Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**DNXF12080RS**	★	**80*	*88*	*60*	*13.5*	*50*	*27*	*12.4*	*7*	*25*	8	8	*1.2*	1
	DNXF12100RS	★	*100*	*108*	*80*	*46*	*50*	*32*	*14.4*	*8.5*	*29*	10	10	*1.6*	2
	DNXF12125RS	★	*125*	*133*	*80*	*56*	*63*	*40*	*16.4*	*9.5*	*29*	11	11	*2.7*	2
	DNXF12160RS	★	*160*	*168*	*100*	*88*	*63*	*40*	*16.4*	*9.5*	*29*	12	12	*4.4*	3
	DNXF12080R	★	**80*	*88*	*60*	*13*	*50*	*25.4*	*9.5*	*6*	*25*	8	8	*1.2*	1
	DNXF12100R	★	*100*	*108*	*70*	*46*	*50*	*31.75*	*12.7*	*8*	*32*	10	10	*1.6*	2
	DNXF12125R	★	*125*	*133*	*80*	*56*	*63*	*38.1*	*15.9*	*10*	*38*	11	11	*2.7*	2
	DNXF12160R	★	*160*	*168*	*100*	*72*	*63*	*50.8*	*19.1*	*11*	*38*	12	12	*4.4*	2

Cutters with sizes of 200 mm or above come with locators. Inserts are sold separately.

For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

★ Worldwide Warehouse item

Insert

Dimensions (inch" / *mm*)

Grade		Coated Carbide				
Process	High-speed / Light	K	K			
	General-Purpose	K	K		PM	PM
	Roughing			K	PM	PM

Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Wiper Facet Length wpr	Fig
SNMT1205ZNEN-L		●	●	●		V-shaped Blade Type	Light Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-G	●	●	●	●			General-purpose	.039"/ *1.0*	1
SNMT1205ZNEN-H	●	●	●	●			Heavy Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-SH	●	●	●	●	●	Straight Type	Improved Chip Control	.039"/ *1.0*	2
XNGT1205ZNEN-W		●	●			Wiper Type	Improved Surface Roughness	.197"/ *5.0*	3

Fig 1

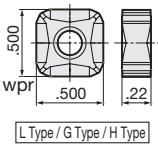


Fig 2

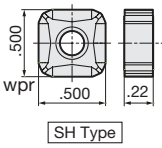
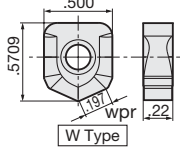
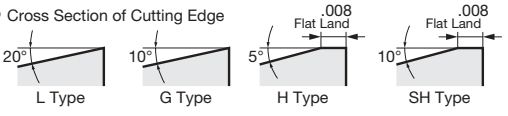


Fig 3 Wiper Insert



● Cross Section of Cutting Edge



Refer to H41 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H42

● USA stocked item

Parts

Locator (*)	Cap Screw (*)	L-Wrench (*)	Insert Screw		Wrench	Anti-Seize Cream
				N·m		
DNXK12R	BX0515	LH040	BFTX0412IP	3.0	TRDR15IP	SUMI-P

* mark is included with ø200 mm or larger sizes.

Identification Code - Metric

DNX	F	12	080	R	S
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

N·m Recommended Tightening Torque (N·m)

DNH(S) Shellmill Metric Type

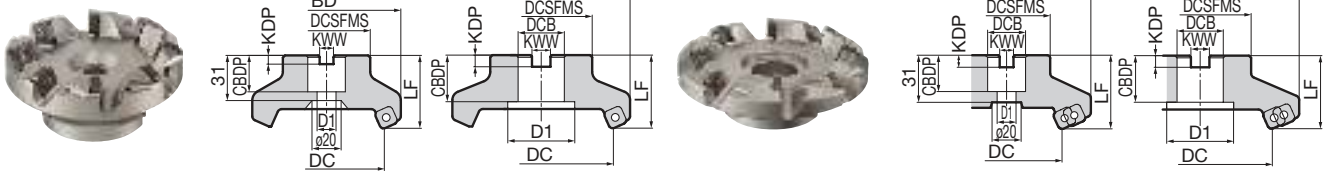
P Steel K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

Maximum Depth of Cut .118" 66° (DNH Type)

Maximum Depth of Cut .197" 66° (DNHS Type)

Fig 1 Fig 2 Fig 3 Fig 4



Body (DNH 12000R) Lead Angle 66° Shallow Depth of Cut High Feed Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**DNH12080R**	★	*80	104	60	13	50	25.4	9.5	6	25	6	6	1.5	1
	DNH12100R	★	100	124	70	46	50	31.75	12.7	8	32	7	7	1.9	2
	DNH12125R	★	125	149	80	56	63	38.1	15.9	10	38	8	8	3.2	2
	DNH12160R	★	160	184	100	72	63	50.8	19.1	11	38	10	10	5.1	2

Body (DNHS 12000R) Lead Angle 66° Medium Depth of Cut High Feed Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**DNHS12080R**	★	*80	116	60	13	50	25.4	9.5	6	25	6	3	1.7	3
	DNHS12100R	★	100	136	70	46	50	31.75	12.7	8	32	8	4	2.3	4
	DNHS12125R	★	125	161	80	56	63	38.1	15.9	10	38	10	5	3.2	4
	DNHS12160R	★	160	196	100	72	63	50.8	19.1	11	38	12	6	6.2	4

Inserts are sold separately.

For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

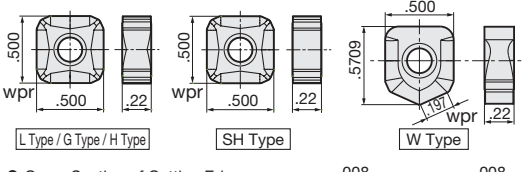
Insert

Dimensions (inch " / *mm*)

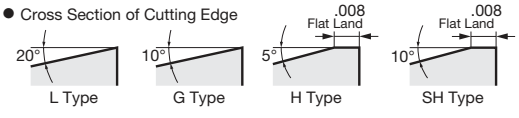
Grade		Coated Carbide				
Process	High-speed / Light	K	K		P M	P M
	General-Purpose	K	K		P M	P M
	Roughing			K	P M	P M

Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Wiper Facet Length wpr	Fig
SNMT1205ZNEN-L		●	●	●		V-shaped Blade Type	Light Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-G	●	●	●	●			General-purpose	.039"/ *1.0*	1
SNMT1205ZNEN-H	●	●	●	●			Heavy Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-SH	●	●	●	●	●	Straight Type	Improved Chip Control	.039"/ *1.0*	2
XNGT1205ZNEN-W		●	●			Wiper Type	Improved Surface Roughness	.197"/ *5.0*	3

Fig 1 Fig 2 Fig 3 Wiper Insert



● Cross Section of Cutting Edge



Refer to H41 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H40

Parts

Locator (*)	Cap Screw (*)	L-Wrench (*)	Insert Screw		Wrench	Anti-seizure Cream
DNXK12R	BX0515	LH040	BFTX0412IP	3.0	TRDR15IP	SUMI-P

* mark is included with ø200 mm or larger sizes.

N·m Recommended Tightening Torque (N·m)

MEMO



■ Features

- **Supports Various Machining Operations**

  Applicable to various machining applications, the cutter lineup includes diameters of ø0.50" to 6.00" (14 to ø160mm), enabling large ramping.

- **Excellent Machining Quality**

  With a combination of optimized cutting edge shape and high-precision molding technology, superb wall surface accuracy and surface finish quality are achieved.

- **Excellent Sharpness with Low Resistance**

  Reduces machining noise and suppresses burrs.

  Lineup includes ground inserts with a focus on sharpness.

- **General-purpose Grade Applicable to Most Part Materials**

  Introducing the new grade ACU2500, supporting machining in a wide range of fields and applicable to steel, stainless steel, and cast iron.

■ Product Range (Body)

Type	Type	Diameters in Stock (inch)										
		ø0.500"	ø0.625"	ø0.750"	ø1.000"	ø1.250"	ø1.500"	ø2.000"	ø2.500"	ø3.000"	ø4.000"	ø6.000"
Shell Mills	WEZ20000R						6	7	8			
	WEZ30000R							5	6	5 7	6 8	8
Endmills	WEZ20000EW	1	2*	2 3*	3 4*	5*						
	WEZ20000EMW		2	2 3	3							
	WEZ20000ELC		2*	2 3*	3 4*	3						
	WEZ30000EW				2*	3*	4	5				
	WEZ30000EMW				2	3						
	WEZ30000ELC				2*	3*	3 4					

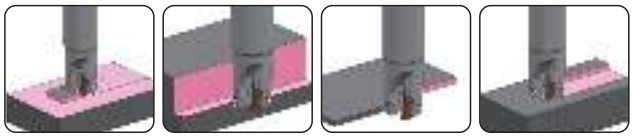
Type	Type	Diameters in Stock (mm)																
		ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shells	WEZ 11000RS											4 6	5 7	6 8	7 10	9 12		
	WEZ 11000R Inch														7 10	9 12		
	WEZ 17000RS											3 4	3 5	4 6	4 7	5 8	6 9 11	8 10 12
	WEZ 17000R Inch														4 7	5 8	6 9 11	8 10 12
With Shank	WEZ 11000E	1	2*	2	2* 3*	3	2 4* 3*	4	4	2 4 3 5*	5	2 6 4	5 7	8	10			
	WEZ 11000EL	1	2*	2	2*	2	2* 3	2	2	2* 3	2 3	2	3					
	WEZ 17000E						2*	2	3	2 3*	3	3 4	3* 5*	4* 6*	7			
	WEZ 17000EL						2	2	2	2* 3	2	2 4 3	3* 5*	4* 6*				

● Numbers inside are number of teeth *mark: Different-diameter shanks in stock Inch Inch Arbor

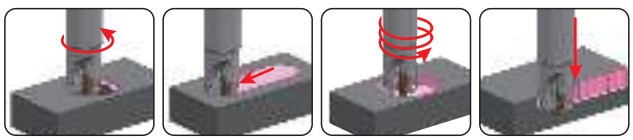
■ Applicable to Various Applications

- **Supports Ramping/Helical Milling/Plunge Cutting**

Face Milling | Shoulder Milling | Side Milling | Slot Milling



Hole Expansion Drilling | Ramping | Helical Milling | Plunge Cutting



■ Optimized Body Design

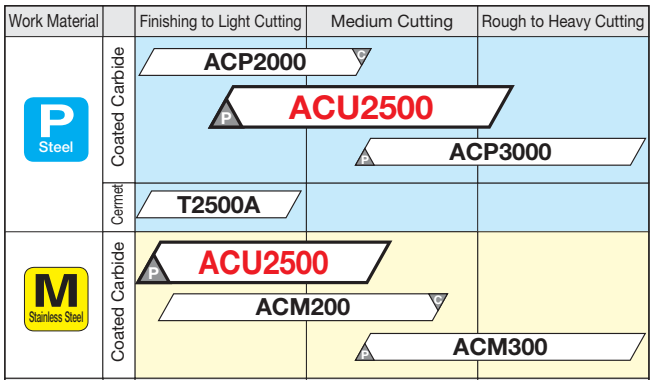
- **Wide Guide Face for Stable Insert Clamping**

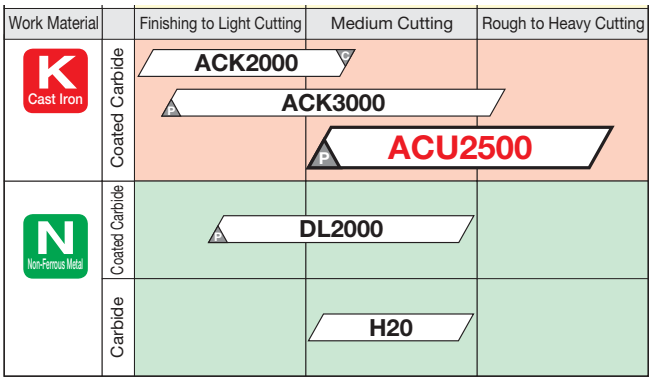


■ Grade Application Range

Newly developed general-purpose ACU2500 grade suitable for various work materials has now been released.

Enhanced lineup of coatings, cemented carbide and cermet for milling steel, stainless steel, cast iron, and aluminum alloy



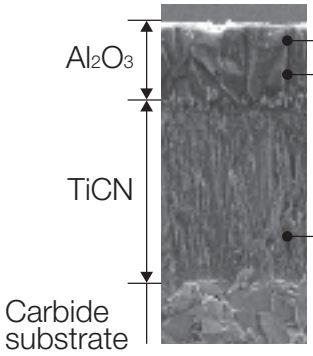


The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD P: PVD

■ Grade Features

New Absotech™ (absolute technology) coating technology that provides absolute stability

ABSOTECH CVD



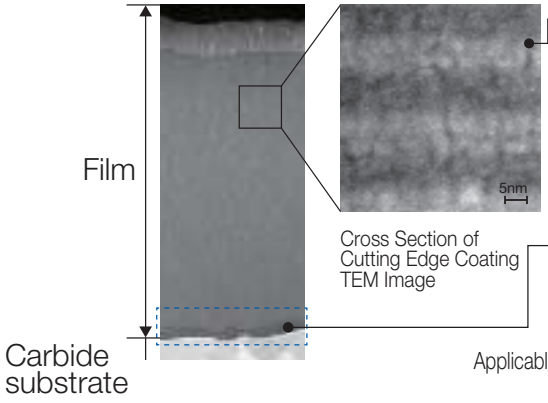
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice as good as conventional types

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al_2O_3 is reinforced for crater wear resistance more than twice as good as conventional types

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice as good as conventional types

Applicable Grades: ACP2000, ACK2000

ABSOTECH PVD



Cross Section of Cutting Edge Coating TEM Image

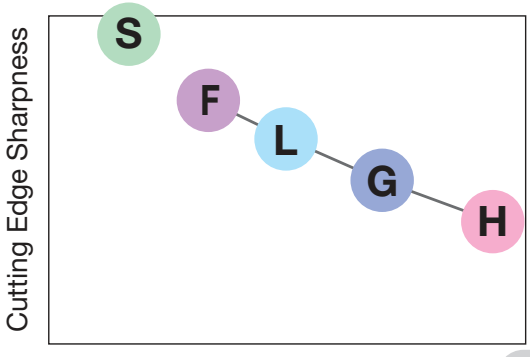
New Super Multi-Layered Composition
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion Chipping resistance more than twice as good as conventional types

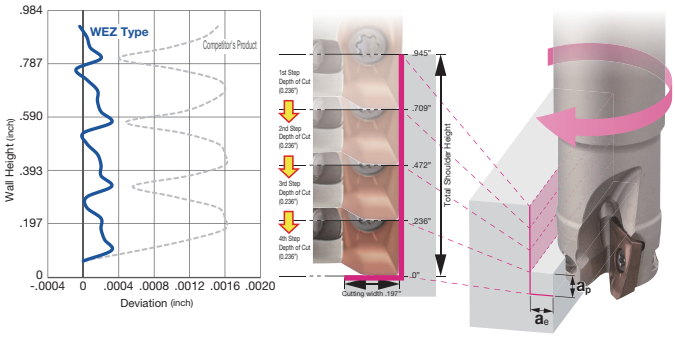
Applicable Grades: ACU2500, ACP3000, ACK3000

■ Chipbreaker Lineup

Work Material	P M K S H N				
	L Type	G Type	H Type	F Type	S Type
Chipbreaker					
Cutting Edge Cross Section 11 Type	Not Available	28°	20°	28°	28°
Cutting Edge Cross Section 17 Type	28°	20°	10°	28°	28°
Applications	Light Cutting Low-rigidity Milling	Main Chipbreaker General-purpose to Interrupted Milling	Heavy Cutting Heavy interrupted machining Hardened Steel	Light Cutting Medium Finishing Low-burr design	For Non-Ferrous Metals

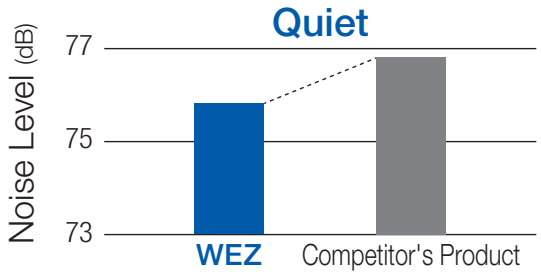


■ Excellent Wall Accuracy



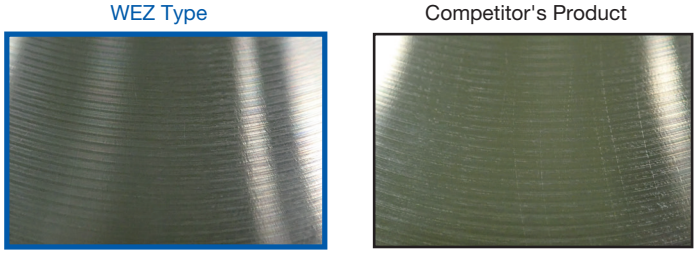
Machine: Vertical Machining Center BT40, Part Material 1050 Steel
Tool: WEZ 11020E03 (ø20, 3 flutes)
Insert: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions: v_c = 492 SFM, f_z = 0.006" IPT, a_p=0.236" x 4 Passes, a_e= 0.197" Dry

■ Lower cutting force helps reduce machining noise



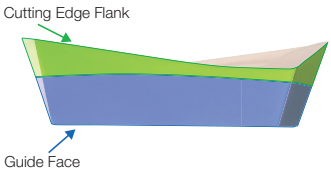
Machine: Vertical Machining Center BT40, Part Material 1050 Steel
Tool: WEZ 11020E03 (ø20, 3 flutes)
Insert: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions: v_c = 492 SFM, f_z = 0.006" IPT, a_p=0.315", a_e= 0.157" Dry

■ Improved Milling Quality



■ High-precision ground class insert with excellent sharpness

- Ground finish on cutting edge and guide face
  The guide face has a ground finish as well as the cutting edge, minimizing corner difference when mounting on the body.
  Stable runout precision and machining quality

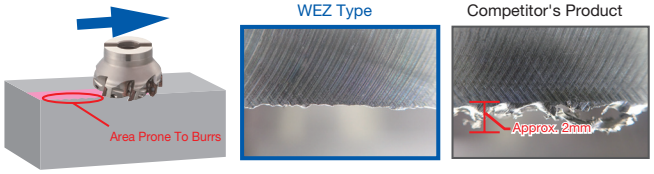


■ Lineup of Chipbreakers for Ground Inserts

- F Type high rake chipbreaker specialized for sharpness and machining accuracy



· Sharpness from ground finish enables burr control
· Good wall accuracy with all diameters



Machine: Vertical Machining Center BT50, Part Material 304 Stainless Steel
Tool: WEZ 11050RS07 (ø50, 7 flutes)
Insert: AOET 11T308PEER-F (ACU2500)
Cutting Conditions: v_c = 394 SFM, f_z = 0.005 IPT, a_p=0.039", a_e= 1.18" Dry

- S Type sharp edge chipbreaker for non-ferrous metals, with excellent adhesion resistance



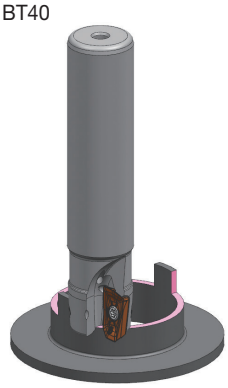
· Suppresses adhesion with rake face lapping
· DLC Coat inserts available for further improved adhesion resistance



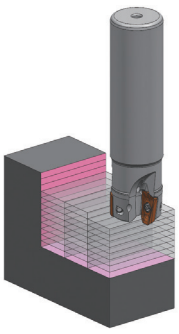
Machine: Vertical Machining Center BT30, Part Material: A383 Aluminum
Tool: WEZ 11020E03 (ø20, 3 flutes)
Insert: AOET 11T308PEFR-S (H20)
Cutting Conditions: v_c = 1,148 SFM, f_z = 0.0039 IPT, a_p=0.118", a_e= 0.393" Dry

■ Application Examples

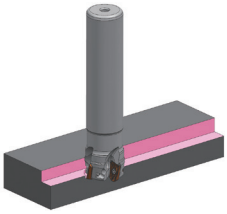
1040 Steel Hub		Sumitomo	Competitor's Product
Vertical Machining Center BT40	Tool	WEZ17025E02	Double-sided, 4 Corners
	Grade	ACU2500	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	25	25
	Number of Teeth	2	2
	v_c (SFM)	394	394
	v_f (IPM)	11.81	11.81
	f_z (IPT)	0.0026	0.0026
	a_p (inch)	0.354	0.354
	a_e (inch)	0.197	0.197
	Coolant	Wet	Wet
	Results	The high chattering sound typical of thin workpieces is gone, and stable machining enables longer tool life.	



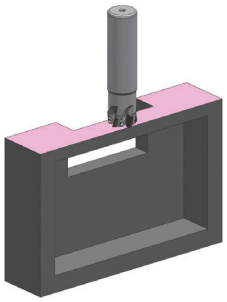
1050 Steel Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center BT50	Tool	WEZ17032E03	Single-Sided 2 Corners
	Grade	ACU2500	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	32	32
	Number of Teeth	3	3
	v_c (SFM)	246	246
	v_f (IPM)	8.86	8.86
	f_z (IPT)	0.004	0.004
	a_p (inch)	0.157	0.157
	a_e (inch)	0.866	0.866
	Coolant	Wet	Wet
	Results	Drastically reduced cutting edge damage with same number of output. Able to continue use, tool life increased.	



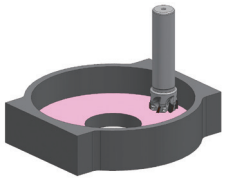
304 Stainless Steel Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center BT40	Tool	WEZ11028E04	–
	Grade	ACU2500	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	28	28
	Number of Teeth	4	4
	v_c (SFM)	492	492
	v_f (IPM)	53.15	53.15
	f_z (IPT)	0.008	0.008
	a_p (inch)	0.079	0.079
	a_e (inch)	0.394	0.394
	Coolant	Dry	Dry
	Results	Tool life increased. Stable machining achieved.	



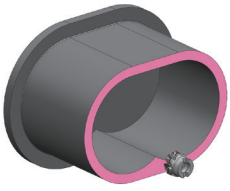
Gray Cast Iron Mounting base		Sumitomo	Competitor's Product
Vertical Machining Center BT50	Tool	WEZ11032E05	Single-Sided 2 Corners
	Grade	ACK3000	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	32	32
	Number of Teeth	5	4
	v_c (SFM)	722	722
	v_f (IPM)	43	43
	f_z (IPT)	0.004	0.004
	a_p (inch)	0.079	0.079
	a_e (inch)	0.787	0.787
	Coolant	Dry	Dry
	Results	Efficiency increased. Even thin areas can be machined without chatter.	



Gray Cast Iron Housing		Sumitomo	Competitor's Product
5-axis Control Vertical Machining Center HSK-A63	Tool	WEZ11040E06	–
	Grade	ACU2500	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	40	40
	Number of Teeth	6	6
	v_c (SFM)	656	656
	v_f (IPM)	51.18	51.18
	f_z (IPT)	0.005	0.005
	a_p (inch)	0.004	0.004
	a_e (inch)	0.0787	0.0787
	Coolant	Wet	Wet
	Results	Stable machining is possible even for thin workpieces or low-rigidity machines.	



Gray Cast Iron Machine Component		Sumitomo	Competitor's Product
Horizontal Machining Center: BT50	Tool	WEZ11050RS07	Single-Sided 2 Corners
	Grade	ACU2500	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	50	50
	Number of Teeth	7	5
	v_c (SFM)	591	591
	v_f (IPM)	31.69	31.69
	f_z (IPT)	0.004	0.004
	a_p (inch)	0.012	0.012
	a_e (inch)	0.394	0.394
	Coolant	Wet	Wet
	Results	Quiet machining sounds for improved machining efficiency. Good surface finish quality with 3µm parallelism and 4µm flatness.	

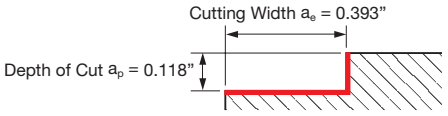


■ Recommended Cutting Conditions

WEZ11 Type

Tool: WEZ11020E03, Insert: AO□T11T3 Type

Cutting Conditions: Depth of Cut a_p = 0.118", Cutting Width a_e = 0.393", Dry



ISO Classification	Part Material	Material Hardness (HB)	Chipbreaker	Grade									
				ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACM200	ACM300	DL2000	H20*
				Feed Rate per Tooth f_z (IPT) Min. - Max.									
				0.003 - 0.008	0.003 - 0.008	0.003 - 0.008	0.003 - 0.007	0.003 - 0.008	0.003 - 0.008	0.003 - 0.008	0.003 - 0.008	0.004 - 0.014	0.004 - 0.014
				Cutting Speed v_c (SFM) Min. - Max.									
P	Steel, Carbon Steel 1015	125	G	885 - 1,335	985 - 1,450	820 - 1,265	755 - 1,190						
P	1045	190	G	560 - 975	660 - 1085	500 - 905	430 - 830						
P	1045 Hardened	250	G	460 - 800	525 - 885	400 - 725	345 - 670						
P	High Carbon Steel	270	G	360 - 635	430 - 705	330 - 600	280 - 545						
P	High Carbon Steel, Hardened	300	G	230 - 400	265 - 440	200 - 360	165 - 325						
P	Low-alloy Steel 4140, 8620	180	G	525 - 920	625 - 1015	460 - 850	400 - 775						
P	4140, 8620 Hardened	275	G	310 - 550	360 - 600	265 - 500	230 - 450						
P	4140, 8620 Hardened	300	G	280 - 475	330 - 550	250 - 450	215 - 415						
P	4140, 8620 Hardened	350	G	200 - 365	230 - 400	165 - 325	150 - 310						
P	High Alloy Steel, D2, H13, A2	200	G	460 - 800	525 - 885	400 - 740							
P	D2, H13, A2 Hardened	325	G	180 - 310	200 - 365	165 - 290							
M	Stainless Steel 430 & others (Martensitic / Ferritic)	200	G	360 - 620						460 - 685	300 - 505		
M	Stainless Steel 403 & Others (Martensitic Hardened)	240	G	330 - 550						410 - 620	265 - 450		
M	304/316 Stainless Steel (Austenitic)	180	G	400 - 650						500 - 725	330 - 550		
K	Cast Iron		G	500 - 905				820 - 1,265	560 - 975				
K	Ductile Cast Iron		G	300 - 550				500 - 760	330 - 580				
S	Exotic Alloy Heat-resistant Alloy		G	100 - 200						115 - 220	85 - 180		
S	Ti Alloy		G	200 - 365						230 - 400	165 - 325		
N	Aluminum Alloy Si less than 12.6%		S									1,640 - 3,610	1,640 - 3,610
N	Aluminum Alloy Si more than 12.6%		S									560 - 905	560 - 905
N	Copper Alloy		S									985 - 1,265	985 - 1,265

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

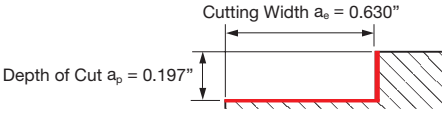
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work material rigidity, depth of cut and other factors.

*For H20, use coolant to prevent adhesion

WEZ17 Type

Tool: WEZ17032E03, Insert: AO□T1705 Type

Cutting Conditions: Depth of Cut a_p = 0.197", Cutting Width a_e = 0.630", Dry



ISO Classification	Part Material	Material Hardness (HB)	Chipbreaker	Grade									
				ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACM200	ACM300	DL2000	H20*
				Feed Rate per Tooth f_z (IPT) Min. - Max.									
				0.004 - 0.012	0.004 - 0.012	0.004 - 0.012	0.004 - 0.008	0.004 - 0.012	0.004 - 0.012	0.004 - 0.012	0.004 - 0.012	0.004 - 0.014	0.004 - 0.014
				Cutting Speed v_c (SFM) Min. - Max.									
P	Steel, Carbon Steel 1015	125	G	935 - 1,410	1,035 - 1,520	870 - 1,335	790 - 1,245						
P	1045	190	G	590 - 1,030	690 - 1,140	525 - 960	445 - 865						
P	1045 Hardened	250	G	475 - 830	560 - 920	430 - 775	360 - 705						
P	High Carbon Steel	270	G	380 - 670	445 - 740	330 - 615	300 - 560						
P	High Carbon Steel, Hardened	300	G	230 - 420	280 - 455	215 - 380	180 - 350						
P	Low-alloy Steel 4140, 8620	180	G	560 - 960	660 - 1,065	495 - 905	430 - 815						
P	4140, 8620 Hardened	275	G	330 - 560	380 - 635	280 - 525	250 - 490						
P	4140, 8620 Hardened	300	G	300 - 505	345 - 560	250 - 470	215 - 430						
P	4140, 8620 Hardened	350	G	215 - 360	250 - 420	180 - 345	165 - 310						
P	High Alloy Steel, D2, H13, A2	200	G	475 - 830	560 - 920	430 - 775							
P	D2, H13, A2 Hardened	325	G	180 - 325	215 - 360	165 - 310							
M	Stainless Steel 430 & others (Martensitic / Ferritic)	200	G	380 - 630						475 - 705	330 - 525		
M	Stainless Steel 403 & Others (Martensitic Hardened)	240	G	345 - 560						430 - 635	280 - 470		
M	304/316 Stainless Steel (Austenitic)	180	G	410 - 685						525 - 760	345 - 580		
K	Cast Iron		G	525 - 960				870 - 1,335	590 - 1,030				
K	Ductile Cast Iron		G	315 - 580				525 - 800	345 - 620				
S	Exotic Alloy Heat-resistant Alloy		G	100 - 220						115 - 220	85 - 180		
S	Ti Alloy		G	200 - 380						250 - 420	165 - 350		
N	Aluminum Alloy Si less than 12.6%		S									1,640 - 3,610	1,640 - 3,610
N	Aluminum Alloy Si more than 12.6%		S									560 - 905	560 - 905
N	Copper Alloy		S									985 - 1,265	985 - 1,265

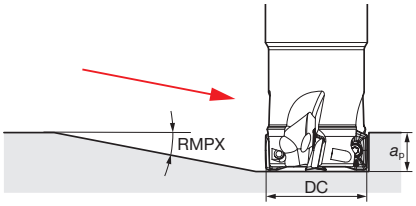
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, part material shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work material rigidity, depth of cut and other factors.

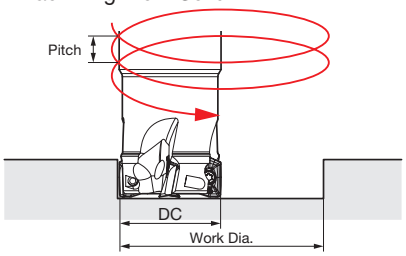
*For H20, use coolant to prevent adhesion

■ Ramping / Helical Milling Upper Limits

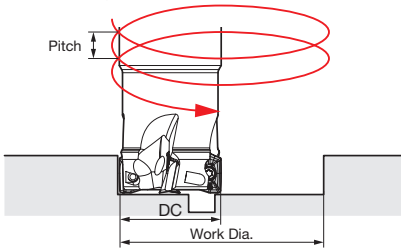
Ramping



Machining From Solid



Machining with prepared hole



WEZ11 Type

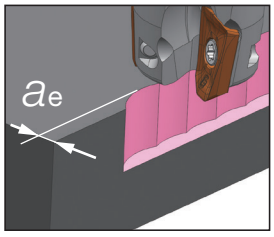
Tool Dia. DC	Max. Ramping Angle RMPX (°)	Machining From Solid				Machining with prepared hole	
		Max. Machining Dia. (inch)	Maximum Pitch	Min. Machining Dia. (inch)	Maximum Pitch	Min. Machining Dia. (inch)	Maximum Pitch
0.500"	6.5	0.892''	0.141''	0.772''	0.092''	0.710''	0.062''
0.625"	10.5	1.142''	0.300''	1.014''	0.220''	0.805''	0.057''
0.750"	7.1	1.392''	0.245''	1.258''	0.186''	1.030''	0.052''
1.000"	4.0	1.892''	0.186''	1.754''	0.149''	1.523''	0.050''
1.250"	2.7	2.392''	0.157''	2.251''	0.130''	2.021''	0.048''
1.500"	1.9	2.892''	0.138''	2.749''	0.116''	2.520''	0.046''
2.000"	1.2	3.892''	0.117''	3.747''	0.101''	3.520''	0.043''
2.500"	0.9	4.892''	0.109''	4.746''	0.096''	4.520''	0.044''

WEZ17 Type

Tool Dia. DC	Max. Ramping Angle RMPX (°)	Machining From Solid				Machining with prepared hole	
		Max. Machining Dia. (inch)	Maximum Pitch	Min. Machining Dia. (inch)	Maximum Pitch	Min. Machining Dia. (inch)	Maximum Pitch
1.000"	10.0	1.892''	0.488''	1.605''	0.316''	1.293''	0.068''
1.250"	6.0	2.392''	0.367''	2.101''	0.256''	1.792''	0.067''
1.500"	4.2	2.892''	0.308''	2.599''	0.225''	2.292''	0.065''
2.000"	2.5	3.892''	0.246''	3.596''	0.191''	3.293''	0.062''
2.500"	1.7	4.892''	0.211''	4.595''	0.170''	4.293''	0.059''

*The table above shows values with nose radius 0.031".

■ Plunge Cutting Upper Limit



	Max. a_e (inch)
WEZ11 Type	0.118"
WEZ17 Type	0.197"

WEZ Shellmill Type - 11mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

New

Rake Angle	Radial	-7° to -11°
	Axial	14° to 15°

.394" 90°



Fig 1

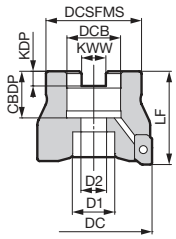


Fig 2

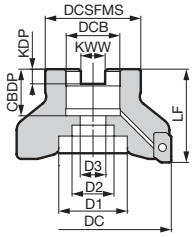
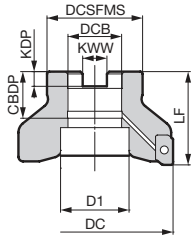


Fig 3



Body (Shell Type)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs/ *kg*)	Fig
Inch	**WEZ21500R06**	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	6	0.441	1
	WEZ22000R07	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	7	0.816	1
	WEZ22500R08	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	8	1.213	1
Metric	**WEZ11040RS04**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	4	*0.21*	1
	WEZ11040RS06	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	6	*0.20*	1
	WEZ11050RS05	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	5	*0.32*	1
	WEZ11050RS07	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	7	*0.31*	1
	WEZ11063RS06	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	6	*0.58*	1
	WEZ11063RS08	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	8	*0.57*	1
	WEZ11080RS07	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	7	*1.08*	1
	WEZ11080RS10	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	10	*1.07*	1
	WEZ11100RS09	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	-	9	*1.57*	3
	WEZ11100RS12	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	-	12	*1.56*	3
	WEZ11080R07	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	-	7	*1.09*	1
	WEZ11080R10	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	-	10	*1.08*	1
	WEZ11100R09	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	*18*	9	*2.12*	2
	WEZ11100R12	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	*18*	12	*2.10*	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

WEZ	11	050	R	S	07
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore	Number of Teeth

Parts

Applicable Cutter		Flat Screw		Integrated Wrench	Anti-seize Cream
Inch	Metric				
WEZ20000 Series	WEZ11000 Series	BFTX0306IP	1.5	TRDR08IP	SUMI-P

Applicable Cutter	Coolant Through Bolts
WEZ21500R06	BFXH 3/8 X 1
WEZ22000R07	BFXH 3/8 X 1
WEZ22500R08	BFXH 1/2 X 11/4

N·m Recommended Tightening Torque (N·m) ● : USA stocked item ★: worldwide warehouse item

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

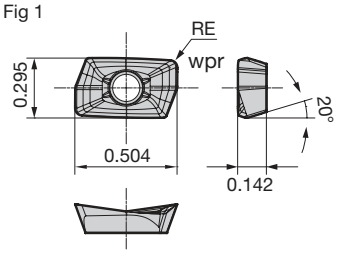
New

Insert

Dimensions (inch" / *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light		P		K		M S			N	P			
	General-purpose	K N M S		P		K	M S	M S	N	N				
	Roughing	K N M S		P		K		M S						
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Wiper Facet Length wpr	Fig
AOMT11T302PEER-G		•		•		•	•	•	–	–	•	.008" / *0.2*	.102" / *2.6*	1
AOMT11T304PEER-G		•	•	•	•	•	•	•	–	–	•	.016" / *0.4*	.110" / *2.8*	1
AOMT11T305PEER-G		•					•	•	–	–		.020" / *0.5*	.106" / *2.7*	1
AOMT11T308PEER-G		•	•	•	•	•	•	•	–	–	•	.031" / *0.8*	.091" / *2.3*	1
AOMT11T310PEER-G		•					•	•	–	–		.039" / *1.0*	.083" / *2.1*	1
AOMT11T312PEER-G		•		•		•	•	•	–	–		.047" / *1.2*	.079" / *2.0*	1
AOMT11T316PEER-G		•		•		•	•	•	–	–		.063" / *1.6*	.067" / *1.7*	1
AOMT11T320PEER-G		•		•		•	•	•	–	–		.079" / *2.0*	.051" / *1.3*	1
AOMT11T324PEER-G		•					•	•	–	–		.094" / *2.4*	.035" / *0.9*	1
AOMT11T330PEER-G		•		•		•	•	•	–	–		.118" / *3.0*	.024" / *0.6*	1
AOMT11T332PEER-G		•					•	•	–	–		.126" / *3.2*	.024" / *0.6*	1
AOMT11T304PEER-H		•	•	•	•	•	•	•	–	–	–	.016" / *0.4*	.110" / *2.8*	1
AOMT11T308PEER-H		•	•	•	•	•	•	•	–	–	–	.031" / *0.8*	.091" / *2.3*	1
AOMT11T312PEER-H		•					•	•	–	–	–	.047" / *1.2*	.079" / *2.0*	1
AOMT11T316PEER-H		•					•	•	–	–	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T302PEER-F		•	–		–		–		–	–	–	.008" / *0.2*	.102" / *2.6*	1
AOET11T304PEER-F		•	–		–		–		–	–	–	.016" / *0.4*	.110" / *2.8*	1
AOET11T305PEER-F		•	–		–		–		–	–	–	.020" / *0.5*	.106" / *2.7*	1
AOET11T308PEER-F		•	–		–		–		–	–	–	.031" / *0.8*	.091" / *2.3*	1
AOET11T310PEER-F		•	–		–		–		–	–	–	.039" / *1.0*	.083" / *2.1*	1
AOET11T312PEER-F		•	–		–		–		–	–	–	.047" / *1.2*	.079" / *2.0*	1
AOET11T316PEER-F		•	–		–		–		–	–	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T320PEER-F		•	–		–		–		–	–	–	.079" / *2.0*	.051" / *1.3*	1
AOET11T324PEER-F		•	–		–		–		–	–	–	.094" / *2.4*	.035" / *0.9*	1
AOET11T330PEER-F		•	–		–		–		–	–	–	.118" / *3.0*	.024" / *0.6*	1
AOET11T332PEER-F		•	–		–		–		–	–	–	.126" / *3.2*	.024" / *0.6*	1
AOET11T302PEFR-S		–	–	–	–	–	–	–	•	•	–	.008" / *0.2*	.102" / *2.6*	1
AOET11T304PEFR-S		–	–	–	–	–	–	–	•	•	–	.016" / *0.4*	.110" / *2.8*	1
AOET11T305PEFR-S		–	–	–	–	–	–	–	•	•	–	.020" / *0.5*	.106" / *2.7*	1
AOET11T308PEFR-S		–	–	–	–	–	–	–	•	•	–	.031" / *0.8*	.091" / *2.3*	1
AOET11T310PEFR-S		–	–	–	–	–	–	–	•	•	–	.039" / *1.0*	.083" / *2.1*	1
AOET11T312PEFR-S		–	–	–	–	–	–	–	•	•	–	.047" / *1.2*	.079" / *2.0*	1
AOET11T316PEFR-S		–	–	–	–	–	–	–	•	•	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T320PEFR-S		–	–	–	–	–	–	–	•	•	–	.079" / *2.0*	.051" / *1.3*	1
AOET11T324PEFR-S		–	–	–	–	–	–	–	•	•	–	.094" / *2.4*	.035" / *0.9*	1
AOET11T330PEFR-S		–	–	–	–	–	–	–	•	•	–	.118" / *3.0*	.024" / *0.6*	1
AOET11T332PEFR-S		–	–	–	–	–	–	–	•	•	–	.126" / *3.2*	.024" / *0.6*	1

Fig 1

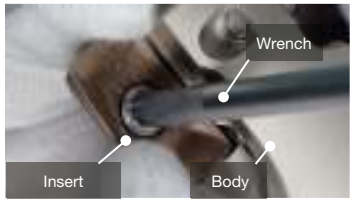


-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-ferrous metals.

● USA stocked item ★: worldwide warehouse item — : Can not make

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly against the seat surface,tighten the screws with the included wrench.
(3) Apply Anti-seize paste to the screws and tighten at the recommended torque.
(4) After tightening, check that there are no gaps on the seat surface.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.



Reworking guidelines
Nose radius = 3.0: C1
(AOMT11T330PEER)
Nose radius = 3.2: C1
(AOMT11T332PEER)
Standard: R1.

WEZ Shellmill Type - 17mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

New

Rake Angle		
	Radial	-4° to -9°
	Axial	10° to 15°

.591" 90° | 15mm 90°



Fig 1

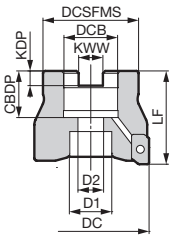


Fig 2

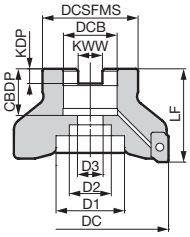


Fig 3

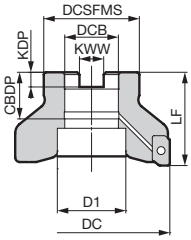


Fig 4

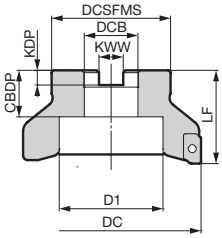
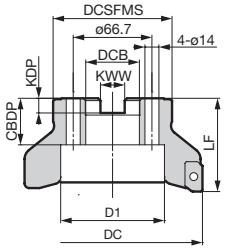


Fig 5



Body (Shell Type)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**WEZ32000R05**	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	5	0.728	1
	WEZ32500R06	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	6	1.124	1
	WEZ33000R05	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	5	1.940	1
	WEZ33000R07	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	7	1.918	1
	WEZ34000R06	●	4.000	3.543	2.500	1.500	0.625	0.380	1.000	2.000	1.181	0.781	6	4.982	3
	WEZ34000R08	●	4.000	3.543	2.500	1.500	0.625	0.380	1.000	2.000	1.181	0.781	8	5.115	3
	WEZ36000R08	●	6.000	4.380	2.500	1.500	0.625	0.380	1.000	2.000	1.181	0.781	8	11.861	4
Metric	**WEZ17040RS03**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	3	*0.19*	1
	WEZ17040RS04	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	4	*0.16*	1
	WEZ17050RS03	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	3	*0.30*	1
	WEZ17050RS05	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	5	*0.26*	1
	WEZ17063RS04	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	4	*0.54*	1
	WEZ17063RS06	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	6	*0.51*	1
	WEZ17080RS04	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	4	*1.10*	1
	WEZ17080RS07	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	7	*1.05*	1
	WEZ17100RS05	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	-	5	*1.58*	3
	WEZ17100RS08	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	-	8	*1.57*	3
	WEZ17125RS06	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	-	6	*3.04*	1
	WEZ17125RS09	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	-	9	*3.07*	1
	WEZ17125RS11	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	-	11	*3.02*	1
	WEZ17160RS08	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	-	8	*5.24*	5
	WEZ17160RS10	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	-	10	*5.31*	5
	WEZ17160RS12	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	-	12	*5.26*	5
	WEZ17080R04	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	-	4	*1.10*	1
	WEZ17080R07	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	-	7	*1.06*	1
	WEZ17100R05	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	*18*	5	*2.08*	2
	WEZ17100R08	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	*18*	8	*2.07*	2
	WEZ17125R06	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	-	6	*3.09*	1
	WEZ17125R09	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	-	9	*3.11*	1
	WEZ17125R11	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	-	11	*3.06*	1
	WEZ17160R08	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	-	8	*5.04*	4
	WEZ17160R10	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	-	10	*5.09*	4
	WEZ17160R12	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	-	12	*5.04*	4

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

WEZ	17	100	R	S	05
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric	Number of Teeth

Parts - Inch

Applicable Cutter	Coolant Through Bolt	Flat Screw	N·m	Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seize Cream
WEZ32000R05	BFXH 3/8 X 1	BFTX0409IP	3.0	-	HPS1015	TRB15IP	SUMI-P
WEZ32500R06	BFXH 1/2 X 11/4						
WEZ33000R05	BFXH 1/2 X 11/4						
WEZ33000R07	BFXH 1/2 X 11/4						
WEZ34000R06	BFXH 3/4 X 2						
WEZ34000R08	BFXH 3/4 X 2						
WEZ36000R08	-			TRDR15IP	-		

Parts - Metric

Applicable Cutter	Flat Screw	N·m	Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seize Cream
WEZ17100R(S)05	BFTX0409IP	3.0	-	HPS1015	TRB15IP	SUMI-P
WEZ17100R(S)08						
WEZ17125R(S)06						
WEZ17125R(S)09						
WEZ17125R(S)11						
WEZ17160R(S)08			TRDR15IP	-	-	
WEZ17160R(S)10						
WEZ17160R(S)12						

N·m Recommended Tightening Torque (N·m) ● USA stocked item ★: worldwide warehouse item

WEZ Shellmill Type - 17mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

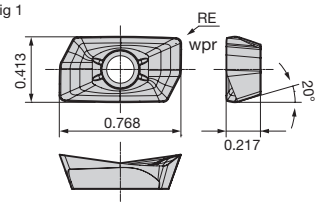
New

Insert

Dimensions(inch " / *mm*)

Grade		Coated Carbide						Carbide	DLC	Cermet			
Process	High-speed/Light		P		K		MS		N	P			
	General-purpose	KS		P		K	MS	MS	N	N			
	Roughing	KS		P		K		MS					
Cat.No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Wiper Facet Length wpr	Fig
AOMT170502PEER-L		•	–		–		•	•	–	–		.008" / *0.2*	.193" / *4.9*	1
AOMT170504PEER-L		•	–	•	–	•	•	•	–	–	•	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-L		•	–	•	–	•	•	•	–	–	•	.031" / *0.8*	.169" / *4.3*	1
AOMT170512PEER-L		•	–		–		•	•	–	–		.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-L		•	–		–		•	•	–	–		.063" / *1.6*	.138" / *3.5*	1
AOMT170502PEER-G		•		•		•	•	•	–	–		.008" / *0.2*	.193" / *4.9*	1
AOMT170504PEER-G		•	•	•	•	•	•	•	–	–	•	.016" / *0.4*	.185" / *4.7*	1
AOMT170505PEER-G		•					•	•	–	–		.020" / *0.5*	.181" / *4.6*	1
AOMT170508PEER-G		•	•	•	•	•	•	•	–	–	•	.031" / *0.8*	.169" / *4.3*	1
AOMT170510PEER-G		•					•	•	–	–		.039" / *1.0*	.161" / *4.1*	1
AOMT170512PEER-G		•		•			•	•	–	–		.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-G		•		•		•	•	•	–	–		.063" / *1.6*	.138" / *3.5*	1
AOMT170520PEER-G		•		•		•	•	•	–	–		.079" / *2.0*	.122" / *3.1*	1
AOMT170524PEER-G		•					•	•	–	–		.094" / *2.4*	.106" / *2.7*	1
AOMT170530PEER-G		•		•		•	•	•	–	–		.118" / *3.0*	.079" / *2.0*	1
AOMT170532PEER-G		•					•	•	–	–		.126" / *3.2*	.071" / *1.8*	1
AOMT170540PEER-G		•		•		•	•	•	–	–		.157" / *4.0*	.039" / *1.0*	1
AOMT170550PEER-G		•		•		•	•	•	–	–		.197" / *5.0*	.020" / *0.5*	1
AOMT170564PEER-G		•					•	•	–	–		.252" / *6.4*	.020" / *0.5*	1
AOMT170504PEER-H		•	•	•	•	•	•	•	–	–	–	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-H		•	•	•	•	•	•	•	–	–	–	.031" / *0.8*	.169" / *4.3*	1
AOMT170512PEER-H		•					•	•	–	–	–	.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-H		•					•	•	–	–	–	.063" / *1.6*	.138" / *3.5*	1
AOET170502PEER-F		•	–		–		–		–	–	–	.008" / *0.2*	.193" / *4.9*	1
AOET170504PEER-F		•	–		–		–		–	–	–	.016" / *0.4*	.185" / *4.7*	1
AOET170505PEER-F		•	–		–		–		–	–	–	.020" / *0.5*	.181" / *4.6*	1
AOET170508PEER-F		•	–		–		–		–	–	–	.031" / *0.8*	.169" / *4.3*	1
AOET170510PEER-F		•	–		–		–		–	–	–	.039" / *1.0*	.161" / *4.1*	1
AOET170512PEER-F		•	–		–		–		–	–	–	.047" / *1.2*	.154" / *3.9*	1
AOET170516PEER-F		•	–		–		–		–	–	–	.063" / *1.6*	.138" / *3.5*	1
AOET170520PEER-F		•	–		–		–		–	–	–	.079" / *2.0*	.122" / *3.1*	1
AOET170524PEER-F		•	–		–		–		–	–	–	.094" / *2.4*	.106" / *2.7*	1
AOET170530PEER-F		•	–		–		–		–	–	–	.118" / *3.0*	.079" / *2.0*	1
AOET170532PEER-F		•	–		–		–		–	–	–	.126" / *3.2*	.071" / *1.8*	1
AOET170540PEER-F		•	–		–		–		–	–	–	.157" / *4.0*	.039" / *1.0*	1
AOET170550PEER-F		•	–		–		–		–	–	–	.197" / *5.0*	.020" / *0.5*	1
AOET170564PEER-F		•	–		–		–		–	–	–	.252" / *6.4*	.020" / *0.5*	1
AOET170502PEFR-S		–	–	–	–	–	–	–	•	•	–	.008" / *0.2*	.193" / *4.9*	1
AOET170504PEFR-S		–	–	–	–	–	–	–	•	•	–	.016" / *0.4*	.185" / *4.7*	1
AOET170505PEFR-S		–	–	–	–	–	–	–	•	•	–	.020" / *0.5*	.181" / *4.6*	1
AOET170508PEFR-S		–	–	–	–	–	–	–	•	•	–	.031" / *0.8*	.169" / *4.3*	1
AOET170510PEFR-S		–	–	–	–	–	–	–	•	•	–	.039" / *1.0*	.161" / *4.1*	1
AOET170512PEFR-S		–	–	–	–	–	–	–	•	•	–	.047" / *1.2*	.154" / *3.9*	1
AOET170516PEFR-S		–	–	–	–	–	–	–	•	•	–	.063" / *1.6*	.138" / *3.5*	1
AOET170520PEFR-S		–	–	–	–	–	–	–	•	•	–	.079" / *2.0*	.122" / *3.1*	1
AOET170524PEFR-S		–	–	–	–	–	–	–	•	•	–	.094" / *2.4*	.106" / *2.7*	1
AOET170530PEFR-S		–	–	–	–	–	–	–	•	•	–	.118" / *3.0*	.079" / *2.0*	1
AOET170532PEFR-S		–	–	–	–	–	–	–	•	•	–	.126" / *3.2*	.071" / *1.8*	1
AOET170540PEFR-S		–	–	–	–	–	–	–	•	•	–	.157" / *4.0*	.039" / *1.0*	1
AOET170550PEFR-S		–	–	–	–	–	–	–	•	•	–	.197" / *5.0*	.020" / *0.5*	1
AOET170564PEFR-S		–	–	–	–	–	–	–	•	•	–	.252" / *6.4*	.020" / *0.5*	1

Fig 1

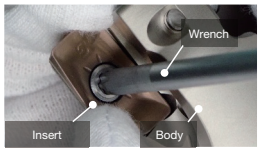


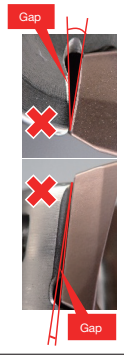
-L: Low Cutting Force,
-G: General-purpose,
-H: Strong Edge,
-F: Medium Finishing,
-S: Non-ferrous metals.

● USA stocked item
★: worldwide warehouse item
– : Can not make

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly against the seat surface,tighten the screws with the included wrench.
(3) Apply Anti-seize paste to the screws and tighten at the recommended torque.
(4) After tightening, check that there are no gaps on the seat surface.





*When mounting inserts with nose radius of 3.0 or above, modification of the body is required.



Reworking guidelines
Nose radius = 3.0: C1
(AOMT170530PEER)
Nose radius = 3.2: C1
(AOMT170532PEER)
Nose radius = 4.0: C2
(AOMT170540PEER)
Nose radius = 5.0: C5
(AOMT170550PEER)
Nose radius = 6.4: C5
(AOMT170564PEER)
Standard: R1.

WEZ Endmill Type - 11mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

New

Rake Angle	Radial	-7° to -18°
	Axial	6° to 15°

.394" 90°



Fig 1

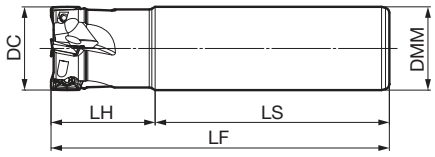
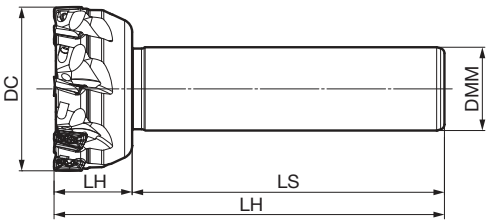


Fig 2



EW: Weldon Shank

Body (Shank Type)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Inch	**WEZ20500EW01**	●	0.500	0.625	1.312	1.906	3.218	1	0.198	1
	WEZ20625EW02-0.500	●	0.625	0.500	1.142	1.781	2.923	2	0.132	2
	WEZ20625EW02	●	0.625	0.625	1.312	1.906	3.218	2	0.220	1
	WEZ20625EMW02	●	0.625	0.625	2.312	1.906	4.218	2	0.287	1
	WEZ20750EW02-0.625	●	0.750	0.625	1.142	1.906	3.048	2	0.198	2
	WEZ20750EW02	●	0.750	0.750	1.533	2.030	3.563	2	0.331	1
	WEZ20750EMW02	●	0.750	0.750	2.533	2.030	4.563	2	0.419	1
	WEZ20750EW03-0.625	●	0.750	0.625	1.142	1.906	3.048	3	0.198	2
	WEZ20750EW03	●	0.750	0.750	1.533	2.030	3.563	3	0.331	1
	WEZ20750EMW03	●	0.750	0.750	2.533	2.030	4.563	3	0.419	1
	WEZ21000EW03-0.750	●	1.000	0.750	1.918	2.030	3.947	3	0.419	2
	WEZ21000EW03	●	1.000	1.000	1.666	2.281	3.947	3	0.397	1
	WEZ21000EMW03	●	1.000	1.000	2.666	2.281	4.947	3	0.882	1
	WEZ21000EW04-0.750	●	1.000	0.750	1.918	2.030	3.947	4	0.419	2
	WEZ21000EW04	●	1.000	1.000	1.666	2.281	3.947	4	0.705	1
	WEZ21250EW05-1.000	●	1.250	1.000	2.060	2.281	4.341	5	0.838	2
	WEZ21250EW05	●	1.250	1.250	2.060	2.281	4.341	5	1.257	1
Metric	**WEZ11014E01**	★	*14*	*16*	*25*	*55*	*80*	1	*0.10*	1
	WEZ11016E02	★	*16*	*16*	*25*	*75*	*100*	2	*0.13*	1
	WEZ11016E02-12	★	*16*	*12*	*25*	*75*	*100*	2	*0.07*	2
	WEZ11018E02	★	*18*	*16*	*25*	*75*	*100*	2	*0.13*	2
	WEZ11020E02	★	*20*	*20*	*30*	*80*	*110*	2	*0.23*	1
	WEZ11020E02-16	★	*20*	*16*	*30*	*80*	*110*	2	*0.15*	2
	WEZ11020E03	★	*20*	*20*	*30*	*80*	*110*	3	*0.22*	1
	WEZ11020E03-16	★	*20*	*16*	*30*	*80*	*110*	3	*0.14*	2
	WEZ11022E03	★	*22*	*20*	*30*	*80*	*110*	3	*0.23*	1
	WEZ11025E02	★	*25*	*25*	*35*	*85*	*120*	2	*0.40*	1
	WEZ11025E03	★	*25*	*25*	*35*	*85*	*120*	3	*0.40*	1
	WEZ11025E03-20	★	*25*	*20*	*35*	*85*	*120*	3	*0.26*	2
	WEZ11025E04	★	*25*	*25*	*35*	*85*	*120*	4	*0.39*	2
	WEZ11025E04-20	★	*25*	*20*	*35*	*85*	*120*	4	*0.26*	2
	WEZ11028E04	★	*28*	*25*	*35*	*85*	*120*	4	*0.41*	1
	WEZ11030E04	★	*30*	*25*	*40*	*90*	*130*	4	*0.46*	1
	WEZ11032E02	★	*32*	*32*	*40*	*90*	*130*	2	*0.74*	1
	WEZ11032E03	★	*32*	*32*	*40*	*90*	*130*	3	*0.73*	1
	WEZ11032E04	★	*32*	*32*	*40*	*90*	*130*	4	*0.73*	2
	WEZ11032E05	★	*32*	*32*	*40*	*90*	*130*	5	*0.72*	2
	WEZ11032E05-25	★	*32*	*25*	*40*	*90*	*130*	5	*0.46*	2
	WEZ11035E05	★	*35*	*32*	*40*	*90*	*130*	5	*0.75*	2
	WEZ11040E02	★	*40*	*32*	*30*	*120*	*150*	2	*0.96*	2
	WEZ11040E04	★	*40*	*32*	*30*	*120*	*150*	4	*0.94*	2
	WEZ11040E06	★	*40*	*32*	*30*	*120*	*150*	6	*0.93*	2
	WEZ11050E05	★	*50*	*32*	*30*	*120*	*150*	5	*1.04*	2
	WEZ11050E07	★	*50*	*32*	*30*	*120*	*150*	7	*1.04*	2
	WEZ11063E08	★	*63*	*32*	*30*	*120*	*150*	8	*1.24*	2
	WEZ11080E10	★	*80*	*32*	*30*	*120*	*150*	10	*1.52*	2

Inserts are sold separately. EW: Weldon Shank

N·m Recommended Tightening Torque (N·m) ● : USA stocked item ★ mark: worldwide warehouse item

WEZ Endmill Type - 11mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

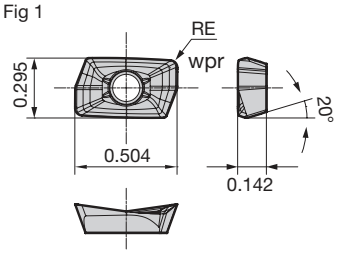
New

Insert

Dimensions (inch" / *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light		P		K		M S			N	P			
	General-purpose	K N S		P		K	M S	M S	N	N				
	Roughing	K N S		P		K		M S						
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Wiper Facet Length wpr	Fig
AOMT11T302PEER-G		•		•		•	•	•	–	–	•	.008" / *0.2*	.102" / *2.6*	1
AOMT11T304PEER-G		•	•	•	•	•	•	•	–	–	•	.016" / *0.4*	.110" / *2.8*	1
AOMT11T305PEER-G		•					•	•	–	–		.020" / *0.5*	.106" / *2.7*	1
AOMT11T308PEER-G		•	•	•	•	•	•	•	–	–	•	.031" / *0.8*	.091" / *2.3*	1
AOMT11T310PEER-G		•					•	•	–	–		.039" / *1.0*	.083" / *2.1*	1
AOMT11T312PEER-G		•		•		•	•	•	–	–		.047" / *1.2*	.079" / *2.0*	1
AOMT11T316PEER-G		•		•		•	•	•	–	–		.063" / *1.6*	.067" / *1.7*	1
AOMT11T320PEER-G		•		•		•	•	•	–	–		.079" / *2.0*	.051" / *1.3*	1
AOMT11T324PEER-G		•					•	•	–	–		.094" / *2.4*	.035" / *0.9*	1
AOMT11T330PEER-G		•		•		•	•	•	–	–		.118" / *3.0*	.024" / *0.6*	1
AOMT11T332PEER-G		•					•	•	–	–		.126" / *3.2*	.024" / *0.6*	1
AOMT11T304PEER-H		•	•	•	•	•	•	•	–	–	–	.016" / *0.4*	.110" / *2.8*	1
AOMT11T308PEER-H		•	•	•	•	•	•	•	–	–	–	.031" / *0.8*	.091" / *2.3*	1
AOMT11T312PEER-H		•					•	•	–	–	–	.047" / *1.2*	.079" / *2.0*	1
AOMT11T316PEER-H		•					•	•	–	–	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T302PEER-F		•	–		–		–		–	–	–	.008" / *0.2*	.102" / *2.6*	1
AOET11T304PEER-F		•	–		–		–		–	–	–	.016" / *0.4*	.110" / *2.8*	1
AOET11T305PEER-F		•	–		–		–		–	–	–	.020" / *0.5*	.106" / *2.7*	1
AOET11T308PEER-F		•	–		–		–		–	–	–	.031" / *0.8*	.091" / *2.3*	1
AOET11T310PEER-F		•	–		–		–		–	–	–	.039" / *1.0*	.083" / *2.1*	1
AOET11T312PEER-F		•	–		–		–		–	–	–	.047" / *1.2*	.079" / *2.0*	1
AOET11T316PEER-F		•	–		–		–		–	–	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T320PEER-F		•	–		–		–		–	–	–	.079" / *2.0*	.051" / *1.3*	1
AOET11T324PEER-F		•	–		–		–		–	–	–	.094" / *2.4*	.035" / *0.9*	1
AOET11T330PEER-F		•	–		–		–		–	–	–	.118" / *3.0*	.024" / *0.6*	1
AOET11T332PEER-F		•	–		–		–		–	–	–	.126" / *3.2*	.024" / *0.6*	1
AOET11T302PEFR-S		–	–	–	–	–	–	–	•	•	–	.008" / *0.2*	.102" / *2.6*	1
AOET11T304PEFR-S		–	–	–	–	–	–	–	•	•	–	.016" / *0.4*	.110" / *2.8*	1
AOET11T305PEFR-S		–	–	–	–	–	–	–	•	•	–	.020" / *0.5*	.106" / *2.7*	1
AOET11T308PEFR-S		–	–	–	–	–	–	–	•	•	–	.031" / *0.8*	.091" / *2.3*	1
AOET11T310PEFR-S		–	–	–	–	–	–	–	•	•	–	.039" / *1.0*	.083" / *2.1*	1
AOET11T312PEFR-S		–	–	–	–	–	–	–	•	•	–	.047" / *1.2*	.079" / *2.0*	1
AOET11T316PEFR-S		–	–	–	–	–	–	–	•	•	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T320PEFR-S		–	–	–	–	–	–	–	•	•	–	.079" / *2.0*	.051" / *1.3*	1
AOET11T324PEFR-S		–	–	–	–	–	–	–	•	•	–	.094" / *2.4*	.035" / *0.9*	1
AOET11T330PEFR-S		–	–	–	–	–	–	–	•	•	–	.118" / *3.0*	.024" / *0.6*	1
AOET11T332PEFR-S		–	–	–	–	–	–	–	•	•	–	.126" / *3.2*	.024" / *0.6*	1

Fig 1

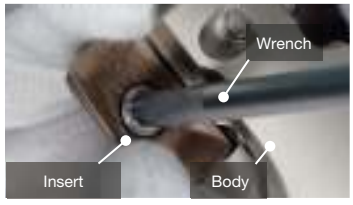


-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-ferrous metals.

● USA stocked item ★: worldwide warehouse item — : Can not make

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly against the seat surface,tighten the screws with the included wrench.
(3) Apply Anti-seize paste to the screws and tighten at the recommended torque.
(4) After tightening, check that there are no gaps on the seat surface.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.



Reworking guidelines
Nose radius = 3.0: C1
(AOMT11T330PEER)
Nose radius = 3.2: C1
(AOMT11T332PEER)
Standard: R1.

WEZ Endmill Type - 11mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

New

Rake Angle		
	Radial	-7° to -18°
	Axial	6° to 15°

.394" 90°



Fig 1

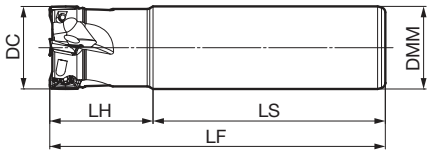
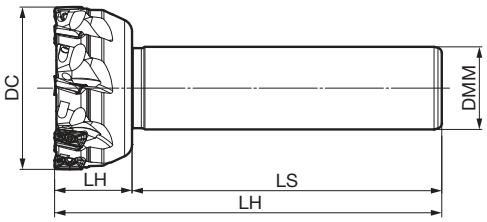


Fig 2



Body (Long Type)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WEZ20625ELC02-0.500**	●	0.625	0.500	0.945	7.055	8.000	2	0.331	2
	WEZ20625ELC02	●	0.625	0.625	2.624	5.376	8.000	2	0.551	1
	WEZ20750ELC02-0.625	●	0.750	0.625	1.142	6.858	8.000	2	0.573	2
	WEZ20750ELC02	●	0.750	0.750	3.067	4.933	8.000	2	0.794	1
	WEZ20750ELC03-0.625	●	0.750	0.625	1.142	6.858	8.000	3	0.573	2
	WEZ20750ELC03	●	0.750	0.750	3.067	4.933	8.000	3	0.794	1
	WEZ21000ELC03-0.750	●	1.000	0.750	1.339	6.661	8.000	3	0.882	2
	WEZ21000ELC03	●	1.000	1.000	3.332	6.669	10.000	3	1.896	1
	WEZ21000ELC04-0.750	●	1.000	0.750	1.339	6.661	8.000	4	0.882	2
	WEZ21000ELC04	●	1.000	1.000	3.332	6.669	10.000	4	1.874	1
	WEZ21250ELC03-1.000	●	1.250	1.000	1.535	6.465	8.000	3	1.742	2
	WEZ21250ELC03	●	1.250	1.250	4.120	5.880	10.000	3	3.064	1
Metric	**WEZ11014EL01**	★	*14*	*16*	*25*	*95*	*120*	1	*0.16*	1
	WEZ11016EL02	★	*16*	*16*	*25*	*120*	*145*	2	*0.19*	1
	WEZ11016EL02-14	★	*16*	*14*	*25*	*120*	*145*	2	*0.15*	2
	WEZ11018EL02	★	*18*	*16*	*25*	*120*	*145*	2	*0.20*	2
	WEZ11020EL02	★	*20*	*20*	*40*	*110*	*150*	2	*0.31*	1
	WEZ11020EL02-18	★	*20*	*18*	*25*	*125*	*150*	2	*0.26*	2
	WEZ11022EL02	★	*22*	*20*	*30*	*120*	*150*	2	*0.32*	2
	WEZ11025EL02	★	*25*	*25*	*50*	*120*	*170*	2	*0.57*	1
	WEZ11025EL02-22	★	*25*	*22*	*30*	*140*	*170*	2	*0.46*	2
	WEZ11025EL03	★	*25*	*25*	*50*	*120*	*170*	3	*0.57*	1
	WEZ11028EL02	★	*28*	*25*	*30*	*140*	*170*	2	*0.60*	2
	WEZ11030EL02	★	*30*	*25*	*30*	*140*	*170*	2	*0.62*	2
	WEZ11032EL02	★	*32*	*32*	*60*	*110*	*170*	2	*0.97*	1
	WEZ11032EL02-30	★	*32*	*30*	*30*	*140*	*170*	2	*0.88*	2
	WEZ11032EL03	★	*32*	*32*	*60*	*110*	*170*	3	*0.96*	1
	WEZ11035EL02	★	*35*	*32*	*30*	*140*	*170*	2	*1.02*	2
	WEZ11035EL03	★	*35*	*32*	*30*	*140*	*170*	3	*1.00*	2
	WEZ11040EL02	★	*40*	*32*	*30*	*140*	*170*	2	*1.08*	2
	WEZ11050EL03	★	*50*	*32*	*30*	*140*	*170*	3	*1.19*	2

Inserts are sold separately.

Identification Code

WEZ 11 025 E L 02 -22

WEZ	11	025	E	L	02	-22
Cutter Series	Insert Size	Cutter Dia.	With Shank	Long Type	Number of Teeth	Shank Dia.

Parts- Inch

Applicable Cutter	Flat Screw	N·m	Integrated Wrench	Anti-seize Cream
WEZ20625ELC02-0.500 WEZ20625ELC02	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEZ20750ELC02-0.625 WEZ20750ELC02 WEZ20750ELC03-0.625 WEZ20750ELC03 WEZ21000ELC03-0.750 WEZ21000ELC03 WEZ21000ELC04-0.750 WEZ21000ELC04 WEZ21250ELC03-1.000 WEZ21250ELC03	BFTX0306IP	1.5		

Parts - Metric

Applicable Cutter	Flat Screw	N·m	Integrated Wrench	Anti-seize Cream
WEZ11014EL01 WEZ11016EL02(-14) WEZ11018EL02	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEZ11020EL02(-18) WEZ11022EL02 WEZ11025EL02(-22) WEZ11025EL03 WEZ11028EL02 WEZ11030EL02 WEZ11032EL02(-30) WEZ11032EL03 WEZ11035EL02 WEZ11035EL03 WEZ11040EL02 WEZ11050EL03	BFTX0306IP	1.5		

N·m Recommended Tightening Torque (N·m) ● : USA stocked item ★: worldwide warehouse item

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

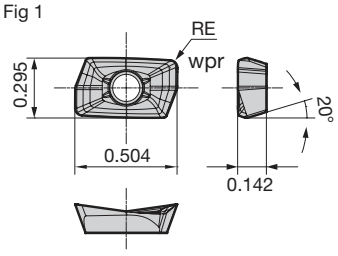
New

Insert

Dimensions (inch" / *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet				
Process	High-speed / Light		P		K		M S			N	P				
	General-purpose	K M S		P		K	M S	M S	N	N					
	Roughing	K M S		P		K		M S							
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Wiper Facet Length wpr	Fig
AOMT11T302PEER-G		•		•		•	•	•	–	–	•	.008" / *0.2*	.102" / *2.6*	1
AOMT11T304PEER-G		•	•	•	•	•	•	•	–	–	•	.016" / *0.4*	.110" / *2.8*	1
AOMT11T305PEER-G		•					•	•	–	–		.020" / *0.5*	.106" / *2.7*	1
AOMT11T308PEER-G		•	•	•	•	•	•	•	–	–	•	.031" / *0.8*	.091" / *2.3*	1
AOMT11T310PEER-G		•					•	•	–	–		.039" / *1.0*	.083" / *2.1*	1
AOMT11T312PEER-G		•		•		•	•	•	–	–		.047" / *1.2*	.079" / *2.0*	1
AOMT11T316PEER-G		•		•		•	•	•	–	–		.063" / *1.6*	.067" / *1.7*	1
AOMT11T320PEER-G		•		•		•	•	•	–	–		.079" / *2.0*	.051" / *1.3*	1
AOMT11T324PEER-G		•					•	•	–	–		.094" / *2.4*	.035" / *0.9*	1
AOMT11T330PEER-G		•		•		•	•	•	–	–		.118" / *3.0*	.024" / *0.6*	1
AOMT11T332PEER-G		•					•	•	–	–		.126" / *3.2*	.024" / *0.6*	1
AOMT11T304PEER-H		•	•	•	•	•	•	•	–	–	–	.016" / *0.4*	.110" / *2.8*	1
AOMT11T308PEER-H		•	•	•	•	•	•	•	–	–	–	.031" / *0.8*	.091" / *2.3*	1
AOMT11T312PEER-H		•					•	•	–	–	–	.047" / *1.2*	.079" / *2.0*	1
AOMT11T316PEER-H		•					•	•	–	–	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T302PEER-F		•	–		–		–		–	–	–	.008" / *0.2*	.102" / *2.6*	1
AOET11T304PEER-F		•	–		–		–		–	–	–	.016" / *0.4*	.110" / *2.8*	1
AOET11T305PEER-F		•	–		–		–		–	–	–	.020" / *0.5*	.106" / *2.7*	1
AOET11T308PEER-F		•	–		–		–		–	–	–	.031" / *0.8*	.091" / *2.3*	1
AOET11T310PEER-F		•	–		–		–		–	–	–	.039" / *1.0*	.083" / *2.1*	1
AOET11T312PEER-F		•	–		–		–		–	–	–	.047" / *1.2*	.079" / *2.0*	1
AOET11T316PEER-F		•	–		–		–		–	–	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T320PEER-F		•	–		–		–		–	–	–	.079" / *2.0*	.051" / *1.3*	1
AOET11T324PEER-F		•	–		–		–		–	–	–	.094" / *2.4*	.035" / *0.9*	1
AOET11T330PEER-F		•	–		–		–		–	–	–	.118" / *3.0*	.024" / *0.6*	1
AOET11T332PEER-F		•	–		–		–		–	–	–	.126" / *3.2*	.024" / *0.6*	1
AOET11T302PEFR-S		–	–	–	–	–	–	–	•	•	–	.008" / *0.2*	.102" / *2.6*	1
AOET11T304PEFR-S		–	–	–	–	–	–	–	•	•	–	.016" / *0.4*	.110" / *2.8*	1
AOET11T305PEFR-S		–	–	–	–	–	–	–	•	•	–	.020" / *0.5*	.106" / *2.7*	1
AOET11T308PEFR-S		–	–	–	–	–	–	–	•	•	–	.031" / *0.8*	.091" / *2.3*	1
AOET11T310PEFR-S		–	–	–	–	–	–	–	•	•	–	.039" / *1.0*	.083" / *2.1*	1
AOET11T312PEFR-S		–	–	–	–	–	–	–	•	•	–	.047" / *1.2*	.079" / *2.0*	1
AOET11T316PEFR-S		–	–	–	–	–	–	–	•	•	–	.063" / *1.6*	.067" / *1.7*	1
AOET11T320PEFR-S		–	–	–	–	–	–	–	•	•	–	.079" / *2.0*	.051" / *1.3*	1
AOET11T324PEFR-S		–	–	–	–	–	–	–	•	•	–	.094" / *2.4*	.035" / *0.9*	1
AOET11T330PEFR-S		–	–	–	–	–	–	–	•	•	–	.118" / *3.0*	.024" / *0.6*	1
AOET11T332PEFR-S		–	–	–	–	–	–	–	•	•	–	.126" / *3.2*	.024" / *0.6*	1

Fig 1



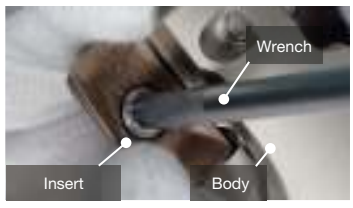
Recommended Cutting Conditions ☞ H50

-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-ferrous metals.

• USA stocked item ★: worldwide warehouse item — : Can not make

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly against the seat surface,tighten the screws with the included wrench.
(3) Apply Anti-seize paste to the screws and tighten at the recommended torque.
(4) After tightening, check that there are no gaps on the seat surface.





*When mounting inserts with nose radius of 3.0 or above, modification of the body is required.



Modify this edge.

Reworking guidelines
Nose radius = 3.0: C1
(AOMT11T330PEER)
Nose radius = 3.2: C1
(AOMT11T332PEER)
Standard: R1.

WEZ Endmill Type - 17mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

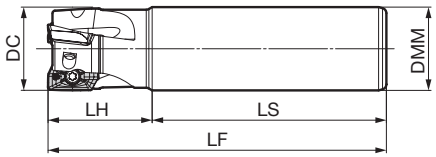
New

Rake Angle		
	Radial	-6° to -12°
	Axial	6° to 15°

.591" 90°

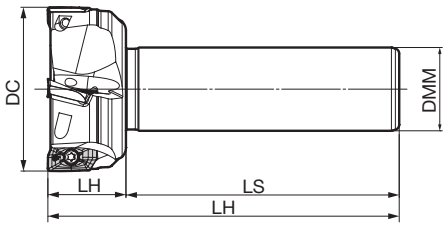


Fig 1



EW: Weldon Shank

Fig 2



Body (Shank Type)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**WEZ31000EW02-0.750**	●	1.000	0.750	1.666	2.281	3.947	2	0.397	2
	WEZ31000EW02	●	1.000	1.000	1.666	2.281	3.947	2	0.683	1
	WEZ31000EMW02	●	1.000	1.000	2.666	2.281	4.947	2	0.860	1
	WEZ31000ELW02	●	1.000	1.000	4.060	2.281	6.341	2	1.100	1
	WEZ31250EW03-1.000	●	1.250	1.000	2.060	2.281	4.341	3	0.816	2
	WEZ31250EW03	●	1.250	1.250	2.060	2.281	4.341	3	1.190	1
	WEZ31250EMW03	●	1.250	1.250	3.000	2.281	5.281	3	1.477	1
	WEZ31500EW04	●	1.500	1.250	2.060	2.281	4.341	4	1.411	1
	WEZ32000EW05	●	2.000	1.250	2.060	2.281	4.341	5	2.050	1
Metric	**WEZ17025E02**	★	*25*	*25*	*35*	*85*	*120*	2	*0.38*	1
	WEZ17025E02-20	★	*25*	*20*	*35*	*85*	*120*	2	*0.25*	2
	WEZ17028E02	★	*28*	*25*	*35*	*85*	*120*	2	*0.40*	2
	WEZ17030E03	★	*30*	*25*	*40*	*90*	*130*	3	*0.43*	2
	WEZ17032E02	★	*32*	*32*	*40*	*90*	*130*	2	*0.71*	1
	WEZ17032E03	★	*32*	*32*	*40*	*90*	*130*	3	*0.69*	1
	WEZ17032E03-25	★	*32*	*25*	*40*	*90*	*130*	3	*0.44*	2
	WEZ17035E03	★	*35*	*32*	*40*	*90*	*130*	3	*0.72*	2
	WEZ17040E03	★	*40*	*32*	*30*	*105*	*135*	3	*0.81*	2
	WEZ17040E04	★	*40*	*32*	*30*	*105*	*135*	4	*0.79*	2
	WEZ17050E03	★	*50*	*32*	*30*	*105*	*135*	3	*0.93*	2
	WEZ17050E03-42	★	*50*	*42*	*30*	*105*	*135*	3	*1.41*	2
	WEZ17050E05	★	*50*	*32*	*30*	*105*	*135*	5	*0.89*	2
	WEZ17050E05-42	★	*50*	*42*	*30*	*105*	*135*	5	*1.37*	2
	WEZ17063E04	★	*63*	*32*	*30*	*105*	*135*	4	*1.10*	2
	WEZ17063E04-42	★	*63*	*42*	*30*	*105*	*135*	4	*1.58*	2
	WEZ17063E06	★	*63*	*32*	*30*	*105*	*135*	6	*1.08*	2
	WEZ17063E06-42	★	*63*	*42*	*30*	*105*	*135*	6	*1.56*	2
	WEZ17080E07	★	*80*	*32*	*30*	*105*	*135*	7	*1.39*	2

Inserts are sold separately. EW: Weldon Shank. EL: Long Type

Identification Code

WEZ	**17**	**032**	**E**	**L**	**02**	**-30**
Cutter Series	Insert Size	Cutter Dia.	With Shank	Long Type	Number of Teeth	Shank Dia.

Parts - Inch

Applicable Cutter	Flat Screw		Integrated Wrench	Anti-seize Cream
WEZ31000EW02-0.750	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ31000EW02				
WEZ31000EMW02				
WEZ31250EW03-1.000	BFTX0409IP			
WEZ31250EW03				
WEZ31250EMW03				
WEZ31500EW04				
WEZ32000EW05				

Parts - Metric

Applicable Cutter	Flat Screw		Integrated Wrench	Anti-seize Cream
WEZ17025EL02	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ17028EL02				
WEZ17030EL02				
WEZ17032EL02(-30)	BFTX0409IP			
WEZ17032EL03				
WEZ17035EL02				
WEZ17040EL02				
WEZ17040EL03				
WEZ17040EL04				
WEZ17050EL03(-42)				
WEZ17050EL05(-42)				
WEZ17063EL04(-42)				
WEZ17063EL06(-42)				

N·m Recommended Tightening Torque (N·m) ● : USA stocked item ★: worldwide warehouse item

WEZ Endmill Type - 17mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

New

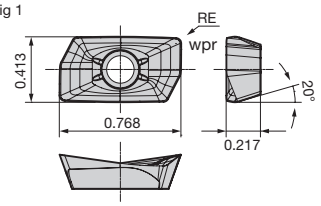
Insert

Dimensions(inch " / *mm*)

Grade		Coated Carbide						Carbide	DLC	Cermet
Process	High-speed/Light		P		K		MS		N	P
	General-purpose	KS		P		K	MS	N	N	
	Roughing	KS		P		K		MS			

Cat.No.	ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Wiper Facet Length wpr	Fig
AOMT170502PEER-L	•	–		–		•	•	–	–		.008" / *0.2*	.193" / *4.9*	1
AOMT170504PEER-L	•	–	•	–	•	•	•	–	–	•	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-L	•	–	•	–	•	•	•	–	–	•	.031" / *0.8*	.169" / *4.3*	1
AOMT170512PEER-L	•	–		–		•	•	–	–		.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-L	•	–		–		•	•	–	–		.063" / *1.6*	.138" / *3.5*	1
AOMT170502PEER-G	•		•		•	•	•	–	–		.008" / *0.2*	.193" / *4.9*	1
AOMT170504PEER-G	•	•	•	•	•	•	•	–	–	•	.016" / *0.4*	.185" / *4.7*	1
AOMT170505PEER-G	•					•	•	–	–		.020" / *0.5*	.181" / *4.6*	1
AOMT170508PEER-G	•	•	•	•	•	•	•	–	–	•	.031" / *0.8*	.169" / *4.3*	1
AOMT170510PEER-G	•					•	•	–	–		.039" / *1.0*	.161" / *4.1*	1
AOMT170512PEER-G	•		•			•	•	–	–		.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-G	•		•		•	•	•	–	–		.063" / *1.6*	.138" / *3.5*	1
AOMT170520PEER-G	•		•		•	•	•	–	–		.079" / *2.0*	.122" / *3.1*	1
AOMT170524PEER-G	•					•	•	–	–		.094" / *2.4*	.106" / *2.7*	1
AOMT170530PEER-G	•		•		•	•	•	–	–		.118" / *3.0*	.079" / *2.0*	1
AOMT170532PEER-G	•					•	•	–	–		.126" / *3.2*	.071" / *1.8*	1
AOMT170540PEER-G	•		•		•	•	•	–	–		.157" / *4.0*	.039" / *1.0*	1
AOMT170550PEER-G	•		•		•	•	•	–	–		.197" / *5.0*	.020" / *0.5*	1
AOMT170564PEER-G	•					•	•	–	–		.252" / *6.4*	.020" / *0.5*	1
AOMT170504PEER-H	•	•	•	•	•	•	•	–	–	–	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-H	•	•	•	•	•	•	•	–	–	–	.031" / *0.8*	.169" / *4.3*	1
AOMT170512PEER-H	•					•	•	–	–	–	.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-H	•					•	•	–	–	–	.063" / *1.6*	.138" / *3.5*	1
AOET170502PEER-F	•	–		–		–		–	–	–	.008" / *0.2*	.193" / *4.9*	1
AOET170504PEER-F	•	–		–		–		–	–	–	.016" / *0.4*	.185" / *4.7*	1
AOET170505PEER-F	•	–		–		–		–	–	–	.020" / *0.5*	.181" / *4.6*	1
AOET170508PEER-F	•	–		–		–		–	–	–	.031" / *0.8*	.169" / *4.3*	1
AOET170510PEER-F	•	–		–		–		–	–	–	.039" / *1.0*	.161" / *4.1*	1
AOET170512PEER-F	•	–		–		–		–	–	–	.047" / *1.2*	.154" / *3.9*	1
AOET170516PEER-F	•	–		–		–		–	–	–	.063" / *1.6*	.138" / *3.5*	1
AOET170520PEER-F	•	–		–		–		–	–	–	.079" / *2.0*	.122" / *3.1*	1
AOET170524PEER-F	•	–		–		–		–	–	–	.094" / *2.4*	.106" / *2.7*	1
AOET170530PEER-F	•	–		–		–		–	–	–	.118" / *3.0*	.079" / *2.0*	1
AOET170532PEER-F	•	–		–		–		–	–	–	.126" / *3.2*	.071" / *1.8*	1
AOET170540PEER-F	•	–		–		–		–	–	–	.157" / *4.0*	.039" / *1.0*	1
AOET170550PEER-F	•	–		–		–		–	–	–	.197" / *5.0*	.020" / *0.5*	1
AOET170564PEER-F	•	–		–		–		–	–	–	.252" / *6.4*	.020" / *0.5*	1
AOET170502PEFR-S	–	–	–	–	–	–	–	•	•	–	.008" / *0.2*	.193" / *4.9*	1
AOET170504PEFR-S	–	–	–	–	–	–	–	•	•	–	.016" / *0.4*	.185" / *4.7*	1
AOET170505PEFR-S	–	–	–	–	–	–	–	•	•	–	.020" / *0.5*	.181" / *4.6*	1
AOET170508PEFR-S	–	–	–	–	–	–	–	•	•	–	.031" / *0.8*	.169" / *4.3*	1
AOET170510PEFR-S	–	–	–	–	–	–	–	•	•	–	.039" / *1.0*	.161" / *4.1*	1
AOET170512PEFR-S	–	–	–	–	–	–	–	•	•	–	.047" / *1.2*	.154" / *3.9*	1
AOET170516PEFR-S	–	–	–	–	–	–	–	•	•	–	.063" / *1.6*	.138" / *3.5*	1
AOET170520PEFR-S	–	–	–	–	–	–	–	•	•	–	.079" / *2.0*	.122" / *3.1*	1
AOET170524PEFR-S	–	–	–	–	–	–	–	•	•	–	.094" / *2.4*	.106" / *2.7*	1
AOET170530PEFR-S	–	–	–	–	–	–	–	•	•	–	.118" / *3.0*	.079" / *2.0*	1
AOET170532PEFR-S	–	–	–	–	–	–	–	•	•	–	.126" / *3.2*	.071" / *1.8*	1
AOET170540PEFR-S	–	–	–	–	–	–	–	•	•	–	.157" / *4.0*	.039" / *1.0*	1
AOET170550PEFR-S	–	–	–	–	–	–	–	•	•	–	.197" / *5.0*	.020" / *0.5*	1
AOET170564PEFR-S	–	–	–	–	–	–	–	•	•	–	.252" / *6.4*	.020" / *0.5*	1

Fig 1

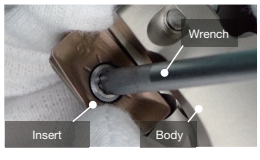


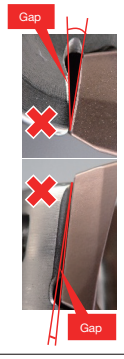
-L: Low Cutting Force,
-G: General-purpose,
-H: Strong Edge,
-F: Medium Finishing,
-S: Non-ferrous metals.

● USA stocked item
★: worldwide warehouse item
– : Can not make

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly against the seat surface,tighten the screws with the included wrench.
(3) Apply Anti-seize paste to the screws and tighten at the recommended torque.
(4) After tightening, check that there are no gaps on the seat surface.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.



Reworking guidelines
Nose radius = 3.0: C1
(AOMT170530PEER)
Nose radius = 3.2: C1
(AOMT170532PEER)
Nose radius = 4.0: C2
(AOMT170540PEER)
Nose radius = 5.0: C5
(AOMT170550PEER)
Nose radius = 6.4: C5
(AOMT170564PEER)
Standard: R1.

WEZ Endmill Type - 17mm Insert

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

New

Rake Angle		
	Radial	-6° to -12°
	Axial	6° to 15°

.591" 90°



Fig 1

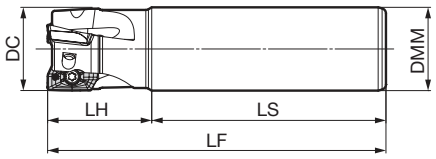
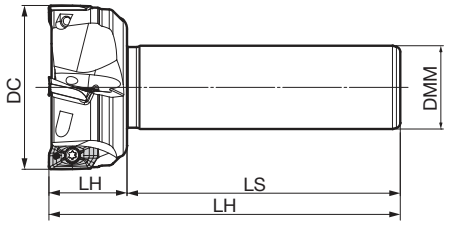


Fig 2



Body (Long Type)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**WEZ31000ELC02-0.750**	●	1.000	0.750	1.339	6.661	8.000	2	0.882	2
	WEZ31000ELC02	●	1.000	1.000	2.666	7.334	10.000	2	1.896	1
	WEZ31250ELC03-1.000	●	1.250	1.000	1.535	8.465	10.000	3	1.984	2
	WEZ31250ELC03	●	1.250	1.250	3.000	7.000	10.000	3	3.042	1
	WEZ31500ELC03	●	1.500	1.250	1.535	8.465	10.000	3	3.285	1
	WEZ31500ELC04	●	1.500	1.250	1.535	8.465	10.000	4	3.219	1
Metric	**WEZ17025EL02**	★	*25*	*25*	*50*	*120*	*170*	2	*0.55*	1
	WEZ17028EL02	★	*28*	*25*	*50*	*120*	*170*	2	*0.57*	2
	WEZ17030EL02	★	*30*	*25*	*50*	*120*	*170*	2	*0.59*	2
	WEZ17032EL02	★	*32*	*32*	*60*	*110*	*170*	2	*0.94*	1
	WEZ17032EL02-30	★	*32*	*30*	*50*	*120*	*170*	2	*0.85*	2
	WEZ17032EL03	★	*32*	*32*	*60*	*110*	*170*	3	*0.92*	1
	WEZ17035EL02	★	*35*	*32*	*50*	*120*	*170*	2	*0.98*	2
	WEZ17040EL02	★	*40*	*32*	*50*	*120*	*170*	2	*1.09*	2
	WEZ17040EL03	★	*40*	*32*	*50*	*120*	*170*	3	*1.08*	2
	WEZ17040EL04	★	*40*	*32*	*50*	*120*	*170*	4	*1.05*	2
	WEZ17050EL03	★	*50*	*32*	*50*	*120*	*170*	3	*1.29*	2
	WEZ17050EL03-42	★	*50*	*42*	*50*	*120*	*170*	3	*1.83*	2
	WEZ17050EL05	★	*50*	*32*	*50*	*120*	*170*	5	*1.25*	2
	WEZ17050EL05-42	★	*50*	*42*	*50*	*120*	*170*	5	*1.79*	2
	WEZ17063EL04	★	*63*	*32*	*50*	*120*	*170*	4	*1.61*	2
	WEZ17063EL04-42	★	*63*	*42*	*50*	*120*	*170*	4	*2.16*	2
	WEZ17063EL06	★	*63*	*32*	*50*	*120*	*170*	6	*1.58*	2
	WEZ17063EL06-42	★	*63*	*42*	*50*	*120*	*170*	6	*2.13*	2

Inserts are sold separately.

Identification Code

WEZ	17	032	E	L	02	-30
Cutter Series	Insert Size	Cutter Dia.	With Shank	Long Type	Number of Teeth	Shank Dia.

Parts

Applicable Cutter	Flat Screw	N·m	Integrated Wrench	Anti-seize Cream
WEZ31000ELC02-0.750	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ31000ELC02				
WEZ31250ELC03-1.000	BFTX0409IP			
WEZ31250ELC03				
WEZ31500ELC03				
WEZ31500ELC04				

Parts

Applicable Cutter	Flat Screw	N·m	Integrated Wrench	Anti-seize Cream
WEZ17025EL02	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ17028EL02				
WEZ17030EL02				
WEZ17032EL02(-30)	BFTX0409IP			
WEZ17032EL03				
WEZ17035EL02				
WEZ17040EL02				
WEZ17040EL03				
WEZ17040EL04				
WEZ17050EL03(-42)				
WEZ17050EL05(-42)				
WEZ17063EL04(-42)				
WEZ17063EL06(-42)				

N·m Recommended Tightening Torque (N·m) ● : USA stocked item ★ : worldwide warehouse item

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

New

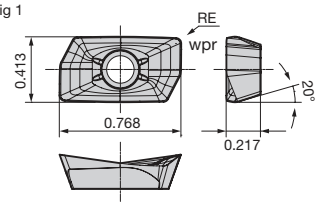
Insert

Dimensions(inch " / *mm*)

Grade		Coated Carbide						Carbide	DLC	Cermet
Process	High-speed/Light		P		K		MS		N	P
	General-purpose	KMS		P		K	MS	MS	N	N	
	Roughing	KMS		P		K		MS			

Cat.No.	ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Wiper Facet Length wpr	Fig
AOMT170502PEER-L	•	–		–		•	•	–	–		.008" / *0.2*	.193" / *4.9*	1
AOMT170504PEER-L	•	–	•	–	•	•	•	–	–	•	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-L	•	–	•	–	•	•	•	–	–	•	.031" / *0.8*	.169" / *4.3*	1
AOMT170512PEER-L	•	–		–		•	•	–	–		.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-L	•	–		–		•	•	–	–		.063" / *1.6*	.138" / *3.5*	1
AOMT170502PEER-G	•		•		•	•	•	–	–		.008" / *0.2*	.193" / *4.9*	1
AOMT170504PEER-G	•	•	•	•	•	•	•	–	–	•	.016" / *0.4*	.185" / *4.7*	1
AOMT170505PEER-G	•					•	•	–	–		.020" / *0.5*	.181" / *4.6*	1
AOMT170508PEER-G	•	•	•	•	•	•	•	–	–	•	.031" / *0.8*	.169" / *4.3*	1
AOMT170510PEER-G	•					•	•	–	–		.039" / *1.0*	.161" / *4.1*	1
AOMT170512PEER-G	•		•			•	•	–	–		.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-G	•		•		•	•	•	–	–		.063" / *1.6*	.138" / *3.5*	1
AOMT170520PEER-G	•		•		•	•	•	–	–		.079" / *2.0*	.122" / *3.1*	1
AOMT170524PEER-G	•					•	•	–	–		.094" / *2.4*	.106" / *2.7*	1
AOMT170530PEER-G	•		•		•	•	•	–	–		.118" / *3.0*	.079" / *2.0*	1
AOMT170532PEER-G	•					•	•	–	–		.126" / *3.2*	.071" / *1.8*	1
AOMT170540PEER-G	•		•		•	•	•	–	–		.157" / *4.0*	.039" / *1.0*	1
AOMT170550PEER-G	•		•		•	•	•	–	–		.197" / *5.0*	.020" / *0.5*	1
AOMT170564PEER-G	•					•	•	–	–		.252" / *6.4*	.020" / *0.5*	1
AOMT170504PEER-H	•	•	•	•	•	•	•	–	–	–	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-H	•	•	•	•	•	•	•	–	–	–	.031" / *0.8*	.169" / *4.3*	1
AOMT170512PEER-H	•					•	•	–	–	–	.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-H	•					•	•	–	–	–	.063" / *1.6*	.138" / *3.5*	1
AOET170502PEER-F	•	–		–		–		–	–	–	.008" / *0.2*	.193" / *4.9*	1
AOET170504PEER-F	•	–		–		–		–	–	–	.016" / *0.4*	.185" / *4.7*	1
AOET170505PEER-F	•	–		–		–		–	–	–	.020" / *0.5*	.181" / *4.6*	1
AOET170508PEER-F	•	–		–		–		–	–	–	.031" / *0.8*	.169" / *4.3*	1
AOET170510PEER-F	•	–		–		–		–	–	–	.039" / *1.0*	.161" / *4.1*	1
AOET170512PEER-F	•	–		–		–		–	–	–	.047" / *1.2*	.154" / *3.9*	1
AOET170516PEER-F	•	–		–		–		–	–	–	.063" / *1.6*	.138" / *3.5*	1
AOET170520PEER-F	•	–		–		–		–	–	–	.079" / *2.0*	.122" / *3.1*	1
AOET170524PEER-F	•	–		–		–		–	–	–	.094" / *2.4*	.106" / *2.7*	1
AOET170530PEER-F	•	–		–		–		–	–	–	.118" / *3.0*	.079" / *2.0*	1
AOET170532PEER-F	•	–		–		–		–	–	–	.126" / *3.2*	.071" / *1.8*	1
AOET170540PEER-F	•	–		–		–		–	–	–	.157" / *4.0*	.039" / *1.0*	1
AOET170550PEER-F	•	–		–		–		–	–	–	.197" / *5.0*	.020" / *0.5*	1
AOET170564PEER-F	•	–		–		–		–	–	–	.252" / *6.4*	.020" / *0.5*	1
AOET170502PEFR-S	–	–	–	–	–	–	–	•	•	–	.008" / *0.2*	.193" / *4.9*	1
AOET170504PEFR-S	–	–	–	–	–	–	–	•	•	–	.016" / *0.4*	.185" / *4.7*	1
AOET170505PEFR-S	–	–	–	–	–	–	–	•	•	–	.020" / *0.5*	.181" / *4.6*	1
AOET170508PEFR-S	–	–	–	–	–	–	–	•	•	–	.031" / *0.8*	.169" / *4.3*	1
AOET170510PEFR-S	–	–	–	–	–	–	–	•	•	–	.039" / *1.0*	.161" / *4.1*	1
AOET170512PEFR-S	–	–	–	–	–	–	–	•	•	–	.047" / *1.2*	.154" / *3.9*	1
AOET170516PEFR-S	–	–	–	–	–	–	–	•	•	–	.063" / *1.6*	.138" / *3.5*	1
AOET170520PEFR-S	–	–	–	–	–	–	–	•	•	–	.079" / *2.0*	.122" / *3.1*	1
AOET170524PEFR-S	–	–	–	–	–	–	–	•	•	–	.094" / *2.4*	.106" / *2.7*	1
AOET170530PEFR-S	–	–	–	–	–	–	–	•	•	–	.118" / *3.0*	.079" / *2.0*	1
AOET170532PEFR-S	–	–	–	–	–	–	–	•	•	–	.126" / *3.2*	.071" / *1.8*	1
AOET170540PEFR-S	–	–	–	–	–	–	–	•	•	–	.157" / *4.0*	.039" / *1.0*	1
AOET170550PEFR-S	–	–	–	–	–	–	–	•	•	–	.197" / *5.0*	.020" / *0.5*	1
AOET170564PEFR-S	–	–	–	–	–	–	–	•	•	–	.252" / *6.4*	.020" / *0.5*	1

Fig 1

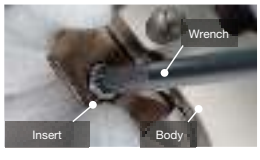


-L: Low Cutting Force,
-G: General-purpose,
-H: Strong Edge,
-F: Medium Finishing,
-S: Non-ferrous metals.

● USA stocked item
★: worldwide warehouse item
– : Can not make

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly against the seat surface,tighten the screws with the included wrench.
(3) Apply Anti-seize paste to the screws and tighten at the recommended torque.
(4) After tightening, check that there are no gaps on the seat surface.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.



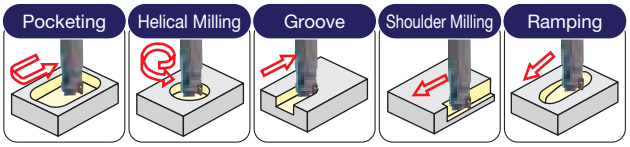
Reworking guidelines
Nose radius = 3.0: C1
(AOMT170530PEER)
Nose radius = 3.2: C1
(AOMT170532PEER)
Nose radius = 4.0: C2
(AOMT170540PEER)
Nose radius = 5.0: C5
(AOMT170550PEER)
Nose radius = 6.4: C5
(AOMT170564PEER)
Standard: R1.



■ General Features

An insert with a strong cutting edge design coupled with a high rigidity body, for stable and high efficiency milling with low resistance. The improved body and insert accuracy provides high accuracy and smooth surface finish, supporting various machining with a selection of 6 types of chipbreakers and 9 milling grades.

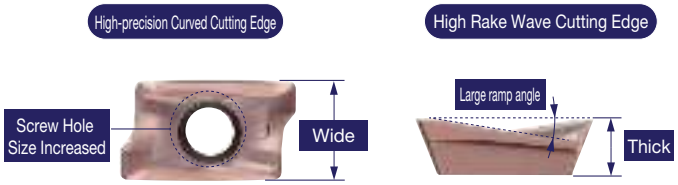
Compatible with Wide Range of Milling



■ Features

Higher Accuracy Cutting Edge with Both Sharpness and Cutting Edge Strength

Unique curved cutting edge design lowers cutting force yet improves cutting edge strength. Achieves high quality machined surface with high precision cutting edge.
Smooth deep groove milling even with low-rigidity machines



Coolant Holes are a Standard Feature for the Whole Series

Improved chip evacuation with air or coolant supply.

Highly Durable Body

Special surface treatment improves corrosion resistance and scratch resistance.
Increased screw size improves clamping force and durability

WEX1000 Series

Fine-pitched and high efficiency milling is possible at a small machining cost.

Wide Variety of Inserts

6 types of chipbreakers and 9 milling grades available for a wide range of applications and work materials

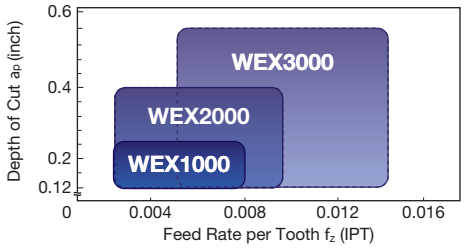
■ Product Range

	Cat. No.		Remarks	Cutter Diameters in Stock (inch) / Number of Teeth												Shape
				ø.500"	ø.625"	ø.750"	ø1.000"	ø1.250"	ø1.500"	ø2.000"	ø2.500"	ø3.000"	ø4.000"	ø6.000"	ø8.000"	
Shell Type	WEX2000R	H71	Standard Type						6	7	8					
	WEX3000R	H72	Standard Type							5	6	7	8		12	
	WEXC3000R	H72	Standard Type									5	6	8		
Shank Type	WEX2000EW	H75	Weldon Shank	1	2	3	4	5								
	WEX2000EMW	H75	Weldon Shank Medium		2	3										
	WEXC2000EW	H75	Weldon Shank			4	4									
	WEXC2000EMW	H75	Weldon Shank Medium				3									
	WEXC2000ELC	H75	Extra Long Type Cylindrical			2										
	WEX2000ELW	H75	Weldon Shank Long			3										
	WEX2000ELC	H75	Extra Long Type Cylindrical			3	4									
	WEX3000EW	H76	Weldon Shank				2	3	4	5						
	WEXC3000EMW	H76	Weldon Shank Medium						3							
	WEX3000EMW	H76	Weldon Shank Medium				2	3								
	WEX3000ELW	H76	Weldon Shank Long				2									
	WEX3000ELC	H76	Extra Long Shank/ Clyindrical				2	3	4							
Modular Type	WEX20000M	H206	Modular Type			3	4	5	6							
	WEX30000M	H207	Modular Type				2	3	4							

	Cat. No.		Remarks	Cutter Diameters in Stock (mm) / Number of Teeth															Shape
				ø10	ø12	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	
Shell Type	WEX1000F	H75	Standard Type											8		10	12	14				
	WEX2000F	H76	Standard Type													6	7	8				
	WEX3000F	H77	Standard Type													4	5	6				
	WEX3000R	H77	Standard Type																4	5	6	
	WEXF3000R	H77	Fine pitch																7	8	9	
Shank Type	WEX1000E	H78	Standard Type	2	3	3	4	4	5		7											
	WEX1000EL	H78	Long Type	2	2	3	3	3	4													
	WEX2000E	H79	Standard Type			1	2	2	3	3	4	4	4	5		6	7	8				
	WEX2000EL	H79	Long Type			1	2	2	2	2	2	2	2	2		2						
	WEX3000E	H80	Standard Type								2	2	3	3	3	4	5	6				
	WEX3000ES	H80	Short Type														5	6				
	WEX3000EL	H80	Long Type								2	2	2	2	2	2						
	WEX3000E-C	H80	Coarse Pitch Type													3	3	4				
	WEX3000ES-C	H80	Short & Coarse Pitch Type														3	4				
Modular Type	WEX2000M	H213	Modular Type				2	2	3	3	4	4	4	5		6						
	WEX3000M	H214	Modular Type								2	2	3	3	3	4						

● Numbers inside are number of teeth * mark: Different-diameter shanks in stock

■ WEX Type Series Application Range (Shoulder Milling)



■ WEX1000 Number of Teeth

Cutter Dia.	Number of Teeth: WEX1000E Standard Type APMX = 6.0mm	WEX1000EL Long Type APMX = 6.0mm	WEX2000E Standard Type APMX = 10.0mm
ø10mm	2	2	—
ø12mm	3	2	—

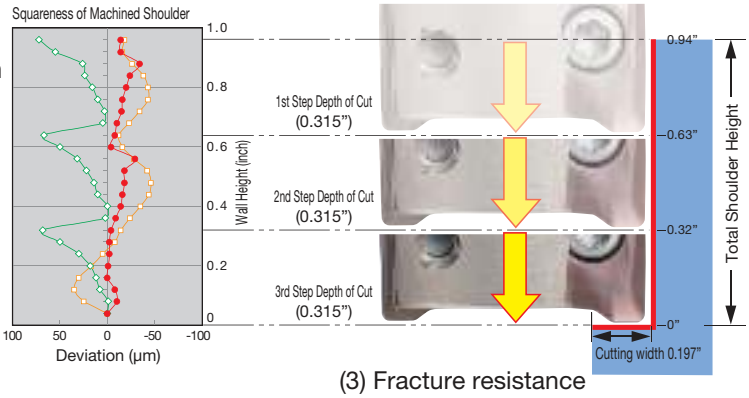
Cutter Dia.	Number of Teeth: WEX1000E Standard Type APMX = 6.0mm	WEX1000EL Long Type APMX = 6.0mm	WEX2000E Standard Type APMX = 10.0mm
ø12mm	3	2	—
ø14mm	3	3	1

■ Cutting Performance

(1) Shoulder milling precision

High-precision cutting edges provide very small step marks
(less than half that of competitors' products)

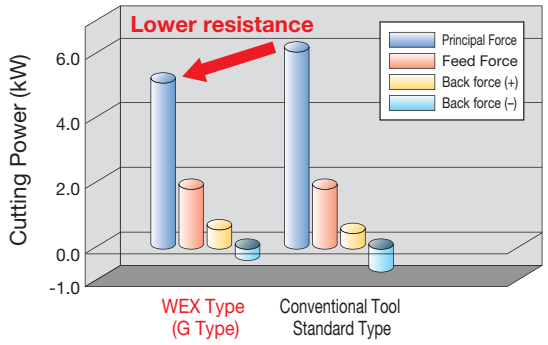




Cutting Conditions
Part Material: A36
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=492 SFM
Feed Rate: f_z=0.006 IPT (v_f=26.57 IPM)
Cutting Width: a_e=0.197"
Depth of Cut: a_p=0.315" x 3 times
Dry

(2) Cutting force

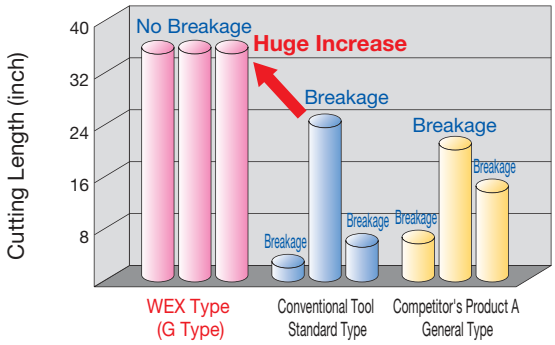
Cutting force (principal force) is approximately 15% lower than conventional tools



Cutting Conditions
Part Material: 1050
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=656 SFM
Feed Rate: f_z=0.008" IPT (v_f=47 IPM)
Cutting Width: a_e=0.315"
Depth of Cut: a_p=0.40" , Dry

(3) Fracture resistance

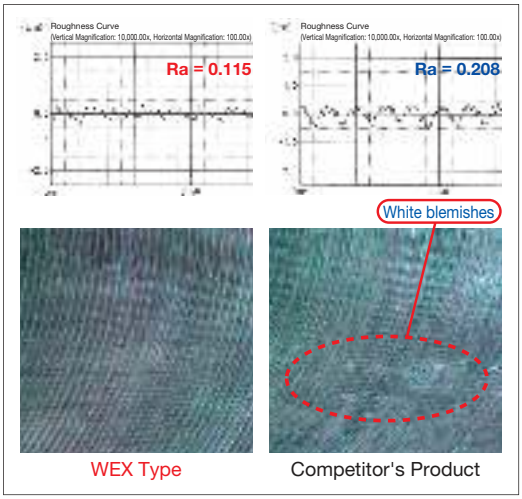
Huge increase in fracture resistance with improved cutting edge strength



Cutting Conditions
Part Material: 4140
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=328 SFM
Feed Rate: f_z=0.016" IPT (v_f=49.6 IPM)
Cutting Width: a_e=0.984"
Depth of Cut: a_p=0.12, Dry

(4) Surface roughness (aluminum alloy milling)

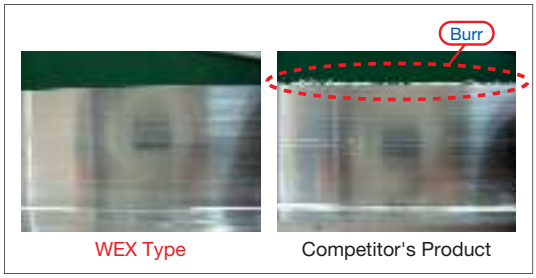
Smooth surface finish free of white blemishes



Cutting Conditions
Work Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: v_c=2,625 SFM
Feed Rate: f_z=0.004" IPT (v_f=94.5" IPM)
Cutting Width: a_e=0.63"
Depth of Cut: a_p=0.40" , Dry

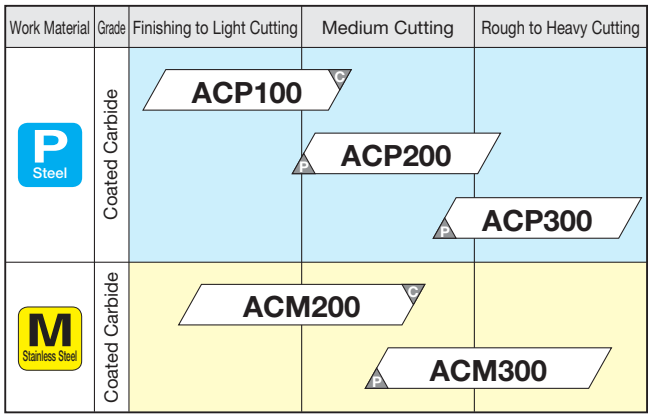
(5) Wall surface burrs (aluminum alloy milling)

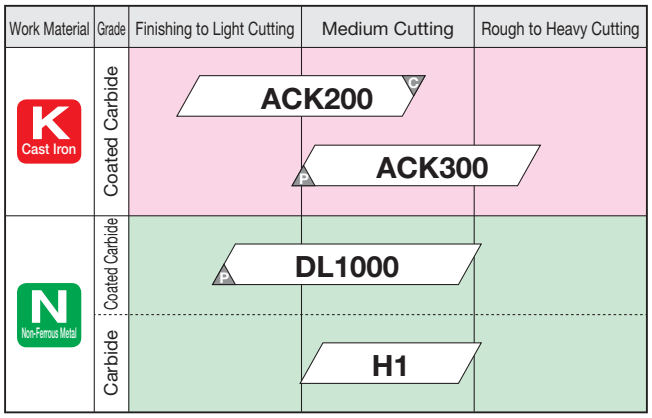
High rake edge significantly reduces burrs.



Cutting Conditions
Part Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: v_c=2,625 SFM
Feed Rate: f_z=0.004" IPT (v_f=94.5" IPM)
Cutting Width: a_e=0.197"
Depth of Cut: a_p=0.472" , Dry

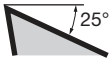
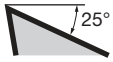
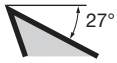
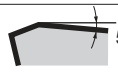
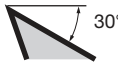
■ Grade Application Range



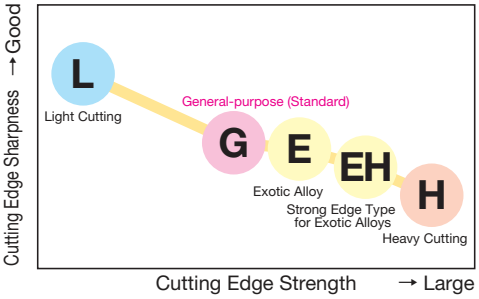


The letters "C" and "P" at the end of each grade indicate the coating type. ▽: CVD, △: PVD, Blank: Uncoated

■ Chipbreaker Lineup

Work Material	P K			M S		N
	L Type	G Type	H Type	E Type	EH Type	S Type
Chipbreaker						
Features	Low Cutting Force	General-purpose Type	High Strength Type	General-Purpose Type For Exotic Alloys	Strong Edge Type For Exotic Alloys	High Rake Type
1000 Series Cross Section	 25°	 25°	 15°	–	–	 25°
2000 Series Cross Section	–	 28°	 20°	 17°	 17°	 27°
3000 Series Cross Section	 25°	 20°	 5°	 14°	 8°	 30°
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	**Main Chipbreakers** General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	Light Cutting to General Purpose	Heavy Interrupted Machining	For Aluminum Alloy and Non-Ferrous Metal

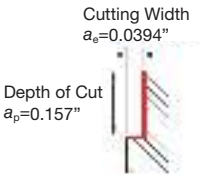
■ Chipbreaker Selection Guide



■ Recommended Cutting Conditions

ISO	Material		Hardness	Grade	Depth of Cut .002 -.050	Depth of Cut .050 - .125	Depth of Cut .125 & over	Feed per Tooth
P	Low and Medium Carbon Steels		<250 Bhn	ACP100	775-1310	725-1275	675-1225	.006-.0125
				ACP200	721-1213	675-1180	600-1125	.006-.0135
				ACP300	675-1075	650-1025	525-925	.006-.014
	Medium Carbon Alloy Steels		<250 Bhn	ACP100	600-975	575-950	550-900	.006-.0095
				ACP200	550-900	525-900	500-875	.006-.0115
				ACP300	525-875	500-825	475-800	.006-.0115
	Medium-High Carbon Steels		<250 Bhn	ACP100	600-975	575-950	550-900	.006-.011
				ACP200	575-950	550-925	500-875	.006-.012
				ACP300	575-950	550-925	500-875	.006-.012
	Free Machining Steels and Alloys		<250 Bhn	ACP100	725-1300	700-1250	675-1200	.006-.0135
				ACP200	750-1325	725-1275	675-1225	.006-.0135
				ACP300	675-1075	650-1050	650-1025	.006-.014
	Tool Steels		<250 Bhn	ACP100	475-820	450-790	425-750	.0047-.010
				ACP200	450-820	435-790	425-750	.0047-.011
				ACP300	450-820	425-790	400-725	.0047-.012
			bhn 220 - 350	ACP100	400-775	400-735	400-700	.004-.009
				ACP200	425-750	400-725	375-690	.0045-.010
				ACP300	420-700	420-695	375-685	.0047-.012
			>33 Hrc	ACP100	325-650	300-625	300-590	.003-.007
				ACP200	325-650	300-625	300-590	.0045-.0095
M	Stainless Steel	Martensitic and Ferritic	<250 Bhn	ACM300	535-850	520-830	275-820	.004-.011
			>250 Bhn	ACM200	425-740	415-720	375-675	.004-.012
		Austenitic	<250 Bhn	ACM300	325-875	300-850	275-825	.004-.012
		Precipitation Hardening	<250 Bhn	ACM200	525-850	500-825	175-675	.004-.012
K	Grey Cast Iron		>250 Bhn	ACK200	700-1050	625-925	590-900	.004-.014
				ACK300	600-950	575-875	550-850	.004-.014
			<250 Bhn	ACK200	600-950	525-825	490-800	.004-.014
				ACK300	500-850	475-775	450-750	.004-.014
	Ductile Iron		>250 Bhn	ACK200	600-925	550-875	490-800	.004-.012
				ACK300	550-825	550-825	450-750	.004-.012
S	Exotic Alloys: Inconel, Hastalloy, Waspalloy, etc.			ACK200	100-160	70-150	60-135	.003-.0075
				ACK300	100-160	70-150	60-135	.004-.0075
N	Non-Ferrous Material			H1	1500-3800	1300-3700	1200-3600	.004-.014
				DL1000	1500-4500	1475-4200	1275-4100	.004-.014

■ Recommended Cutting Conditions in Metric, please see H66 for Inch Parameters



WEX1000

Tool: WEX1012E, Insert: AX□T0602

Cutting Conditions: Depth of Cut a_p=4mm, Width of Cut a_e=1mm, Dry

ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade	ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per Tooth f_z (mm/t)	0.08	0.12	0.16	0.08	0.12	0.16	0.08	0.12	0.16	0.10	0.15	0.20	0.10	0.15	0.20	0.08	0.10	0.12	0.08	0.10	0.12	0.05	0.10	0.15
				Cutting Speed v_c (m/min)																								
P	Steel, Carbon Steel S15C	125	G		260	240	220	240	220	200	220	200	180															
	S45C	190	G		200	180	160	180	160	140	180	160	140															
	S45C Hardened	250	G		180	120	140	160	140	120	150	130	110															
	S75C	270	G		160	140	120	150	130	110	130	110	110															
	S75C Hardened	300	G		100	80	70	90	70	60	70	60	50															
	Low Alloy Steel (SCM, SNCM)	180	G		200	180	160	180	160	150	160	150	130															
	SCM, SNCM Hardened	275	G		130	110	90	120	100	90	100	90	80															
	SCM, SNCM Hardened	300	G		120	100	80	100	90	80	90	80	60															
	SCM, SNCM Hardened	350	G		90	80	60	80	70	60	70	60	40															
	High-alloy Steel (SKD, SKT, SKH)	200	G		180	170	160	170	160	130	150	140	120															
	SKD, SKT, SKH Hardened	325	G		100	80	60	80	60	50	60	50	30															
M	Stainless Steel SUS430 and Others (Martensitic / Ferritic)	200	E																	170	150	120	140	130	110			
	SUS403 and others (Martensitic / Hardened)	240	E																	140	120	100	120	100	90			
	SUS304, SUS316 (Austenitic)	180	E																	180	160	140	160	140	130			
K	Cast Iron		G											240	220	200	220	200	180									
	Ductile Cast Iron		G											160	140	120	140	120	100									
S	Exotic Alloy		E																	50	35		45	25				
N	For Aluminum Alloy Si ≤12.6%		S																							800	600	400
	Si >12.6%		S																							240	200	160
	Copper Alloy		S																							330	300	270

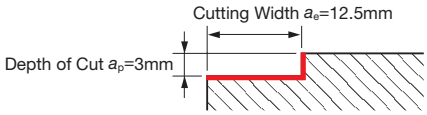
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WEX2000

Tool: WEX2025E, Insert: AX□T1235

Cutting Conditions: Depth of Cut a_p=3mm, Width of Cut a_e=12.5mm, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade	ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per Tooth f_z (mm/t)	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.05	0.15	0.22
				Cutting Speed v_c (m/min)																								
P	Steel, Carbon Steel S15C	125	G		380	350	330	350	330	315	330	315	295															
	S45C	190	G		285	255	235	255	235	220	235	220	200															
	S45C Hardened	250	G		235	210	190	210	190	170	190	170	150															
	S75C	270	G		190	162	143	171	152	133	152	133	115															
	S75C Hardened	300	G		145	115	95	115	95	75	95	75	55															
	Low Alloy Steel (SCM, SNCM)	180	G		265	235	220	235	220	200	220	200	180															
	SCM, SNCM Hardened	275	G		170	145	125	150	130	115	130	115	95															
	SCM, SNCM Hardened	300	G		150	125	105	135	115	95	115	95	75															
	SCM, SNCM Hardened	350	G		125	95	75	105	85	65	85	65	45															
	High-alloy Steel (SKD, SKT, SKH)	200	G		235	210	190	210	190	170	190	170	150															
	SKD, SKT, SKH Hardened	325	G		125	95	75	95	75	55	75	55	35															
M	Stainless Steel SUS430 and Others (Martensitic / Ferritic)	200	E																	175	155	125	155	140	110			
	SUS403 and others (Martensitic / Hardened)	240	EH																	160	140	110	145	125	100			
	SUS304, SUS316 (Austenitic)	180	E																	190	170	140	170	150	125			
K	Cast Iron		G											285	255	235	255	235	220									
	Ductile Cast Iron		G											190	160	140	160	140	125									
S	Exotic Alloy	300	E																	50	40		45	35				
	(Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	330	E																	35	25		30	20				
N	For Aluminum Alloy Si ≤12.6%		S																							1000	750	500
	Si >12.6%		S																							250	200	170
	Copper Alloy		S																							350	330	300

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

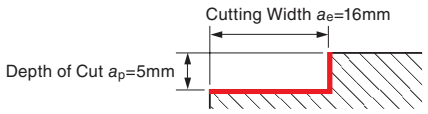
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Recommended Cutting Conditions in Metric, please see H66 for Inch Parameters

WEX3000 Type

Tool: WEX3032E Insert: AX□T1705 Type

Cutting Conditions: Depth of Cut 5mm, Cutting Width 16mm, Dry



ISO Classification	Work Material		Work Hardness (HB)	Chipbreaker	Grades																										
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000						
					Feed f_z (mm/t)																												
					0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.05	0.15	0.25			
					Cutting Speed v_c (m/min)																												
P	Steel, Carbon Steel	S15C	125	G	400	370	350	370	350	330	350	330	310																		
		S45C	190	G	300	270	250	270	250	230	250	230	210																		
		S45C Hardened	250	G	250	220	200	220	200	180	200	180	160																		
		S75C	270	G	200	170	150	180	160	140	160	140	120																		
		S75C Hardened	300	G	150	120	100	120	100	80	100	80	60																		
	Low Alloy Steel	SCM、SNCM	180	G	280	250	230	250	230	210	230	210	190																		
		SCM、SNCM Hardened	275	G	180	150	130	160	140	120	140	120	100																		
		SCM、SNCM Hardened	300	G	160	130	110	140	120	100	120	100	80																		
		SCM、SNCM Hardened	350	G	130	100	80	110	90	70	90	70	50																		
	High Alloy Steel	SKD、SKT、SKH	200	G	250	220	200	220	200	180	200	180	160																		
		SKD、SKT、SKH Hardened	325	G	130	100	80	100	80	60	80	60	40																		
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E							185	165	135							185	165	135	165	150	120						
		SUS403 and Others (Martensitic, Hardened)	240	EH							170	150	120							170	150	120	150	135	110						
		SUS304、SUS316(Austenitic)	180	E							200	180	150							200	180	150	180	160	135						
K	Cast Iron			G										300	270	250	270	250	230												
	Ductile Cast Iron			G										200	170	150	170	150	130												
S	Exotic Alloy		300	E													50	30		50	30		45	25							
	(Heat Resistant Alloy, Super Alloy, Ti Alloy, etc.)		330	E													50	30		50	30		45	25							
N	Aluminum Alloy, Si ≤ 12.6%			S																						1000	750	500			
	Aluminum Alloy, Si > 12.6%			S																						250	200	170			
	Copper Alloy			S																						350	330	300			

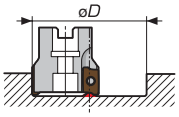
- The recommended cutting conditions may not be practical under certain operating conditions (i.e., machine, work shape, clamping system).
- For groove milling, adjust feed rate to around 70% of the above values.

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth, and other factors.

■ Recommended Values for Helical Milling and Ramping

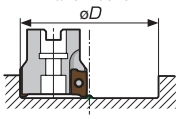
Precautions for Helical Milling

For Minimum Diameter and Below øD



Center uncut portion cannot be removed by traverse cutting with the same cutter

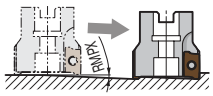
For Maximum Diameter and Above øD



Center uncut portion can be removed by traverse cutting with the same cutter

Precautions for Ramping

Use at the RMPX below or lower



Recommended Values for Helical Milling and Ramping

Cutter Dia. (in.) DC	WEX2000 (AX□T12···)			WEX3000 (AX□T17···)		
	Helical Milling (inch)		Ramping	Helical Milling (inch)		Ramping
	Work Dia. øD		Maximum Ramping Angle RMPX	Work Dia. øD		Maximum Ramping Angle RMPX
	Min. Diameter	Max. Diameter		Min. Diameter	Max. Diameter	
0.500	0.88	0.96	1°50'			
0.625	1.13	1.21	1°20'			
0.750	1.38	1.46	1°00'			
1.000	1.88	1.96	0°45'	1.78	1.92	1°30'
1.250	2.38	2.46	0°35'	2.28	2.42	1°00'
1.500	2.88	2.96	0°25'	2.78	2.92	0°45'
2.000	3.88	3.96	0°20'	3.78	3.92	0°30'
2.500	4.88	4.96	0°15'	4.78	4.92	0°20'
3.000				5.78	5.92	0°15'
4.000				Not Available	Not Available	Not Available
6.000				Not Available	Not Available	Not Available
8.000				Not Available	Not Available	Not Available

Recommended Values for Helical Milling and Ramping

Cutter Dia. (mm) DC	WEX1000 (AX□T06···)			WEX2000 (AX□T12···)			WEX3000 (AX□T17···)		
	Helical Milling (mm)		Ramping	Helical Milling (mm)		Ramping	Helical Milling (mm)		Ramping
	Work Dia. øD		Maximum Ramping Angle RMPX	Work Dia. øD		Maximum Ramping Angle RMPX	Work Dia. øD		Maximum Ramping Angle RMPX
	Min. Diameter	Max. Diameter		Min. Diameter	Max. Diameter		Min. Diameter	Max. Diameter	
10	16.0	18.0	2°30'						
12	20.0	22.0	1°45'						
14	24.0	26.0	1°25'	25.0	27.0	1°40'			
16	28.0	30.0	1°00'	29.0	31.0	1°20'			
18	32.0	34.0	0°45'	33.0	35.0	1°10'			
20	36.0	38.0	0°30'	37.0	39.0	1°00'			
22				41.0	43.0	0°50'			
25	46.0	48.0	0°30'	47.0	49.0	0°45'	44.5	48.0	1°30'
28				53.0	55.0	0°45'	50.5	54.0	1°10'
30				57.0	59.0	0°40'	54.5	58.0	1°10'
32	60.0	62.0	0°25'	61.0	63.0	0°35'	58.5	62.0	1°00'
35							64.5	68.0	0°50'
40	76.0	78.0	0°20'	77.0	79.0	0°25'	74.5	78.0	0°45'
50	96.0	98.0	0°15'	97.0	99.0	0°20'	94.5	98.0	0°30'
63	122.0	124.0	0°10'	123.0	125.0	0°15'	120.5	124.0	0°20'
80							154.5	158.0	0°15'
100							Unusable	Unusable	Unusable
125							Unusable	Unusable	Unusable

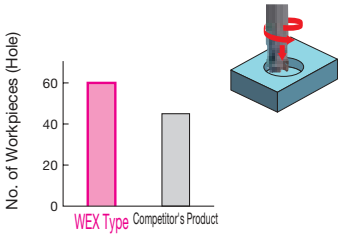
The above table shows the recommended values for 0.8mm nose radius bits.

■ Application Examples

● Machine Components 304 Stainless

WEX1000

The WEX type achieves 1.3x longer tool life for helical milling compared to competitors' products.



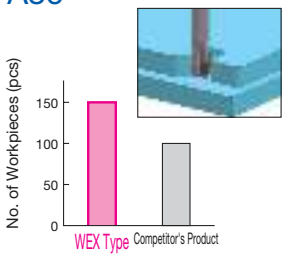
Tool: WEX1020E (ø20)
Insert: AXMT060204PDER-G
Grade: ACM300
Machine: Vertical machining centre BT30

(Cutting Conditions)
v_c=197 SFM
f_z =0.007" IPT
a_p=0.04"
Dry

● Machine Components A36

WEX1000

The WEX type has low cutting force and enables stable machining, while competitors' products have unstable power.
Achieves 1.5x longer tool life than competitors' products.



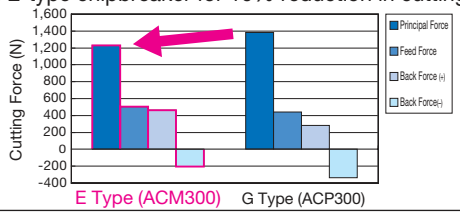
Tool: WEX1010EL (ø10)
Insert: AXMT060204PDER-L
Grade: ACP200
Machine: Vertical machining centre BT40

(Cutting Conditions)
v_c=525 SFM
f_z =0.003" IPT
a_p=0.197"
Dry

● Block Material 316 Stainless

WEX2000

Using an E-type chipbreaker for 10% reduction in cutting force.



Tool: WEX2050F (ø50)
Insert: AXMT123508PEER-E
Grade: ACM300

(Cutting Conditions)
v_c=591 SFM
f_z =0.006" IPT
a_e=0.787"
a_p=0.12" Dry

● Block Material 4140

WEX3000

Compared to competitors', the machined surface has fewer steps, enabling finishing without changing tool.



Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200

(Cutting Conditions)
v_c=656 SFM
f_z =0.006" IPT
a_e=0.197"
a_p=0.40" x 3 Times Dry

● Die Parts, Low Carbon Steel

WEX3000

The WEX type doubles the tool life of conventional tools by performing for longer without breakage.



Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP100

(Cutting Conditions)
v_c=495 SFM
f_z =0.008" IPT
a_e=0.984"
a_p=0.197" Wet

● Extrusion Mold P5 Tool Steel

WEX3000

Less cutting noise than conventional tools and excellent chip evacuation for stable cutting even if the cutting conditions are doubled.
Achieves a nice glossy machined surface.



Tool: WEX3080R (ø80)
Insert: AXMT170508PEER-G
Grade: ACP200

(Cutting Conditions)
v_c=246 SFM
f_z =0.0075" IPT
a_e=3.15"
a_p=0.197" Dry

● Machine Components 304 Stainless Steel

WEX3000

Cutting Distance: 177"
Cutting Distance: 65"



WEX Type (ACM300)
WEX Type (ACP300)
Competitor's Product A
Competitor's Product B

The substrate has excellent fracture resistance and the high hardness coating enables stable machining without breakage.

Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-E
Grade: ACM300

(Cutting Conditions)
v_c=492 SFM
f_z =0.006" IPT
a_e=0.40"
a_p=0.12"
Dry

WEX Shellmill Metric Type - 6 mm Inserts

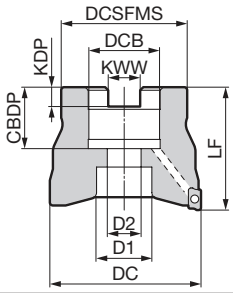
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	7° to 17°
	Axial	9° to 17°

6 mm 90° .236" 90°



Fig 1



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WEX1032F**	★	*32*	*31*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	8	*0.16*	1
	WEX1040F	★	*40*	*32*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	10	*0.21*	1
	WEX1050F	★	*50*	*38*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	12	*0.30*	1
	WEX1063F	★	*63*	*48*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	14	*0.52*	1

Inserts are sold separately.

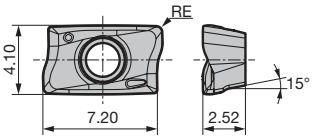
★ Worldwide Warehouse item

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC		
Process	High-speed / Light	P			K		MS		KN	N		
	General-purpose		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Fig
AXMT060204PDER-L		★	★	★	★	★	★	★	-	-	*0.4*	1
AXMT060208PDER-L		★	★	★	★	★	★	★	-	-	*0.8*	1
AXMT060212PDER-L		★	★	★	★	★	★	★	-	-	*1.2*	1
AXMT060202PDER-G		★	★	★	★	★	★	★	-	-	*0.2*	1
AXMT060204PDER-G		★	★	★	★	★	★	★	-	-	*0.4*	1
AXMT060208PDER-G		★	★	★	★	★	★	★	-	-	*0.8*	1
AXMT060212PDER-G		★	★	★	★	★	★	★	-	-	*1.2*	1
AXMT060204PDER-H		★	★	★	★	★	★	★	-	-	*0.4*	1
AXMT060208PDER-H		★	★	★	★	★	★	★	-	-	*0.8*	1
AXMT060212PDER-H		★	★	★	★	★	★	★	-	-	*1.2*	1
AXMT060202PDFR-S		-	-	-	-	-	-	-	★	★	*0.2*	1

Fig 1



-L: Low Cutting Force, G: General-purpose, H: Strong Edge, S: For Aluminum Alloy.

Recommended Cutting Conditions H67

★ Worldwide Warehouse item

Parts

(Sold Separately)

Flat Screw		Wrench	Anti-seizure Cream	Torque Wrench
				 0.5N·m
BFTX01804IP	**0.5**	TRX06IP	SUMI-P	TRDR06IP05

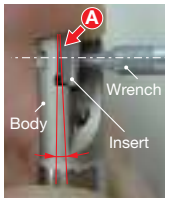
Identification Code

WEX **1** **032** **F**

Cutter Series	Insert Size	Dia.	Metric Bore

Precautions when Mounting WEX1000 Inserts

1



Press the top of the insert in the direction of A.

2



Hold down as shown in C so that there is no gap between the insert bottom and base of insert pocket, and tighten with wrench B (tightening torque 0.5N·m)

A dedicated torque wrench is optionally available (sold separately).

N·m Recommended Tightening Torque (N·m)

WEX Shellmill (Inch & Metric) Type -12 mm Inserts

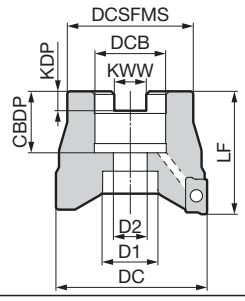
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	16° to 18°
	Axial	23° to 25°

10mm 90° | .236" 90°



Fig 1



Body (Standard Type)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs/ *kg*)	Fig
Inch	**WEX21500R**	●	1.500	1.339	1.562	0.750	0.312	0.187	0.750	0.609	0.406	6	0.42	1
	WEX22000R	●	2.000	1.500	1.562	0.750	0.312	0.187	0.750	0.630	0.406	7	0.64	1
	WEX22500R	●	2.500	1.750	1.562	1.000	0.375	0218	0.750	0.797	0.531	8	1.12	1
Metric	**WEX2040F**	★	*40*	*32*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	6	*0.19*	1
	WEX2050F	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	7	*0.29*	1
	WEX2063F	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	8	*0.51*	1

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

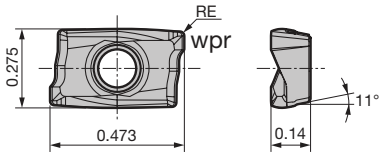
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		P M	P M	K		M S	M S		N
	Roughing		P M	P M		K		M S		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT123504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-G	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-H	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-H	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-E						●	●	-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-E						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-E						●	●	-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123508PEER-EH						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXET123502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.2*	-	1
AXET123504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET123508PEFR-S	-	-	-	-	-	-	-	●	●	.032" / *0.8*	-	1

Fig 1



Recommended Cutting Conditions H66

-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

● USA stocked item ★ Worldwide Warehouse item

Parts

Flat Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	SUMI-P

Identification Code - Inch

WEX	2	2000	R
Cutter Series	Insert Series	Dia. 2.000"	Feed Direction

Identification Code - Metric

WEX	2	040	F
Cutter Series	Insert Size	Dia.	Metric Bore

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

N·m Recommended Tightening Torque (N·m)

WEX SHELLMILL INCH Type - 17mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	12° to 15°
	Axial	29° to 24°

.551" 90°



Fig 1

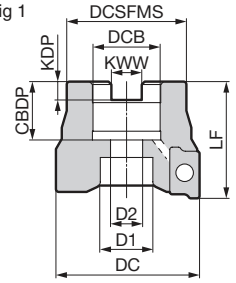
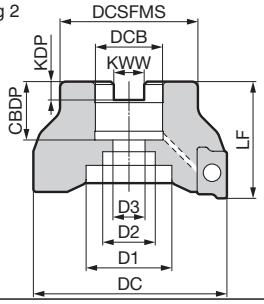


Fig 2



Body (Standard Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Inch	**WEX32000R**	●	2.000	1.575	1.562	.750	.312	.187	.750	.709	.406	-	5	0.48	1
	WEX32500R	●	2.500	1.969	1.562	1.000	.375	.218	.750	.797	.531	-	6	0.92	1
	WEXC33000R	●	3.000	2.362	1.750	1.000	.375	.218	.750	.797	.531	-	5	1.99	1
	WEX33000R	●	3.000	2.362	1.750	1.000	.375	.218	.750	.797	.531	-	7	1.99	1
	WEXC34000R	●	4.000	2.756	1.750	1.250	.500	.281	.750	1.000	.656	-	6	3.65	1
	WEXC34000R-150	●	4.000	3.750	2.000	1.500	.625	.380	1.535	2.000	.781	.781	6	3.65	2
	WEX34000R	●	4.000	2.756	2.461	1.250	.500	.281	0.750	1.000	.656	-	8	3.65	1
	WEX34000R-150	●	4.000	3.750	2.000	1.500	.625	.380	1.535	2.000	.781	.781	8	3.65	2
	WEXC36000R	●	6.000	4.370	2.500	1.500	.625	.380	1.060	2.000	1.500	-	8	7.27	1
	WEX38000R	●	8.000	5.118	2.500	2.500	1.000	.560	1.250	5.315	2.500	-	12	13.66	1

Inserts are sold separately.

● USA stocked item

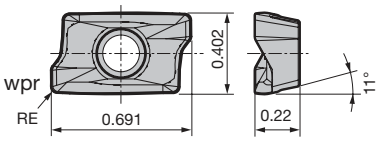
Insert

Dimensions (inch)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		MS		KN	N
	General-purpose		PM	PM	K		MS	MS		N
	Roughing		PM	PM		K		MS		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L	●	●	●	●	●			-	-	.031	.087	1
AXMT170504PEER-G	●	●	●	●	●			-	-	.016	.102	1
AXMT170508PEER-G	●	●	●	●	●			-	-	.031	.087	1
AXMT170512PEER-G	●	●	●	●	●			-	-	.047	.067	1
AXMT170516PEER-G	●	●	●	●	●			-	-	.063	.059	1
AXMT170520PEER-G*	●	●	●	●	●			-	-	.079	.047	1
AXMT170530PEER-G*	●	●	●	●	●			-	-	.118	-	1
AXMT170508PEER-H	●	●	●	●	●			-	-	.031	.087	1
AXMT170512PEER-H	●	●	●	●	●			-	-	.047	.067	1
AXMT170504PEER-E						●	●	-	-	.016	.102	1
AXMT170508PEER-E						●	●	-	-	.031	.087	1
AXMT170512PEER-E						●	●	-	-	.047	.067	1
AXMT170516PEER-E						●	●	-	-	.063	.059	1
AXMT170520PEER-E*						●	●	-	-	.079	.047	1
AXMT170530PEER-E*						●	●	-	-	.118	-	1
AXMT170508PEER-EH						●	●	-	-	.031	.087	1
AXET170502PEFR-S	-	-	-	-	-	-	-	●	●	.008	-	1
AXET170504PEFR-S	-	-	-	-	-	-	-	●	●	.016	-	1
AXET170508PEFR-S	-	-	-	-	-	-	-	●	●	.031	-	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Stainless Steel & Exotic Alloy, -ES: Aluminum & Non-ferrous Alloys.

Recommended Cutting Conditions H6

* marked inserts require modification of the cutter body.

Parts

Flat Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0409IP	3.0	TRDR15IP	SUMI-P

Identification Code

WEX 3 **2000** **R**

WEX	3	2000	R
Cutter Series	Insert Series	Dia. 2.000"	Feed Direction

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.



Modify this portion.

Reworking guidelines

For Nose Radius of 2.0: C1 (AXMT170520PEER)

For Nose Radius of 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m)

WEX Shellmill Metric Type - 17mm Inserts

Rake Angle		
	Radial	12° to 15°
	Axial	29° to 24°

14mm 90° | .551" 90°



Fig 1

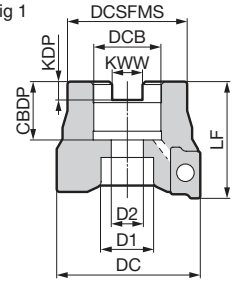
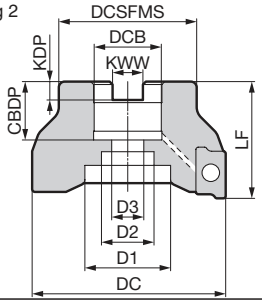


Fig 2



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEX3040F**	★	*40*	*32*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	4	*0.16*	1
	WEX3050F	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	5	*0.25*	1
	WEX3063F	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	6	*0.48*	1
	WEX3080R	★	**80*	*60*	*50*	*25.4*	*9.5*	*6*	*25*	*35*	*26*	*13.5*	4	*1.06*	2
	WEX3100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	*17*	5	*1.99*	2
	WEX3125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	-	6	*2.89*	1

Body (Fine Pitch Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEXF3080R**	★	**80*	*60*	*50*	*25.4*	*9.5*	*6*	*25*	*35*	*26*	*13.5*	7	*0.98*	2
	WEXF3100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	*17*	8	*1.91*	2
	WEXF3125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	-	9	*2.80*	1

Inserts are sold separately.

★ Worldwide Warehouse item

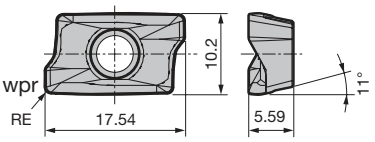
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC			
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N			
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L		●	●	●	●	●			-	-	*0.8*	*2.2*	1
AXMT170504PEER-G		●	●	●	●	●			-	-	*0.4*	*2.6*	1
AXMT170508PEER-G		●	●	●	●	●			-	-	*0.8*	*2.2*	1
AXMT170512PEER-G		●	●	●	●	●			-	-	*1.2*	*1.7*	1
AXMT170516PEER-G		●	●	●	●	●			-	-	*1.6*	*1.5*	1
AXMT170520PEER-G*		●	●	●	●	●			-	-	*2.0*	*1.2*	1
AXMT170530PEER-G*		●	●	●	●	●			-	-	*3.0*	-	1
AXMT170508PEER-H		●	●	●	●	●			-	-	*0.8*	*2.2*	1
AXMT170512PEER-H		●	●	●	●	●			-	-	*1.2*	*1.7*	1
AXMT170504PEER-E							●	●	-	-	*0.4*	*2.6*	1
AXMT170508PEER-E							●	●	-	-	*0.8*	*2.2*	1
AXMT170512PEER-E							●	●	-	-	*1.2*	*1.7*	1
AXMT170516PEER-E							●	●	-	-	*1.6*	*1.5*	1
AXMT170520PEER-E*							●	●	-	-	*2.0*	*1.2*	1
AXMT170530PEER-E*							●	●	-	-	*3.0*	-	1
AXMT170508PEER-EH							●	●	-	-	*0.8*	*2.2*	1
AXET170502PEFR-S		-	-	-	-	-	-	-	●	●	*0.2*	-	1
AXET170504PEFR-S		-	-	-	-	-	-	-	●	●	*0.4*	-	1
AXET170508PEFR-S		-	-	-	-	-	-	-	●	●	*0.8*	-	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Stainless Steel & Exotic Alloy, -ES: Aluminum & Non-ferrous Alloys.

Recommended Cutting Conditions H68

* marked inserts require modification of the cutter body.

● USA stocked item

★ Worldwide Warehouse item

Parts

Flat Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0409IP	3.0	TRDR15IP	SUMI-P

Identification Code-Metric

WEX **3** **040** **F**

Cutter Series	Insert Size	Dia.	F: Metric R: Inch Bore

N·m Recommended Tightening Torque (N·m)

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.



Modify this portion.

Reworking guidelines

For Nose Radius of 2.0: C1 (AXMT170520PEER)

For Nose Radius of 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

WEX Endmill Metric Type- 6 mm Inserts

Rake Angle		
	Radial	7° to 17°
	Axial	9° to 17°

6mm 90° .236" 90°



Fig 1

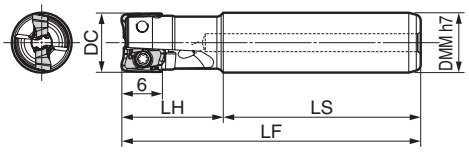
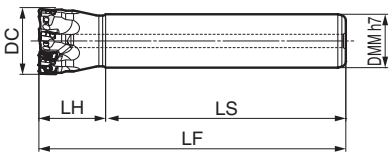


Fig 2



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX1010E**	★	*10*	*10*	*17*	*33*	*50*	2	*0.03*	1
	WEX1012E	★	*12*	*12*	*20*	*60*	*80*	3	*0.06*	1
	WEX1014E	★	*14*	*16*	*22*	*59*	*80*	3	*0.10*	1
	WEX1016E	★	*16*	*16*	*20*	*70*	*90*	4	*0.12*	1
	WEX1018E	★	*18*	*20*	*20*	*80*	*100*	4	*0.21*	1
	WEX1020E	★	*20*	*20*	*22*	*78*	*100*	5	*0.22*	1
	WEX1025E	★	*25*	*20*	*25*	*90*	*115*	7	*0.27*	2

Inserts are sold separately.

★ Worldwide Warehouse item

Body (Long Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX1010EL**	★	*10*	*8*	*17*	*83*	*100*	2	*0.03*	2
	WEX1012EL	★	*12*	*10*	*20*	*100*	*120*	2	*0.06*	2
	WEX1014EL	★	*14*	*12*	*20*	*125*	*145*	3	*0.11*	2
	WEX1016EL	★	*16*	*14*	*20*	*140*	*160*	3	*0.17*	2
	WEX1018EL	★	*18*	*16*	*20*	*160*	*180*	3	*0.25*	2
	WEX1020EL	★	*20*	*18*	*25*	*175*	*200*	4	*0.36*	2

Inserts are sold separately.

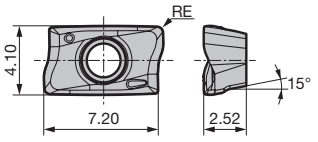
Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC		
Process	High-speed / Light	P			K		MS		KN	N		
	General-purpose		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Fig
AXMT060204PDER-L		★	★	★	★	★	★	★	-	-	*0.4*	1
AXMT060208PDER-L		★	★	★	★	★	★	★	-	-	*0.8*	1
AXMT060212PDER-L		★	★	★	★	★	★	★	-	-	*1.2*	1
AXMT060202PDER-G		★	★	★	★	★	★	★	-	-	*0.2*	1
AXMT060204PDER-G		★	★	★	★	★	★	★	-	-	*0.4*	1
AXMT060208PDER-G		★	★	★	★	★	★	★	-	-	*0.8*	1
AXMT060212PDER-G		★	★	★	★	★	★	★	-	-	*1.2*	1
AXMT060204PDER-H		★	★	★	★	★	★	★	-	-	*0.4*	1
AXMT060208PDER-H		★	★	★	★	★	★	★	-	-	*0.8*	1
AXMT060212PDER-H		★	★	★	★	★	★	★	-	-	*1.2*	1
AXMT060202PDFR-S		-	-	-	-	-	-	-	★	★	*0.2*	1

-L: Low Cutting Force, G: General-purpose, H: Strong Edge, S: For Aluminum Alloy.

Fig 1



Recommended Cutting Conditions H67

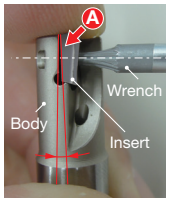
Parts

(Sold Separately)

Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream	Torque Wrench
		N·m			 0.5N·m
WEX1010E(EL) to WEX1025E	BFTX01804IP	0.5	TRX06IP	SUMI-P	TRDR06IP05

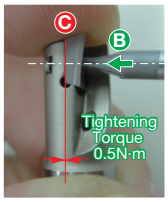
Precautions when Mounting WEX1000 Inserts

1



Press the top of the insert in the direction of A.

2





Hold down as shown in C so that there is no gap between the insert bottom and base of insert pocket, and tighten with wrench B (tightening torque 0.5N·m)

A dedicated torque wrench is optionally available (sold separately).

Identification Code

WEX 1 010 E L

Cutter Series	Insert Size	Dia.	With Shank	Long Type

N·m Recommended Tightening Torque (N·m)

WEX ENDMILL Type - 12 mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	10° to 18°
	Axial	14° to 25°

10mm 90° | .394" 90°

Modular Type ☞ H209



Fig 1

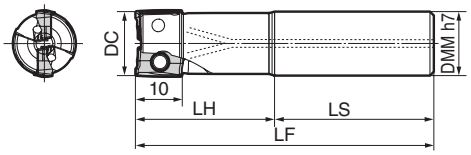
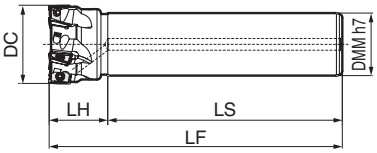


Fig 2



Inch Body (Standard & Long Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs)	Fig
Weldon	WEX20500EW	●	.500	.750	1.309	2.031	3.325	1	0.22	1
	WEX20625EW	●	.625	.625	1.312	1.906	3.218	2	0.29	1
	WEX20625EMW	●	.625	.625	1.685	1.906	3.591	2	0.31	1
	WEXC20750EW	●	.750	.750	1.530	2.031	3.561	2	0.49	1
	WEX20750EW	●	.750	.750	1.530	2.031	3.561	3	0.58	1
	WEX20750EMW	●	.750	.750	2.060	2.031	4.091	3	0.38	1
	WEX20750ELW	●	.750	.750	3.060	2.031	5.091	3	0.84	1
	WEXC21000EW	●	1.000	1.000	1.531	2.281	3.812	3	0.91	1
	WEXC21000EMW	●	1.000	1.000	2.560	2.281	4.841	3	1.54	1
	WEX21000EW	●	1.000	1.000	1.530	2.281	3.811	4	2.01	1
	WEX21250EW	●	1.250	1.250	2.250	2.281	4.531	5	2.25	1
Cylindrical	WEXC20750ELC	●	.750	.750	3.080	6.000	9.000	2	2.15	1
	WEX20750ELC	●	.750	.750	3.080	6.920	10.000	3	3.28	1
	WEX21000ELC	●	1.000	1.000	3.157	6.843	10.000	4	3.87	1

Inserts are sold separately. ● USA stocked item

Metric Body (Standard & Long Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Standard Type	WEX2014E	★	14	16	25	55	80	1	0.10	1
	WEX2016E	★	16	16	25	75	100	2	0.13	1
	WEX2018E	★	18	16	25	75	100	2	0.14	2
	WEX2020E	★	20	20	30	80	110	3	0.22	1
	WEX2022E	★	22	20	30	80	110	3	0.23	2
	WEX2025E	★	25	25	35	85	120	4	0.38	1
	WEX2028E	★	28	25	35	85	120	4	0.39	2
	WEX2030E	★	30	25	35	85	120	4	0.40	2
	WEX2032E	★	32	32	40	90	130	5	0.70	1
	WEX2040E	★	40	32	30	120	150	6	0.91	2
	WEX2050E	★	50	32	30	120	150	7	1.02	2
	WEX2063E	★	63	32	30	120	150	8	1.22	2
Long Type	WEX2014EL	★	14	16	25	95	120	1	0.14	1
	WEX2016EL	★	16	16	25	120	145	2	0.19	1
	WEX2018EL	★	18	16	25	120	145	2	0.19	2
	WEX2020EL	★	20	20	40	110	150	2	0.32	1
	WEX2022EL	★	22	20	30	120	150	2	0.33	2
	WEX2025EL	★	25	25	50	120	170	2	0.55	1
	WEX2028EL	★	28	25	30	140	170	2	0.59	2
	WEX2030EL	★	30	25	30	140	170	2	0.60	2
	WEX2032EL	★	32	32	60	120	180	2	0.99	1
	WEX2040EL	★	40	32	30	150	180	2	1.12	2

Inserts are sold separately. ★ Worldwide Warehouse item

Insert

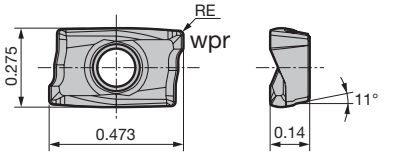
Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		MS		KN	N
	General-purpose		PM	PM	K		MS	MS		N
	Roughing		PM	PM		K		MS		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT123504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-G	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-H	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-H	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-E						●	●	-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-E						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-E						●	●	-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123508PEER-EH						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXET123502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.2*	-	1
AXET123504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET123508PEFR-S	-	-	-	-	-	-	-	●	●	.032" / *0.8*	-	1

-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Fig 1



Recommended Cutting Conditions ☞ H66

Identification Code -Inch

WEX 2 0625 E W

WEX	2	0625	E	W
Cutter Series	Insert Series	Dia. 0.0625"	With Shank	Type M: Medium L: Long W: Weldon C: Cylindrical

Identification Code - Metric

WEX 2 014 E L

WEX	2	014	E	L
Cutter Series	Insert Size	Dia.	With Shank	Long Type

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream
WEX2014E(EL) to WEX2018E(EL)	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEX2020E(EL) to WEX2063E	BFTX0306IP	2.0	TRDR08IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

WEX Endmill Inch Type - 17mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	8° to 15°
	Axial	16° to 24°

.551" 90°

Modular Type ☞ H210

Fig 1



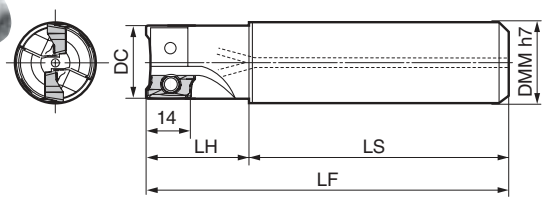
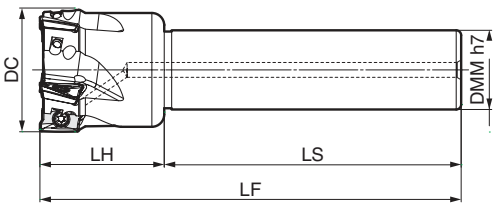


Fig 2



Body (Weldon Shank Type)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs)	Fig
WEX31000EW	●	1.000	1.000	1.530	2.281	3.811	2	0.55	1
WEX31000EMW	●	1.000	1.000	2.560	2.281	4.841	2	0.82	1
WEX31000ELW	●	1.000	1.000	4.060	2.281	6.341	2	0.86	1
WEX31250EW	●	1.250	1.250	2.250	2.281	4.531	3	0.93	1
WEX31250EMW	●	1.250	1.250	4.100	2.281	6.381	3	0.97	1
WEXC31500EMW	●	1.500	1.500	4.140	2.281	6.421	3	1.32	1
WEX31500EW	●	1.500	1.500	2.250	2.281	4.531	4	1.39	1
WEX32000EW	●	2.000	2.000	2.250	2.281	4.531	5	3.31	1

Inserts are sold separately.

Body (Cylindrical Shank Type)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs)	Fig
WEX31000ELC	●	1.000	1.000	3.137	6.863	10.000	2	1.19	1
WEX31250ELC	●	1.250	1.250	3.149	6.851	10.000	3	1.23	1
WEX31500ELC	●	1.500	1.250	3.000	7.000	10.000	4	1.38	2

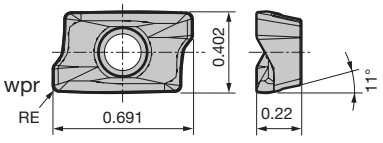
Inserts are sold separately. ● USA stocked item

Insert

Dimensions (inch)

Grade		Coated Carbide							Carbide	DLC			
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N			
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L		●	●	●	●	●			-	-	.031	.087	1
AXMT170504PEER-G		●	●	●	●	●			-	-	.016	.102	1
AXMT170508PEER-G		●	●	●	●	●			-	-	.031	.087	1
AXMT170512PEER-G		●	●	●	●	●			-	-	.047	.067	1
AXMT170516PEER-G		●	●	●	●	●			-	-	.063	.059	1
AXMT170520PEER-G*		●	●	●	●	●			-	-	.079	.047	1
AXMT170530PEER-G*		●	●	●	●	●			-	-	.118	-	1
AXMT170508PEER-H		●	●	●	●	●			-	-	.031	.087	1
AXMT170512PEER-H		●	●	●	●	●			-	-	.047	.067	1
AXMT170504PEER-E							●	●	-	-	.016	.102	1
AXMT170508PEER-E							●	●	-	-	.031	.087	1
AXMT170512PEER-E							●	●	-	-	.047	.067	1
AXMT170516PEER-E							●	●	-	-	.063	.059	1
AXMT170520PEER-E*							●	●	-	-	.079	.047	1
AXMT170530PEER-E*							●	●	-	-	.118	-	1
AXMT170508PEER-EH							●	●	-	-	.031	.087	1
AXET170502PEFR-S		-	-	-	-	-	-	-	●	●	.008	-	1
AXET170504PEFR-S		-	-	-	-	-	-	-	●	●	.016	-	1
AXET170508PEFR-S		-	-	-	-	-	-	-	●	●	.031	-	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.
* marked inserts require modification of the cutter body.

Parts

Applicable Cutter	Flat Screw	N·m	Wrench	Anti-seizure Cream
WEX3025E(EL) to 3030EL	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEX3032E(EL) to 3063E(ES)	BFTX0409IP	3.0	TRDR15IP	SUMI-P

Recommended Cutting Conditions ☞ H66

Identification Code -Inch

WEX **3** **0625** **E** **W**

WEX	3	0625	E	W
Cutter Series	Insert Series	Dia. 0.0625"	With Shank	Type M: Medium L: Long W: Weldon C: Cylindrical

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.



Modify this portion.
Reworking guidelines
For Nose Radius of 2.0: C1 (AXMT170520PEER)
For Nose Radius of 3.0: C1.5 (AXMT170530PEER)
Standard: C0.5.

N·m Recommended Tightening Torque (N·m)

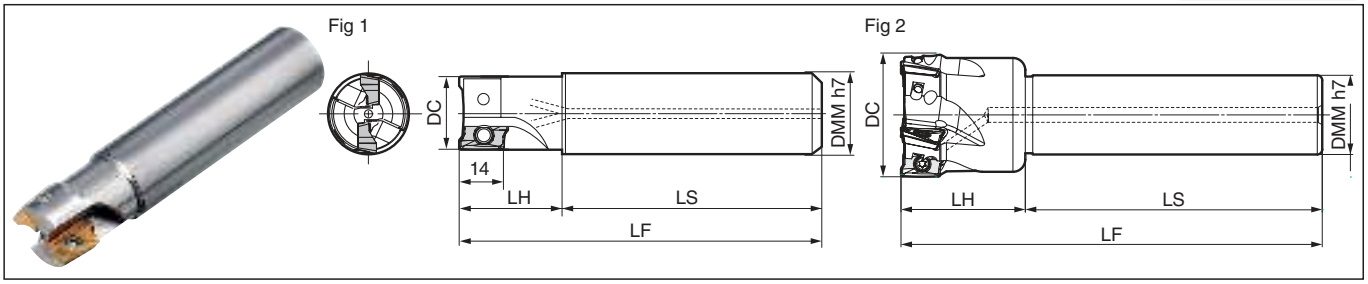
WEX Endmill Metric Type - 17mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	8° to 15°
	Axial	16° to 24°

14mm 90° | .551" 90°

Modular Type ☞ H208



Body (Standard Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3025E-20	★	25	20	35	85	120	2	0.25	2
WEX3025E	★	25	25	35	85	120	2	0.37	1
WEX3028E	★	28	25	35	85	120	2	0.39	2
WEX3030E	★	30	25	40	90	130	3	0.42	2
WEX3032E-25	★	32	25	40	90	130	3	0.43	2
WEX3032E	★	32	32	40	90	130	3	0.67	1
WEX3035E	★	35	32	40	90	130	3	0.69	2
WEX3040E	★	40	32	50	120	170	4	1.01	2
WEX3050E	★	50	32	50	120	170	5	1.23	2
WEX3063E	★	63	32	50	120	170	6	1.58	2

Body (Short Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3050ES	★	50	32	25	110	135	5	0.86	2
WEX3050ES-42	★	50	42	25	110	135	5	1.36	2
WEX3063ES	★	63	32	25	110	135	6	1.02	2
WEX3063ES-42	★	63	42	25	110	135	6	1.52	2

Inserts are sold separately.

Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3025EL	★	25	25	50	120	170	2	0.54	1
WEX3028EL	★	28	25	50	120	170	2	0.56	2
WEX3030EL	★	30	25	60	120	180	2	0.60	2
WEX3032EL	★	32	32	60	120	180	2	0.95	1
WEX3035EL	★	35	32	60	120	180	2	0.98	2
WEX3040EL	★	40	32	80	140	220	2	1.38	2

Body (Coarse Pitch Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3040E-C	★	40	32	50	120	170	3	1.04	2
WEX3050E-C	★	50	32	50	120	170	3	1.28	2
WEX3063E-C	★	63	32	50	120	170	4	1.64	2

Body (Short Coarse Pitch Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3050ES-C	★	50	32	25	110	135	3	0.91	2
WEX3050ES-C-42	★	50	42	25	110	135	3	1.41	2
WEX3063ES-C	★	63	32	25	110	135	4	1.07	2
WEX3063ES-C-42	★	63	42	25	110	135	4	1.57	2

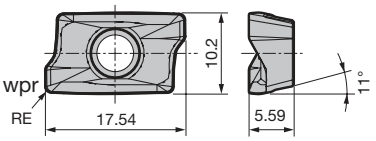
Inserts are sold separately. ★ Worldwide Warehouse item

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC			
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N			
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L		●	●	●	●	●			-	-	0.8	2.2	1
AXMT170504PEER-G		●	●	●	●	●			-	-	0.4	2.6	1
AXMT170508PEER-G		●	●	●	●	●			-	-	0.8	2.2	1
AXMT170512PEER-G		●	●	●	●	●			-	-	1.2	1.7	1
AXMT170516PEER-G		●	●	●	●	●			-	-	1.6	1.5	1
AXMT170520PEER-G*		●	●	●	●	●			-	-	2.0	1.2	1
AXMT170530PEER-G*		●	●	●	●	●			-	-	3.0	-	1
AXMT170508PEER-H		●	●	●	●	●			-	-	0.8	2.2	1
AXMT170512PEER-H		●	●	●	●	●			-	-	1.2	1.7	1
AXMT170504PEER-E							●	●	-	-	0.4	2.6	1
AXMT170508PEER-E							●	●	-	-	0.8	2.2	1
AXMT170512PEER-E							●	●	-	-	1.2	1.7	1
AXMT170516PEER-E							●	●	-	-	1.6	1.5	1
AXMT170520PEER-E*							●	●	-	-	2.0	1.2	1
AXMT170530PEER-E*							●	●	-	-	3.0	-	1
AXMT170508PEER-EH							●	●	-	-	0.8	2.2	1
AXET170502PEFR-S		-	-	-	-	-	-	-	●	●	0.2	-	1
AXET170504PEFR-S		-	-	-	-	-	-	-	●	●	0.4	-	1
AXET170508PEFR-S		-	-	-	-	-	-	-	●	●	0.8	-	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions ☞ H68

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream
WEX3025E(EL) to 3030EL	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEX3032E(EL) to 3063E(ES)	BFTX0409IP	3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.



Modify this portion.
Reworking guidelines
For Nose Radius of 2.0: C1 (AXMT170520PEER)
For Nose Radius of 3.0: C1.5 (AXMT170530PEER)
Standard: C0.5.

High Efficiency Shoulder Milling of Deep Steps



■ General Features

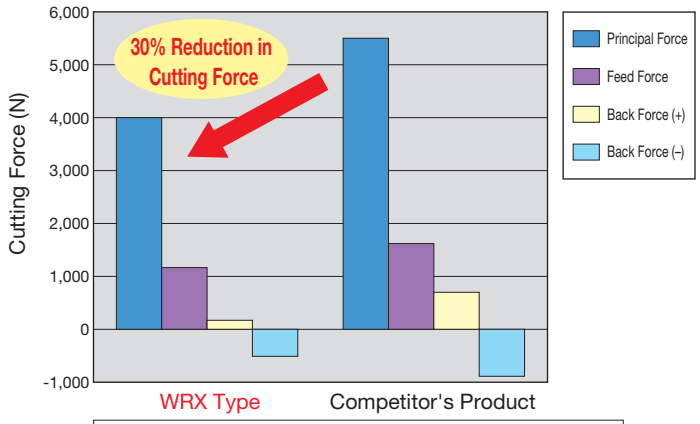
The WRX is an endmill that features cutting edges arranged in a repeater configuration. Its long cutting edges are arranged in multiple stages to enable high efficiency shoulder milling of deep steps.



■ Features

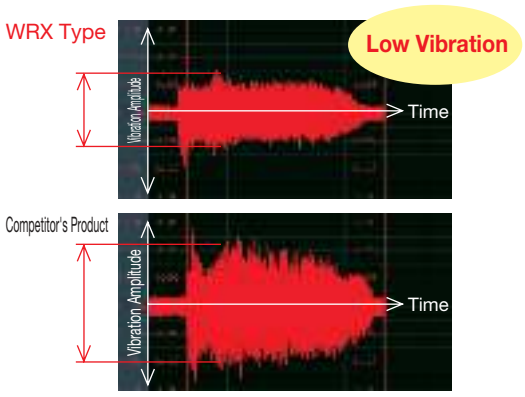
- Cutting edge positions are optimised to provide low resistance and low vibration

■ Comparison of Cutting Force



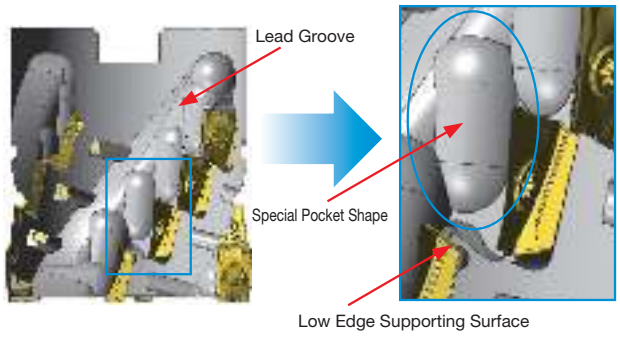
Cutting Conditions
Work Material: 1050
Tool: WRX2025E2725
Cutting Speed: v_c=330 SFM, f_z=0.006 IPT, a_e=0.4in, a_p=1.0in, Dry

■ Comparison of Vibration



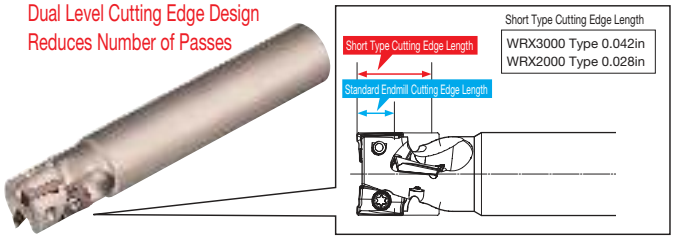
Cutting Conditions
Work Material: 1050
Tool: WRX3080RS5332
Cutting Speed: v_c=492 SFM, f_z=0.008 IPT, a_e=0.2in, a_p=1.6in, Dry

- Lead groove and special pocket shape provide smooth chip evacuation and high body rigidity
- Low edge supporting face reduces bottom edge breakage and provides high reliability



Short Cutting Head Series

Dual Level Cutting Edge Design
Reduces Number of Passes



■ Product Range - Inch

Type	Series Code	Cutting Edge Length (in.)	Dia. (in.)	Shape	Applicable Insert (*)
Shank Type	WRX2000E	1.5 - 2.126	ø1.0 to ø1.5	Weldon Type	AXMT1235 Type
	WRX3000E	2.500	ø2.00		AXMT1705 Type
Shell Type	WRX2300R	2.50 - 3.00	ø2.500 to ø3.00	Shell Type	

■ Product Range- Metric

Cutting Edge	Series Code	Cutting Edge Length (mm)	Dia. (mm)	Shape	Applicable Insert (*)
Standard Type	WRX2000E	27 to 36	ø20 to ø40	Shank Type	AXMT1235 Type
	WRX2000R	36	ø40 to ø50	Mounting Hole Type	
	WRX3000E	40 to 53	ø40 to ø50	Shank Type	AXMT1705 Type
	WRX3000R	53	ø50 to ø100	Mounting Hole Type	
Short Cutting Edge Type	WRX2000E	18	ø20 to ø40	Shank Type	AXMT1235 Type
	WRX2000R		ø40 to ø50	Mounting Hole Type	
	WRX3000E	27	ø40 to ø50	Shank Type	AXMT1705 Type
	WRX3000R		ø50 to ø100	Mounting Hole Type	

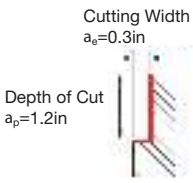
* Applicable inserts are common with the popular WEX type SEC-WaveMill

■ Recommended Cutting Conditions

WRX2000

Tool: WRX2040E3642, Insert: AXMT123504PEER

Cutting Conditions: Depth of Cut a_p=1.18in, Width of Cut a_e=0.315in, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade	ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per Tooth f_z (mm/t)	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2
				Cutting Speed v_c (m/min)																								
P	Steel, Carbon Steel S15C	125	G		280	260	240	260	240	220	240	220	200															
	S45C	190	G		200	180	160	180	160	140	180	160	140															
	S45C Hardened	250	G		180	120	140	160	140	120	150	130	110															
	S75C	270	G		160	140	120	150	130	110	130	110	110															
	S75C Hardened	300	G		100	80	70	90	70	60	70	60	50															
	Low Alloy Steel (SCM, SNCM)	180	G		200	180	160	180	160	150	160	150	130															
	SCM, SNCM Hardened	275	G		130	110	90	120	100	90	100	90	80															
	SCM, SNCM Hardened	300	G		120	100	80	100	90	80	90	80	60															
	SCM, SNCM Hardened	350	G		90	80	60	80	70	60	70	60	40															
	High-alloy Steel (SKD, SKT, SKH)	200	G		180	170	160	170	160	130	150	140	120															
	SKD, SKT, SKH Hardened	325	G		100	80	60	80	60	50	60	50	30															
M	Stainless Steel SUS430 and Others (Martensitic / Ferritic)	200	E																	170	150	120	140	130	110			
	SUS403 and others (Martensitic / Hardened)	240	E																	140	120	100	120	100	90			
	SUS304, SUS316 (Austenitic)	180	E																	180	160	140	160	140	130			
K	Cast Iron		G											240	220	200	220	200	180									
	Ductile Cast Iron		G											160	140	120	140	120	100									
S	Exotic Alloy		E																	50	35		45	25				
N	For Aluminum Alloy Si <12.6%		S																							1000	750	500
	Si >12.6%		S																							250	200	170

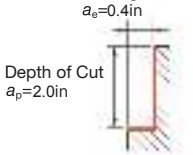
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WRX3000

Tool: WRX3050E5342 Insert: AXMT170508PEER

Cutting Conditions: Depth of Cut ap=2.0in, Width of Cut ae=0.4in, Dry



Classification	Work Material		Hardness (HB)	Chipbreaker	Grades	ACP100			ACP200			ACP300			ACK200			ACK300			DL1000			ACM 200			ACM300		
					Feed Rate - IPT (mm/tooth)	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008
					Cutting Speed - SFM (m/min)																								
P	Carbon steel		125	G		1049 (320)	984 (300)	918 (280)	984 (300)	918 (280)	853 (260)	918 (280)	853 (260)	787 (240)																
			190	G		787 (240)	721 (220)	656 (200)	721 (220)	656 (200)	590 (180)	656 (200)	590 (180)	524 (160)																
	Hardened carbon steel		250	G		656 (200)	590 (180)	524 (160)	590 (180)	524 (160)	459 (140)	524 (160)	459 (140)	393 (120)																
			270	G		524 (160)	459 (140)	393 (120)	492 (150)	426 (130)	360 (110)	426 (130)	360 (110)	328 (100)																
			300	G		393 (120)	328 (100)	262 (80)	328 (100)	262 (80)	196 (60)	262 (80)	196 (60)	164 (50)																
	Low alloy steel		180	G		721 (220)	656 (200)	590 (180)	656 (200)	590 (180)	557 (170)	590 (180)	557 (170)	492 (150)																
	Hardened alloy steel		275	G		459 (140)	393 (120)	328 (100)	426 (130)	360 (110)	328 (100)	360 (110)	328 (100)	262 (80)																
			300	G		426 (130)	360 (110)	295 (90)	360 (110)	295 (90)	262 (80)	328 (100)	262 (80)	196 (60)																
			350	G		341 (104)	262 (80)	209 (64)	288 (88)	236 (72)	183 (56)	236 (72)	183 (56)	131 (40)																
	High alloy steel		200	G		656 (200)	590 (180)	524 (160)	590 (180)	524 (160)	459 (140)	524 (160)	459 (140)	393 (120)																
	Hardened high alloy steel		325	G		328 (100)	262 (80)	196 (60)	262 (80)	196 (60)	164 (50)	196 (60)	164 (50)	98 (30)																
M	Stainless Steel	300 Series	200	G		582 SFM	517 SFM	451 SFM	484 SFM	451 SFM	385 SFM	451 SFM	385 SFM	353 SFM													625 SFM	575 SFM	525 SFM
			240	G		484 SFM	418 SFM	353 SFM	418 SFM	353 SFM	320 SFM	353 SFM	320 SFM	254 SFM													580 SFM	525 SFM	480 SFM
			180	G		615 SFM	549 SFM	484 SFM	549 SFM	484 SFM	451 SFM	484 SFM	451 SFM	385 SFM													650 SFM	600 SFM	550 SFM
		Precip-itation Hardening	>240																					300 ~ 800 SFM	275 ~ 775 SFM	250 ~ 750 SFM			
K	Cast iron		200	G											787 (240)	721 (220)	656 (200)	721 (220)	656 (200)	590 (180)									
	Nodular cast iron		280	G											524 (160)	459 (140)	393 (120)	459 (140)	393 (120)	328 (100)									
S	Super alloys			G											164 (50)	98 (30)		164 (50)	98 (30)										
N	Aluminum alloys																				3280 (1000)	2624 (800)	1968 (600)						

WRX Shell Mill Metric Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle	
Radial	16° to 17°
Axial	24°

18 to 36 mm 90° | .709" to 1.417" 90°



Fig 1

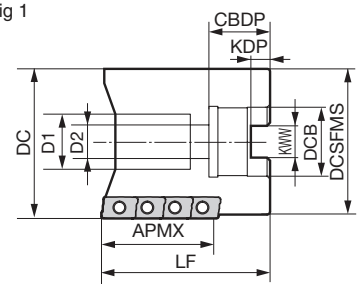
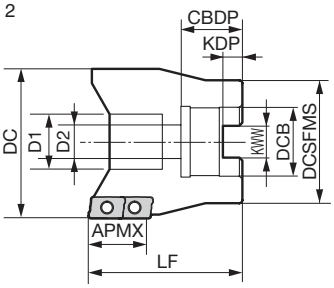


Fig 2



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Metric	**WRX2040RS3616**	★	*40*	*36*	*37.5*	*55*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	16	4	4	0.3	1
	WRX2050RS3622	★	*50*	*36*	*47.5*	*55*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	16	4	4	0.5	1

Body (Short Cutting Edge Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Metric	**WRX2040RS1816**	★	*40*	*18*	*32*	*50*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	10	2	5	0.3	2
	WRX2050RS1822	★	*50*	*18*	*40*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	10	2	5	0.4	2

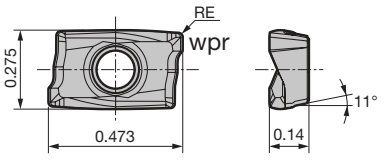
Inserts are sold separately.

Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide							Carbide	DLC			
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N			
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT123504PEER-G		●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-G		●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-G		●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-H		●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-H		●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-H		●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-E							●	●	-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-E							●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-E							●	●	-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123508PEER-EH							●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXET123502PEFR-S		-	-	-	-	-	-	-	●	●	.008" / *0.2*	-	1
AXET123504PEFR-S		-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET123508PEFR-S		-	-	-	-	-	-	-	●	●	.032" / *0.8*	-	1

Fig 1



Recommended Cutting Conditions ☞ H79

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

* Use peripheral inserts with RE of 0.8 mm or less from the second step and above.

Identification Code

WRX **2** **040** **R** **S** **36** **16**

Cutter Series	Insert Size (Insert Length 12mm)	Tool Dia.	Feed Direction	Metric Bore	Cutting Edge Length	Mounting Dia.

N·m Recommended Tightening Torque (N·m)

WRX Shell Mill (Inch & Metric) Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	13° to 15°
	Axial	22° to 24°

27 to 53mm 90° | 2.50-3.00" 90°



Fig 1

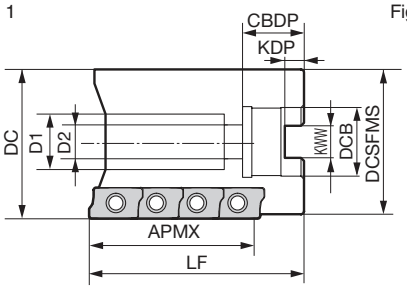


Fig 2

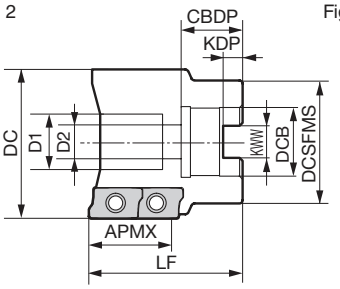
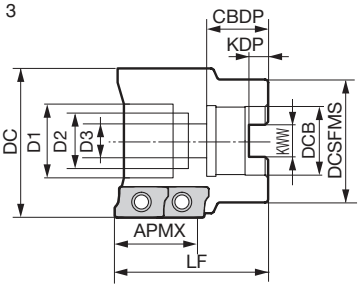


Fig 3



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Inch	**WRX32500R100-250**	●	2.500	2.500	2.378	2.750	1.000	0.375	0.236	1.023	0.797	0.531	-	20	5	4	3.42	1
Inch	**WRX33000R125-300**	●	3.000	3.000	2.878	3.375	1.250	0.500	0.315	1.260	1.000	0.655	-	30	6	5	6.24	1
Metric	**WRX3050RS5322**	★	*50*	*53*	*47*	*70*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	12	4	3	0.6	1
Metric	**WRX3063RS5327**	★	*63*	*53*	*60*	*70*	*27*	*12.4*	*7*	*23*	*20*	*13.5*	-	16	4	4	1.0	1
Metric	**WRX3080RS5332**	★	**80*	*53*	*77*	*85*	*32*	*14.4*	*8*	*26*	*25*	*17*	-	20	4	5	2.2	1
Metric	**WRX3100RS5340**	★	*100*	*53*	*97*	*85*	*40*	*16.4*	*9.5*	*30*	*32*	*21*	-	24	4	6	3.5	1

Body (Short Cutting Edge Type)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Inch	**WRX3080R27254**	★	**80*	27	60	50	25.4	9.5	6	25	35	26	13	12	2	6	1.1	3
Inch	**WRX3100R27317**	★	**100*	27	70	63	31.8	12.7	8	32.5	46	28	17	14	2	7	2.0	3
Metric	**WRX3050RS2722**	★	*50*	27	40	50	22	10.4	6.3	20	18	11	-	8	2	4	0.4	2
Metric	**WRX3063RS2722**	★	*63*	27	50	50	22	10.4	6.3	20	18	11	-	10	2	5	0.7	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

● USA stocked item ★ Worldwide Warehouse item

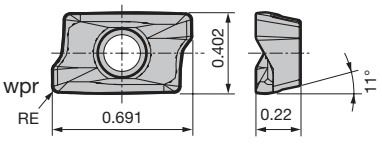
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		P M	P M	K		M S	M S		N
	Roughing		P M	P M		K		M S		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L	●	●	●	●	●			-	-	.031"/ *0.8*	.087"	1
AXMT170504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.102"	1
AXMT170508PEER-G	●	●	●	●	●			-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.067"	1
AXMT170516PEER-G	●	●	●	●	●			-	-	.063" / *1.6*	.059"	1
AXMT170520PEER-G*	●	●	●	●	●			-	-	.079" / *2.0*	.047	1
AXMT170530PEER-G*	●	●	●	●	●			-	-	.118" / *3.0*	-	1
AXMT170508PEER-H	●	●	●	●	●			-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.067"	1
AXMT170504PEER-E						●	●	-	-	.016" / *0.4*	.102"	1
AXMT170508PEER-E						●	●	-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-E						●	●	-	-	.047" / *1.2*	.067"	1
AXMT170516PEER-E						●	●	-	-	.063" / *1.6*	.059"	1
AXMT170520PEER-E*						●	●	-	-	.079" / *2.0*	.047"	1
AXMT170530PEER-E*						●	●	-	-	.118" / *3.0*	-	1
AXMT170508PEER-EH						●	●	-	-	.031" / *0.8*	.087"	1
AXET170502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.3*	-	1
AXET170504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET170508PEFR-S	-	-	-	-	-	-	-	●	●	.031" / *0.8*	-	1

Fig 1



* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H79

Parts

Flat Screw		Wrench
	N·m	
BFTX0409IP	3.0	TRDR15IP

* Use peripheral inserts with RE of 0.8 mm or less from the second step and above.

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.



Modify this portion.

Reworking guidelines

For RE=2.0: C1 (AXMT170520PEER)

For RE=3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m)

WRX Endmill (Inch & Metric) Type

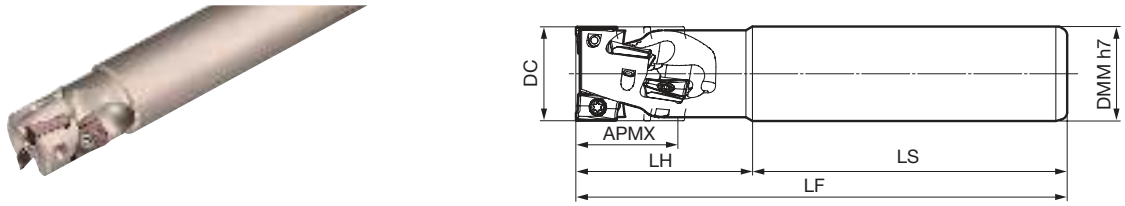
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	13° to 16°
	Axial	16° to 24°

18 to 36 mm 90°

1.50-2.126" 90°

Fig 1



Body (Standard Type)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Inch	**WRX21000E100-150**	●	1.000	1.500	1.000	1.950	2.300	4.250	8	4	2	1.10	1
	WRX21250E125-175	●	1.250	1.750	1.250	2.200	2.300	4.500	15	5	3	1.48	1
	WRX21500E125-200	●	1.500	2.126	1.250	2.500	2.300	4.800	24	6	4	1.82	1
Metric	**WRX2020E3620**	★	*20*	*36*	*20*	*45*	*85*	*130*	4	4	1	0.3	1
	WRX2025E2725	★	*25*	*27*	*25*	*45*	*85*	*130*	6	3	2	0.4	1
	WRX2032E2732	★	*32*	*27*	*32*	*45*	*85*	*130*	9	3	3	0.7	1
	WRX2040E3642	★	*40*	*36*	*42*	*45*	*85*	*130*	16	4	4	1.2	1

Body (Short Cutting Edge Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
WRX2020E1820	★	*20*	*18*	*20*	*40*	*80*	*120*	4	2	2	0.3	1
WRX2025E1825	★	*25*	*18*	*25*	*45*	*85*	*130*	6	2	3	0.4	1
WRX2032E1832	★	*32*	*18*	*32*	*50*	*90*	*140*	8	2	4	0.8	1
WRX2040E1832	★	*40*	*18*	*32*	*40*	*120*	*160*	10	2	5	1.1	1

● USA stocked item ★ Worldwide Warehouse item

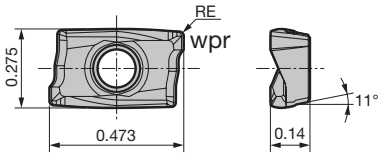
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		MS		KN	N
	General-purpose		PM	PM	K		MS	MS		N
	Roughing		PM	PM		K		MS		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT123504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-G	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-H	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-H	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-E						●	●	-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-E						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-E						●	●	-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123508PEER-EH						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXET123502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.2*	-	1
AXET123504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET123508PEFR-S	-	-	-	-	-	-	-	●	●	.032" / *0.8*	-	1

Fig 1



Recommended Cutting Conditions H79

Parts

Wrench	Flat Screw	N·m
		
TRDR08IP	BFTX0306IP	2.0

* Use peripheral inserts with RE of 0.8 mm or less from the second step and above.

Identification Code

WRX **2** **020** **E** **36** **20**

Cutter Series	Insert Size (Insert Length 12mm)	Tool Dia.	Endmills	Cutting Edge Length	Shank Dia.

N·m Recommended Tightening Torque (N·m)

WRX ENDMILL (INCH & METRIC) Type

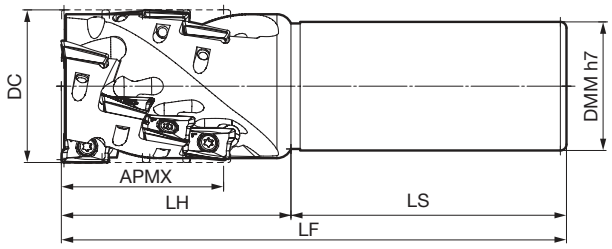
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	12° to 13°
	Axial	20° to 22°

27 to 53mm 90° | 2.50" 90°



Fig 1



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Inch	**WRX32000E125-250**	●	2.000	2.500	1.250	2.700	2.300	5.000	15	5	3	2.56	1
Metric	**WRX3040E4042**	★	*40*	*40*	*42*	*65*	*85*	*150*	*9*	3	3	*1.3*	1
	WRX3050E5342	★	*50*	*53*	*42*	*75*	*90*	*165*	*12*	4	3	*1.8*	1

Body (Short Cutting Edge Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
WRX3040E2732	★	**40**	27	32	60	120	180	6	2	3	*1.2*	1
WRX3050E2732	★	**50**	27	32	60	120	180	8	2	4	*1.4*	1

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

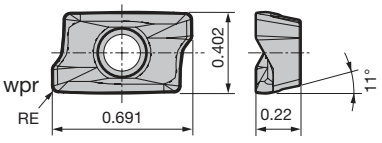
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		MS		KN	N
	General-purpose		PM	PM	K		MS	MS		N
	Roughing		PM	PM		K		MS		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L	●	●	●	●	●			-	-	.031"/ *0.8*	.087"	1
AXMT170504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.102"	1
AXMT170508PEER-G	●	●	●	●	●			-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.067"	1
AXMT170516PEER-G	●	●	●	●	●			-	-	.063" / *1.6*	.059"	1
AXMT170520PEER-G*	●	●	●	●	●			-	-	.079" / *2.0*	.047	1
AXMT170530PEER-G*	●	●	●	●	●			-	-	.118" / *3.0*	-	1
AXMT170508PEER-H	●	●	●	●	●			-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.067"	1
AXMT170504PEER-E						●	●	-	-	.016" / *0.4*	.102"	1
AXMT170508PEER-E						●	●	-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-E						●	●	-	-	.047" / *1.2*	.067"	1
AXMT170516PEER-E						●	●	-	-	.063" / *1.6*	.059"	1
AXMT170520PEER-E*						●	●	-	-	.079" / *2.0*	.047"	1
AXMT170530PEER-E*						●	●	-	-	.118" / *3.0*	-	1
AXMT170508PEER-EH						●	●	-	-	.031" / *0.8*	.087"	1
AXET170502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.3*	-	1
AXET170504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET170508PEFR-S	-	-	-	-	-	-	-	●	●	.031" / *0.8*	-	1

Fig 1



* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H79

Parts

Flat Screw		Wrench
	N·m	
BFTX0409IP	3.0	TRDR15IP

* Use peripheral inserts with RE of 0.8 mm or less from the second step and above.

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.



Modify this portion.

Reworking guidelines

For RE = 2.0: C1 (AXMT170520PEER)

For RE = 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

Identification Code

WRX **3** **040** **E** **40** **42**

Cutter Series	Insert Size (Insert Length 17mm)	Tool Dia.	Endmills	Cutting Edge Length	Shank Dia.

N·m Recommended Tightening Torque (N·m)



■ General Features

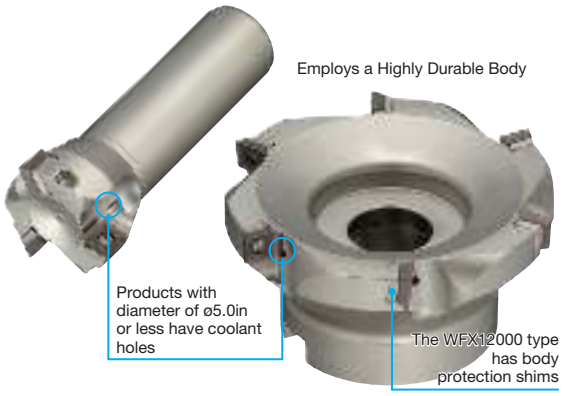
SEC-WaveMill WFX Type for shoulder milling is a screw-locking type cutter capable of using four corners.
Ideal cut edge design delivers good squareness.
Now with high-efficiency, multi-functional WFXH type and chamfering WFXC type.
Our wide range covers a wide variety of applications.



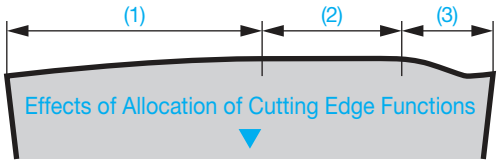
WFXH Type **WFXC** Type

■ Features

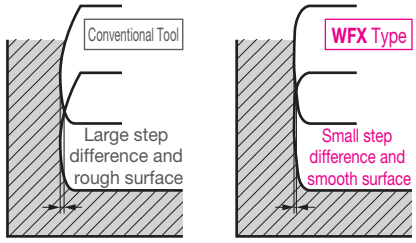
The insert shape optimized for shoulder milling and the high-precision body leave a superior machined surface finish.



● **Optimized Edge Shape (For Shoulder Milling)**



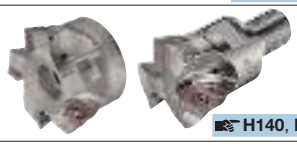
(1): The convex shape **ensures cutting edge strength**
(2): The flat shape **reduces step differences** in shoulder milling



(3): The wiper edge function improves the surface roughness

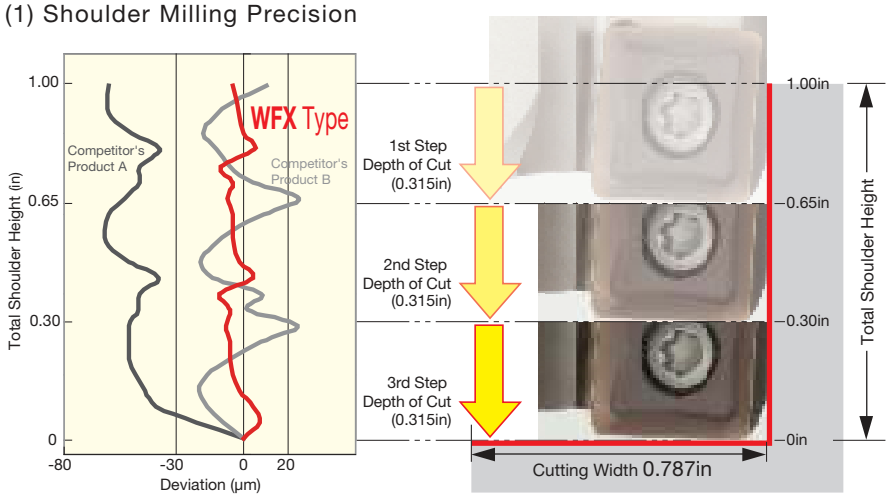
■ Product Range

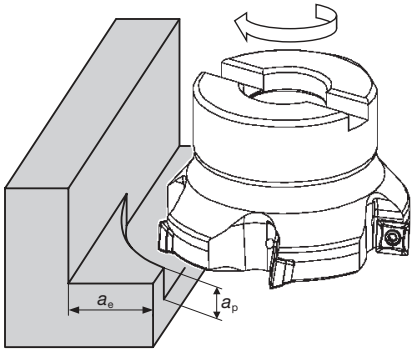
Applications	Type	Cat. No.	Description	Blade Diameters in Stock (inch) ø2.000 ø2.500 ø3.000 ø4.000 ø5.000 6.000 ø8.000	Shape
Shoulder Milling	Shell Type	**WFX40000R**	Standard Type	2.000 — 8.00	 ☞H90
		WFXF40000R	Fine Pitch	2.000 — 8.00	
		WFXX40000R	Extra Fine Pitch	2.000 — 5.00	

Applications	Type	Cat. No.	Description	Blade Diameters in Stock (mm) ø10 ø25 ø40 ø60 ø63 ø80 ø100 1254.92 ø250	Shape
Shoulder Milling	Shell Type	**WFX08000RS**	Standard Type	40 — 100	 ☞H87, H208
		WFXM08000RS	Fine Pitch	40 — 100	
		WFXF08000RS	Extra Fine Pitch	40 — 100	
		WFX08000R	Standard Type	80 — 100	
		WFXM08000R	Fine Pitch	80 — 100	
		WFXF08000R	Extra Fine Pitch	80 — 100	
		WFX12000RS	Standard Type	50 — 100	
		WFXF12000RS	Extra Fine Pitch	50 — 100	
		WFX12000R	Standard Type	80 — 9.84	
		WFXF12000R	Extra Fine Pitch	80 — 9.84	
	Endmill Type	**WFX08000E**	Standard Type	20 — 63	 ☞H94, H95
		WFXM08000E	Fine Pitch	25 — 63	
		WFX12000E	Standard Type	40 — 80	
		WFXF12000E	Extra Fine Pitch	50 — 80	
	Modular Type	**WFX08000M**	Modular Type	20 — 40	
High Efficiency	Shell Type	**WFXH08000RS**	Standard Type	40 — 63	 ☞H140, H211
		WFXH12000RS	Standard Type	60 — 63	
	Modular Type	**WFXH08000M**	Modular Type	25 — 32	
		WFXH12000M	Modular Type	40	
Chamfering	Endmill Type	**WFXC08000E**	Standard Type	8 — 16	 ☞H175, H215
		WFXC12000E	Standard Type	25 — 30	
	Modular Type	**WFXC08000M**	Modular Type	16	
		WFXC12000M	Modular Type	25 — 32	

■ Cutting Performance

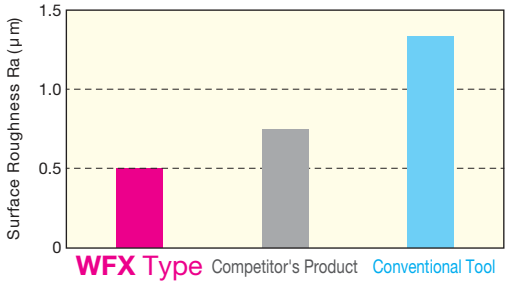
(1) Shoulder Milling Precision





Part Material: **1050 Steel** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **656** SFM, f_z = **0.006 IPT**,
a_p = **0.315"** x **3** times, a_e = **0.8"**

(2) Comparison of Surface Roughness



Part Material: **4140 Steel** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **656 SFM**, f_z = **0.004 IPT**,
a_p = **0.12in**, a_e = **3.54in**

(3) Comparison of Surface Properties

Part Material: **1050 Steel**
Cutting Conditions: a_p = **0.02"**



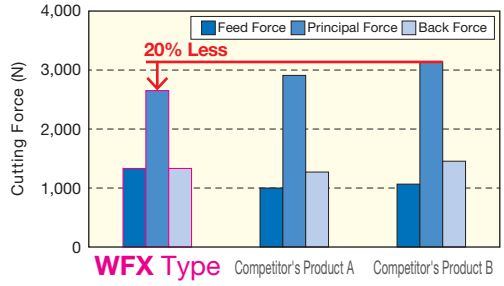
Glossy without Clouding | Clouded without Gloss

Part material: **304 Stainless**
Cutting Conditions: a_p = **0.02"**



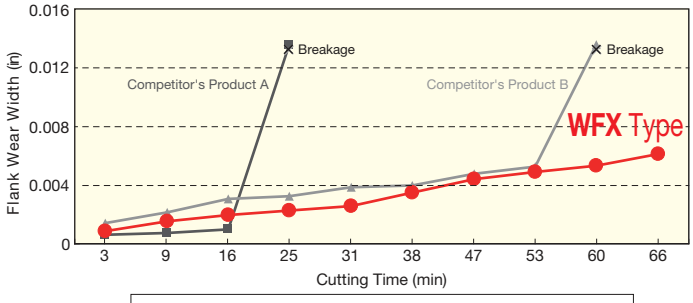
WFX Type | Competitor's Product

(4) Comparison of Cutting Force



Part Material: **1050 Steel** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **656 SFM** f_z = **0.006** IPT,
a_p = **0.4**in, a_e = **0.8in**

(5) Comparison of Wear Resistance



Part Material: **4140 Steel** Tool: **WFX12100R** (ø100 x 1 flute evaluation)
Cutting Conditions: v_c = **656 SFM**, f_z = **0.006 IPT**,
a_p = **0.2**in, a_e = **1.18in**

■ Application Examples

Workpiece (1050 Steel)		Sumitomo	Conventional Tool
	Tool	**WFXF08063RS**	
	Grade	**ACP200**	
	Tool Dia. (mm)	ø63	ø63
	Number of Teeth	8	5
	v_c (SFM)	720	720
	v_f (IPT)	43	43
	f_z (IPM)	0.006	0.008
	a_p (in)	0.12	0.16
	a_e (in)	1.97	1.97
	Coolant	Wet	Wet
	Results	· Vibration reduced by approximately 30% · Good machined surface · Tool life doubled	

Workpiece (Cast Iron - FCD450)		Sumitomo	Conventional Tool
	Tool	**WFXF12100R**	
	Grade	**ACK300**	
	Tool Dia. (mm)	ø100	ø100
	Number of Teeth	7	6
	v_c (SFM)	656	656
	v_f (IPM)	17.5	17.5
	f_z (IPT)	0.004	0.004
	a_p (in)	0.002	0.002
	a_e (in)	-	-
	Coolant	Dry	Dry
	Results	· Good surface roughness Ra 0.98 → 0.38μm, Rz 7.63 → 3.34μm · Cutting time shortened Insert life is extended by approximately 20%	

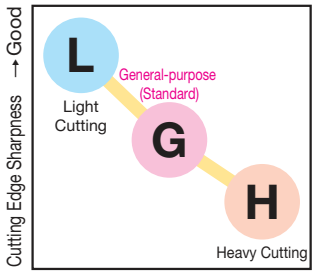
■ Grade Application Range

Work Material	Grade	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	Coated Carbide	ACP100	ACP200	ACP300
M Stainless Steel	Coated Carbide	ACM200	ACM300	

Work Material	Grade	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
K Cast Iron	Coated Carbide	ACK200	ACK300	
N Non-Ferrous Metal	Coated Carbide		DL1000	
	Carbide		H1	

The letters "C" and "P" at the end of each grade indicate the coating type. C : CVD, P : PVD, Blank: Uncoated

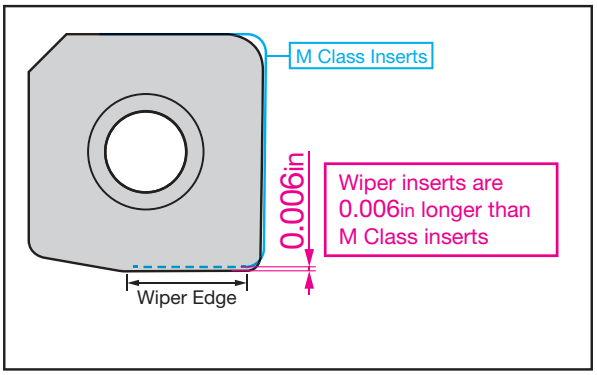
■ Chipbreaker Selection

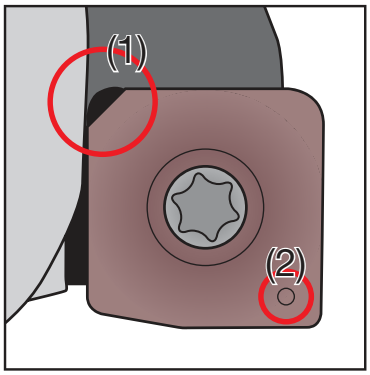


Part Material	P M K S	N
Chipbreaker	L Type	G Type	H Type	Wiper Insert	S Type
Features	Low Cutting Force	General-purpose Type	High Strength Type	Wiper Edge	Sharp Edge
Cutting Edge Cross Section	20°	15°	10°	15°	25°
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General Purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	High-precision Finish	For Non-Ferrous Metals

■ Wiper Insert

Optimized wiper edge shape provides superior surface roughness.





Precautions when Using Wiper Inserts

- The wiper insert has a single corner specification.
- Place the wiper insert so that the chamfered corner is in location (1) shown in the figure.
- Use the corner with the ID mark. (2) (08-size inserts have no marks)
- Refer to page N55 for details about wiper inserts.

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c (SFM/m/min) Min.-Optimum-Max	Feed Rate f_z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

WFX Shellmill Metric Type - 8mm Inserts

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90° .236" 90°



Fig 1

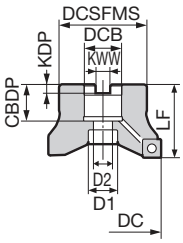


Fig 2

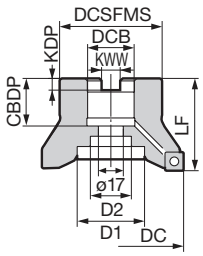
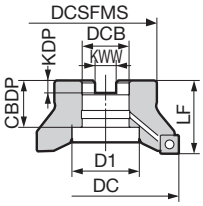


Fig 3



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFX08040RS**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	3	*0.2*	1
	WFX08050RS	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
	WFX08063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.6*	1
	WFX08080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*14*	6	*1.0*	1
	WFX08100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	8	*1.4*	3
	WFX08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	6	*1.0*	1
	WFX08100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	8	*1.9*	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light	P			K		MS		KN	N				
	General-purpose		PM	PM	K		MS	MS		N	P			
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-L		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOET080304PZER-G		★	★	★	★	★	★	★	-	-	★	*0.4*	-	1
SOET080308PZER-G		★	★	★	★	★	★	★	-	-	★	*0.8*	-	1
SOET080312PZER-G		★	★	★	★	★	★	★	-	-	★	*1.2*	-	1
SOET080302PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.2*	-	1
SOET080304PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.4*	-	1
SOET080308PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.8*	-	1
XOEW080308PZTR-W		-	-	-		★			-	-	★	-	*3.3*	2

Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

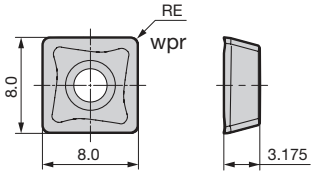
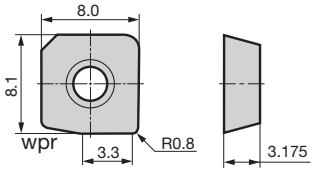


Fig 2 Wiper Insert



Parts

Flat Screw		Wrench
		
BFTX0306IP	**2.0**	TRDR08IP

SUMI-P Anti-seize cream included in the package.

Identification Code

WFX 08 040 R S

Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_C (SFM/m/min) Min.-Optimum-Max	Feed Rate f_Z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

N·m Recommended Tightening Torque (N·m)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WFXM Shellmill Metric Type - 8mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90° .236" 90°



Fig 1

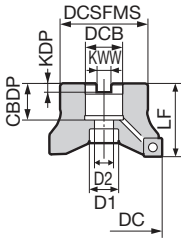


Fig 2

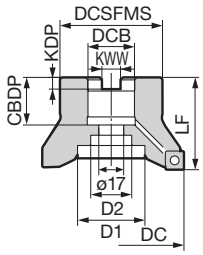
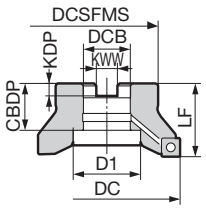


Fig 3



Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXM08040RS**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	4	*0.2*	1
	WFXM08050RS	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.3*	1
	WFXM08063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.5*	1
	WFXM08080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*14*	8	*1.0*	1
	WFXM08100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	10	*1.4*	3
	WFXM08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	8	*1.0*	1
	WFXM08100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	10	*1.9*	2

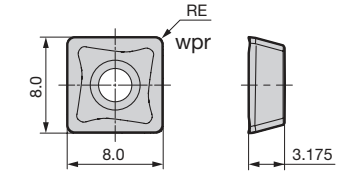
Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

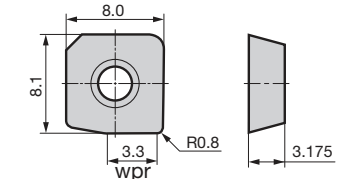
Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed/Light	P			K		MS		KN	N				
	General-purpose		PM	PM	K		MS	MS		N	P			
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-L		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOET080304PZER-G		★	★	★	★	★	★	★	-	-	★	*0.4*	-	1
SOET080308PZER-G		★	★	★	★	★	★	★	-	-	★	*0.8*	-	1
SOET080312PZER-G		★	★	★	★	★	★	★	-	-	★	*1.2*	-	1
SOET080302PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.2*	-	1
SOET080304PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.4*	-	1
SOET080308PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.8*	-	1
XOEW080308PZTR-W		-	-	-		★			-	-	★	-	*3.3*	2



Wiper Insert



Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seize cream included in the package.

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

Identification Code

WFX	M	08	040	R	S
Cutter Series	Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c (SFM/m/min) Min.-Optimum-Max	Feed Rate f_z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WFXFShellmill Metric Type - 8mm Inserts

P Steel M Stainless Steel K Cast Iron N Non-ferrous Metal N Aluminum Alloy S Exotic Alloy

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90° .236" 90°

Fig 1



Fig 2

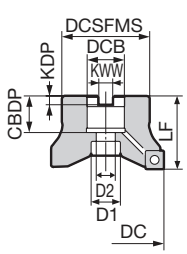
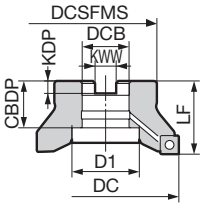


Fig 3



Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXF08040RS**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	6	*0.2*	1
	WFXF08050RS	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	*7*	*0.3*	1
	WFXF08063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	8	*0.5*	1
	WFXF08080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*14*	10	*0.9*	1
	WFXF08100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	12	*1.4*	3
	WFXF08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	10	*1.0*	1
	WFXF08100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	12	*1.9*	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light	P			K		M S		K N	N				
	General-purpose		P M	P M	K		M S	M S		N	P			
	Roughing		P M	P M		K		M S						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-L		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOET080304PZER-G		★	★	★	★	★	★	★	-	-	★	*0.4*	-	1
SOET080308PZER-G		★	★	★	★	★	★	★	-	-	★	*0.8*	-	1
SOET080312PZER-G		★	★	★	★	★	★	★	-	-	★	*1.2*	-	1
SOET080302PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.2*	-	1
SOET080304PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.4*	-	1
SOET080308PZFR-S		-	-	-	-	-	-	-	★	★	-	*0.8*	-	1
XOEW080308PZTR-W		-	-	-		★			-	-	★	-	*3.3*	2

Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

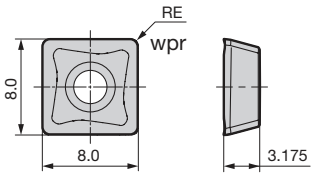
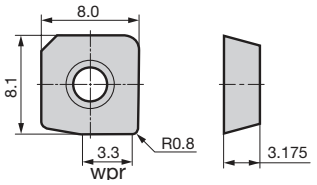


Fig 2 Wiper Insert



Parts

Flat Screw		Wrench
		
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seize cream included in the package.

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c (SFM/m/min) Min.-Optimum-Max	Feed Rate f_z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Identification Code

WFX F 08 040 R S

WFX	F	08	040	R	S
Cutter Series	M: Fine Pitch F: Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

N·m Recommended Tightening Torque (N·m)

WFX SHELLMILL INCH Type -12mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° | .394" 90°

Fig 1



Fig 2

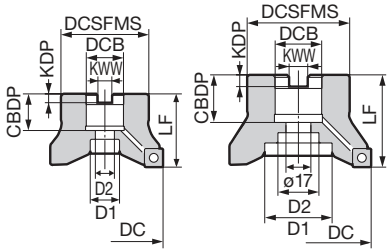


Fig 3

Fig 4

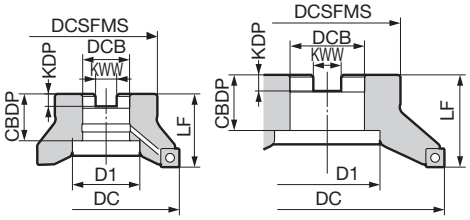


Fig 5

Body (Standard Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**WFX42000R**	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	3	.28	1
	WFX42500R	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	4	.41	1
	WFX43000R	●	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	4	.74	1
	WFX44000R	●	4.000	2.870	2.000	1.250	.500	.280	.750	1.000	.656	5	1.50	1
	WFX44000R-1.50	●	4.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	5	2.24	3
	WFX45000R	●	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	.781	6	2.99	1
	WFX46000R	●	6.000	4.380	2.500	1.500	.625	.380	1.060	2.000	-	8	4.18	2
	WFX48000R	●	8.000	5.906	2.500	2.500	1.000	.560	1.594	5.118	-	10	6.54	3

Inserts are sold separately. * Sizes ø6.000", ø8.000" & ø160 mm and above do not have coolant holes.

Insert

Dimensions (inch)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		MS		KN	N	
	General-purpose		PM	PM	K		MS	MS		N	P
	Roughing		PM	PM		K	MS	MS			

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L	●	●	●	●	●	●	●	-	-	-	.031	.067	1
SOMT120404PDER-G	●	●	●	●	●	●	●	-	-	-	.016	.083	1
SOMT120408PDER-G	●	●	●	●	●	●	●	-	-	●	.031	.067	1
SOMT120412PDER-G	●	●	●	●	●	●	●	-	-	-	.047	.047	1
SOMT120416PDER-G	●	●	●	●	●	●	●	-	-	-	.063	.031	1
SOMT120408PDER-H	●	●	●	●	●	●	●	-	-	-	.031	.067	1
SOET120408PDFR-S	-	-	-	-	●	-	-	●	●	-	.031	-	1
XOEW120408PDTR-W	-	-	-	-	●			-	-	●	-	.256	2

Fig 1

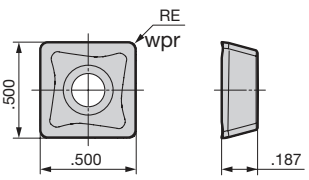
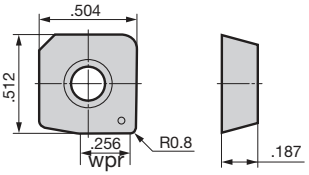
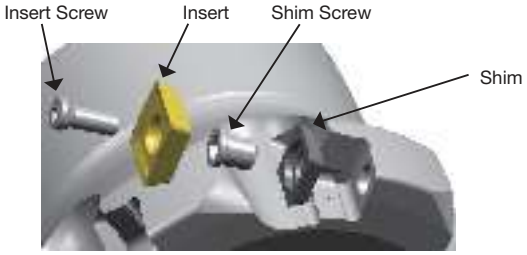


Fig 2 Wiper Insert



Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).



Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)
					
WFXS4R	BW0507F	BFTX03512IP	3.0	TRDR15IP	LH035

SUMI-P Anti-seize cream included in the package.

Identification Code

WFX 4 2000 R

Cutter Series	Insert Size	Cutter Dia. 2.000"	Feed Direction

■ Cutting Conditions

ISO	Work Material	Cutting Speed v_C (SFM/m/min) Min.-Optimum-Max	Feed Rate f_Z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WFXF(X) SHELLMILL INCH Type - 12mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° | .394" 90°

Fig 1



Fig 2

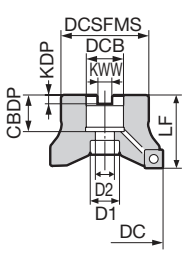


Fig 3

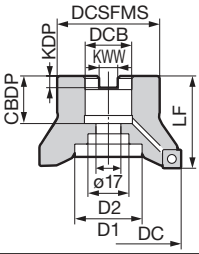


Fig 4

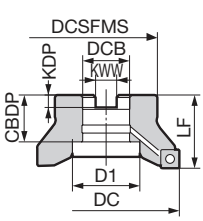
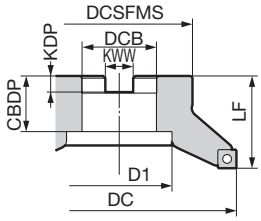


Fig 5



Body (Fine & Extra Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Fine Pitch - Inch	**WFXF42000R**	•	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	4	.28	1
	WFXF42500R	•	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	5	.42	1
	WFXF43000R	•	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	6	.73	1
	WFXF44000R	•	4.000	2.870	2.000	1.250	.500	.280	.750	1.000	.656	7	1.46	1
	WFXF44000R-1.50	•	4.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	7	2.23	3
	WFXF45000R	•	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	.781	8	2.94	1
	WFXF46000R	•	6.000	4.380	2.500	1.500	.625	.380	1.060	2.000	-	12	4.11	2
	WFXF48000R	•	8.000	5.906	2.500	2.500	1.000	.560	1.594	5.118	-	16	6.41	3
Super Fine - Inch	**WFXX42000R**	•	2.000	1.500	1.750	.750	.312	.190	0.750	0.609	.406	5	0.29	1
	WFXX42500R	•	2.500	1.750	1.750	1.000	.375	.220	0.750	0.797	.531	6	0.44	1
	WFXX43000R	•	3.000	2.250	1.750	1.000	.375	.220	0.750	0.797	.531	8	0.74	1
	WFXX44000R	•	4.000	2.870	2.000	1.250	.500	.280	0.750	1.000	.656	10	1.46	1
	WFXX44000R-1.50	•	4.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	10	2.25	3
	WFXX45000R	•	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	.781	12	2.95	1

Inserts are sold separately. * Sizes ø6.000", ø8.000" & ø160 mm and above do not have coolant holes.

Insert

Dimensions (inch)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light	P			K		MS		KN	N				
	General-purpose		PM	PM	K		MS	MS		N	P			
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L		•	•	•	•	•	•	•	-	-	-	.031	.067	1
SOMT120404PDER-G		•	•	•	•	•	•	•	-	-	-	.016	.083	1
SOMT120408PDER-G		•	•	•	•	•	•	•	-	-	•	.031	.067	1
SOMT120412PDER-G		•	•	•	•	•	•	•	-	-	-	.047	.047	1
SOMT120416PDER-G		•	•	•	•	•	•	•	-	-	-	.063	.031	1
SOMT120408PDER-H		•	•	•	•	•	•	•	-	-	-	.031	.067	1
SOET120408PDFR-S		-	-	-	-	-	-	-	•	•	-	.031	-	1
XOEW120408PDTR-W		-	-	-	-	•			-	-	•	-	.256	2

Fig 1

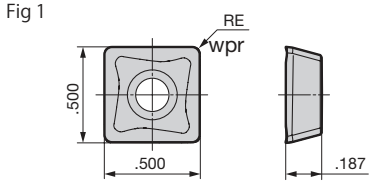
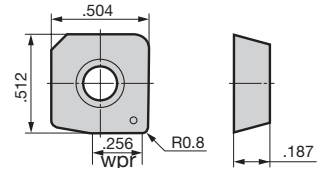
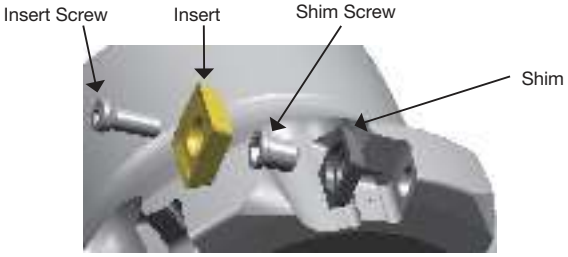


Fig 2 Wiper Insert



Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).



Identification Code

WFX	F	4	2000	R
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia. 2.000"	Feed Direction

Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)
			N·m		
WFXS4R	BW0507F	BFTX03512IP	3.0	TRDR15IP	LH035

SUMI-P Anti-seize cream included in the package.

N·m Recommended Tightening Torque (N·m)

■ Cutting Conditions

ISO	Work Material	Cutting Speed v_C (SFM/m/min) Min.-Optimum-Max	Feed Rate f_Z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WFX SHELLMILL METRIC Type - 12mm Inserts

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° .394" 90°



Fig 1

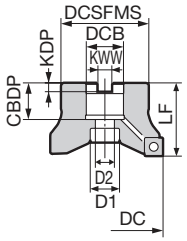


Fig 2

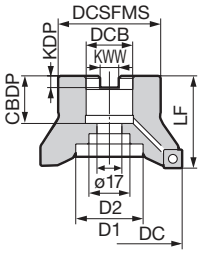


Fig 3

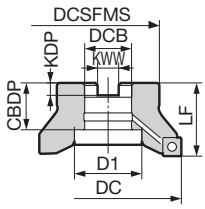


Fig 4

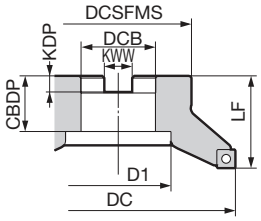
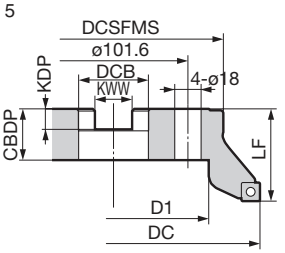


Fig 5



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFX12050RS**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	3	*0.3*	1
	WFX12063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.5*	1
	WFX12080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*14*	4	*0.9*	1
	WFX12100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	5	*1.3*	3
	WFX12080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	4	*0.9*	1
	WFX12100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*27*	5	*1.7*	2
	WFX12125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	6	*2.4*	1
	WFX12160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	8	*3.6*	4
	WFX12200R	★	*200*	*160*	*63*	*47.625*	*25.4*	*14*	*35*	*130*	-	10	*6.8*	5
	WFX12250R	★	*250*	*180*	*63*	*47.625*	*25.4*	*14*	*35*	*160*	-	12	*9.6*	5

Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light	P			K		M S		K N	N				
	General-purpose		P M	P M	K		M S	M S		N	P			
	Roughing		P M	P M		K		M S						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	-	-	-	*0.8*	*1.7*	1
SOMT120404PDER-G		●	●	●	●	●	●	●	-	-	-	*0.4*	*2.1*	1
SOMT120408PDER-G		●	●	●	●	●	●	●	-	-	●	*0.8*	*1.7*	1
SOMT120412PDER-G		●	●	●	●	●	●	●	-	-	-	*1.2*	*1.2*	1
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	*1.6*	*0.8*	1
SOMT120408PDER-H		●	●	●	●	●	●	●	-	-	-	*0.8*	-	1
SOET120408PDFR-S		-	-	-	-	-	-	-	●	●	-	*0.8*	-	1
XOEW120408PDTR-W		-	-	-	-	●			-	-	●	-	*6.5*	2

Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

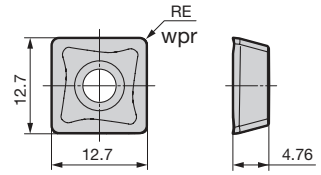
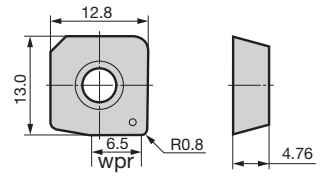
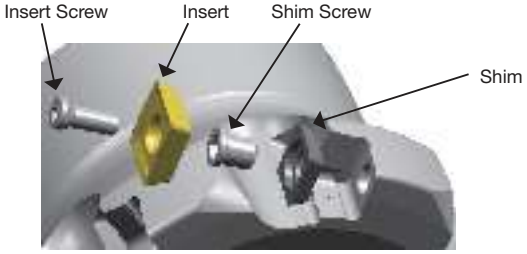


Fig 2 Wiper Insert





Identification Code

WFX 12 050 R S

Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Parts

Shim	Shim Screw	Insert Screw	Wrench	Wrench (For Shims)
				
WFXS4R	BW0507F	BFTX03512IP	3.0	TRDR15IP	LH035

SUMI-P Anti-seize cream included in the package.

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c (SFM/m/min) Min.-Optimum-Max	Feed Rate f_z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WFXF SHELLMILL METRIC Type - 12mm Inserts

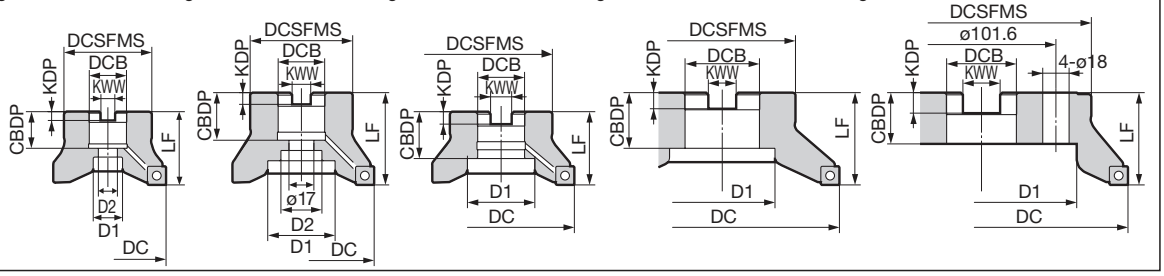
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° | .394" 90°

Fig 1 Fig 2 Fig 3 Fig 4 Fig 5





Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXF12050RS**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
	WFXF12063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.5*	1
	WFXF12080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	6	*0.9*	1
	WFXF12100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	7	*1.3*	3
	WFXF12080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	6	*0.9*	1
	WFXF12100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*27*	7	*1.7*	2
	WFXF12125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	8	*2.3*	1
	WFXF12160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	12	*3.5*	4
	WFXF12200R	★	*200*	*160*	*63*	*47.625*	*25.4*	*14*	*35*	*135*	-	16	*6.7*	5
	WFXF12250R		*250*	*180*	*63*	*47.625*	*25.4*	*14*	*35*	*160*	-	18	*9.5*	5

Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light	P			K		MS		KN	N				
	General-purpose		PM	PM	K		MS	MS		N	P			
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	-	-	-	*0.8*	*1.7*	1
SOMT120404PDER-G		●	●	●	●	●	●	●	-	-	-	*0.4*	*2.1*	1
SOMT120408PDER-G		●	●	●	●	●	●	●	-	-	●	*0.8*	*1.7*	1
SOMT120412PDER-G		●	●	●	●	●	●	●	-	-	-	*1.2*	*1.2*	1
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	*1.6*	*0.8*	1
SOMT120408PDER-H		●	●	●	●	●	●	●	-	-	-	*0.8*	-	1
SOET120408PDFR-S		-	-	-	-	-	-	-	●	●	-	*0.8*	-	1
XOEW120408PDTR-W		-	-	-	-	●			-	-	●	-	*6.5*	2

Fig 1

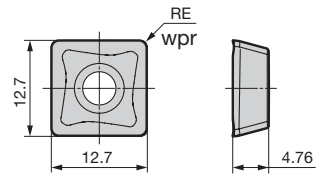
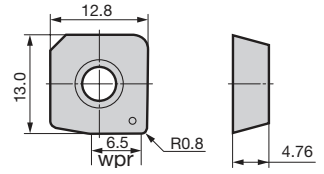
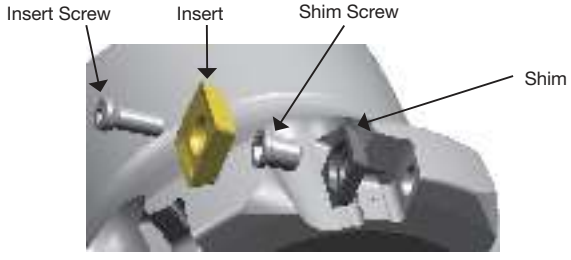


Fig 2 Wiper Insert



Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).



Identification Code

WFX Cutter Series | **F** Fine-Pitch Indication | **12** Insert Size | **050** Cutter Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Shim	Shim Screw	Insert Screw	Wrench	Wrench (For Shims)
		 N·m		
WFXS4R	BW0507F	BFTX03512IP	3.0	TRDR15IP	LH035

SUMI-P Anti-seize cream included in the package.

N·m Recommended Tightening Torque (N·m)

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c (SFM/m/min) Min.-Optimum-Max	Feed Rate f_z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WFX Endmill Metric Type - 8mm Inserts

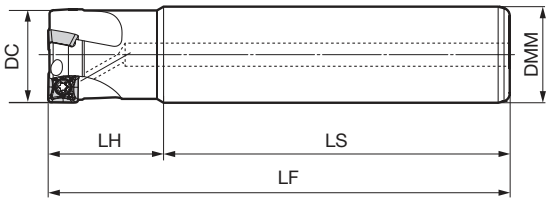
Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90° .236" 90°

Modular Type ☞ H208

Fig 1





Body (Standard Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WFX08020E-16	★	*20*	*16*	*30*	*80*	*110*	2	1
WFX08020E	★	*20*	*20*	*30*	*80*	*110*	2	1
WFX08022E	★	*22*	*20*	*30*	*90*	*120*	2	1
WFX08025E-20	★	*25*	*20*	*30*	*90*	*120*	2	1
WFX08030E	★	*30*	*25*	*30*	*90*	*120*	3	1
WFX08032E	★	*32*	*32*	*30*	*90*	*120*	3	1
WFX08033E	★	*33*	*32*	*30*	*90*	*120*	3	1
WFX08040E	★	*40*	*32*	*30*	*90*	*120*	3	1
WFX08050E	★	*50*	*32*	*30*	*90*	*120*	4	1
WFX08063E	★	*63*	*32*	*30*	*90*	*120*	5	1

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WFXM08025E	★	*25*	*25*	*30*	*90*	*120*	3	1
WFXM08032E	★	*32*	*32*	*30*	*90*	*120*	4	1
WFXM08040E	★	*40*	*32*	*30*	*90*	*120*	4	1
WFXM08050E	★	*50*	*32*	*30*	*90*	*120*	5	1
WFXM08063E	★	*63*	*32*	*30*	*90*	*120*	6	1

Inserts are sold separately.

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light	P			K		MS		KN	N				
	General-purpose		PM	PM	K		MS	MS		N	P			
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	-	-		0.4	*1.3*	1
SOMT080308PZER-L		★	★	★	★	★	★	★	-	-		0.8	*0.9*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	-	-		0.4	*1.3*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	-	-		0.8	*0.9*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	-	-		1.2	*0.5*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	-	-		0.8	*0.9*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	-	-		1.2	*0.5*	1
SOET080304PZER-G		★	★	★	★	★	★	★	-	-	★	0.4	-	1
SOET080308PZER-G		★	★	★	★	★	★	★	-	-	★	0.8	-	1
SOET080312PZER-G		★	★	★	★	★	★	★	-	-	★	1.2	-	1
SOET080302PZFR-S		-	-	-	-	-	-	-	★	★	-	0.2	-	1
SOET080304PZFR-S		-	-	-	-	-	-	-	★	★	-	0.4	-	1
SOET080308PZFR-S		-	-	-	-	-	-	-	★	★	-	0.8	-	1
XOEW080308PZTR-W		-	-	-		★			-	-	★	-	*3.3*	2

Fig 1

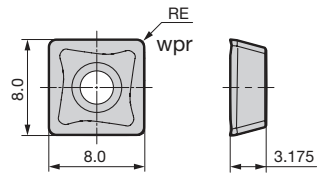
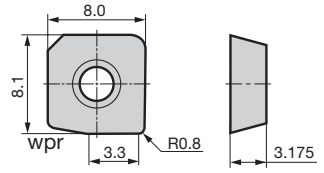


Fig 2 Wiper Insert



Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seize cream included in the package.

Identification Code

WFX **M** **08** **025** **E**

WFX	M	08	025	E
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Endmill Type

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_C (SFM/m/min) Min.-Optimum-Max	Feed Rate f_Z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

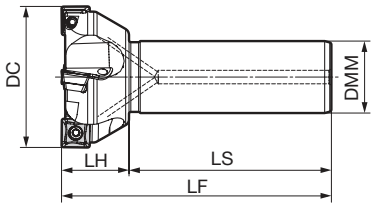
WFX(F) Endmill Metric Type - 12mm Inserts

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° .394" 90°

Fig 1





Body (Standard Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFX12040E	★	*40*	*32*	*30*	*90*	*120*	3	0.68	1
WFX12050E	★	*50*	*32*	*30*	*90*	*120*	3	0.78	1
WFX12063E	★	*63*	*32*	*30*	*90*	*120*	4	0.94	1
WFX12080E	★	*80*	*32*	*30*	*90*	*120*	4	1.29	1

Inserts are sold separately. ø40 mm size does not have seats.

Body (Extra Fine Pitch)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXF12050E	★	*50*	*32*	*30*	*90*	*120*	4	0.78	1
WFXF12063E	★	*63*	*32*	*30*	*90*	*120*	5	0.96	1
WFXF12080E	★	*80*	*32*	*30*	*90*	*120*	6	1.22	1

Inserts are sold separately.

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet			
Process	High-speed / Light	P			K		MS		KN	N				
	General-purpose		PM	PM	K		MS	MS		N	P			
	Roughing		PM	PM		K		MS						
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	-	-	-	*0.8*	*1.7*	1
SOMT120404PDER-G		●	●	●	●	●	●	●	-	-	-	*0.4*	*2.1*	1
SOMT120408PDER-G		●	●	●	●	●	●	●	-	-	●	*0.8*	*1.7*	1
SOMT120412PDER-G		●	●	●	●	●	●	●	-	-	-	*1.2*	*1.2*	1
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	*1.6*	*0.8*	1
SOMT120408PDER-H		●	●	●	●	●	●	●	-	-	-	*0.8*	-	1
SOET120408PDFR-S		-	-	-	-	-	-	-	●	●	-	*0.8*	-	1
XOEW120408PDTR-W		-	-	-	-	●			-	-	●	-	*6.5*	2

Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

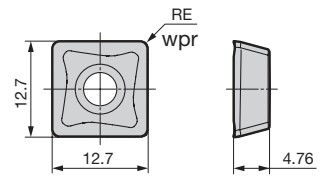
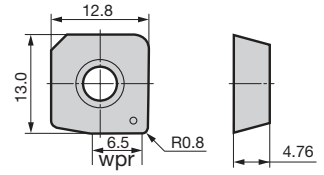
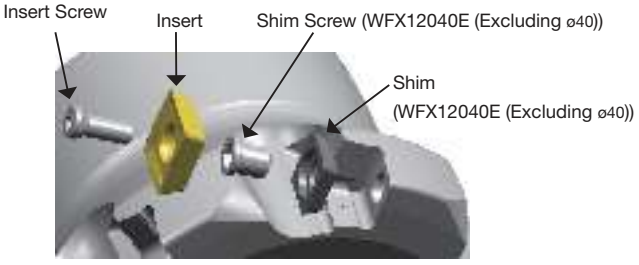


Fig 2 Wiper Insert





Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)
			N·m		
WFXS4R	BW0507F	BFTX03512IP	**3.0**	TRDR15IP	LH035

SUMI-P Anti-seize cream included in the package.
ø40 mm size does not have seats.

Identification Code

WFX	**F**	**12**	**050**	**E**
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Endmill Type

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c (SFM/m/min) Min.-Optimum-Max	Feed Rate f_z (IPT/mm/t) Min.-Optimum-Max	D.O.C. (In/mm)	Grades
P	General Steel	492-656-820	0.004-0.006-0.008	< 0.394	ACP200
		150-200-250	0.10-0.15-0.20	< 10.0	ACP300
	Soft Steel	591-869-1148	0.004-0.006-0.008	< 0.394	ACP200
		180-265-350	0.10-0.15-0.20	< 10.0	ACP300
	Die Steel	328-492-656	0.004-0.006-0.008	< 0.236	ACP200
		100-150-200	0.10-0.15-0.20	< 6.0	ACP300
M	Stainless Steel	175-425-675	.004-.006-.008	< 0.394	ACM200
		55-130-300	0.10-0.15-0.20	< 10.0	ACM200
		525-650-820	.004-.006-.008	< 0.394	ACM300
		160-200-250	0.10-0.15-0.20	< 10.0	ACM300
		525-672-820	0.004-0.006-0.008	< 0.394	ACP300
		160-205-250	0.10-0.15-0.20	< 10.0	
K	Cast Iron	328-574-820	0.004-0.006-0.008	< 0.394	ACK200
		100-175-250	0.10-0.15-0.20	< 10.0	ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)



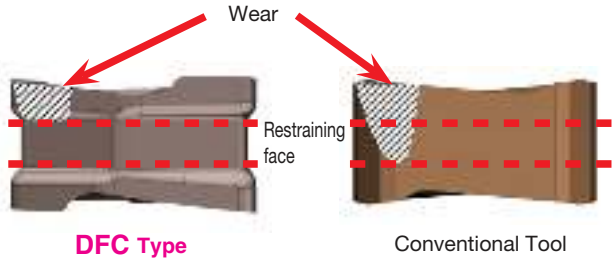
■ General Features

The high-efficiency general-purpose SEC-Sumi Dual Mill DFC Type has a unique insert shape with both excellent sharpness and cutting edge strength, enabling it to be used for a wider range of applications from high-efficiency machining through to finishing.
Further expansion of the shoulder milling GS Type chipbreaker, suitable for a wide range of applications.

■ Features



Unique insert shape delivers sharp cutting performance and cutting edge strength



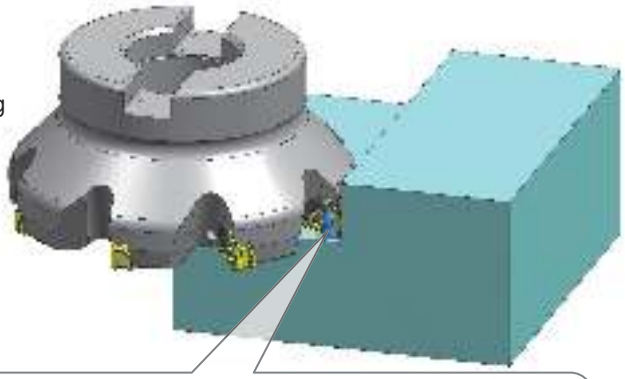
Flank wear of inserts for DFC Type does not reach the restraining face and thus mounting accuracy does not suffer.



The 90° cutting edge angle is suitable for both face milling and shoulder milling

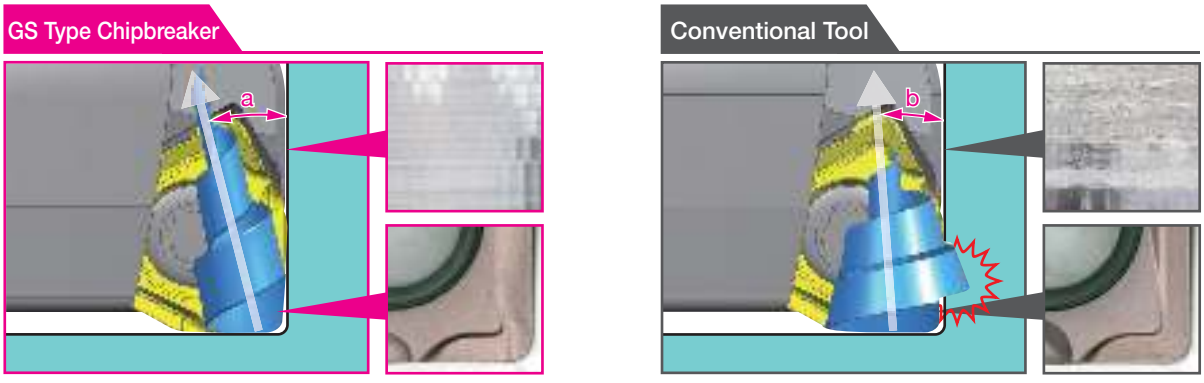
GS Type Chipbreaker for Shoulder Milling

· Excellent chip control
· Suppresses machined surface deterioration due to chip re-cutting



Part Material: 1050, Tool: ø4.000"
Cutting Conditions: v_c = 656 SFM, f_z = 0.008 IPT, a_e = 1.97", a_p = 0.12" x 6 passes, Dry

Chip generation image and machined surface comparison



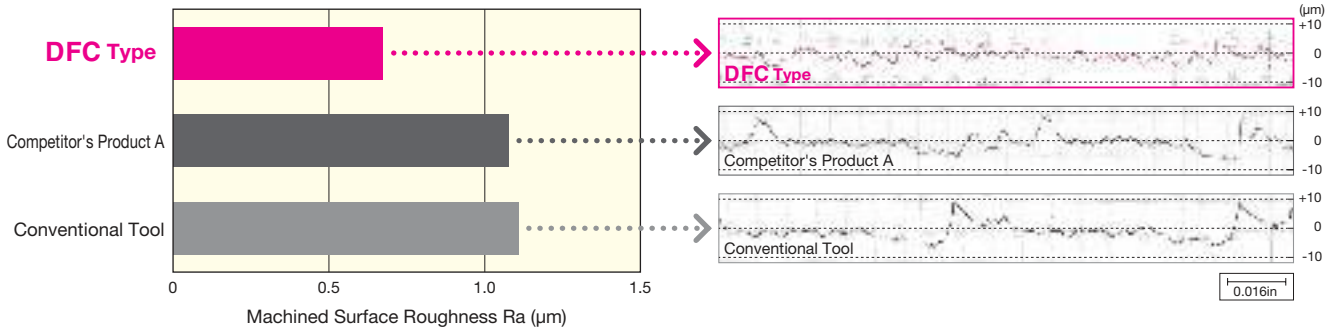
Chip flow direction control (a > b) ⟶ chip re-cutting suppressed

■ Cutting Performance



Face Milling

(1) Machined Surface Roughness Better than competitors' products



Part Material: 1050 Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: v_c = 656 SFM, f_z = 0.008 IPT, a_p = 0.12", a_e = 3.35" Dry

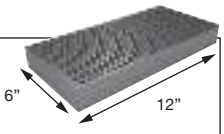
(2) Cutting edge strength: Cutting edge damage during heavy interrupted cutting
Cutting edge strength surpassing competitors' double-sided cutters

	f_z(IPT)		
	0.012	0.016	0.020
DFC Type	○	○	○
Competitor's Product B (Double-sided, 6 Corners)	○	Damage (Midway through 2 passes)	
Competitor's Product C (Double-sided, 6 Corners)	Damage (Midway through 3 passes)		
Competitor's Product D (Double-sided vertical)	Damage (Midway through 3 passes)		

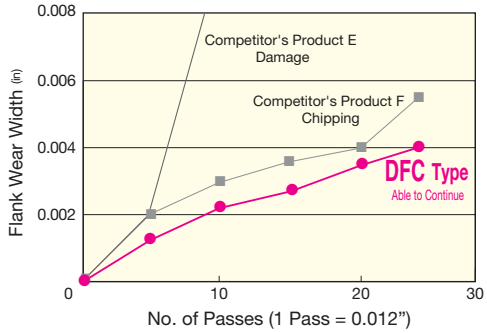
(Cutting Distance: 0.9m)



Part Material: 1050 (With Holes)
Tool: DFC 09100RS
Insert: XNMU 060608PNER-G Grade: ACP300
Cutting Conditions: v_c = 492 SFM a_p = 0.12", a_e = 1.97" Dry



(3) Wear resistance: Achieves long tool life thanks to excellent wear resistance



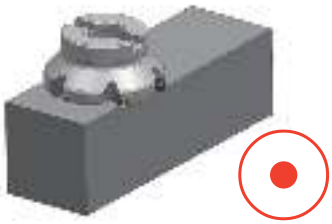
Comparison of cutting edge damage

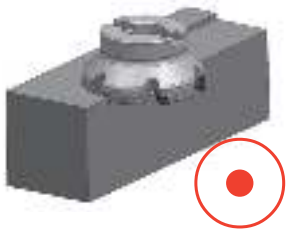


Work Material: 1050 Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: v_c = 656 SFM, f_z = 0.008 IPT, a_p = 0.12", a_e = 3.35" Dry

■ Applications and Recommended Chipbreakers

Face Milling	Shoulder Milling	Side Milling
G	GS	G/GS





Guidelines for Shoulder Milling Conditions

Radial Direction Maximum Depth of Cut
G Type: $a_e \leq 10\%$ of cutter diameter
GS Type: $a_e \leq 50\%$ of cutter diameter

Recommended Axial Depth of Cut $a_p = 0.120$"

Recommended Feed Rate $f_z \leq 0.008$ IPT
(for general steel)



⚠ Applications which are not applicable

Helical Milling



Ramping



■ Product Range

Number in ● is the number of teeth

	Cat. No.		Remarks	Cutter Diameters in Stock (Inch)										Shape
				ø1.00"	ø1.25"	ø1.50"	ø2.00"	ø2.50"	ø3.00"	ø4.00"	ø5.00"	ø6.00"	ø8.00"	
Shell Type	DFC20000R	H101	Standard Pitch	-	-	-	4	5	6	6	7	8	10	
	DFCM20000R	H102	Fine Pitch	-	-	-	5	6	8	10	12	14	15	
	DFCF20000R	H103	Extra Fine Pitch	-	-	-	6	7	9	11	14	16	20	
Shank Type	DFC20000EW	H107	Standard Pitch	2	3	3	4	5	-	-	-	-	-	
	DFCM20000EW	H107	Fine Pitch	-	-	4	5	7	-	-	-	-	-	

● : USA Stock Standard Item, - mark: Not available

	Cat. No.		Remarks	Cutter Diameters in Stock (mm)										Shape
				ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	
Shell Type	DFC09000R/RS	H104	Standard Pitch	-	-	-	4	4	5	6	7	8	10	
	DFCM09000R/RS	H105	Fine Pitch	-	-	-	5	6	7	8	11	12	16	
	DFCF09000R/RS	H106	Extra Fine Pitch	-	-	-	6	7	9	11	14	16	20	
Shank Type	DFC09000E	H107	Standard Pitch	2	2	3	3*	4*	5*	-	-	-	-	
	DFCM09000E	H107	Fine Pitch	-	3	4	5*	6*	7*	-	-	-	-	

● : metric available WWW ☉ : Both metric and inch arbors available WWW * mark: Shank dia. 42mm type (made-to-order) - mark: Not available

■ Insert Mounting Precautions



Prevent gaps from occurring



No Gap

Gap

Place the insert face flat on to the cutter's insert pocket and tighten the flat screw with the recommended torque.

■ Insert Grade

Lineup of Steel Milling Grades ACP100/ACP200/ACP300, Stainless Steel Milling Grades ACM200/ACM300, Cast Iron Milling Grades ACK200/ACK300 and more for a wide range of materials.

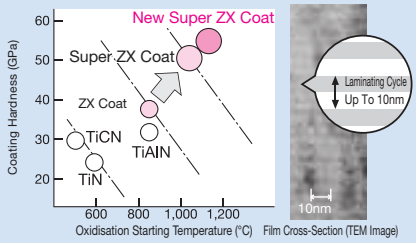


Part Material	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	ACP100 (C)	ACP200 (P)	ACP300 (P)
M Stainless Steel	ACM200 (C)	ACM300 (P)	
K Cast Iron	ACK200 (C)	ACK300 (P)	
S Exotic Alloy	ACM200 (C)	ACM300 (P)	

The letters "C" and "P" at the end of each grade indicate the coating type.
(C): CVD (P): PVD

(P) ACP200/ACP300/ACK300/ACM300

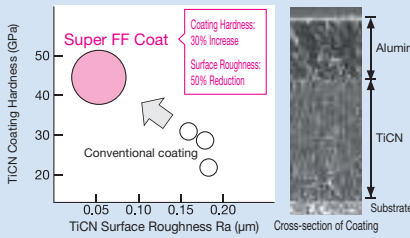
NEW SUPER ZX COAT



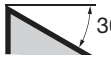
- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidation starting temperature has been increased by 200°C
- Enables more than 1.5 times the machining speed and efficiency of conventional tools
- Achieves more than double the tool life of conventional tools

(C) ACP100/ACK200/ACM200

SUPER FF COAT



- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional tools

	L Type	G Type	GS Type	H Type
Chipbreaker				
Cutting Edge Cross Section	 30°	 20°	 20°	 20°
Nose Radius (in. / *mm*)	.016, .032 *0.4, 0.8*	.016, .032, .472, .063 *0.4, 0.8, 1.2, 1.6*	.016, .032, .472, .063 *0.4, 0.8, 1.2, 1.6*	.032, .472, .063 *0.8, 1.2, 1.6*
Features and Applications	Light Cutting, Low Rigidity Milling, Reduction of Burrs	Face Milling General-purpose to Interrupted Milling	Shoulder Milling	Heavy Cutting, Heavy Cross-Section Machining and Hardened Steel Milling

■ Application Examples

Ring Part Part Material 4140	Sumitomo	Competitor's Product
Tool	DFCM09050RS	Double-sided 6 Corners
Grade	ACP200	-
Chipbreaker	GS	-
Cutter Dia. (mm)	50	50
Number of Teeth	5	5
v_c (SFM)	460	460
v_f (IPM)	44	44
f_z (in./t)	.0098	.009
a_p (in.)	.098	.098
a_e (in.)	1.18	1.18
Coolant	Dry	Dry
Results	With no chip biting, tool life of 600%	

Machine Vise Part Material 1045	Sumitomo	Competitor's Product
Tool	DFCM09050E	Single-sided 2 Corners
Grade	ACP200	-
Chipbreaker	GS	-
Cutter Dia. (mm)	50	50
Number of Teeth	5	5
v_c (SFM)	615	615
v_f (IPM)	47	31.5
f_z (in./t)	.0079	.005
a_p (in.)	.197	.197
a_e (in.)	.511	.511
Coolant	Air Blow	Air Blow
Results	150% Machining Efficiency	

Block Simultaneous Milling Part Material High Manganese Steel Casting	Sumitomo	Competitor's Product
Tool	DFC09160RS	Double-sided 8 Corners
Grade	ACP300	-
Chipbreaker	G	-
Cutter Dia. (mm)	160	160
Number of Teeth	8	12
v_c (SFM)	500	500
v_f (IPM)	19.7	19.7
f_z (in./t)	0.008	0.005
a_p (in.)	.039	.0197
a_e (in.)	4.0	4.0
Coolant	Wet	Wet
Results	200% Machining Efficiency Tool Life 300%	

Construction Machinery Part, Part Material 1050	Sumitomo	Competitor's Product
Tool	DFC09063RS	Single-sided 2 Corners
Grade	ACP200	-
Chipbreaker	G	-
Cutter Dia. (mm)	63	63
Number of Teeth	4	5
v_c (SFM)	600	600
v_f (IPM)	43	35.8
f_z (in./t)	.012	.008
a_p (in.)	.079	.079
a_e (in.)	2.0	2.0
Coolant	Dry	Dry
Results	120% Machining Efficiency	

Automotive Part Work Material 1050	Sumitomo	Competitor's Product
Tool	DFC09080RS	Single-sided 4 Corners
Grade	ACP200	-
Chipbreaker	G	-
Cutter Dia. (mm)	80	80
Number of Teeth	5	5
v_c (SFM)	750	650
v_f (IPM)	50	31.5
f_z (in./t)	.011	.008
a_p (in.)	.079	.079
a_e (in.)	.197	.197
Coolant	Wet	Wet
Results	160% Machining Efficiency	

Pump Part Work Material Ductile Iron	Sumitomo	Competitor's Product
Tool	DFCF09100R	Double-sided 6 Corners
Grade	ACK300	-
Chipbreaker	G	-
Cutter Dia. (mm)	100	100
Number of Teeth	11	8
v_c (SFM)	1100	1100
v_f (IPM)	72	72
f_z (in./t)	.0059	.0083
a_p (in.)	.079	.079
a_e (in.)	3.0	3.0
Coolant	Dry	Dry
Results	Tool Life Over 150%	

DFC Shellmill Inch Type

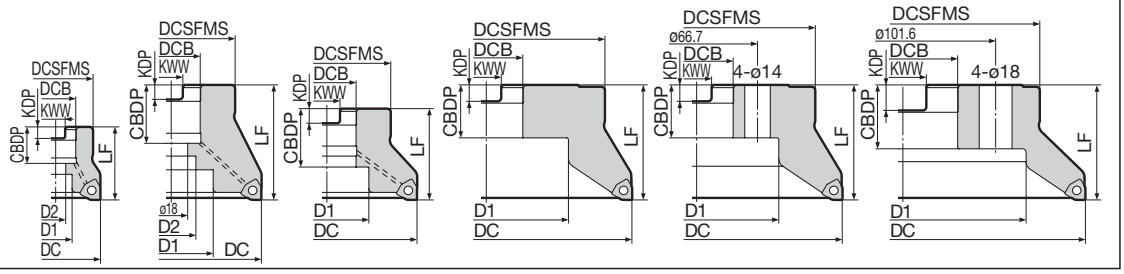
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-9°
	Axial	-5°

.236" 90° | 6mm 90°



Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6



Body (Standard Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	**DFC22000R**	•	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	4	0.75	
	DFC22500R	•	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	5	1.08	
	DFC23000R	•	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	6	1.81	
	DFC24000R	•	4.000	2.870	2.000	1.250	.500	.280	.750	1.000	.656	6	3.84	
	DFC24000R-1.50	•	4.000	3.150	2.500	1.500	.625	.380	1.000	2.000	1.181	6	4.76	
	DFC25000R	•	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	7	7.87	
	DFC26000R	•	6.000	4.380	2.500	1.500	.625	.380	1.000	2.000	1.181	8	11.64	
	DFC28000R	•	8.000	5.906	2.500	2.500	1.000	.560	1.594	5.118	-	10	15.00	

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

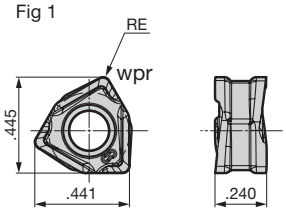
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch)

Grade		Coated Carbide									
Process	High-speed / Light	PM			K		MS				
	General-purpose	PM	PM		K		MS	MS			
	Roughing		PM	PM		K		MS			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L			•	•		•		•	.016	.110	1
XNMU060608PNER-L			•	•		•		•	.031	.094	1
XNMU060604PNER-G		•	•	•	•	•	•	•	.016	.110	1
XNMU060608PNER-G		•	•	•	•	•	•	•	.031	.094	1
XNMU060612PNER-G		•	•	•	•	•	•	•	.047	.079	1
XNMU060616PNER-G		•	•	•	•	•	•	•	.063	.063	1
XNMU060604PNER-GS		•	•	•			•	•	.016	.110	1
XNMU060608PNER-GS		•	•	•			•	•	.031	.094	1
XNMU060612PNER-GS		•	•	•			•	•	.047	.079	1
XNMU060616PNER-GS		•	•	•			•	•	.063	.063	1
XNMU060608PNER-H		•	•	•	•	•	•	•	.031	.094	1
XNMU060612PNER-H		•	•	•	•	•	•	•	.047	.079	1
XNMU060616PNER-H		•	•	•	•	•	•	•	.063	.063	1

Fig 1



Parts

Wrench	Insert Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"
BFXH3/4 X 2	5.00"*	1.50"

Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed (SFM) Min. - Optimum - Max.	Feed Rate (IPT) Min. - Optimum - Max.	D.O.C. (in.)	Grade
P	General Steel	180~280HB	500 - 650 - 820	0.004 - 0.008 - 0.012	<0.236	ACP200 ACP300
	Soft Steel	<180HB	600 - 820 - 1,150	0.006 - 0.010 - 0.014	< 0.236	ACP200 ACP300
	Die Steel	200~220HB	330 - 500 - 650	0.004 - 0.007 - 0.010	< 0.157	ACP200 ACP300
M	PH Stainless Steel	>220HB	300 - 500 - 750	0.004 - 0.007 - 0.010	<0.196	ACM200
	Austenitic Stainless	<250HB	525 - 675 - 820	0.005 - 0.007 - 0.010	<0.236	ACM300
K	Cast Iron	250HB	500 - 750 - 1150	0.004 - 0.008 - 0.012	<0.236	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

Identification Code

DFC **2** **2000** **R**

Cutter Series	Insert Series	Cutter Dia. 2.000"	Feed Direction

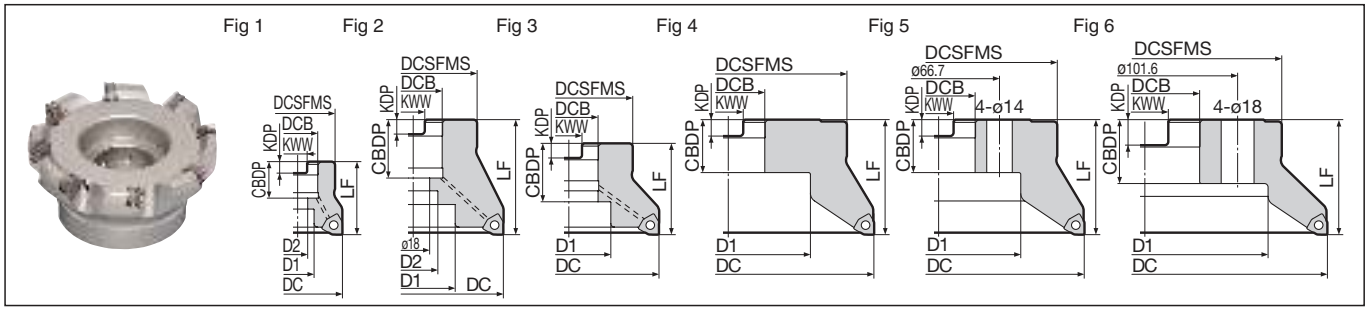
N·m Recommended Tightening Torque (N·m)

DFCM Shellmill Inch Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-9°
	Axial	-5°

.236" 90° | 6mm 90°



Body (Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**DFCM22000R**	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	5	0.75	
	DFCM22500R	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	6	1.05	
	DFCM23000R	●	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	8	1.79	
	DFCM24000R	●	4.000	2.870	2.000	1.250	.500	.280	.750	1.000	.656	10	3.79	
	DFCM24000R-1.50	●	4.000	3.150	2.500	1.500	.625	.380	1.000	2.000	1.181	10	4.67	
	DFCM25000R	●	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	12	7.78	
	DFCM26000R	●	6.000	4.380	2.500	1.500	.625	.380	1.000	2.000	1.181	14	11.55	
	DFCM28000R	●	8.000	5.906	2.500	2.500	1.000	.560	1.594	5.118	-	15	14.79	

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

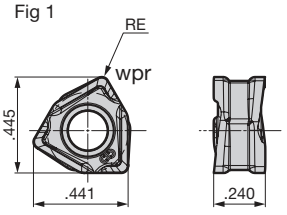
Insert

Dimensions (inch)

Grade		Coated Carbide						
Process	High-speed / Light	PM			K		MS	
	General-purpose	PM	PM		K		MS	MS
	Roughing		PM	PM		K		MS

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L		●	●		●		●	.016	.110	1
XNMU060608PNER-L		●	●		●		●	.031	.094	1
XNMU060604PNER-G	●	●	●	●	●	●	●	.016	.110	1
XNMU060608PNER-G	●	●	●	●	●	●	●	.031	.094	1
XNMU060612PNER-G	●	●	●	●	●	●	●	.047	.079	1
XNMU060616PNER-G	●	●	●	●	●	●	●	.063	.063	1
XNMU060604PNER-GS	●	●	●			●	●	.016	.110	1
XNMU060608PNER-GS	●	●	●			●	●	.031	.094	1
XNMU060612PNER-GS	●	●	●			●	●	.047	.079	1
XNMU060616PNER-GS	●	●	●			●	●	.063	.063	1
XNMU060608PNER-H	●	●	●	●	●	●	●	.031	.094	1
XNMU060612PNER-H	●	●	●	●	●	●	●	.047	.079	1
XNMU060616PNER-H	●	●	●	●	●	●	●	.063	.063	1

Fig 1



Parts

Wrench	Insert Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code

DFC M 2 2000 R

DFC	M	2	2000	R
Cutter Series	Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed (SFM) Min. - Optimum - Max.	Feed Rate (IPT) Min. - Optimum - Max.	D.O.C. (in.)	Grade
P	General Steel	180~280HB	500 - 650 - 820	0.004 - 0.008 - 0.012	<0.236	ACP200 ACP300
	Soft Steel	<180HB	600 - 820 - 1,150	0.006 - 0.010 - 0.014	< 0.236	ACP200 ACP300
	Die Steel	200~220HB	330 - 500 - 650	0.004 - 0.007 - 0.010	< 0.157	ACP200 ACP300
M	PH Stainless Steel	>220HB	300 - 500 - 750	0.004 - 0.007 - 0.010	<0.196	ACM200
	Austenitic Stainless	<250HB	525 - 675 - 820	0.005 - 0.007 - 0.010	<0.236	ACM300
K	Cast Iron	250HB	500 - 750 - 1150	0.004 - 0.008 - 0.012	<0.236	ACK200 ACK300

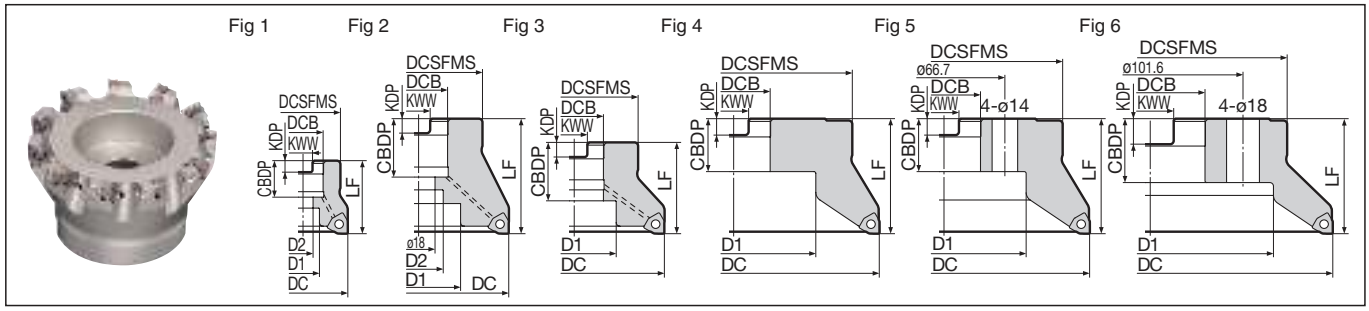
For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

N·m Recommended Tightening Torque (N·m)

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Body (Extra Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**DFCF22000R**	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	6	0.71	1
	DFCF22500R	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	7	1.03	1
	DFCF23000R	●	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	9	1.76	1
	DFCF24000R	●	4.000	2.870	2.000	1.250	.500	.280	.750	1.000	.656	11	3.64	3
	DFCF24000R-1.50	●	4.000	3.150	2.500	1.500	.625	.380	1.000	2.000	1.181	11	4.54	
	DFCF25000R	●	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	14	7.54	1
	DFCF26000R	●	6.000	4.380	2.500	1.500	.625	.380	1.000	2.000	1.181	16	11.29	5
	DFCF28000R	●	8.000	5.906	2.500	2.500	1.000	.560	1.594	5.118	-	20	14.59	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

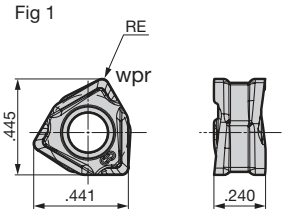
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch)

Grade		Coated Carbide						
Process	High-speed / Light	PM			K		MS	
	General-purpose	PM	PM		K		MS	MS
	Roughing		PM	PM		K		MS

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L		●	●		●		●	.016	.110	1
XNMU060608PNER-L		●	●		●		●	.031	.094	1
XNMU060604PNER-G	●	●	●	●	●	●	●	.016	.110	1
XNMU060608PNER-G	●	●	●	●	●	●	●	.031	.094	1
XNMU060612PNER-G	●	●	●	●	●	●	●	.047	.079	1
XNMU060616PNER-G	●	●	●	●	●	●	●	.063	.063	1
XNMU060604PNER-GS	●	●	●			●	●	.016	.110	1
XNMU060608PNER-GS	●	●	●			●	●	.031	.094	1
XNMU060612PNER-GS	●	●	●			●	●	.047	.079	1
XNMU060616PNER-GS	●	●	●			●	●	.063	.063	1
XNMU060608PNER-H	●	●	●	●	●	●	●	.031	.094	1
XNMU060612PNER-H	●	●	●	●	●	●	●	.047	.079	1
XNMU060616PNER-H	●	●	●	●	●	●	●	.063	.063	1



Parts

Wrench	Insert Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code

DFC **F** **09** **2000** **R**

DFC	F	09	2000	R
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed (SFM) Min. - Optimum - Max.	Feed Rate (IPT) Min. - Optimum - Max.	D.O.C. (in.)	Grade
P	General Steel	180~280HB	500 - 650 - 820	0.004 - 0.008 - 0.012	<0.236	ACP200 ACP300
	Soft Steel	<180HB	600 - 820 - 1,150	0.006 - 0.010 - 0.014	< 0.236	ACP200 ACP300
	Die Steel	200~220HB	330 - 500 - 650	0.004 - 0.007 - 0.010	< 0.157	ACP200 ACP300
M	PH Stainless Steel	>220HB	300 - 500 - 750	0.004 - 0.007 - 0.010	<0.196	ACM200
	Austenitic Stainless	<250HB	525 - 675 - 820	0.005 - 0.007 - 0.010	<0.236	ACM300
K	Cast Iron	250HB	500 - 750 - 1150	0.004 - 0.008 - 0.012	<0.236	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

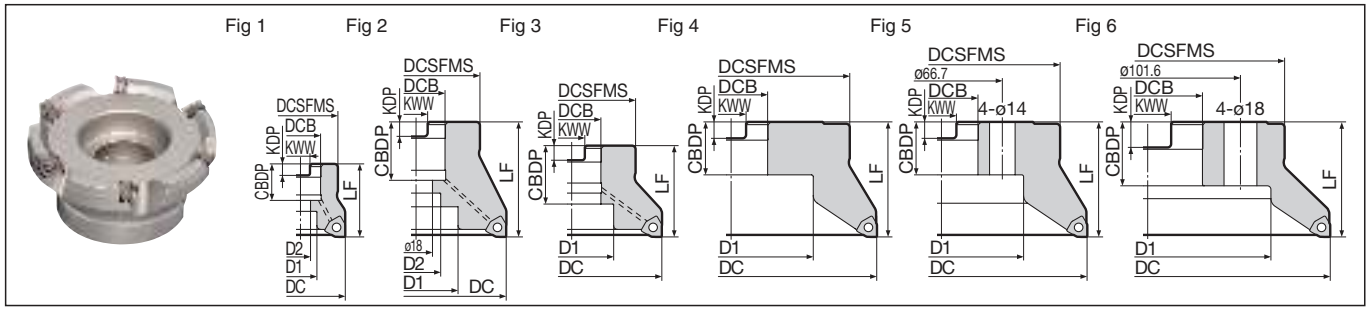
N·m Recommended Tightening Torque (N·m)

DFC Shellmill Metric Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFC09050RS**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
	DFC09063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.5*	1
	DFC09080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	5	*1.0*	1
	DFC09100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	6	*1.4*	3
	DFC09125RS	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	7	*2.8*	1
	DFC09160RS	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	8	*4.6*	5
	DFC09200RS	★	*200*	*150*	*63*	*60*	*25.7*	*14*	*35*	*135*	-	10	*5.7*	6
	DFC09080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	5	*1.0*	1
	DFC09100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	6	*2.0*	2
	DFC09125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	7	*2.8*	1
	DFC09160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	8	*3.6*	4
	DFC09200R	★	*200*	*150*	*63*	*47.625*	*25.4*	*14*	*35*	*135*	-	10	*6.0*	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

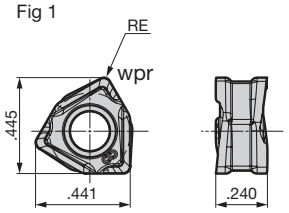
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide									
Process	High-speed / Light	PM			K		MS				
	General-purpose	PM	PM		K		MS	MS			
	Roughing		PM	PM		K		MS			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L			●	●		●		●	*0.4*	*2.8*	1
XNMU060608PNER-L			●	●		●		●	*0.8*	*2.4*	1
XNMU060604PNER-G		●	●	●	●	●	●	●	*0.4*	*2.8*	1
XNMU060608PNER-G		●	●	●	●	●	●	●	*0.8*	*2.4*	1
XNMU060612PNER-G		●	●	●	●	●	●	●	*1.2*	*2*	1
XNMU060616PNER-G		●	●	●	●	●	●	●	*1.6*	*1.6*	1
XNMU060604PNER-GS		●	●	●			●	●	*0.4*	*2.8*	1
XNMU060608PNER-GS		●	●	●			●	●	*0.8*	*2.4*	1
XNMU060612PNER-GS		●	●	●			●	●	*1.2*	*2*	1
XNMU060616PNER-GS		●	●	●			●	●	*1.6*	*1.6*	1
XNMU060608PNER-H		●	●	●	●	●	●	●	*0.8*	*2.4*	1
XNMU060612PNER-H		●	●	●	●	●	●	●	*1.2*	*2*	1
XNMU060616PNER-H		●	●	●	●	●	●	●	*1.6*	*1.6*	1

Fig 1



Parts

Wrench	Insert Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code

DFC **09** **050** **R** **S**

Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed (v_c) (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

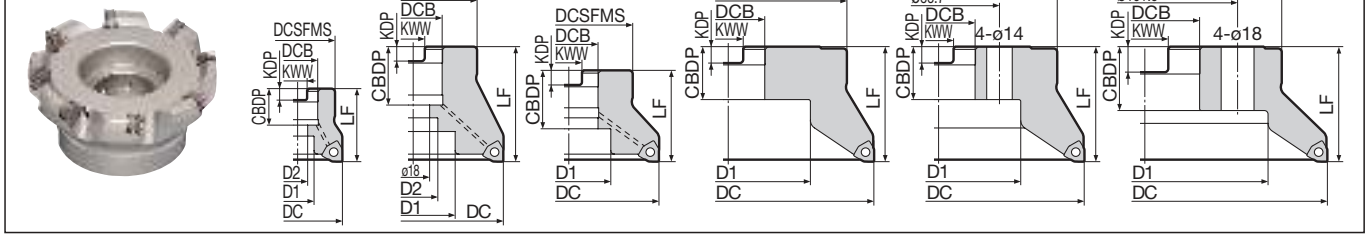
N·m Recommended Tightening Torque (N·m)

DFCM Shellmill Metric Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCM09050RS**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.3*	1
	DFCM09063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.5*	1
	DFCM09080RS	★	**80*	55	50	*27*	*12.4*	*7*	*22*	*20*	*14*	7	*0.9*	1
	DFCM09100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	8	*1.4*	3
	DFCM09125RS	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	11	*2.7*	1
	DFCM09160RS	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	12	*4.5*	5
	DFCM09200RS	★	*200*	*150*	*63*	*60*	*25.7*	*14*	*35*	*135*	-	16	*5.6*	6
	DFCM09080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	7	*0.9*	1
	DFCM09100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	8	*1.9*	2
	DFCM09125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	11	*2.7*	1
	DFCM09160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	12	*3.5*	4
	DFCM09200R	★	*200*	*150*	*63*	*47.625*	*25.4*	*14*	*35*	*135*	-	*16*	*5.9*	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

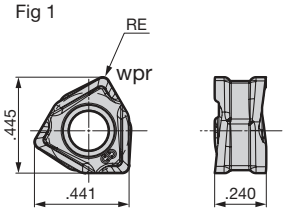
Insert

Dimensions (*mm*)

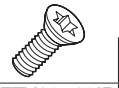
Grade		Coated Carbide						
Process	High-speed / Light	PM			K		MS	
	General-purpose	PM	PM		K		MS	MS
	Roughing		PM	PM		K		MS

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L		●	●		●		●	*0.4*	*2.8*	1
XNMU060608PNER-L		●	●		●		●	*0.8*	*2.4*	1
XNMU060604PNER-G	●	●	●	●	●	●	●	*0.4*	*2.8*	1
XNMU060608PNER-G	●	●	●	●	●	●	●	*0.8*	*2.4*	1
XNMU060612PNER-G	●	●	●	●	●	●	●	*1.2*	*2*	1
XNMU060616PNER-G	●	●	●	●	●	●	●	*1.6*	*1.6*	1
XNMU060604PNER-GS	●	●	●			●	●	*0.4*	*2.8*	1
XNMU060608PNER-GS	●	●	●			●	●	*0.8*	*2.4*	1
XNMU060612PNER-GS	●	●	●			●	●	*1.2*	*2*	1
XNMU060616PNER-GS	●	●	●			●	●	*1.6*	*1.6*	1
XNMU060608PNER-H	●	●	●	●	●	●	●	*0.8*	*2.4*	1
XNMU060612PNER-H	●	●	●	●	●	●	●	*1.2*	*2*	1
XNMU060616PNER-H	●	●	●	●	●	●	●	*1.6*	*1.6*	1

Fig 1



Parts

Wrench	Insert Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code

DFC **M** **09** **050** **R** **S**

Cutter Series	Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

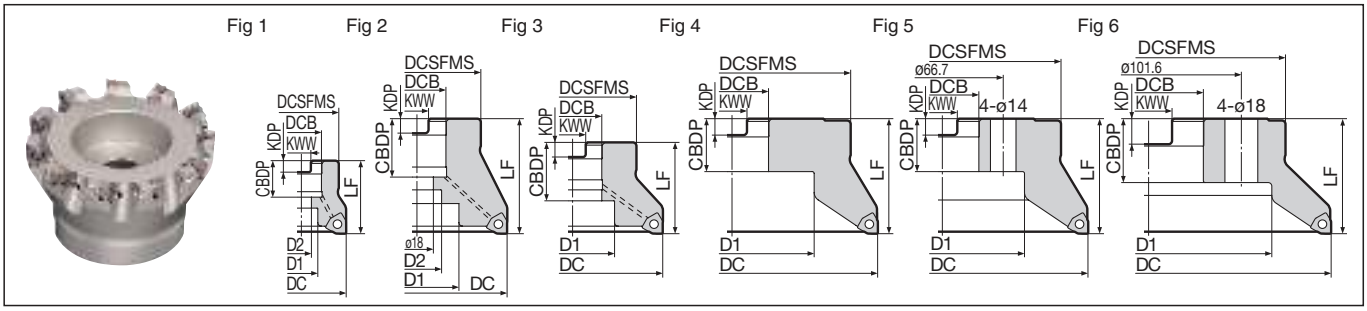
ISO	Part Material	Hardness	Cutting Speed (v_c) (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACP200 ACP300
P	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	ACP200 ACP300
P	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCF09050RS**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.3*	1
	DFCF09063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	7	*0.5*	1
	DFCF09080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	9	*0.9*	1
	DFCF09100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	11	*1.3*	3
	DFCF09125RS	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	14	*2.6*	1
	DFCF09160RS	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	16	*4.5*	5
	DFCF09200RS	★	*200*	*150*	*63*	*60*	*25.7*	*14*	*35*	*135*	-	20	*5.5*	6
	DFCF09080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	9	*0.9*	1
	DFCF09100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	11	*1.9*	2
	DFCF09125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	14	*2.7*	1
	DFCF09160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	16	*3.5*	4
	DFCF09200R	★	*200*	*150*	*63*	*47.625*	*25.4*	*14*	*35*	*135*	-	20	*5.8*	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. ★ Worldwide Warehouse item

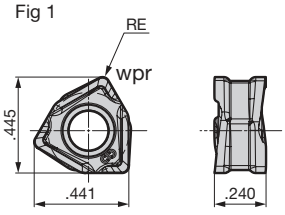
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	PM			K		MS			
	General-purpose	PM	PM		K		MS	MS		
	Roughing		PM	PM		K		MS		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L			●	●		●		●	*0.4*	*2.8*	1
XNMU060608PNER-L			●	●		●		●	*0.8*	*2.4*	1
XNMU060604PNER-G		●	●	●	●	●	●	●	*0.4*	*2.8*	1
XNMU060608PNER-G		●	●	●	●	●	●	●	*0.8*	*2.4*	1
XNMU060612PNER-G		●	●	●	●	●	●	●	*1.2*	*2*	1
XNMU060616PNER-G		●	●	●	●	●	●	●	*1.6*	*1.6*	1
XNMU060604PNER-GS		●	●	●			●	●	*0.4*	*2.8*	1
XNMU060608PNER-GS		●	●	●			●	●	*0.8*	*2.4*	1
XNMU060612PNER-GS		●	●	●			●	●	*1.2*	*2*	1
XNMU060616PNER-GS		●	●	●			●	●	*1.6*	*1.6*	1
XNMU060608PNER-H		●	●	●	●	●	●	●	*0.8*	*2.4*	1
XNMU060612PNER-H		●	●	●	●	●	●	●	*1.2*	*2*	1
XNMU060616PNER-H		●	●	●	●	●	●	●	*1.6*	*1.6*	1

Fig 1



Parts

Wrench	Insert Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code

DFC **F** **09** **050** **R** **S**

Cutter Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed (V_{c}) (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACP200 ACP300
P	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	ACP200 ACP300
P	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

N·m Recommended Tightening Torque (N·m) ●: USA Standard stocked item

DFC(M) ENDMILL (Inch & Metric) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Fig 1

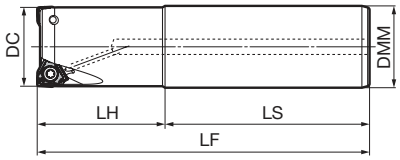
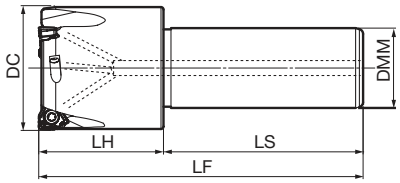


Fig 2



Body (Standard Type)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
Inch	**DFC21000EW**	●	1.000	1.000	2.060	2.281	4.341	2	1
	DFC21250EW	●	1.250	1.250	2.060	2.281	4.341	3	1
	DFC21500EW	●	1.500	1.250	2.060	2.281	4.341	3	1
	DFC22000EW	●	2.000	1.250	2.060	2.281	4.341	4	1
	DFC22500EW	●	2.500	1.250	2.060	2.281	4.341	5	1
Metric	**DFC09025E**	★	*25*	*25*	*40*	*80*	*120*	2	1
	DFC09032E	★	*32*	*32*	*50*	*80*	*130*	2	1
	DFC09040E	★	*40*	*32*	*50*	*80*	*130*	3	2
	DFC09050E	★	*50*	*32*	*50*	*80*	*130*	3	2
	DFC09050E-42		*50*	*42*	*50*	*100*	*150*	3	2
	DFC09063E	★	*63*	*32*	*50*	*80*	*130*	4	2
	DFC09063E-42		*63*	*42*	*50*	*100*	*150*	4	2
	DFC09080E	★	*80*	*32*	*50*	*80*	*130*	5	2
	DFC09080E-42		*80*	*42*	*50*	*100*	*150*	5	2

Body (Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
Inch	**DFCM21500EW**	●	1.500	1.250	2.060	2.281	4.341	4	1
	DFCM22000EW	●	2.000	1.250	2.060	2.281	4.341	5	1
	DFCM22500EW	●	2.500	1.250	2.060	2.281	4.341	7	1
Metric	**DFCM09032E**	★	*32*	*32*	*50*	*80*	*130*	3	1
	DFCM09040E	★	*40*	*32*	*50*	*80*	*130*	4	2
	DFCM09050E	★	*50*	*32*	*50*	*80*	*130*	5	2
	DFCM09050E-42		*50*	*42*	*50*	*100*	*150*	5	2
	DFCM09063E	★	*63*	*32*	*50*	*80*	*130*	6	2
	DFCM09063E-42		*63*	*42*	*50*	*100*	*150*	6	2
	DFCM09080E	★	*80*	*32*	*50*	*80*	*130*	7	2
	DFCM09080E-42		*80*	*42*	*50*	*100*	*150*	7	2

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

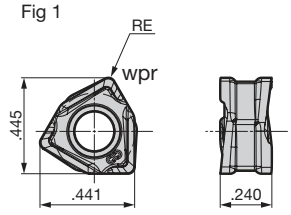
Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide						
Process	High-speed / Light	PM			K		MS	
	General-purposeg	PM	PM		K		MS	MS
	Roughing		PM	PM		K		MS

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L		●	●		●		●	.016" / *0.4*	.110"	1
XNMU060608PNER-L		●	●		●		●	.032" / *0.8*	.094"	1
XNMU060604PNER-G	●	●	●	●	●	●	●	.016" / *0.4*	.110"	1
XNMU060608PNER-G	●	●	●	●	●	●	●	.032" / *0.8*	.094"	1
XNMU060612PNER-G	●	●	●	●	●	●	●	.047" / *1.2*	.079"	1
XNMU060616PNER-G	●	●	●	●	●	●	●	*.063"* / 1.6	.063"	1
XNMU060604PNER-GS	●	●	●			●	●	.016" / *0.4*	.110"	1
XNMU060608PNER-GS	●	●	●			●	●	.032" / *0.8*	.094"	1
XNMU060612PNER-GS	●	●	●			●	●	.047" / *1.2*	.079"	1
XNMU060616PNER-GS	●	●	●			●	●	*.063"* / 1.6	.063"	1
XNMU060608PNER-H	●	●	●	●	●	●	●	.032" / *0.8*	.094"	1
XNMU060612PNER-H	●	●	●	●	●	●	●	.047" / *1.2*	.079"	1
XNMU060616PNER-H	●	●	●	●	●	●	●	*.063"* / 1.6	.063"	1

Fig 1



Parts

Wrench	Insert Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code - Inch

DFC Cutter Series | **M** Fine Pitch | **2** Insert Series | **1000** Cutter Dia. 1.000" | **EW** Endmill Weldon Shank

Identification Code - Metric

DFC Cutter Series | **M** Fine Pitch | **09** Insert Size | **025** Cutter Dia. | **E** Endmill Type

Recommended Cutting Conditions (for inch/ SFM, see page H101)

ISO	Part Material	Hardness	Cutting Speed (v_c) (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACP200 ACP300
P	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	ACP200 ACP300
P	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACK200 ACK300

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)



■ Features

- Excellent Machined Surface Quality

  Employs ground insert for high accuracy to produce excellent machined surface quality.

- Cutting Edge Designed for High Cutting Edge Strength and Sharpness

  Provides tangential insert and optimized cutting edge shape to achieve both high cutting edge strength and sharpness.

- Wide Ranging Product Lineup

  An enhanced lineup of grades is available in addition to 2 types of insert sizes and 3 types of chipbreakers.
  Can be used for various machining applications.

■ Product Range

Type	Type	Description	Cutter Diameters in Stock (Inch)											Shape
			ø.625	ø.750	ø1.000	ø1.250	ø1.500	ø2.000	ø2.500	ø3.000	ø4.000	ø5.000	ø6.000	
Shellmills	TSX30000R	Standard Pitch					4	5	6					
	TSXF08000R	Fine Pitch					6	8	10					
	TSX40000R	Standard Pitch					4	5	6	7	9	12	14	
	TSXF40000R	Fine Pitch					5	6	8	10	13			
Endmills	TSX30000EW	Standard Pitch	2	2	3	3	4							
	TSXF30000EW	Fine Pitch			4	5	6							
	TSX40000EW	Standard Pitch			2	2	3							
	TSXF40000EW	Fine Pitch				3	4							

Type	Type	Description	Cutter Diameters in Stock (mm)													Shape
			ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	ø315	
Shellmills	TSX08000RS	Standard Pitch					4	5	6	7							
	TSX08000R (inch)	Standard Pitch								7							
	TSXF08000RS	Extra Fine Pitch					6	8	10	11							
	TSXF08000R (inch)	Extra Fine Pitch								11							
	TSX13000RS	Standard Pitch					3	4	5	5	6	7	8	12	14	16	
	TSX13000R (inch)	Standard Pitch								5	6	7	8	12	14	16	
	TSXM13000RS	Fine Pitch					4	5	6	7	8	10	12	16	20	24	
	TSXM13000R (inch)	Fine Pitch								7	8	10	12	16	20	24	
	TSXF13000RS	Extra Fine Pitch					5	6	7	8	10	14	16				
	TSXF13000R (inch)	Extra Fine Pitch								8	10	14	16				
Endmills	TSX08000E	Standard Pitch	2	2*	3*	3*	4	5	6	7							
	TSXF08000E	Extra Fine Pitch		3	4	5	6	8	10	11							
	TSX13000E	Standard Pitch			2	2	3	4	5	5							
	TSXM13000E	Fine Pitch				3	4	5	6	7							
	TSXF13000E	Extra Fine Pitch					5	6	7	8							

Number in ● is the number of teeth
* mark: Different-diameter shanks in stock

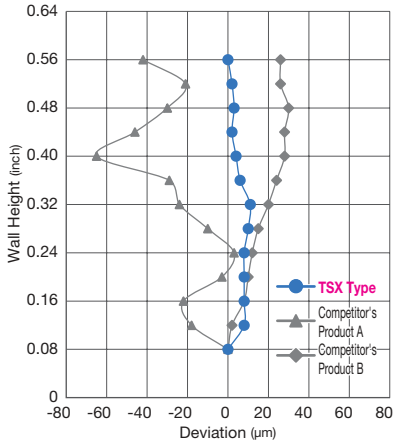
■ Product Range (Repeater Mills)

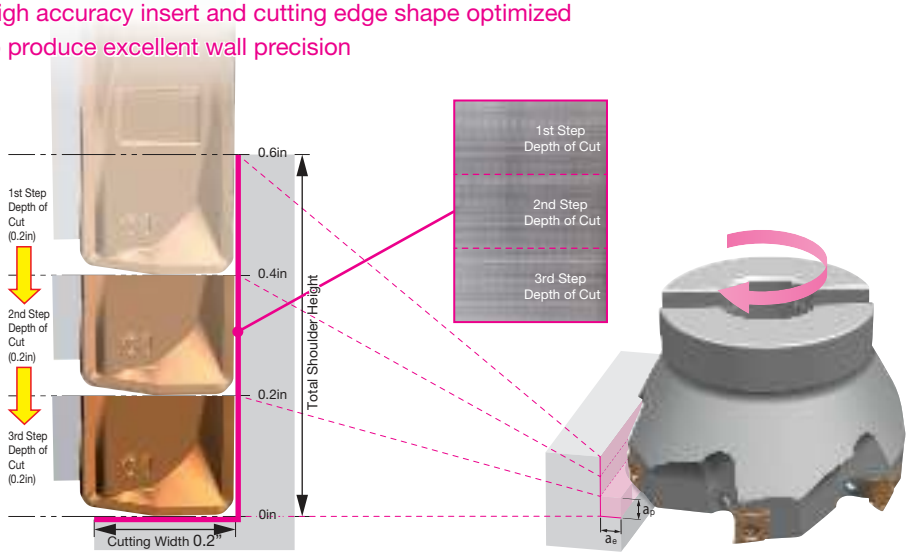
Type	Type	Cutter Diameters in Stock (mm)										Shape
		ø20	ø25	ø32	ø40	ø50	ø63		ø80		ø100	ø125	
Shells	TSXR08000RS			2	3	3	4	5					
	TSXR13000RS				2	3		3	4	4	5	5	6	7	
With Shank	TSXR08000E	1	2	2	3										
	TSXR13000E				2	3									

Number in ● is the number of teeth

■ Shoulder Milling Precision

High accuracy insert and cutting edge shape optimized to produce excellent wall precision

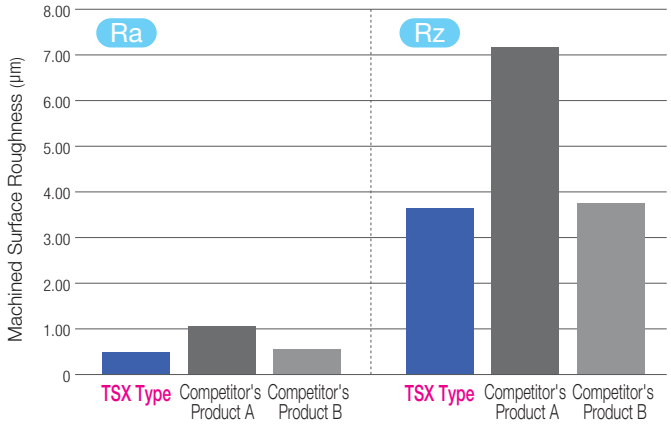




Machine: Vertical Machining Center BT50, Part Material: 1050 Steel
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 656 SFM, f_z = 0.008" IPT, a_p = 0.197" x 3 Passes, a_e = 0.20"

■ Machined Surface Roughness

Cutting edge shape optimized to produce excellent machined surface roughness



Machined Surface Comparison

TSX Type Without Cloudiness



Competitor's Product Cloudy



Machine: Vertical Machining Center BT50, Part Material: 1050 Steel
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 656 SFM, f_z = 0.008 IPT, a_p = 0.12", a_e = 2.36" Dry

■ Cutting Edge Strength

TSX Type has high cutting edge strength and enables high efficiency machining

1 Pass = 12"

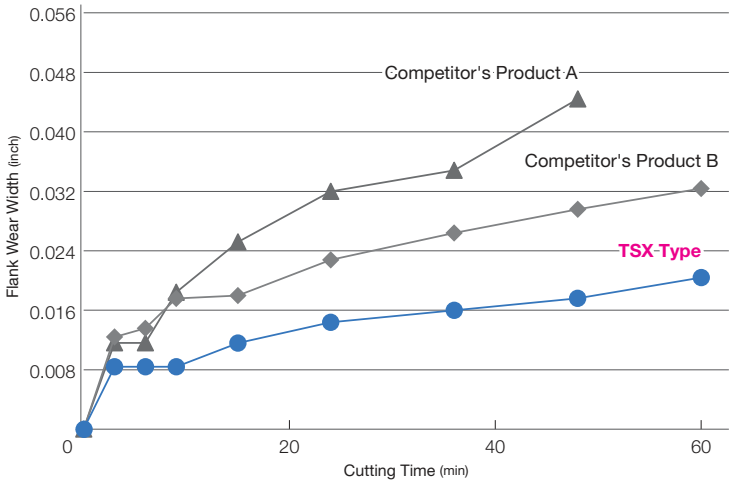
Cutting Length	4 Passes	8 Passes	12 Passes
TSX Type	Continued Machining Possible		
Competitor's Product A	Damage		
Competitor's Product B	Damage		



Machine: Vertical Machining Center BT50, Part Material: 1050 Steel
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 492 SFM, f_z = 0.024 IPT (Accelerating)
a_p = 0.12", a_e = 1.57" Dry

■ Tool Life

Excellent Wear Resistance Realizes Stable Tool Life



Machine: Vertical Machining Center BT50, Part Material: 1050 Steel
Tool: TSX 08025E, Insert: LNEX 080408PNER-G (ACP200)
Cutting Conditions: v_c = 656 SFM, f_z = 0.004 IPT, a_p = 0.08" a_e = 0.20" Dry

TSX Type
(After cutting for 60 minutes)



Competitor's Product A
(After cutting for 48 minutes)

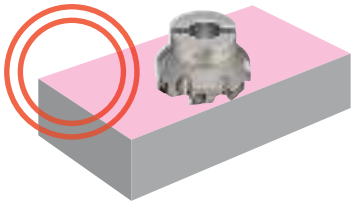


Competitor's Product B
(After cutting for 60 minutes)

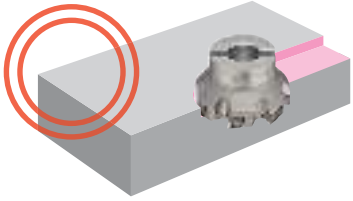


■ Applications

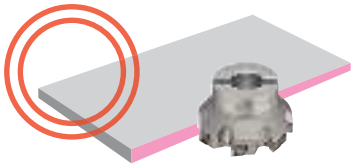
Face Milling



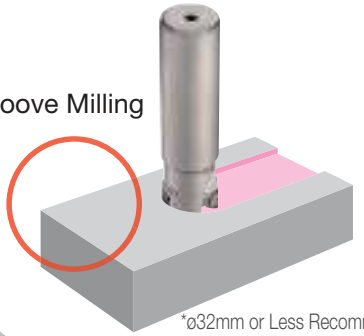
Shoulder Milling



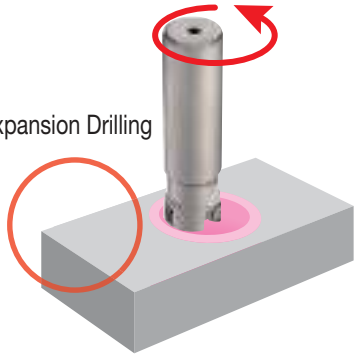
Side Milling



Groove Milling

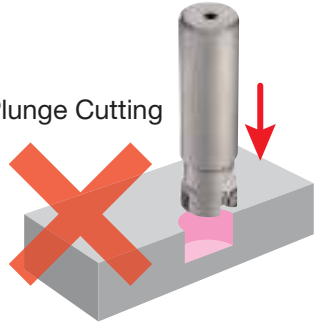


Hole Expansion Drilling

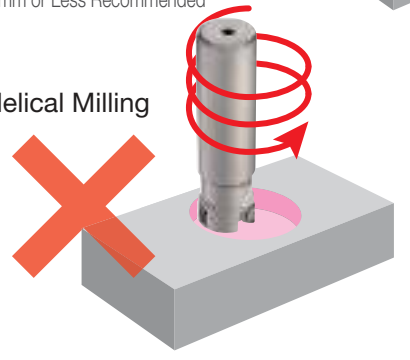


*ø32mm or Less Recommended

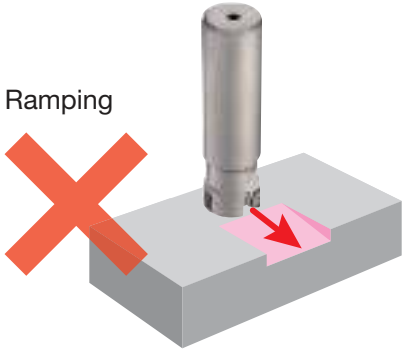
Plunge Cutting



Helical Milling

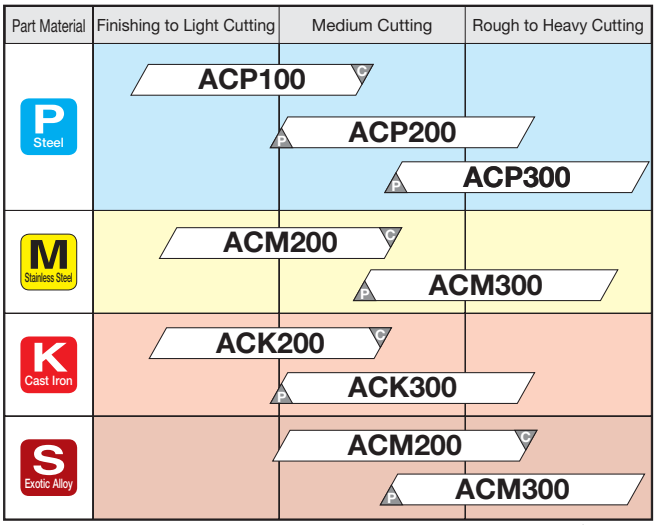


Ramping



■ Insert Grade Selection

Lineup of Milling Grades ACP100/ACP200/ACP300, Stainless Steel Milling Grades ACM200/ACM300, Cast Iron Milling Grades ACK200/ACK300 and more for a wide range of materials.



The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD P: PVD

■ Product Range

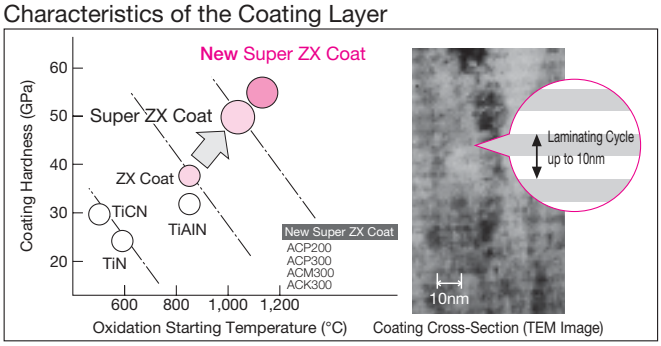
Cat. No.	Nose Radius (inch)					
	R.016	R.031	R.047	R.063	R.094	R.126
LNEX 0804○○PNER-L	●	●	●	●		
LNEX 0804○○PNER-G	●	●	●	●		
LNEX 1306○○PNER-L	●	●	●	●	●	●
LNEX 1306○○PNER-G	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●

■ Coating Features

Super ZX Coat
(PVD: Physical Vapor Deposition)

Employs our super multi-layered New Super ZX Coat, which utilizes our proprietary thin-layer coating technology and advanced nanotechnology. The coating consists of thousands of alternating, nanometer-thin (1 nanometer = 1 billionth of a meter) layers

Characteristics of the Coating Layer

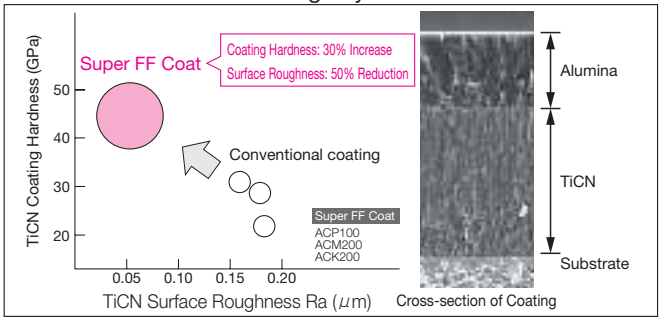


- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidation starting temperature has been increased by 200°C
- Enables more than 1.5 times the machining speed and efficiency of conventional tools
- Achieves more than double the tool life of conventional tools

Super FF Coat
(CVD: Chemical Vapor Deposition)

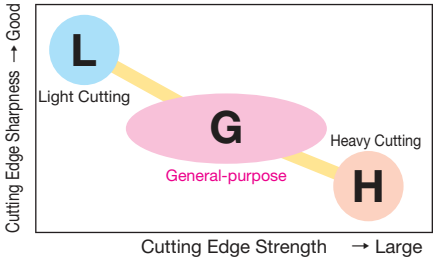
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology

Characteristics of the Coating Layer

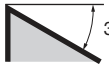
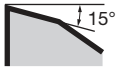
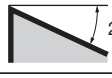
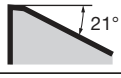


- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional tools

■ Chipbreaker Selection

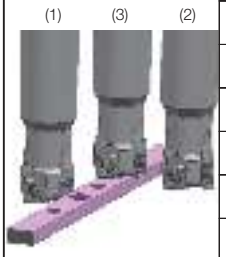


■ Chipbreaker Lineup

Part Material	P M K S		
Chipbreaker	L Type	G Type	H Type
			
Features	Low Cutting Force	General-purpose Type	High Strength Type
LNEX08 Type Cross Section	 30°	 15°	Not Available
LNEX13 Type Cross Section	 25°	 21°	 21°
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	General-purpose to Interrupted Milling	Heavy Cutting, Heavy Cross-Section Machining and Hardened Steel Milling

■ Application Examples

4140 Machine Components		Sumitomo	Conventional Tool
Machining Center: BT30	Tool	TSXF08020E	Vertical Type 4 Corners
	Grade	ACP200	-
	Chipbreaker	G	-
	Cutter Dia. (mm)	20	20
	Number of Teeth	3	3
	v_c (SFM)	886	886
	v_f (IPM)	26	26
	f_z (IPT)	0.002	0.002
	a_p (inch)	0.315	0.315
	a_e (inch)	0.025	0.028
	Coolant	Wet	Wet
	Results	Reduced finishing processes thanks to wall surface accuracy superior to conventional tools.	



(1)(2) Side Milling
(3) Face Milling

304 Stainless Steel Guide		Sumitomo	Conventional Tool
Machining Center: BT50	Tool	TSXM13125RS	-
	Grade	ACM200	-
	Chipbreaker	L	-
	Cutter Dia. (mm)	125	125
	Number of Teeth	10	8
	v_c (SFM)	230	230
	v_f (IPM)	3.15	1.57
	f_z (IPT)	0.0018	0.0011
	a_p (inch)	0.197	0.197
	a_e (inch)	3.74	3.74
	Coolant	Wet	Wet
	Results	2 times the machining efficiency and 2 times longer tool life.	



Gray Cast Iron Cylinder Block		Sumitomo	Conventional Tool
Machining Center: BT40	Tool	TSX13050RS	-
	Grade	ACK300	-
	Chipbreaker	L	-
	Cutter Dia. (mm)	50	50
	Number of Teeth	4	4
	v_c (SFM)	771	771
	v_f (IPM)	23.6	23.6
	f_z (IPT)	.004	.004
	a_p (inch)	0.0315	0.0315
	a_e (inch)	0.0315	0.0315
	Coolant	Wet	Wet
	Results	Dimensional tolerance and surface roughness superior to conventional tools.	



Cast Steel Shaft Housing		Sumitomo	Conventional Tool
Machining Center: BT40	Tool	TSX13100R	-
	Grade	ACP200	-
	Chipbreaker	G	-
	Cutter Dia. (mm)	100	100
	Number of Teeth	6	8
	v_c (SFM)	600	450
	v_f (IPM)	37.87	39.37
	f_z (IPT)	0.011	0.011
	a_p (inch)	Roughing: 0.12", Finishing: 0.04"	Roughing: 0.12", Finishing: 0.04"
	a_e (inch)	-	-
	Coolant	Wet	Wet
	Results	Machined surface superior to conventional tools.	



Ductile Cast Iron Housing		Sumitomo	Conventional Tool
Machining Center: BT40	Tool	TSXM13050RS	Single-Sided 4 Corners
	Grade	ACK300	-
	Chipbreaker	G	-
	Cutter Dia. (mm)	50	50
	Number of Teeth	5	5
	V_c (SFM)	787	787
	V_f (IPM)	45.3	45.3
	f_z (IPT)	0.006	0.006
	a_p (inch)	0.04	0.04
	a_e (inch)	1.18	1.18
	Coolant	Dry	Dry
	Results	Tool life extension of 131% achieved.	



4130 Bearing Cover		Sumitomo	Competitor's Product
Horizontal Machining Center: BT50	Tool	TSXM13080RS	-
	Grade	ACP200	-
	Chipbreaker	H	-
	Cutter Dia. (mm)	80	80
	Number of Teeth	7	6
	V_c (SFM)	591	591
	V_f (IPM)	37.4	37.4
	f_z (IPT)	0.005	0.008
	a_p (inch)	0.031	0.031
	a_e (inch)	1.97	1.97
	Coolant	Dry	Dry
	Results	Tool life extension of 333% achieved.	



TSX(F) SHELL MILL Type - 8mm Inserts

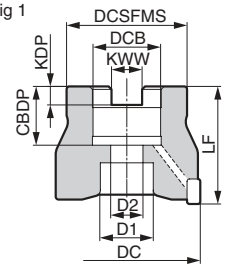
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-20°
	Axial	-6°

8mm 90° | .315" 90°



Fig 1



Body (Standard Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lb / *kg*)	Fig
Inch	**TSX31500R**	●	1.500	1.339	1.750	.750	.312	.190	.750	.609	.406	4	0.44	1
	TSX32000R	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	5	0.88	1
	TSX32500R	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	6	1.10	1
Metric	**TSX08040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18*	*14*	*9*	4	*0.21*	1
	TSX08050RS	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.30*	1
	TSX08063RS	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.53*	1
	TSX08080RS	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22*	*20*	*14*	7	*0.99*	1
	TSX08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*14*	7	*1.00*	1

Body (Extra Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lb / *kg*)	Fig
Inch	**TSXF31500R**	●	1.500	1.339	1.750	.750	.312	.190	.750	0.609	.406	6	0.44	1
	TSXF32000R	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	8	0.88	1
	TSXF32500R	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	10	1.10	1
Metric	**TSXF08040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18*	*14*	*9*	6	*0.21*	1
	TSXF08050RS	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20*	*18*	*11*	8	*0.31*	1
	TSXF08063RS	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20*	*18*	*11*	10	*0.54*	1
	TSXF08080RS	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22*	*20*	*14*	11	*0.97*	1
	TSXF08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*14*	11	*0.98*	1

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

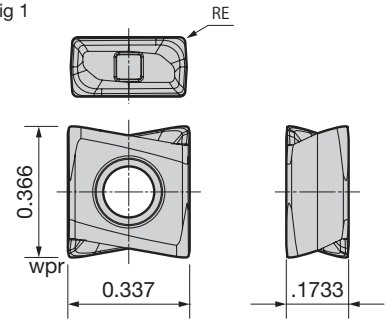
● USA stocked item ★ Worldwide Warehouse item

Insert

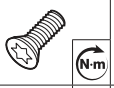
Dimensions (inch "/ *mm*)

Grade		Coated Carbide										
Process	High-speed / Light	PM			K		MS					
	General-purpose	PM	PM		K		MS	MS				
	Roughing		PM	PM		K		MS				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX080404PNER-L			●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-L			●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-L			●			●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-L			●			●	●	●	.063" / *1.6*	.024" / *.6*	1
LNEX080404PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.024" / *.6*	1

Fig 1



Parts

Screw		Wrench	Anti-seize Cream
	N·m		
BFTX0308IP	2.0	TRDR08IP	SUMI-P

Identification Code - Inch

TSX F 3 2000 R

Cutter Series | Extra Fine Pitch Series | Insert | Cutter Dia. 2.000" | Feed Direction

Identification Code - Metric

TSX F 08 050 R S

Cutter Series | Extra Fine Pitch | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c(sfm)Min-Max	Feed Rate f_z(ipt) Min-Max	Recommended Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT40 machine tools.

N·m Recommended Tightening Torque (N·m)

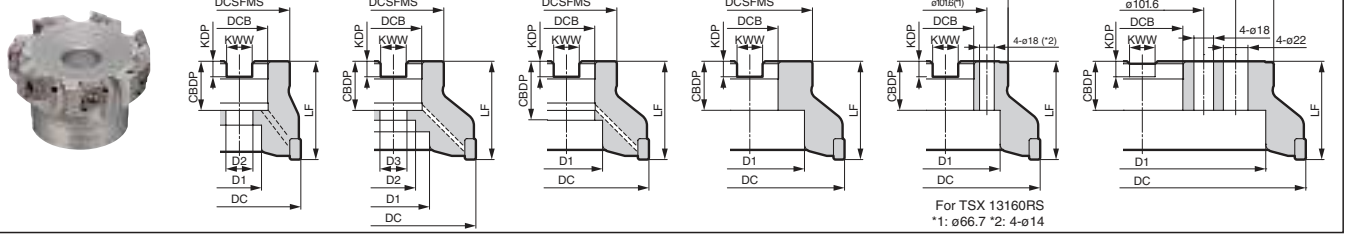
TSX SHELL MILL Type -13mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-23° to -15°
	Axial	-6°

.473" 90°

12mm 90°



Body (Standard Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lb / *kg*)	Fig
Inch	**TSX41500R**	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	4	0.44	1
	TSX42000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	5	0.66	1
	TSX42500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	6	1.10	1
	TSX43000R	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	7	1.76	1
	TSX44000R	●	4.000	2.870	2.000	1.500	0.625	0.380	1.000	2.000	0.781	-	9	4.85	1
	TSX45000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.000	2.000	0.781	-	12	7.50	1
	TSX46000R	●	6.000	4.380	2.500	1.500	0.625	0.380	1.000	2.000	0.781	-	14	11.0	1
Metric	**TSX13040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	-	*3*	*0.20*	1
	TSX13050RS	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	*4*	*0.30*	1
	TSX13063RS	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	*5*	*0.50*	1
	TSX13080RS	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	-	*5*	*0.92*	1
	TSX13100RS	★	*100*	*70*	*50*	*32.0*	*14.4*	*8.0*	*32.0*	*46*	-	-	*6*	*1.35*	3
	TSX13125RS	★	*125*	*80*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*52*	*29*	-	*7*	*2.55*	1
	TSX13160RS	★	*160*	*130*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*90*	-	-	*8*	*4.97*	5*
	TSX13200RS	★	*200*	*160*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*135*	-	-	*12*	*6.20*	5
	TSX13250RS	★	*250*	*180*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*160*	-	-	*14*	*9.35*	5
	TSX13315RS	★	*315*	*240*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*230*	-	-	*16*	*16.42*	6
	TSX13080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25.0*	*20*	*14*	-	*5*	*0.93*	1
	TSX13100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.0*	*46*	*27*	*18*	*6*	*1.88*	2
	TSX13125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	-	*7*	*2.61*	1
	TSX13160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11.0*	*38.0*	*72*	-	-	*8*	*4.18*	4
	TSX13200R	★	*200*	*160*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*135*	-	-	*12*	*6.36*	5
	TSX13250R	★	*250*	*180*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*160*	-	-	*14*	*9.60*	5
	TSX13315R	★	*315*	*240*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*230*	-	-	*16*	*16.68*	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

● USA stocked item ★ Worldwide Warehouse item

Identification Code - Inch

TSX 4 2000 R

Cutter Series | Insert Series | Cutter Dia. 2.000" | Feed Direction

Identification Code - Metric

TSX 13 100 R S

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c (sfm) Min-Max	Feed Rate f_z (ipt) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

Note
· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
· The above figures are guidelines for use with BT40 machine tools.

Recommended Cutting Conditions - Metric

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron/Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

Note
· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
· The above figures are guidelines for use with BT50 machine tools.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

TSX SHELL MILL Type -13mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

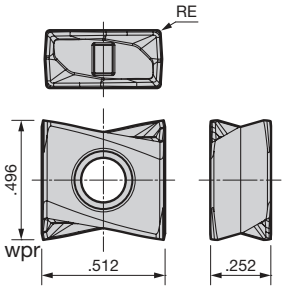
Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide						
Process	High-speed / Light	PM			K		MS	
	General-purpose		PM		K		MS	MS
	Roughing		PM	PM		K		MS

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L		•	•	•	•	•	•	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L		•	•	•	•	•	•	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L		•			•	•	•	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L		•			•	•	•	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L		•			•	•	•	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L		•			•	•	•	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L		•			•	•	•	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G	•	•	•	•	•	•	•	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G	•	•	•	•	•	•	•	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G	•	•	•	•	•	•	•	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G	•	•	•	•	•	•	•	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G	•	•	•	•	•	•	•	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G	•	•	•	•	•	•	•	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G	•	•	•	•	•	•	•	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H		•	•	•	•			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H		•	•	•	•			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H		•	•	•	•			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H		•	•	•	•			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H		•	•	•	•			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H		•	•	•	•			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H		•	•	•	•			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Seat	Anti-seize Cream
							
TSX41500R	BFTX03510IP	3.0	TRDR15IP	HPS1015	TRB15IP	-	SUMI-P
TSX42000R							
TSX42500R							
TSX43000R							
TSX44000R							
TSX45000R							
TSX46000R							
TSX13040RS			-			-	
TSX13050RS							
TSX13063RS							
TSX13080RS							
TSX13100RS							
TSX13125RS							
TSX13160RS			TRDR15IP	-	-	TSXS13R	
TSX13200RS							
TSX13250RS							
TSX13315RS							
TSX13080R			-	HPS1015	TRB15IP	-	
TSX13100R							
TSX13125R							
TSX13160R			TRDR15IP	-	-	TSXS13R	
TSX13200R							
TSX13250R							
TSX13315R							

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

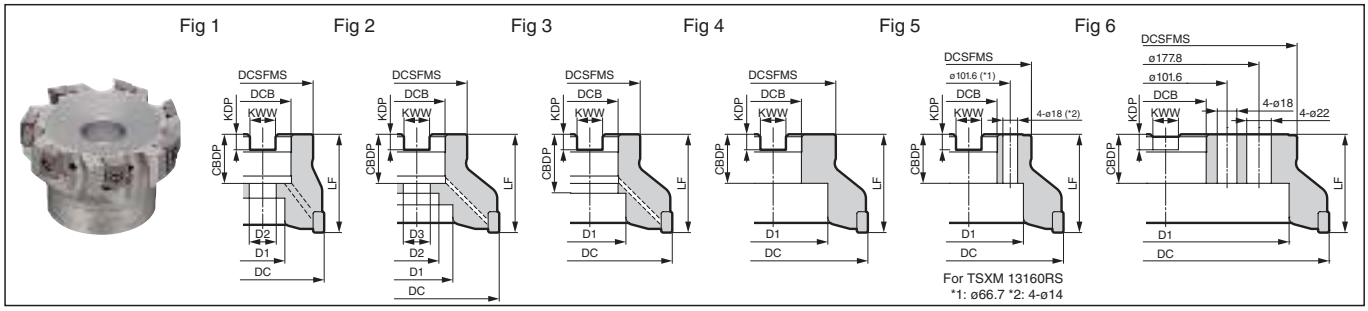
• mark: Standard stocked item (new product/expanded item)

TSXM Shell Mill Type -13mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-23° to 15°
	Axial	-6°

.473" 90° | 12mm 90°



Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM13040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	-	4	*0.19*	1
	TSXM13050RS	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	5	*0.28*	1
	TSXM13063RS	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	6	*0.50*	1
	TSXM13080RS	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	-	7	*0.92*	1
	TSXM13100RS	★	*100*	*70*	*50*	*32.0*	*14.4*	*8.0*	*32.0*	*46*	-	-	8	*1.36*	3
	TSXM13125RS	★	*125*	*80*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*52*	*29*	-	10	*2.57*	1
	TSXM13160RS	★	*160*	*130*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*90*	-	-	12	*5.02*	5*
	TSXM13200RS	★	*200*	*160*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*135*	-	-	16	*6.32*	5
	TSXM13250RS	★	*250*	*180*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*160*	-	-	20	*9.42*	5
	TSXM13315RS	★	*315*	*240*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*230*	-	-	24	*16.37*	6
	TSXM13080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25.0*	*20*	*14*	-	7	*0.93*	1
	TSXM13100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.0*	*46*	*27*	*18*	8	*1.90*	2
	TSXM13125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	-	10	*2.62*	1
	TSXM13160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11.0*	*38.0*	*72*	-	-	12	*4.22*	4
	TSXM13200R	★	*200*	*160*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*135*	-	-	16	*6.48*	5
	TSXM13250R	★	*250*	*180*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*160*	-	-	20	*9.68*	5
	TSXM13315R	★	*315*	*240*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*230*	-	-	24	*16.63*	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX M 13 100 R S

Cutter Series | Fine Pitch | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Recommended Cutting Conditions - Metric

ISO	Part Material	Hardness	Cutting Speed v_c (sfm) Min-Max	Feed Rate f_z (ipt) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT40 machine tools.

Recommended Cutting Conditions - Metric

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron/Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.

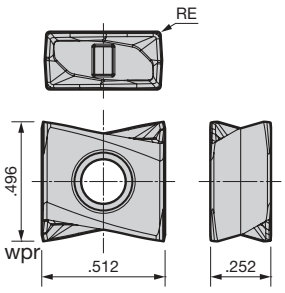
N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide									
Process	High-speed / Light	PM			K		MS				
	General-purpose		PM		K		MS	MS			
	Roughing		PM	PM		K		MS			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L			●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L			●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L			●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L			●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L			●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L			●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L			●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H			●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H			●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H			●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H			●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H			●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H			●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H			●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench		Seat	Anti-seize Cream
				Handle Grip	Bit		
							
TSXM13040RS	BFTX03510IP	3.0	-	HPS1015	TRB15IP	-	SUMI-P
TSXM13050RS							
TSXM13063RS							
TSXM13080RS							
TSXM13100RS							
TSXM13125RS							
TSXM13160RS			TRDR15IP	-	-	TSXS13R	
TSXM13200RS							
TSXM13250RS							
TSXM13315RS							
TSXM13080R			-	HPS1015	TRB15IP	-	
TSXM13100R							
TSXM13125R							
TSXM13160R			TRDR15IP	-	-	TSXS13R	
TSXM13200R							
TSXM13250R							
TSXM13315R							

● mark: Standard stocked item

TSXF SHELL MILL Type - 13mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	–23 to –15°
	Axial	–6°

12mm 90°

.473" 90°



Fig 1

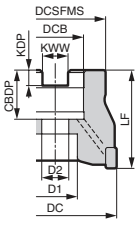


Fig 2

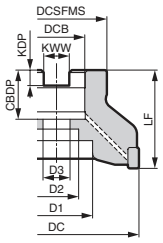


Fig 3

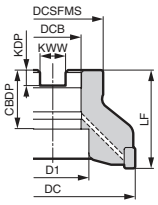


Fig 4

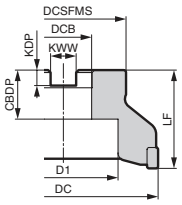
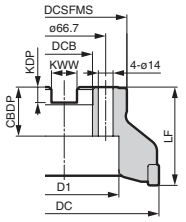


Fig 5



Body (Extra Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**TSXF41500R**	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	5	0.44	1
	TSXF42000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	6	0.66	1
	TSXF42500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	8	1.10	1
	TSXF43000R	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	10	1.76	1
	TSXF44000R	●	4.000	2.870	2.000	1.500	0.625	0.380	1.000	2.000	0.781	-	13	4.85	1
Metric	**TSXF13040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	-	5	*0.18*	1
	TSXF13050RS	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	6	*0.29*	1
	TSXF13063RS	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	7	*0.50*	1
	TSXF13080RS	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	-	8	*0.92*	1
	TSXF13100RS	★	*100*	*70*	*50*	*32.0*	*14.4*	*8.0*	*32.0*	*46*	-	-	10	*1.34*	3
	TSXF13125RS	★	*125*	*80*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*52*	*29*	-	14	*2.58*	1
	TSXF13160RS	★	*160*	*130*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*90*	-	-	16	*5.08*	5
Inch	**TSXF13080R**	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25.0*	*20*	*14*	-	8	*0.93*	1
	TSXF13100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.0*	*46*	*27*	*18*	10	*1.88*	2
	TSXF13125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	-	14	*2.60*	1
	TSXF13160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11.0*	*38.0*	*72*	-	-	16	*4.28*	4

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code - Inch

TSX F 4 2000 R

TSX	F	4	2000	R
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Identification Code - Metric

TSX F 13 100 R S

TSX	F	13	100	R	S
Cutter Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c(sfm)Min-Max	Feed Rate f_z(ipt) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT40 machine tools.

Recommended Cutting Conditions - Metric

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron/Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.

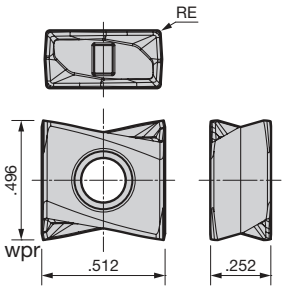
N·m Recommended Tightening Torque (N·m)

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide									
Process	High-speed / Light	P M			K		M S				
	General-purpose		P M		K		M S	M S			
	Roughing		P M	P M		K		M S			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L			●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L			●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L			●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L			●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L			●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L			●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L			●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H			●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H			●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H			●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H			●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H			●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H			●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H			●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench		Anti-seize Cream
				Handle Grip	Bit	
						
TSXF41500R	BFTX03510IP	3.0	TRDR15IP	HPS1015	TRB15IP	SUMI-P
TSXF42000R						
TSXF42500R						
TSXF43000R						
TSXF44000R						
TSXF13040RS			-			
TSXF13050RS						
TSXF13063RS						
TSXF13080RS						
TSXF13100RS						
TSXF13125RS						
TSXF13160RS			TRDR15IP	-	-	
TSXF13080R			-	HPS1015	TRB15IP	
TSXF13100R						
TSXF13125R						
TSXF13160R			TRDR15IP	-	-	

● mark: Standard stocked item

TSX(F) ENDMILL Type - 8 mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

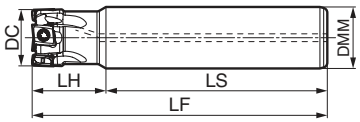
Rake Angle		
	Radial	–36 to –20°
	Axial	–6°

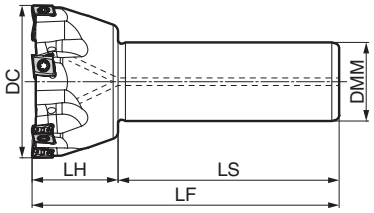
8mm 90° | .315" 90°

Fig 1



Fig 2





Body (Standard Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Inch	**TSX30625EW**	●	0.625	0.625	1.312	1.906	3.218	2	0.22	1
	TSX30750EW	●	0.750	0.750	1.534	2.030	3.563	2	0.35	1
	TSX31000EW	●	1.000	1.000	2.060	2.281	4.341	3	0.88	1
	TSX31250EW	●	1.250	1.250	2.060	2.281	4.341	3	1.32	1
	TSX31500EW	●	1.500	1.250	2.060	2.281	4.341	4	1.54	2
Metric	**TSX08016E**	★	*16*	*16*	*25*	*75*	*100*	2	*0.13*	1
	TSX08020E	★	*20*	*20*	*30*	*80*	*110*	2	*0.22*	1
	TSX08020E-16	★	*20*	*16*	*30*	*80*	*110*	2	*0.15*	2
	TSX08025E	★	*25*	*25*	*30*	*90*	*120*	3	*0.40*	1
	TSX08025E-20	★	*25*	*20*	*30*	*90*	*120*	3	*0.26*	2
	TSX08032E	★	*32*	*32*	*30*	*90*	*120*	3	*0.67*	1
	TSX08032E-25	★	*32*	*25*	*30*	*90*	*120*	3	*0.43*	2
	TSX08040E	★	*40*	*32*	*30*	*90*	*120*	4	*0.72*	2
	TSX08050E	★	*50*	*32*	*30*	*90*	*120*	5	*0.85*	2
	TSX08063E	★	*63*	*32*	*35*	*90*	*125*	6	*1.09*	2
	TSX08080E	★	*80*	*32*	*35*	*90*	*125*	7	*1.44*	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Inch	**TSXF30750EW**	●	0.750	0.750	1.534	2.030	3.563	3	0.44	1
	TSXF31000EW	●	1.000	1.000	2.060	2.281	4.341	4	0.88	1
	TSXF31250EW	●	1.250	1.250	2.060	2.281	4.341	5	1.32	1
	TSXF31500EW	●	1.500	1.250	2.060	2.281	4.341	6	1.54	2
Metric	**TSXF08020E**	★	*20*	*20*	*30*	*80*	*110*	3	*0.22*	1
	TSXF08025E	★	*25*	*25*	*30*	*90*	*120*	4	*0.40*	1
	TSXF08032E	★	*32*	*32*	*30*	*90*	*120*	5	*0.67*	1
	TSXF08040E	★	*40*	*32*	*30*	*90*	*120*	6	*0.73*	2
	TSXF08050E	★	*50*	*32*	*30*	*90*	*120*	8	*0.85*	2
	TSXF08063E	★	*63*	*32*	*35*	*90*	*125*	10	*1.10*	2
	TSXF08080E	★	*80*	*32*	*35*	*90*	*125*	11	*1.42*	2

Inserts are sold separately.

Identification Code - Inch

TSX F 3 1000 EW

TSX	F	3	1000	EW
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 1.000"	Weldon Shank Type

Identification Code - Metric

TSX F 08 032 E (-25)

TSX	F	08	032	E	(-25)
Cutter Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Shank Type	Shank Dia.

Parts

Applicable Cutter	Screw	N·m	Wrench	Anti-seize Cream
TSX08016E, TSX08020E, TSXF08020E	BFTX0306IP	2.0	TRDR08IP	SUMI-P
TSX08025E to 80E, TSXF08025E to 80E	BFTX0308IP			

Insert Size	Catalog Number	Insert Screw	N·m	Wrench
TSX3000 (LNEX08)	TSX□30625□~TSX□30750□	BFTX0306IP	2.0	TRDR08IP
	TSX□31000□~TSX□32500□	BFTX0308IP		
TSX4000 (LNEX13)	TSX□41000□~TSX□44000□	BFTX03510IP	3.0	TRDR15IP

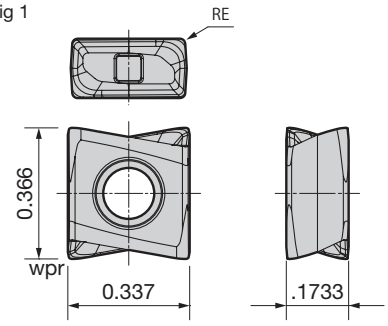
N·m Recommended Tightening Torque (N·m)

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide									
Process	High-speed / Light	PM			K		MS				
	General-purpose	PM	PM		K		MS	MS			
	Roughing		PM	PM		K		MS			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX080404PNER-L			●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-L			●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-L			●			●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-L			●			●	●	●	.063" / *1.6*	.024" / *.6*	1
LNEX080404PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.024" / *.6*	1

Fig 1



Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c(sfm)Min-Max	Feed Rate f_z(ipt) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

Note
· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
· The above figures are guidelines for use with BT40 machine tools.

Recommended Cutting Conditions - Metric

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron/Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

Note
· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
· The above figures are guidelines for use with BT50 machine tools.

● mark: Standard stocked item

TSX(M/F) ENDMILL Type - 13mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

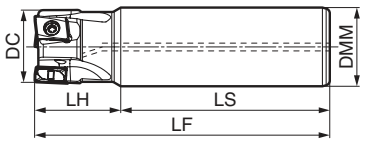
Rake Angle		
	Radial	–31 to –15°
	Axial	–6°

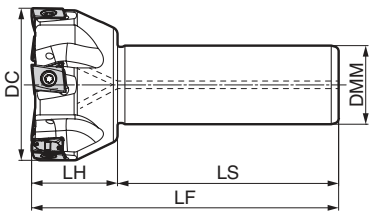
12mm 90° | .472" 90°

Fig 1



Fig 2





Body (Standard Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**TSX41000EW**	●	1.000	1.000	2.060	2.281	4.341	2	0.66	1
	TSX41250EW	●	1.250	1.250	2.060	2.281	4.341	2	1.32	1
	TSX41500EW	●	1.500	1.250	2.060	2.281	4.341	3	1.54	2
Metric	**TSX13025E**	★	*25*	*25*	*35*	*85*	*120*	2	*0.38*	1
	TSX13032E	★	*32*	*32*	*35*	*85*	*120*	2	*0.66*	1
	TSX13040E	★	*40*	*32*	*30*	*90*	*120*	3	*0.71*	2
	TSX13050E	★	*50*	*32*	*30*	*90*	*120*	4	*0.81*	2
	TSX13063E	★	*63*	*32*	*35*	*90*	*125*	5	*1.08*	2
	TSX13080E	★	*80*	*32*	*35*	*90*	*125*	5	*1.40*	2

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM13032E**	★	*32*	*32*	*35*	*85*	*120*	3	*0.65*	1
	TSXM13040E	★	*40*	*32*	*30*	*90*	*120*	4	*0.71*	2
	TSXM13050E	★	*50*	*32*	*30*	*90*	*120*	5	*0.80*	2
	TSXM13063E	★	*63*	*32*	*35*	*90*	*125*	6	*1.07*	2
	TSXM13080E	★	*80*	*32*	*35*	*90*	*125*	7	*1.41*	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Inch	**TSXF41250EW**	●	1.250	1.250	2.060	2.281	4.341	3	1.32	1
	TSXF41500EW	●	1.500	1.250	2.060	2.281	4.341	4	1.78	2
Metric	**TSXF13040E**	★	*40*	*32*	*30*	*90*	*120*	5	*0.70*	2
	TSXF13050E	★	*50*	*32*	*30*	*90*	*120*	6	*0.80*	2
	TSXF13063E	★	*63*	*32*	*30*	*90*	*125*	7	*1.07*	2
	TSXF13080E	★	*80*	*32*	*35*	*90*	*125*	8	*1.42*	2

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

Identification Code - Inch

TSX F 4 1000 EW

TSX	F	4	1000	EW
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 1.000"	Weldon Shank Type

Identification Code - Metric

TSX M 13 050 E

TSX	M	13	050	E
Cutter Series	M: Fine Pitch F : Extra Fine Pitch	Insert Size	Cutter Dia.	Shank Type

Parts

Screw		Wrench	Anti-seize Cream
	N·m		
BFTX03510IP	3.0	TRDR15IP	SUMI-P

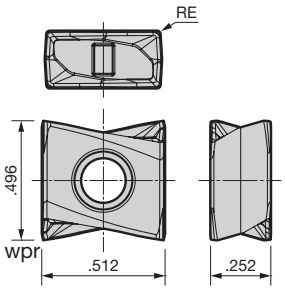
N·m Recommended Tightening Torque (N·m) ●: USA Standard stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide									
Process	High-speed / Light	PM			K		MS				
	General-purpose		PM		K		MS	MS			
	Roughing		PM	PM		K		MS			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L			●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L			●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L			●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L			●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L			●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L			●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L			●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H			●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H			●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H			●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H			●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H			●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H			●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H			●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c(sfm)Min-Max	Feed Rate f_z(ipt) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

Note
· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
· The above figures are guidelines for use with BT40 machine tools.

Recommended Cutting Conditions - Metric

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron/Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

Note
· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
· The above figures are guidelines for use with BT50 machine tools.

●: USA Standard stocked item

TSXR Repeater Shellmill Type - 8mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

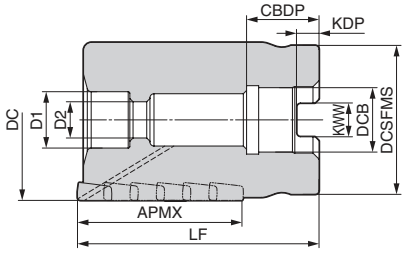
Rake Angle		
	Radial	–20 to –15°
	Axial	–6 to –3°

34 to 60mm 90°

1.614" to 2.362" 90°



Fig 1



Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Weight (kg)	Fig
Metric	**TSXR08032RS3416Z02**	★	*32*	*34*	*33*	*55*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	10	5	*0.17*	1
	TSXR08040RS4016Z03	★	*40*	*40*	*37*	*60*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	18	6	*0.32*	1
	TSXR08050RS5422Z03	★	*50*	*54*	*47*	*75*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	24	8	*0.70*	1
	TSXR08050RS5422Z04	★	*50*	*54*	*47*	*75*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	32	8	*0.68*	1
	TSXR08063RS6027Z05	★	*63*	*60*	*60*	*80*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	45	9	*1.25*	1

Inserts are sold separately.

★: Worldwide Warehouse Item

Identification Code

TSXR	08	050	R	S	54	22	Z03
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Hole Diameter	Effective No. of Teeth

Parts

Applicable Cutter	Screw	N·m	Wrench	Bolt	Anti-seize Cream
TSXR08032RS3416Z02	BFTX0308IP	2.0	TRDR08IP	BX0845	SUMI-P
TSXR08040RS4016Z03				BX0850	
TSXR08050RS5422Z03				BX1060	
TSXR08050RS5422Z04					
TSXR08063RS6027Z05				BX1265	

N·m Recommended Tightening Torque (N·m)

TSXR Repeater Shellmill Type - 8mm Inserts

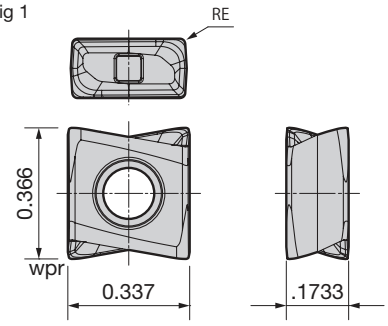
P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide									
Process	High-speed / Light	PM			K		MS				
	General-purpose	PM	PM		K		MS	MS			
	Roughing		PM	PM		K		MS			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX080404PNER-L			●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-L			●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-L			●			●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-L			●			●	●	●	.063" / *1.6*	.024" / *.6*	1
LNEX080404PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.024" / *.6*	1

Fig 1



Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACP100
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACM200
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for a_e = diameter 20% or less.

● mark: Standard stocked item

TSXR Repeater Shellmill Type - 13mm Inserts

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

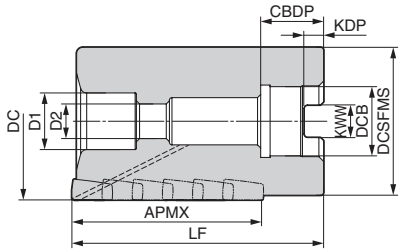
Rake Angle		
	Radial	–23 to –15°
	Axial	–6 to –3°

41 to 60mm 90°

1.614" to 2.362" 90°

Fig 1





Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR13040RS4116Z02**	★	*40*	*41*	*37*	*60*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	8	4	2	0.31	1
	TSXR13050RS6022Z03	★	*50*	*60*	*47*	*80*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	18	6	3	0.66	1
	TSXR13063RS5027Z03	★	*63*	*50*	*60*	*75*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	15	5	3	1.12	1
	TSXR13063RS6027Z04	★	*63*	*60*	*60*	*80*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	24	6	4	1.15	1
	TSXR13080RS6032Z04	★	*80*	*60*	*77*	*80*	*32.0*	*14.4*	*8.0*	*26.0*	*25*	*18*	24	6	4	2.06	1
	TSXR13080RS6032Z05	★	*80*	*60*	*77*	*80*	*32.0*	*14.4*	*8.0*	*26.0*	*25*	*18*	30	6	5	2.04	1
	TSXR13100RS6040Z05	★	*100*	*60*	*88*	*85*	*40.0*	*16.4*	*9.0*	*29.0*	*32*	*21*	30	6	5	3.45	1
	TSXR13100RS6040Z06	★	*100*	*60*	*88*	*85*	*40.0*	*16.4*	*9.0*	*29.0*	*32*	*21*	36	6	6	3.44	1
	TSXR13125RS6040Z07	★	*125*	*60*	*100*	*85*	*40.0*	*16.4*	*9.0*	*29.0*	*32*	*21*	42	6	7	5.63	1

Inserts are sold separately.

★: Worldwide Warehouse Item

Identification Code

TSXR 13 050 R S 60 22 Z03

TSXR	13	050	R	S	60	22	Z03
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Hole Diameter	Effective No. of Teeth

Parts

Applicable Cutter	Screw	N·m	Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Bolt	Anti-seize Cream
TSXR13040RS4116Z02	BFTX03510IP	3.0	-	HPS1015	TRB15IP	BX0850	SUMI-P
TSXR13050RS6022Z03						BX1060	
TSXR13063RS5027Z03						BX1260	
TSXR13063RS6027Z04						BX1265	
TSXR13080RS6032Z04			TRDR15IP	-	-	BX1660	
TSXR13080RS6032Z05							
TSXR13100RS6040Z05						BX2065	
TSXR13100RS6040Z06							
TSXR13125RS6040Z07							

N·m Recommended Tightening Torque (N·m)

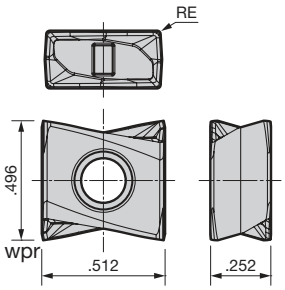
TSXR Repeater Shellmill Type - 13mm Inserts

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide									
Process	High-speed / Light	P M			K		M S				
	General-purpose		P M		K		M S	M S			
	Roughing		P M	P M		K		M S			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L			●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L			●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L			●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L			●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L			●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L			●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L			●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H			●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H			●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H			●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H			●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H			●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H			●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H			●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACP100
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACM200
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for a_e = diameter 20% or less.

●: USA Standard stocked item

TSXR Repeater Endmill Type - 8 mm Inserts

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

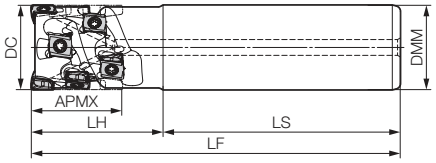
Rake Angle		
	Radial	–33 to –18°
	Axial	–6° to –3°

21 to 40 mm 90°

.827" to 1.575" 90°

Fig 1





Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR08020E2120Z01**	★	*20*	*21*	*20*	*30*	*80*	*110*	3	3	1	*0.22*	1
	TSXR08025E2725Z02	★	*25*	*27*	*25*	*35*	*90*	*125*	8	4	2	*0.39*	1
	TSXR08032E3432Z02	★	*32*	*34*	*32*	*50*	*90*	*140*	10	5	2	*0.74*	1
	TSXR08040E4032Z03	★	*40*	*40*	*32*	*60*	*90*	*150*	18	6	3	*0.92*	1

Inserts are sold separately.

★: Worldwide Warehouse Item

Identification Code

TSXR **08** **025** **E** **27** **25** **Z02**

TSXR	08	025	E	27	25	Z02
Cutter Series	Insert Size	Cutter Dia.	Shank Type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Parts

Screw		Wrench	Anti-seizure Cream
			
BFTX0308IP	2.0	TRDR08IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

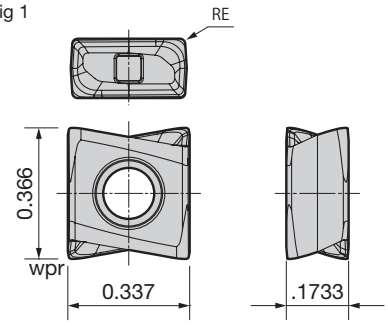
TSXR Repeater Endmill Type - 8 mm Inserts

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide									
Process	High-speed / Light	P M			K		M S				
	General-purpose	P M	P M		K		M S	M S			
	Roughing		P M	P M		K		M S			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX080404PNER-L			●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-L			●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-L			●			●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-L			●			●	●	●	.063" / *1.6*	.024" / *.6*	1
LNEX080404PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.024" / *.6*	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACP100
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACM200
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.

●: USA Standard stocked item

TSXR Repeater Endmill Type - 13 mm Inserts

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

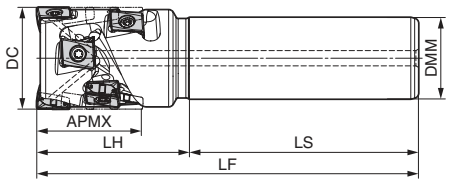
Rake Angle		
	Radial	–23 to –18°
	Axial	–6° to –3°

41 to 60 mm 90°

1.614" to 2.362" 90°

Fig 1





Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR13040E4132Z02**	★	*40*	*41*	*32*	*60*	*90*	*150*	8	4	2	*0.91*	1
	TSXR13050E6042Z03	★	*50*	*60*	*42*	*80*	*90*	*170*	18	6	3	*1.74*	1

Inserts are sold separately.

★: Worldwide Warehouse Item

Identification Code

TSXR 13 050 E 60 42 Z03

TSXR	13	050	E	60	42	Z03
Cutter Series	Insert Size	Cutter Dia.	Shank Type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Parts

Screw		Wrench	Anti-seize Cream
			
BFTX03510IP	3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

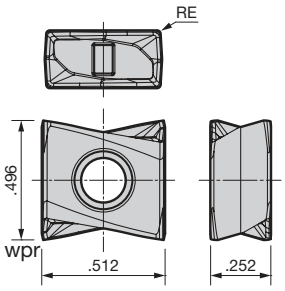
TSXR Repeater Endmill Type - 13 mm Inserts

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide									
Process	High-speed / Light	P M			K		M S				
	General-purpose		P M		K		M S	M S			
	Roughing		P M	P M		K		M S			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L			●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L			●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L			●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L			●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L			●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L			●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L			●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H			●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H			●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H			●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H			●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H			●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H			●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H			●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACP100
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACM200
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	-	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.

●: USA Standard stocked item

Contact Sheet for TSX Milling Cutter - Custom Repeater Type

Fill in the ☐ with required special dimensions

After completion, please submit to your local Sumitomo Sales Represenative or authorized distributor
Please include necessary additional information (shape, dimension, etc.)

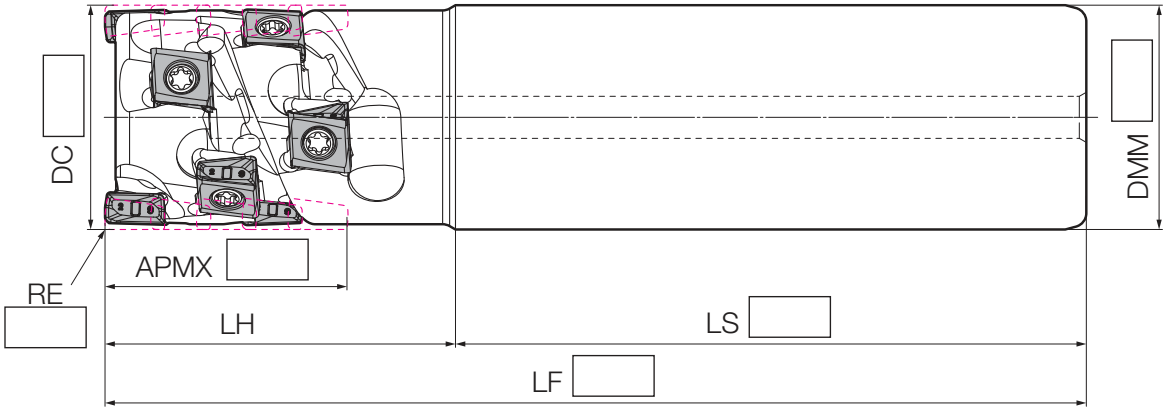
Company Contact Information:



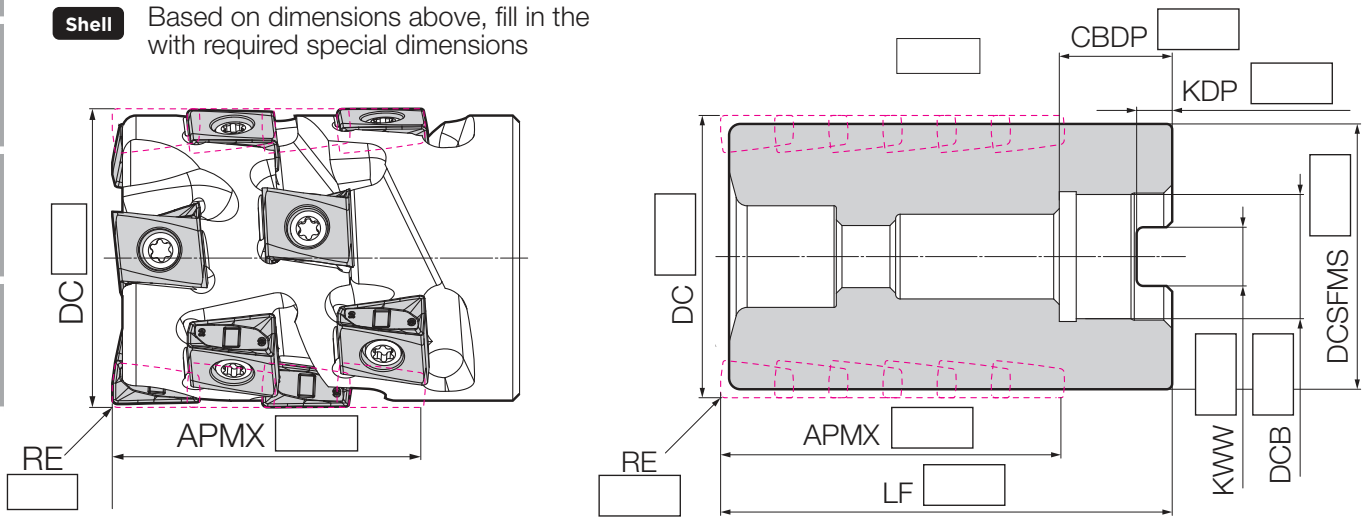
Dimensions

Applicable Insert	Corner Diameter (mm) DC	Max DOC (mm) APMX	Total # of Teeth	Steps	Max Effective Teeth	Type: Shell	Type: Shank
LNEX08	32	34	10	5	2	O	O
	40	40	18	6	3	O	O
	50	54	24	8	3	O	
LNEX13	40	40	8	4	2	O	O
	50	60	18	6	3	O	O
	63	60	18	6	3	O	
	80	60	24	6	4	O	
	100	60	30	6	5	O	

Shank Based on dimensions above, fill in the ☐ with required special dimensions



Shell Based on dimensions above, fill in the ☐ with required special dimensions



Contact Sheet for TSX Milling Cutter - Custom Slot / Side Cutter Type

Fill in the ☐ with required special dimensions

Company Contact Information:

Insert

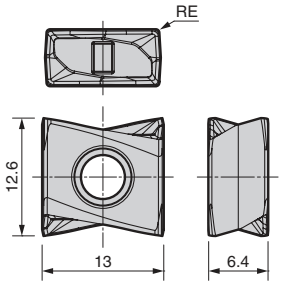
Dimensions (inch)

Grade		Coated Carbide								
Process	High-speed / Light	PM			K		MS			
	General-purpose	PM	PM		K		MS	MS		
	Roughing		PM	PM		K		MS		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Fig
LNEX080404PNEL-L			●			●			.016	1
LNEX080408PNEL-L			●			●			.031	1
LNEX080412PNEL-L			●			●			.047	1
LNEX080416PNEL-L			●			●			.063	1
LNEX080404PNEL-G			●		●	●		●	.016	1
LNEX080408PNEL-G			●		●	●		●	.031	1
LNEX080412PNEL-G			●		●	●			.047	1
LNEX080416PNEL-G			●		●	●			.063	1
LNEX130604PNEL-L			●			●			.016	1
LNEX130608PNEL-L			●			●			.031	1
LNEX130612PNEL-L			●			●			.047	1
LNEX130616PNEL-L			●			●			.063	1
LNEX130620PNEL-L			●			●			.079	1
LNEX130624PNEL-L			●			●			.094	1
LNEX130632PNEL-L			●			●			.126	1
LNEX130604PNEL-G			●		●	●		●	.016	1
LNEX130608PNEL-G			●		●	●		●	.031	1
LNEX130612PNEL-G			●		●	●			.047	1
LNEX130616PNEL-G			●		●	●			.063	1
LNEX130620PNEL-G			●		●	●			.079	1
LNEX130624PNEL-G			●		●	●			.094	1
LNEX130632PNEL-G			●		●	●			.126	1

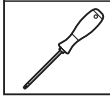
Use peripheral inserts with RE of 0.8mm or less from the second step and above.

●= USA Stocked Item

Fig 1



Parts

Wrench	Screw	Anti-seize Paste
		

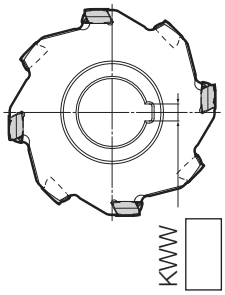
Corner Radius Availability for Custom Tools

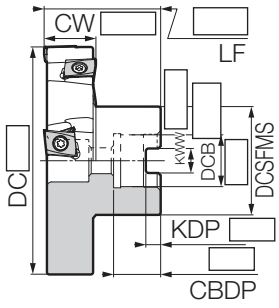
LNEX08 (RE) =0.4 ~ 1.6mm
LNEX13 (RE) =0.4 ~ 3.2mm
*It is possible corner radius after machining will be different than the RE of the insert
*Inserts can be made right or left handed

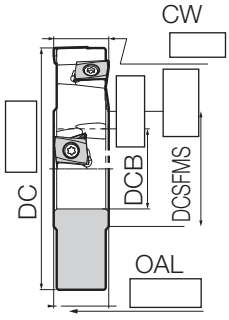
CW Size	
14mm	LNEX08
18 ~ 22mm	LNEX13

*If CW size is larger than the above dimensions, then product will be designed as a repeater mill

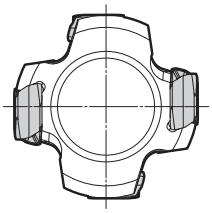


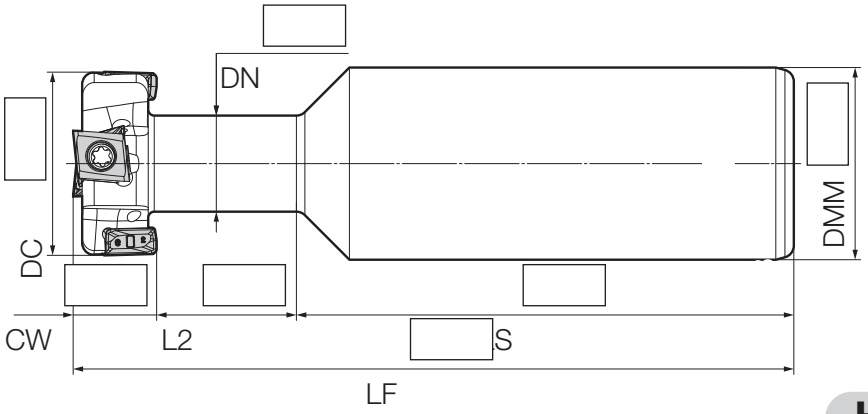






T-Slot Type





Please specify # of effective teeth desired: _____

PWS(F) Type / PWSR Type



■ General Features

A highly reliable shoulder milling cutter with strong, sharp cutting edge and tangential inserts.

PWSR Type, with a 2-stage insert array structure supporting large depths of cut, has been added to the lineup.

■ Features

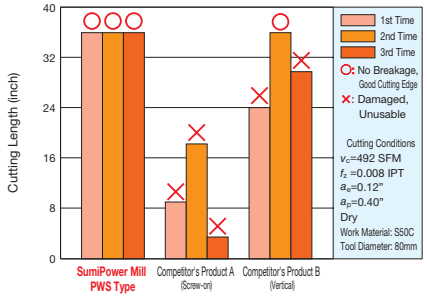
- Tangential inserts with excellent cutting edge strength and optimized breaker provide superb cutting edge and sharpness.
- Serrated insert design created with high-precision formation technology allows stable milling and low chatter even in applications with large tool overhang.
- ACP and ACK series allow a wide range of materials to be covered.

■ Performance

- General-purpose G Type Insert Performance Comparison

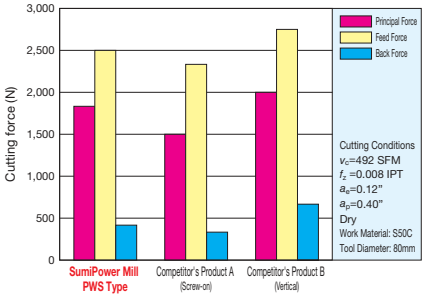
Comparison of Cutting Edge Strength

Strong cutting edge delivers superb stability



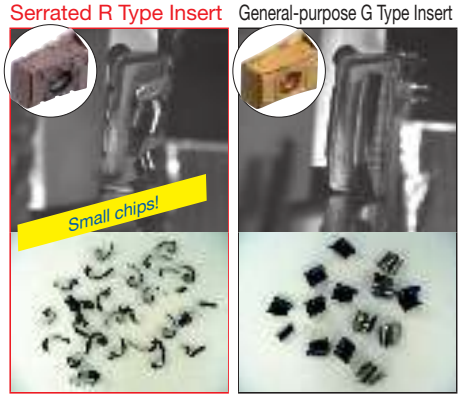
Comparison of Cutting Force

Sharpness approaching that of screw-on inserts



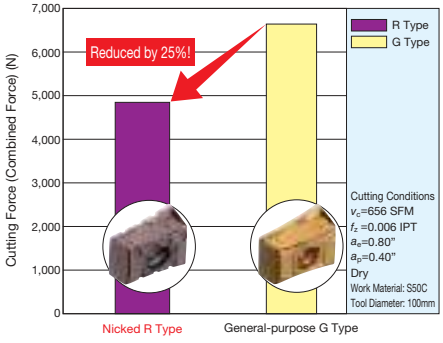
- Serrated R Type Insert Performance Comparison

Serrated R Type Insert | General-purpose G Type Insert

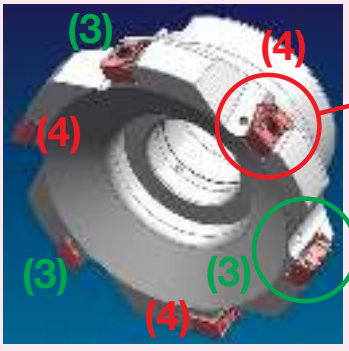


Comparison of Cutting Force

Reduced cutting power and excellent chatter resistance



⚠ Serrated R Type Insert Usage Precautions







1) Precautions when Mounting

When using the serrated R type indexable inserts, mount them so that the serrated grooves alternate as shown in the image on the left.

2) Precautions for Cutting Conditions

As these are mounted as in the image on the left, compared to mounting inserts of the same shape for all blades, the feed rate per tooth is doubled. Accordingly,

f_z = 0..010 IPT

feed rate is set as the upper limit and can be adjusted for use.

Ex.) For use with f_z = 0.2mm/t
With all regular blades: Feed Rate per Tooth 0.008 IPT
With serrated types: Feed Rate per Tooth 0.016 IPT

Using inserts incorrectly may damage tools.

PWS(F) Shell Mill Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	–15°
	Axial	–6°

.591" 90° | 16mm 90°



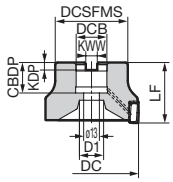
Fig 1


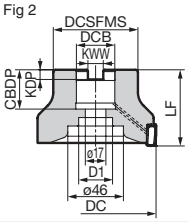
Fig 2


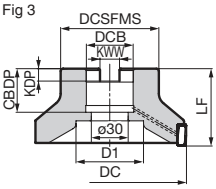
Fig 3


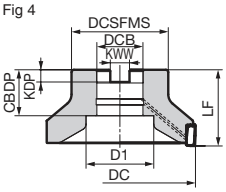
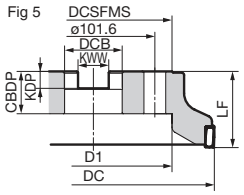
Fig 4


Fig 5


Body (Standard Type)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**PWS43000R**	●	3.000	1.000	2.250	.797	1.750	.375	.220	1.020	5	2.10	1
	PWS44000R-1.25	●	4.000	1.250	2.870	1.000	2.000	.500	.280	1.020	6	5.29	1
	PWS44000R-1.50	●	4.000	1.500	3.540	2.000	2.500	.625	.380	2.400	6	5.40	3
	PWS45000R	●	5.000	1.500	3.750	2.000	2.500	.625	.380	1.535	7	5.29	1
	PWS46000R	●	6.000	1.500	4.380	2.000	2.500	.625	.380	1.535	8	8.81	1
	PWS48000R	●	8.000	2.500	5.118	-	2.500	1.000	.560	1.594	10	14.33	2
	PWS410000R	●	10.000	2.500	7.087	-	2.756	1.000	.560	1.594	12	27.11	2
Metric	**PWS4080R**	★	*80	*25.4*	*60*	*20*	*50*	*9.5*	*6*	*25*	4	*1.0*	1
	PWS4100R	★	*100	*31.75*	*70*	*28*	*63*	*12.7*	*8*	*32.5*	6	*1.8*	2
	PWS4125R	★	*125*	*38.1*	*80*	*55*	*63*	*15.9*	*10*	*35.5*	6	*2.4*	3
	PWS4160R	★	*160*	*50.8*	*100*	*72*	*63*	*19.1*	*11*	*38*	8	*4.0*	4
	PWS4200R	★	*200*	*47.625*	*130*	*130*	*63*	*25.4*	*14*	*35*	10	*6.5*	5
	PWS4250R	★	*250*	*47.625*	*130*	*160*	*63*	*25.4*	*14*	*35*	12	*12.3*	5

Cutters with sizes of 8.00" or above come with seats (no coolant holes).
Inserts are sold separately.

Body (Fine Pitch Type)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**PWSF43000R**	●	3.000	1.000	2.250	.797	1.750	0.375	.220	1.020	7	1.95	1
	PWSF44000R-1.25	●	4.000	1.250	2.870	1.000	2.000	0.500	.280	1.020	9	5.07	1
	PWSF44000R-1.50	●	4.000	1.500	3.540	2.000	2.500	0.625	.380	2.400	9	5.10	3
	PWSF45000R	●	5.000	1.500	3.750	2.000	2.500	0.625	.380	1.535	10	5.07	1
	PWSF46000R	●	6.000	1.500	4.380	2.000	2.500	0.625	.380	1.535	13	8.59	1
	PWSF48000R	●	8.000	2.500	5.118	-	2.500	1.000	.560	1.594	16	14.10	2
	PWSF410000R	●	10.000	2.500	7.087	-	2.756	1.000	.560	1.594	20	26.90	2
Metric	**PWSF4080R**	★	*80	*25.4*	*60*	*20*	*50*	*9.5*	*6*	*25*	6	*0.9*	1
	PWSF4100R	★	*100	*31.75*	*70*	*28*	*63*	*12.7*	*8*	*32.5*	8	*1.7*	2
	PWSF4125R	★	*125*	*38.1*	*80*	*55*	*63*	*15.9*	*10*	*35.5*	8	*2.3*	3
	PWSF4160R	★	*160*	*50.8*	*100*	*72*	*63*	*19.1*	*11*	*38*	10	*3.9*	4
	PWSF4200R	★	*200*	*47.625*	*130*	*130*	*63*	*25.4*	*14*	*35*	12	*6.4*	5
	PWSF4250R	★	*250*	*47.625*	*130*	*160*	*63*	*25.4*	*14*	*35*	14	*12.2*	5

Cutters with sizes of 8.00" or above come with seats (no coolant holes).
Inserts are sold separately.

● USA stocked item
★Worldwide Warehouse item

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide				
Process	High-speed / Light	P			K	
	General-purpose		PM	PM	K	
	Roughing		PM	PM		K

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Wiper Facet Length wpr	Applications	Remarks	Fig
LNMX170808PNSR-L	●	●	●	●	●	0.118" / *3.0*	Light Cutting		1
LNMX170808PNSR-G	●	●	●	●	●	0.118" / *3.0*	General-purpose	1st Recommended	1
LNMX170808PNSR-R	●	●	●	●	●	0.118" / *3.0*	Heavy Cutting	Serrated	2

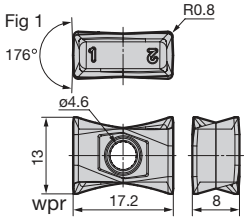
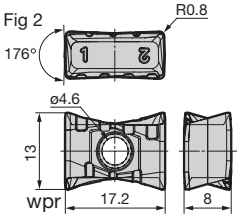
Fig 1


Fig 2


Recommended Cutting Conditions - Metric

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280 HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	-	100-**150**-200	0.10-**0.18**-0.25	ACP300
K	Cast Iron Ductile Cast Iron	250HB	100-**175**-250	0.10-**0.23**-0.35	ACK200

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c (SFM) Min-Max	Feed Rate f_z (IPT) Min-Max	Insert Grade
P	Carbon Steel	180-280HB	500–1,500	.004 – .014	ACP200
	Alloy Steel	180-280HB	330–815	.004 – .010	ACP200
M	Stainless Steel	-	330–650	.006 – .010	ACP300
K	Cast Iron/Ductile Cast Iron	250HB	330–815	.004 – .014	ACK200

Parts

Flat Screw (For Inserts / Shims)	Wrench	Anti-seize Cream	Shim (*)
BFTX0412IP	3.0 (N·m)	TTR15IP	SUMI-P	PWSS4R

* mark is included with ø8.00" & ø200 mm or larger sizes.

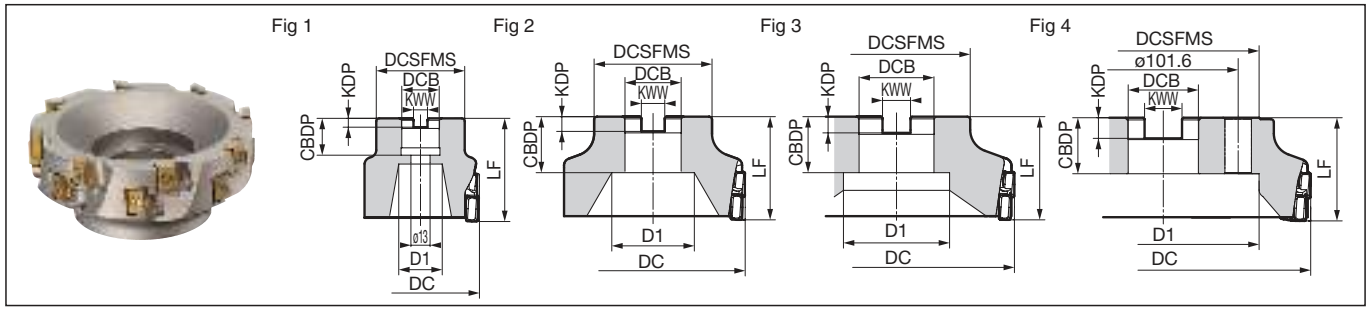
(N·m) Recommended Tightening Torque (N·m)

PWSR 2 Step Shellmill Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	−15°
	Axial	−6°

Maximum Depth of Cut: 31 mm 90° | 1.22" 90°



Body (2-Step Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Metric	**PWSR4080R**		**80*	*25.4*	*60*	*29.5*	*70*	*9.5*	*6*	*25*	8	4	*1.4*	1
	PWSR4100R		**100*	*31.75*	*70*	*46*	*70*	*12.7*	*8*	*32*	12	6	*2.0*	2
	PWSR4125R		*125*	*38.1*	*80*	*56*	*70*	*15.9*	*10*	*38*	12	6	*3.0*	2
	PWSR4160R		*160*	*50.8*	*100*	*72*	*70*	*19.1*	*11*	*38*	16	8	*5.2*	3
	PWSR4200R		*200*	*47.625*	*130*	*160*	*70*	*25.4*	*14*	*38*	20	10	*8.0*	4

Cutters with sizes of ø200mm or above have "without oil holes" and "with shim" specifications.
Inserts are sold separately.

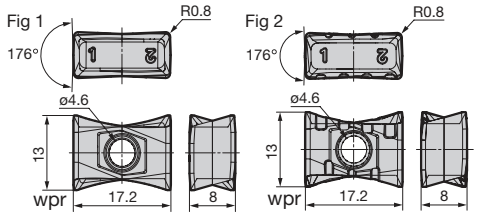
★ Worldwide Warehouse item

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide							
Process	High-speed / Light	P			K				
	General-purpose		PM	PM	K				
	Roughing		PM	PM		K			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	Wiper Facet Length wpr	Applications	Remarks	Fig
LNMX170808PNSR-L		●	●	●	●	●	0.118" / *3.0*	Light Cutting		1
LNMX170808PNSR-G		●	●	●	●	●	0.118" / *3.0*	General-purpose	1st Recommended	1
LNMX170808PNSR-R		●	●	●	●	●	0.118" / *3.0*	Heavy Cutting	Serrated	2



Parts

Flat Screw (For Inserts / Shims)		Wrench	Anti-seizure Cream	Shim (*)
BFTX0412IP	3.0	TTR15IP	SUMI-P	PWSS4R

* mark is included with ø200 mm or larger sizes.

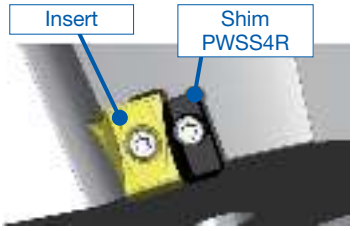
Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280 HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	-	100-**150**-200	0.10-**0.18**-0.25	ACP300
K	Cast Iron Ductile Cast Iron	250HB	100-**175**-250	0.10-**0.23**-0.35	ACK200

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Large Diameter Size
(ø8.00" & ø200 mm or larger sizes.)
Body Structure

Safety Shim Design to Protect Body



N·m Recommended Tightening Torque (N·m)



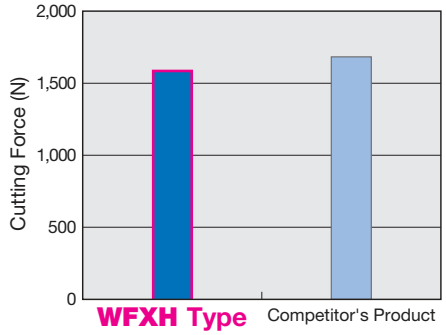
■ General Features

SEC-WaveMill WFXH Types are high performance multi-functional cutters that use a WFX series insert to support roughing at high feed rates and other milling applications.

■ Features

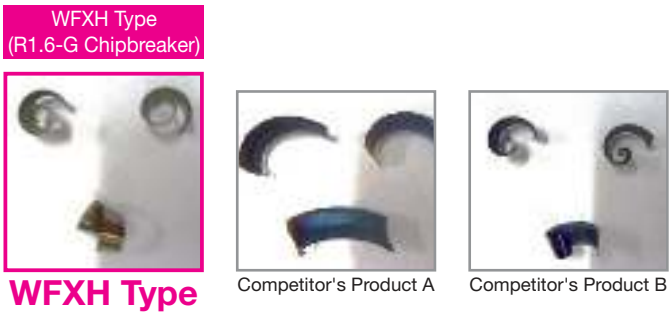
(1) Stable, high-efficiency machining due to insert's superior sharpness
(2) Various milling applications are supported (ramping, helical milling)
(3) Various inserts for the WFX series can be used

Cutting force: High sharpness realises stable cutting



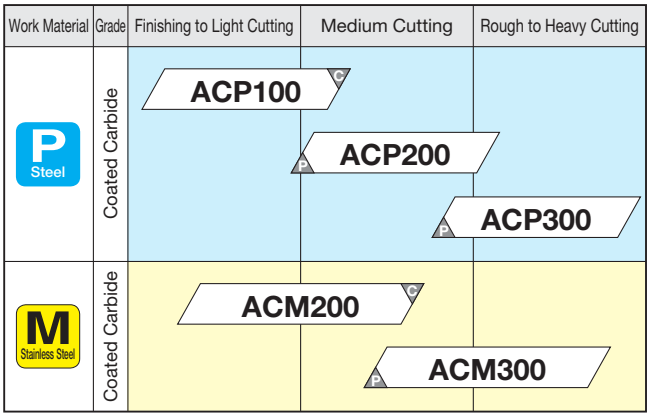
Part Material: 1050
Tool: WFXH12063RS (5 flutes)
Cutting Conditions: v_c=200m/min, f_z=1.0mm/t, a_p=0.5mm, a_e=44mm, Dry

Chips: Small, curly chips at low cutting temperature

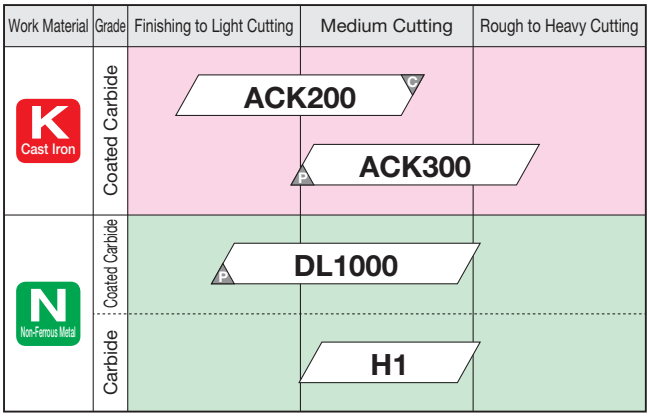


Part Material: 1050
Tool: WFXH12063RS, SOMT120416PDER-G (ACP200)
Cutting Conditions: v_c=200m/min, f_z=1.0mm/t, a_p=1mm, a_e=35mm, Dry

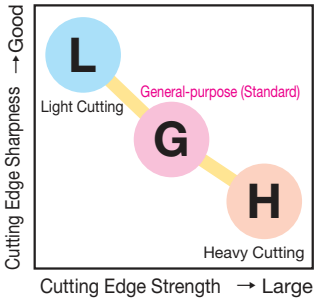
■ Grade Application Range

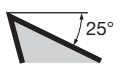


The letters "C" and "P" at the end of each grade indicate the coating type. ▽: CVD, △: PVD, Blank: Uncoated



■ Chipbreaker Selection



Work Material	P M K			N
Chipbreaker	L Type	G Type	H Type	S Type
				
Features	Low Cutting Force	General-purpose Type	High Strength Type	Sharp Edge
Cutting Edge Cross Section	 20°	 15°	 10°	 25°
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General Purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	For Non-Ferrous Metals

■ Precautions for Use (1) Precautions for Corner Finishing

* Corners have remaining material or over-cut portion with respect to the expected corner profile.

Fig 1

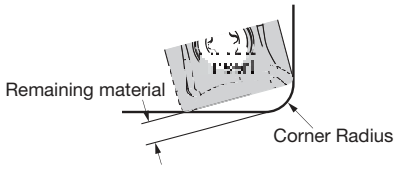
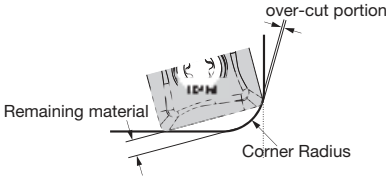


Fig 2



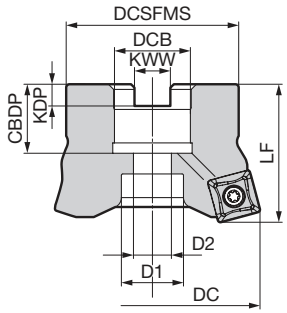
WFXH08000RS Type

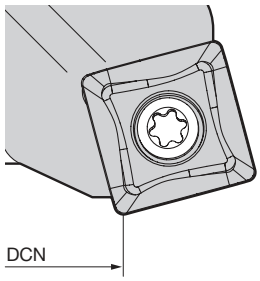
Corner Radius	SOMT08○○04-□			SOMT08○○08-□			SOMT08○○12-□		
	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape
2.0	1.41	0	Fig 1	1.30	0	Fig 1	1.21	0	Fig 1
2.5	1.30	0.02	Fig 2	1.19	0.01	Fig 2	1.09	0	Fig 1
3.0	-	-	-	-	-	-	0.98	0.05	Fig 2

WFXH12000RS Type

Corner Radius	SOMT12○○04-□			SOMT12○○08-□			SOMT12○○12-□			SOMT08○○16-□		
	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape
2.0	2.58	0	Fig 1	2.48	0	Fig 1	2.37	0	Fig 1	2.25	0	Fig 1
2.5	2.47	0	Fig 1	2.37	0	Fig 1	2.25	0	Fig 1	2.14	0	Fig 1
3.0	2.36	0	Fig 1	2.26	0	Fig 1	2.14	0	Fig 1	2.11	0	Fig 1
3.5	2.24	0.01	Fig 2	2.14	0	Fig 1	2.03	0	Fig 1	1.91	0	Fig 1
4.0	-	-	-	2.03	0.04	Fig 2	1.91	0.03	Fig 2	1.8	0.01	Fig 2

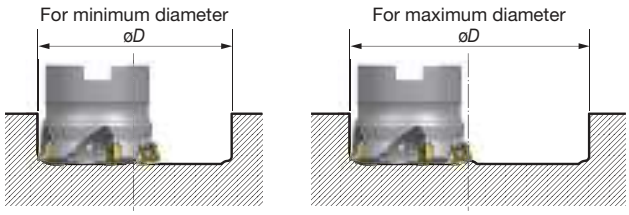
■ Precautions for Use (2) The minimum machining diameter DCN differs depending on the insert used. We recommend using WFXH Type large nose radius inserts.



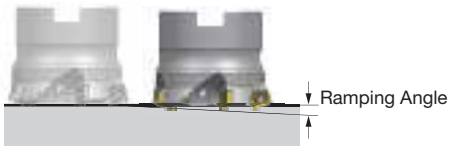


Body Cat. No.	Nominal Diameter	DCN			
		R0.4	R0.8	R1.2	R1.6
WFXH08025M12Z2	25	10.4	10.9	11.5	—
WFXH08032M12Z3	32	17.4	17.9	18.5	—
WFXH08040RS	40	25.4	25.9	26.5	—
WFXH08050RS	50	35.4	35.9	36.5	—
WFXH08050RS-Z6	50	35.4	35.9	36.5	—
WFXH08063RS	63	48.4	48.9	49.5	—
WFXH12040M12Z3	40	16.6	17.1	17.5	18.1
WFXH12050RS	50	26.6	27.2	27.7	28.2
WFXH12063RS	63	39.5	40.0	40.4	41.1

■ Ramping and Helical Milling



Min. Diameter, Max. Diameter

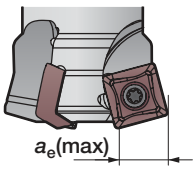


Ramping Angle

Insert Cat. No.	Nominal Diameter	Helical Milling (inch)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramping Angle
SOMT08○○04-□	**25**	1.378	1.929	1°30'
	32	1.929	2.480	0°30'
	40	2.559	3.110	0°30'
	50	Impossible	Impossible	0°30'
	63	Impossible	Impossible	Impossible
SOMT08○○08-□	**25**	1.378	1.850	3°
	32	1.929	2.441	1°30'
	40	2.559	3.071	1°
	50	3.346	3.858	0°30'
	63	4.370	4.882	0°30'
SOMT08○○12-□	**25**	1.339	1.850	4°30'
	32	1.889	2.402	2°30'
	40	2.519	3.032	1°30'
	50	3.307	3.819	1°
	63	4.331	4.842	0°30'

Insert Cat. No.	Nominal Diameter	Helical Milling (inch)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramping Angle
SOMT12○○04-□	**40**	2.204	3.110	1°
	50	2.992	3.898	0°30'
	63	Impossible	Impossible	Impossible
SOMT12○○08-□	**40**	2.204	3.071	1°30'
	50	2.992	3.858	1°
	63	4.016	4.882	0°30'
SOMT12○○12-□	**40**	2.165	3.032	2°30'
	50	2.953	3.819	1°30'
	63	3.976	4.843	1°
SOMT12○○12-□	**40**	2.165	2.992	3°30'
	50	2.953	3.779	2°
	63	3.976	4.803	1°30'

■ Maximum Depth of Cut when Plunging



Insert Cat. No.	Maximum Depth of Cut a_e(max)
SOMT08	6mm
SOMT12	10mm

Lower the feed rate when plunging.

■ Recommended Cutting Conditions

Work Material	Insert Grade	Cutting Speed v_c(SFM)	Insert Cat. No.	ø25		ø32		ø40		ø50		ø63	
				a_p (inch)	f_z (IPT)	a_p (inch)	f_z (IPT)	a_p (inch)	f_z (IPT)	a_p (inch)	f_z (IPT)	a_p (inch)	f_z (IPT)
P General Steel Below 200HB	ACP200	330-720	**SOMT08**	0.0315	0.0315	0.0315	0.0315	-	-	0.0315	0.0315	0.0315	0.0315
			SOMT12	-	-	-	-	0.0394	0.0394	0.394	0.0394	0.0394	0.0394
P Alloy Steel Below 45HRC	ACP200	260-650	**SOMT08**	0.0275	0.0315	0.0275	0.0315	-	-	0.0275	0.0315	0.0275	0.0315
			SOMT12	-	-	-	-	0.0315	0.0394	0.0315	0.0394	0.0315	0.0394
M Stainless Steel 304, etc.	ACM300	260-540	**SOMT08**	0.0315	0.0275	0.0315	0.0275	-	-	0.0315	0.0275	0.0315	0.0275
			SOMT12	-	-	-	-	0.0394	0.0315	0.0394	0.0315	0.0394	0.0315
K Cast Iron FC, FCD	ACK300	330-720	**SOMT08**	0.0315	0.0394	0.0315	0.0394	-	-	0.0315	0.0394	0.0315	0.0394
			SOMT12	-	-	-	-	0.0394	0.0472	0.0394	0.0472	0.0394	0.0472
H Hardened Steel Below 50HRC	ACK300	135-360	**SOMT08**	0.0197	0.0197	0.0197	0.0197	-	-	0.0197	0.0197	0.0197	0.0197
			SOMT12	-	-	-	-	0.0236	0.0315	0.0236	0.0315	0.0236	0.0315

· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
The above figures are guidelines for use with BT50 machine tools.

· The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.
When tool overhang is more than L/D=3 and less than or equal to L/D=5, settings should be adjusted to approximately 70 to 80% of those indicated in the above recommended cutting conditions (a_p, f_z).
When tool overhang is more than L/D=5 and less than or equal to L/D=8, settings should be adjusted to approximately 50 to 60% of those indicated in the above recommended cutting conditions (a_p, f_z).

WFXH Shellmill Type - 8mm Inserts

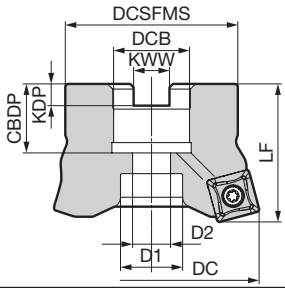
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle	Radial	−6°
	Axial	6°

1.5mm, 15°



Fig 1



Body (WFXH32000R & WFXH08000RS) Applicable Insert SOMT08 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**WFXH32000R** New	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	6	*0.3*	1
Metric	**WFXH08040RS**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	4	*0.2*	1
Metric	**WFXH08050RS**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.3*	1
Metric	**WFXH08050RS-Z6**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.3*	1
Metric	**WFXH08063RS**	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.5*	1

Inserts are sold separately. ★: Worldwide Warehouse Item ● USA stocked item

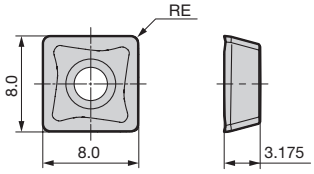
Insert

Dimensions (*mm*)

Grade		Coated Carbide						Carbide	DLC	Cermet
Process	High-speed / Light	P			K		MS	KN	N	
Process	General-purpose		PM	PM	K		MS		N	P
Process	Roughing		PM	PM		K		MS		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L	★	★	★	★	★	★	★	-	-		*0.4*	1
SOMT080308PZER-L	★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080304PZER-G	★	★	★	★	★	★	★	-	-		*0.4*	1
SOMT080308PZER-G	★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080312PZER-G	★	★	★	★	★	★	★	-	-		*1.2*	1
SOMT080308PZER-H	★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080312PZER-H	★	★	★	★	★	★	★	-	-		*1.2*	1
SOET080304PZER-G	★	★	★	★	★	★	★	-	-	★	*0.4*	1
SOET080308PZER-G	★	★	★	★	★	★	★	-	-	★	*0.8*	1
SOET080312PZER-G	★	★	★	★	★	★	★	-	-	★	*1.2*	1
SOET080302PZFR-S *	-	-	-	-	-	-	-	★	★	-	*0.2*	1
SOET080304PZFR-S *	-	-	-	-	-	-	-	★	★	-	*0.4*	1
SOET080308PZFR-S *	-	-	-	-	-	-	-	★	★	-	*0.8*	1

Fig 1



★: Worldwide Warehouse Item

*If the cutting edge strength for high efficiency milling of non-ferrous metal is insufficient, try a G-type chipbreaker (ACK300).

Recommended Cutting Conditions H139 Precautions for Use H138

Parts

Flat Screw	Wrench
	
BFTX0306IP	**2.0** TRDR08IP

N·m Recommended Tightening Torque (N·m)

SUMI-P Anti-seize cream included in the package.

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

Identification Code

WFX H 08 040 RS - Z6

WFX	H	08	040	RS	- Z6
Cutter Series	For High Efficiency Milling	Insert Size	Dia.	Metric Bore	Fine Pitch Type (Number is no. of teeth)

WFXH Shellmill Type -12mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	−6°
	Axial	6°

2.5mm, 15°

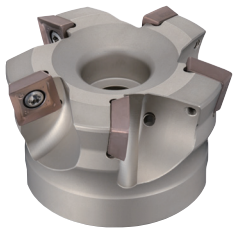
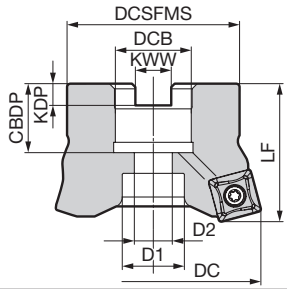


Fig 1



Body (WFXH12000RS) Applicable Insert SOMT12 Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXH12050RS**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
	WFXH12063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.4*	1

Inserts are sold separately.

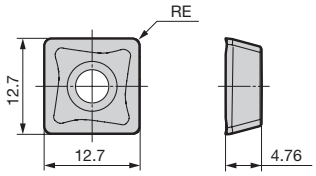
★: Worldwide Warehouse Item

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N	P		
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	-	-	-	*0.8*	1
SOMT120404PDER-G		●	●	●	●	●	●	●	-	-	-	*0.4*	1
SOMT120408PDER-G		●	●	●	●	●	●	●	-	-	●	*0.8*	1
SOMT120412PDER-G		●	●	●	●	●	●	●	-	-	-	*1.2*	1
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	*1.6*	1
SOMT120408PDER-H		●	●	●	●	●	●	●	-	-	-	*0.8*	1
SOET120408PDFR-S *		-	-	-	-	-	-	-	●	●	-	*0.8*	1

Fig 1



● USA stocked item

*If the cutting edge strength for high efficiency milling of non-ferrous metal is insufficient, try a G-type chipbreaker (ACK300).

Recommended Cutting Conditions H139 | Precautions for Use H138

Parts

Insert Screw		Wrench
	N·m	
BFTX03512IP	3.0	TRDR15IP

SUMI-P Anti-seizure cream included in the package.

Identification Code

WFX H 12 050 RS

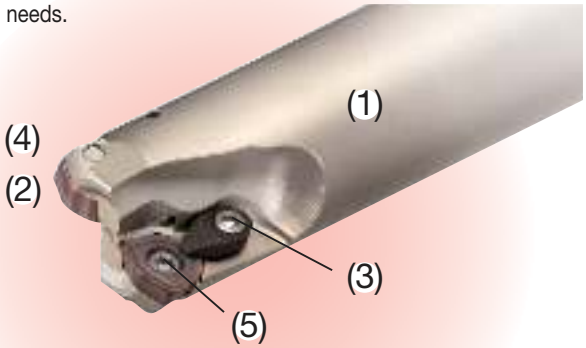
WFX	H	12	050	RS
Cutter Series	For High Efficiency Milling	Insert Size	Dia.	Metric Bore

N·m Recommended Tightening Torque (N·m)



■ General Features

The Metal Slash Mill MSX Type is a multi-purpose cutter capable of roughing at ultra-high feeds. Its wide application range dramatically boosts efficiency. Inserts are available in four sizes, ranging from ø.750" to ø6.000" diameter, to cover a wide variety of milling needs.



■ Features

(1) **Highly Durable Body** Special surface treatment improves scratch resistance

(2) **Versatile Machining Operations** Use for ramping, helical and pocketing

(3) **Double Clamp** Stable milling with a strong clamp is possible (MSX06000 type or MSX08000 type units with ø22mm or less use a single clamp)

(4) **With Coolant Hole** Improved chip evacuation with air or coolant supply hole and specially shaped pocket design

(5) **Insert Shape** Unique tool shape combines sharpness and cutting edge strength

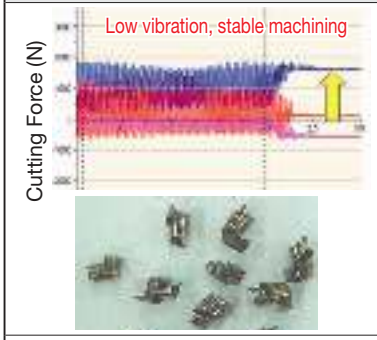
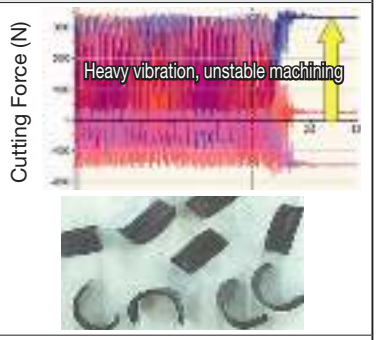
■ Insert Applications and Types

· Insert utilizes a special cutting edge profile.
· Economical, three-cornered insert

Type	General-purpose Type	Strong Edge Type
Applications	General Milling (First Recommendation)	Interrupted Milling
Appearance / Features	 Sharper Edge	 Emphasis on Fracture Resistance

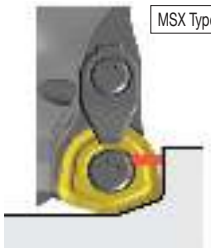
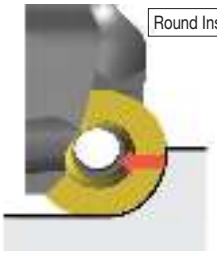
■ Cutting Performance

● Comparison of Cutting Force

MSX Type	Conventional Tool
	

Part Material: 1050
Cutting Conditions: v_c=492 SFM, f_z=0.04 IPT, a_p=0.984in, a_e=0.08in

● Shoulder Milling Comparison of MSX Type and Conventional Tool

MSX Type	Conventional Tool
Performs under high conditions  Cutting force is consistent even when depth of cut is increased, for stable cutting performance.	Prone to chatter  Greater depth of cut increases contact length, which increases cutting force.

■ Product Range

	Type	External Diameter				Applicable Insert
		Inch	Number of Teeth	MM	Number of Teeth	
Shell Type ☞H144	**MSX3/*08***	1.50" to 2.00"	4 to 5	ø40	4 to 5	WDMT 08 Type
	MSX4/*12*	2.00" to 4.00"	4 to 7	ø50 to ø63	4 to 7	WDMT 12 Type
	MSX5/*14*	2.00" to 6.00"	4 to 8	ø50 to ø100	3 to 8	WDMT 14 Type
Endmill Type ☞H145	**MSX2/*06***	0.75"	3	ø16 to ø25	2 to 3	WDMT 06 Type
	MSX3/*08*	1.00" to 1.50"	2 to 4	ø20 to ø35	2 to 4	WDMT 08 Type
	MSX4/*12*	1.25" to 1.50"	2 to 3	ø32 to ø50	2 to 4	WDMT 12 Type
	MSX5/*14*	-	-	ø40 to ø63	2 to 4	WDMT 14 Type
Modular Type ☞H212	**MSX2/*06***	0.75" to 1.00"	3	ø16 to ø25	2 to 3	WDMT 06 Type
	MSX3/*08*	1.00" to 1.25"	3	ø25 to ø35	2 to 3	WDMT 08 Type
	MSX4/*12*	-		ø32 to ø40	2 to 3	WDMT 12 Type

■ Precautions for Corner Finishing

* Corners will have remaining material or gouges with respect to the expected corner profile.

Fig 1

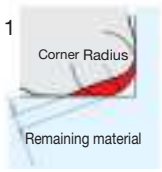
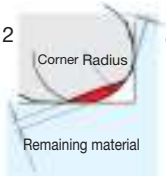


Fig 2

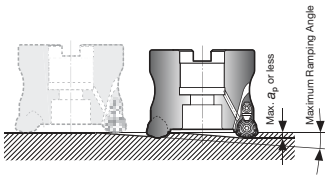


over-cut portion

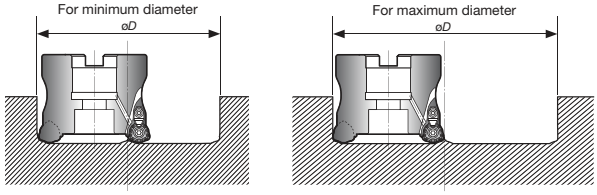
Corner Radius	MSX06000			MSX08000			MSX12000			MSX14000		
	Remaining material	over-cut portion	Fig	Remaining material	over-cut portion	Fig	Remaining material	over-cut portion	Fig	Remaining material	over-cut portion	Fig
.079	0.016	0	1	0.029	0	1	0.052	0	1	0.065	0	1
.098	0.010	0.003	2	0.023	0	1	0.046	0	1	0.059	0	1
.118				0.018	0.001	2	0.041	0	1	0.054	0	1
.138							0.035	0.00004	2	0.048	0	1
.157										0.042	0.00063	2

■ Ramping and Helical Milling

Ramping



Helical Milling



Uncut material at the center not removable with same cutter.

Uncut material at the center removable with same cutter using traverse cutting.

øDc (mm / in.)	WDMT06 Type			WDMT08 Type			WDMT12 Type			WDMT14 Type		
	Ramping	Helical Milling		Ramping	Helical Milling		Ramping	Helical Milling		Ramping	Helical Milling	
	Max. Ramping Angle	Min.	Max.	Max. Ramping Angle	Min.	Max.	Max. Ramping Angle	Min.	Max.	Max. Ramping Angle	Min.	Max.
16	6° 00'	0.827	1.181									
17	5° 00'	0.905	1.259									
18	4° 30'	1	1.339									
20	3° 30'	1.142	1.496	7° 30'	1	1.496						
22	3° 00'	1.299	1.654	5° 30'	1.142	1.654						
25	2° 00'	1.535	1.889	4° 00'	1.378	1.889						
28				3° 00'	1.614	2.126						
32				2° 30'	1.929	2.441	6° 30'	1.654	2.441			
35				2° 00'	2.165	2.677	5° 00'	1.889	2.677			
40				2° 00'	2.559	3.071	4° 00'	2.284	3.071	6° 00'	2.087	3.071
50							2° 30'	3.071	3.858	3° 30'	2.874	3.858
63							2° 00'	4.055	4.882	2° 00'	3.898	4.882
80										1° 30'	5.236	6.221
100										1° 00'	6.811	7.795
0.750	4° 00'	1.11	1.417									
1.000	2° 00'	1.58	1.92	4° 00'	1.42	1.92						
1.250				2° 30'	1.93	2.4	6° 30'	1.62	2.4			
1.500				1° 30'	2.45	2.91	4° 00'	2.13	2.91			
2.000				1° 00'	3.39	3.91	2° 30'	3.08	3.91	3° 30'	2.90	3.91
2.500							1° 30'	4.08	4.91	2° 30'	3.90	4.91
3.000							1° 00'	5.08	5.91	1° 30'	4.90	5.91
4.000							0° 30'	7.08	7.91	1° 00'	6.90	7.91
5.000										0° 30'	8.90	9.91
6.000										0° 30'	10.90	11.91

■ Recommended Cutting Conditions

Insert Cat. No.	Max. a_p	RE	Approx. RE
WDMT0603	1.0	1.5	2.0
WDMT0804	1.5	2.0	2.5
WDMT1205	2.0	2.0	3.0
WDMT1406	2.5	2.0	3.5

Insert Cat. No.	Max. a_p	RE (in)	Approx. RE (in.)
WDMT0603	0.039"	0.0591"	0.0787"
WDMT0804	0.059"	0.0787"	0.098"
WDMT1205	0.079"	0.0787"	0.118"
WDMT1406	0.098"	0.0787"	0.138"

(a_p: Depth of Cut, f_z: Feed Rate)

Work Material	Insert Grade	Cutting Speed v_c (SFM)	Insert Cat. No.	Endmill Type										Shell Type			
				ø16		ø20		ø25		ø32		ø40		ø50/ø63		ø80/ø100	
				a_p (in)	f_z (IPT)	a_p (in)	f_z (IPT)	a_p (in)	f_z (IPTt)	a_p (in)	f_z (IPT)	a_p (in)	f_z (IPT)	a_p (in)	f_z (IPT)	a_p (in)	f_z (IPT)
P General Steel Below 200HB	ACP200	330-**500**-650	**WDMT0603**	0.032	0.032	0.032	0.032	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.039	0.039	0.039	0.047	0.039	0.047	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.047	0.055	0.047	0.055	0.047	0.055	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.059	0.059	0.059	0.059	0.059	0.059
P Alloy Steel Below 45HRC	ACP200	260-**430**-590	**WDMT0603**	0.028	0.032	0.028	0.032	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.032	0.039	0.032	0.047	0.032	0.047	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.039	0.055	0.039	0.055	0.039	0.055	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.051	0.059	0.051	0.059	0.051	0.059
M Stainless Steel SUS304, etc.	ACP300	260-**400**-500	**WDMT0603**	0.032	0.028	0.032	0.028	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.039	0.032	0.039	0.032	0.039	0.032	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.047	0.047	0.047	0.047	0.047	0.047	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.059	0.051	0.059	0.051	0.059	0.051
K Cast Iron FC, FCD	ACK200 ACK300	330-**500**-650	**WDMT0603**	0.032	0.039	0.032	0.039	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.039	0.047	0.039	0.055	0.039	0.055	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.047	0.059	0.047	0.059	0.047	0.059	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.059	0.071	0.059	0.071	0.059	0.071
H Hardened Steel Below 50HRC	ACK200 ACK300	130-**260**-330	**WDMT0603**	0.020	0.020	0.020	0.020	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.020	0.020	0.020	0.032	0.020	0.032	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.024	0.039	0.024	0.039	0.024	0.039	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.039	0.047	0.039	0.047	0.039	0.047

· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity. The above figures are guidelines for use with BT50 machine tools.

· The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.
When tool overhang is more than L/D=3 and less than or equal to L/D=5, settings should be adjusted to approximately 70 to 80% of those indicated in the above recommended cutting conditions (a_p, f_z).
When tool overhang is more than L/D=5 and less than or equal to L/D=8, settings should be adjusted to approximately 50 to 60% of those indicated in the above recommended cutting conditions (a_p, f_z).

MSX SHELLMILL (8mm / 12mm / 14mm insert) Type

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel | S Exotic Alloy

Rake Angle		
	Radial	–3° to –8°
	Axial	8°

1.5mm 20° (08000 Type) | .0591" 20° (08000 Type) | 2.0mm 20° (12000 Type) | .079" 20° (12000 Type) | 2.5mm 20° (14000 Type) | .096" 20° (14000 Type)



Fig 1

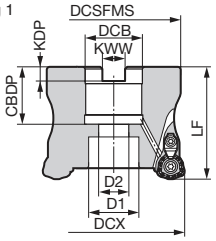
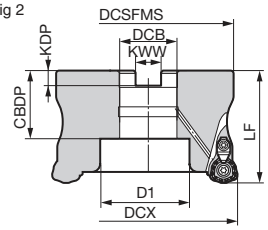


Fig 2



Body with Applicable Insert WDMT08 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**MSX31500R**	●	1.500	1.339	1.530	.750	.312	.190	.750	.609	.406	4	0.58	1
Inch	**MSX32000R**	●	2.000	1.850	2.000	.750	.312	.190	.750	.609	.406	5	0.74	1
Metric	**MSX08040RS**	★	*40*	*37*	*45*	*16*	*8.4*	*5.6*	*18*	*13.5*	*9*	4	*0.2*	1

Body with Applicable Insert WDMT12 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**MSX42000R**	●	2.000	1.850	2.000	.750	.312	.190	.750	.609	.406	4	0.74	1
Inch	**MSXM42000R**	●	2.000	1.850	2.000	.750	.312	.190	.750	.609	.406	5	0.77	1
Inch	**MSX42500R**	●	2.500	2.362	2.000	1.000	.375	.220	.750	.797	.530	5	1.10	1
Inch	**MSX43000R**	●	3.000	2.756	2.000	1.000	.375	.220	.750	.797	.530	6	1.76	1
Inch	**MSX44000R-1.25**	●	4.000	3.740	2.500	1.250	.500	.280	.750	1.000	.656	7	4.85	1
Inch	**MSX44000R-1.50**	●	4.000	3.740	2.500	1.500	.625	.380	1.000	2.000	.781	7	5.85	1
Metric	**MSX12050RS**	★	*50*	*47*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
Metric	**MSX12063RS**	★	*63*	*60*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.6*	1

Body with Applicable Insert WDMT14 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**MSX52000R**	●	2.000	1.850	2.000	.750	.312	.190	.750	.609	.406	4	0.74	1
Inch	**MSX52500R**	●	2.500	2.362	2.000	1.000	.375	.220	.750	.797	.531	5	1.10	1
Inch	**MSX53000R**	●	3.000	2.756	2.000	1.000	.375	.220	.750	.797	.531	5	1.76	1
Inch	**MSX54000R-1.25**	●	4.000	3.740	2.500	1.250	.500	.280	.750	1.000	.656	6	4.85	1
Inch	**MSX54000R-1.50**	●	4.000	3.740	2.500	1.500	.625	.380	1.000	2.000	.781	6	5.85	1
Inch	**MSX55000R**	●	5.000	3.937	2.500	1.500	.625	.380	1.000	2.000	.781	7	7.41	1
Inch	**MSX56000R**	●	6.000	3.937	2.500	1.500	.625	.380	1.000	2.000	.781	8	9.63	1
Metric	**MSX14050RS**	★	*50*	*47*	*50*	*22*	*10.4*	*6.3*	*20*	*17*	*11*	3	*0.3*	1
Metric	**MSX14063RS**	★	*63*	*60*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.6*	1
Metric	**MSX14080RS**	★	**80*	*76*	*63*	*27*	*12.4*	*7.0*	*25*	*20*	*13.5*	5	*1.4*	1
Metric	**MSX14100RS**	★	*100*	*96*	*63*	*32*	*14.4*	*8.5*	*32*	*44*		6	*2.2*	2
Metric	**MSX14080R**	★	**80*	*76*	*63*	*31.75*	*12.7*	*8.0*	*32*	*28*	*17*	5	*1.3*	1
Metric	**MSX14100R**	★	**100*	*96*	*63*	*31.75*	*12.7*	*8.0*	*32*	*28*	*17*	6	*2.4*	1

Inserts are sold separately. ● USA stocked item ★: Worldwide Warehouse Item

Recommended Cutting Conditions H143

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

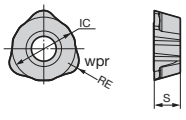
Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide											
Process	High-speed / Light			K		MS							
	General-purpose	PM	PM	K		MS	MS						
	Roughing	PM	PM		K		MS						

Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Inscribed Circle IC	Thickness S	Nose Radius RE	Wiper Facet Length wpr	Applicable Cutter	Fig
General-purpose	**WDMT0804ZDTR**	●	●	●	●	●	●	.335" / *8.5*	.157" / *4.0*	.079" / *2.0*	0.035 / *0.9*	MSX08000R Type	1
General-purpose	**WDMT1205ZDTR**	●	●	●	●	●	●	.473" / *12*	.197" / *5.0*	.079" / *2.0*	0.063 / *1.6*	MSX12000R Type	1
General-purpose	**WDMT1406ZDTR**	●	●	●	●	●	●	.551" / *14*	.236" / *6.0*	.079" / *2.0*	0.079 / *2.0*	MSX14000R Type	1
Honed Type	**WDMT0804ZDTR-H**	●	●	●	●	●	●	.335" / *8.5*	.157" / 4.0	.079" / *2.0*	0.035 / *0.9*	MSX08000R Type	1
Honed Type	**WDMT1205ZDTR-H**	●	●	●	●	●	●	.473" / *12*	.197" / 5.0	.079" / *2.0*	0.063 / *1.6*	MSX12000R Type	1
Honed Type	**WDMT1406ZDTR-H**	●	●	●	●	●	●	.551" / *14*	.236" / 6.0	.079" / *2.0*	0.079 / *2.0*	MSX14000R Type	1

Fig 1



Parts see page N34 for coolant through Bolts

Applicable Body	Flat Screw	N·m	Wrench	Clamp	C-Ring	Clamp Screw
MSX08000R Type	BFTX0306IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08
MSX12000R Type	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15
MSX14000R Type	BFTX0511IP	5.0	TRDR20IP	CCH4.5	CR03	BFTX04513IP20

N·m Recommended Tightening Torque (N·m)

Identification Code - Inch

MSX 3 2000 R

Cutter Series | Insert Size | Cutter Dia. 2.000" | Feed Direction

Identification Code - Metric

MSX 08 040 R S

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

MSX Endmill (8mm / 12mm / 14mm insert) Type

P Steel M Stainless Steel K Cast Iron H Hardened Steel

Rake Angle	
Radial	–3° to –8°
Axial	8°

1.0mm 20° .039" 20° (06000 Type) | 1.5mm 20° .0591" 20° (08000 Type) | 2.0mm 20° .079" 20° (12000 Type) | 2.5mm 20° .096" 20° (14000 Type)

Modular Type H210

Fig. 1 (Single Clamp)



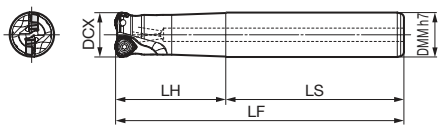
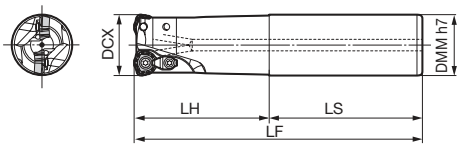


Fig. 2 (Double Clamp)



Body with Applicable Insert WDMT06 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lb/*kg*)	Fig
Inch	**MSX20750EW**	●	0.750	0.750	2.000	2.031	4.000	3	.88	1
	MSX20750ELC	●	0.750	0.750	2.000	6.000	8.000	3	.88	1
Metric	**MSX06016ES**	★	*16*	*16*	*30*	*80*	*110*	2	*0.2*	1
	MSX06016EM	★	*16*	*16*	*70*	*80*	*150*	2	*0.2*	1
	MSX06017EM	★	*17*	*16*	*20*	*130*	*150*	2	*0.2*	1
	MSX06018EM	★	*18*	*16*	*20*	*130*	*150*	2	*0.2*	1
	MSX06020ES	★	*20*	*20*	*50*	*80*	*130*	3	*0.3*	1
	MSX06020EM	★	*20*	*20*	*100*	*80*	*180*	3	*0.4*	1
	MSX06022EM	★	*22*	*20*	*30*	*150*	*180*	3	*0.4*	1
	MSX06025ES	★	*25*	*25*	*60*	*80*	*140*	3	*0.5*	1
	MSX06025EM	★	*25*	*25*	*120*	*130*	*250*	3	*0.8*	1

Body with Applicable Insert WDMT12 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Inch	**MSX41250EW**	●	1.250	1.250	2.500	2.281	4.781	2	1.23	2
	MSX41250ELC	●	1.250	1.250	2.500	7.500	10.000	2	2.31	2
	MSX41500EW	●	1.500	1.250	2.500	2.281	4.781	2	1.47	2
	MSX41500ELC	●	1.500	1.500	2.500	7.500	10.000	2	3.21	2
	MSXF41500EW	●	1.500	1.500	2.500	2.281	4.781	3	1.53	2
Metric	**MSX12032ES**	★	*32*	*32*	*70*	*80*	*150*	2	*0.8*	2
	MSX12032EM	★	*32*	*32*	*120*	*130*	*250*	2	*1.4*	2
	MSX12035EM	★	*35*	*32*	*50*	*200*	*250*	2	*1.4*	2
	MSX12040ES	★	*40*	*32*	*50*	*100*	*150*	3	*0.9*	2
	MSX12040EM	★	*40*	*32*	*50*	*200*	*250*	3	*1.5*	2
	MSX12050EM	★	*50*	*42*	*50*	*200*	*250*	4	*2.6*	2

Body with Applicable Insert WDMT08 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Inch	**MSX31000EW**	●	1.000	1.000	2.500	2.281	4.781	2	1.04	1
	MSX31000ELC	●	1.000	1.000	2.500	7.500	10.000	2	2.13	1
	MSXF31000EW	●	1.000	1.000	2.500	2.281	4.781	3	1.09	1
	MSXF31250EW	●	1.250	1.250	2.500	2.281	4.781	3	1.24	1
	MSXF31500EW	●	1.500	1.500	2.500	2.281	4.781	4	1.31	1
Metric	**MSX08020ES**	★	*20*	*20*	*50*	*80*	*130*	2	*0.3*	1
	MSX08020EM	★	*20*	*20*	*100*	*80*	*180*	2	*0.3*	1
	MSX08022EM	★	*22*	*20*	*30*	*150*	*180*	2	*0.4*	1
	MSX08025ES	★	*25*	*25*	*60*	*80*	*140*	2	*0.4*	2
	MSX08025EM	★	*25*	*25*	*120*	*130*	*250*	2	*0.8*	2
	MSX08028EM	★	*28*	*25*	*40*	*210*	*250*	2	*0.9*	2
	MSX08032ES	★	*32*	*32*	*70*	*80*	*150*	3	*0.8*	2
	MSX08032EM	★	*32*	*32*	*120*	*130*	*250*	3	*1.4*	2
	MSX08035EM	★	*35*	*32*	*50*	*200*	*250*	3	*1.5*	2

Body with Applicable Insert WDMT14 Type

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**MSX14040ES**	★	*40*	*32*	*50*	*100*	*150*	2	*0.9*	2
	MSX14040EM	★	*40*	*32*	*50*	*200*	*250*	2	*1.5*	2
	MSX14050ES	★	*50*	*42*	*50*	*100*	*150*	3	*1.5*	2
	MSX14050EM	★	*50*	*42*	*50*	*200*	*250*	3	*2.5*	2
	MSX14063ES	★	*63*	*42*	*50*	*100*	*150*	4	*1.7*	2
	MSX14063EM	★	*63*	*42*	*50*	*200*	*250*	4	*2.8*	2

Inserts are sold separately.

Recommended Cutting Conditions H143

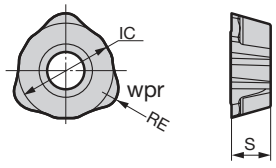
● USA stocked item ★: Worldwide Warehouse Item

Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide											
Process	High-speed / Light			K		MS							
	General-purpose	PM	PM	K		MS	MS						
	Roughing	PM	PM		K		MS						
Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Inscribed Circle IC	Thickness S	Nose Radius RE	Wiper Facet Length wpr	Applicable Cutter	Fig
General-purpose	**WDMT0603ZDTR**	●	●	●	●	●	●	.250" / **6.35**	.118" / *3.0*	.071" / *1.5*	.028" / *0.7*	MSX06000E Type	1
	WDMT0804ZDTR	●	●	●	●	●	●	.335" / *8.5*	.157" / *4.0*	.079" / *2.0*	.035" / *0.9*	MSX08000R Type	1
	WDMT1205ZDTR	●	●	●	●	●	●	.473" / *12*	.197" / *5.0*	.079" / *2.0*	.063" / *1.6*	MSX12000R Type	1
	WDMT1406ZDTR	●	●	●	●	●	●	.551" / *14*	.236" / *6.0*	.079" / *2.0*	.079" / *2.0*	MSX14000R Type	1
Honed Type	**WDMT0603ZDTR-H**	●	●	●	●	●	●	.250" / **6.35**	.118" / *3.0*	.071" / *1.5*	.028" / *0.7*	MSX06000E Type	1
	WDMT0804ZDTR-H	●	●	●	●	●	●	.335" / *8.5*	.157" / *4.0*	.079" / *2.0*	.035" / *0.9*	MSX08000R Type	1
	WDMT1205ZDTR-H	●	●	●	●	●	●	.473" / *12*	.197" / *5.0*	.079" / *2.0*	.063" / *1.6*	MSX12000R Type	1
	WDMT1406ZDTR-H	●	●	●	●	●	●	.551" / *14*	.236" / *6.0*	.079" / *2.0*	.079" / *2.0*	MSX14000R Type	1

Fig 1



Parts

Applicable Inch Body	Applicable *Metric* Body	Flat Screw	N·m	Wrench	Clamp	C-Ring	Clamp Screw
MSX20000 Type	*MSX06000E Type*	BFTX02505IP	1.5	TRDR08IP	-	-	-
MSX30000 Type ≤ 1.0"	–	BFTX0305IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08
—	*MSX08020E, MSX08022E Type*	BFTX0306IP	2.0	TRDR08IP	-	-	-
MSX30000 Type ≥ 1.0"	*Other MSX08000E types not described above*	BFTX0306IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08
MSX40000 Type	*MSX12000E Type*	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15
MSX50000 Type	*MSX14000E Type*	BFTX0511IP	5.0	TRDR20IP	CCH4.5	CR03	BFTX04513IP20

Identification Code - Inch

MSX 3 1000 E W

Cutter Series | Insert Series | Cutter Dia. 1.000" | Endmill Type | W: Weldon C: Cylindrical

Identification Code - Metric

MSX 06 016 E S

Cutter Series | Insert Size | Cutter Dia. | Endmill Type | S: Short M: Medium

N·m Recommended Tightening Torque (N·m)



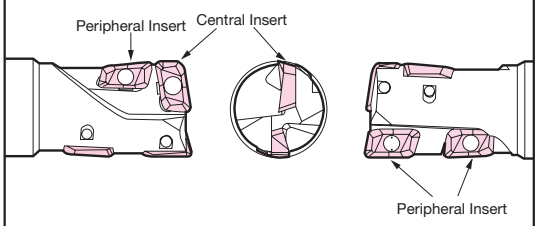
■ General Features

The WaveMill WMM Type performs a variety of operations such as groove milling, shoulder milling, ramping, pocketing, drilling, helical milling, etc., all with a single tool.
With low cutting force and excellent chip evacuation, it is also effective for consolidating tools.

■ Features and Applications

- The WMM Type alone can perform a number of operations such as shoulder milling, slot milling and drilling
- Excellent for high-efficiency ramping, helical drilling and pocketing
- Uses WaveMill inserts for sharpness and cutting edge strength
- The reduction in cutting force enables the same chip evacuation as conventional tools but with less force required
- Easy tool management as only 1 type of insert is used
- Also ideal for stainless steel machining

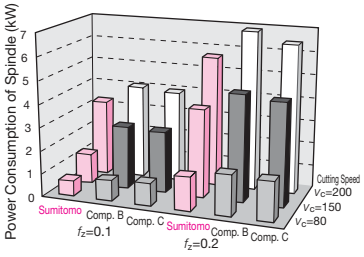
● WMM Type insert arrangement



■ Product Range and Performance

Type	Description	Cutter Dia. (mm) ø20 – ø30 – ø40
2000E	Standard Type	20 – 30
2000EL	Long Type	20 – 30
2000ELH	Long Type w / Coolant Hole	20 – 30
2000EXLH	Extra-Long Type w / Coolant Hole	22 – 30
3000E	Standard Type	32 – 40
3000EL	Long Type	32 – 40
3000ELH	Long Type w / Coolant Hole	32 – 40
3000EXLH	Extra-Long Type w / Coolant Hole	35 – 40

● Performance Comparison (Groove Milling)



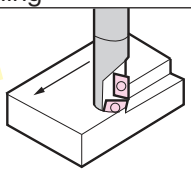
Diameter of Tool: ø25
Work Material: S50C
Cutting Conditions: v_C=80,150,200m/min, f_z=0.1, 0.2mm/t
a_p=15mm, Tool Overhang=40mm

■ Various Milling Examples
Tool: WMM2025E

● Shoulder Milling

304 Stainless Steel

Also cuts stainless steel

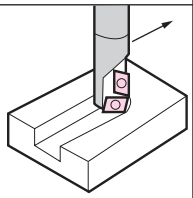


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Depth of Cut: a_p=1.00", a_e=0.20"
Cutting Speed: v_C=394 SFM, Feed Rate: f_Z=0.006 IPT
Air Blast

● Slot Milling

Gray Cast Iron

Deep slot milling can be performed easily, Easy chip removal

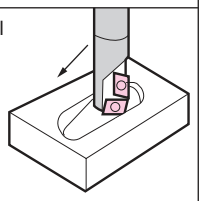


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ310)
Depth of Cut: a_p=0.60" , a_e=1.00"
Cutting Speed: v_C=590 SFM, Feed Rate: f_Z=0.005 IPT
Air Blast

● Ramping

1050 Block Material

Capable of tapered recess cutting without prepared holes

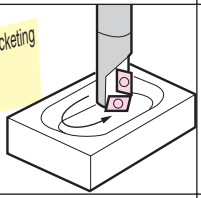


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Cutting Width: a_e=1.00", Depth: a_p=0.60"
Cutting Speed: v_C=656 SFM, Feed Rate: f_Z=0.004 IPT
Ramp Angle: θ=15°
Air Blast

● Pocketing

1050 Block Material

Capable of traverse cutting and pocketing with continuous lateral feed from the initial drilling or ramping process

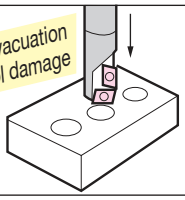


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Machining done continuously from a deep drilling process with a depth of 0.60"
Cutting Width: a_e=1.00", Depth: a_p=0.60"
Cutting Speed: v_C=656 SFM, Feed Rate: f_Z=0.004 IPT
Air Blast

● Drilling

1050 Block Material

Capable of easy chip evacuation and drilling without tool damage

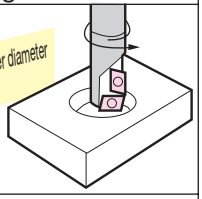


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Bore Diameter: ø1.00", Depth: a_p=0.60"
Cutting Speed: v_C=656 SFM, Feed Rate: f=0.004 IPR
Step Feed: 0.20"
Air Blast

● Helical Milling

1050 Block Material

Capable of large boring with diameters 1.2-1.8 times the cutter diameter without prepared holes



Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Bore Diameter: ø1.6", Depth: a_p=0.80"
Cutting Speed: v_C=984 SFM, Feed Rate: f=0.004 IPR
Axial Feed: 0.60in/Pitch
Air Blast

WMM Inch & Metric (10 mm Insert) Type

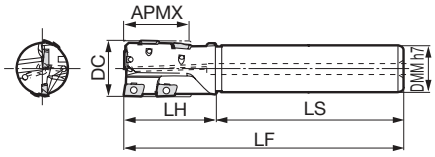
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	15° to 16°
	Axial	7° to 11°

1.05- 1.39" 90° | 17 to 35mm 90°

Fig 1





Body (Standard Type / WMM2000E Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM2020E	★	*20*	*20*	*17*	*35*	*95*	*130*	3	1	1
WMM2021E	★	*21*	*20*	*17*	*35*	*95*	*130*	3	1	1
WMM2025E	★	*25*	*25*	*26*	*40*	*100*	*140*	4	1	1
WMM2026E	★	*26*	*25*	*26*	*40*	*100*	*140*	4	1	1
WMM2030E	★	*30*	*25*	*35*	*50*	*100*	*150*	5	1	1

Body (Long Type / With Coolant Holes)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM2020ELH	★	*20*	*20*	*17*	*60*	*125*	*185*	3	1	1
WMM2021ELH	★	*21*	*20*	*17*	*35*	*150*	*185*	3	1	1
WMM2025ELH	★	*25*	*25*	*26*	*75*	*145*	*220*	4	1	1
WMM2026ELH	★	*26*	*25*	*26*	*40*	*180*	*220*	4	1	1
WMM2030ELH	★	*30*	*25*	*35*	*50*	*180*	*230*	5	1	1

★Worldwide Warehouse Item ● USA stocked item

Milling Cutter Body (Inch Type)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM10100M	●	1.000	1.000	1.05	1.719	2.281	4.000	4	1	1
WMM10125M	●	1.250	1.250	1.39	2.719	2.281	5.000	5	1	1

Milling Cutter Body (Long Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM2020EL	★	*20*	*20*	*17*	*60*	*125*	*185*	3	1	1
WMM2021EL	★	*21*	*20*	*17*	*35*	*150*	*185*	3	1	1
WMM2025EL	★	*25*	*25*	*26*	*75*	*145*	*220*	4	1	1
WMM2026EL	★	*26*	*25*	*26*	*40*	*180*	*220*	4	1	1
WMM2030EL	★	*30*	*25*	*35*	*50*	*180*	*230*	5	1	1

Body (Extra-Long Type / With Coolant Holes)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM2022EXLH		*22*	*20*	*17*	*35*	*215*	*250*	3	1	1
WMM2027EXLH		*27*	*25*	*26*	*40*	*280*	*320*	4	1	1
WMM2030EXLH		*30*	*25*	*35*	*50*	*300*	*350*	5	1	1

Inserts are sold separately.

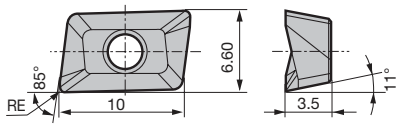
Dimensions (inch / *mm*)

Insert

Grade		Coated Carbide						
Process	High-speed / Light				K N	N		
	General-purpose	M	P	K		N		
	Roughing							
Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Nose Radius RE	Fig
APMT103504PDER		●	●	●	-	-	0.016 / *0.4*	1
APMT103508PDER		●	●	●	-	-	0.032 / *0.8*	1
APMT103512PDER		●	●	●	-	-	0.047 / *1.2*	1
APMT103504PDER-H		●	●	●	-	-	0.016 / *0.4*	1
APMT103508PDER-H		●	●	●	-	-	0.032 / *0.8*	1
APMT103512PDER-H		●	●	●	-	-	0.047 / *1.2*	1
APET103504PDER-F		●	●	●	-	-	0.016 / *0.4*	1
APET103504PDFR-S		-	-	-	●	●	0.016 / *0.4*	1

-H: Strong Edge Type, F: Ground Insert, S: For Aluminum Alloy.

Fig 1



Spare Parts (Common)

Applicable Endmill	Flat Screw		Wrench	Anti-seize Cream
WMM2000 Type	BFTX02506N	N·m 1.5	TRD08	SUMI-P
WMM3000 Type	BFTX03584	N·m 3.0	TRD15	SUMI-P

■ Recommended Cutting Conditions Diameter ø20 to ø26mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t)	Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80- **120** -160	Shoulder Milling	0.05- **0.13** -0.20	ACZ330
				Groove Milling	0.05- **0.09** -0.12	
				Drilling	0.05- **0.12** -0.18	
M	Stainless Steel	-	80- **100** -120	Shoulder Milling	0.05- **0.10** -0.15	ACZ350
				Groove Milling	0.05- **0.08** -0.10	
				Drilling	0.05- **0.09** -0.12	
K	Cast Iron	250HB	70- **150** -180	Shoulder Milling	0.05- **0.13** -0.20	ACZ310
				Groove Milling	0.05- **0.09** -0.12	
				Drilling	0.05- **0.12** -0.18	
N	Aluminum Alloy	-	200- **300** -500	Shoulder Milling	0.10- **0.15** -0.20	DL1000
				Groove Milling	0.05- **0.08** -0.10	
				Drilling	0.05- **0.08** -0.10	

■ Recommended Cutting Conditions Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t)	Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80- **120** -160	Shoulder Milling	0.05- **0.15** -0.25	ACZ330
				Groove Milling	0.05- **0.10** -0.15	
				Drilling	0.05- **0.13** -0.20	
M	Stainless Steel	-	80- **100** -120	Shoulder Milling	0.05- **0.13** -0.20	ACZ350
				Groove Milling	0.05- **0.09** -0.12	
				Drilling	0.05- **0.12** -0.18	
K	Cast Iron	250HB	70- **150** -180	Shoulder Milling	0.05- **0.15** -0.25	ACZ310
				Groove Milling	0.05- **0.10** -0.15	
				Drilling	0.05- **0.13** -0.20	
N	Aluminum Alloy	-	200- **300** -500	Shoulder Milling	0.10- **0.15** -0.20	DL1000
				Groove Milling	0.05- **0.08** -0.10	
				Drilling	0.05- **0.08** -0.10	

Note The cutting conditions are guidelines. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WMM Inch & Metric (16 mm Insert) Type

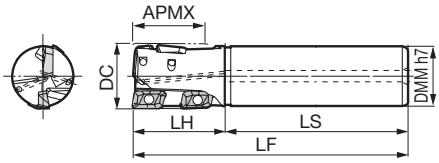
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	17° to 19°
	Axial	7° to 11°

1.54" 90° | 39mm 90°

Fig 1





Body (Standard Type / WMM3000E Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM3032E	★	*32*	*32*	*39*	*50*	*100*	*150*	4	1	1
WMM3033E	★	*33*	*32*	*39*	*50*	*100*	*150*	4	1	1
WMM3035E	★	*35*	*32*	*39*	*50*	*100*	*150*	4	1	1
WMM3040E	★	*40*	*32*	*39*	*55*	*105*	*160*	4	1	1
WMM2030E	★	*30*	*25*	*35*	*50*	*100*	*150*	5	1	1

Body (Long Type / With Coolant Holes)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM3032ELH	★	*32*	*32*	*39*	*90*	*140*	*230*	4	1	1
WMM3033ELH	★	*33*	*32*	*39*	*50*	*180*	*230*	4	1	1
WMM3035ELH	★	*35*	*32*	*39*	*50*	*180*	*230*	4	1	1
WMM3040ELH	★	*40*	*32*	*39*	*55*	*185*	*240*	4	1	1

Milling Cutter Body (Inch Type)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM16150M	●	1.500	1.250	1.54	2.719	2.281	5.000	4	1	1

Milling Cutter Body (Long Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM3032EL	★	*32*	*32*	*39*	*90*	*140*	*230*	4	1	1
WMM3033EL	★	*33*	*32*	*39*	*50*	*180*	*230*	4	1	1
WMM3035EL	★	*35*	*32*	*39*	*50*	*180*	*230*	4	1	1
WMM3040EL	★	*40*	*32*	*39*	*55*	*185*	*240*	4	1	1

Body (Extra-Long Type / With Coolant Holes)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM3035EXLH		*35*	*32*	*39*	*50*	*320*	*370*	4	1	1
WMM3040EXLH		*40*	*32*	*39*	*55*	*365*	*420*	4	1	1

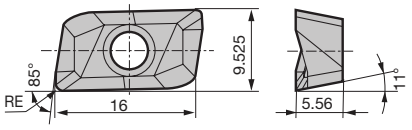
Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide						
Process	High-speed / Light				K N	N		
	General-purpose	M	P	K		N		
	Roughing							
Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Nose Radius RE	Fig
APMT160508PDER		●	●	●	-	-	0.031 / *0.8*	1
APMT160512PDER		●	●	●	-	-	0.047 / *1.2*	1
APMT160516PDER		●	●	●	-	-	0.063 / *1.6*	1
APMT160508PDER-H		●	●	●	-	-	0.031 / *0.8*	1
APMT160512PDER-H		●	●	●	-	-	0.047 / *1.2*	1
APMT160516PDER-H		●	●	●	-	-	0.063 / *1.6*	1
APMT160520PDER-H*		●	●	●	-	-	0.079 / *2.0*	1
APMT160530PDER-H*		●	●	●	-	-	0.118 / *3.0*	1
APMT160540PDER-H*		●	●	●	-	-	0.157 / *4.0*	1
APMT160550PDER-H*		●	●	●	-	-	0.197 / *5.0*	1
APMT160560PDER-H*		●	●	●	-	-	0.236 / *6.0*	1
APET160508PDER-F		●	●	●	-	-	0.031 / *0.8*	1
APET160508PDFR-S		-	-	-	●	●	0.031 / *0.8*	1

Fig 1



-H: Strong Edge Type, F: Ground Insert, S: For Aluminum Alloy.

* marked inserts require modification of the cutter body. Correct the tool diameter by +0.5mm before use.

Parts

Applicable Endmill	Flat Screw		Wrench	Anti-seize Cream
WMM2000 Type	BFTX02506N	N·m 1.5	TRD08	SUMI-P
WMM3000 Type	BFTX03584	N·m 3.0	TRD15	SUMI-P

■ Recommended Cutting Conditions Blade Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t)	Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80-**120**-160	Shoulder Milling	0.05-**0.15**-0.25	ACZ330
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
M	Stainless Steel	-	80-**100**-120	Shoulder Milling	0.05-**0.13**-0.20	ACZ350
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
K	Cast Iron	250HB	70-**150**-180	Shoulder Milling	0.05-**0.15**-0.25	ACZ310
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
N	Aluminum Alloy	-	200-**300**-500	Shoulder Milling	0.10-**0.15**-0.20	DL1000
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.08**-0.10	

Note The cutting conditions are guidelines. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

MEMO

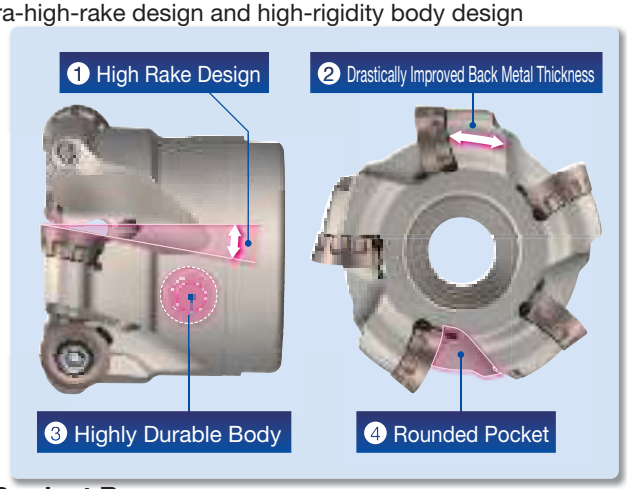


■ General Features

SEC-Wave Radius Mill RSX type is a radius cutter that enables stable machining even when using machines with low clamp rigidity, thanks to a body design that achieves excellent sharpness and rigidity.
Lineup of ACM Series grades for stainless steel/exotic alloy, ACP200 grade for steel and ACK300 grade for cast iron to suit a wide range of work materials.
RSX08000 and RSX20000 lineup extended to support a wide range of machining.

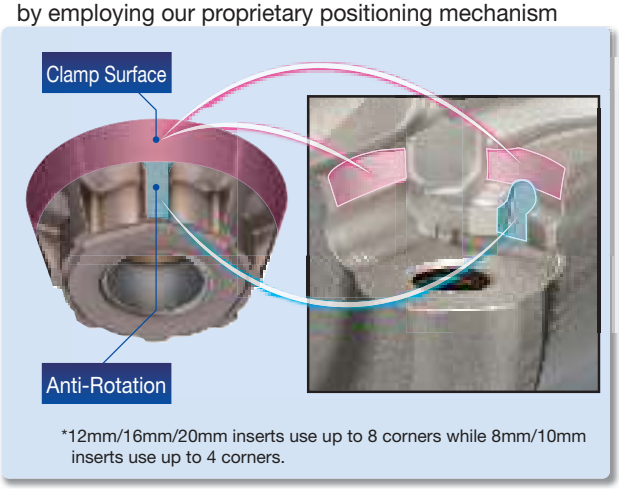
■ Low-resistance, Low-vibration Design

Achieves low-resistance, low-vibration machining thanks to ultra-high-rake design and high-rigidity body design



■ Excellent Operability

Enables easy corner control with high accuracy and operability by employing our proprietary positioning mechanism



*12mm/16mm/20mm inserts use up to 8 corners while 8mm/10mm inserts use up to 4 corners.

■ Product Range

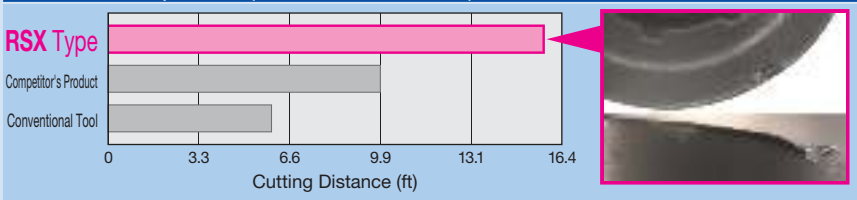
Type		Insert Size	Type	Cutter Dia. (inch) ø1.00	ø1.25	ø1.50	ø2.00	ø2.50	ø3.00	ø4.00	ø5.00	ø6.00
Shell Type	Standard	10	RSX32000 R				●					
		12	RSX40000 R				●	●	●	●	●	●
		16	RSX50000 R					●	●	●	●	●
 H153	Fine-Pitch	10	RSXF32000 R				●					
		12	RSXF40000 R				●	●	●	●	●	●
		16	RSXF50000 R					●	●	●	●	●
Shank Type	Standard	10	RSX30000 EW	●	●	●						
		12	RSX40000 EW		●	●						
 H159	Flne-Pitch	10	RSXF30000 EW	●	●	●						
		12	RSXF40000 EW		●	●						
Modular Type	Standard	10	RSX30000 M	●	●							
		12	RSX40000 M		●	●						
 H213	Fine-Pitch	10	RSXF30000 M	●	●							
		12	RSXF40000 M		●	●						

Type		Insert Size	Type	Cutter Dia. (inch) ø1.00	ø1.25	ø1.50	ø2.00	ø2.50	ø3.00	ø4.00	ø5.00	ø6.00
Shell Type	Standard	10	RSX32000 R				●					
		12	RSX40000 R				●	●	●	●	●	●
		16	RSX50000 R					●	●	●	●	●
	Fine-Pitch	10	RSXF32000 R				●					
		12	RSXF40000 R				●	●	●	●	●	●
		16	RSXF50000 R					●	●	●	●	●
Shank Type	Standard	10	RSX30000 EW	●	●	●						
		12	RSX40000 EW		●	●						
	Flne-Pitch	10	RSXF30000 EW	●	●	●						
		12	RSXF40000 EW		●	●						
Modular Type	Standard	10	RSX30000 M	●	●							
		12	RSX40000 M		●	●						
	Fine-Pitch	10	RSXF30000 M	●	●							
		12	RSXF40000 M		●	●						

●: Inch in stock, Blank: Not available

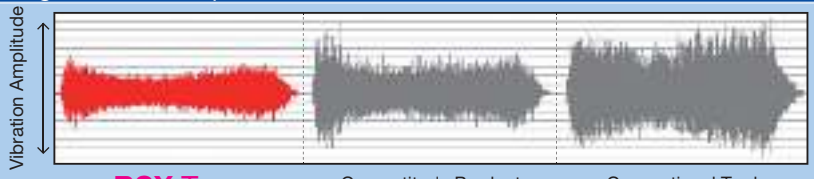
■ Cutting Performance

Tool Life Comparison (Fracture Resistance)



Achieves a tool life approximately 1.6 times longer than that of our competitors' products

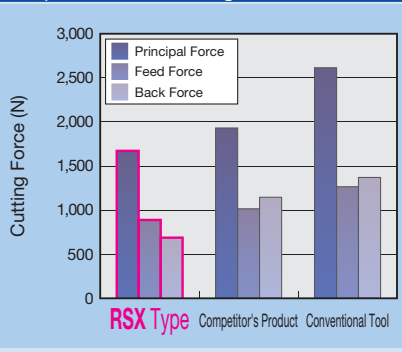
Cutting Vibration Comparison



RSX Type Competitor's Product Conventional Tool

Reduced by approximately 15% compared to competitors' products

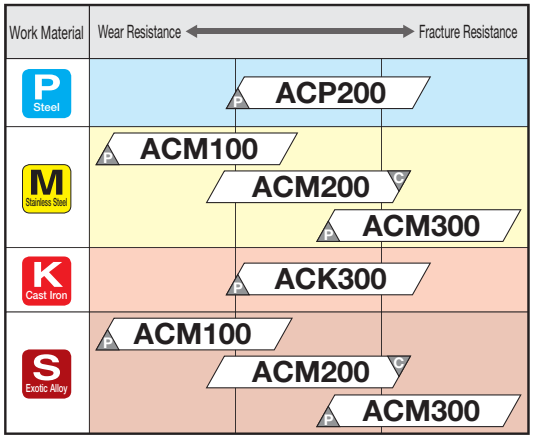
Comparison of Cutting Force



Part Material: 304 Stainless Tool: ø50
Cutting Conditions: *Vc* = 656 SFM, *fz* = 0.0197"
ap = 0.08", *ae* = 0.40", Wet

■ Long, Stable Tool Life

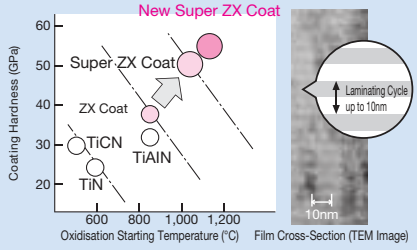
Adopts ACP200 grade for steel and ACK300 grade for cast iron machining, enabling milling of steel, stainless steel, cast iron and exotic alloys



The letters "C" and "P" at the end of each grade indicate the coating type.
▽: CVD, △: PVD, Blank: Uncoated

ACP200/ACM100/ACM300/ACK300

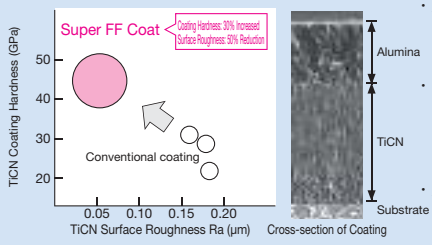
NEW SUPER ZX COAT



- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidization starting temperature has been increased by 200°C
- Enables more than 1.5 times the machining speed and efficiency of conventional tools
- Achieves more than double the tool life of conventional tools under the same cutting conditions

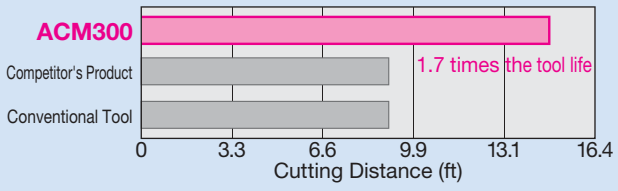
ACM200

SUPER FF COAT



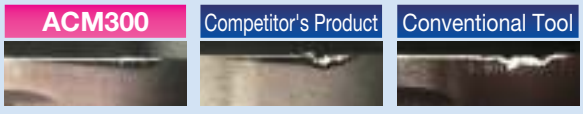
- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional tools under the same cutting conditions

Tool Life (304 Stainless Machining)

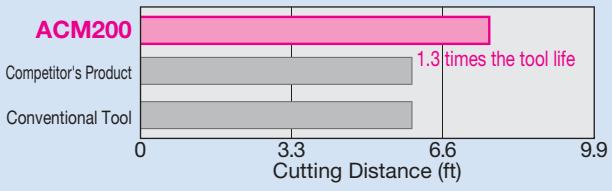


Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: *vc* = 656 SFM, *fz* = 0.02" IPT
ap = 0.08", *ae* = 0.40" Wet

(Cutting Distance: 8.86ft)

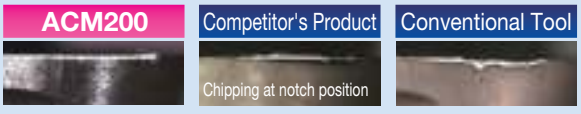


Tool Life (17-4 PH Machining)



Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: *vc* = 492 SFM, *fz* = 0.012 IPT
ap = 0.08", *ae* = 0.40" Wet

(Cutting Distance: 5.91ft)

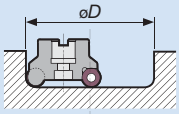


■ Machining Applications

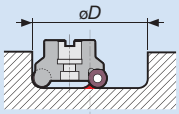
Can be used for various types of high-efficiency machining such as deep shoulder milling of molds, ramping, and helical milling.

Precautions for Helical Milling

Standard Diameter

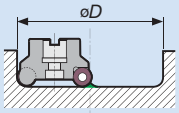


Standard Diameter or Below



Center uncut portion cannot be removed with the same cutter.

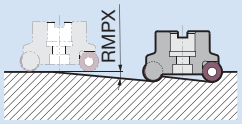
Standard Diameter or Above



Center uncut portion can be removed by traverse cutting with the same cutter.

Precautions for Ramping

Use at the RMPX below or lower.

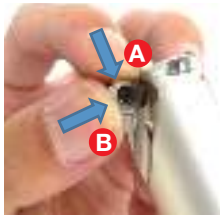


Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Ramping	
	Cutter Dia. DC inch	Maximum Ramping Angle RMPX
RDET10...	**1.000**	10° 15'
	1.250	6° 45'
	1.500	4° 45'
	2.000	3° 15'
RDET12...	**1.250**	12° 30'
	1.500	8° 30'
	2.000	5° 30'
	2.500	4°
	3.000	3°
	4.000	2°
	5.000	1° 30'
	6.000	1°
RDET16...	**2.500**	5° 50'
	3.000	4° 20'
	4.000	2°
	5.000	1° 30'
	6.000	1°

Insert Cat. No.	Helical Milling (mm)				Ramping
	Cutter Dia. DC	Work Dia. øD			Maximum Ramping Angle RMPX
		Min. Dia.	Standard Diameter	Max. Dia.	
RDET08...	**20**	1.09	1.26	1.54	12°00'
	25	1.46	1.65	1.93	7°15'
	32	2.00	2.04	2.48	4°45'
RDET10...	**25**	1.30	1.57	1.93	10°30'
	32	1.81	2.13	2.48	6°45'
	40	2.44	2.76	3.11	4°30'
	50	3.23	3.54	3.90	3°15'
	52	3.39	3.70	4.06	3°10'
RDET12...	**32**	1.63	2.05	2.48	12°30'
	40	2.26	2.68	3.11	8°00'
	50	3.05	3.46	3.90	5°30'
	52	81.5	3.62	4.06	5°15'
	63	3.21	4.49	4.92	4°00'
	66	4.31	4.72	5.16	3°45'
	80	5.41	5.83	6.26	2°50'
	100	6.99	7.40	7.83	2°10'
RDET16...	**63**	3.78	4.33	4.92	6°00'
	80	5.12	5.67	6.26	4°10'
	100	6.69	7.24	7.83	3°00'
	125	8.66	9.21	9.80	2°20'
RDET20...	**80**	4.80	5.51	6.26	4°15'
	100	6.38	7.09	7.83	3°00'
	125	8.35	9.05	9.80	2°00'
	160	11.01	11.81	12.56	1°15'

■ Precautions for Mounting Inserts



Hold down the insert from the Ⓐ and Ⓑ directions and fasten the screw.

Precautions for RSX08000 Type



Align either insert rake face marking position Ⓒ with the marking position Ⓓ on the body.

RSX(F) Shellmill Type -10mm Inserts

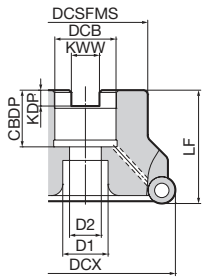
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

5mm | .197"



Fig 1



Body (RSX32000R & RSX10000RS) Standard Type

Dimensions (lbs / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSX32000R**	●	2.000	1.500	1.750	0.750	0.312	0.221	0.750	0.609	0.406	4	0.80	1
Metric	**RSX10040RS**	★	*40*	*34*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	4	*0.2*	1
	RSX10050RS	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.3*	1
	RSX10052RS	★	*52*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.4*	1

Body (RSXF32000R RSXF10000RS) Fine Pitch Type

Dimensions (lbs / *mm*))

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**RSXF32000R**	●	2.000	1.500	1.750	0.750	0.312	0.221	0.750	0.609	0.406	4	0.80	1
Metric	**RSXF10040RS**	★	*40*	*34*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	5	*0.2*	1
	RSXF10050RS	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.3*	1
	RSXF10052RS	★	*52*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.3*	1

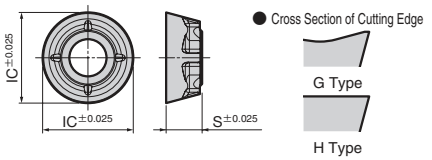
Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide							
Process	High-speed / Light			MS	MS				
	General-purpose	PM		MS	MS	MS			
	Roughing	PM	K			MS			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET10T3MOEN-G		●	●	●	●	●	0.394 / *10*	0.156 / *3.97*	1
RDET10T3M0EN-H		●	●	●	●	●	0.394 / *10*	0.156 / *3.97*	1

Fig 1



★Worldwide Warehouse Item ● USA stocked item

Precautions for Mounting Inserts H152

Parts

Wrench	Flat Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX03584IP	3.0	SUMI-P

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

Identification Code - Inch

RSX F 3 2000 R

Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 2.000"	Feed Direction

Identification Code - Metric

RSX F 10 040 R S

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

		Work Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
		Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
	Stainless Steel Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
		400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
		Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy	Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium	Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
		α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

N·m Recommended Tightening Torque (N·m)

RSX(F) SHELLMILL INCH Type -12mm Inserts

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

.236"



Fig 1

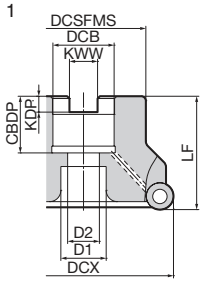


Fig 2

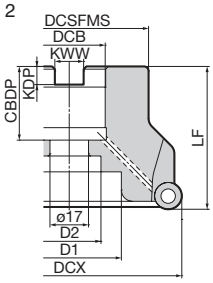
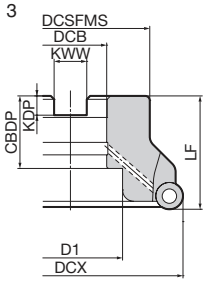


Fig 3



Body (RSX40000R) Standard Type

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	**RSX42000R**	●	2.000	1.500	1.750	0.750	0.312	0.248	0.750	0.609	0.406	4	0.70	1
	RSX42500R	●	2.500	1.750	1.750	1.000	0.375	0.248	0.750	0.797	0.531	5	1.1	1
	RSX43000R	●	3.000	2.250	1.750	1.000	0.375	0.276	0.750	0.797	0.531	6	1.75	1
	RSX44000R-1.25	●	4.000	2.870	2.000	1.250	0.500	0.335	0.750	1.000	0.656	7	3.75	1
	RSX44000R-1.50	●	4.000	2.870	2.500	1.500	0.625	0.335	1.000	2.000	0.781	7	4.00	1
	RSX45000R	●	5.000	3.750	2.500	1.500	0.625	0.465	1.000	2.000	0.781	8	7.60	1
	RSX46000R	●	6.000	4.380	2.500	1.500	0.625	0.532	1.000	2.000	0.781	9	11.90	1

Body (RSXF40000R) Fine Pitch Type

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	**RSXF42000R**	●	2.000	1.500	1.750	0.750	0.312	0.248	0.750	0.609	0.406	5	0.65	1
	RSXF42500R	●	2.500	1.750	1.750	1.000	0.375	0.248	0.750	0.797	0.531	6	1.05	1
	RSXF43000R	●	3.000	2.250	1.750	1.000	0.375	0.276	0.750	0.797	0.531	8	1.75	1
	RSXF44000R-1.25	●	4.000	2.870	2.000	1.250	0.500	0.335	0.750	1.000	0.656	9	4.75	1
	RSXF44000R-1.50	●	4.000	2.870	2.500	1.500	0.625	0.335	1.000	2.000	0.781	9	5.25	1
	RSXF45000R	●	5.000	3.750	2.500	1.500	0.625	0.465	1.000	2.000	0.781	11	7.5	1
	RSXF46000R	●	6.000	4.380	2.500	1.500	0.625	0.532	1.000	2.000	0.781	12	11.75	1

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

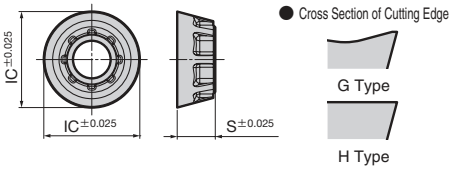
● USA stocked item

Insert

Dimensions (inch)

Grade		Coated Carbide							
Process	High-speed / Light			MS	MS				
	General-purpose	PM		MS	MS	MS			
	Roughing	PM	K			MS			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET1204M0EN-G		●	●	●	●	●	.473	.187	1
RDET1204M0EN-H		●	●	●	●	●	.473	.187	1

Fig 1



Parts

Wrench	Flat Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX0409IP	3.0	SUMI-P

Identification Code

RSX **F** **4** **2000** **R**

Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 2.000"	Feed Direction

Recommended Cutting Conditions

Precautions for Mounting Inserts H152

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**- 0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**- 0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**- 0.40	ACK300

		Part Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z (ipt) Min - Max	Recommended Grade
M	Stainless Steel Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
M	Stainless Steel Cr Based	Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
M	Stainless Steel Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
M	Stainless Steel Cr-Ni Based	400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
M	Stainless Steel Cr-Ni Based	Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy	Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
S	Titanium	Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	ACM100 ACM200
S	Titanium	α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	ACM100 ACM200

NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

N·m Recommended Tightening Torque (N·m)

RSX(F) Shellmill Metric Type - 12mm Inserts

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

6mm



Fig 1

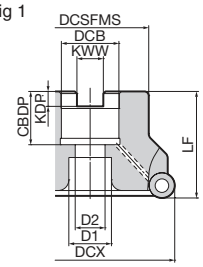


Fig 2

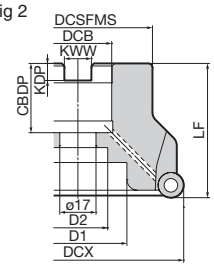
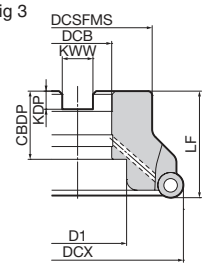


Fig 3



Body (RSX12000RS / R)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX12040RS**	★	*40*	*32*	*40*	*16*	*8.4*	*5.6*	*18*	*13.5*	*9*	3	*0.2*	1
	RSX12050RS	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
	RSX12052RS	★	*52*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
	RSX12063RS	★	*63*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.4*	1
	RSX12066RS	★	*66*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*14*	6	*0.7*	1
	RSX12080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*14*	6	*1.0*	1
	RSX12100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	6	*1.4*	3
	RSX12080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*13*	6	*1.0*	1
	RSX12100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.5*	*46*	*28*	6	*1.9*	2

Body (RSXF12000RS / R) Fine Pitch Type

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF12040RS**	★	*40*	*32*	*40*	*16*	*8.4*	*5.6*	*18*	*13.5*	*9*	4	*0.2*	1
	RSXF12050RS	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.3*	1
	RSXF12052RS	★	*52*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.3*	1
	RSXF12063RS	★	*63*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.4*	1
	RSXF12066RS	★	*66*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*14*	7	*0.7*	1
	RSXF12080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*14*	7	*0.9*	1
	RSXF12100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	10	*1.3*	3
	RSXF12080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*13*	7	*1.0*	1
	RSXF12100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.5*	*46*	*28*	10	*1.8*	2

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

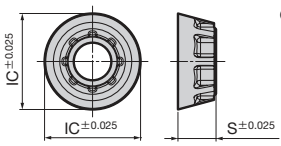
* For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							
Process	High-speed / Light			MS	MS				
	General-purpose	PM		MS	MS	MS			
	Roughing	PM	K			MS			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET1204M0EN-G		●	●	●	●	●	12	4.76	1
RDET1204M0EN-H		●	●	●	●	●	12	4.76	1

Fig 1



● Cross Section of Cutting Edge



★Worldwide Warehouse Item ● USA stocked item

Precautions for Mounting Inserts H152

Parts

Wrench	Flat Screw		Anti-seize Cream
		N·m	
TRDR15IP	BFTX0409IP	3.0	SUMI-P

Identification Code

RSX **F** **12** **040** **R** **S**

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

		Part Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z (ipt) Min - Max	Recommended Grade
M	Stainless Steel Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
M	Stainless Steel Cr Based	Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
M	Stainless Steel Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
M	Stainless Steel Cr-Ni Based	400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
M	Stainless Steel Cr-Ni Based	Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy	Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
S	Titanium	Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	ACM100 ACM200
S	Titanium	α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	ACM100 ACM200

NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

RSX(F) Inch SHELLMILL Type - 16mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

.315"



Fig 1

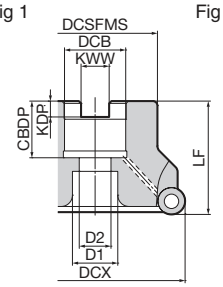


Fig 2

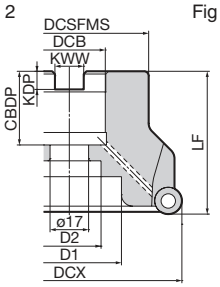


Fig 3

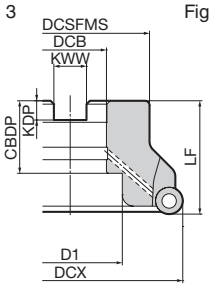


Fig 4

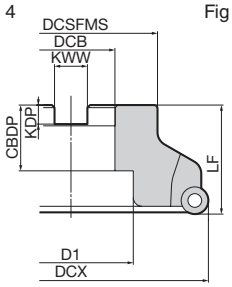
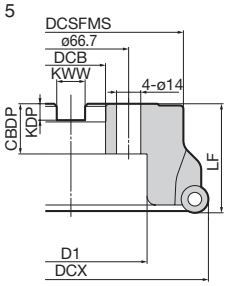


Fig 5



Body (RSX50000R)

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**RSX52500R**	●	2.500	1.750	1.750	1.000	0.375	0.248	0.750	0.797	0.531	4	0.95	1
	RSX53000R	●	3.000	2.250	1.750	1.000	0.375	0.248	0.750	0.797	0.531	5	1.50	1
	RSX54000R-1.25	●	4.000	2.870	2.000	1.250	0.500	0.276	0.750	1.000	0.656	7	4.25	1
	RSX54000R-1.50	●	4.000	2.870	2.500	1.500	0.625	0.335	1.000	2.000	0.781	7	4.90	1
	RSX55000R	●	5.000	3.750	2.500	1.500	0.625	0.335	1.000	2.000	0.781	8	7.1	1
	RSX56000R	●	6.000	4.380	2.500	1.500	0.625	0.465	1.000	2.000	0.781	9	11.2	5

Body (RSXF50000R) Fine Pitch Type

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**RSXF52500R**	●	2.500	1.750	1.750	1.000	0.375	0.248	0.750	0.797	0.531	5	0.85	1
	RSXF53000R	●	3.000	2.250	1.750	1.000	0.375	0.248	0.750	0.797	0.531	6	1.55	1
	RSXF54000R-1.25	●	4.000	2.870	2.000	1.250	0.500	0.276	0.750	1.000	0.656	8	3.25	3
	RSXF54000R-1.50	●	4.000	2.870	2.500	1.500	0.625	0.335	1.000	2.000	0.781	8	4.35	1
	RSXF55000R	●	5.000	3.750	1.500	1.500	0.625	0.335	1.000	2.000	0.781	9	6.4	5
	RSXF56000R	●	6.000	6.000	4.380	1.500	1.312	0.465	1.000	0.781	1.500	10	10.5	1

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

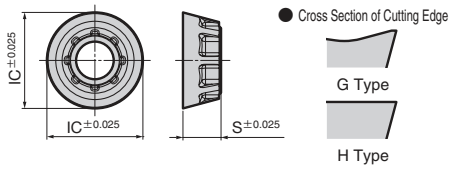
● USA stocked item

Insert

Dimensions (inch)

Grade		Coated Carbide							
Process	High-speed / Light			MS	MS				
	General-purpose	PM		MS	MS	MS			
	Roughing	PM	K			MS			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET1606M0EN-G		●	●	●	●	●	0.630	0.256	1
RDET1606M0EN-H		●	●	●	●	●	0.630	0.256	1

Fig 1



Precautions for Mounting Inserts H152

Parts

Wrench	Flat Screw	N·m	Anti-seize Cream
TRDR20IP	BFTX0511IP	5.0	SUMI-P

Identification Code

RSX F 5 3000 R

RSX	F	5	3000	R
Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 3.000"	Feed Direction

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

		Part Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z (ipt) Min - Max	Recommended Grade
M	Stainless Steel Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
M	Stainless Steel Cr Based	Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
M	Stainless Steel Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
M	Stainless Steel Cr-Ni Based	400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
M	Stainless Steel Cr-Ni Based	Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy	Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
S	Titanium	Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	ACM100 ACM200
S	Titanium	α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	ACM100 ACM200

NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

N·m Recommended Tightening Torque (N·m)

RSX(F) Metric Shellmill Type - 16mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

8mm



Fig 1

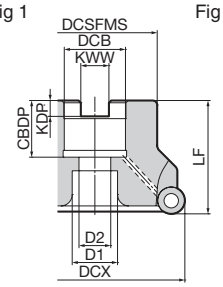


Fig 2

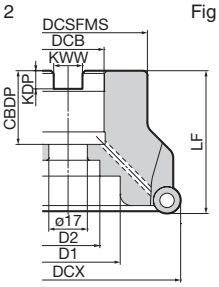


Fig 3

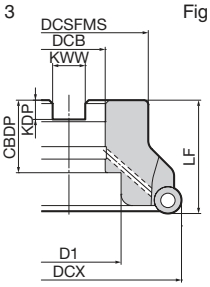


Fig 4

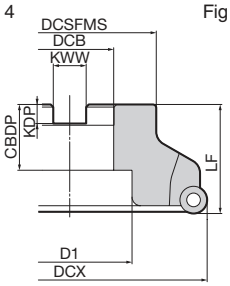
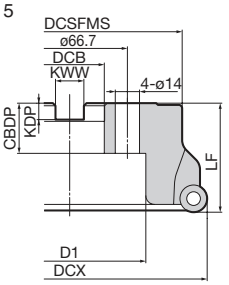


Fig 5



Body (RSX16000RS / R)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX16063RS**	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.5*	1
	RSX16080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*14*	5	*0.9*	1
	RSX16100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	6	*1.3*	3
	RSX16125RS	★	*125*	*80*	*63*	*40*	*16.4*	*9.5*	*29*	*52*	*29*	6	*2.6*	1
	RSX16080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*13*	5	*0.9*	1
	RSX16100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.5*	*46*	*28*	6	*1.8*	2
	RSX16125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	6	*2.7*	1

Body (RSXF16000RS / R) Fine Pitch Type

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF16063RS**	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.4*	1
	RSXF16080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*14*	6	*0.8*	1
	RSXF16100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	7	*1.3*	3
	RSXF16125RS	★	*125*	*80*	*63*	*40*	*16.4*	*9.5*	*29*	*52*	*29*	8	*2.5*	1
	RSXF16160RS		*160*	*130*	*63*	*40*	*16.4*	*9.5*	*29*	*88*	-	10	*4.8*	5
	RSXF16080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*13*	6	*0.8*	1
	RSXF16100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.5*	*46*	*28*	7	*1.7*	2
	RSXF16125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	8	*2.6*	1
	RSXF16160R		*160*	*100*	*63*	*50.8*	*19.0*	*11.0*	*38*	*72*	-	10	*4.3*	4

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

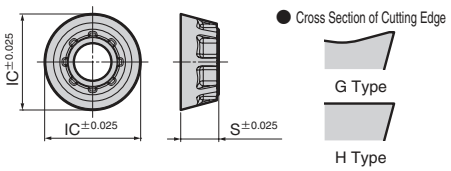
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							
Process	High-speed / Light			MS	MS				
	General-purpose	PM		MS	MS	MS			
	Roughing	PM	K			MS			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET1606M0EN-G		●	●	●	●	●	16	6.5	1
RDET1606M0EN-H		●	●	●	●	●	16	6.5	1

Fig 1



● USA stocked item ★Worldwide Warehouse Item

Parts

Wrench	Flat Screw		Anti-seize Cream
		N·m	
TRDR20IP	BFTX0511IP	5.0	SUMI-P

Identification Code

RSX	F	16	063	R	S
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

Precautions for Mounting Inserts H152

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

		Part Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel Cr-Ni Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
M	Stainless Steel Cr-Ni Based	Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
M	Stainless Steel Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
M	Stainless Steel Cr-Ni Based	400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
M	Stainless Steel Cr-Ni Based	Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy	Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
S	Titanium	Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	ACM100 ACM200
S	Titanium	α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	ACM100 ACM200

NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

RSX(F) Metric Shellmill Type - 20mm Inserts

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-5°
	Axial	10°

10mm



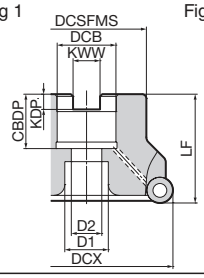
Fig 1


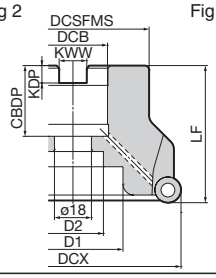
Fig 2


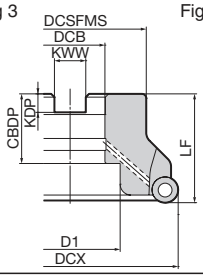
Fig 3


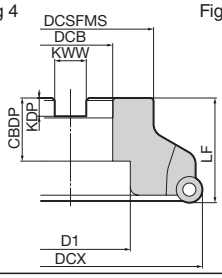
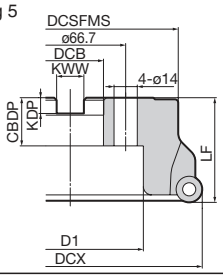
Fig 4


Fig 5


Body (RSX20000R / RS)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX20080RS**	★	*80	55	50	27	12.4	7	22	20	14	4	0.9	1
	RSX20100RS	★	100	70	50	32	14.4	8	32	46	-	5	1.8	3
	RSX20125RS	★	125	80	63	40	16.4	9	29	52	29	6	2.6	1
	RSX20160RS	★	160	130	63	40	16.4	9	29	90	-	7	4.7	5
	RSX20080R	★	*80	55	50	25.4	9.5	6	25	20	14	4	0.9	1
	RSX20100R	★	100	70	63	31.75	12.7	8	32	46	27	5	1.8	2
	RSX20125R	★	125	80	63	38.1	15.9	10	35.5	55	30	6	2.6	1
	RSX20160R	★	160	100	63	50.8	19.1	11	38	72	-	7	4.2	4

Body (RSXF20000R / RS) Fine Pitch Type

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF20080RS**	★	*80	55	50	27	12.4	7	22	20	14	5	0.9	1
	RSXF20100RS	★	100	70	50	32	14.4	8	32	46	-	6	1.8	3
	RSXF20125RS	★	125	80	63	40	16.4	9	29	52	29	7	2.6	1
	RSXF20160RS	★	160	130	63	40	16.4	9	29	90	-	9	4.6	5
	RSXF20080R	★	*80	55	50	25.4	9.5	6	25	20	14	5	0.9	1
	RSXF20100R	★	*100	70	63	31.75	12.7	8	32	46	27	6	1.8	2
	RSXF20125R	★	125	80	63	38.1	15.9	10	35.5	55	30	7	2.6	1
	RSXF20160R	★	160	100	63	50.8	19.1	11	38	72	-	9	4.1	4

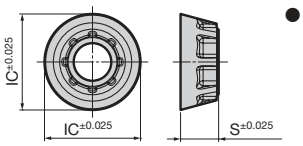
Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET2006M0EN-G		★	★	★	★	★	20	6.5	1
RDET2006M0EN-H		★	★	★	★	★	20	6.5	1

Fig 1


Cross Section of Cutting Edge


★Worldwide Warehouse Item

Parts

Wrench	Flat Screw		Anti-seize Cream
			
TRDR25IP	BFTX0615IP	5.0	SUMI-P

Identification Code

RSX **F** **20** **080** **R** **S**

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

Precautions for Mounting Inserts H152

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**- 0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**- 0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**- 0.40	ACK300

		Part Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
M	Stainless Steel Cr Based	Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
M	Stainless Steel Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
M	Stainless Steel Cr-Ni Based	400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
M	Stainless Steel Cr-Ni Based	Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy	Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
S	Titanium	Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	ACM100 ACM200
S	Titanium	α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	ACM100 ACM200

NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

N·m Recommended Tightening Torque (N·m)

RSX(F) ENDMILL Type - 8mm / 10mm / 12mm Inserts

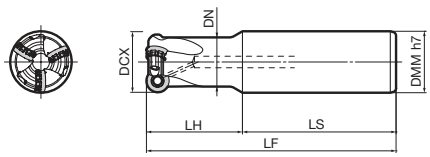
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5° to -8°
	Axial	10°

4mm (08000ES) | 5mm (10000ES) | .197" (10000ES) | 6mm (12000ES) | .236" (12000ES)

Fig 1





Body (RSX3 / *RSX10*) Applicable Insert IC = 10mm Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSX31000EW**	●	1.000	1.000	0.799	2.060	2.280	4.340	2	0.95	1
Inch	**RSX31250EW**	●	1.250	1.250	1.063	2.060	2.280	4.340	3	1.15	1
Inch	**RSX31500EW**	●	1.500	1.250	1.334	2.060	2.280	4.340	3	1.25	1
Metric	**RSX10025ES**	★	*25*	*25*	*20.3*	*50*	*80*	*130*	2	*0.4*	1
Metric	**RSX10032ES**	★	*32*	*32*	*27.1*	*50*	*80*	*130*	3	*0.7*	1

Body (RSX4 / *RSX12*) Applicable Insert IC = 12mm Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSX41250EW**	●	1.250	1.250	1.063	2.060	2.280	4.340	2	1.20	1
Inch	**RSX41500EW**	●	1.500	1.250	1.334	2.060	2.280	4.340	3	1.50	1
Metric	**RSX12032ES**	★	*32*	*32*	*25.6*	*50*	*80*	*130*	2	*0.7*	1

★Worldwide Warehouse Item ● USA stocked item

Body (*RSXF08*) Fine Pitch Type, Applicable Insert IC = 8mm Type

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF08020ES**	★	*20*	*20*	*16.9*	*30*	*70*	*100*	3	*0.3*	1
Metric	**RSXF08025ES**	★	*25*	*25*	*21.9*	*40*	*80*	*120*	4	*0.4*	1

Body (RSXF3 / *RSX10*) Fine Pitch Type, Applicable Insert IC = 10mm Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSXF31000EW**	●	1.000	1.000	0.799	2.060	2.280	4.340	3	1.00	1
Inch	**RSXF31000ELC**	●	1.000	1.000	0.799	3.750	6.250	10.000	3	2.00	1
Inch	**RSXF31250EW**	●	1.250	1.250	1.063	2.060	2.280	4.340	4	1.25	1
Inch	**RSXF31250ELC**	●	1.250	1.250	1.063	3.750	6.250	10.000	4	2.75	1
Inch	**RSXF31500EW**	●	1.500	1.250	1.334	2.060	2.280	4.340	4	1.40	1
Inch	**RSXF31500ELC**	●	1.500	1.250	1.334	3.750	6.250	10.000	4	3.25	1
Metric	**RSXF10025ES**	★	*25*	*25*	*20.3*	*50*	*80*	*130*	3	*0.4*	1
Metric	**RSXF10032ES**	★	*32*	*32*	*27.1*	*50*	*80*	*130*	4	*0.7*	1

Body (RSXF4 / *RSXF12*) Fine Pitch Type, Applicable Insert IC = 12mm Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSXF41250EW**	●	1.250	1.250	1.063	2.060	2.280	4.340	3	1.40	1
Inch	**RSXF41250ELC**	●	1.250	1.250	1.063	3.750	6.250	10.000	3	3.50	1
Inch	**RSXF41500EW**	●	1.500	1.250	1.334	2.060	2.280	4.340	4	1.65	1
Inch	**RSXF41500ELC**	●	1.500	1.250	1.334	3.750	6.250	10.000	4	4.00	1
Metric	**RSXF12032ES**	★	*32*	*32*	*25.6*	*50*	*80*	*130*	3	*0.7*	1

Inserts are sold separately.

Dimensions (inch / *mm*)

Insert

Grade		Coated Carbide				
Process	High-speed / Light			MS	MS	
	General-purpose	PM		MS	MS	MS
	Roughing	PM	K			MS

Cat. No.	ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Applicable Cutters	Fig
RDET0803M0EN-G	★	★	★	★	★	0.315 / *8*	0.125 *3.18*	RSX(F)08000ES	1
RDET0803M0EN-H	★	★	★	★	★				1
RDET10T3M0EN-G	●	●	●	●	●	0.394 / *10*	0.156 *3.97*	RSX30000EW RSX(F)10000RS / ES	1
RDET10T3M0EN-H	●	●	●	●	●				1
RDET1204M0EN-G	●	●	●	●	●	0.472 / *12*	0.187 *4.76*	RSX40000EW RSX(F)12000RS / ES	2
RDET1204M0EN-H	●	●	●	●	●				2

Fig 1

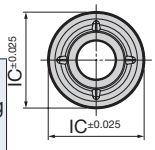
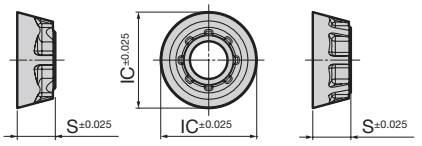


Fig 2



● Cross Section of Cutting Edge



Precautions for Mounting Inserts H152

Parts

Applicable Cutter	Wrench	Flat Screw	N·m	Anti-seize Cream
RSX(F)08000ES	TRDR08IP	BFTX02506IP	1.5	SUMI-P
RSX(F)10000ES	TRDR15IP	BFTX03584IP	3.0	SUMI-P
RSX(F)12000ES	TRDR15IP	BFTX0409IP	3.0	SUMI-P

Identification Code - Inch

RSX F 3 1000 EW

RSX	F	3	1000	EW
Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 1.000"	Endmill Type W: Weldon C: Cylindrical

Identification Code

RSX F 10 025 ES

RSX	F	10	025	ES
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Endmill Type

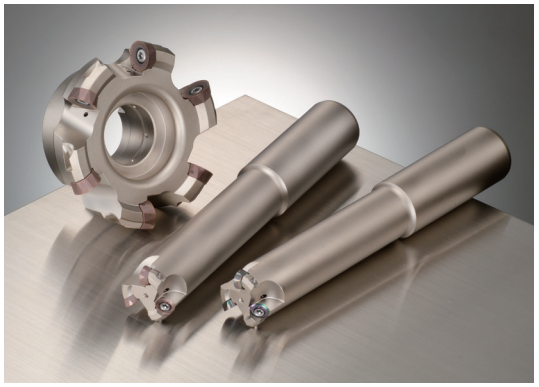
N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

		Part Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z (ipt) Min - Max	Recommended Grade
M	Stainless Steel Cr. Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
M	Stainless Steel Cr. Based	Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
M	Stainless Steel Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
M	Stainless Steel Cr-Ni Based	400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
M	Stainless Steel Cr-Ni Based	Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy Titanium	Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
S	Heat Resistant Alloy Titanium	Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
S	Heat Resistant Alloy Titanium	α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.



■ General Features

The WRCX Type SEC-Wave Radius Mill is a versatile, high-efficiency cutter that is suited to various types of machining such as deep shoulder milling of molds, ramping, and helical milling.
Furthermore, a wide selection of chipbreakers and grades covers a wide range of work materials, from steel to non-ferrous metals.

■ Features

- Durable body with special surface treatment offers significantly improved tool life and reliability.
- Superb chatter resistance with anti-vibration edge design.
- All sizes come with coolant holes preventing chip build-up and jamming.
- Sturdy screw clamp with Torx Plus screw insert mounting ensures stable machining.

■ Product Range

	Metric Type	O.D. (mm)	# of Teeth
Shell Type ☞H161, 164	WRCX(F)12000R(S)	ø40 to ø80	4-6
	WRCX(F)16000R(S)	ø63 to ø100	3-6
	WRCX20000R(S)	ø125 to ø160	5-6
Endmill Type ☞H165	WRCX08000E	ø20 to ø25	2-3
	WRCX10000E	ø25 to ø32	2-3
	WRCX16000E	ø40 to ø50	2-3
Modular Type ☞H214	WRCX08000M	ø20 to ø25	2-3
	WRCX10000M	ø25 to ø32	2-3

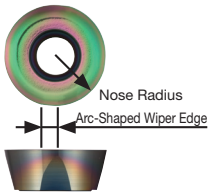
Inch Type	O.D. (Inch)	# of Teeth
WRCX30000R	ø2.000"	4
WRCX40000R	ø2.0 to ø4.0"	4-6
WRCX60000R	ø3.0 to ø6.0"	5-8
WRCX80000R	ø4.0 to ø6.0"	6-8
WRCX30000EW	ø1.0 to ø1.5"	2-4
WRCX30000ELC	ø1.0 to ø1.5"	2-4
WRCX40000EW	ø1.25 to ø1.5"	2-3
WRCX40000ELC	ø1.25 to ø1.5"	2-3

■ Abundant Insert Series

- In addition to conventional WRC Type inserts, the new lineup includes non-ferrous metal inserts and surfing inserts

Non-Ferrous Metal Inserts QPET ○○○○○○ PPFR-S

- Good surface roughness with arc-shaped wiper edge
- Sharp corners
- Four-cornered insert

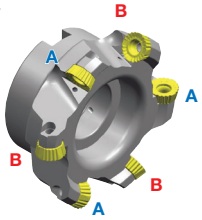


Surfing Insert QPMT ○○○○○○ PPER-R

- Cutting edges feature unique rippled design
- Four-cornered insert
- Low cutting force, enabling use on low-rigidity machines as well

*Use in combinations that alternate cutting edge **A** and cutting edge **B**.
(Only useable on cutters with an even number of cutting edges)





Shift the phase in 90° increments to mount inserts

● Maximum Allowable Spindle Speed when Milling Non-Ferrous Metal (Unit: RPM)

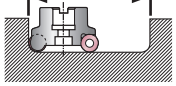
Cutter Dia. DC(mm)	Insert Cat. No. QPET10·····-S	QPET12·····-S	QPET16·····-S
25	28,000		
32	25,000		
40		22,000	15,000
50		20,000	14,000
63		18,000	13,000
80		16,000	12,000
100			10,000

Even if the speed used is within the maximum allowable revolution speeds listed above, abnormal vibrations may occur due to machine rigidity or other factors. Therefore, it is advisable to start operation at half the maximum allowable revolution speed and increase the speed gradually while checking for abnormalities.

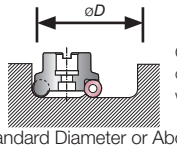
■ Usage Precautions

● Precautions for Helical Milling

Standard Diameter

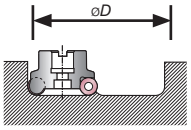


Standard Diameter or Below



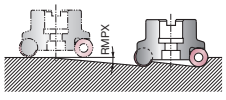
Center uncut portion cannot be removed with the same cutter.

Standard Diameter or Above



Center uncut portion can be removed by traverse cutting with the same cutter.

● Precautions for Ramping
● Use at the RMPX below or lower.



● Recommended Values for Helical Milling and Ramping

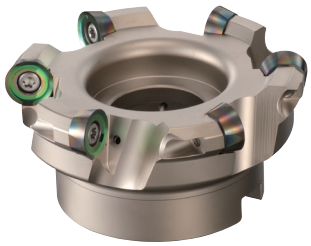
Insert Cat. No. Inch	Cutter Dia. DCX	Ramping Maximum Ramping Angle RMPX(max)	Insert Cat. No. metric	Helical Milling (Dimensions in inch) Cutter Dia. DCX	Work Dia. øD Min. Dia.	Standard Diameter	Max. Dia.	Ramping Maximum Ramping Angle RMPX(max)
QP□□32.510○○	1.00	11°, 30'	QP□□08○○○○	20	0.98	1.26	1.54	13°
	1.25	7° 30'		25	1.38	1.65	1.93	8°20'
	1.50	5° 30'	QP□□10○○○○	25	1.26	1.57	1.89	13°10'
	2.00	5° 30'		32	1.81	2.13	2.44	8°
QP□□4312○○	1.25	18° 30'	QP□□12○○○○	40	2.24	2.68	3.11	10°
	1.50	12° 30'		50	3.03	3.46	3.90	7°30'
	2.00	7° 30'		63	4.06	4.49	4.92	5°10'
	2.50	5° 30'		80	5.39	5.83	6.26	3°50'
	3.00	4°	QP□□16○○○○	40	1.93	2.52	3.11	19°30'
	4.00	2° 30'		50	2.72	3.31	3.90	12°
QP□□6416○○	3.00	7° 30'		63	3.74	4.33	4.92	8°
	4.00	4° 30'		80	5.08	5.67	6.26	5°30'
	5.00	3° 15'		100	6.65	7.24	7.83	4°
	6.00	3° 15'	QP□□20○○○○	125	8.35	9.06	9.76	3°30'
QP□□8424○○	4.00	6°		160	11.10	11.81	12.52	2°30'
	5.00	4° 15'						
	6.00	3° 15'						

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle		
	Radial	0°
	Axial	-3°

.1875" | .250" | .375" | .500"

Fig 1



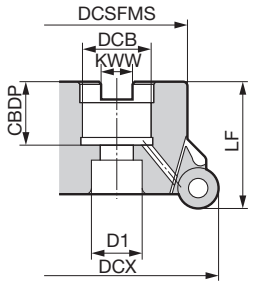


Fig. 2

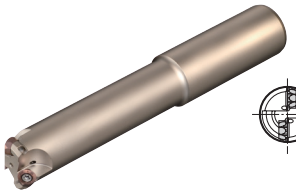
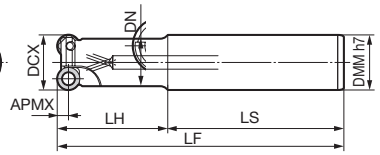


Fig 1



Body (Shell Mill Type)

Dimensions (inch)

Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Mounting Depth CBDP	Bolt D1	Number of Teeth	Insert	Insert Size	Fig
WRCX32000R	•	2.000	1.500	1.750	0.750	0.312	1.020	0.609	4	QPMT3	0.375	1
WRCX42000R	•	2.000	1.500	1.750	0.750	0.312	1.020	0.609	4	QPMT4	0.500	1
WRCX42500R	•	2.500	1.750	1.750	1.000	0.375	1.020	0.797	4			1
WRCX43000R	•	3.000	2.250	1.750	1.000	0.375	1.020	0.797	5			1
WRCX44000R	•	4.000	2.87	2.00	1.250	0.500	1.020	1.000	6			1
WRCX63000R	•	3.000	2.25	1.75	1.000	0.375	1.020	0.797	5	QPMT6	0.750	1
WRCX64000R	•	4.000	2.87	2.00	1.250	0.500	1.020	1.000	6			1
WRCX65000R	•	5.000	3.75	2.50	1.500	0.625	1.060	2.000	6			1
WRCX66000R	•	6.000	3.75	2.50	1.500	0.625	1.060	2.000	8			1
WRCX84000R	•	4.000	2.87	2.00	1.250	0.500	1.020	1.000	6	QPMT8	1.000	1
WRCX85000R	•	5.000	3.75	2.50	1.500	0.625	1.060	2.000	6			1
WRCX86000R	•	6.000	3.70	2.50	1.500	0.625	1.060	2.000	8			1

Inserts are sold separately.

Body (WRCX30000) Applicable Insert IC = 0.375 Type

Dimensions (inch)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WRCX31000EW	•	1.000	1.000	1.000	0.157	2.060	2.281	4.341	2	2
WRCX31000ELC	•	1.000	1.000	1.000	0.157	3.750	6.250	10.000	2	2
WRCX31250EW	•	1.250	1.250	1.250	0.157	2.060	2.281	4.341	3	2
WRCX31250ELC	•	1.250	1.250	1.250	0.157	3.750	6.250	10.000	3	2
WRCX31500EW	•	1.500	1.250	1.500	0.157	2.060	2.281	4.341	4	2
WRCX31500ELC	•	1.500	1.250	1.500	0.157	3.750	6.250	10.000	4	2

Body (WRCX40000) Applicable Insert IC = 0.500 Type

Dimensions (inch)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WRCX41250EW	•	1.250	1.250	1.250	0.197	2.060	2.281	4.341	2	2
WRCX41250ELC	•	1.250	1.250	1.250	0.197	3.750	6.250	10.000	2	2
WRCX41500EW	•	1.500	1.500	1.500	0.197	2.060	2.281	4.341	3	2
WRCX41500ELC	•	1.500	1.500	1.500	0.197	3.750	6.250	10.000	3	2

Insert (Common)

Dimensions (inch)

Grade		Coated Carbide				Carbide	DLC					
Process	High-speed / Light	P				K N	N					
	General-purpose		P M	P M			N					
	Roughing		P M	P M	K							
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK300	H1	DL1000	Inscribed Circle IC	Thickness S	Max Depth of Cut	Fig
General purpose	**QPMT32.510PPEN**	•	•	•	•			0.375	0.156	0.1875	1
	QPMT32.510PPEN-H	•		•	•			0.375	0.156	0.1875	1
	QPMT4312PPEN	•	•	•	•			0.500	0.1875	0.250	1
	QPMT4312PPEN-H	•		•	•			0.500	0.1875	0.250	1
	QPMT6416PPEN	•	•	•	•			0.750	0.250	0.375	1
	QPMT6416PPEN-H	•		•	•			0.750	0.250	0.375	1
	QPMT8424PPEN	•	•	•	•			1.000	0.250	0.500	1
	QPMT8424PPEN-H	•		•	•			1.000	0.250	0.500	1
For Non-Ferrous Metals	**QPET32.510PPENS***					•	•	0.375	0.156	0.1875	2
	QPET4312PPENS*					•	•	0.500	0.1875	0.250	2

Fig 1

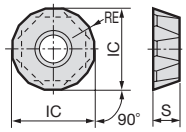
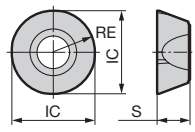


Fig 2 For Non-Ferrous Metals



*: -H at the end indicates strong edge type.

Parts

Flat Screw		Wrench	Anti-seize Cream
			
BFTX0409IP	3.0	TRDR15IP	SUMI-P

Coolant Through Bolts	
Catalog Number	Cutter Size
BFXH 3/8 x 1	2.00"
BFXH 1/2 x 1 1/4	2.50"
BFXH 1/2 x 1 1/4	3.00"
BFXH 5/8 x 1 1/4	4.00"
BFXH 3/4 x 1 1/2	5.00"

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

	Part Material	Grade	øD = 1.00" - 1.25"		øD = 1.50" - 3.00"		øD = 4.00" - 6.00"	
			SFM	IPT	SFM	IPT	SFM	IPT
P	Carbon Steel	ACP200	260-395-525	.004-.012-.016	330-525-655	.008-.016-.024	490-655-820	.012-.016-.024
P	Alloy Steel (HRC<40)	ACP200	195-330-460	.004-.008-.012	330-460-590	.008-.012-.016	330-525-655	.004-.012-.020
M	Stainless Steel (304)	ACP200, ACP300	195-330-395	.004-.006-.008	260-395-525	.004-.008-.012	525-590-655	.006-.008-.012
K	Gray Cast Iron	ACK200, ACK300	195-260-395	.004-.008-.012	260-395-525	.004-.008-.016	330-490-655	.004-.006-.008
N	Non-ferrous Metal	H1, DL1000	655-1640-3280	.004-.008-.012	655-1640-3280	.004-.012-.016	655-1640-3280	.008-.016-.024

WRCX(F) Metric Shellmill Type -12mm Inserts

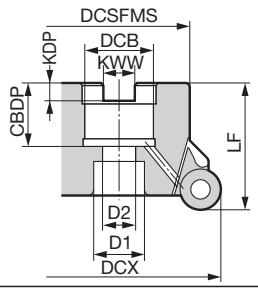
P Steel M Stainless Steel K Cast Iron N Aluminum Alloy

Rake Angle		
	Radial	0°
	Axial	-3°

6mm .236"



Fig 1



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX12040RS**	★	*40*	*36*	*40*	*16*	*8.4*	*5.6*	*18*	*13.5*	*9*	4	*0.2*	1
	WRCX12050RS	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.2*	1
	WRCX12063RS	★	*63*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.4*	1
	WRCX12080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*13.5*	6	*0.9*	1

Inserts are sold separately.

Body (Fine Pitch Type)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF12050RS**	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.2*	1
	WRCXF12063RS	★	*63*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.4*	1

Inserts are sold separately.

For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

★Worldwide Warehouse Item ● USA stocked item

Insert (Common)

Dimensions (*mm*)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K			N				
	General-purpose				K			N				
	Roughing					K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Nose Radius RE	Thickness S	Fig
General-purpose	**QPMT120440 PPEN**		●	●	●	●	-	-	*12*	*4.0*	*4.76*	1
	QPMT120440 PPEN-H		●	●	●	●	-	-	*12*	*4.0*	*4.76*	1
For Non-Ferrous Metals	**QPET120460 PPFR-S**	-	-	-	-	-	●	●	*12*	*6.0*	*4.76*	2
Surfing	**QPMT120460 PPER-R**		★	★			-	-	*12*	*6.0*	*4.76*	3

Fig 1

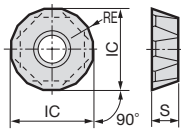


Fig 2 For Non-Ferrous Metals

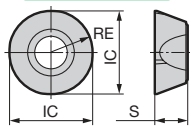
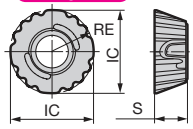


Fig 3 Surfing Insert



*: -H at the end indicates strong edge type.

Parts

Flat Screw		Wrench	Anti-seize Cream
			
BFTX0409IP	3.0	TRDR15IP	SUMI-P

Recommended Cutting Conditions

External Diameter ø40 to ø80 mm

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel	180 to 280 HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	-	80-**120**-160	0.10-**0.20**-0.30	ACP300
K	Cast Iron	250HB	80-**120**-160	0.10-**0.20**-0.40	ACK200
N	Non-ferrous Metal	-	200-**500**-1,000	0.10-**0.30**-0.40	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WRCX(F) Metric Shellmill Type -16mm Inserts

Rake Angle		
	Radial	0°
	Axial	-3°

8mm | .315"



Fig 1

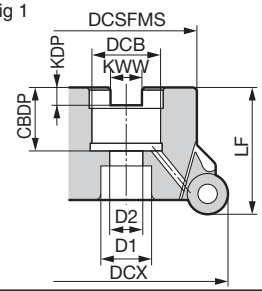
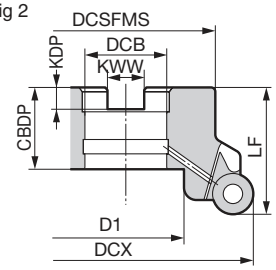


Fig 2



Body (WRCX16000RS / R)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX16063RS**	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	3	*0.4*	1
	WRCX16080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*13.5*	4	*0.8*	1
	WRCX16100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	5	*1.2*	2
	WRCX16080R	★	*80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*13*	4	*0.8*	1
	WRCX16100R	★	*100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32*	*46*	*17*	5	*1.4*	1

Inserts are sold separately.

Body (WRCXF16000RS / R) Fine Pitch Type

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF16063RS**	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.4*	1
	WRCXF16080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7.0*	*25*	*20*	*13.5*	5	*0.7*	1
	WRCXF16100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8.5*	*32*	*46*	-	6	*1.2*	2

Inserts are sold separately.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K		K N	N				
	General-purpose		P M	P M	K			N				
	Roughing		P M	P M		K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Nose Radius RE	Thickness S	Fig
General-purpose	**QPMT160660 PPEN**		●	●	●	●	-	-	*16*	*6.0*	*6.5*	1
	QPMT160660 PPEN-H		●	●	●	●	-	-	*16*	*6.0*	*6.5*	1
Anti-Vibration*2	**QPMT160608 PPEN**		●	●	●	●	-	-	*16*	*0.8*	*6.5*	1
	QPMT160608 PPEN-CP		●	●	●	●	-	-	*16*	*0.8*	*6.5*	2
For Non-Ferrous Metals	**QPET160680 PPFR-S**	-	-	-	-	-	●	●	*16*	*8.0*	*6.5*	3
Surfing	**QPMT160680 PPER-R**		★	★			-	-	*16*	*8.0*	*6.5*	4

Fig 1

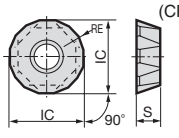


Fig 2 (CP Type)

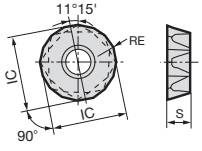


Fig 3 For Non-Ferrous Metals

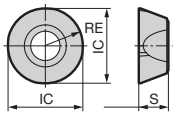
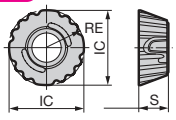


Fig 4 Surfing Insert



*1: -H at the end indicates strong edge type.

*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Parts

Flat Screw		Wrench	Anti-seize Cream
	N·m		
BFTX0511IP	5.0	TRDR20IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

Diameter ø40 to ø80 mm

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280 HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	-	80- **120** -160	0.10- **0.20** -0.30	ACP300
K	Cast Iron	250HB	80- **120** -160	0.10- **0.20** -0.40	ACK200
N	Non-ferrous Metal	-	200- **500** -1,000	0.10- **0.30** -0.40	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Diameter ø100 to ø160mm

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150- **200** -250	0.30- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280 HB	100- **160** -200	0.10- **0.30** -0.50	ACP200
M	Stainless Steel	-	160- **180** -200	0.15- **0.20** -0.30	ACP300
K	Cast Iron	250HB	100- **150** -200	0.10- **0.15** -0.20	ACK200
N	Non-ferrous Metal	-	200- **500** -1,000	0.20- **0.40** -0.60	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WRCX Metric Shellmill Type - 20mm Inserts

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	0°
	Axial	-3°

10mm | 0.394"



Fig 1

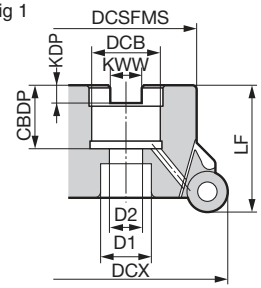
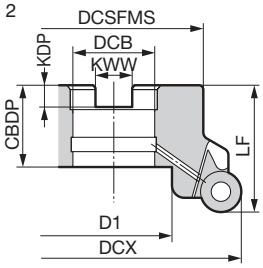


Fig 2



Body (WRCX20000R)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX20125R**	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	5	*2.3*	1
	WRCX20160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11.0*	*38*	*72*	-	6	*4.0*	2

Inserts are sold separately.

Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K		K N	N				
	General-purpose		P M	P M	K			N				
	Roughing		P M	P M		K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Nose Radius RE	Thickness S	Fig
General-purpose*1	**QPMT200670PPEN**		●	●	●	●	-	-	20	7.0	6.5	1
	QPMT200670PPEN-H		●	●	●	●	-	-	20	7.0	6.5	1
Anti-Vibration*2	**QPMT200608PPEN**		●	●	●	●	-	-	20	0.8	6.5	1
	QPMT200608PPEN-CP		●	●	●	●	-	-	20	0.8	6.5	2
Surfing	**QPMT2006100PPER-R**		★	★			-	-	20	10.0	6.5	3

Fig 1

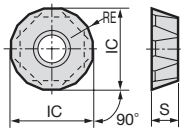


Fig 2 (CP Type)

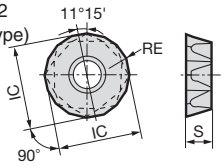
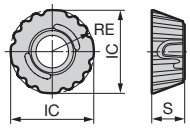


Fig 3 Surfing Insert



*1: -H at the end indicates strong edge type.

*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Parts

Flat Screw		Wrench	Anti-seize Cream
			
BFTX0615IP	7.5	TRDR25IP	SUMI-P

Recommended Cutting Conditions

Diameter ø100 to ø160mm

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150-**200**-250	0.30-**0.40**-0.60	ACP200
	Alloy Steel	180 to 280 HB	100-**160**-200	0.10-**0.30**-0.50	ACP200
M	Stainless Steel	-	160-**180**-200	0.15-**0.20**-0.30	ACP300
K	Cast Iron	250HB	100-**150**-200	0.10-**0.15**-0.20	ACK200

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WRCX Endmill Metric Type - 8mm/ 10mm/ 16mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

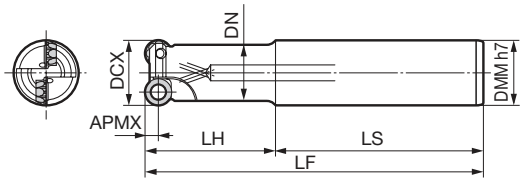
Rake Angle		
	Radial	-23 to -15°
	Axial	-6°

4mm (08000E Type) | .157" (10000E Type) | 5mm (16000E Type) | .197" | 8mm | .315"

Modular Type H214

Fig 1





Body (WRCX08000E) Applicable Insert IC = 8mm Type

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX08020ES	★	20	20	18	4	50	80	130	2	0.2	1
WRCX08020EM	★	20	20	18	4	100	80	180	2	0.3	1
WRCX08020EL		20	20	18	4	130	120	250	2	0.5	1
WRCX08025ES	★	25	25	21	4	50	80	130	3	0.4	1
WRCX08025EM	★	25	25	21	4	100	80	180	3	0.5	1
WRCX08025EL		25	25	21	4	130	120	250	3	0.7	1

Body (WRCX10000E) Applicable Insert IC = 10mm Type

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX10025ES	★	25	25	21	5	50	80	130	2	0.4	1
WRCX10025EM	★	25	25	21	5	100	80	180	2	0.5	1
WRCX10025EL		25	25	21	5	130	120	250	2	0.7	1
WRCX10032ES	★	32	32	28	5	50	80	130	3	0.7	1
WRCX10032EM	★	32	32	28	5	120	80	200	3	1.0	1
WRCX10032EL		32	32	28	5	180	120	300	3	1.5	1

Body (WRCX16000E) Applicable Insert IC = 16mm Type

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX16040ES	★	40	32	31.3	8	50	120	170	2	0.9	1
WRCX16040EM	★	40	32	31.3	8	50	200	250	2	1.4	1
WRCX16050ES	★	50	32	40.8	8	50	120	170	3	1.0	1
WRCX16050EM	★	50	32	40.8	8	50	200	250	3	1.5	1

Inserts are sold separately.

Parts

Applicable Cutters	Flat Screw	N·m	Wrench
WRCX08000E Type	BFTX02506IP	1.5	TRDR08IP
WRCX10000E Type	BFTX03584IP	3.0	TRDR15IP
WRCX16000E Type	BFTX0511IP	5.0	TRDR20IP

Recommended Cutting Conditions

Diameter ø20 to ø32mm

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80-**120**-160	0.10-**0.30**-0.40	ACP200
	Alloy Steel	180 to 280 HB	60-**100**-140	0.10-**0.20**-0.30	ACP200
M	Stainless Steel	-	60-**100**-120	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	60- **80** -120	0.10-**0.20**-0.30	ACK200
N	Non-ferrous Alloys	-	200-**500**-1,000	0.10-**0.20**-0.30	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Diameter ø40 to ø50 mm

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel	180 to 280 HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	-	80-**120**-160	0.10-**0.20**-0.30	ACP300
K	Cast Iron	250HB	80-**120**-160	0.10-**0.20**-0.40	ACK200
N	Non-ferrous Alloys	-	200-**500**-1,000	0.10-**0.30**-0.40	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide					Carbide	DLC
Process	High-speed / Light	P			K		K N	N
	General-purpose		P M	P M	K			N
	Roughing		P M	P M		K		

Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig	Applicable Cutter
General-purpose*1	**QPMT080330PPEN**		●	●	●	●	-	-	8	3.0	3.18	1	WRCX08000E Type
	QPMT080330PPEN-H		●	●	●	●	-	-	8	3.0	3.18	1	
	QPMT10T335PPEN		●	●	●	●	-	-	10	3.5	3.97	1	WRCX10000E Type
	QPMT10T335PPEN-H		●	●	●	●	-	-	10	3.5	3.97	1	
	QPMT160660PPEN		●	●	●	●	-	-	16	6.0	6.5	1	WRCX16000E Type
	QPMT160660PPEN-H		●	●	●	●	-	-	16	6.0	6.5	1	
Anti-Vibration*2	**QPMT160608PPEN**		●	●	●	●	-	-	16	0.8	6.5	1	WRCX16000E Type
	QPMT160608PPEN-CP		●	●	●	●	-	-	16	0.8	6.5	2	
For Non-Ferrous Metals	**QPET10T350PPFR-S**	-	-	-	-	-	●	●	10	5.0	3.97	3	WRCX10000E Type
	QPET160680PPFR-S	-	-	-	-	-	●	●	16	8.0	6.5	3	WRCX16000E Type
Surfing	**QPMT160680PPER-R**		★	★			-	-	16	8.0	6.5	4	WRCX16000E Type

Fig 1

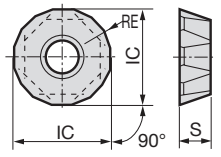


Fig 2 (CP Type)

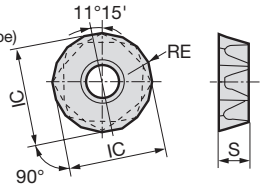


Fig 3 For Non-Ferrous Metals

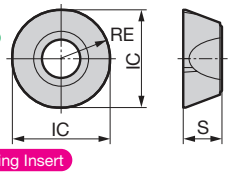
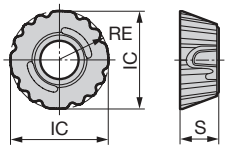


Fig 4 Surfing Insert



*1: -H at the end indicates strong edge type. *2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

N·m Recommended Tightening Torque (N·m)

MEMO

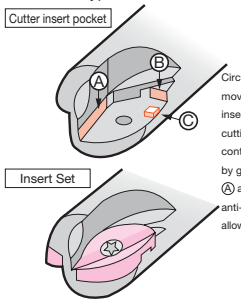


3D Profile Roughing

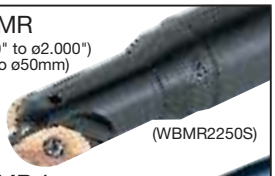
■ General Features

A lineup of ø.750" to ø2.000" ballnose endmill models for 3D profile roughing of die molds and machine parts.

● WBMR Type Anti-Rotation Mechanism



WBMR
(ø.750" to ø2.000")
(ø20 to ø50mm)


(WBMR2250S)

WBMR-L
(ø1.000" to ø1.250")
(ø20 to ø50mm)

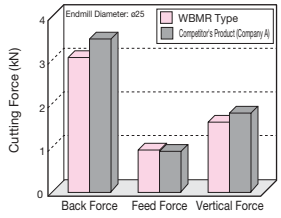

(WBMR2500SL)

■ WBMR2000 / 2000L (ø.750" to ø2.000")

- Wave-shaped high rake angle insert design achieves a sharp cutting edge and low resistance
- Economical M-class insert with strong cutting edge
- Anti-rotation guides prevent insert from slipping during machining
- Integrated insert shape is used for large diameter cutters, enabling easier tool management

■ Performance

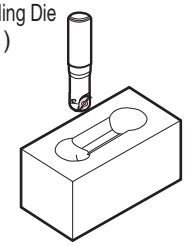
● Cutting Force



Part Material: 1050 Steel
Cutting Conditions
(Shoulder Milling, Down Cut)
vc = 656 SFM
f_Z = 0.006 IPT
Axial Depth of Cut 0.197"
Radial Depth of Cut 0.197"

■ Application Examples

● Cold Molding Die (SKD11)



Evaluation
Flank wear width after continuous cutting for seven hours was less than competitor's product. Stable cutting was observed.

WBMR2200S (ø20)
Insert Grade: ACZ350
Cutting Conditions
n = 2,200min^{-1}
v_f = 500mm/min
Depth of Cut: 0.3 to 2mm
Insoluble Cutting Oil

Inch Hardware

Catalog Number	Screw	Wrench
WBMR075□X	BFTX0307N	TRX10
WBMR100□X	BFTX0409N	TRD15
WBMR125□X	BFTX0511N	TRD20
WBMR150□X	BFTX0619N	TRD25
WBMR200□X	BFTX0619N	TRD25

■ Spare Parts

Endmill Cat. No. □ indicates S/M/L Type	Part Name	Short Edge Type	Long Edge Type (-L)	
		For Tip Insert	For Tip Insert	For Peripheral Insert
WBMR2200□(L)	Flat Screw	BFTX0307N (N·m) 2.0		
	Wrench	TRX10		
WBMR2250□(L)	Flat Screw	BFTX0409N (N·m) 3.0		
	Wrench	TRD15		
WBMR2300□(L)	Flat Screw	BFTX0511N (N·m) 5.0		BFTX0407N (N·m) 3.0
	Wrench	TRD20		TRD15
WBMR2400□(L)	Flat Screw	BFTX0619N (N·m) 7.5		BFTX0409N (N·m) 3.0
	Wrench	TRD25		TRD15
WBMR2500□(L) WBMR2500□(L)-C	Flat Screw	BFTX0619N (N·m) 7.5		BFTX0409N (N·m) 3.0
	Wrench	TRD25		TRD15

SUMI-P Anti-seizure cream included in the package.

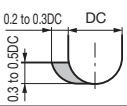
Recommended Cutting Conditions

(A) Tip insert only (Inch)

ISO	Part Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330 - 660	0.004" - 0.012"	ACP200
P	Alloy Steel	180 to 280 HB	230 - 400	0.004" - 0.012"	ACP200
M	Stainless Steel, Die Steel	-	165 - 330	0.004" - 0.008"	ACP300
K	Cast Iron	250HB	330 - 500	0.008" - 0.016"	ACK300

(A) Tip insert only (Metric)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**150**-200	0.10-**0.20**-0.30	ACP200
P	Alloy Steel	180 to 280 HB	70-**100**-120	0.10-**0.20**-0.30	ACP200
M	Stainless Steel, Die Steel	-	50- **80** -100	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	100-**120**-150	0.20-**0.30**-0.40	ACK300



Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

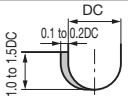
Recommended Cutting Conditions

(B) Tip insert and peripheral insert (Inch)

ISO	Part Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	265 - 500	0.004" - 0.012"	ACP200
P	Alloy Steel	180 to 280 HB	165 - 330	0.004" - 0.012"	ACP200
M	Stainless Steel, Die Steel	-	135 - 265	0.004" - 0.008"	ACP300
K	Cast Iron	250HB	265 - 400	0.008" - 0.016"	ACK300

(B) Tip insert and peripheral insert (Metric)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80-**120**-150	0.10-**0.20**-0.30	ACP200
P	Alloy Steel	180 to 280 HB	50- **80** -100	0.10-**0.20**-0.30	ACP200
M	Stainless Steel, Die Steel	-	40- **60** -80	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	80-**100**-120	0.20-**0.30**-0.40	ACK300



(N·m) Recommended Tightening Torque (N·m)

WBMR Endmill Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	-
	Axial	-10°

20-47mm | .787" to 1.85"



Fig 1

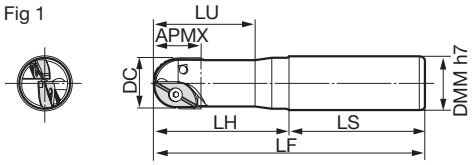
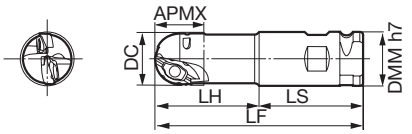


Fig 2



Note: Fig. 2 shows a combination clamped shank diagram (2500□-C).

Body

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
Inch	**WBMR075SX**	●	0.750	1.000	0.752	2.285	2.261	1.181	4.546	2
	WBMR075MX	●	0.750	1.000	0.752	3.785	2.261	1.181	6.046	2
	WBMR075LX	●	0.750	1.000	0.752	5.285	2.261	1.181	7.546	2
	WBMR100SX	●	1.000	1.250	0.917	2.535	2.261	1.378	4.796	2
	WBMR100MX	●	1.000	1.250	0.917	4.285	2.261	1.378	6.546	2
	WBMR100LX	●	1.000	1.250	0.917	6.035	2.261	1.378	8.296	2
	WBMR100LCX	●	1.000	1.250	0.917	2.535*	9.215**	1.378	11.75	1
	WBMR125SX	●	1.250	1.250	1.228	2.535	2.261	1.693	4.796	2
	WBMR125MX	●	1.250	1.250	1.228	4.535	2.261	1.693	6.796	2
	WBMR125LX	●	1.250	1.250	1.228	6.535	2.261	1.693	8.796	2
	WBMR125LCX	●	1.250	1.250	1.228	2.535*	11.215**	1.693	13.75	1
	WBMR150SX	●	1.500	1.500	1.543	2.535	2.688	1.94	5.223	2
	WBMR150MX	●	1.500	1.500	1.543	4.535	3.244	3.688	7.779	2
	WBMR150LX	●	1.500	1.500	1.543	6.535	3.244	5.488	9.779	2
	WBMR200SX	●	2.000	2.000	1.862	2.785	3.244	2.256	6.029	2
	WBMR200MX	●	2.000	2.000	1.862	5.035	3.244	4.138	8.279	2
	WBMR200LX	●	2.000	2.000	1.862	7.285	3.244	6.163	10.529	2
Metric	**WBMR2200S**	★	*20*	*25*	*20*	*60*	*80*	*40*	*140*	1
	WBMR2200M	★	*20*	*25*	*20*	*60*	*140*	*40*	*200*	1
	WBMR2200L	★	*20*	*25*	*20*	*80*	*170*	*40*	*250*	1
	WBMR2250S	★	*25*	*32*	*23*	*70*	*80*	*50*	*150*	1
	WBMR2250M	★	*25*	*32*	*23*	*73*	*147*	*50*	*220*	1
	WBMR2250L	★	*25*	*32*	*23*	*100*	*200*	*50*	*300*	1
	WBMR2300S	★	*30*	*32*	*28*	*80*	*80*	*60*	*160*	1
	WBMR2300M	★	*30*	*32*	*28*	*85*	*155*	*60*	*240*	1
	WBMR2300L	★	*30*	*32*	*28*	*120*	*230*	*60*	*350*	1
	WBMR2400S	★	*40*	*42*	*35*	*100*	*100*	-	*200*	1
	WBMR2400M	★	*40*	*42*	*35*	*180*	*100*	-	*280*	1
	WBMR2400L	★	*40*	*42*	*35*	*250*	*100*	-	*350*	1
	WBMR2500S	★	*50*	*42*	*47*	*100*	*100*	-	*200*	1
	WBMR2500M	★	*50*	*42*	*47*	*180*	*100*	-	*280*	1
	WBMR2500L	★	*50*	*42*	*47*	*250*	*100*	-	*350*	1
	WBMR2500S-C	★	*50*	*50.8*	*47*	*100*	*100*	-	*200*	2
	WBMR2500M-C	★	*50*	*50.8*	*47*	*180*	*100*	-	*280*	2
	WBMR2500L-C	★	*50*	*50.8*	*47*	*250*	*100*	-	*350*	2

Inserts are sold separately.

Insert

Dimensions (*mm*)

Fig 1

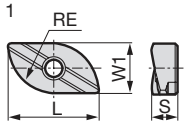


Fig 2

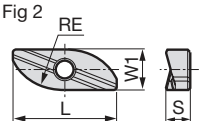


Fig 3

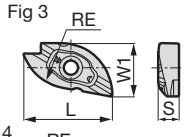
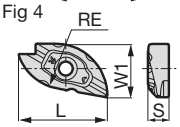


Fig 4



Grade		Coated Carbide		
Process	High-speed / Light			
	General-purpose	P M	P M	
	Roughing	P M	P M	K

Cat. No.	ACP200	ACP300	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill	Remarks
ZNMT1804100-C	★	★	★	18.00	9.76	4.76	10	1	WBMR 2200□	· Tip inserts are used in combination according to Fig. 1 & 2.
ZNMT2004100-S	★	★	★	20.00	7.50	4.37	10	2		
ZNMT2205125-C	★	★	★	22.50	12.20	5.70	12.5	1	WBMR 2250□	· Tip inserts are used in combination according to Fig. 1 & 2.
ZNMT2305125-S	★	★	★	23.00	9.38	5.56	12.5	2		
ZNMT2706150-C	★	★	★	27.00	14.64	6.75	15	1	WBMR 2300□	· Tip inserts are used in combination according to Fig. 1 & 2.
ZNMT2806150-S	★	★	★	28.00	11.25	6.35	15	2		
ZNMT3608200	★	★	★	36.00	19.50	8.65	20	3	WBMR 2400□	· Use two of the items shown in Fig. 4 as the tip inserts.
ZNMT4310250	★	★	★	43.00	25.70	10.15	25	3	WBMR 2500□	· Use two of the items shown in Fig. 4 or Fig. 5 (nicked) as the tip inserts.
ZNMT4310250-N	★	★	★	43.00	25.70	10.15	25	4		

Insert

Dimensions (inch)

Fig 1

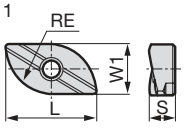


Fig 2

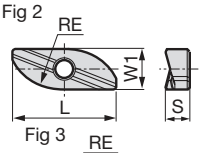
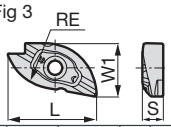


Fig 3



Grade		Coated Carbide		
Process	High-speed / Light			
	General-purpose	P M	P M	
	Roughing	P M	P M	K

Cat. No.	ACP200	ACP300	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill
ZNMT3CX	●	●	●	0.720	0.361	0.189	0.375	1	WBMR075□
ZNMT3SX	●	●	●	0.795	0.280	0.167	0.375	2	
ZNMT4CX	●	●	●	0.887	0.480	0.224	0.500	1	WBMR100□
ZNMT4SX	●	●	●	0.913	0.369	0.217	0.500	2	
ZNMT5CX	●	●	●	1.150	0.615	0.281	0.625	1	WBMR125□
ZNMT5SX	●	●	●	1.185	0.472	0.263	0.625	2	
ZNMT6X	●	●	●	1.430	0.781	0.348	0.750	3	WBMR150□
ZNMT8X	●	●	●	1.705	1.012	0.400	1.000	3	WBMR200□

Parts H167 | Recommended Cutting Conditions H167

● USA stocked item ★ Worldwide Warehouse item

WBMR Endmill Type

P Steel M Stainless Steel K Cast Iron

Rake Angle		
	Radial	-
	Axial	-10°

30 to 69mm | 1.18" to 2.72"



Fig 1

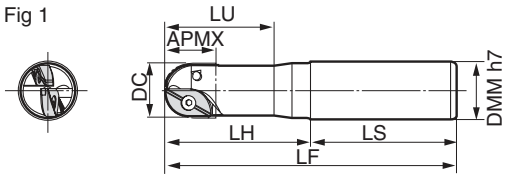
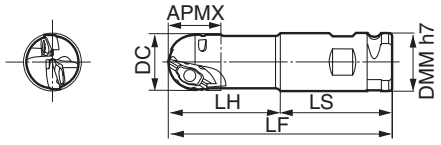
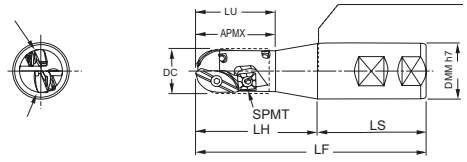


Fig 2



Note: Fig. 2 shows a combination clamped shank diagram (2500□-C).

Fig 3 shown with SPMT insert



Body

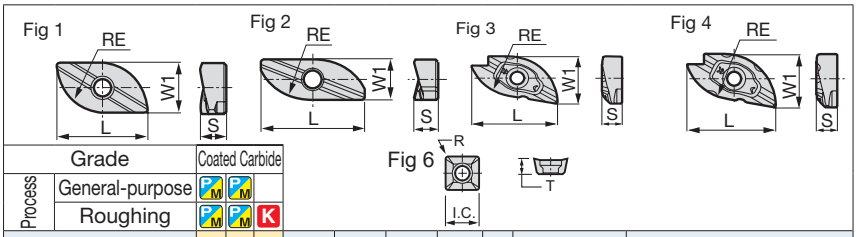
Dimensions (inch / *mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
WBMR100SLX	●	1.000	1.250	1.535	2.535	2.261	1.653	4.796	3
WBMR100MLX	●	1.000	1.250	1.535	4.285	2.261	1.653	6.546	3
WBMR100LLX	●	1.000	1.250	1.535	6.035	2.261	1.653	8.296	3
WBMR125SLX	●	1.250	1.250	1.835	2.535	2.261	1.968	4.796	3
WBMR125MLX	●	1.250	1.250	1.835	4.535	2.261	1.968	6.796	3
WBMR125LLX	●	1.250	1.250	1.835	6.535	2.261	1.968	8.796	3
WBMR2200SL	★	*20*	*25*	*30*	*60*	*80*	*40*	*140*	1
WBMR2200ML	★	*20*	*25*	*30*	*60*	*140*	*40*	*200*	1
WBMR2200LL	★	*20*	*25*	*30*	*80*	*170*	*40*	*250*	1
WBMR2250SL	★	*25*	*32*	*38*	*70*	*80*	*50*	*150*	1
WBMR2250ML	★	*25*	*32*	*38*	*73*	*147*	*50*	*220*	1
WBMR2250LL	★	*25*	*32*	*38*	*100*	*200*	*50*	*300*	1
WBMR2300SL	★	*30*	*32*	*42*	*80*	*80*	*60*	*160*	1
WBMR2300ML	★	*30*	*32*	*42*	*85*	*155*	*60*	*240*	1
WBMR2300LL	★	*30*	*32*	*42*	*120*	*230*	*60*	*350*	1
WBMR2400SL	★	*40*	*42*	*50*	*100*	*100*	-	*200*	1
WBMR2400ML	★	*40*	*42*	*50*	*180*	*100*	-	*280*	1
WBMR2400LL	★	*40*	*42*	*50*	*250*	*100*	-	*350*	1
WBMR2500SL	★	*50*	*42*	*69*	*100*	*100*	-	*200*	1
WBMR2500ML	★	*50*	*42*	*69*	*180*	*100*	-	*280*	1
WBMR2500LL	★	*50*	*42*	*69*	*250*	*100*	-	*350*	1
WBMR2500SL-C	★	*50*	*50.8*	*69*	*100*	*100*	-	*200*	2
WBMR2500ML-C	★	*50*	*50.8*	*69*	*180*	*100*	-	*280*	2
WBMR2500LL-C	★	*50*	*50.8*	*69*	*250*	*100*	-	*350*	2

Inserts are sold separately.

Insert

Dimensions (*mm*)



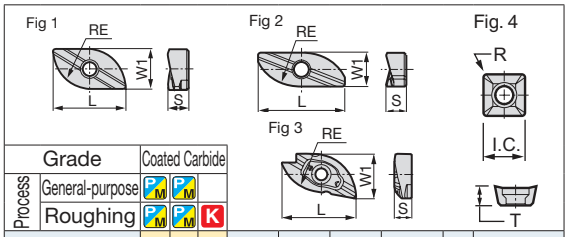
Process	Grade	Coated Carbide
General-purpose		P M P M
Roughing		P M P M K

Cat. No.	ACP200	ACP300	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill	Remarks
ZNMT1804100-C	★	★	★	18.00	9.76	4.76	10	1	WBMR 2200□L	· Tip inserts are used in combination according to Fig. 1 & 2. · Peripheral insert (Fig. 3) for 2200□L only.
ZNMT2004100-S	★	★	★	20.00	7.50	4.37	10	2		
SPMT070308	★	★	★	7.94	-	3.18	-	3		
ZNMT2205125-C	★	★	★	22.50	12.20	5.70	12.5	1	WBMR 2250□L	· Tip inserts are used in combination according to Fig. 1 & 2. · Peripheral insert (Fig. 3) for 2250□L only.
ZNMT2305125-S	★	★	★	23.00	9.38	5.56	12.5	2		
SPMT09T308	★	★	★	9.53	-	3.97	-	3		
ZNMT2706150-C	★	★	★	27.00	14.64	6.75	15	1	WBMR 2300□L	· Tip inserts are used in combination according to Fig. 1 & 2. · Peripheral insert (Fig. 3) for 2300□L only.
ZNMT2806150-S	★	★	★	28.00	11.25	6.35	15	2		
SPMT09T308	★	★	★	9.53	-	3.97	-	3		
ZNMT3608200	★	★	★	36.00	19.50	8.65	20	4	WBMR 2400□L	· Use two of the items shown in Fig. 4 as the tip inserts. · Peripheral insert (Fig. 3) for 2400□L only.
SPMT09T308	★	★	★	9.53	-	3.97	-	3		
ZNMT4310250	★	★	★	43.00	25.70	10.15	25	4	WBMR 2500□L	· Use two of the items shown in Fig. 4 or Fig. 5 (nicked) as the tip inserts. · Peripheral insert (Fig. 3) for 2500□L only.
ZNMT4310250-N	★	★	★	43.00	25.70	10.15	25	5		
SPMT120408	★	★	★	12.70	-	4.76	-	6		

● USA stocked item ★ Worldwide Warehouse item

Insert

Dimensions (inch)



Process	Grade	Coated Carbide
General-purpose		P M P M
Roughing		P M P M K

Cat. No.	ACP200	ACP300	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill
ZNMT3CX	●	●	●	0.720	0.361	0.189	0.375	1	WBMR075□
ZNMT3SX	●	●	●	0.795	0.280	0.167	0.375	2	
ZNMT4CX	●	●	●	0.887	0.480	0.224	0.500	1	WBMR100□
ZNMT4SX	●	●	●	0.913	0.369	0.217	0.500	2	
ZNMT5CX	●	●	●	1.150	0.615	0.281	0.625	1	WBMR125□
ZNMT5SX	●	●	●	1.185	0.472	0.263	0.625	2	
ZNMT6X	●	●	●	1.430	0.781	0.348	0.750	3	WBMR150□
ZNMT8X	●	●	●	1.705	1.012	0.400	1.000	3	WBMR200□
SPMT09T308	★	★	●	0.375	0.375	0.156	0.031	4	

Parts H167 Recommended Cutting Conditions H167





■ General Features

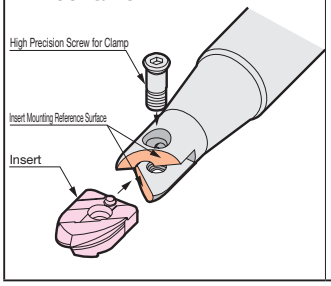
A lineup of ø0.5" to ø1.25" ballnose endmill models for 3D profile finishing of die molds and machine parts.

3D Profile Finishing

■ WBMF10000 Type (ø0.5" to ø1.25")

- Simple but precise clamping design
- Original large helix angle design
- Sharp cutting edge that produces good surface roughness
- Excellent wear resistance with Super ZX Coat

● WBMF Type clamp mechanism.

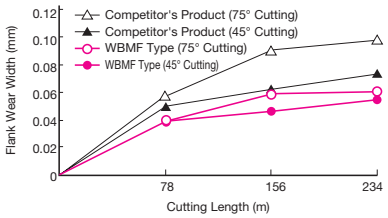


WBMF1000



■ Performance

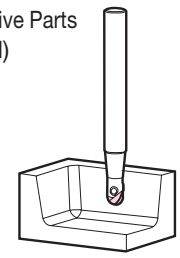
● Insert Life



Results
WBMF Type outperforms competitors' products in most processes including plan profiling, with better wear resistance.
Part Material: 1050
Machining Method: Ramping (45°, 75°)
Cutting Conditions
n = 2,000 RPM
v_f = 78.74 IPM
a_p = 0.012"
ρ_f = 0.024"
Dry

■ Application Examples

● Mold for Automotive Parts (Injection Mold)



Evaluation
Much better finishing as compared to competitors' products, with polishing time required reduced by half.
WBMF1000 Type
Work Material: 1055
Process: Contouring
Cutting Conditions
n = 2,500 RPM
v_f = 31.5 IPM
a_p = 0..028"
Overhang = 5.9"
Wet

Parts

Applicable Endmill	Precision Screw		Wrench
WBMF1100	BFTG0408F	N·m 3.0	TRD15
WBMF1120	BFTG0409F		
WBMF1160	BFTG0513F	N·m 5.0	TRD20
WBMF1200	BFTG0617F	N·m 7.5	TRD25
WBMF1250	BFTG0621F		
WBMF1300	BFTG0825F		

Hardware - Inch

Cat. Number	Screw	Wrench
WBMF10500□	BFTG0409F	TRD15
WBMF10625□	BFTG0513F	TRD20
WBMF10750□	BFTG0617F	TRD25
WBMF11000□	BFTG0621F	TRD25
WBMF11250□	BFTG0825F	TRD25

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	200-**250**-300	0.10-**0.20**-0.30	ACZ120
	Alloy Steel	180 to 280 HB	100-**150**-200	0.10-**0.20**-0.30	ACZ120

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WBMF Endmill Type

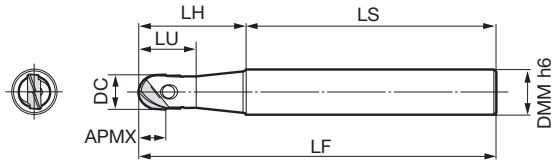
Rake Angle	Radial	-
	Axial	0°

0.1 to 0.4 mm

.0039" to .016"

Fig 1





Body

Dimensions (inch /*mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
Inch	**WBMF10500S**	●	0.5	0.625	0.427	1.772	1.906	0.782	3.678	1
	WBMF10500M	●	0.5	0.625	0.427	2.5222	1.906	0.782	4.428	1
	WBMF10500L	●	0.5	0.75	0.427	3.27	2.031	0.782	5.3	1
	WBMF10625S	●	0.625	0.75	0.47	1.77	2.0313	1	3.801	1
	WBMF10625M	●	0.625	0.75	0.47	2.52	2.0313	1	4.551	1
	WBMF10625L	●	0.625	1.00	0.47	3.265	2.2813	1	5.546	1
	WBMF10750S	●	0.75	1.00	0.572	2.265	2.2813	1.25	4.5459	1
	WBMF10750M	●	0.75	1.00	0.572	3.7647	2.2813	1.25	6.0459	1
	WBMF10750L	●	0.75	1.00	0.572	5.265	2.2813	1.25	7.546	1
	WBMF11000S	●	1.00	1.25	0.736	2.5117	2.2813	1.5	4.793	1
	WBMF11000M	●	1.00	1.25	0.736	4.265	2.2813	1.5	6.546	1
	WBMF11000L	●	1.00	1.25	0.736	6.0147	2.2813	1.5	8.296	1
	WBMF11250S	●	1.25	1.25	0.919	2.515	2.2813	1.75	4.796	1
	WBMF11250M	●	1.25	1.25	0.919	4.515	2.2813	1.75	6.796	1
	WBMF11250L		1.25	1.25	0.919	6.5147	2.2813	1.75	8.796	1
Metric	**WBMF1100S**	★	*10*	*16*	*9*	*30*	*70*	*17*	*100*	1
	WBMF1100M	★	*10*	*16*	*9*	*35*	*95*	*17*	*130*	1
	WBMF1100L	★	*10*	*16*	*9*	*50*	*130*	*17*	*180*	1
	WBMF1120S	★	*12*	*16*	*10.5*	*40*	*70*	*19.5*	*110*	1
	WBMF1120M	★	*12*	*16*	*10.5*	*40*	*110*	*19.5*	*150*	1
	WBMF1120L	★	*12*	*16*	*10.5*	*60*	*140*	*19.5*	*200*	1
	WBMF1160S	★	*16*	*20*	*12*	*50*	*80*	*25.5*	*130*	1
	WBMF1160M	★	*16*	*20*	*12*	*50*	*130*	*25.5*	*180*	1
	WBMF1160L	★	*16*	*20*	*12*	*70*	*150*	*25.5*	*220*	1
	WBMF1200S	★	*20*	*25*	*15*	*60*	*80*	*32*	*140*	1
	WBMF1200M	★	*20*	*25*	*15*	*60*	*140*	*32*	*200*	1
	WBMF1200L	★	*20*	*25*	*15*	*80*	*170*	*32*	*250*	1
	WBMF1250S	★	*25*	*32*	*18.5*	*70*	*80*	*36*	*150*	1
	WBMF1250M	★	*25*	*32*	*18.5*	*73*	*147*	*36*	*220*	1
	WBMF1250L	★	*25*	*32*	*18.5*	*100*	*200*	*36*	*300*	1
	WBMF1300S	★	*30*	*32*	*22.5*	*80*	*80*	*43*	*160*	1
	WBMF1300M	★	*30*	*32*	*22.5*	*85*	*155*	*43*	*240*	1
	WBMF1300L	★	*30*	*32*	*22.5*	*120*	*230*	*43*	*350*	1

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

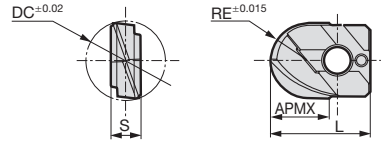
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide
Process	High-speed / Light	P
	General-purpose	
	Roughing	

Cat. No.	ACZ120	Dia. DC	Length L	Maximum Depth of Cut APMX	Thickness S	Nose Radius RE	Applicable Endmill	Fig
ZPGU2S	•	0.500	0.722	0.427	0.22	0.250	WBMF10500	1
ZPGU2.5S	•	0.625	0.805	0.470	0.24	0.313	WBMF10625	1
ZPGU3S	•	0.750	0.946	0.572	0.28	0.375	WBMF10750	1
ZPGU4S	•	1.000	1.130	0.736	0.30	0.500	WBMF11000	1
ZPGU5S	•	1.250	1.392	0.919	0.34	0.625	WBMF11250	1
ZPGU1551050	★	*10*	*15.6*	*9*	*5.1*	*5.0*	WBMF1100	1
ZPGU1856060	★	*12*	*18*	*10.5*	*5.6*	*6.0*	WBMF1120	1
ZPGU2061080	★	*16*	*20.5*	*12*	*6.1*	*8.0*	WBMF1160	1
ZPGU2471100	★	*20*	*24.5*	*15*	*7.1*	*10.0*	WBMF1200	1
ZPGU2876125	★	*25*	*28.5*	*18.5*	*7.6*	*12.5*	WBMF1250	1
ZPGU3486150	★	*30*	*34.4*	*22.5*	*8.6*	*15.0*	WBMF1300	1

Fig 1



● USA stocked item ★ Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

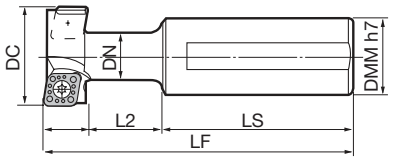
P Steel M Stainless Steel K Cast Iron

Rake Angle		
	Radial	0°
	Axial	0°

9 to 22 mm 90°

Fig 1





Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Diameter DN	Shank DMM	Width CW	Length L2	Shank LS	Overall Length LF	Number of Teeth	Fig
TSE2125	★	*21*	*10.5*	*25*	*9*	*20*	*80*	*109*	2	1
TSE2525	★	*25*	*12.5*	*25*	*11*	*21*	*80*	*112*	2	1
TSE3232	★	*32*	*16.5*	*32*	*14*	*26*	*80*	*120*	2	1
TSE4032	★	*40*	*20.5*	*32*	*18*	*32*	*80*	*130*	2	1
TSE5032	★	*50*	*26.5*	*32*	*22*	*38*	*80*	*140*	4	1

Inserts are sold separately.

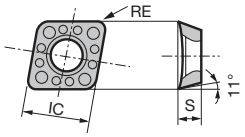
Insert

Dimensions (*mm*)

	Grade		Coated Carbide	Carbide	
	Process	High-speed / Light			
		General-purpose	PM	PK	K
		Roughing			

Cat. No. ANSI	ISO	AC630M	A30	G10E	Inscribed Circle IC	Thickness S	Nose Radius RE	Applicable Endmill	Fig
CPMT21.51ENS	**CPMT060204N-US**	●	●	●	6.35	2.38	0.4	TSE 2125	1
CPMT2.51.52ENS	**CPMT080308N-US**	●	●	●	7.938	3.18	0.8	TSE 2525	1
CPMT32.52ENX	**CPMT09T308N-US**	●	●	●	9.525	3.97	0.8	TSE 3232	1
CPMT432ENS	**CPMH120408N-US**	●	●	●	12.7	4.76	0.8	TSE 4032 TSE 5032	1

Fig 1



Parts

Flat Screw		Wrench	Applicable Endmill
BFTX02506N	N·m 1.5	TRX08	TSE2125
BFTX0307N	N·m 2.0	TRX10	TSE2525
BFTX0407N	N·m 3.0	TRX15	TSE3232
BFN0511T	N·m 5.0	TRX20	TSE4032 TSE5032

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**125**-150	0.05-**0.08**-0.10	AC630M
	Alloy Steel	180 to 280 HB	60- **80** -100	0.03-**0.05**-0.08	AC630M
K	Cast Iron	250HB	60- **80** -100	0.05-**0.08**-0.10	G10E

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

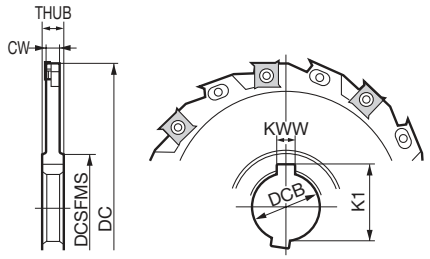
Rake Angle		
	Radial	-12°
	Axial	-2°

4 to 8 mm | 88°30'

All TSM Products are made-to-order



Fig 1



Body

Dimensions (*mm*)

Cat. No.	Dia. DC	Boss DCSFMS	Width CW	Thickness THUB	Bore Dia. DCB	Keyway Width KWW	Key Groove K1	Number of Teeth	Weight (kg)	Fig
TSM1004	*100*	*48*	*4*	*8*	*31.75*	*7.92*	*35.2*	10	0.15	1
TSM1005	*100*	*48*	*5*	*8*	*31.75*	*7.92*	*35.2*	10	0.20	1
TSM1006	*100*	*48*	*6*	*8*	*31.75*	*7.92*	*35.2*	10	0.30	1
TSM1254	*125*	*58*	*4*	*8*	*31.75*	*7.92*	*35.2*	12	0.35	1
TSM1255	*125*	*58*	*5*	*8*	*31.75*	*7.92*	*35.2*	12	0.40	1
TSM1256	*125*	*58*	*6*	*8*	*31.75*	*7.92*	*35.2*	12	0.45	1
TSM1258	*125*	*58*	*8*	*10*	*31.75*	*7.92*	*35.2*	12	0.60	1
TSM1604	*160*	*58*	*4*	*8*	*38.10*	*9.52*	*42.3*	16	0.50	1
TSM1605	*160*	*58*	*5*	*8*	*38.10*	*9.52*	*42.3*	16	0.60	1
TSM1606	*160*	*58*	*6*	*8*	*38.10*	*9.52*	*42.3*	16	0.70	1
TSM1608	*160*	*58*	*8*	*10*	*38.10*	*9.52*	*42.3*	16	0.95	1

Inserts are sold separately.

All of the above items are made-to-order.

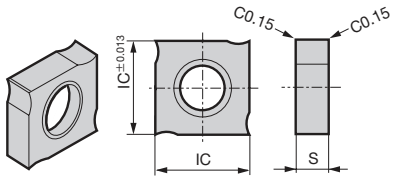
Insert

Dimensions (*mm*)

Grade		Carbide
Process	High-speed / Light	
	General-purpose	P K
	Roughing	

Cat. No.	A30	Inscribed Circle IC	Thickness S	Applicable Cutter	Fig
SNHG121		12.7	2.2	TSM 1004 / TSM 1254 / TSM 1604	1
SNHG122		12.7	2.7	TSM 1005 / TSM 1255 / TSM 1605	1
SNHG123		12.7	3.2	TSM 1006 / TSM 1256 / TSM 1606	1
SNHG124		12.7	4.3	TSM 1258 / TSM 1608	1

Fig 1



Parts

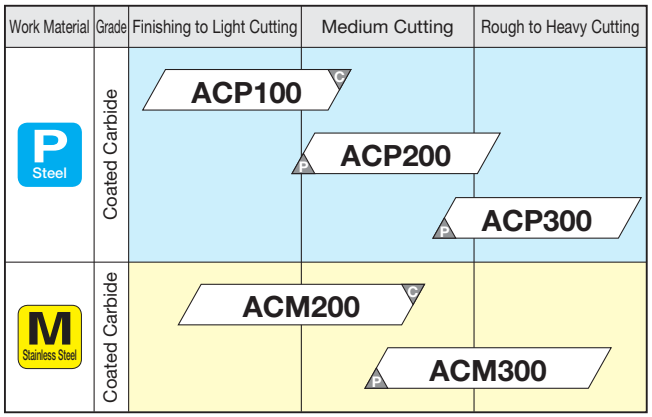
Applicable Cutter	Screw Hole Piece	Flat Screw		Wrench
TSM1004 TSM1254 TSM1604	TP43	BFNX0303	N·m 2.0	TRX10
TSM1005 TSM1255 TSM1605	TP53	BFNX0304	N·m 2.0	TRX10
TSM1006 TSM1256 TSM1606	TP64	BFNX0405	N·m 3.5	TRD20
TSM1258 TSM1608	TP84	BFNX0407	N·m 3.5	TRD20

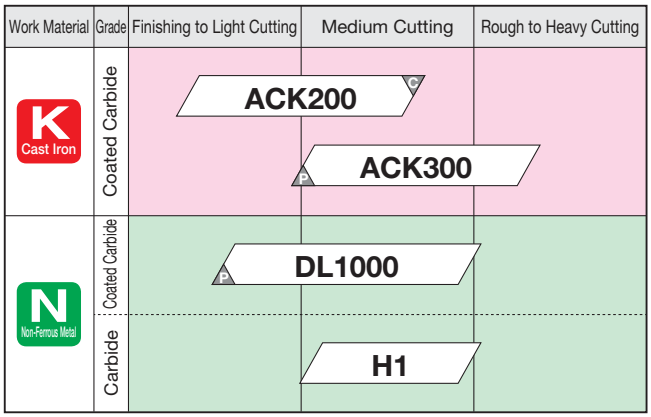


■ General Features

The SEC-WaveMill WFXC Type is a chamfering tool that uses a WFX series insert. A wide variety of grades support various work materials.

■ Grade Application Range





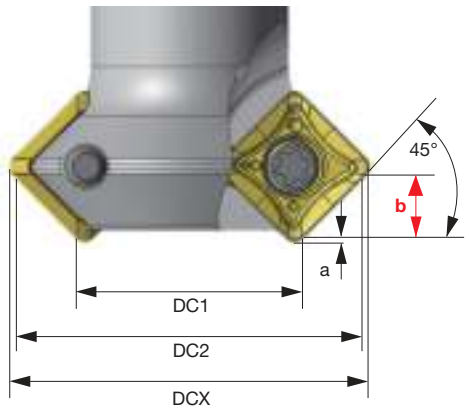
The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD, P: PVD, Blank: Uncoated

■ Precautions for Use

Chamfering tools use a straight cutting edge that enables the chamfering range to be changed depending on the nose radius (RE) of the insert mounted to the body.
Work diameter: Use within the range shown in the table below, no lower than DC1 and no higher than DC2.
Depth of cut: cutting to a depth shown by the distance from the tool tip (a) in a straight line to the cutting edge. (b) is possible.

Dimensions (mm)

Body	Insert		Min. Machining Dia.	Min. Machining Dia.	Minimum Depth	Maximum Depth	Maximum Dia.
	Cat. No.	RE	DC1	DC2	a	b	DCX
WFXC08008E	SOMT080304	0.4	7.5	15.8	0.1	**4.1**	17.8
	SOMT080308	0.8	8.0	15.8	0.2	**3.9**	17.5
	SOMT080312	1.2	8.5	15.8	0.4	**3.6**	17.2
WFXC08016E	SOMT080304	0.4	15.5	23.8	0.1	**4.1**	25.8
	SOMT080308	0.8	16.0	23.8	0.2	**3.9**	25.5
	SOMT080312	1.2	16.5	23.8	0.3	**3.6**	25.2
WFXC12025E	SOMT120404	0.4	24.6	38.3	0.1	**6.8**	41.3
	SOMT120408	0.8	25.0	38.3	0.2	**6.6**	41.0
	SOMT120412	1.2	25.6	38.3	0.4	**6.3**	40.7
	SOMT120416	1.6	26.1	38.3	0.5	**6.1**	40.4
WFXC12032E	SOMT120404	0.4	31.6	45.3	0.1	**6.8**	48.3
	SOMT120408	0.8	32.0	45.3	0.2	**6.6**	48.0
	SOMT120412	1.2	32.6	45.3	0.4	**6.3**	47.7
	SOMT120416	1.6	33.1	45.3	0.5	**6.1**	47.4



WFXC Endmill Type - 8mm Inserts

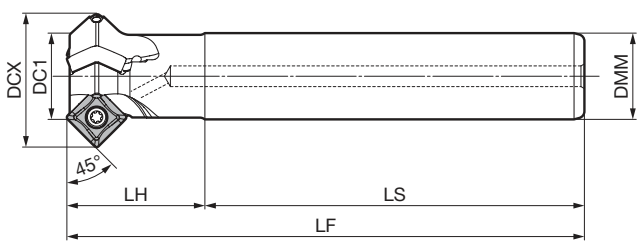
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	0°
	Axial	0°

45°

Fig 1





Body (Standard Type) Applicable Insert 8mm Type

Dimensions (*mm*)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Overall Length LF	Head LH	Shank LS	Shank DMM	Number of Teeth	Weight (kg)	Fig
WFXC08008E	★	*8*	*17.5*	*120*	*30*	*90*	*10*	1	*0.1*	1
WFXC08016E	★	*16*	*25.5*	*120*	*30*	*90*	*16*	2	*0.2*	1

DC1 and DCX dimensions are values with an insert with 0.8 nose radius mounted.

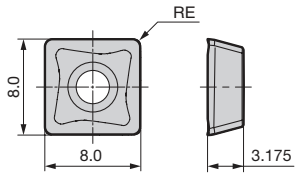
Insert

★Worldwide Warehouse Item

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N	P		
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	-	-		0.4	1
SOMT080308PZER-L		★	★	★	★	★	★	★	-	-		0.8	1
SOMT080304PZER-G		★	★	★	★	★	★	★	-	-		0.4	1
SOMT080308PZER-G		★	★	★	★	★	★	★	-	-		0.8	1
SOMT080312PZER-G		★	★	★	★	★	★	★	-	-		1.2	1
SOMT080308PZER-H		★	★	★	★	★	★	★	-	-		0.8	1
SOMT080312PZER-H		★	★	★	★	★	★	★	-	-		1.2	1
SOET080304PZER-G		★	★	★	★	★	★	★	-	-	★	0.4	1
SOET080308PZER-G		★	★	★	★	★	★	★	-	-	★	0.8	1
SOET080312PZER-G		★	★	★	★	★	★	★	-	-	★	1.2	1
SOET080302PZFR-S		-	-	-	-	-	-	-	★	★	-	0.2	1
SOET080304PZFR-S		-	-	-	-	-	-	-	★	★	-	0.4	1
SOET080308PZFR-S		-	-	-	-	-	-	-	★	★	-	0.8	1

Fig 1



Precautions for Use H174

Parts

Applicable Cutter	Flat Screw	N·m	Wrench
WFXC08000M	BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seizure Cream is included in the package.

Identification Code

WFX C 08 016 E

Cutter Series | Chamfering | Insert Size | Dia. | Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280 HB	150-**200**-250	0.05-**0.10**-0.15
P	Mild Steel	≤ 180HB	180-**265**-350	0.10-**0.15**-0.20
P	Die Steel	200 to 220 HB	100-**150**-200	0.05-**0.10**-0.15
M	Stainless Steel	-	150-**200**-250	0.05-**0.10**-0.15
K	Cast Iron	250HB	100-**175**-250	0.05-**0.10**-0.15

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WFXC Endmill Type - 12mm Inserts

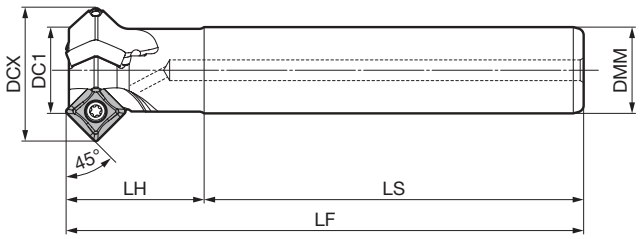
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	0°
	Axial	0°

45°

Fig 1





Body (Standard Type) Applicable Insert 12mm Type

Dimensions (*mm*)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Overall Length LF	Head LH	Shank LS	Shank DMM	Number of Teeth	Weight (kg)	Fig
WFXC12025E	★	*25*	*41.0*	*150*	*40*	*110*	*25*	3	*0.6*	1
WFXC12032E	★	*32*	*48.0*	*150*	*40*	*110*	*32*	3	*1.0*	1

DC1 and DCX dimensions are values with an insert with 0.8 nose radius mounted.

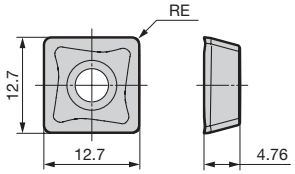
Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	-	-	-	0.8	1
SOMT120404PDER-G		●	●	●	●	●	●	●	-	-	-	0.4	1
SOMT120408PDER-G		●	●	●	●	●	●	●	-	-	●	0.8	1
SOMT120412PDER-G		●	●	●	●	●	●	●	-	-	-	1.2	1
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	1.6	1
SOMT120408PDER-H		●	●	●	●	●	●	●	-	-	-	0.8	1
SOET120408PDFR-S		-	-	-	-	-	-	-	●	●	-	0.8	1

Fig 1



Precautions for Use H174

Parts

Applicable Cutter	Flat Screw		Wrench
		N·m	
WFXC12000M	BFTX03512IP	3.0	TRDR15IP

SUMI-P Anti-seizure Cream is included in the package.

Identification Code

WFX C 12 025 E

Cutter Series | Chamfering | Insert Size | Dia. | Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280 HB	150-**200**-250	0.05-**0.10**-0.15
P	Mild Steel	≤ 180HB	180-**265**-350	0.10-**0.15**-0.20
P	Die Steel	200 to 220 HB	100-**150**-200	0.05-**0.10**-0.15
M	Stainless Steel	-	150-**200**-250	0.05-**0.10**-0.15
K	Cast Iron	250HB	100-**175**-250	0.05-**0.10**-0.15

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

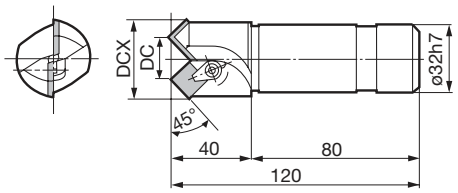
N·m Recommended Tightening Torque (N·m)

Rake Angle		
	Radial	0°
	Axial	0°

45°

Fig 1





(Figure shows SMC420)

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Number of Teeth	Hole Chamfering Machining Range	Fig
SMC407	★	*7*	*24.3*	1	ø11.0 to ø23.8	1
SMC420	★	*20*	*37.3*	2	ø21.2 to ø36.8	1
SMC435	★	*35*	*52.3*	2	ø36.2 to ø51.8	1

Inserts are sold separately.

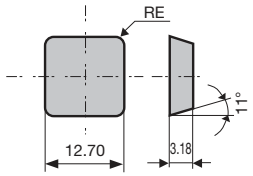
Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide		Carbide			Cermet			
Process	High-speed / Light	K					P			
	General-purpose	K		P	P K	K		P		
	Roughing		K							
Cat. No.		ACK200	ACK300	ST20E	A30	G10E	T1500A	T250A	Nose Radius RE	Fig
SPMN422				●	●	●	●	●	0.8	1
SPMN423		●	●		●	●	●		1.2	1
SPG422				●	●	●	●		0.8	1

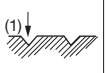
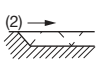
Fig 1



Parts

Clamp	Double Screw			Wrench
		Size	N·m	
CCM6BR	WB616	**M6**	**5.0**	LH030

Applications

(1) Single Sided	(2) Double Sided	(3) Hole Chamfering	(4) Stepping	(5) Small Plunging, Traverse Cutting
				 



■ Features

New

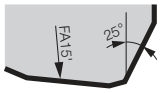
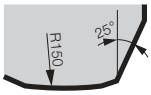
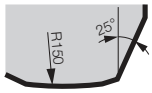
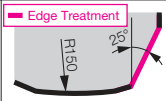
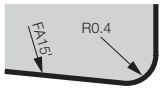
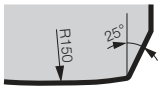
- **Drastically Reduced Runout Adjustment Time**
  Simple screw-fastening structure enables fine adjustments to be made easily
- **Through-Tool Coolant**
  Secures a supply of coolant to the cutting edge and breaks chips thoroughly
- **Lightweight Aluminum Alloy Body**
  Utilizing aluminum alloy to achieve a total weight of less than 2.87lbs for a ø125mm cutter with 22 teeth.

Series

Number in circle is the number of teeth Inch Inch Arbor

Type	Cat. No.	Body Material	Diameter Range (mm)							
			ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell type	ANXA16000RS	Aluminum Alloy					10 14	12 18	14 22	20 28
Shell type	ANXA16000R Inch	Aluminum Alloy					10 14	12 18	14 22	20 28
Shell type	ANXS16000RS	Steel		6	6 9	8 12	10 14	12 18	14 22	
Shell type	ANXS16000R Inch	Steel				8 12	10 14	12 18	14 22	
Shank type	ANXS16000E	Steel	4	6						

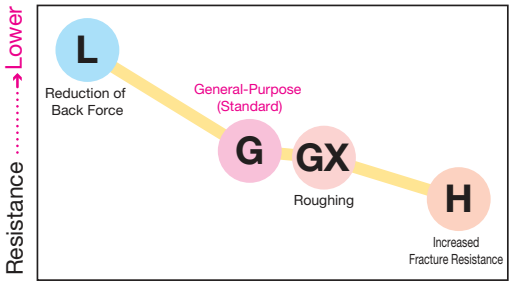
Insert Selection Guide N

Type	L	G	GX	H	—	W
Cutting Edge Shape						
Features	Low Resistance	Standard	Long Edge	High Strength		
Applications	Finishing/Light Cutting	General-Purpose	Roughing		Corner Radius Milling	Wiper
Cutting Edge Length (*)	0.236" *6.0mm*	0.236" *6.0mm*	0.354" *9.0mm*	0.236" *6.0mm*		
Wiper Edge Length	0.075" *1.9mm*	0.075" *1.9mm*	0.075" *1.9mm*	0.075" *1.9mm*	0.098" *2.5mm*	0.157" *4.0mm*



*Cutting Edge Length

Edge Selection Guide

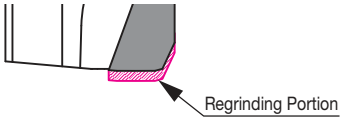


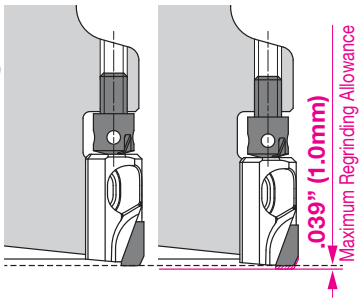
Sumitomo Services Offering in USA!

- **Pre-setting**
- **Insert Reconditioning**

Benefits of Reconditioning

- Reduces running costs by drastically increased insert regrinding allowance (to .039" / 1.0mm)
- Assuming .008" (0.2mm) of regrinding each time, an edge can be reground up to 5 times. (*Peripheral edge cannot be reground.)





For service inquiries, please contact local Sumitomo Sales Representative or Engineering Department

■ Maximum Allowable Spindle Speed

(Aluminum alloy body)

Cat. No.	*n* max(RPM)
ANXA16080RS14	20,000
ANXA16100RS18	18,000
ANXA16125RS22	16,000
ANXA16160RS28	14,000
ANXA16080RS10	20,000
ANXA16100RS12	18,000
ANXA16125RS14	16,000
ANXA16160RS20	14,000
ANXA16080R14	20,000
ANXA16100R18	18,000
ANXA16125R22	16,000
ANXA16160R28	14,000
ANXA16080R10	20,000
ANXA16100R12	18,000
ANXA16125R14	16,000

Cat. No.	*n* max(RPM)
ANXA16160R20	14,000

Cat. No.	*n* max(RPM)
ANXS16040RS06	25,000
ANXS16050RS09	25,000
ANXS16063RS12	22,000
ANXS16080RS14	20,000
ANXS16100RS18	18,000
ANXS16125RS22	16,000
ANXS16050RS06	25,000
ANXS16063RS08	22,000
ANXS16080RS10	20,000
ANXS16100RS12	18,000
ANXS16125RS14	16,000
ANXS16063R12	22,000
ANXS16080R14	20,000
ANXS16100R18	18,000
ANXS16125R22	16,000

(Steel body)

Cat. No.	*n* max(RPM)
ANXS16063R08	22,000
ANXS16080R10	20,000
ANXS16100R12	18,000
ANXS16125R14	16,000
ANXS16032E04	10,000
ANXS16040E06	10,000

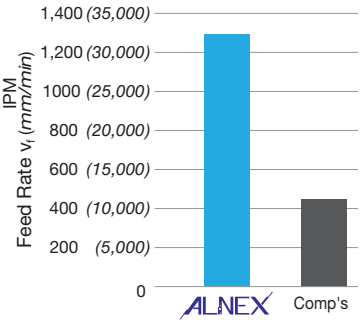
High-speed/High-efficiency Cutting

Ultra-high efficiency machining with feed rates v_f = 1,200 IPM (*30,000 mm/min*)



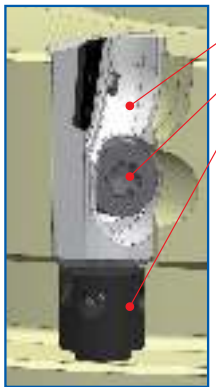
Cutter diameter ø100mm comparison

	Spindle Speed min^{-1}	Number of Teeth	Feed Rate IPM v_f (*mm/min*)
ALNEX	18,000	18	1,275 (*32,400*)
Comp's	9,500	12	450 (*11,400*)

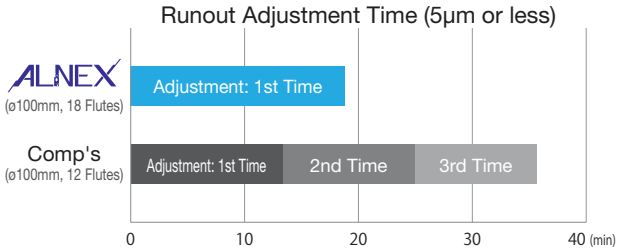


Drastically Reduced Runout Adjustment Time

● Simple screw-fastening structure ● Enables fine adjustments to be made easily ● High-rigidity body







1st Time Completed, Adjustment Time Reduced

Chip Control



Coolant Through Inserts Chip Breaking



ALNEX



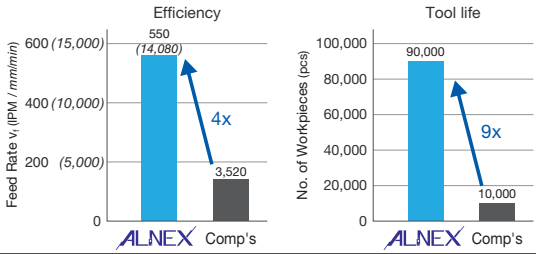
Competitor's

Part Material: ADC12 v_c = 8,200 SFM, f_z = 0.002 IPT, a_p = 0.02"
Cutting conditions: v_c = *2,500m/min*, f_z = *0.05mm/t*, a_p = *0.5mm* Wet

■ Application Examples

4 times the efficiency and 9 times the tool life

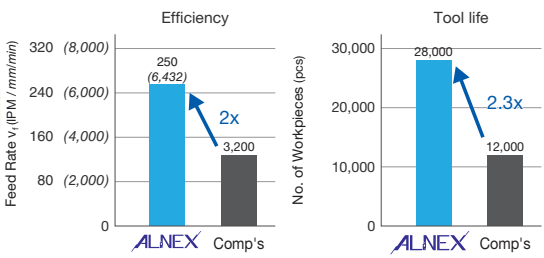




Machine: Vertical Machining Center BT30, Part Material: ADC12 Automotive Component Tool: ANXA 16125R22 (ø125, 22 teeth, aluminum alloy body *Total weight with arbor 1.75kg)
Insert: ANB 1600R-G (DA1000) Cutting conditions: v_c = 10,300 SFM (*3,142m/min*), v_f = 554 IPM (*14,080mm/min*), a_p = .031" (*0.8mm*) Wet

2 times the efficiency and 2.3 times the tool life





Machine: Vertical Machining Center HSK63, Part Material: ADC12 Cylinder Head Tool: ANXS 16063RS12 (ø63, 12 teeth, steel body)
Insert: ANB 1600R-G (DA1000) Cutting conditions: v_c = 5,200 SFM (*1,583m/min*), v_f = 250 IPM (*6,432mm/min*), a_p = .02" (*0.5mm*) Wet

ANXS R(S) Steel Shellmill Type

New

Rake Angle		
	Radial	5°
	Axial	5°

3mm 90°



Fig 1

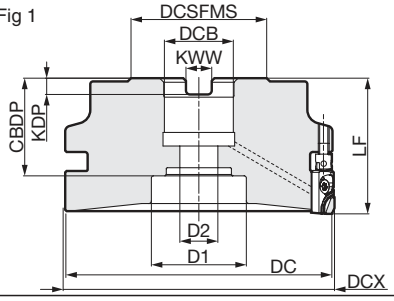
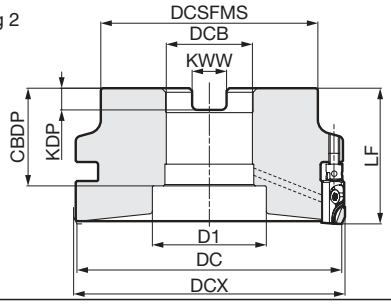


Fig 2



Body (Steel)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch Arbors	ANXS16063R08	★	61	63	50	50	25.4	9.5	6	31	20	14	8	0.9	1
	ANXS16063R12	★	61	63	50	50	25.4	9.5	6	31	20	14	12	0.9	1
	ANXS16080R10	★	78	80	50	50	25.4	9.5	6	34	35	14	10	1.2	1
	ANXS16080R14	★	78	80	50	50	25.4	9.5	6	34	35	14	14	1.2	1
	ANXS16100R12	★	98	100	80	50	31.75	12.7	8	36	42	-	12	2.0	2
	ANXS16100R18	★	98	100	80	50	31.75	12.7	8	36	42	-	18	2.0	2
	ANXS16125R14	★	123	125	80	63	38.1	15.9	10	42.5	52	-	14	3.9	2
	ANXS16125R22	★	123	125	80	63	38.1	15.9	10	42.5	52	-	22	3.9	2
Metric Arbors	ANXS16040RS06	★	38	40	38.5	40	16	8.4	5.6	26	14	9	6	0.3	1
	ANXS16050RS06	★	48	50	48.5	40	22	10.4	6.3	26	18	11	6	0.4	1
	ANXS16050RS09	★	48	50	48.5	40	22	10.4	6.3	26	18	11	9	0.5	1
	ANXS16063RS08	★	61	63	50	40	22	10.4	6.3	26	18	11	8	0.7	1
	ANXS16063RS12	★	61	63	50	40	22	10.4	6.3	26	18	11	12	0.7	1
	ANXS16080RS10	★	78	80	50	50	27	12.4	7	34	35	14	10	1.2	1
	ANXS16080RS14	★	78	80	50	50	27	12.4	7	34	35	14	14	1.2	1
	ANXS16100RS12	★	98	100	80	50	32	14.4	8	32	46	-	12	2.0	2
	ANXS16100RS18	★	98	100	80	50	32	14.4	8	32	46	-	18	2.0	2
	ANXS16125RS14	★	123	125	80	63	40	16.4	9	35	52	-	14	3.9	2
	ANXS16125RS22	★	123	125	80	63	40	16.4	9	35	52	-	22	3.9	2

Inserts are sold separately. Center Bolt included with cutter purchase.
If using corner radius inserts (ANB1604R), DC = DCX.
★= World Wide Warehouse Item

Parts Identification Code

ANX S 16 100 R S 18

Cutter Series	Steel Body	Blade Size	Cutter Dia.	Rotation	Metric Bore	Number of Teeth

(Sold Separately)

Applicable Cutter	Clamp Screw		Adjustment Screw	Wrench	Adjustment Wrench	Center Bolt	Assembly Wrench
ANXS16063R○○	BXA0310IP	2.0 N·m	HFJ	TRXW10IP	ANT	BXH1235-D18	HFVT
ANXS16080R○○						BXH1235-D33	
ANXS16100R○○						BXH1635-D40	
ANXS16125R○○						BXH2036-D50	
ANXS16040RS06						BXH0825-D13	
ANXS16050RS○○						BXH1030-D16	
ANXS16063RS○○							
ANXS16080RS○○						BXH1235-D33	
ANXS16100RS○○						BXH1635-D40	
ANXS16125RS○○						BXH2036-D50	

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS16063R08	22,000
ANXS16063R12	22,000
ANXS16080R10	20,000
ANXS16080R14	20,000
ANXS16100R12	18,000
ANXS16100R18	18,000
ANXS16125R14	16,000
ANXS16125R22	16,000
ANXS16040RS06	25,000
ANXS16050RS06	25,000
ANXS16050RS09	25,000
ANXS16063RS08	22,000
ANXS16063RS12	22,000
ANXS16080RS10	20,000
ANXS16080RS14	20,000
ANXS16100RS12	18,000
ANXS16100RS18	18,000
ANXS16125RS14	16,000
ANXS16125RS22	16,000

New

Insert Table

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed/Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Length	Wiper Edge Shape	Applications	Fig
ANB1600R-L	●	*6.0*	*1.9*	Linear	Low Resistance	1
ANB1600R-G	●	*6.0*	*1.9*	Arc-Shaped	General Purpose	1
ANB1600R-H	●	*6.0*	*1.9*	Arc-Shaped	Strong Edge	1
ANB1600R-GX	●	*9.0*	*1.9*	Arc-Shaped	Long Edge	2
ANB1604R	●	*6.0*	*2.5*	Linear	Corner Radius	3
ANB1600R-W	●	-	*4.0*	Arc-Shaped	Wiper	4

Fig 1

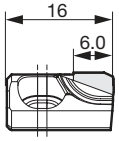


Fig 2

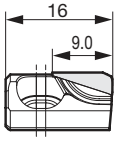


Fig 3

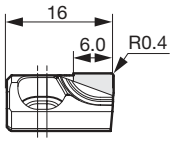
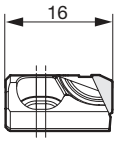


Fig 4



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (SFM / *m/min*) Min. - Optimum - Max.	Feed Rate f_z (IPT / *mm/t*) Min. - Optimum - Max.	Blade Grade
N	Aluminum Alloy	-	6,500 - 8,200 - 9,800 *2,000 - 2,500 - 3,000*	.002 - .005 - .008 *0.05 - 0.13 - 0.20*	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (SFM / *m/min*) Min. - Optimum - Max.	Feed Rate f_z (IPT / *mm/t*) Min. - Optimum - Max.	Blade Grade
N	Aluminum Alloy	-	1,300 - 2,000 - 2,600 *400 - 600 - 800*	.002 - .005 - .008 *0.05 - 0.13 - 0.20*	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

ANXA R(S) Aluminum Shellmill Type

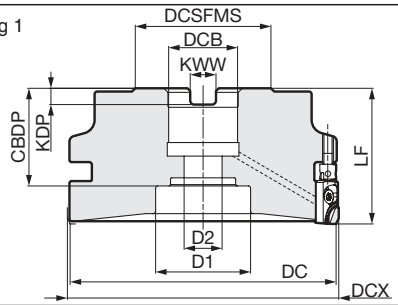
New

Rake Angle		
	Radial	5°
	Axial	5°

3mm 90°



Fig 1



Body (Aluminum Alloy)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)
Inch Arbors	ANXA16080R10	●	78	80	50	50	25.4	9.5	6	34	35	14	10	0.5
	ANXA16080R14	●	78	80	50	50	25.4	9.5	6	34	35	14	14	0.5
	ANXA16100R12	●	98	100	50	50	25.4	9.5	6	34	35	14	12	0.9
	ANXA16100R18	●	98	100	50	50	25.4	9.5	6	34	35	14	18	0.9
	ANXA16125R14	●	123	125	50	50	25.4	9.5	6	34	35	14	14	1.2
	ANXA16125R22	●	123	125	50	50	25.4	9.5	6	34	35	14	22	1.3
	ANXA16160R20	●	158	160	80	63	38.1	15.9	10	42.5	55	30	20	2.4
	ANXA16160R28	●	158	160	80	63	38.1	15.9	10	42.5	55	30	28	2.6
Metric Arbors	ANXA16080RS10	★	78	80	50	50	27	12.4	7	34	35	14	10	0.5
	ANXA16080RS14	★	78	80	50	50	27	12.4	7	34	35	14	14	0.5
	ANXA16100RS12	★	98	100	50	50	27	12.4	7	34	35	14	12	0.8
	ANXA16100RS18	★	98	100	50	50	27	12.4	7	34	35	14	18	0.9
	ANXA16125RS14	★	123	125	50	50	27	12.4	7	34	35	14	14	1.2
	ANXA16125RS22	★	123	125	50	50	27	12.4	7	34	35	14	22	1.3
	ANXA16160RS20	★	158	160	80	63	40	16.4	9	35	52	29	20	2.6
	ANXA16160RS28	★	158	160	80	63	40	16.4	9	35	52	29	28	2.6

Inserts are sold separately. Center Bolt included with cutter purchase.
If using corner radius inserts (ANB1604R), DC = DCX.

●= USA Stocked Item ★= World Wide Warehouse Item

Identification Code

ANX A 16 100 R S 18

Cutter Series	Aluminum Alloy Body	Blade Size	Cutter Dia.	Rotation	Metric Bore	Number of Teeth

Parts

(Sold Separately)

Applicable Cutter	Clamp Screw		Adjustment Screw	Wrench	Adjustment Wrench	Center Bolt	Assembly Wrench
ANXA16080R○○	BXA0310IP	2.0 (N·m)	HFJ	TRXW10IP	ANT	BXH1235-D33	HFVT
ANXA16100R○○							
ANXA16125R○○							
ANXA16160R○○						BXH2036-D50	
ANXA16080RS○○						BXH1235-D33	
ANXA16100RS○○							
ANXA16125RS○○							
ANXA16160RS○○						BXH2036-D50	

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXA16080R10	20,000
ANXA16080R14	20,000
ANXA16100R12	18,000
ANXA16100R18	18,000
ANXA16125R14	16,000
ANXA16125R22	16,000
ANXA16160R20	14,000
ANXA16160R28	14,000
ANXA16080RS10	20,000
ANXA16080RS14	20,000
ANXA16100RS12	18,000
ANXA16100RS18	18,000
ANXA16125RS14	16,000
ANXA16125RS22	16,000
ANXA16160RS20	14,000
ANXA16160RS28	14,000

(N·m) Recommended Tightening Torque (N·m)

New

Insert Table

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed/Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Length	Wiper Edge Shape	Applications	Fig
ANB1600R-L	●	*6.0*	*1.9*	Linear	Low Resistance	1
ANB1600R-G	●	*6.0*	*1.9*	Arc-Shaped	General Purpose	1
ANB1600R-H	●	*6.0*	*1.9*	Arc-Shaped	Strong Edge	1
ANB1600R-GX	●	*9.0*	*1.9*	Arc-Shaped	Long Edge	2
ANB1604R	●	*6.0*	*2.5*	Linear	Corner Radius	3
ANB1600R-W	●	-	*4.0*	Arc-Shaped	Wiper	4

Fig 1

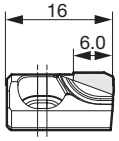


Fig 2

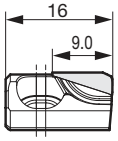


Fig 3

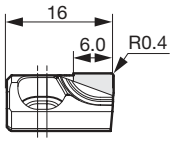
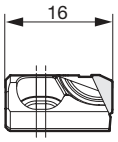


Fig 4



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (SFM / *m/min*) Min. - Optimum - Max.	Feed Rate f_z (IPT / *mm/t*) Min. - Optimum - Max.	Blade Grade
N	Aluminum Alloy	-	6,500 - 8,200 - 9,800 *2,000 - 2,500 - 3,000*	.002 - .005 - .008 *0.05 - 0.13 - 0.20*	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (SFM / *m/min*) Min. - Optimum - Max.	Feed Rate f_z (IPT / *mm/t*) Min. - Optimum - Max.	Blade Grade
N	Aluminum Alloy	-	1,300 - 2,000 - 2,600 *400 - 600 - 800*	.002 - .005 - .008 *0.05 - 0.13 - 0.20*	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

ANXS Steel Endmill Type

New | Rake Angle: Radial -2° to 0°, Axial 5° | 3mm | 90°

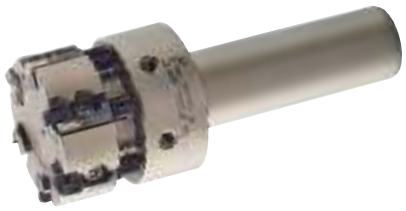
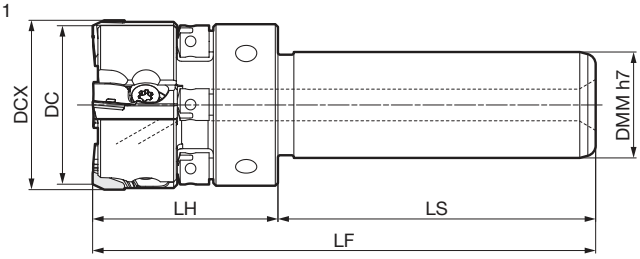


Fig 1



Body (Steel)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)
ANXS16032E04	★	*30*	*32*	*20*	*35*	*60*	*95*	4	*0.3*
ANXS16040E06	★	*38*	*40*	*20*	*40*	*60*	*100*	6	*0.5*

Inserts are sold separately.
If using corner radius inserts (ANB1604R), DC = DCX.
★= World Wide Warehouse Item

Identification Code

ANX S 16 032 E 04

Cutter Series	Steel Body	Blade Size	Cutter Dia.	With Shank	Number of Teeth

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS16032E04	10,000
ANXS16040E06	10,000

Parts

(Sold Separately)

Applicable Cutter	Clamp Screw		Adjustment Screw	Wrench	Adjustment Wrench	Assembly Wrench
ANXS16032E04	BXA0310IP	2.0	HFJ	TRXW10IP	ANT	HFVT
ANXS16040E06						

Insert Table

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed/Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Length	Wiper Edge Shape	Applications	Fig
ANB1600R-L	●	*6.0*	*1.9*	Linear	Low Resistance	1
ANB1600R-G	●	*6.0*	*1.9*	Arc-Shaped	General Purpose	1
ANB1600R-H	●	*6.0*	*1.9*	Arc-Shaped	Strong Edge	1
ANB1600R-GX	●	*9.0*	*1.9*	Arc-Shaped	Long Edge	2
ANB1604R	●	*6.0*	*2.5*	Linear	Corner Radius	3
ANB1600R-W	●	-	*4.0*	Arc-Shaped	Wiper	4

Fig 1

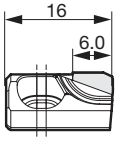


Fig 2

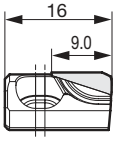


Fig 3

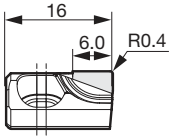
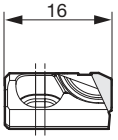


Fig 4



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (SFM / *m/min*) Min. - Optimum - Max.	Feed Rate f_z (IPT / *mm/t*) Min. - Optimum - Max.	Blade Grade
N	Aluminum Alloy	-	6,500 - 8,200 - 9,800 *2,000 - 2,500 - 3,000*	.002 - .005 - .008 *0.05 - 0.13 - 0.20*	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (SFM / *m/min*) Min. - Optimum - Max.	Feed Rate f_z (IPT / *mm/t*) Min. - Optimum - Max.	Blade Grade
N	Aluminum Alloy	-	1,300 - 2,000 - 2,600 *400 - 600 - 800*	.002 - .005 - .008 *0.05 - 0.13 - 0.20*	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

MEMO

HF Type



■ General Features

The HF Type high-efficiency aluminum alloy cutter employs a unique blade design to achieve machining without burrs.
New HFFH Type with coolant holes is now available as a BBT30 (BIG-PLUS™) arbour integrated version.

Work Material

· Aluminum and aluminum alloys
· Other non-ferrous metals

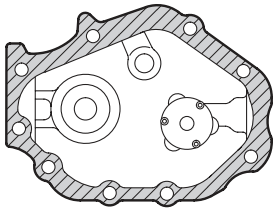
(Not suited for cast iron or steel.)

■ Features

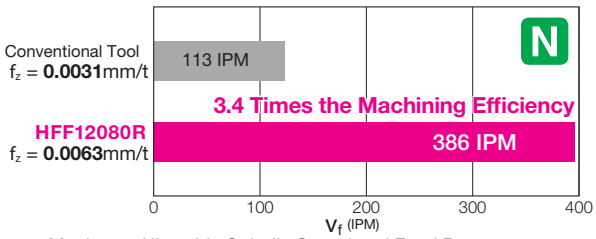


● Achieves high-efficiency milling with V_f of over 787 IPM thanks to its multi-blade design (3 edges per inch)

High-feed, High-efficiency Milling by Multi-edge Design

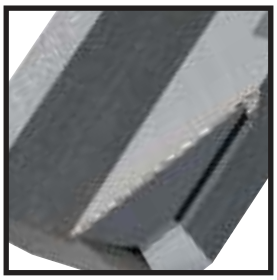


Workpiece: Aluminum Case (Frame Milling)
Tool: **HFF12080R-25.4** (ø80 10-flute),
Conventional Tool (ø80 6-flute)



■ Maximum Allowable Spindle Speed and Feed Rate

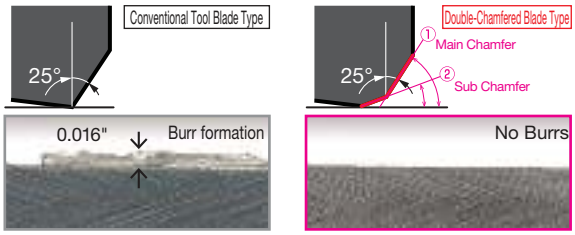
Cutter Dia. (mm)	nmax (RPM)	V_c (SFM)	f_z (IPT)	Maximum Number of Teeth	V_f (IPM)
ø80	11,000	9,065	up to 0.008"	10	up to 866"
ø100	9,500	9,787	up to 0.008"	12	up to 897"
ø125	7,500	9,659	up to 0.008"	15	up to 886"



● Reduces burrs by using a double-chamfered blade type

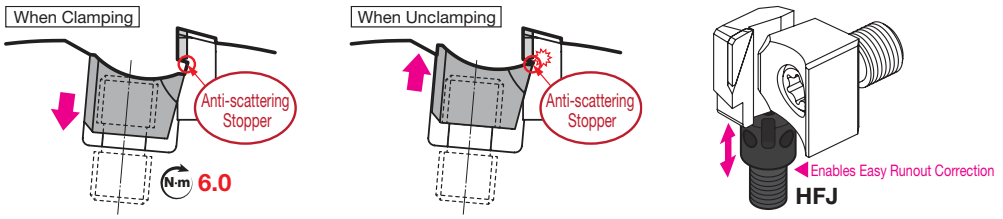
Drastically reduces burrs by preventing the plastic deformation that causes burrs.

Work Material: **A6061** Sheet Metal
Cutting Conditions: V_c = **10,308 SFM**, f_z = **0.004 IPT**, a_p = **0.02"**, Dry





● Wedge clamp with anti-scattering mechanism ensures safety and operability



Ensure that the maximum allowable spindle speed (n max) specified for each cutter diameter is not exceeded. (See the table at upper right)

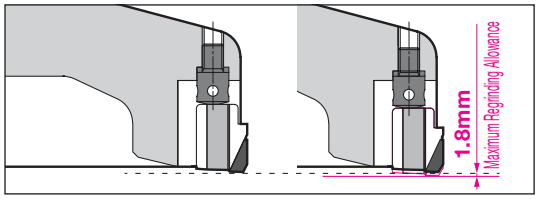


● Reduces running costs by drastically increasing blade regrinding allowance (to 0.071")

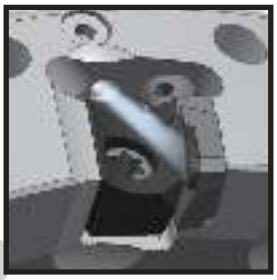
Assuming 0.008" of regrinding each time, an edge can be used up to 10 times.

(Given conditions of normal wear with a_p = **0.06"** or less)





The regrinding amount has been drastically increased compared to conventional screw-lock types



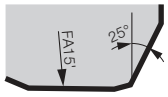
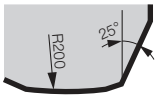
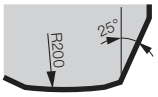
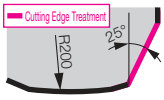
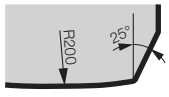
● Internal coolant improves chip evacuation performance (HFFH Type, HFFH-BBT30 Type)

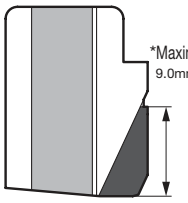
The internal coolant effectively prevents chips from becoming clogged or biting into the work material and achieves longer tool life. (Use an internal coolant compatible arbor)

N·m Recommended Tightening Torque (N·m)

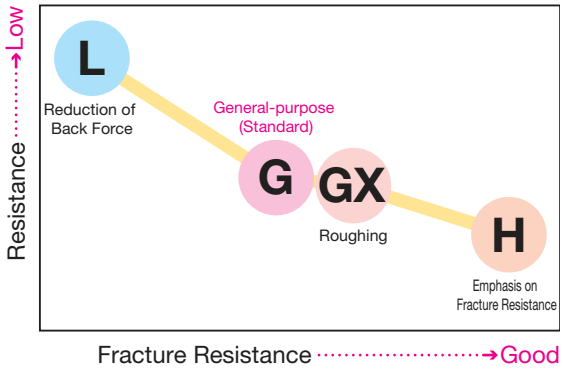
*1 BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
*2 Can also be used with BT30 spindle machines.

■ Chipbreaker Selection

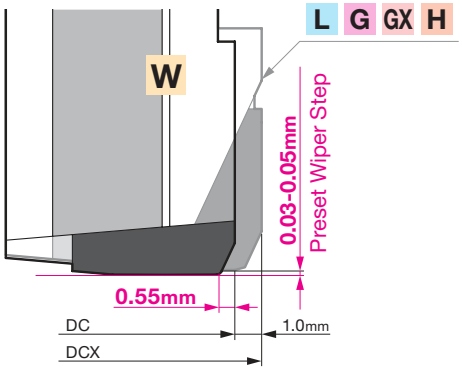
Work Material	N				
Type	L Type	G Type	GX Type	H Type	W Type
Cutting Edge Shape					
Features	Low Resistance	Standard	Long Edge	High Strength	Wiper
Applications	Reduction of Back Force	General-purpose	Roughing	Emphasis on Fracture Resistance	
Edge Length (*)	0.236”	0.236”	0.354”	0.236”	



■ Chipbreaker Selection Guide

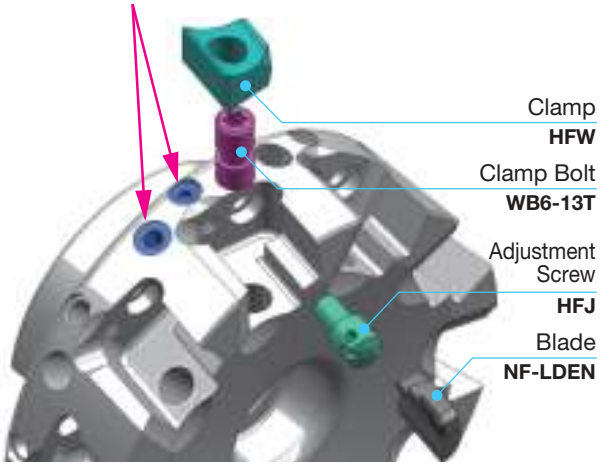


■ Wiper Blade Step Amount



■ Structure of HF Type

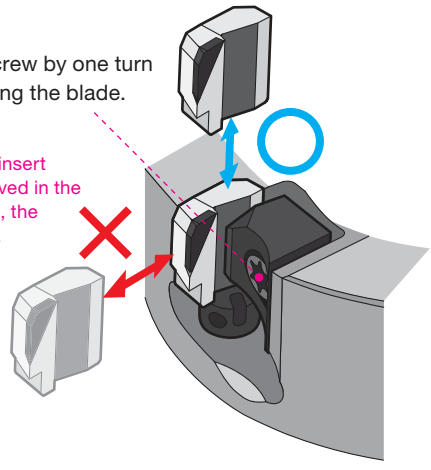
The axial set screw and balance adjustment screw hole have an embedded special part that prevents the insertion of screwdrivers or hex wrenches.



■ Blade Mounting Direction

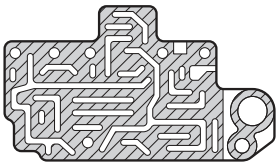
Loosen the screw by one turn before removing the blade.

⚠ Note that if the insert is forcibly removed in the wrong direction, the part may break.

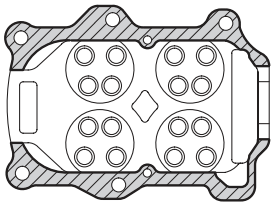


■ Application Examples

● Workpiece: Automotive Component		Sumitomo
Work Material: Aluminum Alloy	Body	HFFH12100R-25.4
	Blade Cat. No.	NF-LDEN12T3ZDTR-H
	Grade	DA1000
	Number of Teeth	12
	v_c(SFM)	6,181
	n(RPM)	6,000
	v_f(IPM)	236”
	f_z(IPT)	0.002”
	a_p(inch)	0.008”
	Coolant	Wet (Internal Coolant Supply)
	Results	Achieves 3,600 units, double the tool life of conventional external coolant supply types. Good machined surface



● Workpiece: Engine Component		Sumitomo
Work Material: Aluminum Alloy	Body	HFFH12125R-31.75
	Blade Cat. No.	NF-LDEN12T3ZDFR-G
	Grade	DA1000
	Number of Teeth	15
	v_c(SFM)	9,663
	n(RPM)	295
	v_f(IPM)	266”
	f_z(IPT)	0.0024”
	a_p(inch)	0.08”
	Coolant	Wet (Internal Coolant Supply)
	Results	In contrast to conventional external coolant supply types, the tool life has reached 1.7x greater at 17,000 units and creates finer chips



HFM SHELLMILL (Inch & Metric) Type

Rake Angle		
	Radial	4°
	Axial	10°

.118" 90° | 3mm 90°



Fig 1

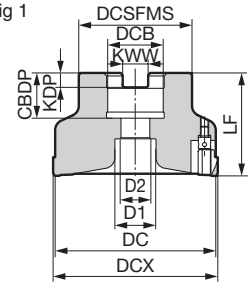


Fig 2

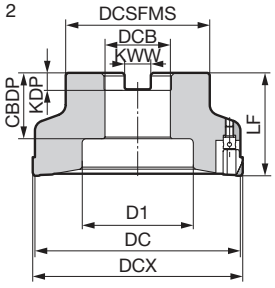
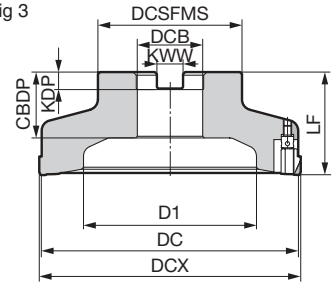


Fig 3



Body (Fine Pitch: 2-teeth / Inch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Coolant Bolt	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**HFMH42500R**	●	2.500	2.579	1.970	2.000	1.000	0.375	0.220	1.020	0.797	0.531	BFXH1/2X1 1/4	6	1.76	1
	HFMH43000R	●	3.000	3.079	1.970	2.000	1.000	0.375	0.220	1.020	0.797	0.531	BFXH1/2X1 1/4	6	2.42	1
	HFMH44000R	●	4.000	4.079	2.756	2.000	1.500	0.625	0.380	1.457	2.126	0.781	BFXH3/4X2	8	3.96	1
	HFMH45000R	●	5.000	5.079	3.150	2.000	1.500	0.625	0.380	1.457	2.126	0.781	BFXH3/4X2	10	6.17	1
	HFMH46000R	●	6.000	6.079	3.740	2.374	1.500	0.625	0.380	1.457	2.756	0.781	BFXH3/4X2	12	9.50	1
Metric	**HFM12080RS-22**	★	*80*	*82*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	6	*1.0*	1
	HFM12080RS-27	★	*80*	*82*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	6	*1.2*	1
	HFM12100RS-32	★	*100*	*102*	*70*	*50*	*32*	*14.4*	*8*	*32*	*54*	-	-	8	*1.7*	2
	HFM12125RS-32	★	*125*	*127*	*70*	*50*	*32*	*14.4*	*8*	*32*	*84*	-	-	10	*2.2*	3
	HFM12125RS-40	★	*125*	*127*	*90*	*63*	*40*	*16.4*	*9*	*35*	*84*	-	-	10	*2.8*	3
	HFM12080R-25.4	★	*80*	*82*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*35*	-	-	6	*1.0*	2
	HFM12100R-25.4	★	*100*	*102*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*54*	-	-	8	*1.5*	2
	HFM12100R-31.75	★	*100*	*102*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*54*	-	-	8	*1.7*	2
	HFM12125R-25.4	★	*125*	*127*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*84*	-	-	10	*2.0*	3
	HFM12125R-31.75	★	*125*	*127*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*84*	-	-	10	*2.2*	3
	HFM12125R-38.1	★	*125*	*127*	*80*	*63*	*38.1*	*15.9*	*10*	*36*	*84*	-	-	10	*2.5*	3

Inserts are sold separately.

Inserts

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Length	Wiper Edge Shape	Applications	Fig
NF-LDEN12T3ZDFR-L	●	*6.0*	*2.2*	Linear	Low Resistance	1
NF-LDEN12T3ZDFR-G	●	*6.0*	*2.2*	Arc-Shaped	General-purpose	1
NF-LDEN12T3ZDTR-H	●	*6.0*	*2.2*	Arc-Shaped	Strong Edge	1
NF-LDEN12T3ZDFR-GX	●	*9.0*	*2.2*	Arc-Shaped	Long Edge	2
NF-LDEN12T3ZDFR-W	●	-	*4.0*	Arc-Shaped	Wiper	3

Fig 1

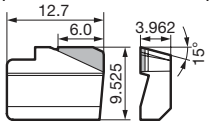


Fig 2

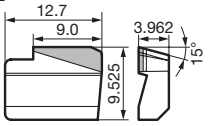
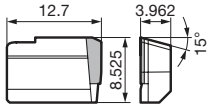


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code - Inch

HF M H 4 3000 R

Cutter Series	Course Pitch	Coolant	Insert Size	Cutter Dia. 3.000"	Feed Direction

Identification Code - Metric

HF M 12 080 R S - 22

Cutter Series	Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore	Bore Dia.

Recommended Cutting Conditions - Metric

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	6,560 - 9,850	0.002 - 0.008	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	1,315 - 2,630	0.002 - 0.008	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Recommended Cutting Conditions - Metric

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	-	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

HFF Shellmill Metric Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°



Fig 1

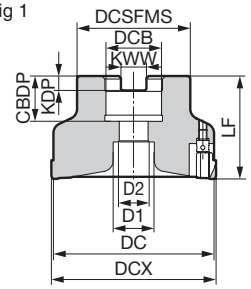


Fig 2

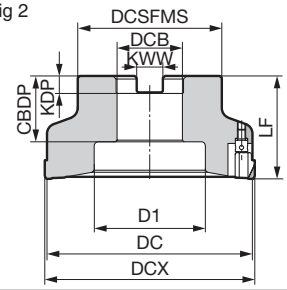
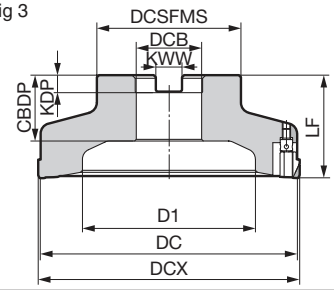


Fig 3



Body (Extra Fine Pitch: 3-teeth / Inch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFF12080RS-22**	★	*80*	*82*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	10	1.0	1
	HFF12080RS-27	★	*80*	*82*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	10	1.2	1
	HFF12100RS-32	★	*100*	*102*	*70*	*50*	*32*	*14.4*	*8*	*32*	*54*	-	12	1.7	2
	HFF12125RS-32	★	*125*	*127*	*70*	*50*	*32*	*14.4*	*8*	*32*	*84*	-	15	2.2	3
	HFF12125RS-40	★	*125*	*127*	*90*	*63*	*40*	*16.4*	*9*	*35*	*84*	-	15	2.8	3
	HFF12080R-25.4	★	*80*	*82*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*35*	-	10	*1.0*	2
	HFF12100R-25.4	★	*100*	*102*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*54*	-	12	*1.5*	2
	HFF12100R-31.75	★	*100*	*102*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*54*	-	12	*1.7*	2
	HFF12125R-25.4	★	*125*	*127*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*84*	-	15	*2.0*	3
	HFF12125R-31.75	★	*125*	*127*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*84*	-	15	*2.2*	3
	HFF12125R-38.1	★	*125*	*127*	*80*	*63*	*38.1*	*15.9*	*10*	*36*	*84*	-	15	*2.5*	3

Inserts are sold separately.

Inserts

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Length	Wiper Edge Shape	Applications	Fig
NF-LDEN12T3ZDFR-L	●	*6.0*	*2.2*	Linear	Low Resistance	1
NF-LDEN12T3ZDFR-G	●	*6.0*	*2.2*	Arc-Shaped	General-purpose	1
NF-LDEN12T3ZDTR-H	●	*6.0*	*2.2*	Arc-Shaped	Strong Edge	1
NF-LDEN12T3ZDFR-GX	●	*9.0*	*2.2*	Arc-Shaped	Long Edge	2
NF-LDEN12T3ZDFR-W	●	-	*4.0*	Arc-Shaped	Wiper	3

Fig 1

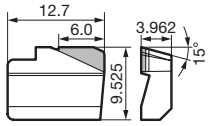


Fig 2

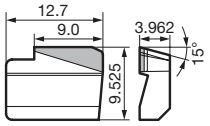
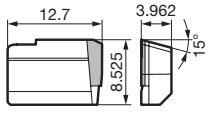


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code

HF F 12 080 R S - 22

Cutter Series	Extra Fine Pitch	Blade Size	Cutter Dia.	Feed Direction	Metric Bore	Bore Dia.

Recommended Cutting Conditions - Metric

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	-	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

HFFH SHELLMILL (Inch & Metric) Type

Rake Angle		
	Radial	4°
	Axial	10°

.118" 90° 3mm 90°



Fig 1

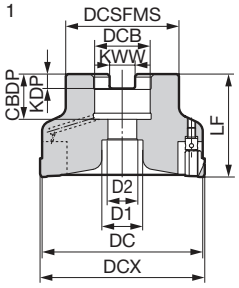


Fig 2

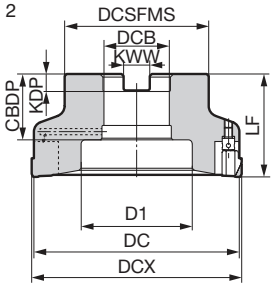
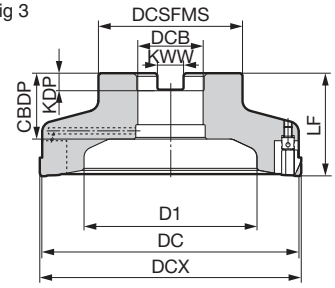


Fig 3



Body (Extra Fine Pitch: 3-teeth / Inch) With Coolant Holes

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Coolant Bolt	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**HFFH43000R**	●	3.000	3.079	1.970	2.000	1.000	0.375	0.220	1.020	0.797	0.531	BFXH1/2X1 1/4	9	2.20	1
	HFFH44000R	●	4.000	4.079	2.756	2.000	1.500	0.625	0.380	1.457	2.126	0.781	BFXH3/4X2	12	3.75	1
	HFFH45000R	●	5.000	5.079	3.150	2.000	1.500	0.625	0.380	1.457	2.126	0.781	BFXH3/4X2	15	5.95	1
	HFFH46000R	●	6.000	6.079	3.740	2.374	1.500	0.625	0.380	1.457	2.756	0.781	BFXH3/4X2	18	9.30	1
Metric	**HFFH12080RS-22**	★	*80*	*82*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	* BFXH1025-D16	10	*1.0*	1
	HFFH12080RS-27	★	*80*	*82*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	* BFXH1230-D18	10	*1.2*	1
	HFFH12100RS-32	★	*100*	*102*	*70*	*50*	*32*	*14.4*	*8*	*32*	*54*	-	* BFXH1635-D40	12	*1.7*	2
	HFFH12125RS-32	★	*125*	*127*	*70*	*50*	*32*	*14.4*	*8*	*32*	*84*	-	* BFXH1635-D40	15	*2.2*	3
	HFFH12125RS-40	★	*125*	*127*	*90*	*63*	*40*	*16.4*	*9*	*35*	*84*	-	* BFXH2036-D50	15	*2.8*	3
	HFFH12080R-25.4	★	*80*	*82*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*35*	-	* BFXH1/2-20X1 1/4-D33	10	*1.0*	2
	HFFH12100R-25.4	★	*100*	*102*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*54*	-	* BFXH1/2-20X1 1/4-D40	12	*1.5*	2
	HFFH12100R-31.75	★	*100*	*102*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*54*	-	* BFXH5/8-18X1 1/2-D50	12	*1.7*	2
	HFFH12125R-25.4	★	*125*	*127*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*84*	-	* BFXH1/2-20X1 1/4-D40	15	*2.0*	3
	HFFH12125R-31.75	★	*125*	*127*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*84*	-	* BFXH5/8-18X1 1/2-D50	15	*2.2*	3
	HFFH12125R-38.1	★	*125*	*127*	*80*	*63*	*38.1*	*15.9*	*10*	*36*	*84*	-	* BFXH3/4X2	15	*2.5*	3

Inersts are sold separately.

* Sold Separately

Inserts

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Length	Wiper Edge Shape	Applications	Fig
NF-LDEN12T3ZDFR-L	●	*6.0*	*2.2*	Linear	Low Resistance	1
NF-LDEN12T3ZDFR-G	●	*6.0*	*2.2*	Arc-Shaped	General-purpose	1
NF-LDEN12T3ZDTR-H	●	*6.0*	*2.2*	Arc-Shaped	Strong Edge	1
NF-LDEN12T3ZDFR-GX	●	*9.0*	*2.2*	Arc-Shaped	Long Edge	2
NF-LDEN12T3ZDFR-W	●	-	*4.0*	Arc-Shaped	Wiper	3

Fig 1

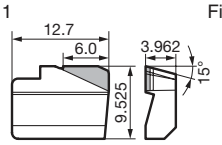


Fig 2

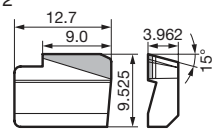
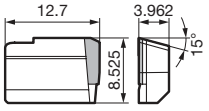


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code - Inch

HF	F	H	4	3000	R
Cutter Series	Fine Pitch	Coolant	Insert Size	Cutter Dia. 3.000"	Feed Direction

Identification Code - Metric

HF	F	H	12	080	R	S	-	22
Cutter Series	Extra Fine Pitch	Coolant	Insert Size	Cutter Dia.	Feed Direction	Metric Bore		Bore Dia.

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	-	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

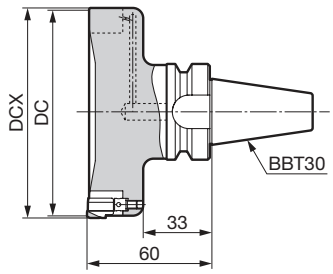
HFFH - BBT30 Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°



Fig 1



Body (Extra Fine Pitch: 3-teeth / Inch) With Coolant Holes

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Number of Teeth	Weight (kg)	Fig
Inch	**HFFH12080R-BBT30**	★	*80*	*82*	10	*1.6*	1
	HFFH12100R-BBT30	★	*100*	*102*	12	*2.4*	1
	HFFH12125R-BBT30	★	*125*	*127*	15	*2.9*	1

Inerts are sold separately.

Inserts

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Length	Wiper Edge Shape	Applications	Fig
NF-LDEN12T3ZDFR-L	●	6.0	*2.2*	Linear	Low Resistance	1
NF-LDEN12T3ZDFR-G	●	6.0	*2.2*	Arc-Shaped	General-purpose	1
NF-LDEN12T3ZDTR-H	●	6.0	*2.2*	Arc-Shaped	Strong Edge	1
NF-LDEN12T3ZDFR-GX	●	9.0	*2.2*	Arc-Shaped	Long Edge	2
NF-LDEN12T3ZDFR-W	●	-	*4.0*	Arc-Shaped	Wiper	3

Fig 1

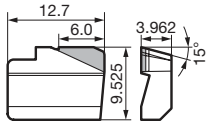


Fig 2

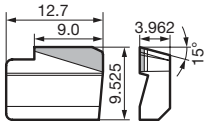
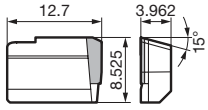


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
						
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code

HF	F	H	12	080	R	-	BBT30
Cutter Series	Extra Fine Pitch	With Oil Hole	Insert Size	Cutter Dia.	Feed Direction		Supported Arbor Symbol

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	-	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

* BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
* Can also be used with BT30 spindle machines.

N·m Recommended Tightening Torque (N·m)

RF Type



■ General Features

The RF Type cutter for aluminum alloy has a lightweight body designed for high-speed, high-performance roughing to finish milling of aluminum alloy and other non-ferrous metals.

■ Work Material

- Aluminum and aluminum alloys
- Other Non-Ferrous Metals

(Not suited for cast iron or steel.)

■ Features

- From Roughing to Finishing Processes: Roughing: Economical carbide insert / Finishing: High-precision SUMIDIA insert
- Strong and Lightweight Body: Special aluminum alloy body. 40% lighter than steel cutters. Hard anodizing. Improved efficiency with higher spindle speeds, lower spindle loads and shorter tool change time
- Safety Design: Prevents inserts from dislodging from cutter due to centrifugal force. (Speeds must be within max. recommended conditions) To prevent warping, wedges are not used in the cutter construction
- Easy Runout Adjustment: External setting gauge is used for easy tool presetting. High-precision cutter construction - units fitted are within 10μm runout even before setting

■ Application Examples

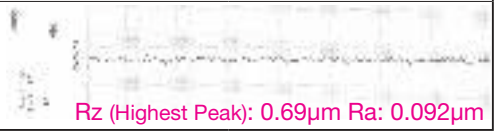
Workpiece (Work Material)	Tool Cutting Blade (Insert Grade)	Cutting Conditions v_c = Cutting Speed (SFM) v_f = Feed Rate (IPM) a_p = Depth of Cut (inch)	Results
Case (ADC12)	RF4160R SUMIDIA Blade (DA2200)	v_c = 9,843 v_f = 225 a_p = 0.004"	Finished Surface Roughness: Ra=0.2μm, Number of Workpieces: 30,000 pcs (30x tool life of carbide inserts)
Contact Surface of Transmission Case (ADC12)	RF4125R SUMIDIA Insert (DA1000)	v_c = 9,843 v_f = 300 a_p = 0.06"	Finished Surface Roughness: Ra=0.3μm, Number of Workpieces: 20,000 units
Contact Surface of Cylinder Head (AC4C)	RF4250R Carbide Insert (H1)	v_c = 6,562 v_f = 296 a_p = 0.14"	Rough Cutting Number of Workpieces: 10,000 units

● Maximum Allowable Spindle Speed

Cat. No.	n max (RPM)
RF4080R	17,000
RF4100R	15,900
RF4125R	13,500
RF4160R	11,000
RF4200R	9,000
RF4250R	7,600
RF4315R	6,000

■ Finished Surface Roughness

- Process: Finish Milling
- Machine: Vertical Machining Centre
- Arbour: HSK63A
- Work Material: Si 10 to 12% Al Alloy
- Cutter: RF4100R 6-Flute (1 Wiper)
- Grade: SUMIDIA (DA1000)
- v_c = 16,372 SFM
- n = 15,900 RPM
- v_f = 450 IPMn
- f_z = 0.0047 IPT
- a_p = 0.0197", Wiper a_p = 0.0012"
- Dry



Rz (Highest Peak): 0.69μm Ra: 0.092μm

■ Recommended Cutting Conditions

Si content of 12.6% or less

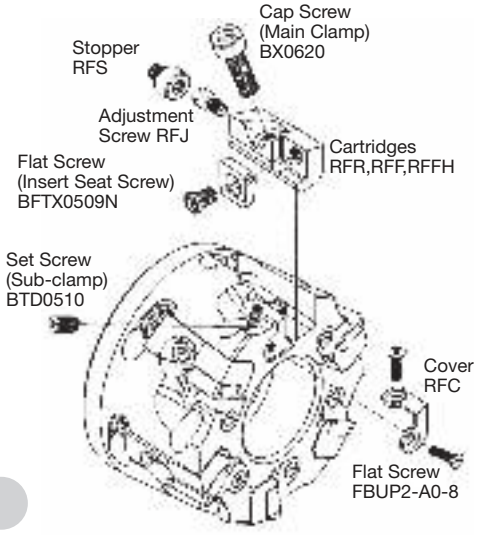
ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	6,560 - 16,400	0.002 - 0.008	DA1000 DA2200
		-	3,280 - 8,200	0.002 - 0.008	H1

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	1,320 - 2,630	0.002 - 0.008	DA1000 DA2200
		-	660 - 1,320	0.002 - 0.008	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

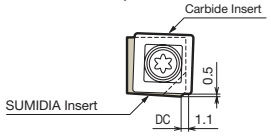
■ Structure of RF Type



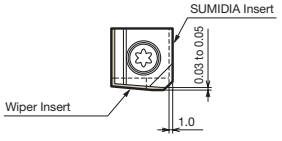
● Recommended Cutting Edge Position

We recommend positioning as in the figure below when mounting carbide inserts or SUMIDIA inserts (blades).

● When roughing and finishing in the same process



● When using wiper edge



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

As it is possible to mix different types of inserts/blades, it is important to take note of the following.

- Do not mix reground and new inserts or inserts with a different regrinding amount on the same cutter.
- Carbide and SUMIDIA inserts must be arranged alternately.
- Ensure proper balance by fixing the SUMIDIA inserts of the blades on opposite sides of the cutter.

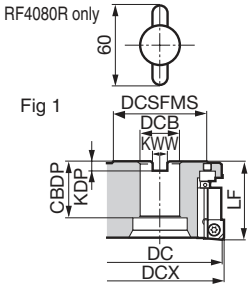
RF Shellmill Metric Type

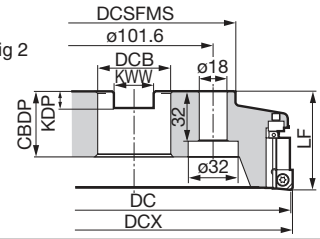
Rake Angle		
	Radial	4°
	Axial	10°

3mm 90° (SUMIDIA Insert)

10mm 87° (Carbide Insert)







Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Maximum Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**RF4080R**	★	*80*	*82*	*60*	*50*	*25.40*	*9.5*	*6*	*30*	6	0.7	1
	RF4100R	★	*100*	*102*	*75*	*50*	*31.75*	*12.7*	*8*	*38*	6	1.0	1
	RF4125R	★	*125*	*127*	*75*	*63*	*38.10*	*15.9*	*10*	*38*	8	1.6	1
	RF4160R	★	*160*	*162*	*100*	*63*	*50.80*	*19.1*	*11*	*38*	10	2.6	1
	RF4200R	★	*200*	*202*	*130*	*63*	*47.625*	*25.4*	*14*	*42*	12	3.6	2
	RF4250R		*250*	*252*	*130*	*63*	*47.625*	*25.4*	*14*	*42*	16	6.0	2
	RF4315R		*315*	*317*	*240*	*80*	*47.625*	*25.4*	*14*	*42*	18	11.0	2

Cartridges, blades and inserts are sold separately.

Use a collar bolt to mount the cutter to the arbor.

Insert / Cartridge

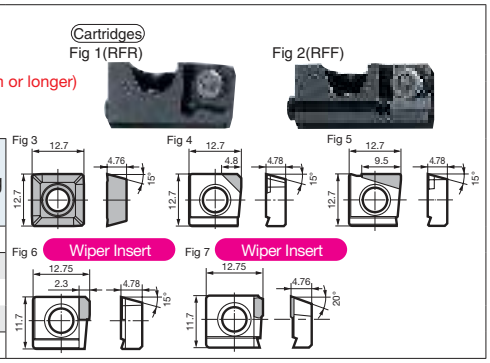
Dimensions (*mm*)

Grade		Carbide	DLC	SUMIDIA		SUMICRYSTAL
Process	High-speed / Light	N	N	N	N	N
	General-purpose	N	N	N	N	
	Roughing	N	N	N	N	

For SUMICRYSTAL details, refer to page M62

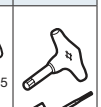
When using large depths of cut (a_p = 3mm or longer) with RF4080R, use the RFFH cartridge. (RFF is possible for normal cutting.)

Cat. No.	H1	DL1000	DA1000	DA2200	SC10	Fig	Wiper Length	Cartridges Cat. No.	Cartridges Stock	Fig
SDET1204ZDFR	●	●	-	-	-	3	-	RFR	●	1
NF-SNEW1204ADFR	-	-	●	▲	-	4	*2.2*	RFF	●	2
NF-SNEW120404ADFR-H	-	-	●	-	-	5	*1.4*	RFF (Others) RFFH(RF4080R)	●	2
NF-SNEW1204ADFR-W	-	-	●	▲	-	6	*3.0*	RFF	●	2
SNEW1204ADFR-WS	-	-	-	-	●	7	*2.0*	RFF	●	2



An "H" at the end of the part number indicates large depth of cut type, while "W" or "WS" indicates a wiper insert.

Parts

Cover	Stopper	Cap Screw		Set Screw		Flat Screw	Adjustment Screw	Flat Screw		Wrench	Wrench
		Main Clamp 	N·m	Sub-clamp 	N·m	Cover Mounting 		Insert Fastening 	N·m	TH050 TH025 RFT 	
RFC	RFS	BX0620	**10.0**	BTD0510	**3.0**	FBUP2 -A0-8	RFJ	BFTX0509N	**5.0**	TH050 TH025 RFT	TTX20

Description	Catalog No.	Stock	Appearance
Cartridge	RFF	●	
Coolant Through Arbor Bolt	RF-SCB80	●	
	RF-SCB100	●	
	RF-SCB125	●	
	RF-SCB160	●	

NOTES: Cartridges and inserts are sold separately.

Blades / Dummy Blades



Product Name	Cat. No.	SUMIDIA DA2200
SUMIDIA Blade	RFB	●
SUMIDIA Wiper Blade	RFBW	●
Dummy Blade	RFD	●(Steel)

Use dummy blades for unused teeth to protect the body as well as maintaining balance.

Setting Parts

Cartridge design allows inserts to be attached outside the machine with high precision.



Setting Gauge RF-SET (Sold Separately / Standard Stock)



Clamp Jig RF-JIG (Sold Separately / Standard Stock)

Internal Coolant Attachments

Use an internal coolant holder or a standard clamp bolt with a coolant hole when using internal coolant.
Typical examples are given in the table below. For standards, contact each manufacturer directly.

Body Cat. No.	Internal Coolant Holder	Standard Clamp Bolt with Coolant Hole (Example)	
		MST Corporation	Big Daishowa Seiki Co. Ltd.
RF 4080R	—	MBC-M12	TMBA-M12
RF 4100R	—	MBC-M16	TMBA-M16
RF 4125R	—	MBC-M20	TMBA-M20
RF 4160R	—	MBC-M24	TMBA-M24
RF 4200R	RF-CLT	—	—
RF 4250R	RF-CLT	—	—
RF 4315R	RF-CLT	—	—



Internal Coolant Holders RF-CLT (Standard Stock)



Standard Clamp Bolt with Coolant Hole [Typical Example] MBC-M12 to M24 (Sold Separately)



Direction of Coolant Ejection

N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

SRF Type



■ General Features

The SRF Type small diameter aluminum alloy cutter is ideal for aluminum alloy machining on high-performance small machines.

■ Features

- Ideal for small machines
  Especially reliable on BT30 class small machines.
- From roughing to finishing processes
  Utilizes SUMIDIA DA1000 inserts
  with effective cutting edge length of 5mm
- Economical NF-type Inserts:
  NF Type SUMIDIA inserts with tough DA1000 grade lower tooling costs.
- High-speed Cutting with SUMIDIA:
  Maximum spindle speeds of up to n = 20,000 RPM
  (Actual spindle speeds must be set within the rotational limits of your machine and holder)
- Simple Runout Adjustment Mechanism:
  Simple insert direct mounting design
  for runout precision with easy fine adjustment

■ Application Examples

Workpiece (Work Material)	Tool Insert Cat. No. (Insert Grade)	Cutting Conditions n = Spindle Speed (RPM) v_f = Feed Rate (IPM) a_p = Depth of Cut (inch)	Results
Cam Case (ADC12)	SRF50R NF-SNEW09T3ADTR (DA1000)	n = 6,000 v_f = 95 a_p= 0.02"	12,000 pcs machined with no problems
Computer Case (ADC12)	SRF50R NF-SNEW09T3ADTR (DA1000)	n = 15,000 v_f = 295 a_p= 0.008"	2.5 times more efficient endmill operation
Differential Case (ADC12)	SRF63R NF-SNEW09T3ADTR (DA1000)	n = 8,000 v_f = 160 a_p= 0.02"	No obstructions on tool magazine when mounting ø63 cutter on small machines.

■ Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_C (SFM) Min. - Max.	Feed Rate f_Z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	6,560 - 13,120	0.002 - 0.008	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	1,320 - 2,630	0.002 - 0.008	DA1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

SRF Type

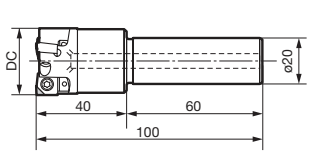
Rake Angle		
	Radial	-2° to 4°
	Axial	6°

5mm 90°

Fig 1



Fig 2



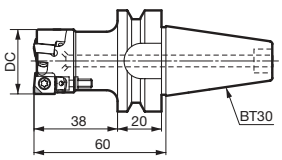


Fig 3

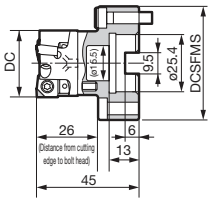
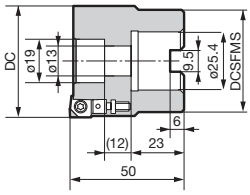


Fig 4

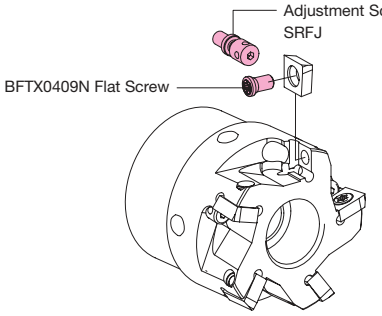


Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Number of Teeth	Weight (kg)	Fig
Metric	**SRF30R-ST**	★	*30*	-	3	*0.34*	1
	SRF40R-ST	★	*40*	-	4	*0.50*	1
	SRF30R-BT30	★	*30*	-	3	*0.57*	2
	SRF40R-BT30	★	*40*	-	4	*0.72*	2
	SRF30R	★	*30*	*50.0*	3	*0.27*	3
	SRF40R	★	*40*	*50.0*	4	*0.35*	3
	SRF50R	★	*50*	*46.5*	5	*0.59*	4
	SRF63R	★	*63*	*45.0*	6	*0.67*	4

Inserts are sold separately.



For securing the ø80mm and ø100mm cutters to the arbor, use a JIS B1176 hexagonal socket bolt (M12 x 1.18" to 1.38").

Insert

Dimensions (*mm*)

Grade		SUMIDIA	
Process	High-speed / Light	N	N
	General-purpose	N	N
	Roughing	N	N

Cat. No.	DA1000	DA2200	Wiper Length	Cutting Edge Shape	Fig
NF-SNEW09T3ADTR	●	▲	*2.0*	Standard	1
NF-SNEW09T3ADTR-U	●	▲	*2.2*	Wiper Edge	2
NF-SNEW09T3ADTR-R	●	▲	*2.0*	Nose Radius	3

Fig 1

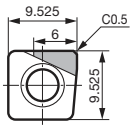


Fig 2

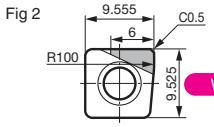
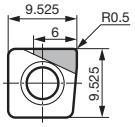
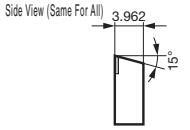
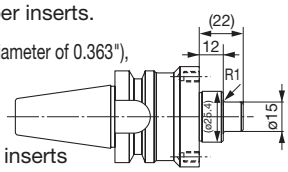


Fig 3

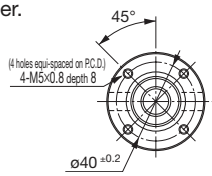




- Standard inserts and wiper inserts can be used on the same cutter body.
- Standard inserts with nose radius should be used where chatter is present. These cannot be used with wiper inserts.
- Inserts can be reground 3 times (up to minimum IC diameter of 0.363"), but the cutting edge height changes by the reground amount.



- Do not mix new and reground inserts or inserts with different regrind amounts on the same cutter.
- When using reground inserts, it is advisable to re-confirm cutting edge position with a tool pre-setter.
- Arbour for SRF30R, SRF40R



When using body SRF30R and SRF40R cutters, the arbor needs to be modified as shown above.
(1. Reduce part of the arbor's adapter shaft length from ø1.00" to ø0.590". Add 4 tap holes for (M5) mounting bolts.)
Use hex socket bolts M5 × 0.787" for securing the body.

Maximum Depth of Cut (SRF50R, 5-Flute)

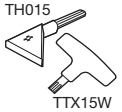
The table below contains guidelines on the maximum depth of cut, determined from internal tests. 'O' marks indicate the possible application range. Actual cutting conditions should be set based on the actual machine and workpiece characteristics.

Depth of Cut a_p (inch) \ Feed Rate	Feed Rate v_f (IPM)		
	100	160	200
	Feed Rate Per Tooth f_z (IPT)		
	0.002	0.003	0.004
0.02	O	O	O
0.04	O	O	O
0.06	O	O	O
0.08	O	O	O
0.10	O	O	O
0.12	O	O	O
0.14	O	O	-
0.16	O	-	-
0.18	O	-	-
0.20	O	-	-

Cutting Conditions
Cutter: SRF50R
Insert: NF-SNEW 09T3ADTR (DA1000) *n* = 10,000 RPM
Arbour: BT30 FMA25.4-45
Workpiece: A-5052
Width: Maximum depth of cut at 1.38"



Parts

Flat Screw		Adjustment Screw	Wrench
	N·m		
BFTX0409N	4.0	SRFJ	TH015 TTX15W

● USA stocked item
★Worldwide Warehouse Item

N·m Recommended tightening torque (N/m) ▲: Limited Availability, made to order, or discontinued (please confirm stock availability)



■ General Features

SEC-WaveMill WAX type is a high speed and high efficiency cutter capable of processes from rough milling to finishing of non-ferrous metals such as aluminum alloy.

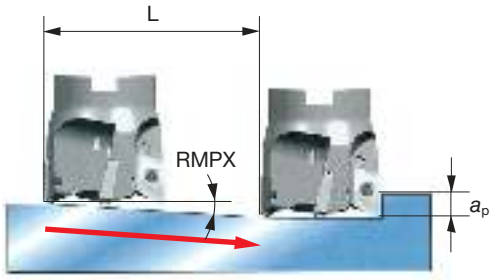
■ Features

- Ramping
- For Helical Milling
- Safety Design:
  · Prevents dislodging of inserts caused
  · by centrifugal force.
- Coolant Compatible:
  · Coolant holes are a standard feature for the WAX series.
- Excellent Adhesion Resistance:
  · Top rake face of the insert has a lapped finish.
  · DLC Coat inserts are available for improved adhesion resistance.

■ Ramping

Maximum ramping angle (RMPX) depends on cutter diameter.
Minimum milling distance (L) for any depth of cut can be calculated by the equation below:

$$L = \frac{a_p}{\tan RMPX} \quad (mm)$$

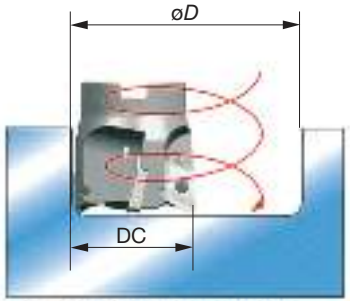




■ Ramping Angle

Cutter Dia. DC(mm)	Maximum Ramping Angle RMPX	
	WAX3000 Type	WAX4000 Type
20	28°	
25	17°	26°
32	12°	18°30'
40	9°	13°
50	7°	9°30'
63	5°	7°
80	3°	5°
100	3°	4°
125	2°	3°

■ Helical Milling





■ Helical Milling Diameter

Cutter Dia. DC(mm)	WAX3000 Type		WAX4000 Type	
	Min. Dia.	Max. Dia.	Min. Dia.	Max. Dia.
20	0.87	1.30		
25	1.14	1.69	1.06	1.69
32	1.69	2.24	1.50	2.24
40	2.32	2.87	2.13	2.87
50	3.11	3.66	2.91	3.66
63	4.13	4.69	3.94	4.69
80	5.47	6.02	5.28	6.02
100	7.76	7.60	6.85	7.60
125	9.02	9.57	8.82	9.57

■ Maximum Allowable Spindle Speed

Cutter Dia. DC(mm)	WAX3000 Type		WAX4000 Type	
	n max(RPM)	v_c(SFM)	*n* max(RPM)	v_c(SFM)
20	14,000	2,625		
25	29,000	7,218	11,000	2,821
32	25,000	8,203	9,000	2,953
40	23,000	9,515	20,000	8,203
50	20,000	10,171	18,000	9,187
63	18,000	11,484	16,000	10,171
80	16,000	14,324	14,000	11,484
100	14,000	14,436	12,000	12,140
125	13,000	16,733	11,000	14,108

The *n* maximum speeds are set to prevent the inserts from dislodging by centrifugal force.

■ Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2000 - 4000	0.002 - 0.010	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WAX 3000 Shell Mill Type

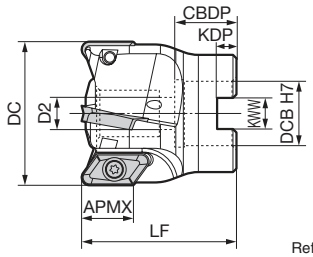
Rake Angle		
	Radial	6°
	Axial	19° to 25°

.63 - .71" 90°

16 to 18mm 90°



Fig 1



Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Overall Length LF	Bolt D2	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WAX32000-3.2**	●	2.000	0.750	1.750	0.406	0.312	0.220	0.787	4	0.75	1
	WAX32500-3.2	●	2.500	1.000	1.750	0.531	0.375	0.220	0.787	5	1.38	1
	WAX33000-3.2	●	3.000	1.000	2.000	0.531	0.375	0.248	0.866	5	2.20	1
	WAX34000-3.2	●	4.000	1.250	2.500	0.656	0.500	0.394	1.181	6	4.85	1
	WAX35000-3.2	●	5.000	1.500	2.500	0.656	0.625	0.394	1.181	7	7.71	1
Metric	**WAX3050-3.2**	★	*50*	*22*	*50*	*11*	*10.4*	*6.3*	*21*	4	*0.34*	1
	WAX3063-3.2	★	*63*	*22*	*50*	*11*	*10.4*	*6.3*	*21*	5	*0.6*	1
	WAX3080-3.2	★	*80*	*25.4*	*50*	*14*	*9.5*	*6*	*25*	5	*1.0*	1
	WAX3100-3.2	★	*100*	*31.75*	*63*	*17*	*12.7*	*8*	*32*	6	*2.2*	1
	WAX3125-3.2	★	*125*	*38.1*	*63*	*21*	*15.9*	*10*	*35*	7	*3.5*	1

Body (RE = 4.0 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Overall Length LF	Bolt D2	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WAX32000-4.0**	●	2.000	0.750	1.750	0.406	0.312	0.220	0.787	4	0.75	1
	WAX32500-4.0	●	2.500	1.000	1.750	0.531	0.375	0.220	0.787	4	1.38	1
	WAX33000-4.0	●	3.000	1.000	2.000	0.531	0.375	0.248	0.866	5	2.20	1
	WAX34000-4.0	●	4.000	1.250	2.500	0.656	0.500	0.394	1.181	6	4.85	1
	WAX35000-4.0	●	5.000	1.500	2.500	0.656	0.625	0.394	1.181	7	7.71	1
Metric	**WAX3050-4.0**	★	*50*	*22*	*50*	*11*	*10.4*	*6.3*	*21*	4	*0.34*	1
	WAX3063-4.0	★	*63*	*22*	*50*	*11*	*10.4*	*6.3*	*21*	4	*0.6*	1
	WAX3080-4.0	★	*80*	*25.4*	*50*	*14*	*9.5*	*6*	*25*	5	*1.0*	1
	WAX3100-4.0	★	*100*	*31.75*	*63*	*17*	*12.7*	*8*	*32*	6	*2.2*	1
	WAX3125-4.0	★	*125*	*38.1*	*63*	*21*	*15.9*	*10*	*35*	7	*3.5*	1

Inserts are sold separately. ● USA stocked item ★ Worldwide Warehouse item

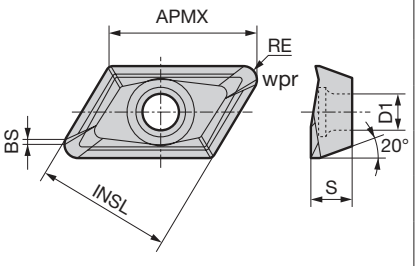
Insert

Dimensions (inch / *mm*)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Wiper Facet Length wpr	Thickness S	Bore Dia. D1	Fig
AECT160404PEFRA	•	•	0.708 (*18*)	0.6456 (*16.4*)	0.055 (*1.4*)	0.016 (*0.4*)	0.055 (*1.4*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160408PEFRA	•	•	0.708 (*18*)	0.6456 (*16.4*)	0.039 (*1.0*)	0.031 (*0.8*)	0.039 (*1.0*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160412PEFRA	•	•	0.708 (*18*)	0.6456 (*16.4*)	0.023 (*0.6*)	0.047 (*1.2*)	0.024 (*0.6*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160416PEFRA	•	•	0.689 (*17.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.063 (*1.6*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160420PEFRA	•	•	0.689 (*17.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.079 (*2.0*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160430PEFRA	•	•	0.669 (*17*)	0.6456 (*16.4*)	0.028 (*0.7*)	0.118 (*3.0*)	0.028 (*0.7*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160432PEFRA	•	•	0.669 (*17*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.126 (*3.2*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160440PEFRA	•	•	0.649 (*16.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.157 (*4.0*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160450PEFRA	•	•	0.630 (*16*)	0.6456 (*16.4*)	0.016 (*0.4*)	0.197 (*5.0*)	0.016 (*0.4*)	0.1968 (*5*)	0.1732 (*4.4*)	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-Seize Cream
		N·m		
WAX3000 Type	BFTX0408	3.0	TRD15	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2,000 - 4,000	0.002 - 0.010	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

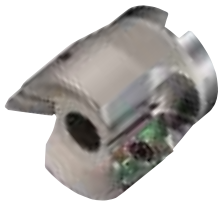
WAX 4000 Shell Mill Type

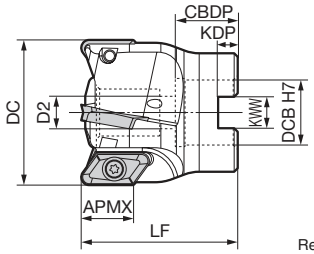
Rake Angle		
	Radial	6°
	Axial	19° to 25°

.866" - .945" 90°

22 to 24 mm 90°

Fig 1





Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Overall Length LF	Bolt D2	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (lbs/*kg*)	Fig
Inch	**WAX42000-3.2**	•	2.000	0.750	2.000	0.406	0.312	0.220	0.787	2	0.82	1
	WAX42500-3.2	•	2.500	1.000	2.000	0.531	0.375	0.220	0.787	3	1.19	1
	WAX43000-3.2	•	3.000	1.000	2.000	0.531	0.375	0.248	0.866	4	1.79	1
	WAX44000-3.2	•	4.000	1.250	2.500	0.656	0.500	0.394	1.181	5	3.75	1
	WAX45000-3.2	•	5.000	1.500	2.500	0.656	0.625	0.394	1.181	6	5.73	1
Metric	**WAX4050-3.2**	★	*50*	*16*	*50*	*9*	*8.4*	*5.6*	*18*	2	*0.37*	1
	WAX4063-3.2	★	*63*	*22*	*50*	*11*	*10.4*	*6.3*	*21*	3	*0.54*	1
	WAX4080-3.2	★	*80*	*25.4*	*50*	*14*	*9.5*	*6*	*25*	4	*0.81*	1
	WAX4100-3.2	★	*100*	*31.75*	*63*	*17*	*12.7*	*8*	*32*	5	*1.7*	1
	WAX4125-3.2	★	*125*	*38.1*	*63*	*21*	*15.9*	*10*	*35*	6	*2.6*	1

Body (RE = 4.0 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Overall Length LF	Bolt D2	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (lbs/*kg*)	Fig
Inch	**WAX42000-4.0**	•	2.000	0.750	2.000	0.406	0.312	0.220	0.787	2	0.82	1
	WAX42500-4.0	•	2.500	1.000	2.000	0.531	0.375	0.220	0.787	3	1.19	1
	WAX43000-4.0	•	3.000	1.000	2.000	0.531	0.375	0.248	0.866	4	1.79	1
	WAX44000-4.0	•	4.000	1.250	2.500	0.656	0.500	0.394	1.181	5	3.75	1
	WAX45000-4.0	•	5.000	1.500	2.500	0.656	0.625	0.394	1.181	6	5.73	1
Metric	**WAX4050-4.0**	★	*50*	*16*	*50*	*9*	*8.4*	*5.6*	*18*	2	*0.37*	1
	WAX4063-4.0	★	*63*	*22*	*50*	*11*	*10.4*	*6.3*	*21*	3	*0.54*	1
	WAX4080-4.0	★	*80*	*25.4*	*50*	*14*	*9.5*	*6*	*25*	4	*0.81*	1
	WAX4100-4.0	★	*100*	*31.75*	*63*	*17*	*12.7*	*8*	*32*	5	*1.7*	1
	WAX4125-4.0	★	*125*	*38.1*	*63*	*21*	*15.9*	*10*	*35*	6	*2.6*	1

Inserts are sold separately.

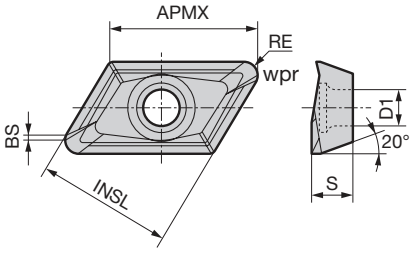
Insert

Dimensions (inch / *mm*)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Wiper Facet Length wpr	Thickness S	Bore Dia. D1	Fig
AECT220604PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.059 (1.5)	0.016 (0.4)	0.059 (*1.5*)	0.250 (6.35)	0.236 (6.0)	1
AECT220608PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.047 (1.2)	0.031 (0.8)	0.047 (*1.2*)	0.250 (6.35)	0.236 (6.0)	1
AECT220612PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.031 (0.8)	0.047 (1.2)	0.031 (*0.8*)	0.250 (6.35)	0.236 (6.0)	1
AECT220616PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.016 (0.4)	0.063 (1.6)	0.016 (*0.4*)	0.250 (6.35)	0.236 (6.0)	1
AECT220620PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.020 (0.5)	0.079 (2.0)	0.020 (*0.5*)	0.250 (6.35)	0.236 (6.0)	1
AECT220630PEFRA	•	•	0.905 (23)	0.8563 (21.8)	0.023 (0.6)	0.118 (3.0)	0.024 (*0.6*)	0.250 (6.35)	0.236 (6.0)	1
AECT220632PEFRA	•	•	0.905 (23)	0.8563 (21.8)	0.016 (0.4)	0.126 (3.2)	0.016 (*0.4*)	0.250 (6.35)	0.236 (6.0)	1
AECT220640PEFRA	•	•	0.866 (22)	0.8563 (21.8)	0.047 (1.2)	0.157 (4.0)	0.047 (*1.2*)	0.250 (6.35)	0.236 (6.0)	1
AECT220650PEFRA	•	•	0.866 (22)	0.8563 (21.8)	0.016 (0.4)	0.197 (5.0)	0.016 (*0.4*)	0.250 (6.35)	0.236 (6.0)	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

■ Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2000 - 4000	0.002 - 0.010	DL1000

Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

Parts

Applicable Cutter Diameter	Flat Screw	N·m	Wrench	Anti-Seize Cream
ø25 to ø32	BFTX0509N	5.0	TRD20	SUMI-P
ø40 to ø125	BFTX0511N			

WAX 3000 ENDMILL Type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

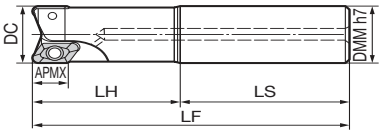
16 to 18 mm 90°

.63 - .71" 90°



Fig 1





Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (lbs/*kg*)	Fig
Inch	**WAX30750EW-3.2**	●	0.750	0.750	4.281	2.000	2.281	1	0.55	1
	WAX31000EW-3.2	●	1.000	1.000	4.781	2.500	2.281	2	0.93	1
	WAX31250EW-3.2	●	1.250	1.250	4.781	2.500	2.281	2	1.65	1
	WAX31500EW-3.2	●	1.500	1.500	4.781	2.500	2.281	3	2.20	1
	WAX30750ELC-3.2	●	0.750	0.750	8.000	2.000	6.000	1	0.91	1
	WAX31000ELC-3.2	●	1.000	1.000	10.000	2.500	7.500	2	1.49	1
	WAX31250ELC-3.2	●	1.250	1.250	10.000	2.500	7.500	2	2.17	1
	WAX31500ELC-3.2	●	1.500	1.500	10.000	2.500	7.500	3	3.30	1
Metric	**WAX3020E-3.2**	★	*20*	*20*	*130*	*60*	*70*	1	*0.25*	1
	WAX3025E-3.2	★	*25*	*25*	*140*	*60*	*80*	2	*0.42*	1
	WAX3025EL-3.2	★	*25*	*25*	*200*	*60*	*140*	2	*0.63*	1
	WAX3032E-3.2	★	*32*	*32*	*150*	*70*	*80*	2	*0.75*	1
	WAX3032EL-3.2	★	*32*	*32*	*220*	*70*	*150*	2	*1.2*	1
	WAX3040E-3.2	★	*40*	*32*	*160*	*70*	*90*	3	*1.0*	1
	WAX3040EL-3.2	★	*40*	*32*	*220*	*70*	*150*	3	*1.4*	1

Body (RE = 4.0 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (lbs/*kg*)	Fig
Inch	**WAX30750EW-4.0**	●	0.750	0.750	4.281	2.000	2.281	1	0.55	1
	WAX31000EW-4.0	●	1.000	1.000	4.281	2.000	2.281	2	0.93	1
	WAX31250EW-4.0	●	1.250	1.250	4.781	2.500	2.281	2	1.65	1
	WAX31500EW-4.0	●	1.500	1.500	4.781	2.500	2.281	3	2.20	1
	WAX30750ELC-4.0	●	0.750	0.750	8.000	2.000	6.000	1	0.91	1
	WAX31000ELC-4.0	●	1.000	1.000	10.000	2.500	7.500	2	1.49	1
	WAX31250ELC-4.0	●	1.250	1.250	10.000	2.500	7.500	2	2.17	1
	WAX31500ELC-4.0	●	1.500	1.500	10.000	2.500	7.500	3	3.30	1
Metric	**WAX3020E-4.0**	★	*20*	*20*	*130*	*60*	*70*	1	*0.25*	1
	WAX3025E-4.0	★	*25*	*25*	*140*	*60*	*80*	2	*0.42*	1
	WAX3025EL-4.0	★	*25*	*25*	*200*	*60*	*140*	2	*0.63*	1
	WAX3032E-4.0	★	*32*	*32*	*150*	*70*	*80*	2	*0.75*	1
	WAX3032EL-4.0	★	*32*	*32*	*220*	*70*	*150*	2	*1.2*	1
	WAX3040E-4.0	★	*40*	*32*	*160*	*70*	*90*	3	*1.0*	1
	WAX3040EL-4.0	★	*40*	*32*	*220*	*70*	*150*	3	*1.4*	1

● USA stocked item ★ Worldwide Warehouse item

Inserts are sold separately.

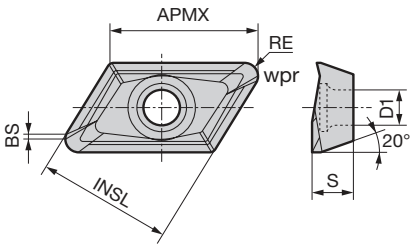
Insert

Dimensions (inch / *mm*)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Wiper Facet Length wpr	Thickness S	Bore Dia. D1	Fig
AECT160404PEFRA	•	•	0.708 (*18*)	0.6456 (*16.4*)	0.055 (*1.4*)	0.016 (*0.4*)	0.055 (*1.4*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160408PEFRA	•	•	0.708 (*18*)	0.6456 (*16.4*)	0.039 (*1.0*)	0.031 (*0.8*)	0.039 (*1.0*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160412PEFRA	•	•	0.708 (*18*)	0.6456 (*16.4*)	0.023 (*0.6*)	0.047 (*1.2*)	0.024 (*0.6*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160416PEFRA	•	•	0.689 (*17.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.063 (*1.6*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160420PEFRA	•	•	0.689 (*17.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.079 (*2.0*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160430PEFRA	•	•	0.669 (*17*)	0.6456 (*16.4*)	0.028 (*0.7*)	0.118 (*3.0*)	0.028 (*0.7*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160432PEFRA	•	•	0.669 (*17*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.126 (*3.2*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160440PEFRA	•	•	0.649 (*16.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.157 (*4.0*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160450PEFRA	•	•	0.630 (*16*)	0.6456 (*16.4*)	0.016 (*0.4*)	0.197 (*5.0*)	0.016 (*0.4*)	0.1968 (*5*)	0.1732 (*4.4*)	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-Seize Cream
				
WAX3000E/EL Type	BFTX0408	3.0	TRD15	SUMI-P

■ Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2000 - 4000	0.002 - 0.010	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WAX 4000 ENDMILL Type

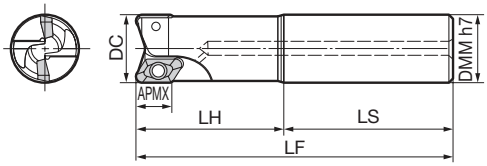
Rake Angle		
	Radial	6
	Axial	19° to 25°

.866" - .945" 90°

22 to 24 mm 90°

Fig 1





Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (inch / *mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (lbs/*kg*)	Fig
WAX41000EW-3.2	●	1.000	1.000	4.781	2.500	2.281	1	1.49	1
WAX41250EW-3.2	●	1.250	1.250	4.781	2.500	2.281	1	1.65	1
WAX41500EW-3.2	●	1.500	1.500	4.781	2.500	2.281	2	2.20	1
WAX41000ELC-3.2	●	1.000	1.000	10.000	2.500	7.500	1	1.49	1
WAX41250ELC-3.2	●	1.250	1.250	10.000	2.500	7.500	1	2.17	1
WAX41500ELC-3.2	●	1.500	1.500	10.000	2.500	7.500	2	3.30	1
WAX4025E-3.2	★	*25*	*25*	*140*	*60*	*80*	1	*0.41*	1
WAX4025EL-3.2	★	*25*	*25*	*200*	*60*	*140*	1	*0.63*	1
WAX4032E-3.2	★	*32*	*32*	*150*	*70*	*80*	1	*0.72*	1
WAX4032EL-3.2	★	*32*	*32*	*220*	*70*	*150*	1	*1.2*	1
WAX4040E-3.2	★	*40*	*32*	*160*	*70*	*90*	2	*0.88*	1
WAX4040EL-3.2	★	*40*	*32*	*220*	*70*	*150*	2	*1.2*	1

Body (RE = 4.0 or less)

Dimensions (inch / *mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (lbs/*kg*)	Fig
WAX41000EW-4.0	●	1.000	1.000	4.281	2.000	2.281	1	0.93	1
WAX41250EW-4.0	●	1.250	1.250	4.781	2.500	2.281	1	1.65	1
WAX41500EW-4.0	●	1.500	1.500	4.781	2.500	2.281	2	2.20	1
WAX41000ELC-4.0	●	1.000	1.000	10.000	2.500	7.500	1	1.49	1
WAX41250ELC-4.0	●	1.250	1.250	10.000	2.500	7.500	1	2.17	1
WAX41500ELC-4.0	●	1.500	1.500	10.000	2.500	7.500	2	3.30	1
WAX4025E-3.2	★	*25*	*25*	*140*	*60*	*80*	1	*0.41*	1
WAX4025EL-3.2	★	*25*	*25*	*200*	*60*	*140*	1	*0.63*	1
WAX4032E-3.2	★	*32*	*32*	*150*	*70*	*80*	1	*0.72*	1
WAX4032EL-3.2	★	*32*	*32*	*220*	*70*	*150*	1	*1.2*	1
WAX4040E-3.2	★	*40*	*32*	*160*	*70*	*90*	2	*0.88*	1
WAX4040EL-3.2	★	*40*	*32*	*220*	*70*	*150*	2	*1.2*	1

● USA stocked item ★ Worldwide Warehouse item

Inserts are sold separately.

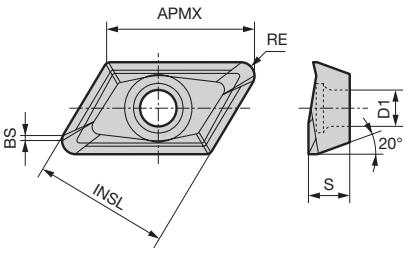
Insert

Dimensions (inch / *mm*)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Thickness S	Bore Dia. D1	Fig
AECT220604PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.059 (1.5)	0.016 (0.4)	0.250 (6.35)	0.236 (6.0)	1
AECT220608PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.047 (1.2)	0.031 (0.8)	0.250 (6.35)	0.236 (6.0)	1
AECT220612PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.031 (0.8)	0.047 (1.2)	0.250 (6.35)	0.236 (6.0)	1
AECT220616PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.016 (0.4)	0.063 (1.6)	0.250 (6.35)	0.236 (6.0)	1
AECT220620PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.020 (0.5)	0.079 (2.0)	0.250 (6.35)	0.236 (6.0)	1
AECT220630PEFRA	●	●	0.905 (23)	0.8563 (21.8)	0.023 (0.6)	0.118 (3.0)	0.250 (6.35)	0.236 (6.0)	1
AECT220632PEFRA	●	●	0.905 (23)	0.8563 (21.8)	0.016 (0.4)	0.126 (3.2)	0.250 (6.35)	0.236 (6.0)	1
AECT220640PEFRA	●	●	0.866 (22)	0.8563 (21.8)	0.047 (1.2)	0.157 (4.0)	0.250 (6.35)	0.236 (6.0)	1
AECT220650PEFRA	●	●	0.866 (22)	0.8563 (21.8)	0.016 (0.4)	0.197 (5.0)	0.250 (6.35)	0.236 (6.0)	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter Diameter	Flat Screw	N·m	Wrench	Anti-seizure Cream
ø25 to ø32	BFTX0509N	5.0	TRD20	SUMI-P
ø40 to ø125	BFTX0511N			

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	-	600-**900**-1,200	0.05-**0.15**-0.25	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

FMU / FMU-E Type

K Cast Iron

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 90°



Fig 1

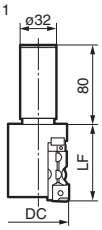


Fig 2

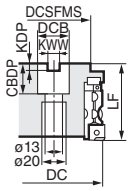


Fig 3

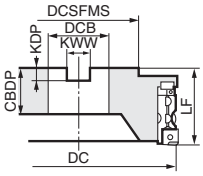


Fig 4

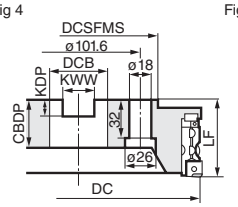
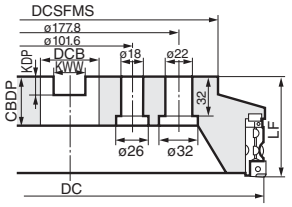


Fig 5



Body

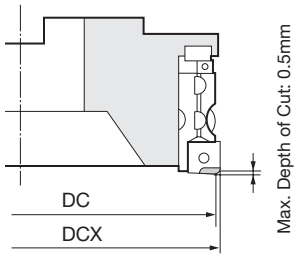
Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FMU4040ER**	★	**37**	40	-	63	-	-	-	-	2	1.0	1
	FMU4050ER	★	**47**	50	-	63	-	-	-	-	3	1.2	1
	FMU4063ER	★	**60**	63	60	63	**25.4**	9.5	6	25	4	1.0	2
	FMU4080R	★	**80**	82.8	60	63	**25.4**	9.5	6	25	6	1.7	2
	FMU4100R	★	**100**	102.8	75	63	**31.75**	12.7	8	38	8	2.5	3
	FMU4125R	★	**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.9	3
	FMU4160R	★	**160**	162.8	100	63	**50.8**	19.1	11	38	12	6.3	3
	FMU4200R	★	**200**	202.8	130	63	**47.625**	25.4	14	40	16	9.3	4
	FMU4250R		**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.5	4
	FMU4315R		**315**	317.8	240	80	**47.625**	25.4	14	40	24	25.0	5

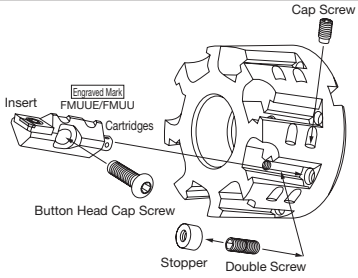
Inserts are sold separately. ★ Worldwide Warehouse item

Maximum Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°



Structure



Insert

Dimensions (mm)

Grade		SUMIBORON		
Process	High-speed / Light	K	K	
	General-purpose	K	K	
	Roughing			
Cat. No.		BN7000	BN700	Fig
SNEW1203ADTR		•	•	1
SNEW1203ADTR-S		•	•	2

Fig 1

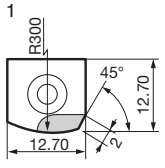
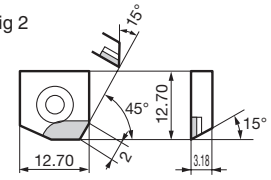


Fig 2



Part number suffix -S denotes a low-thrust insert.

Cartridges

Cartridges	Flat Screw		Adjustment Bolt	O-ring	Wrench	Wrench
		N·m			 (For Flat Screws)	
FMUU(E)*	BFTX0509N	5.0	FMUJ	P3	TTX20	TH015

* FMU4040ER / 4050ER / 4063ER use FMUUE type cartridges.
* FMUU / FMUUE are pre-assembled with flat screws and adjustment screws (with O-rings attached).

Setting Gauge



FMU-SET (Sold Separately)

Parts

Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)
				 (For Cartridges)	 (For Cap Screws)	 (For Stoppers)
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025

* FMU4040ER, 4050ER and 4063ER use BH0615 bolts.
* SUMI-P Anti-seizure cream included in the package.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
K	Gray Cast Iron	250HB	2,625 - 6,560	0.004 - 0.012	BN7000(Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

Rake Angle		
	Radial	-6° 45'
	Axial	-5° 45'

3mm / 75°



Fig 1

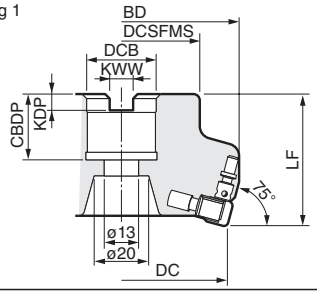
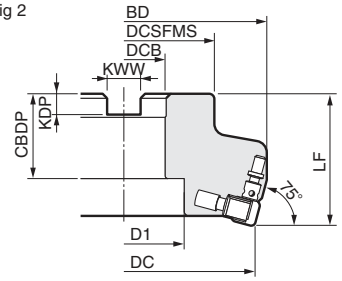


Fig 2



High-speed, High-efficiency Milling for Cast Iron

- High-Efficiency Milling of Gray Cast Iron
  - · Utilizes solid CBN - SUMIBORON BNS800 for high-speed cutting of v_c = 4,920 SFM.
  - · High speed roughing with depth of cut up to 0.118"
  - · Wiper insert for high-speed finishing
- Low Cost
  - · Economical double-sided insert with 8 usable corners
  - · Insert can be reground and used again
- Simple Runout Adjustment Mechanism
  - · Simple design for insert direct mounting
  - · Easy yet precise runout precision adjustment

Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Maximum Spindle Speed (min⁻¹)	Weight (kg)	Fig
Inch	**RM3080R**	•	**80**	90	60	-	50	**25.40**	9.5	6	25	6	9,000	1.6	1
	RM3100R	•	**100**	110	70	46	50	**31.75**	12.7	8	32	8	8,000	2.1	2
	RM3125R	•	**125**	135	80	59	63	**38.10**	15.9	10	38	10	7,000	3.9	2
	RM3160R	•	**160**	170	100	80	63	**50.80**	19.1	11	38	12	6,000	5.9	2

Inserts are sold separately.

Insert

•USA Stock Standard Item

Dimensions (mm)

Grade		SUMIBORON
Process	High-speed / Light	K
	General-purpose	K
	Roughing	K

Cat. No.	BNS800	Fig
SNGN090308	•	1
SNGN090312	•	1
SNEN090308W	•	2

Fig 1

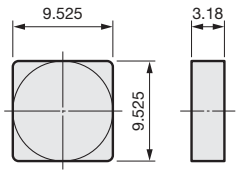
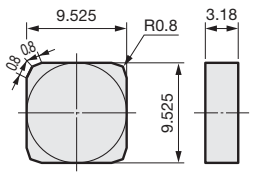
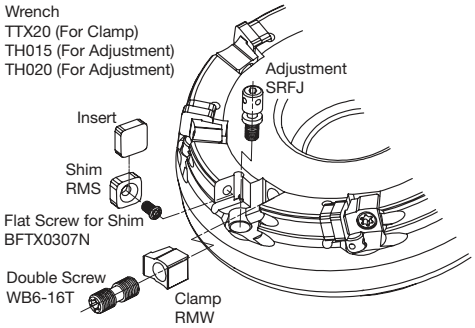


Fig 2 Wiper Insert





⚠ CAUTION

- · Do not use inserts with different catalogue numbers, such as a mix of standard and wiper inserts, on a single cutter setting.
- · New and reground inserts cannot be mixed for use. Use either only new inserts or only reground inserts.
- · Inserts can only be reground once (inscribed circle dimension must be at least 9.125mm).

Parts

Clamp	Double Screw	Shim	Flat Screw for Shim		Adjustment Screw	Wrench (For Clamp)	Wrench (For Adjustment)	Wrench (For Adjustment)
RMW	WB6-16T	RMS	BFTX0307N	N·m 2.0	SRFJ	TTX20	TH015	TH020

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
K	Gray Cast Iron	250HB	2,625 - 5,000	0.002 - 0.008	BNS800 (Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

Modular Tools H

H203 to H216

		Modular Tools	H204
Shoulder Milling	For High-efficiency Milling of Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WEZ Type	H206
	For Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WFX Type	H208
	For High-efficiency Milling of Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WEX Type	H209
High Feed	For High-feed Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WFXH Type	H211
	For High-feed Machining of Steel, Cast Iron and Stainless Steel	SEC-Metal Slash Mill MSX Type	H212
Radius	For Exotic Alloy	SEC-Wave Radius Mill RSX(F) Type	H213
	For Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-Wave Radius Mill WRCX Type	H214
Chamfering	For Chamfering of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	SEC-WaveMill WFXC Type	H215

Stock Markings and Symbols

●: Standard stocked item
▲: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).
Blank: Made-to-order item
— mark: Not available



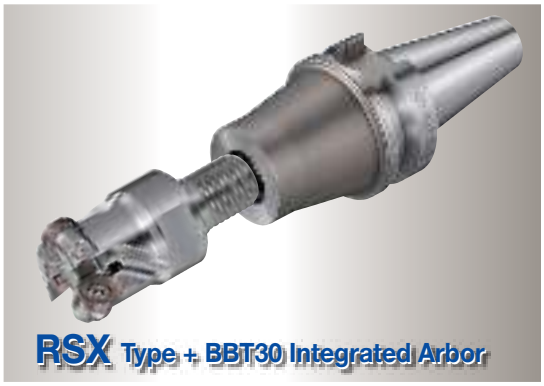
■ General Features

- Indexable head endmills are available in 8 types!
  - · Shoulder Milling Endmill **WFX Type**
  - · High-Efficiency Endmill **WFXH Type**
  - · Corner Radius Endmill **RSX Type**
  - · Chamfering Endmill **WFXC Type**
  - · Endmill for various applications **WEZ Type**
  - · Stop-Boring Endmill **WEX Type**
  - ·Ultra-High-Feed Endmill **MSX Type**
  - · Multi-Function Radius Endmill **WRCX Type**
  - · Tangential Endmill **TSX Type**
- In addition to carbide arbors and steel arbours, the lineup of integrated BBT types enables a variety of combinations

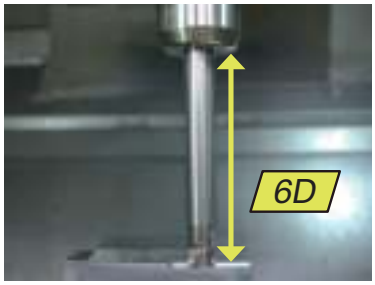
Suitable for milling with ***long overhangs*** *when combined with carbide or steel arbors*



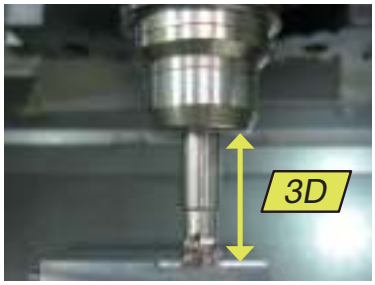
When combined with BBT integrated arbors, ***high load milling*** *is supported*



Modular Type + Carbide Arbor



Standard Type (Integrated Arbor)



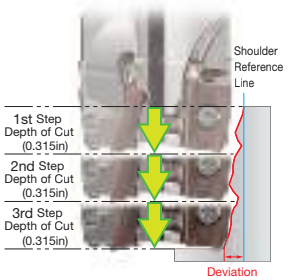
Note: Overhang varies depending on cutting conditions such as the tool used, machine rigidity and work clamp rigidity.

■ Screw Size and Mounting Cutter Size

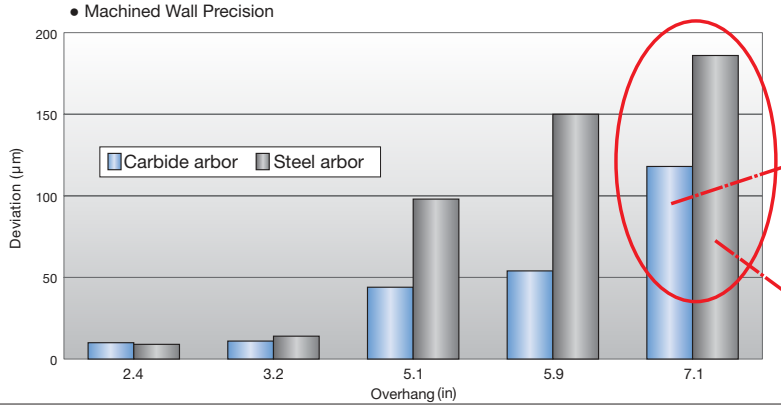
Screw **CRKS**	Applicable Cutter Size (DC)
M8	ø16, ø18
M10	ø20, ø22
M12	ø24, ø28
M16	ø30, ø32, ø35, ø40

■ Cutting Performance

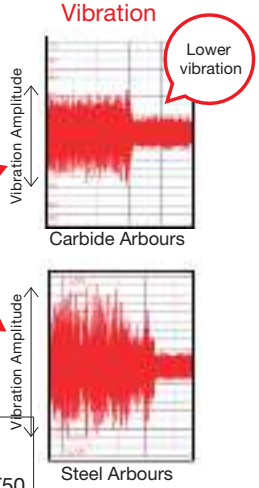
● Carbide arbors achieve greater precision and stable milling compared to steel arbors



● Machined Wall Precision

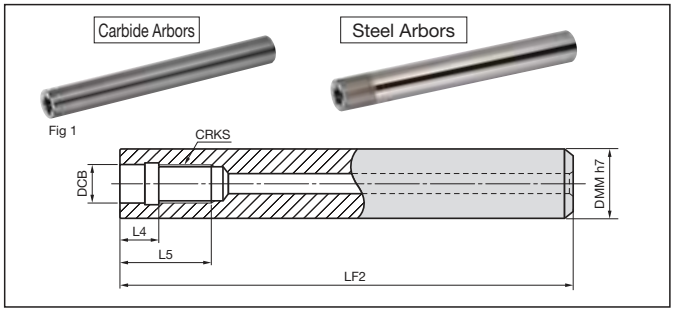


Vibration

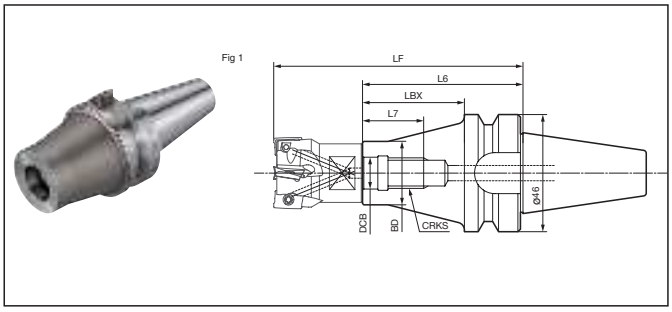


Work Material : 1050
Tool : WEX2025M12Z4 (ø25 x 4-flute)
Cutting Conditions: v_c = 328 SFM f_z = 0.004in/t a_e = 3.15in x 3 times a_p = 0.08in Machine: Machining center BT50

Modular Tooling - Arbors (Carbide Arbors/Steel Arbors)



BBT Integrated Type - SEC-Modular Tooling Arbors



Steel Arbor

Dimensions (*mm*)

	Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*	Fig
Inch	**MA0625M08L475S**	●	**M8**	0.335	0.625	4.750	0.393	0.708	5.734	1
	MA0750M10L600S	●	**M10**	0.413	0.750	6.000	0.393	0.787	7.181	1
	MA1000M12L800S	●	**M12**	0.492	1.000	8.000	0.393	0.866	9.378	1
	MA1000M16L800S	●	**M16**	0.669	1.000	8.000	0.393	0.944	9.575	1
	MA1250M16L800S	●	**M16**	0.669	1.250	8.000	0.393	0.944	9.575	1
Metric	**MA16M08L120S**	★	**M8**	*8.5*	*16*	*120*	*10*	*18*	*145*	1
	MA20M10L150S	★	**M10**	*10.5*	*20*	*150*	*10*	*20*	*180*	1
	MA25M12L200S	★	**M12**	*12.5*	*25*	*200*	*10*	*22*	*235*	1
	MA32M16L200S	★	**M16**	*17.0*	*32*	*200*	*10*	*24*	*240*	1

BBT Integrated Arbor

Dimensions (*mm*)

Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	O.D. BD	Body Overhang L6	Length LBX	Thread Depth L7	Overhang LF*	Coolant Hole	Fig
BBT30-M8-50	★	**M8**	*8.5*	*15.9*	*73*	*50*	*18*	*98*	Yes	1
BBT30-M10-45	★	**M10**	*10.5*	*19.9*	*68*	*45*	*20*	*98*	Yes	1
BBT30-M12-40	★	**M12**	*12.5*	*24.9*	*63*	*40*	*22*	*98*	Yes	1
BBT30-M16-35	★	**M16**	*17*	*31.9*	*58*	*35*	*24*	*98*	Yes	1

*Overhang length for LF is with head mounted.
Can also be used with BT30 spindle machines.

Carbide Arbor

Dimensions (*mm*)

Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*	Fig
MA15M08L120C	★	**M8**	*8.5*	*15*	*120*	*10*	*18*	*145*	1
MA15M08L160C	★	**M8**	*8.5*	*15*	*160*	*10*	*18*	*185*	1
MA16M08L120C	★	**M8**	*8.5*	*16*	*120*	*10*	*18*	*145*	1
MA16M08L160C	★	**M8**	*8.5*	*16*	*160*	*10*	*18*	*185*	1
MA18M10L150C	★	**M10**	*10.5*	*18*	*150*	*10*	*20*	*180*	1
MA18M10L200C	★	**M10**	*10.5*	*18*	*200*	*10*	*20*	*230*	1
MA20M10L150C	★	**M10**	*10.5*	*20*	*150*	*10*	*20*	*180*	1
MA20M10L200C	★	**M10**	*10.5*	*20*	*200*	*10*	*20*	*230*	1
MA23M12L200C	★	**M12**	*12.5*	*23*	*200*	*10*	*22*	*235*	1
MA23M12L250C	★	**M12**	*12.5*	*23*	*250*	*10*	*22*	*285*	1
MA25M12L200C	★	**M12**	*12.5*	*25*	*200*	*10*	*22*	*235*	1
MA25M12L250C	★	**M12**	*12.5*	*25*	*250*	*10*	*22*	*285*	1
MA28M16L200C	★	**M16**	*17.0*	*28*	*200*	*10*	*24*	*240*	1
MA28M16L300C	★	**M16**	*17.0*	*28*	*300*	*10*	*24*	*340*	1
MA32M16L200C	★	**M16**	*17.0*	*32*	*200*	*10*	*24*	*240*	1
MA32M16L300C	★	**M16**	*17.0*	*32*	*300*	*10*	*24*	*340*	1



Identification Code

MA 15 M8 L120 C

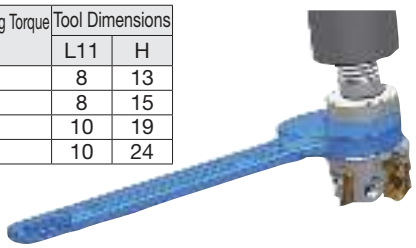
Cutter Series	Shank Dia. .625"	Mounting Screw Size	Arbor Overall Length	Grade C: Carbide S: Steel

Recommended Tightening Torque (N·m)

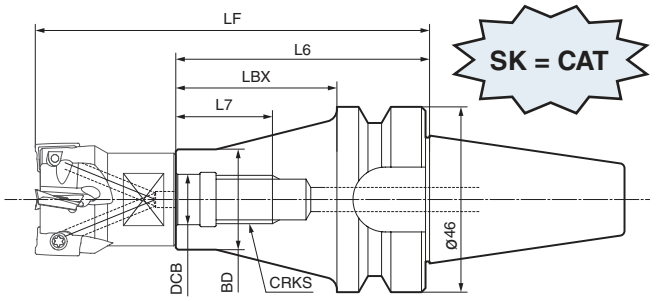
*Take care when tightening the head.

- When mounting the head to an arbor, follow the standard tightening torque in the table below.
- Check the mounting screw diameter for the head and arbor beforehand.

Screw Size	Regulated Tightening Torque (N·m)	Tool Dimensions L11	H
M8	23	8	13
M10	46	8	15
M12	80	10	19
M16	90	10	24



SEC- Modular Tools - Modular Tool Adapters



Modular Adapters - SK40

Catalog Number	Stock	Dimension (mm) CRKS	DCB	DMM	BD	LF	L7	LBX
SMA-M8-69-SK40	★	**M8**	*8.5*	*13.8*	*23*	*69*	*12*	*49.9*
SMA-M8-94-SK40	★	**M8**	*8.5*	*13.8*	*25*	*94*	*12*	*74.9*
SMA-M8-119-SK40	★	**M8**	*8.5*	*13.8*	*30*	*119*	*12*	*99.9*
SMA-M10-69-SK40	★	**M8**	*8.5*	*18.0*	*25*	*69*	*12*	*49.9*
SMA-M10-94-SK40	★	**M10**	*10.5*	*18.0*	*30*	*94*	*12*	*74.9*
SMA-M10-119-SK40	★	**M10**	*10.5*	*18.0*	*35*	*119*	*12*	*99.9*
SMA-M10-169-SK40	★	**M10**	*10.5*	*18.0*	*45*	*169*	*12*	*149.9*
SMA-M12-69-SK40	★	**M10**	*12.5*	*21.0*	*30*	*69*	*12*	*49.9*
SMA-M12-94-SK40	★	**M12**	*12.5*	*21.0*	*35*	*94*	*12*	*74.9*
SMA-M12-119-SK40	★	**M12**	*12.5*	*21.0*	*38*	*119*	*12*	*99.9*
SMA-M12-169-SK40	★	**M12**	*12.5*	*21.0*	*48*	*169*	*12*	*149.9*
SMA-M16-69-SK40	★	**M12**	*17.0*	*29.0*	*34*	*69*	*12*	*49.9*
SMA-M16-94-SK40	★	**M16**	*17.0*	*29.0*	*35*	*94*	*12*	*74.9*
SMA-M16-119-SK40	★	**M16**	*17.0*	*29.0*	*40*	*119*	*12*	*99.9*
SMA-M16-169-SK40	★	**M16**	*17.0*	*29.0*	*48*	*169*	*12*	*149.9*

Note: The above holders require an M16 thread retention knob

Modular Adapters - SK50

Catalog Number	Stock	Dimension (mm) CRKS	DCB	DMM	BD	LF	L7	LBX
SMA-M8-69-SK50	★	M8	8.5	13.8	23	69	12	49.9
SMA-M8-119-SK50	★	M8	8.5	13.8	30	119	12	74.9
SMA-M8-169-SK50	★	M8	8.5	13.8	45	169	12	99.9
SMA-M10-69-SK50	★	M10	10.5	18.0	25	69	12	49.9
SMA-M10-119-SK50	★	M10	10.5	18.0	35	119	12	99.9
SMA-M10-169-SK50	★	M10	10.5	18.0	45	169	12	149.9
SMA-M12-69-SK50	★	M12	12.5	21.0	30	69	12	49.9
SMA-M12-119-SK50	★	M12	12.5	21.0	38	119	12	99.9
SMA-M12-169-SK50	★	M12	12.5	21.0	52	169	12	149.9
SMA-M16-69-SK50	★	M16	17.0	29.0	34	69	12	49.9
SMA-M16-119-SK50	★	M16	17.0	29.0	40	119	12	99.9
SMA-M16-169-SK50	★	M16	17.0	29.0	48	169	12	149.9

Note: The above holders require an M24 thread retention knob

WEZ Modular Type - 11mm Insert

SEC-Modular Tools

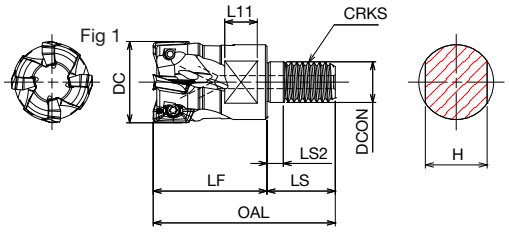
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-6°
	Axial	12°

.394" 90° Maximum Depth of Cut



Fig 1



Head

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WEZ20750M10Z3**	●	0.750	0.413	M10	1.929	1.181	0.197	0.748	0.315	0.591	3	0.088	1
	WEZ21000M12Z4	●	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	4	0.198	1
	WEZ21250M16Z5	●	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	5	0.419	1
	WEZ21500M16Z6	●	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	6	0.507	1
Metric	**WEZ11016M08Z2**	★	*16*	*8.5*	M8	*42*	*25*	*5*	*17*	*8*	*13*	2	*0.03*	1
	WEZ11018M08Z2	★	*18*	*8.5*	M8	*42*	*25*	*5*	*17*	*8*	*13*	2	*0.03*	1
	WEZ11020M10Z2	★	*20*	*10.5*	M10	*49*	*30*	*5*	*19*	*8*	*15*	2	*0.06*	1
	WEZ11020M10Z3	★	*20*	*10.5*	M10	*49*	*30*	*5*	*19*	*8*	*15*	3	*0.05*	1
	WEZ11022M10Z3	★	*22*	*10.5*	M10	*49*	*30*	*5*	*19*	*8*	*15*	3	*0.06*	1
	WEZ11025M12Z2	★	*25*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	2	*0.11*	1
	WEZ11025M12Z3	★	*25*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	3	*0.10*	1
	WEZ11025M12Z4	★	*25*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	4	*0.10*	1
	WEZ11026M12Z4	★	*26*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	4	*0.10*	1
	WEZ11026M12Z5	★	*26*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	5	*0.09*	1
	WEZ11028M12Z4	★	*28*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	4	*0.11*	1
	WEZ11028M12Z5	★	*28*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	5	*0.10*	1
	WEZ11030M16Z2	★	*30*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	2	*0.20*	1
	WEZ11030M16Z4	★	*30*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	4	*0.19*	1
	WEZ11030M16Z5	★	*30*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	5	*0.17*	1
	WEZ11032M16Z2	★	*32*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	2	*0.22*	1
	WEZ11032M16Z3	★	*32*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	3	*0.20*	1
	WEZ11032M16Z4	★	*32*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	4	*0.20*	1
	WEZ11032M16Z5	★	*32*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	5	*0.19*	1
	WEZ11035M16Z2	★	*35*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	2	*0.24*	1
	WEZ11035M16Z5	★	*35*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	5	*0.22*	1
	WEZ11040M16Z2	★	*40*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	2	*0.28*	1
	WEZ11040M16Z4	★	*40*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	4	*0.26*	1
	WEZ11040M16Z5	★	*40*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	5	*0.26*	1
	WEZ11040M16Z6	★	*40*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	6	*0.25*	1

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

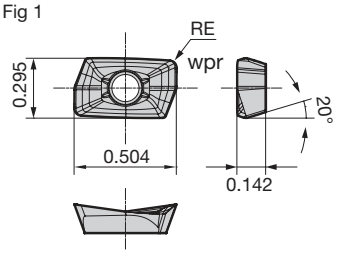
Insert

Dimensions (inch" / *mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light		P		K		M S			N	P
	General-purpose	M S		P		K	M S	M S	N	N	
	Roughing	M S		P		K		M S			

Cat. No.	ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Wiper Facet Length wpr	Fig
AOMT11T302PEER-G	●					●	●	—	—		.008" / *0.2*	.102" / *2.6*	1
AOMT11T304PEER-G	●	●	●	●	●	●	●	—	—	●	.016" / *0.4*	.110" / *2.8*	1
AOMT11T308PEER-G	●	●	●	●	●	●	●	—	—	●	.031" / *0.8*	.091" / *2.3*	1
AOMT11T310PEER-G	●							—	—		.039" / *1.0*	.083" / *2.1*	1
AOMT11T312PEER-G	●					●	●	—	—		.047" / *1.2*	.079" / *2.0*	1
AOMT11T316PEER-G	●					●	●	—	—		.063" / *1.6*	.067" / *1.7*	1
AOMT11T320PEER-G	●					●	●	—	—		.079" / *2.0*	.051" / *1.3*	1
AOMT11T324PEER-G	●					●	●	—	—		.094" / *2.4*	.035" / *0.9*	1
AOMT11T330PEER-G	●					●	●	—	—		.118" / *3.0*	.024" / *0.6*	1
AOMT11T332PEER-G	●					●	●	—	—		.126" / *3.2*	.024" / *0.6*	1
AOMT11T304PEER-H	●	●	●	●	●	●	●	—	—	—	.016" / *0.4*	.110" / *2.8*	1
AOMT11T308PEER-H	●	●	●	●	●	●	●	—	—	—	.031" / *0.8*	.091" / *2.3*	1
AOMT11T312PEER-H	●					●	●	—	—	—	.047" / *1.2*	.079" / *2.0*	1
AOMT11T316PEER-H	●					●	●	—	—	—	.063" / *1.6*	.067" / *1.7*	1
AOET11T302PEER-F	●	—		—		—		—	—	—	.008" / *0.2*	.102" / *2.6*	1
AOET11T304PEER-F	●	—		—		—		—	—	—	.016" / *0.4*	.110" / *2.8*	1
AOET11T305PEER-F	●	—		—		—		—	—	—	.020" / *0.5*	.106" / *2.7*	1
AOET11T308PEER-F	●	—		—		—		—	—	—	.031" / *0.8*	.091" / *2.3*	1
AOET11T310PEER-F	●	—		—		—		—	—	—	.039" / *1.0*	.083" / *2.1*	1
AOET11T312PEER-F	●	—		—		—		—	—	—	.047" / *1.2*	.079" / *2.0*	1
AOET11T316PEER-F	●	—		—		—		—	—	—	.063" / *1.6*	.067" / *1.7*	1
AOET11T320PEER-F	●	—		—		—		—	—	—	.079" / *2.0*	.051" / *1.3*	1
AOET11T324PEER-F	●	—		—		—		—	—	—	.094" / *2.4*	.035" / *0.9*	1
AOET11T330PEER-F	●	—		—		—		—	—	—	.118" / *3.0*	.024" / *0.6*	1
AOET11T332PEER-F	●	—		—		—		—	—	—	.126" / *3.2*	.024" / *0.6*	1
AOET11T302PEFR-S	—	—	—	—	—	—	—	●	●	—	.008" / *0.2*	.102" / *2.6*	1
AOET11T304PEFR-S	—	—	—	—	—	—	—	●	●	—	.016" / *0.4*	.110" / *2.8*	1
AOET11T305PEFR-S	—	—	—	—	—	—	—	●	●	—	.020" / *0.5*	.106" / *2.7*	1
AOET11T308PEFR-S	—	—	—	—	—	—	—	●	●	—	.031" / *0.8*	.091" / *2.3*	1
AOET11T310PEFR-S	—	—	—	—	—	—	—	●	●	—	.039" / *1.0*	.083" / *2.1*	1
AOET11T312PEFR-S	—	—	—	—	—	—	—	●	●	—	.047" / *1.2*	.079" / *2.0*	1
AOET11T316PEFR-S	—	—	—	—	—	—	—	●	●	—	.063" / *1.6*	.067" / *1.7*	1
AOET11T320PEFR-S	—	—	—	—	—	—	—	●	●	—	.079" / *2.0*	.051" / *1.3*	1
AOET11T324PEFR-S	—	—	—	—	—	—	—	●	●	—	.094" / *2.4*	.035" / *0.9*	1
AOET11T330PEFR-S	—	—	—	—	—	—	—	●	●	—	.118" / *3.0*	.024" / *0.6*	1
AOET11T332PEFR-S	—	—	—	—	—	—	—	●	●	—	.126" / *3.2*	.024" / *0.6*	1

Fig 1



-L: Low Cutting Force,
-G: General-purpose,
-H: Strong Edge,
-F: Medium Finishing,
-S: Non-ferrous metals.

● USA stocked item
★: worldwide warehouse item
— : Can not make

Arbours H205
Running Parameters H50

Identification Code - Inch

WEZ	2	1000	M12	Z4
Cutter Series	Insert Size	Dia. 1.000"	Mounting Screw Size	Number of Teeth

Identification Code - Metric

WEZ	11	016	M08	Z2
Cutter Series	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

Parts

Applicable Cutter		Flat Screw		Integrated Wrench	Anti-seize Paste
Inch	Metric				
WEZ20000 Series	WEZ11000 Series	BFTX0306IP	1.5	TRDR08IP	SUMI-P

WEZ Modular Type - 17mm Insert

SEC-Modular Tools

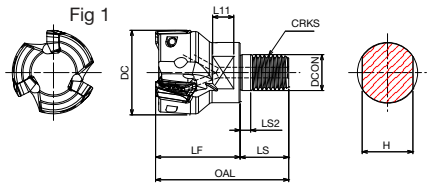
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle	
Radial	10° to 18°
Axial	14° to 25°

.591" 90° | 15mm 90° Maximum Depth of Cut



Fig 1



Head

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**WEZ31000M12Z2**	●	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	2	0.176	1
	WEZ31250M16Z3	●	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	3	0.353	1
	WEZ31500M16Z4	●	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	4	0.419	1
Metric	**WEZ17025M12Z2**	★	*25*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	*2*	*0.08*	1
	WEZ17025M12Z3	★	*25*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	*3*	*0.07*	1
	WEZ17028M12Z2	★	*28*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	*2*	*0.10*	1
	WEZ17030M16Z2	★	*30*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*2*	*0.17*	1
	WEZ17030M16Z3	★	*30*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*3*	*0.15*	1
	WEZ17032M16Z2	★	*32*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*2*	*0.19*	1
	WEZ17032M16Z3	★	*32*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*3*	*0.16*	1
	WEZ17032M16Z4	★	*32*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*4*	*0.14*	1
	WEZ17035M16Z2	★	*35*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*2*	*0.21*	1
	WEZ17035M16Z3	★	*35*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*3*	*0.19*	1
	WEZ17040M16Z2	★	*40*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*2*	*0.25*	1
	WEZ17040M16Z3	★	*40*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*3*	*0.23*	1
	WEZ17040M16Z4	★	*40*	*17*	M16	*63*	*40*	*5*	*23*	*10*	*24*	*4*	*0.21*	1

Inserts are sold separately.

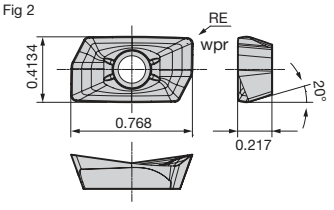
● USA stocked item ★ Worldwide Warehouse item

Insert

Dimensions(inch " / *mm*)

Grade		Coated Carbide						Carbide	DLC	Cermet			
Process	High-speed/Light		P		K		M S		N	P			
	General-purpose	M S		P		K	M S	M S	N	N			
	Roughing	M S		P		K		M S					
Cat.No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Wiper Facet Length wpr	Fig
AOMT170502PEER-L		●	—		—		●	●	—	—		.008" / *0.2*	.193" / *4.9*	1
AOMT170504PEER-L		●	—	●	—	●	●	●	—	—	●	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-L		●	—	●	—	●	●	●	—	—	●	.031" / *0.8*	.169" / *4.3*	1
AOMT170512PEER-L		●	—		—		●	●	—	—		.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-L		●	—		—		●	●	—	—		.063" / *1.6*	.138" / *3.5*	1
AOMT170502PEER-G		●					●	●	—	—		.008" / *0.2*	.193" / *4.9*	1
AOMT170504PEER-G		●	●	●	●	●	●	●	—	—	●	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-G		●	●	●	●	●	●	●	—	—	●	.031" / *0.8*	.169" / *4.3*	1
AOMT170510PEER-G		●							—	—		.039" / *1.0*	.161" / *4.1*	1
AOMT170512PEER-G		●					●	●	—	—		.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-G		●					●	●	—	—		.063" / *1.6*	.138" / *3.5*	1
AOMT170520PEER-G		●					●	●	—	—		.079" / *2.0*	.122" / *3.1*	1
AOMT170524PEER-G		●					●	●	—	—		.094" / *2.4*	.106" / *2.7*	1
AOMT170530PEER-G		●					●	●	—	—		.118" / *3.0*	.079" / *2.0*	1
AOMT170532PEER-G		●					●	●	—	—		.126" / *3.2*	.071" / *1.8*	1
AOMT170540PEER-G		●					●	●	—	—		.157" / *4.0*	.039" / *1.0*	1
AOMT170550PEER-G		●					●	●	—	—		.197" / *5.0*	.020" / *0.5*	1
AOMT170564PEER-G		●					●	●	—	—		.252" / *6.4*	.020" / *0.5*	1
AOMT170504PEER-H		●	●	●	●	●	●	●	—	—	—	.016" / *0.4*	.185" / *4.7*	1
AOMT170508PEER-H		●	●	●	●	●	●	●	—	—	—	.031" / *0.8*	.169" / *4.3*	1
AOMT170512PEER-H		●					●	●	—	—	—	.047" / *1.2*	.154" / *3.9*	1
AOMT170516PEER-H		●					●	●	—	—	—	.063" / *1.6*	.138" / *3.5*	1
AOET170502PEER-F		●	—		—		—		—	—	—	.008" / *0.2*	.193" / *4.9*	1
AOET170504PEER-F		●	—		—		—		—	—	—	.016" / *0.4*	.185" / *4.7*	1
AOET170505PEER-F		●	—		—		—		—	—	—	.020" / *0.5*	.181" / *4.6*	1
AOET170508PEER-F		●	—		—		—		—	—	—	.031" / *0.8*	.169" / *4.3*	1
AOET170510PEER-F		●	—		—		—		—	—	—	.039" / *1.0*	.161" / *4.1*	1
AOET170512PEER-F		●	—		—		—		—	—	—	.047" / *1.2*	.154" / *3.9*	1
AOET170516PEER-F		●	—		—		—		—	—	—	.063" / *1.6*	.138" / *3.5*	1
AOET170520PEER-F		●	—		—		—		—	—	—	.079" / *2.0*	.122" / *3.1*	1
AOET170524PEER-F		●	—		—		—		—	—	—	.094" / *2.4*	.106" / *2.7*	1
AOET170530PEER-F		●	—		—		—		—	—	—	.118" / *3.0*	.079" / *2.0*	1
AOET170532PEER-F		●	—		—		—		—	—	—	.126" / *3.2*	.071" / *1.8*	1
AOET170540PEER-F		●	—		—		—		—	—	—	.157" / *4.0*	.039" / *1.0*	1
AOET170550PEER-F		●	—		—		—		—	—	—	.197" / *5.0*	.020" / *0.5*	1
AOET170564PEER-F		●	—		—		—		—	—	—	.252" / *6.4*	.020" / *0.5*	1
AOET170502PEFR-S		—	—	—	—	—	—	—	●	●	—	.008" / *0.2*	.193" / *4.9*	1
AOET170504PEFR-S		—	—	—	—	—	—	—	●	●	—	.016" / *0.4*	.185" / *4.7*	1
AOET170505PEFR-S		—	—	—	—	—	—	—	●	●	—	.020" / *0.5*	.181" / *4.6*	1
AOET170508PEFR-S		—	—	—	—	—	—	—	●	●	—	.031" / *0.8*	.169" / *4.3*	1
AOET170510PEFR-S		—	—	—	—	—	—	—	●	●	—	.039" / *1.0*	.161" / *4.1*	1
AOET170512PEFR-S		—	—	—	—	—	—	—	●	●	—	.047" / *1.2*	.154" / *3.9*	1
AOET170516PEFR-S		—	—	—	—	—	—	—	●	●	—	.063" / *1.6*	.138" / *3.5*	1
AOET170520PEFR-S		—	—	—	—	—	—	—	●	●	—	.079" / *2.0*	.122" / *3.1*	1
AOET170524PEFR-S		—	—	—	—	—	—	—	●	●	—	.094" / *2.4*	.106" / *2.7*	1
AOET170530PEFR-S		—	—	—	—	—	—	—	●	●	—	.118" / *3.0*	.079" / *2.0*	1
AOET170532PEFR-S		—	—	—	—	—	—	—	●	●	—	.126" / *3.2*	.071" / *1.8*	1
AOET170540PEFR-S		—	—	—	—	—	—	—	●	●	—	.157" / *4.0*	.039" / *1.0*	1
AOET170550PEFR-S		—	—	—	—	—	—	—	●	●	—	.197" / *5.0*	.020" / *0.5*	1
AOET170564PEFR-S		—	—	—	—	—	—	—	●	●	—	.252" / *6.4*	.020" / *0.5*	1

Fig 2



-L: Low Cutting Force,
-G: General-purpose,
-H: Strong Edge,
-F: Medium Finishing,
-S: Non-ferrous metals.

● USA stocked item
★: worldwide warehouse item
— : Can not make

Arbours H205
Running Parameters H50

Parts - Inch

Applicable Cutter	Flat Screw	N·m	Integrated Wrench	Anti-seize Cream
WEZ31000M12Z2	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ31250M16Z3 WEZ31500M16Z4	BFTX0409IP			

Identification Code - Inch

WEZ	3	1000	M12	Z4
Cutter Series	Insert Size	Dia. 1.000"	Mounting Screw Size	Number of Teeth

Identification Code - Metric

WEZ	17	016	M08	Z2
Cutter Series	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

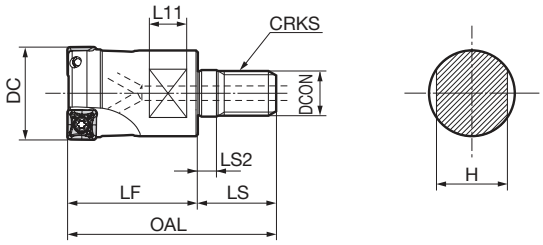
N·m Recommended Tightening Torque (N·m)

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Fig 1





Head

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WFX08020M10Z2	★	20	10.5	**M10**	49	30	5	19	8	15	2	1
WFX08022M10Z2	★	22	10.5	**M10**	49	30	5	19	8	15	2	1
WFX08025M12Z2	★	25	12.5	**M12**	56	35	5	21	10	19	2	1
WFX08028M12Z2	★	28	12.5	**M12**	56	35	5	21	10	19	2	1
WFX08030M16Z3	★	30	17.0	**M16**	63	40	5	23	10	24	3	1
WFX08032M16Z3	★	32	17.0	**M16**	63	40	5	23	10	24	3	1
WFX08040M16Z3	★	40	17.0	**M16**	63	40	5	23	10	24	3	1

Inserts are sold separately. ★ Worldwide Warehouse item

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L		●	●	●	●	●	●	●	-	-		0.4	1
SOMT080308PZER-L		●	●	●	●	●	●	●	-	-		0.8	1
SOMT080304PZER-G		●	●	●	●	●	●	●	-	-		0.4	1
SOMT080308PZER-G		●	●	●	●	●	●	●	-	-		0.8	1
SOMT080312PZER-G		●	●	●	●	●	●	●	-	-		1.2	1
SOMT080308PZER-H		●	●	●	●	●	●	●	-	-		0.8	1
SOMT080312PZER-H		●	●	●	●	●	●	●	-	-		1.2	1
SOET080304PZER-G		●	●	●	●	●	●	●	-	-	●	0.4	1
SOET080308PZER-G		●	●	●	●	●	●	●	-	-	●	0.8	1
SOET080312PZER-G		●	●	●	●	●	●	●	-	-	●	1.2	1
SOET080302PZFR-S		-	-	-	-	-	-	-	●	●	-	0.2	1
SOET080304PZFR-S		-	-	-	-	-	-	-	●	●	-	0.4	1
SOET080308PZFR-S		-	-	-	-	-	-	-	●	●	-	0.8	1
XOEW080308PZTR-W		-	-	-		●			-	-	●	-	2

Fig 1

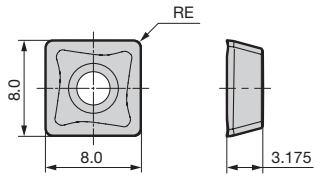
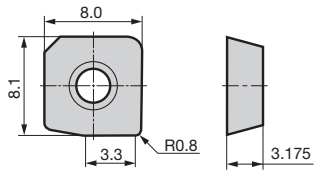


Fig 2 Wiper Insert



Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Arbours H205

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seize cream included in the package.

Identification Code

WFX 08 020 M10 Z2

WFX	08	020	M10	Z2
Cutter Series	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACP200 ACP300
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	ACP200 ACP300
P	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	ACP200 ACP300
M	Stainless Steel	-	160-**200**-250	0.10-**0.15**-0.20	< 6	ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACK200 ACK300
N	Non-ferrous Metal	-	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

WEX Modular Type - 12mm Inserts

SEC-Modular Tools

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

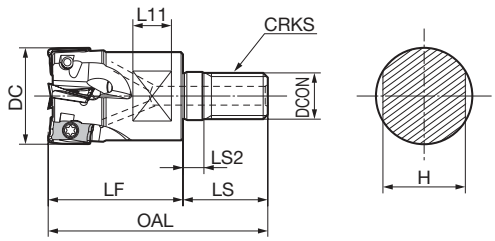
Expansion

Rake Angle		
	Radial	10° to 18°
	Axial	14° to 25°

Maximum Depth of Cut: .394" 90° | 10mm 90°

Fig 1





Head

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
Inch	**WEX20750M10Z3**	●	0.750	0.413	M10	1.929	1.181	0.197	0.748	0.315	0.591	3	1
	WEX21000M12Z4	●	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	4	1
	WEX21250M16Z5	●	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	5	1
	WEX21500M16Z6	●	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	6	1
Metric	**WEX2016M08Z2**	★	*16*	*8.5*	M8	*42*	*25*	*5*	*17*	*8*	*13*	2	1
	WEX2018M08Z2	★	*18*	*8.5*	M8	*42*	*25*	*5*	*17*	*8*	*13*	2	1
	WEX2020M10Z3	★	*20*	*10.5*	M10	*49*	*30*	*5*	*19*	*8*	*15*	3	1
	WEX2022M10Z3	★	*22*	*10.5*	M10	*49*	*30*	*5*	*19*	*8*	*15*	3	1
	WEX2025M12Z4	★	*25*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	4	1
	WEX2028M12Z4	★	*28*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	4	1
	WEX2030M16Z4	★	*30*	*17.0*	M16	*63*	*40*	*5*	*23*	*10*	*24*	4	1
	WEX2032M16Z5	★	*32*	*17.0*	M16	*63*	*40*	*5*	*23*	*10*	*24*	5	1
	WEX2040M16Z6	★	*40*	*17.0*	M16	*63*	*40*	*5*	*23*	*10*	*24*	6	1

Inserts are sold separately. ● USA stocked item ★ Worldwide Warehouse item

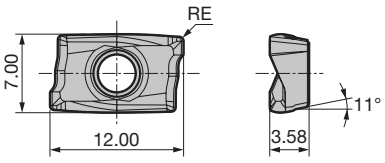
Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		P M	P M	K		M S	M S		N
	Roughing		P M	P M		K		M S		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Fig
AXMT123504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	1
AXMT123508PEER-G	●	●	●	●	●			-	-	.032" / *0.8*	1
AXMT123512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	1
AXMT123504PEER-H	●	●	●	●	●			-	-	.016" / *0.4*	1
AXMT123508PEER-H	●	●	●	●	●			-	-	.032" / *0.8*	1
AXMT123512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	1
AXMT123504PEER-E						●	●	-	-	.016" / *0.4*	1
AXMT123508PEER-E						●	●	-	-	.032" / *0.8*	1
AXMT123512PEER-E						●	●	-	-	.047" / *1.2*	1
AXMT123508PEER-EH						●	●	-	-	.032" / *0.8*	1
AXET123502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.2*	1
AXET123504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	1
AXET123508PEFR-S	-	-	-	-	-	-	-	●	●	.032" / *0.8*	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Stainless Steel & Exotic Alloy, -ES: Aluminum & Non-ferrous Alloys.

Recommended Cutting Conditions H66 Arbours H205

Parts

Applicable Endmills	Flat Screw	N·m	Wrench	Anti-seize Cream
WEX2016M, WEX2018M	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEX2020M to WEX2040M	BFTX0306IP			

SUMI-P Anti-seize cream included in the package.

Identification Code Inch

WEX **2** **1000** **M12** **Z4**

Cutter Series	Insert Size	Dia. 1.000"	Mounting Screw Size	Number of Teeth

Identification Code - Metric

WEX **2** **016** **M08** **Z2**

Cutter Series	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

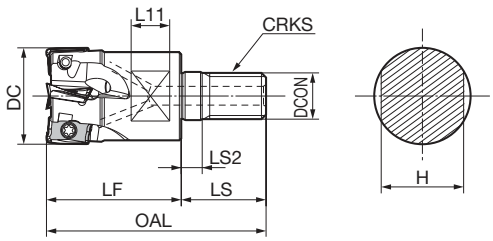
N·m Recommended Tightening Torque (N·m)

Rake Angle		Maximum Depth of Cut
	Radial	8° to 15°
	Axial	16° to 24°

.551" 90° 14mm 90°



Fig 1



Head

Dimensions (inch / *mm*)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WEX31000M12Z2	●	1.000	0.492	**M12**	2.205	1.378	0.197	0.827	0.394	0.748	2	1
WEX31250M16Z3	●	1.250	0.669	**M16**	2.480	1.575	0.197	0.906	0.394	0.945	3	1
WEX31500M16Z4	●	1.500	0.669	**M16**	2.480	1.575	0.197	0.906	0.394	0.945	4	1
WEX3025M12Z2	★	*25*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	2	1
WEX3028M12Z2	★	*28*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	2	1
WEX3030M16Z3	★	*30*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1
WEX3032M16Z3	★	*32*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1
WEX3035M16Z3	★	*35*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1
WEX3040M16Z4	★	*40*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	4	1

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

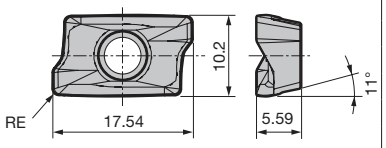
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		P M	P M	K		M S	M S		N
	Roughing		P M	P M		K		M S		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE Inch	Nose Radius RE Metric	Fig
AXMT170508PEER-L	●	●	●	●	●			-	-	.031	*0.8*	1
AXMT170504PEER-G	●	●	●	●	●			-	-	.016	*0.4*	1
AXMT170508PEER-G	●	●	●	●	●			-	-	.031	*0.8*	1
AXMT170512PEER-G	●	●	●	●	●			-	-	.047	*1.2*	1
AXMT170516PEER-G	●	●	●	●	●			-	-	.063	*1.6*	1
AXMT170520PEER-G*	●	●	●	●	●			-	-	.079	*2.0*	1
AXMT170530PEER-G*	●	●	●	●	●			-	-	.118	*3.0*	1
AXMT170508PEER-H	●	●	●	●	●			-	-	.031	*0.8*	1
AXMT170512PEER-H	●	●	●	●	●			-	-	.047	*1.2*	1
AXMT170504PEER-E						●	●	-	-	.016	*0.4*	1
AXMT170508PEER-E						●	●	-	-	.031	*0.8*	1
AXMT170512PEER-E						●	●	-	-	.047	*1.2*	1
AXMT170516PEER-E						●	●	-	-	.063	*1.6*	1
AXMT170520PEER-E*						●	●	-	-	.079	*2.0*	1
AXMT170530PEER-E*						●	●	-	-	.118	*3.0*	1
AXMT170508PEER-EH						●	●	-	-	.031	*0.8*	1
AXET170502PEFR-S	-	-	-	-	-	-	-	●	●	.008	*0.2*	1
AXET170504PEFR-S	-	-	-	-	-	-	-	●	●	.016	*0.4*	1
AXET170508PEFR-S	-	-	-	-	-	-	-	●	●	.031	*0.8*	1

Fig 1



Recommended Cutting Conditions H66

-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Stainless Steel & Exotic Alloy, -ES: Aluminum & Non-ferrous Alloys.
* marked inserts require modification of the cutter body.

Parts

Applicable Endmill	Flat Screw	N·m	Wrench	Anti-seize Cream
WEX3025M to WEX3030M	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEX3032M to WEX3040M	BFTX0409IP			

SUMI-P Anti-seize cream included in the package.

Identification Code - Inch

WEX **3** **1000** **M12** **Z2**

Cutter Series	Insert Size	Dia. 1.000"	Mounting Screw Size	Number of Teeth

Identification Code - Metric

WEX **3** **025** **M12** **Z2**

Cutter Series	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

N·m Recommended Tightening Torque (N·m)

WFXH Modular Type - 8mm / 12 mm Inserts

SEC-Modular Tools

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

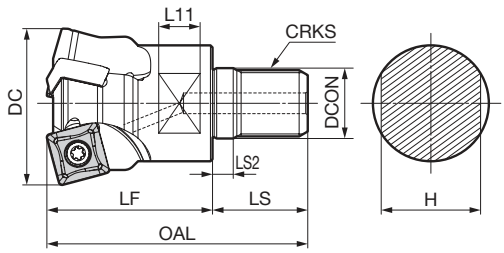
Rake Angle		
	Radial	-6°
	Axial	6°

1.5mm 15° (08000M Type)

2.5mm 15° (12000M Type)

Fig 1





Head (WFXH 08000M) Applicable Insert SOMT08 Type

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Mounting Dia DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXH08025M12Z2	★	*25*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	*2*	*0.1*	1
WFXH08032M16Z3	★	*32*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	*3*	*0.2*	1

★ Worldwide Warehouse item

Head (WFXH 12000M) Applicable Insert SOMT12 Type

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Mounting Dia DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXH12040M16Z3	★	*40*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	*3*	*0.2*	1

Inserts are sold separately.

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		MS		KN	N			
	General-purpose		PM	PM	K		MS	MS		N	P		
	Roughing		PM	PM		K		MS					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L		●	●	●	●	●	●	●	-	-		*0.4*	1
SOMT080308PZER-L		●	●	●	●	●	●	●	-	-		*0.8*	1
SOMT080304PZER-G		●	●	●	●	●	●	●	-	-		*0.4*	1
SOMT080308PZER-G		●	●	●	●	●	●	●	-	-		*0.8*	1
SOMT080312PZER-G		●	●	●	●	●	●	●	-	-		*1.2*	1
SOMT080308PZER-H		●	●	●	●	●	●	●	-	-		*0.8*	1
SOMT080312PZER-H		●	●	●	●	●	●	●	-	-		*1.2*	1
SOET080304PZER-G		●	●	●	●	●	●	●	-	-	●	*0.4*	1
SOET080308PZER-G		●	●	●	●	●	●	●	-	-	●	*0.8*	1
SOET080312PZER-G		●	●	●	●	●	●	●	-	-	●	*1.2*	1
SOET080302PZFR-S		-	-	-	-	-	-	-	●	●	-	*0.2*	1
SOET080304PZFR-S		-	-	-	-	-	-	-	●	●	-	*0.4*	1
SOET080308PZFR-S		-	-	-	-	-	-	-	●	●	-	*0.8*	1
SOMT120408PDER-L		●	●	●	●	●	●	●	-	-	-	*0.8*	2
SOMT120404PDER-G		●	●	●	●	●	●	●	-	-	-	*0.4*	2
SOMT120408PDER-G		●	●	●	●	●	●	●	-	-	●	*0.8*	2
SOMT120412PDER-G		●	●	●	●	●	●	●	-	-	-	*1.2*	2
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	*1.6*	2
SOMT120408PDER-H		●	●	●	●	●	●	●	-	-	-	*0.8*	2
SOET120408PDFR-S		-	-	-	-	-	-	-	●	●	-	*0.8*	2

Fig 1

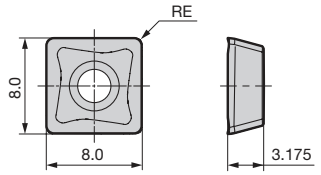
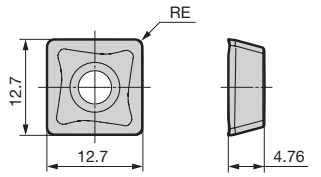


Fig 2



Precautions for Use H138 Arbours H205

Identification Code

WFX H 08 025 M12 Z2

WFX	H	08	025	M12	Z2
Cutter Series	For High Efficiency Milling	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

Recommended Cutting Conditions

Work Material	Insert Grade	Cutting Speed v_c (m/min)	Insert Cat. No.	ø25		ø32		ø40		ø50		ø63	
				a_p (mm)	Feed Rate (mm/rev)	a_p (mm)	Feed Rate (mm/rev)	a_p (mm)	Feed Rate (mm/rev)	a_p (mm)	Feed Rate (mm/rev)	a_p (mm)	Feed Rate (mm/rev)
P General Steel Below 200HB	ACP200	100-**150**-200	SOMT08	0.8	0.8	0.8	0.8	-	-	0.8	0.8	0.8	0.8
			SOMT12	-	-	-	-	1.0	1.0	1.0	1.0	1.0	1.0
P Alloy Steel Below HRC45	ACP200	80-**130**-180	SOMT08	0.7	0.8	0.7	0.8	Q	Q	0.7	0.8	0.7	0.8
			SOMT12	-	-	-	-	0.8	1.0	0.8	1.0	0.8	1.0
M Stainless Steel SUS304, etc.	ACM300	80-**120**-150	SOMT08	0.8	0.7	0.8	0.7	-	-	0.8	0.7	0.8	0.7
			SOMT12	-	-	-	-	1.0	0.8	1.0	0.8	1.0	0.8
K Cast Iron FC, FCD	ACK300	100-**150**-200	SOMT08	0.8	1.0	0.8	1.0	-	-	0.8	1.0	0.8	1.0
			SOMT12	-	-	-	-	1.0	1.2	1.0	1.2	1.0	1.2
H Hardened Steel Below HRC50	ACK300	40- **80**-100	SOMT08	0.5	0.5	0.5	0.5	-	-	0.5	0.5	0.5	0.5
			SOMT12	-	-	-	-	0.6	0.8	0.6	0.8	0.6	0.8

· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity. The above figures are guidelines for use with BT50 machine tools.

· The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.
When tool overhang is more than L/D = 3 and less than or equal to L/D=5, settings should be adjusted to approximately 70 to 80% of those indicated in the above recommended cutting conditions (i.e. a_p and Feed Rate).
When tool overhang is more than L/D = 5 and less than or equal to L/D=8, settings should be adjusted to approximately 50 to 60% of those indicated in the above recommended cutting conditions (i.e. a_p and feed rate).

Parts

Applicable Endmill	Flat Screw	N·m	Wrench
WFXH08000M	BFTX0306IP	2.0	TRDR08IP
WFXH12000M	BFTX03512IP	3.0	TRDR15IP

SUMI-P Anti-seize cream included in the package.

N·m Recommended Tightening Torque (N·m)

MSX Modular Type - 6mm / 8mm /12 mm Inserts

SEC-Modular Tools

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	
Radial	-3° to -6°
Axial	8°

.039" 20° (06000M Type) | 1.0mm 20° | .0591" 20° (08000M Type) | 1.5mm 20° | .079" 20° (12000M Type) | 2.0mm 20°

Fig 1



Head (MSX 06000M) Applicable Insert WDMT06 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
Inch	**MSX20750M10Z3**	●	0.750	0.413	**M10**	1.929	1.181	.197	.748	.315	.591	3	1
Inch	**MSX21000M12Z3**	●	1.000	0.492	**M12**	2.205	1.378	.197	.827	.394	.748	3	1
Metric	**MSX06016M08Z2**	★	*16*	*8.5*	**M8**	*42*	*25*	*5*	*17*	*8*	*13*	2	1
Metric	**MSX06018M08Z2**	★	*18*	*8.5*	**M8**	*42*	*25*	*5*	*17*	*8*	*13*	2	1
Metric	**MSX06020M10Z3**	★	*20*	*10.5*	**M10**	*49*	*30*	*5*	*19*	*8*	*15*	3	1
Metric	**MSX06022M10Z3**	★	*22*	*10.5*	**M10**	*49*	*30*	*5*	*19*	*8*	*15*	3	1
Metric	**MSX06025M12Z3**	★	*25*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	3	1

Inserts are sold separately.

Head (MSX 08000M) Applicable Insert WDMT08 Type

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
Inch	**MSX31000M12Z2**	●	1.000	0.492	**M12**	2.205	1.378	.197	.827	.394	.748	2	1
Inch	**MSX31250M16Z3**	●	1.250	0.669	**M16**	2.480	1.575	.197	.906	.394	.945	3	1
Metric	**MSX08025M12Z2**	★	*25*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	2	1
Metric	**MSX08028M12Z2**	★	*28*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	2	1
Metric	**MSX08030M16Z3**	★	*30*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1
Metric	**MSX08032M16Z3**	★	*32*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1
Metric	**MSX08035M16Z3**	★	*35*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1

Inserts are sold separately.

Head (MSX 12000M) Applicable Insert WDMT12 Type

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
MSX12032M16Z2	★	*32*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	2	1
MSX12035M16Z2	★	*35*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	2	1
MSX12040M16Z3	★	*40*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1

Inserts are sold separately. ● USA stocked item ★ Worldwide Warehouse item

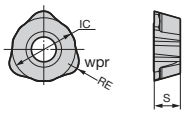
Insert

Dimensions (inch " / *mm*)

Grade		Coated Carbide					
Process	High-speed / Light			K		MS	
	General-purpose	PM	PM	K		MS	MS
	Roughing	PM	PM		K		MS

Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Inscribed Circle IC	Thickness S	Nose Radius RE	Wiper Facet Length wpr	Applicable Cutter	Fig
General-purpose	**WDMT0804ZDTR**	●	●	●	●	●	●	.335" / *8.5*	.157" / *4.0*	.079" / *2.0*	0.035 / *0.9*	MSX08000R Type	1
	WDMT1205ZDTR	●	●	●	●	●	●	.473" / *12*	.197" / *5.0*	.079" / *2.0*	0.063 / *1.6*	MSX12000R Type	1
	WDMT1406ZDTR	●	●	●	●	●	●	.551" / *14*	.236" / *6.0*	.079" / *2.0*	0.079 / *2.0*	MSX14000R Type	1
Honed Type	**WDMT0804ZDTR-H**	●	●	●	●	●	●	.335" / *8.5*	.157" / 4.0	.079" / *2.0*	0.035 / *0.9*	MSX08000R Type	1
	WDMT1205ZDTR-H	●	●	●	●	●	●	.473" / *12*	.197" / 5.0	.079" / *2.0*	0.063 / *1.6*	MSX12000R Type	1
	WDMT1406ZDTR-H	●	●	●	●	●	●	.551" / *14*	.236" / 6.0	.079" / *2.0*	0.079 / *2.0*	MSX14000R Type	1

Fig 1



Applicable Endmill	Flat Screw	N·m	Wrench	Clamp	C-Ring	Clamp Screw
MSX06000M Type	BFTX02505IP	1.5	TRDR08IP	-	-	-
MSX08000M Type	BFTX0306IP	2.0		CCH3.5	CR03	BFTX03510IP08
MSX12000M Type	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15

Recommended Cutting Conditions H143 | Arbours H205

Identification Code - Inch

MSX **2** **1000** **M12** **Z3**

Cutter Series	Insert Size	Dia. 1.000"	Mounting Screw Size	Number of Teeth

Identification Code - Metric

MSX **06** **016** **M08** **Z2**

Cutter Series	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

N·m Recommended Tightening Torque (N·m)

RSX(F) Modular Type - 8mm / 10mm / 12 mm Inserts

SEC-Modular Tools

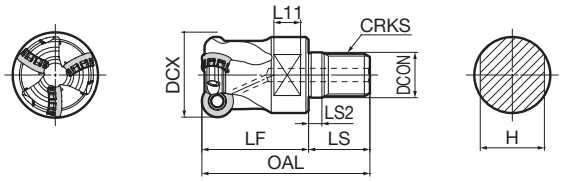
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5° to -8°
	Axial	10°

.157" 4mm (08000M Type) | .197" 5mm (10000M Type) | .236" 6mm (12000M Type)

Fig 1





Head (RSX08000M) Applicable Insert RDET08 Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**RSX08020M10Z2**	★	20	10.5	**M10**	49	30	5	19	8	15	2	0.1	1
	RSX08025M12Z3	★	25	12.5	**M12**	56	35	5	21	10	19	3	0.1	1
	RSX08032M16Z4	★	32	17.0	**M16**	63	40	5	23	10	24	4	0.2	1

Head (RSXF08000M) Fine Pitch Type, Applicable Insert RDET08 Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF08020M10Z3**	★	20	10.5	**M10**	49	30	5	19	8	15	3	0.1	1
	RSXF08025M12Z4	★	25	12.5	**M12**	56	35	5	21	10	19	4	0.1	1
	RSXF08032M16Z5	★	32	17.0	**M16**	63	40	5	23	10	24	5	0.2	1

Head (RSX10000M) Applicable Insert RDET10 Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**RSX10025M12Z2**	★	25	12.5	**M12**	56	35	5	21	10	19	2	0.1	1
	RSX10032M16Z3	★	32	17.0	**M16**	63	40	5	23	10	24	3	0.2	1

Head (RSXF3 & RSXF10) Fine Pitch Type, Applicable Insert RDET10 Type

Dimensions (inch / mm)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Inch	**RSXF31000M12Z3**	●	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	3	.22	1
	RSXF31250M16Z4	●	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	4	.44	1
Metric	**RSXF10025M12Z3**	★	25	12.5	**M12**	56	35	5	21	10	19	3	0.1	1
	RSXF10032M16Z4	★	32	17.0	**M16**	63	40	5	23	10	24	4	0.2	1

Head (RSX12000M) Applicable Insert RDET12 Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**RSX12032M16Z2**	★	32	17.0	**M16**	63	40	5	23	10	24	2	0.2	1
	RSX12040M16Z3	★	40	17.0	**M16**	63	40	5	23	10	24	3	0.3	1

● USA stocked item ★ Worldwide Warehouse item

Head (RSXF4 & RSX12) Fine Pitch Type, Applicable Insert RDET12 Type

Dimensions (inch / mm)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Inch	**RSXF41250M16Z3**	●	1.250	0.669	**M16**	2.480	1.575	0.197	0.906	0.394	0.945	3	.44	1
	RSXF41500M16Z4	●	1.500	0.669	**M16**	2.480	1.575	0.197	0.906	0.394	0.945	4	.66	1
Metric	**RSXF12032M16Z3**	★	32	17.0	**M16**	63	40	5	23	10	24	3	0.2	1
	RSXF12040M16Z4	★	40	17.0	**M16**	63	40	5	23	10	24	4	0.3	1

Inserts are sold separately.

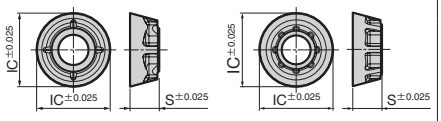
Insert

Dimensions (inch / mm)

Grade		Coated Carbide				
Process	High-speed / Ligh			MS	MS	
	General-purpose	PM		MS	MS	MS
	Roughing	PM	K			MS

Cat. No.	ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Applicable Cutter	Fig
RDET0803M0EN-G	●	●	●	●	●	*8*	*3.18*	RSX(F)08000ES/M Type	1
RDET0803M0EN-H	●	●	●	●	●	*8*	*3.18*		
RDET10T3M0EN-G	●	●	●	●	●	.394" / *10*	.156" / *3.97*	RSX(F)10000RS/ES/M Type	1
RDET10T3M0EN-H	●	●	●	●	●	.394" / *10*	.156" / *3.97*		
RDET1204M0EN-G	●	●	●	●	●	.472" / *12*	.187" / *4.76*	RSX(F)12000RS/ES/M Type	2
RDET1204M0EN-H	●	●	●	●	●	.472" / *12*	.187" / *4.76*		

Fig 1 Fig 2



● Cross Section of Cutting Edge



Recommended Cutting Conditions H153 | Precautions for Mounting Inserts H152 | Arbours H205

Parts

Applicable Endmill	Flat Screw	N·m	Wrench	Anti-seize Cream
RSX(F)08000M	BFTX02506IP	1.5	TRDR08IP	SUMI-P
RSX(F)10000M Type	BFTX03584IP	3.0	TRDR15IP	
RSX(F)12000M Type	BFTX0409IP	3.0		

SUMI-P Anti-seize cream included in the package.

Identification Code - Inch

RSX F 3 1000 M12 Z3

RSX	F	3	1000	M12	Z3
Cutter Series	Fine-Pitch Indication	Insert Size	Dia. 1.000"	Mounting Screw Size	Number of Teeth

Identification Code - Metric

RSX F 10 025 M12 Z2

RSX	F	10	025	M12	Z2
Cutter Series	Fine-Pitch Indication	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

N·m Recommended Tightening Torque (N·m)

WRCX Modular Type - 8mm / 10mm / 12mm Inserts

SEC-Modular Tools

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle		
	Radial	0°
	Axial	-3°

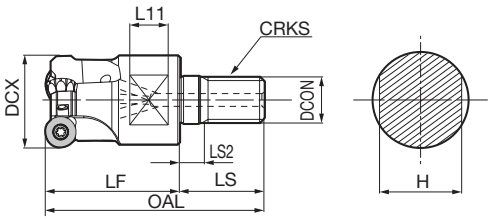
4mm (08000M Type) | 5mm (10000M Type) | 6mm (12000M Type)


WRCX08000M Type


WRCX10000M Type


WRCX12000M Type

Fig 1



Head (WRCX 08000M) Applicable Insert IC = 8mm Type

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WRCX08020M10Z2	★	*20*	*10.5*	**M10**	*49*	*30*	*5*	*19*	*8*	*15*	2	1
WRCX08025M12Z3	★	*25*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	3	1

Inserts are sold separately.

Head (WRCX 10000M) Applicable Insert IC = 10mm Type

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WRCX10025M12Z2	★	*25*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	2	1
WRCX10028M12Z2	★	*28*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	2	1
WRCX10030M16Z3	★	*30*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1
WRCX10032M16Z3	★	*32*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1

Inserts are sold separately.

Head (WRCX 12000M) Applicable Insert IC = 12mm Type

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WRCX12040M16Z4	★	*40*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	4	1

Inserts are sold separately. ★ Worldwide Warehouse item

Parts

Applicable Endmill	Flat Screw	N·m	Wrench
WRCX08000M	BFTX02506IP	1.5	TRDR08IP
WRCX10000M	BFTX03584IP	3.0	TRDR15IP
WRCX12000M	BFTX0409IP	3.0	TRDR15IP

SUMI-P Anti-seizure cream included in the package.

Identification Code

WRCX 08 020 M10 Z2

Cutter Series | Insert Size | Dia. | Mounting Screw Size | Number of Teeth

Insert

Dimensions (*mm*)

Grade		Coated Carbide					Carbide	DLC					
Process	High-speed / Light	P			K		K N	N					
	General-purpose		P M	P M	K			N					
	Roughing		P M	P M		K							
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Nose Radius RE	Thickness S	Applicable Endmill	Fig
General-purpose *1	**QPMT080330 PPEN**		●	●	●	●	-	-	*8*	*3.0*	*3.18*	WRCX08000M Type	1
	QPMT080330 PPEN-H		●	●	●	●	-	-					1
	QPMT10T335 PPEN		●	●	●	●	-	-	*10*	*3.5*	*3.97*	WRCX10000M Type	1
	QPMT10T335 PPEN-H		●	●	●	●	-	-					1
	QPMT120440 PPEN		●	●	●	●	-	-	*12*	*4.0*	*4.76*	WRCX12000M Type	1
	QPMT120440 PPEN-H		●	●	●	●	-	-					1
For Non-Ferrous Metals	**QPET10T350 PPFR-S**	-	-	-	-	-	●	●	*10*	*5.0*	*3.97*	WRCX10000M Type	2
	QPET120460 PPFR-S	-	-	-	-	-	●	●	*12*	*6.0*	*4.76*	WRCX12000M Type	2
Surfing	**QPMT120460 PPER-R**		●	●			-	-	*12*	*6.0*	*4.76*	WRCX12000M Type	3

*1 -H at the end means the strong edge type.

Fig 1

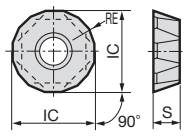


Fig 2

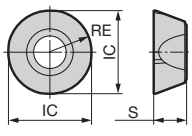
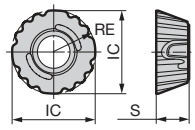


Fig 3

Surfing Insert



Arbours H205

Recommended Cutting Conditions

O.D. ø20 to ø32mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180to 280 HB	80-**120**-160	0.10-**0.30**-0.40	ACP200
	Alloy Steel	180to 280 HB	60-**100**-140	0.10-**0.20**-0.30	ACP200
M	Stainless Steel	Q	60-**100**-120	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	60- **80** -120	0.10-**0.20**-0.30	ACK200
N	Non-ferrous Metal	Q	200-**500**-1,000	0.10-**0.20**-0.30	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

O.D. ø40mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel	180to 280 HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	-	80-**120**-160	0.10-**0.20**-0.30	ACP300
K	Cast Iron	250HB	80-**120**-160	0.10-**0.20**-0.40	ACK200
N	Non-ferrous Metal	-	200-**500**-1,000	0.10-**0.30**-0.40	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

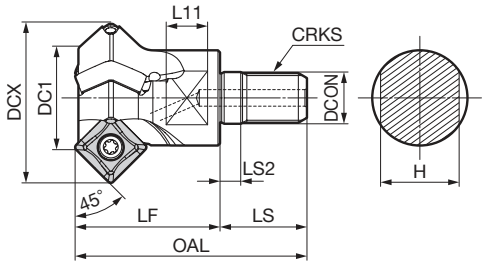
N·m Recommended Tightening Torque (N·m)

Rake Angle		
	Radial	0°
	Axial	0°

45°



Fig 1



Head (WFXC 08000M) Applicable Insert SOMT08 Type

Dimensions (*mm*)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXC08016M08Z2	★	*16*	*25.5*	*8.5*	**M8**	*42*	*25*	*5*	*17*	*8*	*13*	2	*0.1*	1

DC1 and DCON dimensions are values with an insert with 0.8 nose radius mounted.

Head (WFXC 12000M) Applicable Insert SOMT12 Type

Dimensions (*mm*)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXC12025M12Z3	★	*25*	*41.0*	*12.5*	**M12**	*56*	*32*	*5*	*21*	*10*	*19*	3	*0.1*	1
WFXC12032M16Z3	★	*32*	*48.0*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	*0.2*	1

DC1 and DCON dimensions are values with an insert with 0.8 nose radius mounted.

★ Worldwide Warehouse item

Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L		●	●	●	●	●	●	●	-	-		*0.4*	1
SOMT080308PZER-L		●	●	●	●	●	●	●	-	-		*0.8*	1
SOMT080304PZER-G		●	●	●	●	●	●	●	-	-		*0.4*	1
SOMT080308PZER-G		●	●	●	●	●	●	●	-	-		*0.8*	1
SOMT080312PZER-G		●	●	●	●	●	●	●	-	-		*1.2*	1
SOMT080308PZER-H		●	●	●	●	●	●	●	-	-		*0.8*	1
SOMT080312PZER-H		●	●	●	●	●	●	●	-	-		*1.2*	1
SOET080304PZER-G		●	●	●	●	●	●	●	-	-	●	*0.4*	1
SOET080308PZER-G		●	●	●	●	●	●	●	-	-	●	*0.8*	1
SOET080312PZER-G		●	●	●	●	●	●	●	-	-	●	*1.2*	1
SOET080302PZFR-S		-	-	-	-	-	-	-	●	●	-	*0.2*	1
SOET080304PZFR-S		-	-	-	-	-	-	-	●	●	-	*0.4*	1
SOET080308PZFR-S		-	-	-	-	-	-	-	●	●	-	*0.8*	1
SOMT120408PDER-L		●	●	●	●	●	●	●	-	-	-	*0.8*	2
SOMT120404PDER-G		●	●	●	●	●	●	●	-	-	-	*0.4*	2
SOMT120408PDER-G		●	●	●	●	●	●	●	-	-	●	*0.8*	2
SOMT120412PDER-G		●	●	●	●	●	●	●	-	-	-	*1.2*	2
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	*1.6*	2
SOMT120408PDER-H		●	●	●	●	●	●	●	-	-	-	*0.8*	2
SOET120408PDFR-S		-	-	-	-	-	-	-	●	●	-	*0.8*	2

Fig 1

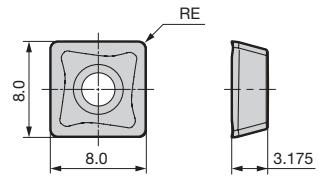
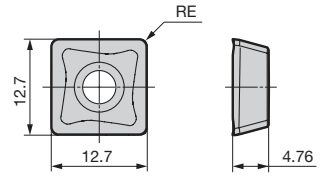


Fig 2



Precautions for Use H174 Arbours H205

Parts

Applicable Endmill	Flat Screw	N·m	Wrench
WFXC08000M	BFTX0306IP	1.5	TRDR08IP
WFXC12000M	BFTX03512IP	3.0	TRDR15IP

SUMI-P Anti-seize cream included in the package.

Identification Code

WFX C 08 016 M08 Z2

Cutter Series	Chamfering	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280 HB	150-**200**-250	0.05-**0.10**-0.15
P	Mild Steel	≤ 180HB	180-**265**-350	0.10-**0.15**-0.20
P	Die Steel	200 to 220 HB	100-**150**-200	0.05-**0.10**-0.15
M	Stainless Steel	-	150-**200**-250	0.05-**0.10**-0.15
K	Cast Iron	250HB	100-**175**-250	0.05-**0.10**-0.15

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

TSX(F) Modular Type - 8mm / 13 mm Inserts

SEC-Modular Tools

Rake Angle		
	Radial	-20°
	Axial	-6°

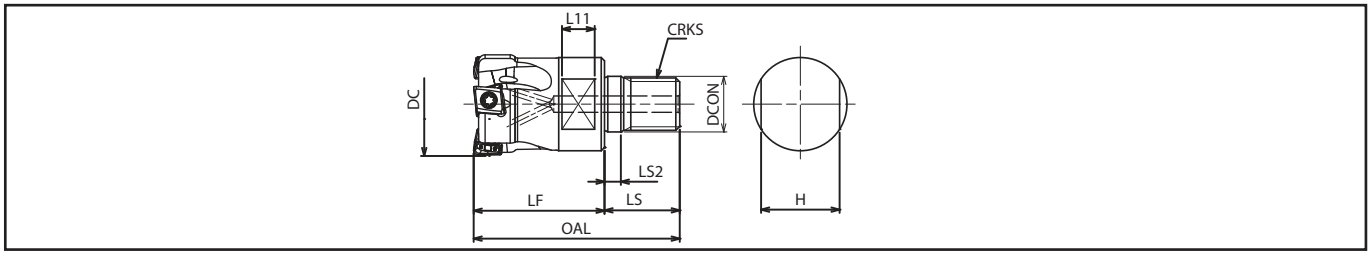
.315" 90° | 8mm 90°

TSX 08

Rake Angle		
	Radial	-23° to -15°
	Axial	-6°

.473" 90° | 12mm 90°

TSX 13



Head (TSXF30000M) Applicable Insert LNEX08 Type

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
TSXF30750M10Z3	•	0.750	0.413	M10	1.929	1.181	0.197	0.748	0.315	0.591	3	1
TSXF31000M12Z4	•	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	4	1
TSXF31250M16Z5	•	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	5	1
TSXF31500M16Z6	•	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	6	1

Head (TSXF40000M) Applicable Insert LNEX13 Type

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
TSX41000M12Z2	•	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	2	1
TSX41250M16Z3	•	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	3	1
TSX41500M16Z4	•	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	4	1

Inserts are sold separately.

• USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								
Process	High-speed / Light	PM			K		MS			
	General-purpose	PM	PM		K		MS	MS		
	Roughing		PM	PM		K		MS		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Fig
LNEX080404PNER-L			•	•	•	•	•	•	.016"/ *0.4*	1
LNEX080408PNER-L			•	•	•	•	•	•	0.032"/ *0.8*	1
LNEX080412PNER-L			•			•	•	•	0.047"/ *1.2*	1
LNEX080416PNER-L			•			•	•	•	0.063"/ *1.6*	1
LNEX080404PNER-G		•	•	•	•	•	•	•	0.016"/ *0.4*	1
LNEX080408PNER-G		•	•	•	•	•	•	•	0.032"/ *0.8*	1
LNEX080412PNER-G		•	•	•	•	•	•	•	0.047"/ *1.2*	1
LNEX080416PNER-G		•	•	•	•	•	•	•	0.063"/ *1.6*	1
LNEX130604PNER-L			•	•	•	•	•	•	0.016"/ *0.4*	2
LNEX130608PNER-L			•	•	•	•	•	•	0.032"/ *0.8*	2
LNEX130612PNER-L			•			•	•	•	0.047"/ *1.2*	2
LNEX130616PNER-L			•			•	•	•	0.063"/ *1.6*	2
LNEX130620PNER-L			•			•	•	•	0.079"/ *2.0*	2
LNEX130624PNER-L			•			•	•	•	0.094"/ *2.4*	2
LNEX130632PNER-L			•			•	•	•	0.126"/ *3.2*	2
LNEX130604PNER-G		•	•	•	•	•	•	•	0.016"/ *0.4*	2
LNEX130608PNER-G		•	•	•	•	•	•	•	0.032"/ *0.8*	2
LNEX130612PNER-G		•	•	•	•	•	•	•	0.047" / *1.2*	2
LNEX130616PNER-G		•	•	•	•	•	•	•	0.063" / *1.6*	2
LNEX130620PNER-G		•	•	•	•	•	•	•	0.079" / *2.0*	2
LNEX130624PNER-G		•	•	•	•	•	•	•	0.094" / *2.4*	2
LNEX130632PNER-G		•	•	•	•	•	•	•	0.126" / *3.2*	2
LNEX130604PNER-H			•	•	•	•			0.016"/ *0.4*	2
LNEX130608PNER-H			•	•	•	•			0.032" / *0.8*	2
LNEX130612PNER-H			•	•	•	•			0.047" / *1.2*	2
LNEX130616PNER-H			•	•	•	•			0.063" / *1.6*	2
LNEX130620PNER-H			•	•	•	•			0.079" / *2.0*	2
LNEX130624PNER-H			•	•	•	•			0.094" / *2.4*	2
LNEX130632PNER-H			•	•	•	•			0.126" / *3.2*	2

Fig 1

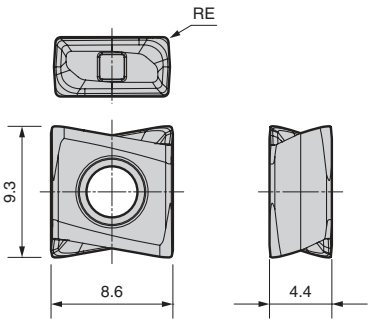
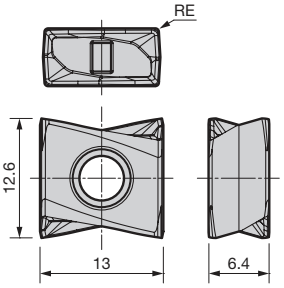


Fig. 2



Recommended Cutting Conditions H213

Identification Code

TSX F 3 0750 M12 Z3

(1) Cutter Series	(2) Pitch Type	(3) Insert Size	(4) Diameter	(5) Mounting Screw	(6) No. of Teeth
TSX	F	3: 08 4:13	0750	M12	Z3

Parts

Insert Size	Catalog Number	Insert Screw	Wrench	Recommended Tightening Torque
TSX3000 (LNEX08)	TSX□30625□~TSX□30750□	BFTX0306IP	TRDR08IP	2.0Nm
	TSX□31000□~TSX□32500□	BFTX0308IP		
TSX4000 (LNEX13)	TSX□41000□~TSX□44000□	BFTX03510IP	TRDR15IP	3.0Nm

Milling Cutters (Special Purpose)
H217 to H235

H



For High Feed Cast Iron Machining	SEC-Goal Mill Series	H218
	Expansion GFX(C) 13000 Type	H222
	GFX 16000 Type	H223
	GFS 13000 Type	H224
	GRHNM 17000 Type	H225
	GRHNF 17000 Type	H226
For High Feed Cast Iron Machining	SEC-High-Feed Mill Series	H228
	Cutting Edge Reference System	H229
	NRV 4000 / 5000 Type	H230
	DPV 4000 / 5000 Type	H231
	NFV 4000 / 5000 Type	H232
For High-Feed Milling of Non-Ferrous Alloys / Thin Workpieces	APV 5000 Type	H233
QC System	IGETALLOY Quick Change System	H234
	Applicable Cutters for QC-System	H235

Stock Markings and Symbols

●: Standard stocked item
▲: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).
Blank: Made-to-order item
— mark: Not available

GFX Type / GFS Type / GRHN Type



■ General Features

SEC-Goal Mill Series cutters have been developed for high-efficiency machining and finishing of cast iron parts (such as engine cylinder blocks and transmission cases).

■ Features

- Special cutters for high-feed machining of cast iron
- Multi-teeth design (approx. 3 teeth per inch)
- Finishing cutters feature an easy-to-use function for edge runout fine adjustment
- Highly reliable cutter with tangential inserts for finishing
- Chipbreaker type inserts for low cutting force

■ Product Range

Series Code	GFX	GFS	GRHN
Applications	Finishing	Finishing / Shoulder Milling	Roughing
Surface Roughness	< Ra3.2	< Ra3.2	< Ra12.5
Appearance	 →H226 to H227	 →H228	 →H229 to H230

Refer to the QC system on pages H238 to H239 for details and specifications on the two-piece mounting system and adapter.

Work Material	Applications	High-speed Finishing	Finishing to General Cutting	Interrupted Cutting	Applicable Cutters
K Cast Iron	Finishing	BN7000	ACK260	ACK280	GFX Type GFS Type

Work Material	Applications	Light Cutting	General Cutting	Heavy Interrupted Cutting	Applicable Cutters
K Cast Iron	For Roughing	ACK100	ACK200	ACK300	GRHN Type

■ Grade Characteristic Values

Classification	Grade	Hardness	Transverse Rupture Strength (GPa)	Main Coating Components	Coating Thickness (μm)	Features
K Cast Iron	ACK260	92.6HRA	2.6	Super ZX Coat	3	· From finishing to general machining of cast iron and ductile cast iron. · Employs new super multi-layered PVD coating consisting of nanometre-thin layers of TiAlN and AlCrN. Combines with a tough, thermal-resistant substrate for long and stable tool life.
K Cast Iron	ACK280	91.7HRA	3.0	Super ZX Coat	3	· For heavy interrupted cutting and wet cutting of cast iron and ductile cast iron. · Employs new super multi-layered PVD coating consisting of nanometre-thin layers of TiAlN and AlCrN. · Coupled with an ultra-tough substrate for superior fracture resistance and thermal crack resistance during wet cutting.

BN7000 Characteristic Values ☞H13
ACK100, ACK200, ACK300 Characteristic Values ☞H13

■ Application Examples

Application: Finishing

• Workpiece: Side Face of Cylinder Block		SEC-Goal Mill	Competitor's Product
Work Material: **Gray Cast Iron** Roughness Standard: Rz **12.5**µm Machine: Horizontal Machining Centre	Tool	**GFXC13100R**	ø100
	Grade	**BN7000**	CVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	Number of Teeth	4	10
	v_c (m/min)	1,200	251
	v_f (mm/min)	10,000	500
	f_z (mm/t)	0.65	0.063
	a_p (mm)	0.5	0.5
	Coolant	Dry	Dry
	Results	· v_f = 10,000mm/min can be realised · Achieves a v_f value 20 times larger than our competitors' products	

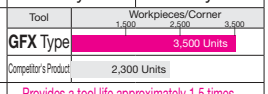
Application: Finishing

• Workpiece: Side Face of Cylinder Head		SEC-Goal Mill	Competitor's Product
Work Material: **Gray Cast Iron** Roughness Standard: Rz **12.5**µm Machine: Horizontal Machining Centre	Tool	**GFXC13125R**	ø125
	Grade	**BN7000**	PVD
	Tool Shape	Tangential Screw Locked	Horizontal Screw Locked
	Number of Teeth	4	12
	v_c (m/min)	1,000	216
	v_f (mm/min)	6,000	376
	f_z (mm/t)	0.59	0.057
	a_p (mm)	0.5	1.0
	Coolant	Dry	Dry
	Results	· v_f = 6,000mm/min can be realised · Improves efficiency by 16 times and provides better surface roughness than our competitors' products	

Application: Finishing

• Workpiece: Bottom Face of Cylinder Block		SEC-Goal Mill	Conventional Tool
Work Material: **Gray Cast Iron** Roughness Standard: Ra **6.3**µm Machine: Horizontal Machining Centre	Tool	**GFXC13125R**	ø125
	Grade	**ACK260**	CBN
	Tool Shape	Tangential Screw Locked	Wedge Type
	Number of Teeth	10	4
	v_c (m/min)	250	510
	v_f (mm/min)	1,020	1,020
	f_z (mm/t)	0.16	0.20
	a_p (mm)	0.5	0.5
	Coolant	Wet	Wet
	Results	· Carbide tools providing a tool life as long as CBN cutters · Reduces costs	

Application: Finishing

• Workpiece: Bottom Face of Cylinder Block		SEC-Goal Mill	Competitor's Product
Work Material: **Gray Cast Iron** Roughness Standard: Ra **3.2**µm Machined: Special Machine	Tool	**GFX16315R** (Special Type)	ø315
	Grade	**ACK260**	PVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	Number of Teeth	44 (Effective)	40
	v_c (m/min)	148	148
	v_f (mm/min)	720	720
	f_z (mm/t)	0.11	0.12
	a_p (mm)	0.5	0.5
	Coolant	Dry	Dry
	Results		
	Evaluation	Provides a tool life approximately 1.5 times longer than that of our competitors' products	

Application: Finishing

• Workpiece: Lathe Bed		SEC-Goal Mill	Competitor's Product
Work Material: **Gray Cast Iron** Roughness Standard: Ra **6.3**µm Machine: Double Column Machining Centre	Tool	**GFX16125R**	ø125
	Grade	**ACK260**	Ceramics
	Tool Shape	Tangential Screw Locked	–
	Number of Teeth	16	10
	v_c (m/min)	300	785
	v_f (mm/min)	3,057	3,000
	f_z (mm/t)	0.25	0.15
	a_p (mm)	0.3	0.3
	Coolant	Dry	Dry
	Results	Equivalent v_f value to ceramics achieved with carbide	
	Evaluation	Reduced running costs	

Application: Roughing

• Workpiece: Printer Roller		SEC-Goal Mill	Competitor's Product
Work Material: **Nodular Iron** Machine: Horizontal Machining Centre	Tool	**GRHNM17080R**	ø80
	Grade	**ACK200**	PVD
	Tool Shape	Screw-Fastened	Screw-Fastened
	Number of Teeth	8	9
	v_c (m/min)	230	151
	v_f (mm/min)	732.5	541
	f_z (mm/t)	0.1	0.1
	a_p (mm)	3 to 5	3 to 5
	Coolant	Dry	Dry
	Results	· Achieves 1.4 Times Machining Efficiency	

Application: Roughing

• Workpiece: Machine Tool Parts		SEC-Goal Mill	Competitor's Product
Work Material: **FC300** Machine: Double Column Machining Centre	Tool	**GRHNM17160R**	ø160
	Grade	**ACK200**	CVD
	Tool Shape	Screw-Fastened	Wedge Type
	Number of Teeth	16	8
	v_c (m/min)	250	140
	v_f (mm/min)	1,780	549
	f_z (mm/t)	0.20	0.245
	a_p (mm)	3→5→2	3→5→2
	Coolant	Dry	Dry
	Results	· Achieves 3.2 Times Machining Efficiency	

■ Application Examples

Application: Finishing

• Workpiece: Housing		SEC-Goal Mill	Competitor's Product
Work Material: **Gray Cast Iron** Roughness Standard: Ra **1.6**µm Machine: Horizontal Machining Centre	Tool	**GFXC13100R**	ø100
	Grade	**ACK260**	CVD
	Tool Shape	Tangential Screw Locked	Horizontal Screw Locked
	Number of Teeth	8	10
	v_c (m/min)	250	250
	v_f (mm/min)	960	530
	f_z (mm/t)	0.15	0.066
	a_p (mm)	0.1	0.1
	Coolant	Dry	Dry
	Results	· Provides higher efficiency and accuracy, and visually better than our competitors' products · Achieves a tool life that is over 2.5 times longer than that of our competitors' products	



Application: Finishing

• Workpiece: Large Diesel Engine (Base Plate)		SEC-Goal Mill	Current Tool
Work Material: **Gray Cast Iron** Roughness Standard: Ra **3.2**µm Size: **1,600**mm x **1,800**mm Machine: Horizontal Machining Centre	Tool	**GFX16160R**	ø160
	Grade	**ACK260**	CBN
	Tool Shape	Tangential Screw Locked	Blade Type
	Number of Teeth	20	10
	v_c (m/min)	300	980
	v_f (mm/min)	2,980	1,950
	f_z (mm/t)	0.25	0.10
	a_p (mm)	0.3	0.3
	Coolant	Dry	Dry
	Results	Carbide tools achieve 1.5 times the efficiency of CBN and provide machined surfaces equivalent to those machined with CBN on visual inspection	



Application: Finishing

• Workpiece: Side of Lathe Bed (11m Overall Length)		SEC-Goal Mill	Competitor's Product
Work Material: **Gray Cast Iron** Roughness Standard: Ra **3.2**µm Machine: Double Column Machining Centre	Tool	**GFX16160R**	ø160
	Grade	**ACK260**	CVD
	Tool Shape	Tangential Screw Locked	Horizontal Screw Locked
	Number of Teeth	20	8
	v_c (m/min)	120	125
	v_f (mm/min)	477	400
	f_z (mm/t)	0.10	0.20
	a_p (mm)	0.3	0.3
	Coolant	Dry	Dry
	Results	Tool / Cutting Length / Corner (20m, 40m) GFX Type: 40m Competitor's Product: 10m	
	Evaluation	Provides a cutting length 4 times longer than that of our competitors' products	



Application: Finishing

• Workpiece: Angle Plate		SEC-Goal Mill
Work Material: **Gray Cast Iron** Roughness Standard: Ra **3.2**µm Machine: Horizontal Machining Centre	Tool	**GFS13125R**
	Grade	**ACK260**
	Tool Shape	Tangential Screw Locked
	Number of Teeth	6
	v_c (m/min)	137
	v_f (mm/min)	1,000
	f_z (mm/t)	0.47
	a_p (mm)	0.015
	Coolant	Dry
	Results	Surface Roughness: Ra **1.0**µm No Step Final Grinding Omitted



Application: Finishing

• Workpiece: Hydraulic Component		SEC-Goal Mill	Competitor's Product
Work Material: **Nodular Iron** Roughness Standard: Ra **3.2**µm Machine: Horizontal Machining Centre	Tool	**GFX13080R**	ø80
	Grade	**ACK260**	PVD
	Tool Shape	Tangential Screw Locked	Vertical Drawing Pins
	Number of Teeth	8	6
	v_c (m/min)	218	180
	v_f (mm/min)	1,600	650
	f_z (mm/t)	0.23	0.15
	a_p (mm)	0.1	0.1
	Coolant	Wet	Wet
	Results	Tool / Workpieces/Corner (50, 100, 150) GFX Type: 148 Units Competitor's Product: 100 Units	
	Evaluation	Provides a tool life approximately 1.5 times longer than that of our competitors' products	



Application: Finishing

• Workpiece: Rear Hub Carrier		SEC-Goal Mill	Current Tool
Work Material: **Nodular Iron** Roughness Standard: Rz **25**µm Machine: Horizontal Machining Centre	Tool	**GFX16100R**	ø100
	Grade	**ACK260**	CVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	Number of Teeth	12	14
	v_c (m/min)	250	150
	v_f (mm/min)	3,150	800
	f_z (mm/t)	0.33	0.12
	a_p (mm)	0.5-1.0	0.5-1.0
	Coolant	Wet	Wet
	Results	· Current tools make steps in machined surfaces. · Efficiency improved.	



Application: Finishing

• Workpiece: Hydraulic Component		SEC-Goal Mill	Conventional Tool
Work Material: **Ductile Iron** Roughness Standard: Ra **1.6**µm Machine: Horizontal Machining Centre	Tool	GFX16125R (Special Type)	ø125
	Grade	**ACK260**	PVD
	Tool Shape	Tangential Screw Locked	Wedge Type
	Number of Teeth	6	6
	v_c (m/min)	160	150
	v_f (mm/min)	733	110
	f_z (mm/t)	0.30/1.20	0.05
	a_p (mm)	0.25	0.25
	Coolant	Wet	Wet
	Results	Tool / Tool Life / Corner (200min., 400min.) GFX Type: 350min Conventional Tool: 150min	
	Evaluation	Provides tool life approximately 2.3 times longer than conventional tools	



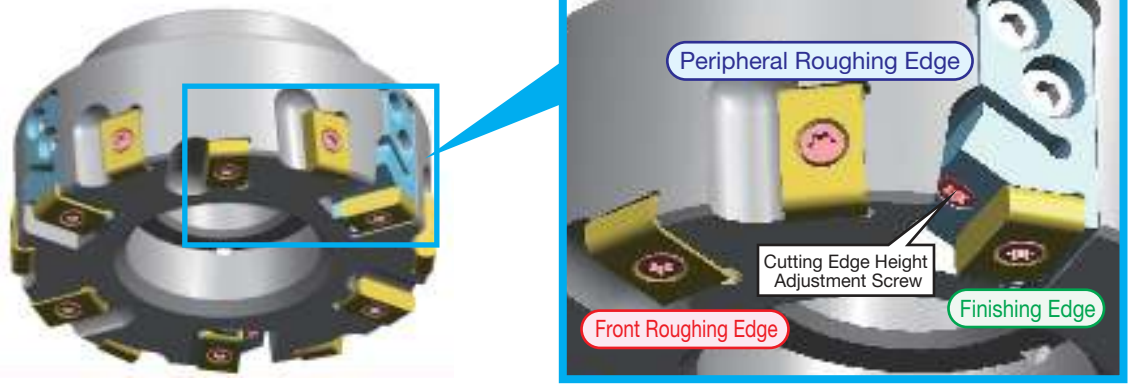
Application: Simultaneous Finishing

• Workpiece: Crank Case		SEC-Goal Mill	Competitor's Product
Work Material: **Al** + **Gray Cast Iron** Roughness Standard: Ra **3.2**µm Machine: Vertical Machining Centre	Tool	**GFX13100R**	ø100
	Grade	**ACK260**	PVD
	Tool Shape	Tangential Screw Locked	Vertical Drawing Pins
	Number of Teeth	12	12
	v_c (m/min)	400	314
	v_f (mm/min)	1,529	1,440
	f_z (mm/t)	0.10	0.12
	a_p (mm)	0.3	0.3
	Coolant	Wet	Wet
	Results	Tool / Workpieces/Corner (100, 200, 300) GFX Type: 250 Units Competitor's Product: 100 Units	
	Evaluation	Tool life approximately 2.5 times that of competitors' products	



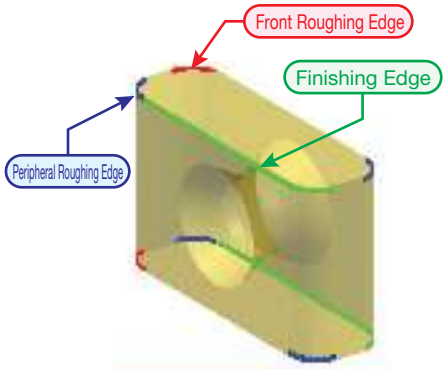
■ GFX Type Features

● Simple Runout Adjustment

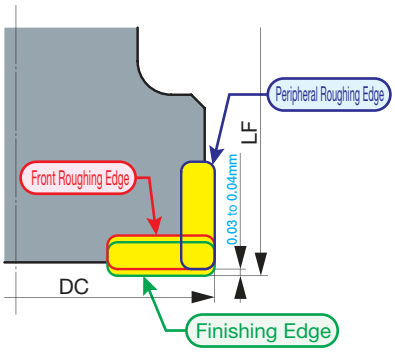


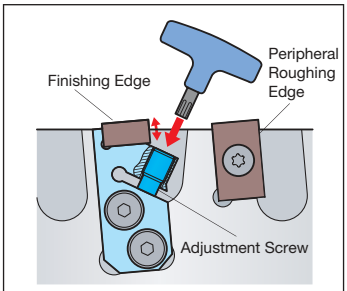
Finishing edge runout can be adjusted by 5μm or less simply by turning the adjustment screw.

● Economical 8-Cornered Insert



Arraying the same number of vertical and horizontal inserts allows 8-corner configuration.



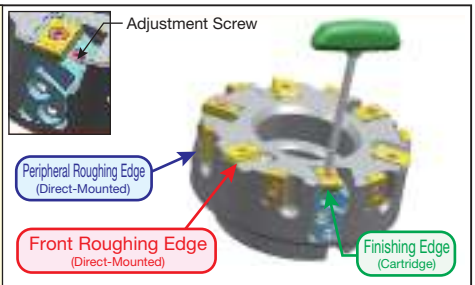


Finishing Edge Adjustment on GFX Type

■ GFX Type Finishing Edge Runout Adjustment Procedure

(1) Insert Assembly

Attach insert to cutter body.
When doing so, check that the cartridge adjustment screw is completely loose.



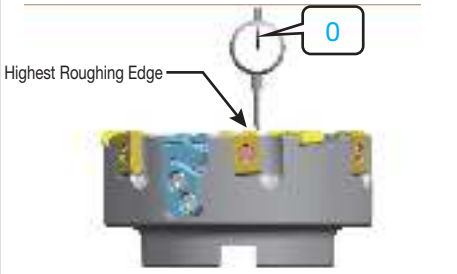
(2) Check Roughing Edge Runout

Measure face runout of the roughing edge and check the cutting edge that protrudes the most.



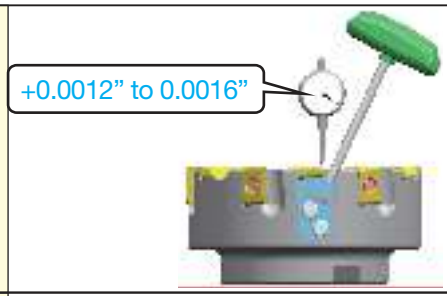
(3) Set Reference Roughing Edge

Set "0" as the cutting edge height checked in (2).



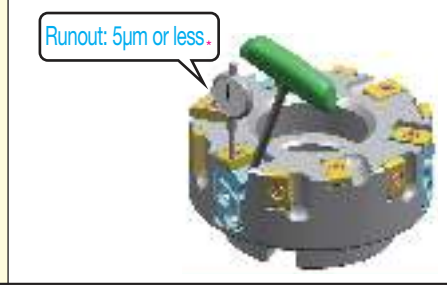
(4) Adjust Finishing Edge Height

Select a finishing edge and adjust with the adjustment screw so that the edge protrudes around 0.0012" to 0.0016" further than (3).



(5) Adjust Runout

With the finishing edge from (4) as a reference, adjust the position of the other finishing edges so that runout is equal to or less than 5 μm.



⚠

· Always adjust finishing edge height before use.

· Using the tool with the adjustment screw loose may result in tool breakage.

* Adjusting finishing edge runout to 2μm or less will result in a better machined surface.

GFX 13000 / GFXC 13000 Type

Expansion

Rake Angle		
	Radial	-8°
	Axial	-5°

1 mm 89°~89°30'





Fig 1

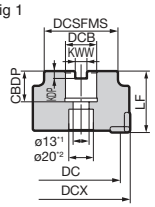


Fig 2

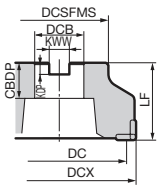


Fig 3

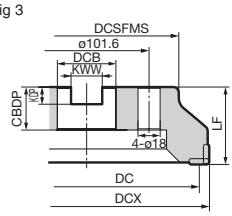
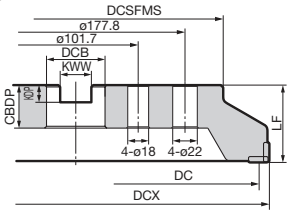


Fig 4



Body (GFX 13000 Type)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total Number of Teeth	Finishing Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Inch Arbor	**GFX13080R/L**	●		***80**	67.3	60	50	**25.4**	9.5	6	25	8	2	8	1.4	1
	GFX13100R/L	●		**100**	87.3	70	50	**31.75**	12.7	8	32	12	3	12	1.9	2
	GFX13125R/L	●		**125**	112.3	80	63	**38.1**	15.9	10	38	16	4	16	3.3	2
	GFX13160R/L	●		**160**	147.3	120	63	**50.8**	19	11	38	20	5	20	6.4	2
	GFX13200R/L			**200**	187.3	150	63	**47.625**	25.4	14	35	28	7	28	7.8	3
	GFX13250R/L			**250**	237.3	200	63	**47.625**	25.4	14	35	36	9	36	12.6	3
	GFX13315R/L			**315**	302.3	240	80	**47.625**	25.4	14	35	44	11	44	20.2	4

Body (GFXC 13000 Coarse Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total Number of Teeth	Finishing Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**GFXC13063RS/LS**	●		**63**	50.3	50	50	**22**	10.4	6	20	4	1	4	0.9	1
Inch Arbor	**GFXC13080R/L**	●		***80**	67.3	60	50	**25.4**	9.5	6	25	6	1	6	1.4	1
	GFXC13100R/L	●		**100**	87.3	70	50	**31.75**	12.7	8	32	8	2	8	1.9	2
	GFXC13125R/L	●		**125**	112.3	80	63	**38.1**	15.9	10	38	10	2	10	3.3	2
	GFXC13160R/L	●		**160**	147.3	120	63	**50.8**	19	11	38	12	3	12	6.4	2
	GFXC13200R/L	●		**200**	187.3	150	63	**47.625**	25.4	14	35	16	4	16	7.8	3
	GFXC13250R/L	●		**250**	237.3	184	63	**47.625**	25.4	14	35	20	5	20	9.4	3
	GFXC13315R/L	●		**315**	302.3	240	80	**47.625**	25.4	14	35	24	6	24	17.9	4

*1 GFXC13063RS/LS is ø11.
*2 GFXC13063RS/LS is ø18.
Inserts are sold separately.

● USA stocked item

Application Examples ☞ H218

For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Fig 1

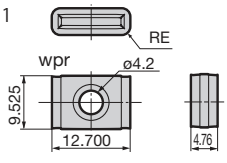
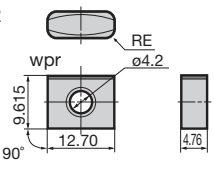


Fig 2



Grade		Coated Carbide			Carbide	CBN			
Process	High-speed Finishing					K			
	Finishing / Medium Cutting	K							
	Roughing		K	K					
Cat. No.		ACK260	ACK280	ACK300	H10E	BN7000	Nose Radius RE	Wiper Facet Length wpr	Fig
LNGX130508PNFN-W		●	●		●	-	0.8	1.6	1
LNGX130516PNFN-W		●	●		●	-	1.6	1.6	1
LNGX130516PNTN-W		-	-	-	-	●	1.6	1.6	2

Components ☞ H221

● Permissible Spindle Speed for CBN Inserts by Size

☞ H221

Precautions for Use of GFXC Type

GFXC Type can be used with fewer teeth attached. In this case, only mount inserts to the mounting positions with markings. Remove the screws from the mounting positions where inserts will not be mounted.



No. of GFXC type inserts for all teeth mounted versus mounted number of teeth reduced.

Cat. No.	Diameter DC	Total No. of Teeth	Mounted No. of Teeth Reduced
GFXC 13063RS/LS	63mm	4	**2**
13080R/L	80mm	6	**2**
13100R/L	100mm	8	**4**
13125R/L	125mm	10	**4**

Cat. No.	Diameter DC	Total No. of Teeth	Mounted No. of Teeth Reduced
GFXC 13160R/L	160mm	12	**6**
13200R/L	200mm	16	**8**
13250R/L	250mm	20	**10**
13315R/L	315mm	24	**12**

The number of inserts mounted should always match either the "Total No. of Teeth" or "Mounted No. of Teeth Reduced" quantities.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	200- **250**- 350	0.1-**0.3**-0.5	ACK260
K	Cast Iron	250HB	800-**1,000**-1,200	0.1-**0.3**-0.5	BN7000

Note Calculate cutting conditions based on effective no. of teeth.

GFX 16000 Type

K Cast Iron

Rake Angle		
	Radial	-8°
	Axial	-5°

1 mm, 89°~89°30'



Fig 1

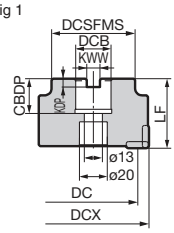


Fig 2

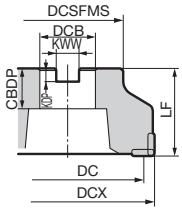


Fig 3

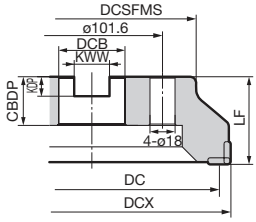
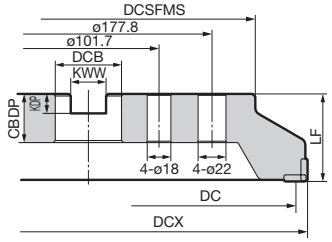


Fig 4



Body (GFX 16000 Type)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total Number of Teeth	Finishing Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Inch Arbor	**GFX16080R/L**			***80**	64.1	60	50	**25.4**	9.5	6	25	8	2	8	1.4	1
	GFX16100R/L	●		**100**	84.1	70	50	**31.75**	12.7	8	32	12	3	12	1.9	2
	GFX16125R/L	●		**125**	109.1	80	63	**38.1**	15.9	10	38	16	4	16	3.3	2
	GFX16160R/L	●		**160**	144.1	120	63	**50.8**	19	11	38	20	5	20	6.4	2
	GFX16200R/L	●		**200**	184.1	150	63	**47.625**	25.4	14	35	28	7	28	7.8	3
	GFX16250R/L			**250**	234.1	200	63	**47.625**	25.4	14	35	36	9	36	12.6	3
	GFX16315R/L			**315**	299.1	240	80	**47.625**	25.4	14	35	44	11	44	20.2	4

Inserts are sold separately.

Application Examples H218

For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

● USA stocked item

Insert

Dimensions (mm)

Grade		Coated Carbide			Carbide	CBN		
Process	High-speed Finishing					K		
	Finishing / Medium Cutting	K						
	Roughing		K	K				
Cat. No.		ACK260	ACK280	ACK300	H10E	BN7000	Wiper Facet Length wpr	Fig
LNGX160516PNFN-W		●	●		●	-	1.6	1
LNGX160516PNTN-W		-	-	-	-		1.6	2

Fig 1

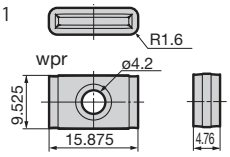
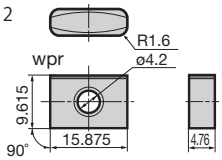


Fig 2



Parts

Cartridges (For 13000)	Cartridges (For 16000)	Adjustment Screw	Wrench	Insert Screw	N·m	Wrench (For Adjustment Screw)	Cap Screw/Radial Cartridge (For GFXK4R/L)	Cap Screw/Radial Cartridge (For GFVK5R/L)	Wrench (For Cartridges)	Anti-seize Cream
					N·m					
GFXK4R/L	GFVK5R/L	BTD05F09	TTX15W	BFTX03588	**3.0**	LT15	BX0414	BX0418	TH030	SUMI-P

Finishing cartridges do not come assembled with inserts.

● Permissible Spindle Speed for CBN Inserts by Size

Nominal Diameter (mm)	Allowable Spindle Speed (min⁻¹) n max.	Nominal Diameter (mm)	Allowable Spindle Speed (min⁻¹) n max.
ø63	6,000	ø160	2,300
ø80	4,700	ø200	1,900
ø100	3,800	ø250	1,500
ø125	3,000	ø315	1,200

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	200- **250**- 350	0.1-**0.3**-0.5	ACK260
K	Cast Iron	250HB	800-**1,000**-1,200	0.1-**0.3**-0.5	BN7000

Note: Calculate cutting conditions based on effective no. of teeth.

Rake Angle		
	Radial	-11°
	Axial	-3°

10mm 90°



Fig 1

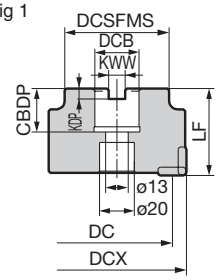
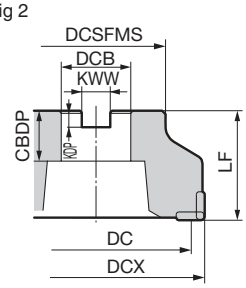


Fig 2



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total Number of Teeth	Finishing Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Inch Arbor	**GFS13080R/L**			***80**	66.9	60	50	**25.4**	9.5	6	25	5	1	4	1.4	1
	GFS13100R/L			**100**	86.9	70	50	**31.75**	12.7	8	32	6	1	5	1.9	2
	GFS13125R/L			**125**	111.9	80	63	**38.1**	15.9	10	38	8	2	6	3.3	2
	GFS13160R/L			**160**	147.3	120	63	**50.8**	19	11	38	10	2	8	6.4	2

Inserts are sold separately. Made to Order

Application Examples H218

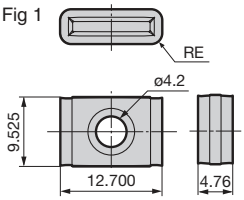
For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

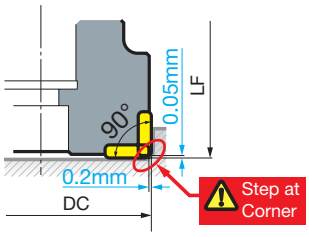
Insert

Dimensions (mm)

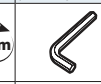
Grade		Coated Carbide			Carbide		
Process	High-speed / Light	K			K		
	General-purpose	K					
	Roughing		K	K			
Cat. No.		ACK260	ACK280	ACK300	H10E	Nose Radius RE	Fig
LNGX130508PNFN-W		•	•		•	0.8	1
LNGX130516PNFN-W		•	•		•	1.6	1

Fig 1





Parts

Finishing Cartridges*	Adjustment Screw	Wrench	Insert Screw		Wrench (For Adjustment)	Cap Screw (For Cartridges)	Wrench (For Cartridges)	Anti-seize Cream
				N·m				
GFSK4R/L	BTD05F09	TTX15W	BFTX03588	**3.0**	LT15	BX0520	TH040	SUMI-P

* marked finishing cartridges do not come assembled with inserts.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	200-**250**-300	0.10-**0.15**-0.30	ACK260

Note Calculate cutting conditions based on effective no. of teeth.

GRHNM 17000 Type

Rake Angle		
	Radial	-6°30' to -5°
	Axial	-6°

6mm / 60°



Fig 1

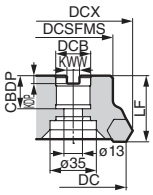


Fig 2

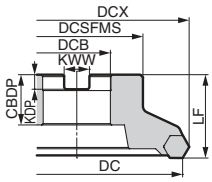


Fig 3

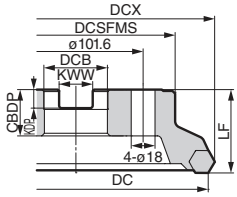
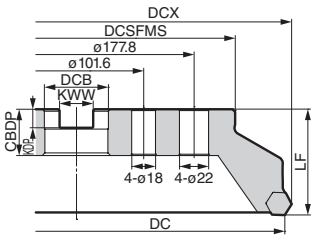


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total Number of Teeth	Weight (kg)	Fig
Inch Arbor	**GRHNM17080R/L**	●		***80**	90.5	60	50	**25.4**	9.5	6	25	8	1.2	1
	GRHNM17100R/L	●		**100**	110.5	70	50	**31.75**	12.7	8	32	10	1.7	2
	GRHNM17125R/L	●		**125**	135.5	80	63	**38.1**	15.9	10	38	12	2.9	2
	GRHNM17160R/L	●		**160**	170.5	100	63	**50.8**	19.1	11	38	16	4.5	2
	GRHNM17200R/L	●		**200**	210.5	150	63	**47.625**	25.4	14	35	20	7.3	3
	GRHNM17250R/L	●		**250**	260.5	200	63	**47.625**	25.4	14	35	24	13.1	3
	GRHNM17315R/L	●		**315**	325.5	240	80	**47.625**	25.4	14	35	28	24.5	4

Inserts are sold separately.

Application Examples ☞ H218

For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

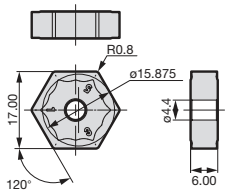
● USA stocked item

Insert

Dimensions (mm)

Grade		Coated Carbide			
Process	High-speed / Light	K	K		
	General-purpose	K	K		
	Roughing			K	
Cat. No.		ACK100	ACK200	ACK300	Fig
HNEF100608DNEN-G		●	●	●	1

Fig 1



Parts

Double Screw		Clamp	Wrench
			
WB6-20T	**6.0**	GRHNW	TTX20

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	200-**250**-300	0.15-**0.23**-0.30	ACK200

Note Calculate cutting conditions based on effective no. of teeth.

GRHNF 17000 Type

Rake Angle		
	Radial	-6°30' to -5°
	Axial	-6°

6mm / 60°



Fig 1

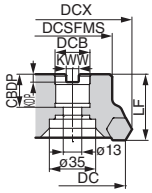


Fig 2

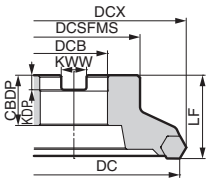


Fig 3

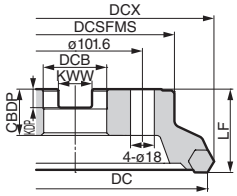
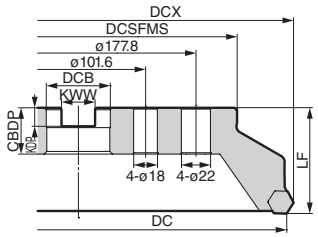


Fig 4



Body

Dimensions (*mm*)

	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Total Number of Teeth	Weight (kg)	Fig
Metric	**GRHNF17080R/L**	★		*80	90.5	60	50	25.4	9.5	6	25	10	1.2	1
	GRHNF17100R/L	★		100	110.5	70	50	31.75	12.7	8	32	14	1.8	2
	GRHNF17125R/L	★		125	135.5	80	63	38.1	15.9	10	38	18	2.9	2
	GRHNF17160R/L	★		160	170.5	100	63	50.8	19.1	11	38	22	4.5	2
	GRHNF17200R/L	★		200	210.5	150	63	47.625	25.4	14	35	28	7.3	3
	GRHNF17250R/L	★		250	260.5	200	63	47.625	25.4	14	35	36	13.1	3
	GRHNF17315R/L	★		315	325.5	240	80	47.625	25.4	14	35	44	24.5	4

Inserts are sold separately.

Application Examples H218

For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

● USA stocked item ★ Worldwide Warehouse item

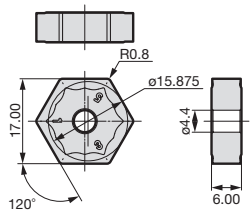
Insert

Dimensions (*mm*)

Grade		Coated Carbide		
Process	High-speed / Light	K	K	
	General-purpose	K	K	
	Roughing			K

Cat. No.	ACK100	ACK200	ACK300	Fig
HNEF100608DNEN-G	●	●	●	1

Fig 1



Parts

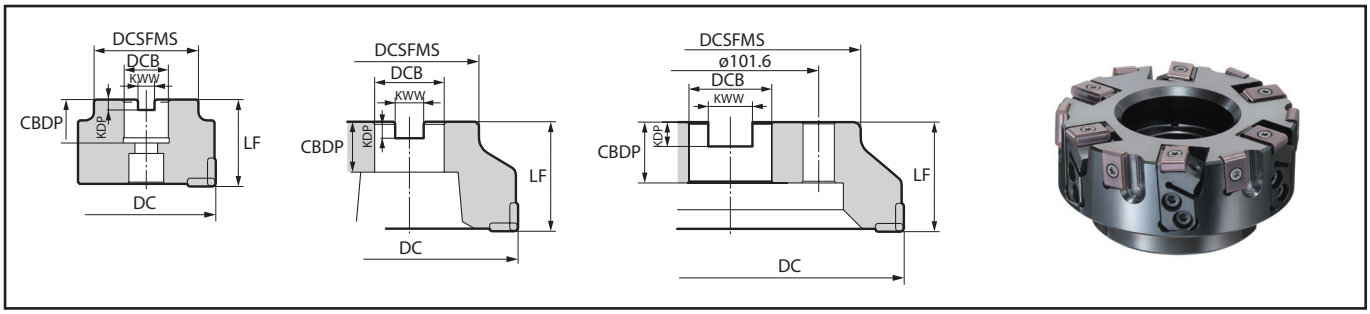
Double Screw		Clamp	Wrench
	N·m		
WB6-20T	6.0	GRHNW	TTX20

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	200-**250**-300	0.15-**0.23**-0.30	ACK200

Note Calculate cutting conditions based on effective no. of teeth.

N·m Recommended Tightening Torque (N·m)



Body

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth		Effective Cutting Diamater	Fig
										Roughing	Wiper		
Inch	**GFV53000R**	●	3.000	2.900	2.000	1.000	0.375	0.220	1.060	6	2	2.352	1
	GFV54000R	●	4.000	3.380	2.000	1.500	0.625	0.385	1.060	10	2	3.342	1
	GFV56000R	●	6.000	4.880	2.500	2.000	0.761	0.438	1.000	12	4	5.342	2
	GFV58000R	●	8.000	6.040	2.500	2.500	1.00	0.560	1.595	20	4	7.342	3

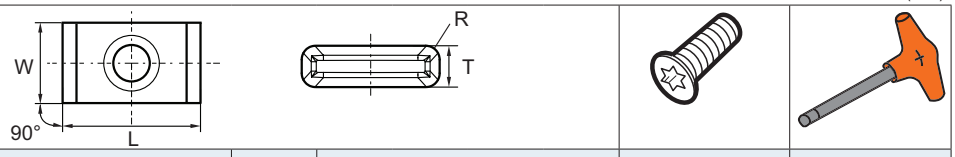
Inserts are sold separately. Left handed cutters are made to order.

Application Examples H218

Insert & Hardware

● USA stocked item

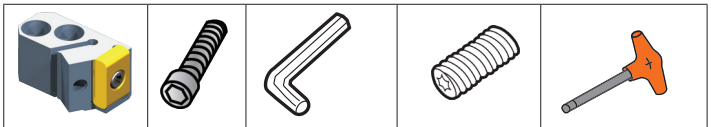
Dimensions (inch)



Catalog No.	Stock	Dimensions (inch)				Insert Screw*	Insert Wrench
		L	W	T	R		
LNGX160516PNFN-W-K244L9	●	0.625	0.375	0.187	0.063	BFTX03588	TTX15W
LNGX160516PNFN-W-K246L9	●						
LNGX160516PNFN-W-SN2100K	●						
LNGX130516PNTN-W-BN7000**	●	0.500					

*Torque specifications for insert screw= 26.5 in/lbs. **Insert only for use with Special Wiper Cartridge, see below

Parts

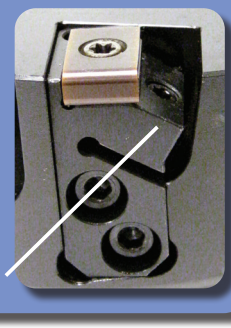


Wiper Cartridge*	Cartridge Mount Screw	Wrench for Cartridge Mount Screw	Axial Adjustment Screw	Wrench for Adjustment Screw
GFVK5R	BX0418	LT15	ED090225E	TTX15W

*Insert not included with cartridge

Micro Adjustment:

- Check each of the fixed pocket milling inserts to find the one at the highest setting.
- Load the wiper cartridges into the face mill body and torque the cartridge mount screw
- Adjust the wiper cartridge using the axial adjustment screw so that it is .0010" ~ .0012" above the highest fixed pocket milling insert



Parts - Wiper Cartridge for CBN Insert

Wiper Cartridge for CBN Insert*	Adjustment Screw	Wrench	Insert Screw		Wrench (For Adjustment Screw)	Cap Screw GFVK5R-13	Wrench (For Cartridges)	Anti-seizure Cream
GFVK5R-13	BTD05F09	TTX15W	BFTX03588	3.0	LT15	BX0414	TH030	SUMI-P

Finishing cartridges do not come assembled with inserts.

*Insert not included with cartridge

Recommended Cutting Conditions

Gray Cast Iron				Ductile Cast Iron			
Grade	SFM	D.O.C.	IPT	Grade	SFM	D.O.C.	IPT
K244L9	450~1150	0.004~0.030	0.004~0.015	K244L9	450~800	0.004~0.030	0.004~0.015
K246L9	400~650			K246L9	400~600		
SN2100K	1000~3000	0.010~0.080	0.004~0.010				

*Greater depths of cut (up to 4mm) possible if wiper cartridges are removed.

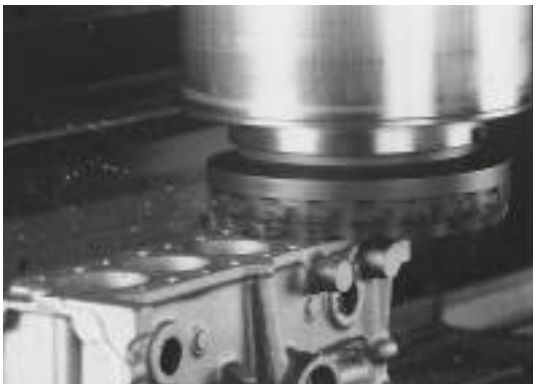
Recommended Cutting Conditions - BN7000

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	800- **1,000** -1,200	0.1- **0.3** -0.5	BN7000

Note: Calculate cutting conditions based on effective no. of teeth.

NOTE: If the wiper inserts will be indexed without presetting the wiper cartridge heights again, the first preset height should be from 0.001" to 0.002" (0.025 to 0.050 mm) above the highest fixed pocket periphery insert.

High-Feed Facemills



■ General Features

Sumitomo Electric Hardmetal SEC-High Feed facemills achieve high-performance milling particularly suited for cast irons, aluminum and light alloys. Cutting edge reference system design is rugged, simple and easy to maintain.
A range of facemills are available to suit various applications.

■ Series Common Features

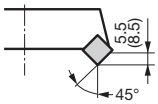
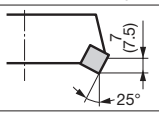
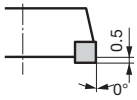
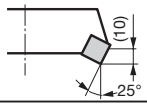
- Dedicated cutter for high-feed machining of cast iron and light alloys
- Cutting edge reference system provides simple, easy and fast runout management. (→H233)
- Fine pitch cutter design (*3 teeth per inch) is ideal for high-efficiency machining

  Cutting edge O.D. inch conversion (example: ø100 ≈ 4 inches x 3 = 12 blades)
- An excellent range of cutter designs and insert grades to suit various applications
- Quick change system enabling fast replacement of cutter (→H238)

	Cat. No.	Specifications	Applicable Cutter Size
(1)	F Type/NF Type*	Quick Change System	ø160mm and below
(2)	2-piece type	2-piece set indication	ø200mm and above
(3)		Two-piece cutter with centre bolt	

* The Quick Change System NF type is a made-to-order item. For details, please contact us directly.

■ Type / Specifications

Applications		Cat. No.	Approach Angle & Maximum Depth of Cut ( ) for 5000 Type	Rake Angle		Insert Cat. No.	Page
Applications	Surface Roughness			Axial Rake	Radial Rake		
Roughing	25S	**NRV 4000** Type		-5°	-6°	SNC43MW	H234
		NRV 5000 Type				SNC535	
Roughing / Finishing	18S	**DPV 4000** Type		+10°	+5°	SDCN42R/L	H235
		DPV 5000 Type				SDCN53R/L	
Finishing	12.5S	**NFV 4000** Type		-5°	-6°	6SS43M	H236
		NFV 5000 Type				6SS53M	
Roughing / Finishing of Light Alloy	12.5S	**APV 5000** Type		+18°	-2°	SDC53R/L	H237

■ Recommended Cutting Conditions

Cat. No.	Insert Cat. No.	Insert Grade	Cutting Conditions (Min. - Optimum - Max.)		
			v_c(m /min)	f_z(mm/t)	a_p (mm)
NRV 4000 Type	SNC43MW	ACK200	80 - **100** - 120	0.1 - **0.15** - 0.2	up to 3
NRV 5000 Type	SNC535	ACK200	80 - **100** - 120	0.1 - **0.15** - 0.2	up to 3
DPV 4000 Type	SDCN42R/L	G10E	80 - **100** - 120	0.1 - **0.15** - 0.2	up to 3
DPV 5000 Type	SDCN53R/L	G10E	80 - **100** - 120	0.1 - **0.15** - 0.2	up to 5
NFV 4000 Type	6SS43M	H10E	120 - **160** - 200	0.1 - **0.15** - 0.2	up to 0.5
NFV 5000 Type	6SS53M	H10E	120 - **160** - 200	0.1 - **0.15** - 0.2	up to 0.5
APV 5000 Type	SDC53R/L	H1	< 400	0.1 - **0.20** - 0.3	up to 3

Cutting Edge Reference System



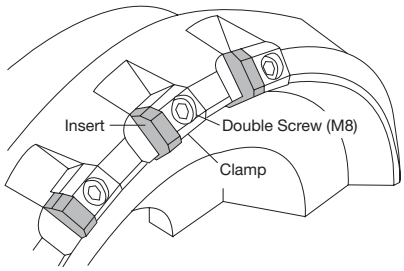
■ General Features

Conventional indexable cutters are designed to position and clamp two or three faces of the insert with locators, etc. The cutting edge reference cutter, on the other hand, retains the insert only with a clamp. (See Fig. 1) This system is adopted for our entire high-feed cutter series.

■ Features of the Cutting Edge Reference Cutter

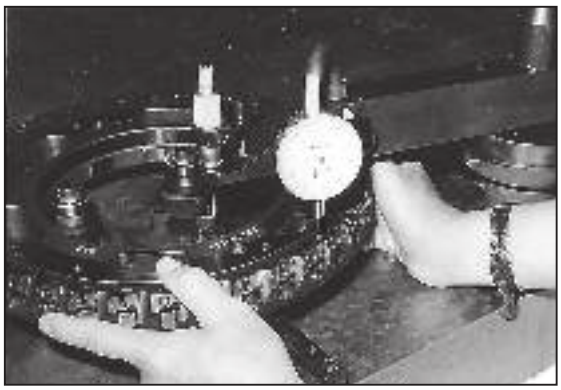
- Axial runout of the inserts is kept within 5 to 10μm to ensure stable surface roughness and longer tool life.
- Simple design with fewer parts compared to the locator type facilitates cleaning the typical cast iron machining dirt and is comparatively inexpensive.
- Fewer parts allow high-density cutter design, higher machining efficiency and longer tool life.

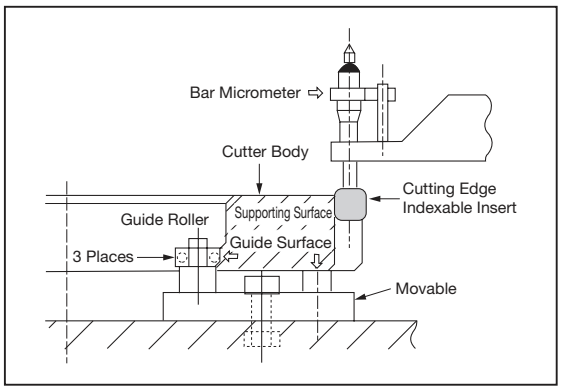
Fig. 1



■ Assembly Jig

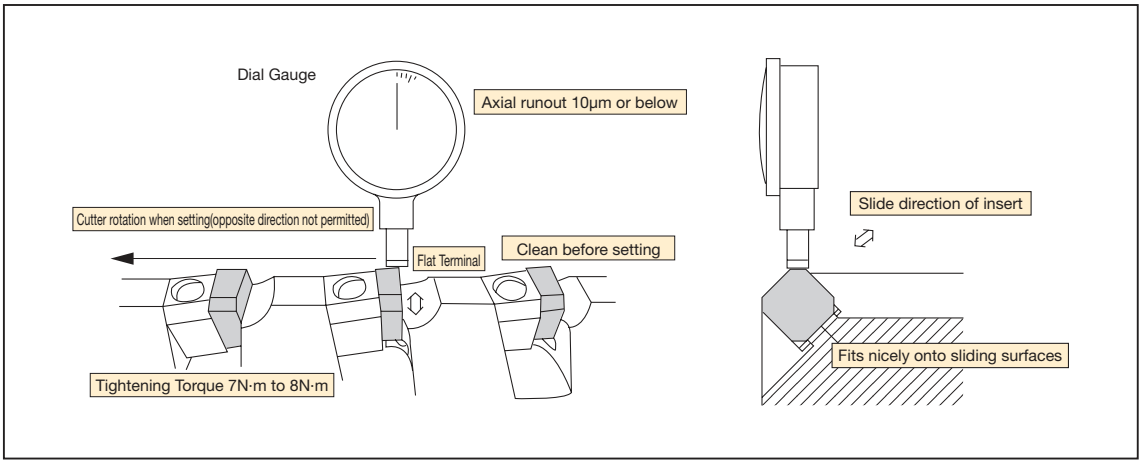
Application of a special assembly jig (as shown in the figure below) is recommended to accurately assemble the cutting edge reference cutter.





■ Insert Assembly Guidelines

When mounting (assembling) the inserts, pay careful attention to the points noted below in .



NRV 4000 Type / 5000 Type

Rake Angle		
	Radial	-6°
	Axial	-5°

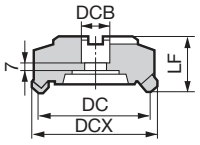
5.5mm 45° (4000 Type)

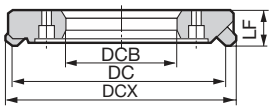
8.5mm 45° (5000 Type)

Fig 1



Fig 2





Body

Dimensions (mm)

Classification		Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX*	Bore Dia. DCB	Height LF	Number of Teeth	Weight (kg)	Fig
Inch	F Type	**NRV100QR/L**			**100**	112(118)	**31.75**	60	10	2.7	1
		NRV125QR/L			**125**	137(143)	**38.1**	60	14	3.8	1
		NRV160QR/L			**160**	172(177)	**50.8**	60	18	6.3	1
	2-piece type	**NRVZ200R/L**			**200**	212(218)	**80**	40	24	5.8	2
		NRVZ250R/L			**250**	262(268)	**120**	40	30	9.0	2
		NRVZ315R/L			**315**	326(332)	**180**	40	36	12.5	2
		NRVZ355R/L			**355**	366(372)	**220**	40	42	15.5	2
		NRVZ400R/L			**400**	411(417)	**250**	40	48	18.8	2
		NRVZ450R/L			**450**	461(467)	**300**	40	54	22.0	2

Inserts are sold separately. Made to Order
Put 4 or 5 in "○" in the catalogue number.
Refer to page H238 for special arbors for the type of cutters shown in Fig. 1.
Refer to page H238 for dedicated adapters for the type of cutters shown in Fig. 2.
* marked dimensions in ( ) are for the 5000 type.

Insert

Dimensions (mm)

Grade		Coated Carbide		Carbide
Process	High-speed / Light	K		
	General-purpose	K		K
	Roughing		K	

Cat. No.	ACK200	ACK300	G10E	Inscribed Circle IC	Chamfer CHW	Nose Radius RE	Fig	Applicable Cutter
SNC43MW			●	12.70	3.0	-	1	NRV4000
SNC433				12.70	-	1.2	2	NRV4000
SNC434				12.70	-	1.6	2	NRV4000
SNC435				12.70	-	2.0	2	NRV4000
SNC436				12.70	-	2.4	2	NRV4000
SNC535				15.875	-	2.0	3	NRV5000
SNMN432			●	12.70	-	0.8	3	NRV4000
SNMN433		●	●	12.70	-	1.2	3	NRV4000
SNMN434				12.70	-	1.6	3	NRV4000
SNMN435				12.70	-	2.0	3	NRV4000
SNMN436				12.70	-	2.4	3	NRV4000

Fig 1

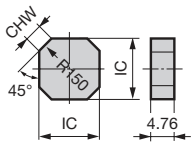


Fig 2

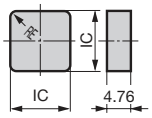
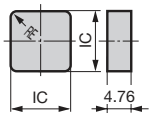


Fig 3



● USA stocked item

Recommended Cutting Conditions H226

Parts

Applicable Cutters	Clamp ø160 and below	Clamp ø200 and above	Double Screw	Wrench	Jig
					
NRV4000R	NW41RR	NW42RR	WB6-20	TH030	· Arbor for F Type · Adapter for 2-piece type
NRV4000L	NW41RL	NW42RL			
NRV5000R	NW51R	NW52R	WV6-20		
NRV5000L	NW51L	NW52L			

DPV 4000 Type / 5000 Type

Rake Angle		
	Radial	5°
	Axial	10°

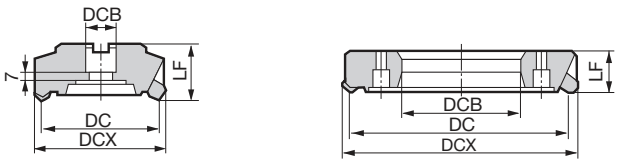
7mm / 65° (4000 Type)

7.5mm / 65° (5000 Type)

Fig 1



Fig 2



Body

Dimensions (mm)

	Classification	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX*	Bore Dia. DCB	Height LF	Number of Teeth 4000	Number of Teeth 5000	Weight (kg)	Fig
Inch	F Type	**DPV100QR/L**			**100**	107.2(109.6)	**31.75**	60	12	10	2.6	1
		DPV125QR/L			**125**	131.5(133.6)	**38.1**	60	16	14	3.6	1
		DPV160QR/L			**160**	165.8(176.6)	**50.8**	60	20	18	6.0	1
	2-piece type	**DPVZ200R/L**			**200**	206.5(208)	**80**	40	26	24	5.5	2
		DPVZ250R/L			**250**	256 (258)	**120**	40	32	32	9.0	2
		DPVZ315R/L			**315**	322.5(323)	**180**	40	38	36	12.0	2
		DPVZ355R/L			**355**	361.5(363)	**220**	40	44	42	15.0	2
		DPVZ400R/L			**400**	406.5(408)	**250**	40	50	48	17.8	2
		DPVZ450R/L			**450**	456.5(458)	**300**	40	56	54	20.8	2

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Refer to page H238 for special arbors for the type of cutters shown in Fig. 1.
Refer to page H238 for dedicated adapters for the type of cutters shown in Fig. 2.
* marked dimensions in ( ) are for the 5000 type.

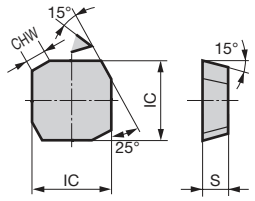
Insert

Dimensions (mm)

Grade		Coated Carbide		Carbide
Process	High-speed / Light	K		K
	General-purpose	K		
	Roughing		K	

Cat. No.	ACK200	ACK300	H10E	Inscribed Circle IC	Thickness S	Chamfer CHW	Applicable Cutter	Fig
SDCN42R			•	12.70	3.18	3.5	DPV4000R	1
SDCN42L			•	12.70	3.18	3.5	DPV4000L	1
SDCN53R			•	15.875	5.0	5.0	DPV5000R	1
SDCN53L				15.875	5.0	5.0	DPV5000L	1

Fig 1



• USA stocked item

Recommended Cutting Conditions ☞ H226

Parts

Applicable Cutter	Clamp ø160 and below	Clamp ø200 and above	Double Screw	Wrench	Jig
					
DPV4000R	HTW40R	HTW41R	WB6-20	TH030	· Arbor for F Type · Adapter for 2-piece type
DPV4000L	HTW40L	HTW41L			
DPV5000R	HTW50R	HTW51R	WB6-20		
DPV5000L	HTW50L	HTW51L			

NFV 4000 Type / 5000 Type

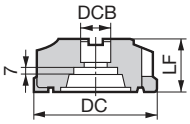
Rake Angle		
	Radial	-6°
	Axial	-5°

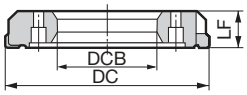
0.5mm 90°

Fig 1



Fig 2





Body

Dimensions (mm)

Classification		Cat. No.	Stock R	Stock L	Dia. DC	Bore Dia. DCB	Height LF	Number of Teeth	Weight (kg)	Fig
Inch	F Type	**NFV100QR/L**			**100**	**31.75**	60	10	2.6	1
		NFV125QR/L			**125**	**38.1**	60	14	3.9	1
		NFV160QR/L			**160**	**50.8**	60	18	6.3	1
	2-piece type	**NFVZ200R/L**			**200**	**80**	40	24	5.3	2
		NFVZ250R/L			**250**	**120**	40	30	9.0	2
		NFVZ315R/L			**315**	**180**	40	36	11.3	2
		NFVZ355R/L			**355**	**220**	40	42	14.0	2
		NFVZ400R/L			**400**	**250**	40	48	16.5	2
		NFVZ450R/L			**450**	**300**	40	54	21.0	2

Inserts are sold separately. Made to Order.
Put 4 or 5 in "○" in the catalogue number.
Refer to page H238 for special arbors for the type of cutters shown in Fig. 1.
Refer to page H238 for dedicated adapters for the type of cutters shown in Fig. 2.

Insert

Dimensions (mm)

Grade		Carbide
Process	High-speed / Light	K
	General-purpose	
	Roughing	

Cat. No.	H10E	Inscribed Circle IC	Thickness S	Applicable Cutter	Fig
SNE 43W	●	12.70	4.76	NFV4000	1
6SS43M	●	12.70	4.76	NFV4000	2
SNEF53W	●	15.875	4.76	NFV5000	1
SNEF53WT		15.875	4.76	NFV5000	1
6SS53M	●	15.875	4.76	NFV5000	2
SNEN535W		15.875	4.76	NFV5000	3

Fig 1

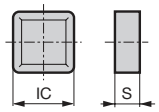


Fig 2

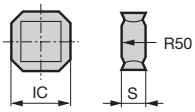
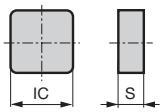


Fig 3



● USA stocked item

Recommended Cutting Conditions H226

Parts

Applicable Cutter	Clamp ø160 and below	Clamp ø200 and above	Double Screw	Wrench	Jig
					
NFV4000R	NW41FR	NW42FR	WB6-20	TH030	· Arbor for F Type · Adapter for 2-piece type
NFV4000L	NW41FL	NW42FL			
NFV5000R	NW51R	NW52R			
NFV5000L	NW51L	NW52L			

APV 5000 Type

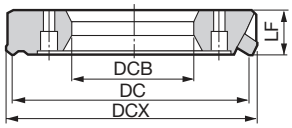
Rake Angle		
	Radial	-2°
	Axial	18°

10mm / 65°

P Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Fig 1





Body

Dimensions (mm)

Classification		Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Bore Dia. DCB	Height LF	Number of Teeth	Weight (kg)	Fig
Inch	2-piece type	**APVZ5200R/L**			**200**	211	**80**	40	18	7.0	1
		APVZ5250R/L			**250**	261	**120**	40	22	10.8	1
		APVZ5315R/L			**315**	326	**180**	40	26	13.7	1
		APVZ5355R/L			**355**	366	**220**	40	32	16.3	1
		APVZ5400R/L			**400**	411	**250**	40	36	20.0	1
		APVZ5450R/L			**450**	461	**300**	40	40	23.6	1

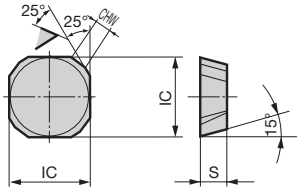
Inserts are sold separately. Made to Order.

Insert

Dimensions (mm)

Grade		Carbide		Cermet	Cat. No.	Inscribed Circle IC	Thickness S	Chamfer CHW	Applicable Cutter	Fig
Process	High-speed / Light		K N							
	General-purpose	P		P						
	Roughing									
		A30N	H1	T250A						
			●		**SDC53R**	15.88	4.76	2.5	APV5000R	1
			●		**SDC53L**	15.88	4.76	2.5	APV5000L	1
		●			**SDC53TR**	15.88	4.76	2.5	APV5000R	1
					SDC53TL	15.88	4.76	2.5	APV5000L	1
					SDC53TR-R	15.88	4.76	2.5	APV5000R	1
		●			**SDCH53TR**	15.88	4.76	2.5	APV5000R	1
					SDCH53TR-R	15.88	4.76	2.5	APV5000R	1

Fig 1



Recommended Cutting Conditions ☞ H226

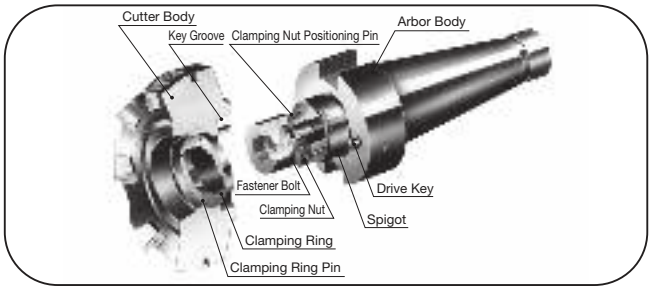
● USA stocked item

Parts

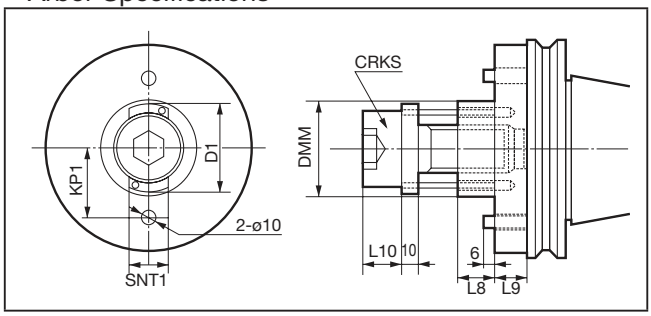
Applicable Cutter	Clamp ø200 and above	Double Screw	Wrench	Jig
				
APV5000R	AW52R	WB6-20	TH030	· Adapter for 2-piece type
APV5000L	AW52L			

■ Quick-F Series

● Structure



● Arbor Specifications



Dimensions (mm)

Cat. No.	Shank DMM	Bolt D1	Screw CRKS	Key Groove Width SNT1	Length L8	Length L9	Length L10	Key Position KP1
○○○○**QF4R/L**	31.75	30.75	M14 P2.0	18	22	22	13	27.5
○○○○**QF5R/L**	38.10	37.10	M16 P2.0	20	20	24	14	27.5
○○○○**QF6R/L**	50.80	49.80	M20 P2.5	24	20	30	16	34

Enter the taper code in the ○ mark. (Example: BT50-QF4R)

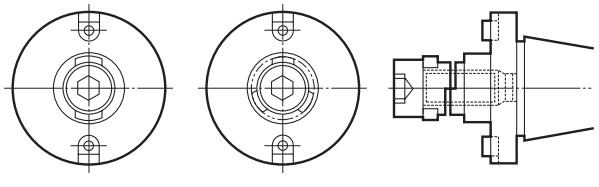
● Features and Applications

(1) Requires less time for mounting and removing.
(2) Can be used with cutter diameters of 4" (ø100) to 6" (ø160).

■ Quick-NF Series (Applicable to cutter diameters of 3" (ø80) to 6" (ø160))

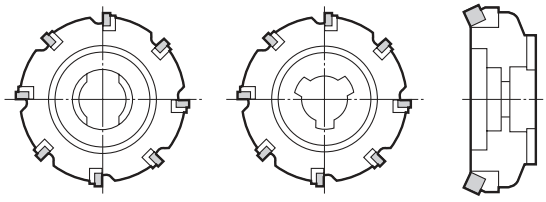
* Made-to-order item. Please contact us directly when ordering.

● Arbor specifications



QNF3R/L to QNF5R/L Shape QNF6R/L Shape

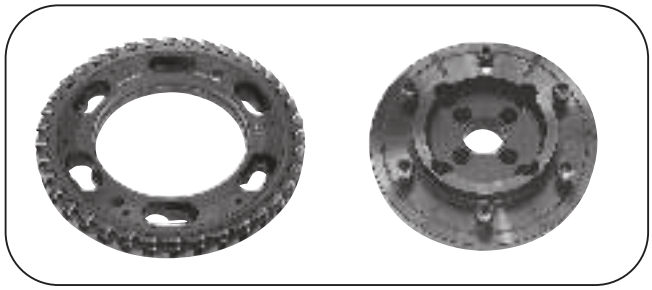
● Cutter specifications



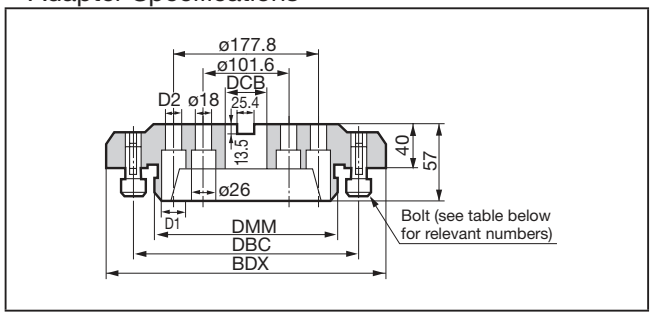
3 to 5 Inch 6 Inch

■ Two-Piece Cutter with Slotted Hole

● Appearance of Slotted Hole Type Body



● Adapter Specifications



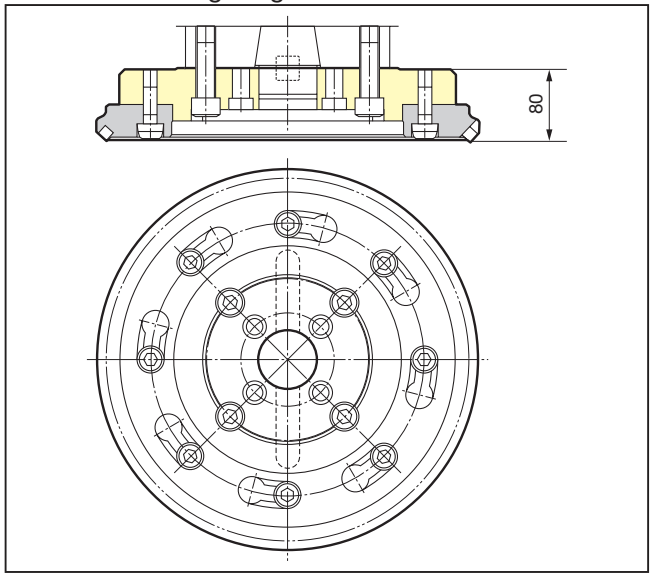
Dimensions (mm)

Cat. No.	Shank DMM	Max. O.D. BDX	Bore Dia. DCB	Bolt D1	Bolt D2	Hole Position DBC	No. of Bolts n	Cutter Size (mm)
QAD 200	80	180	**47.625**	—	—	120	4	ø200
250	120	230	**47.625**	—	—	170	4	ø250
315	180	295	**47.625**	32	22	230	6	ø315
355	220	335	**63.50**	32	22	270	6	ø355
400	250	370	**63.50**	32	22	300	6	ø400
450	300	420	**63.50**	32	22	350	6	ø450

● Features and Applications

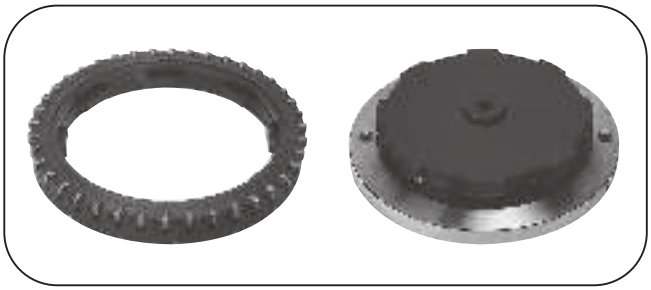
(1) Lightweight ring cutter body.
(2) Cutter can be changed without removing the bolt.
(3) A tapered spline system is used to connect the adapter to the cutter.
(4) Can be used for cutters over ø200.
(5) Effective when mounting several cutter body sizes on the same adapter.

● Cutter Mounting Diagram

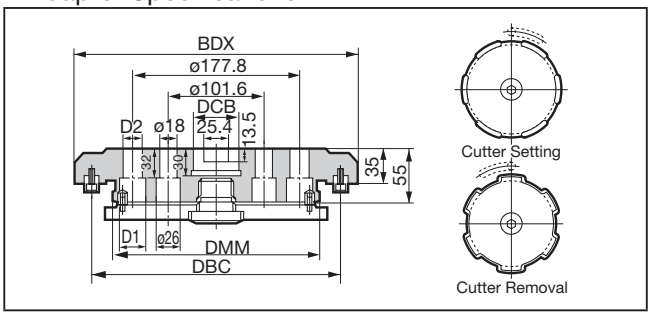


■ Two-Piece Cutter with Centre Bolt

● Appearance



● Adapter Specifications



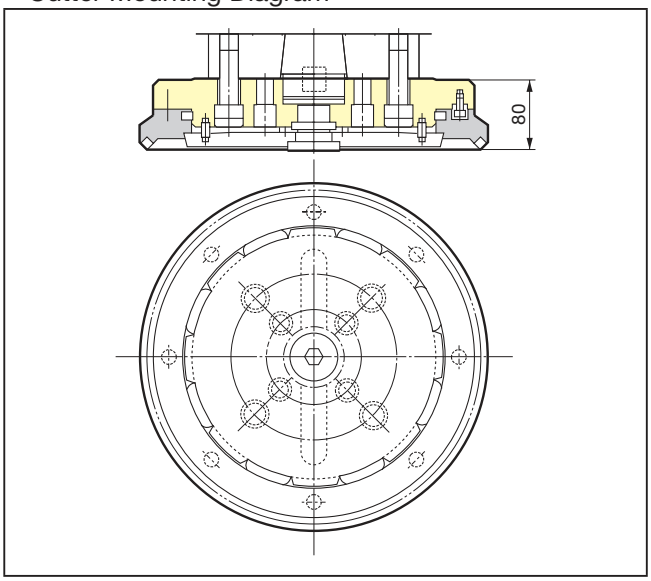
Dimensions (mm)

Cat. No.	Shank DMM	Max. O.D. BDX	Bore Dia. DCB	Bolt D1	Bolt D2	Hole Position DBC	Cutter Size (mm)
NQAD 200	105	180	**47.625**	—	—	155	ø200
250	155	240	**47.625**	—	—	205	ø250
315	220	305	**47.625**	32	22	270	ø315
355	260	345	**63.50**	32	22	310	ø355
400	305	390	**63.50**	32	22	355	ø400
450	355	440	**63.50**	32	22	405	ø450

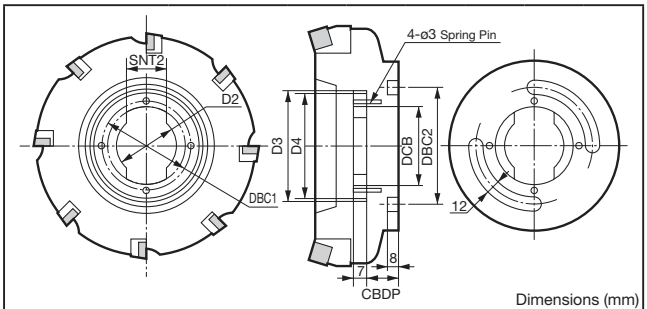
● Features and Applications

(1) With one clamping bolt, the total weight of the two-piece cutter is lighter.
(2) Cutter can be replaced quickly - simply turn one bolt halfway to mount and remove.
(3) A tapered spline system is used to connect the adapter to the cutter.
(4) Can be used for cutters over ø200.

● Cutter Mounting Diagram



■ Quick-F QF Type Cutter Specifications

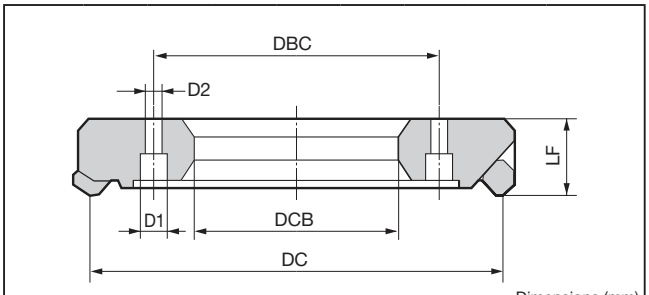


Dimensions (mm)

Cutter Size (mm)	Dia. DCB	Bolt D2	Bolt D3	Diameter D4	Hole position DBC1	Hole position DBC2	Key Groove Width SNT2	Mounting Depth CBDP
ø100	31.75	22	43.75	43.5	37.75	55	20	24
ø125	38.10	29	50.10	49.8	44.10	55	22	22
ø160	50.80	41	62.80	62.5	56.80	68	26	22

This design applies to all F type high-feed cutters (→ H234 to H237).
Conventional cutter can be easily adapted to quick change through slight modification.

■ QAD Cutter (Two-Piece Type) Specifications

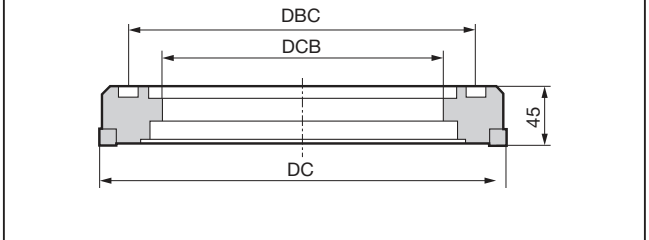


Dimensions (mm)

Cutter Size (mm)	Dia. DC	Bore Dia. DCB	Bolt D1	Bolt D2	Hole Position DBC	Height LF	Bolt Count	Adapter Cat. No.
ø200	**200**	**80**	24	14	120	40	4	QAD200
ø250	**250**	**120**	30	18	170	40	4	QAD250
ø315	**315**	**180**	30	18	230	40	6	QAD315
ø355	**355**	**220**	30	18	270	40	6	QAD355
ø400	**400**	**250**	30	18	300	40	8	QAD400
ø450	**450**	**300**	30	18	350	40	8	QAD450

This design applies to the 2-piece type high-feed cutters (→ H234 to H237).

■ NQAD Cutter (Two-Piece Type with Centre Bolt) Specifications



Dimensions (mm)

Cutter Size (mm)	Dia. DC	Bore Dia. DCB	Hole Position DBC	Adapter Cat. No.
ø200	**200**	**105**	155	NQAD200
ø250	**250**	**155**	205	NQAD250
ø315	**315**	**220**	270	NQAD315
ø355	**355**	**260**	310	NQAD355
ø400	**400**	**305**	355	NQAD400
ø450	**450**	**355**	405	NQAD450

This design applies to all two-piece type high feed cutters with a centre bolt (→ H234 to H237).

Discontinued Items - Milling
H235 to H241

H



WGC Series ····· H238
UFO Type ····· H239
APG/DNF Type ····· H239
CHG/CPG Type ····· H240
DPG Type ····· H241
EHG/FPG Type ····· H242
WEM/WRM/PWC Type ····· H243

Stock Markings and Symbols

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

4mm 45° | 6mm 45°



Shank type | Shell type Coarse Pitch | Shell type Fine Pitch

Insert

Dimensions (mm)

Grade		Coated Carbide					DLC	Carbide			Cermet	SUMIDIA			
Process	High-speed / Light	P			K		N			K N		N	N		
	General-purpose		P M	M	K		N	P	K S		P	N	N		
	Roughing		P M	P M		K						N	N		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	A30N	EH520	H1	T250A	DA1000	DA2200	Applicable Cutter	Fig
SEET0903AGFN-L		●	●	●	●	●	●			●				WGC3000 Type	1
SEET0903AGSN-G		●	●	●	●	●			●		●				1
SEET0903AGSN-N		●	●	●	●	●					●				1
SEMT0903AGSN-L		●	●	●	●	●									1
SEMT0903AGSN-G		●	●	●	●	●		●							1
SEET13T3AGFN-L		●	●	●	●	●	●		●	●				WGC4000 Type WGCF4000 Type	2
SEET13T3AGSN-G		●	●	●	●	●			●		●				2
SEET13T3AGSN-N		●	●	●	●	●		●			●				2
SEMT13T3AGSN-L		●	●	●	●	●									2
SEMT13T3AGSN-G		●	●	●	●	●		●							2
SEMT13T3AGSN-H		●	●	●	●	●									2
NF-SECW13T3AGTN-N												●	▲		2
NF-XEEW13T3AGFR-W												●	▲		3
XEEW13T3AGER-W						●					●				3

Fig 1

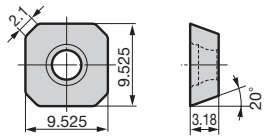


Fig 2

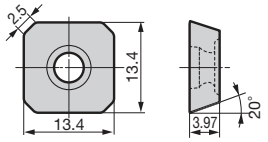
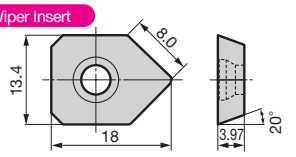


Fig 3

Wiper Insert



Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Spare Parts (Common)

Applicable Endmill	Shim	Shim Screw	Screw		Wrench	Wrench (For Shims)
WGC 3000RS Type	-	-	BFTX0307IP	N·m 2.0	TRDR10IP	-
WGC 4000RS Type WGCF 4000RS type	WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035

SUMI-P anti-seizure cream is included in the package.

Recommended Cutting Conditions WGC3000RS Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.18**-0.20	ACP200
M	Stainless Steel	-	160-**200**-250	0.15-**0.18**-0.20	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.18**-0.20	ACK200
N	Non-Ferrous Alloy	-	300-**500**-1,000	0.15-**0.18**-0.20	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WGC4000RS/WGCF4000RS Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.25**-0.40	ACP200
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	-	160-**200**-250	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	-	300-**500**-1,000	0.15-**0.18**-0.20	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Recommended Cutting Conditions WGC3000EW Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.18**-0.20	ACP200
M	Stainless Steel	-	160-**200**-250	0.15-**0.18**-0.20	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.18**-0.20	ACK200
N	Non-Ferrous Alloy	-	300-**500**-1,000	0.15-**0.18**-0.20	DL1000

The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WGC4000EW Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.25**-0.40	ACP200
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	-	160-**200**-250	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	-	300-**500**-1,000	0.15-**0.18**-0.20	DL1000

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

UFO & CHE Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-7°
	Axial	27°



UFO Fine Pitch Face Mill Series UFO400



UFO Coarse Pitch Face Mill Series UFO400 & UFO500



UFO End Mill Series



UFOR Face Mill Series UFOR600



CHE Bridgeport Shank Series



CHE Weldon Shank Series

Inserts Apply to UFO Mills

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet	
Process	High-speed / Light	P			K		M			N			
	General-purpose		P M	P M	K			P	K		K	P	
	Roughing		P M	P M		K							
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	H10E	T250A	Fig
SFEN12T3AZTN		•	•					•				•	1
SFEN12T3AZTN-S								•					1
SFEN12T3AZTN-W													1
SFEN12T3AZFN										•			1
SFKN12T3AZTN		•	•	•				•				•	2(3)
SFKN12T3AZTN-S								•					3
SFKN12T3AZTN-W												•	3
SFKN12T3AZFN					•	•	•		•				2(3)
SFKR12T3AZEN		•						•					4
UW12500R											•		5
SFEN1504AZTN		•	•					•				•	1
SFEN1504AZTN-S													1
SFEN1504AZTN-W													1
SFEN1504AZFN													1
SFKN1504AZTN		•	•	•				•				•	2(3)
SFKN1504AZTN-S													3
SFKN1504AZTN-W													3
SFKN1504AZFN					•		•		•				2(3)
UW15500R											•		4
UW15500L													—

Fig 1

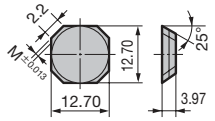


Fig. 2 (Grades in ACP/ACK Series)

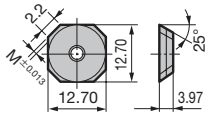


Fig 3

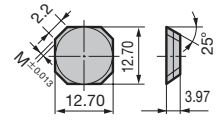


Fig 4

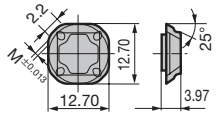


Fig 5 Wiper Insert

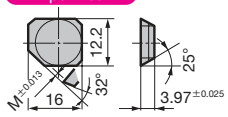


Fig 1

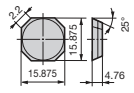


Fig. 2 (Grades in ACP/ACK Series)

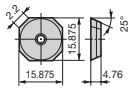


Fig 3

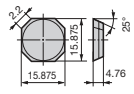
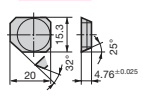


Fig 4 Wiper Insert



-S: Sharp Edge, -W: Strong Edge.

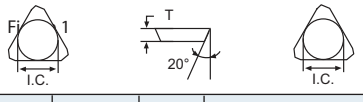
UFO Parts

Applicable Cutter	Locator Clamp	Insert Clamp	Double Screw	Size	N·m	Seat	Locator
UFO 4000R Type	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**	UF4SR	UF4KR
UFO 4000L Type	UFKWL	UFTWL	WB7-15T	**M7**	**8.0**	UF4SL	UF4KL

T-wrench (TT25) is included as a standard accessory.

Inserts Apply to CHE Shoulder Mills





Sumitomo Cat. No.	Coated	Cermet	Uncoated	PCD	I.C.	T	Figure
TECN32R					0.375	0.125	1
TEEN32R					0.375	0.125	2
NF-TEEN32R					0.375	0.125	2
TEKN32TR					0.375	0.125	1
TECN43R					0.500	0.1875	1
TEEN43R					0.500	0.1875	2
NF-TEEN43R					0.500	0.1875	2
TEKN43R					0.500	0.1875	1
TEKN43TR					0.500	0.1875	1

UFO Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	100-**175**-250	0.15-**0.23**-0.30	ACP200
P	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.23**-0.30	ACP200
P	Die Steel	200 to 220 HB	80-**140**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**190**-220	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	60-**155**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**550**-800	0.15-**0.23**-0.30	H1

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Hardware for CHE Bridgeport





Catalog Number	Locator	Clamp	Locator Screw	Clamp Screw	Retaining Ring	Clamp Wrench	Locator Wrench
CHE3-1 □ □ □ RR8	–	CCH5R	–	BHE0510	ER04	–	LH030
CHE4-2000RR8	LCE4R	CEWR	FBH0512	WB8R-16T	–	TT27	TH030

Hardware for CHE Weldon

Catalog Number	Locator	Clamp	Locator Screw	Clamp Screw	Retaining Ring	Clamp Wrench	Locator Wrench
CHE2- □ □ □ □RW	–	CCH4R	–	BHE0407	ER03	–	TH025
CHE3- 1□ □ □ RW	–	CCH5R	–	BHE0510	ER04	–	LH030
CHE4- 2000RW	LCE4R	CEWR	FBH0512	WB8R-16T	–	TT27	TH030

N·m Recommended Tightening Torque (N·m)

APG & DNF Type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	-2°
	Axial	18°

7mm / 65°

Rake Angle		
	Radial	-6°
	Axial	-5°

6.5mm / 65°



APG Face Mill Series



DNF Face Mill Series

Inserts Apply to APG Mills

Dimensions (mm)

Grade		Coated Carbide						Carbide		Cermet		DLC	SUMIDIA		
Process	High-speed / Light	P			K		M		KN	P		N	N	N	
	General-purpose		PM	PM	K			P			P	N	N	N	
	Roughing		PM	PM		K							N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	H1	T1500A	T250A	DL1000	DA1000	DA2200	Fig
SDCH42TR								•				—	—	—	1
SDCH42TL												—	—	—	1
SDCH42TR-R											•	—	—	—	1
SDCH42TL-R												—	—	—	1
SDC42R									•			•	—	—	2
NF-SDC42R		—	—	—	—	—	—	—	—	—	—	—	•	▲	2
SDC42L									•			—	—	—	2
SDC42TR								•				—	—	—	2
SDC42TL												—	—	—	2
SDC42TR-R											•	—	—	—	2
SDC42TL-R												—	—	—	2
APW4R										•		—	•	▲	3

Fig 1

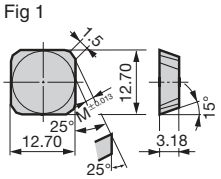


Fig 2

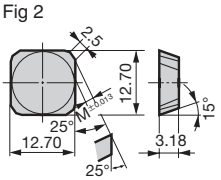
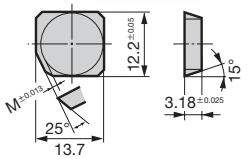


Fig 3 Wiper Insert



Inserts Apply to DNF Mills

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet		SUMIBORON
Process	High-speed / Light	P			K							P		H
	General-purpose		PM		K			P	P	K	K		P	H
	Roughing		PM	PM		K								
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	BN2000	Fig
CSNH43M					•	•		•		•	•			—	1
CSNH43MT												•	•	—	1
CSN43M								•			•			—	2
CSN43MT												•	•	•	2
CSNB43M								•			•			—	3
CSNB43MT													•	—	3
SNC433														—	—
SNC434														—	—
SNMN432									•		•	•		—	4
SNMN433						•			•		•		•	—	4
SNMN434														—	3
SNMN432TN-S														—	—
SNMN433TN-S														—	—
SNMN434TN-S														—	—
NW100										•		•		—	5

Fig 1

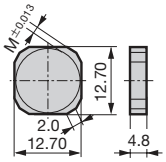


Fig 2

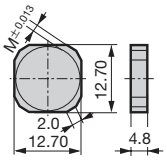


Fig 3

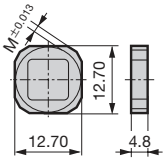


Fig 4

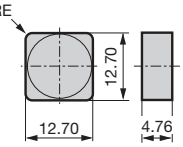
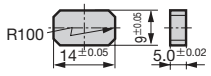
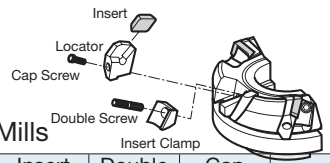


Fig 5 Wiper Insert



Cap Screw	Size	N·m
	M5	5.0



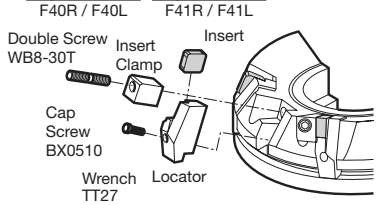
Parts Apply to APG Mills

Applicable Cutter	Locator	Insert Clamp	Double Screw	Cap Screw	Wrench
APG4080R	LAP40R	ATW45R	WB8-20	BXF0520R	TH040
APG4100R Up to APG4500R			WB8-22TL		TT27
APG4080L	LAP40L	ATW45L	WB8-20	BXF0520R	TH040
APG4100L Up to APG4500L			WB8-22T		TT27

Parts Apply to DNF Mills

Applicable Cutter	Locator (*)	Insert Clamp
DNF4080R DNF4100R	LNF40R	FTW40R
DNF4125R Up to DNF4500R	LNF40R	FTW41R
DNF4080L Up to DNF4100L	LNF40L	FTW40L
DNF4125L Up to DNF4500L	LNF40L	FTW41L

Engraved Mark F40R / F40L | Engraved Mark F41R / F41L



Double Screw	Size	N·m
WB8-30T	M8	8.0

*: To use wiper inserts, change locators to LNFW40R(L). Leave wrench and cap screw as they are.

N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	4°
	Axial	15°

16mm 90°



CHG Face Mill Series



CPG 400 & 500 Face Mill Series

Inserts Apply to CHG

Dimensions (mm)

Grade		Coated Carbide						Carbide			Cermet	SUMIDIA			
Process	High-speed / Light	P			K		M			K N		N	N	N	
	General-purpose		P M	P M	K			P	K		P	N	N	N	
	Roughing		P M	P M		K						N	N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	T250A	DA150	DA1000	DA2200	Fig
TEEN43R*									●	●		●	-	▲	1-A
NF-TEEN43R		-	-	-	-	-	-	-	-	-	-	-	●	▲	1-A
TEEN 43TR		●	●	●				●			●	-	-	-	2(1)-B
TEKN43R					●	●			●			-	-	-	2(1)-A
TEKN43TR		●	●	●				●			●	-	-	-	2(1)-B

Fig 1

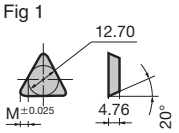
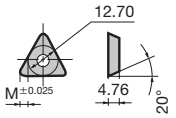


Fig. 2 (Grades in ACP/ACK Series)



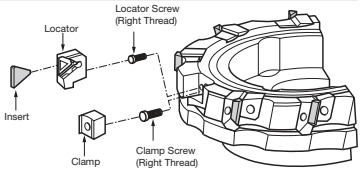


Cutting Edge A



Cutting Edge B

DL1000 is also available for *-marked TEEN43R.
Upper face and wiper edge of H1 insert have a mirror finish.
Some E class precision inserts have different shapes.



Parts Apply to CHG

Applicable Cutter	Locator	Clamp	Clamp Screw			Locator Screw			Wrench
CHG 4080R Up to CHG 4125R	LCH4R	CHWR	FBX0811	M8	N·m 8.0	FBH0512	M5	N·m 5.0	TH030 TH040
CHG 4160R Up to CHG 4315R			FBX0817						

The wrench is for the locator screw for TH030 and for the clamp screw for TH040.

Inserts Apply to CPG 400 & 500 Face Mills



Figure 1

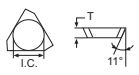


Figure 2

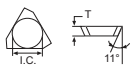
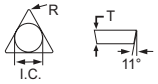
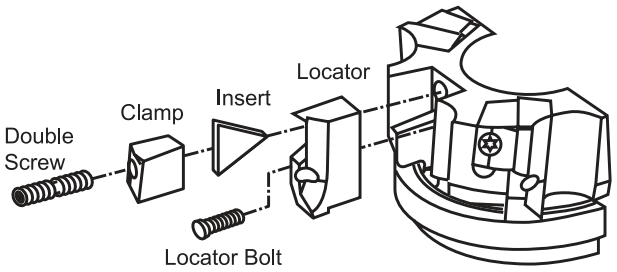


Figure 3



Sumitomo Cat. No.	Coated AC230	Coated AC325	Coated AC211	Coated EH20Z	Cermet T250A	Uncoated A30N	Uncoated G10E	I.C.	T	R	Figure
TPCH43R			▲				▲	0.500	0.1875		1
TPCH43TR	▲	▲			▲	▲		0.500	0.1875		1
TPC53P12R						▲		0.625	0.1875		2
TPC53P12RA						▲		0.625	0.1875		2
TPG431		▲				▲	▲	0.500	0.1875	0.0156	3
TPG432		▲		▲		▲	▲	0.500	0.1875	0.0312	3
TPG433		▲		▲				0.500	0.1875	0.0469	3
TPMN431		▲				▲		0.500	0.1875	0.0156	3
TPMN432		▲				▲		0.500	0.1875	0.0312	3
TPMN433		▲					▲	0.500	0.1875	0.0469	3
TPMN434						▲		0.500	0.1875	0.0625	3



"T" denotes inserts with a T-Land.
ρUSA limited availability item

Parts for CPG 400 Series

Catalog Number	Locator	Clamp	Clamp Bolt	Locator Bolt	Wrench
CPG03R	LCP40R	PTW40R	WB8-24T	BX0510	TT27
CPG04R					
CPG05R		PTW41R			LH040
CPG06R					

Parts for CPG 500 Series

Catalog Number	Locator	Clamp	Clamp Bolt	Locator Clamp Bolt	Wrench	Wrench
CPG504R	LCP50R	PTW50R	WB8-24T	BH0408	TT27	TT25
CPG505R						
CPG506R		PTW51R				
CPG508R						
CPG510R						

N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

DPG 400 & DPG 500 Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	0°
	Axial	8°

9.5mm / 75°

Rake Angle		
	Radial	0°
	Axial	8°

12mm / 75°



DPG 400 Face Mill Series



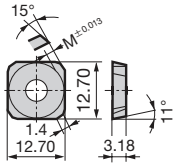
DPG 500 Face Mill Series

Inserts Apply for DPG 400

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet		
Process	High-speed / Light	P			K		M					P		
	General-purpose		P M	P M	K			P	P	K	K		P	
	Roughing		P M	P M		K								
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	Fig
SPCH42R					●	●	●				●			1(2)
SPCH42L					●	●					●			2
SPCH42TR		●	●	●				●		●				1(2)
SPCH42TL			●					●						2
SPCH42TR-R												●	●	2
SPCH42TL-R													●	2
SPMN422									●		●	●	●	3
SPMN423					●	●			●		●	●		3
SPG422									●		●	●		-
SPG423											●			-
DPW500R										●		●		4
DPW500L										●				4

Fig. 1 (Grades in ACP/ACK Series) Fig 2



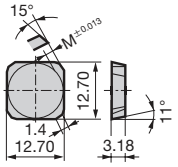


Fig 3

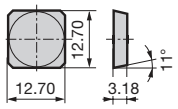
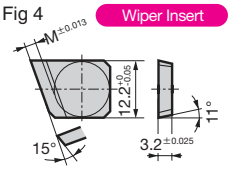
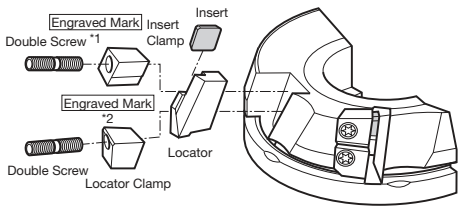


Fig 4 Wiper Insert



Parts Apply for DPG 400

Applicable Cutter	Locator	Locator Clamp For DPG	Locator Clamp For DPGF	Insert Clamp For DPG	Insert Clamp For DPGF	Double Screw	Wrench
DPG(F)4080R	GL40R	GLW40R	GLWF80R	GTW40R	GTWF80R	WB8-22T	TT27
DPG(F)4100R Up to DPG(F)4160R		GLW41R	GLWF41R	GTW41R	GTWF41R	WB8-30T	
DPG4200R		GLW42R	-	GTW42R	-		
DPG(F)4080L	GL40L	GLW40L	GLWF80L	GTW40L	GTWF80L	WB8-22T	TT27
DPG(F)4100L Up to DPG(F)4160L		GLW41L	GLWF41L	GTW41L	GTWF41L	WB8-30T	
DPG4200L		GLW42L	-	GTW42L	-		



*1 Engraved Mark: T40R,T40L,T41R,T41L,T42R,T42L, TF80R,TF80L,TF41R,TF41L

*2 Engraved Mark: L40R,L40L,L41R,L41L,L42R,L42L, LF80R,LF80L,LF41R,LF41L

Double Screw (Common)	Size	N·m
	M8	8.0

Inserts Apply for DPG 500

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet		
Process	High-speed / Light	P			K		M					P		
	General-purpose		P M	P M	K			P	P	K	K		P	
	Roughing		P M	P M		K								
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	Fig
SPCH53R-R					●	●	●				●			1
SPCH53L-R											●			1
SPCH53TR-R		●	●					●		●		●	●	1
SPCH53TL-R			●					●		●				1
SPMN532									●		●			2
SPMN533									●		●			2
GW500R										●		●		3
GW500L														3

Fig 1

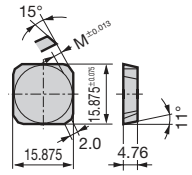


Fig 2

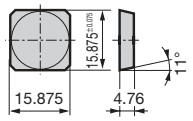
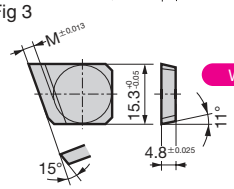
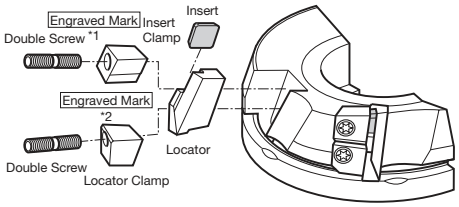


Fig 3 Wiper Insert



Parts Apply for DPG 500

Applicable Cutter	Locator	Locator Clamp	Insert Clamp	Double Screw	Wrench
DPG5080R	GL50R	GLW50R	GTW50R	WB8-22T	TT27
DPG5100R Up to DPG5160R		GLW51R	GTW51R	WB8-30T	
DPG5200R Up to DPG5500R		GLW52R	GTW52R		
DPG5080L	GL50L	GLW50L	GTW50L	WB8-22T	TT27
DPG5100L Up to DPG5160L		GLW51L	GTW51L	WB8-30T	
DPG5200L Up to DPG5500L		GLW52L	GTW52L		



*1 Engraved Mark: T50R,T50L,T51R,T51L,T52R,T52L

*2 Engraved Mark: L50R,L50L,L51R,L51L,L52R,L52L

Double Screw (Common)	Size	N·m
	M8	8.0

N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

EHG 400 & FPG 400 / 500 Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-3°
	Axial	20°

5.5mm 45°

Rake Angle	Radial	-4°
	Axial	15°

6.5mm 45° 8.5mm 45°



EHG 400 Face Mill Series



FPG 400 & 500 Face Mill Series

Inserts Apply to EHG 400

Dimensions (mm)

Grade		Coated Carbide						Carbide		Cermet			
Process	High-speed / Light	P			K		M						
	General-purpose		PM	PM	K			P	K	P			
	Roughing		PM	PM		K							
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T250A	Inscribed Circle IC	Thickness S	Fig
SECN42MT								●		●	12.70	3.18	1
SECN42M											12.70	3.18	1
SEEN42MT		●	●	●							12.70	3.18	3*
SEKN42MT		●	●	●				●		●	12.70	3.18	2(3)
SECN42MT-W										●	12.70	3.18	3
SECN42M					●	●	●		●		12.70	3.18	2(3)
SENN1203AFTN*		●	-	-	-	-	-	●	-	●	12.70	3.18	3
SEMR1203AFEN		●	-	-	-	-	-	●	-	-	12.70	3.18	4
SEER1203AFEN**		●	-	-	-	-	-	●	-	-	12.70	3.18	4

Fig 1

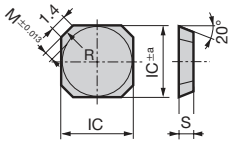


Fig. 2 (Grades in ACP/ACK Series)

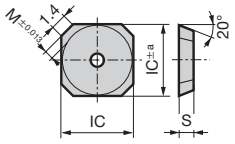


Fig 3

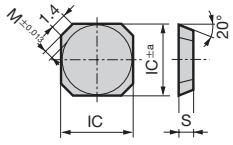
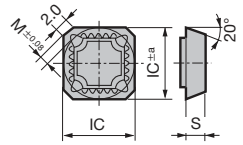


Fig 4



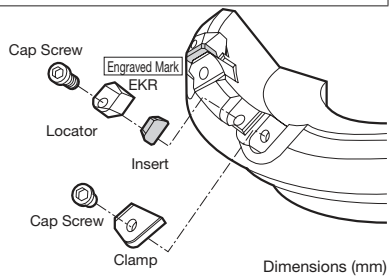
Cat. No. marked *: M ±0.08 Chamfer 1.4 → 2.0.
Cat. No. marked **: M ±0.025 Chamfer 2.0 → 2.2.
The shape of *-marked E class inserts differs slightly from the above figures.

Parts Apply to EHG 400

Applicable Cutter	Locator	Clamp	Cap Screw	Size	N·m	Wrench
EHG4000R Type	EHK4R	EHW4R	EHBX0512	M5	5.0	TH040
EHG5000R Type	EHK5R	EHW5R		M5		

Insert Application Table

Body	Insert
EHG4000 Type	SESN42·· SESS12··
EHG5000 Type	SESN53··



Inserts Apply to FPG 400 & 500

Dimensions (mm)

Grade		Coated Carbide						Carbide		Cermet		SUMIDIA		
Process	High-speed / Light	P			K		M			P		N	N	
	General-purpose		PM	PM	K			P	K		P	N	N	
	Roughing		PM	PM		K						N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T1500A	T250A	DA1000	DA2200	Fig
SDEX42MT								●		●	●	-	-	2
SDKN42M					●	●	●		●			-	-	1(2)
NF-SDKN42M		-	-	-	-	-	-	-	-		-	●	▲	2
SDKN42MT		●	●	●				●		●	●	-	-	1(2)
SDKN42MT-W											●	-	-	2
SDNN1203AETN*		●	●	-	-	-	-	●	-	-	●	-	-	2
SDMR1203AEEN		●	●					●			-	-	-	3
SDMR1203AETN		-	-	-	-	-	-	-	-	-	●	-	-	3
SDEX53MT								●			●	-	-	5
SDKN53M					●	●	●		●			-	-	4(5)
SDKN53MT		●	●	●				●			●	-	-	4(5)

Fig. 1 (Grades in ACP/ACK Series)

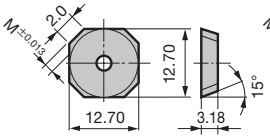


Fig 2

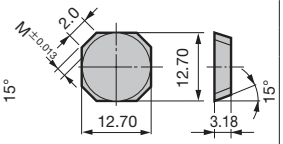


Fig 3

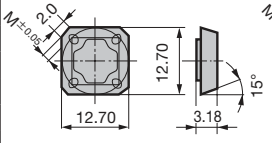


Fig. 4 (Grades in ACP/ACK Series)

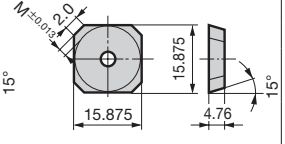


Fig.5: Same as Fig. 4 without hole

Cat. No. marked *: M ±0.08.

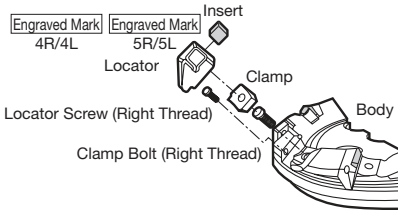
Parts Apply to FPG 400 & 500

Applicable Cutter	Locator Screw	Size	N·m	Clamp Screw	Clamp	Locator
FPG4000R Type	FBH0512	M5	5.0	FBX0817	FPWR	LFP4R
FPG4000L Type					FPWL	LFP4L
FPG5000R Type					FPWR	LFP5R
FPG5000L Type					FPWL	LFP5L

T-wrenches used are TH030 (locator screw) and TH040 (clamp screw).

Insert Application Table

Body	Insert
FPG4000 Type	SDSS42·· SDSS12··
FPG5000 Type	SDSS53··



N·m Recommended Tightening Torque (N·m)

WEM 4000/5000



Hardware

		
Catalog Number	Screw	Wrench
WEM3□□□RW□	BFTX02506N	TRD08
WEM3□□EX	BFTX02506N	TRD08

Torque specifications for BFTX02506N insert screw=10-14 inch/lbs.

Hardware for WEM

		
Catalog Number	Screw	Wrench
WMM10□□□M	BFTX02506N	TRD08

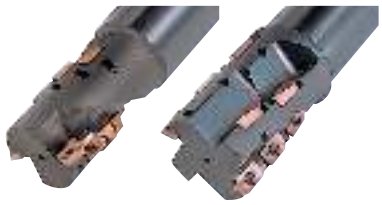
Torque specifications for BFTX02506N insert screw=10-14 inch/lbs.

Hardware

		
Catalog Number	Screw	Wrench
WMM16□□□M	BFTX03584	TRD15

Torque specifications for BFTX03584 insert screw=27-31 inch/lbs.

WRM 10000/16000



Hardware

		
Catalog Number	Screw	Wrench
WRM10□□□M	BFTX02506N	TRD08

Torque specifications for BFTX02506N insert screw=10-14 inch/lbs.

Hardware

		
Catalog Number	Screw	Wrench
WRM16□□□M	BFTX03588	TRD15

Torque specifications for BFTX03588 insert screw=27-31 inch/lbs.

PWC



Fig. 1

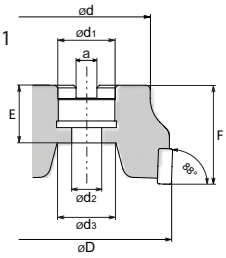
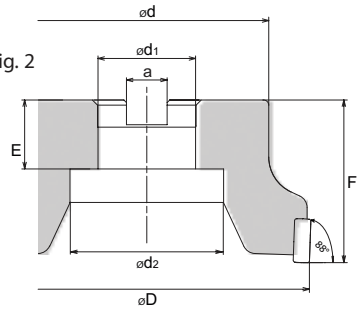


Fig. 2



Inserts Apply to SumiEdge Mill Cutter Bodies



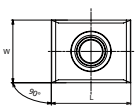


Fig. 1

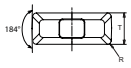
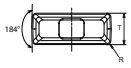


Fig. 2



	Grade		Dimensions (Inches)					
Sumitomo Cat. No.	ACK200	ACK300	L	W	T	R	Facet Width	Fig.
LNMX160608PNSN-G	▲	▲	0.634	0.476	0.250	0.032	0.218	1
LNMX160608PNSN-H	▲	▲	0.634	0.476	0.250	0.032	0.218	2
LNMX1606-W		▲	0.636	0.476	0.250	0.032	*	-

*See page 000 for facet width information.

Hardware

		
Applicable Cutter	Insert Screw	Wrench
PWC Series	BFTX0511N	TTX15W

MEMO

Endmills

I 1 to I 122



Selection Guide ..... I 2
Cutting Edge Length List by Diameter ..... I 4
Endmill Coating ..... I 13
GSX MILL Series ..... I 14
SUMIDIA Coated SSDC Series ..... I 19
SSEH Series ..... I 20
AURORA Coat Endmills ..... I 22
MOLD FINISH MASTER Series ..... I 23

Square	General-purpose	GSX MILL Ballnose 2 Flutes	GSXB 20000 - Inch ..... I 27
		GSX MILL 2 Flutes	GSX 200C-1.5D - Inch ..... I 28
		GSX MILL 2 Flutes	GSX 200C-2D - Inch ..... I 29
		GSX MILL 2 Flutes	GSX 200C-3D - Inch ..... I 30
		GSX MILL 2 Flutes	GSX 200C-4D - Inch ..... I 31
		GSX MILL 2 Flutes	GSX 200S-2D - Inch ..... I 32
		GSX MILL 2 Flutes	GSX 200S-3D - Inch ..... I 33
		GSX MILL 4 Flutes	GSX 400C-1.5D - Inch ..... I 34
		GSX MILL 4 Flutes	GSX 400C-2D - Inch ..... I 35
		GSX MILL 4 Flutes	GSX 400C-3D - Inch ..... I 36
		GSX MILL 4 Flutes	GSX 400C-4D - Inch ..... I 37
		GSX MILL 4 Flutes	GSX 400S-2D - Inch ..... I 38
		GSX MILL 4 Flutes	GSX 400S-3D - Inch ..... I 39
		GSX MILL 2 Flutes	GSX 20000C-1.5D - Metric ..... I 40
		GSX MILL 2 Flutes	GSX 20000S-2D/20000C-2D - Metric ..... I 42, I 46
		GSX MILL 2 Flutes	GSX 20000S-3D/20000C-3D - Metric ..... I 48, I 50
		GSX MILL 2 Flutes	GSX 20000S-4D/20000C-4D - Metric ..... I 52, I 54
		GSX MILL 3 Flutes	GSX 30000C-1.5D - Metric ..... I 56
		GSX MILL 3 Flutes	GSX 30000C-2D - Metric ..... I 58
		GSX MILL 4 Flutes	GSX 40000C-1.5D - Metric ..... I 60
		GSX MILL 4 Flutes	GSX 40000S-2D/40000C-2D - Metric ..... I 62, I 64
		GSX MILL 4 Flutes	GSX 40000S-3D/40000C-3D - Metric ..... I 66, I 68
		GSX MILL 4 Flutes	GSX 40000S-4D/40000C-4D - Metric ..... I 70, I 72
	High Efficiency	GSX MILL Anti-vibration 4 Flutes	GSV 4000-2.5D ..... I 74
		GSX MILL Anti-vibration 4 Flutes	GSXVL 4000-2.5D/4000S-2.5D ..... I 76, I 78
	Hardened Steel	SUMIBORON Helical Master 1 Flute	Helical Master BNES ..... I 80
	Non-ferrous Metal	Non-Ferrous Metals AURORA Coat 2/4 Flutes	ASM 2000DL/4000DL ..... I 82, I 83
		Non-Ferrous Metals 2 Flutes	ASM 2000 ..... I 84
		Non-Ferrous Metals SUMIDIA 2/4 Flutes	DFE ..... I 85
		Non-Ferrous Metals SUMIDIA 1/2 Flutes	DAE ..... I 87
	CFRP Graphite	SUMIDIA Coated for CFRP 4 Flutes	SSDC 4000(RL) ..... I 89
Radius		GSX MILL 4 Flutes	GSX 40000-R-2D ..... I 90
		GSX MILL Anti-vibration 4 Flutes	GSV 4000-R-2.5D ..... I 92
		GSX MILL Anti-vibration 4 Flutes	GSXVL 4000-R-2.5D ..... I 94
		Exotic Alloy SSEH Anti-vibration 4 Flutes	SSEHVL 4000W-R ..... I 96
		Exotic Alloy SSEH 4 Flutes	SSEH 4000W-R ..... I 98
		Exotic Alloy SSEH Anti-vibration 4 Flutes	SSEHVL 4000-R ..... I 100
		Exotic Alloy SSEH 4 Flutes	SSEH 4000-R ..... I 101
		MOLD FINISH MASTER Series 1 Flute	NPDRS ..... I 102
		MOLD FINISH MASTER Series 2 Flutes	BNBR ..... I 104
Ballnose		GSX MILL Ballnose 2 Flutes	GSXB 20000 - Metric ..... I 106
		Non-Ferrous Metals AURORA Coat Ballnose 2 Flutes	SNB 2000DL ..... I 109
		Non-Ferrous Metals AURORA Coat Long Neck Ballnose 2 Flutes	SNB2 ..... I 110
		MOLD FINISH MASTER Series 1 Flute	NPDBS/NPDB ..... I 112, I 113
		SUMIDIA Coated Ballnose 2 Flutes	SDCB ..... I 114
		MOLD FINISH MASTER Series 2 Flutes	BNBP/BNBC ..... I 116, I 118
		SUMIBORON 2 Flutes	Ballnose Endmills BNBS ..... I 119
Multi-Purpose		GSX MILL Slot 3 Flutes	GSXSLT 30000C-1.5D ..... I 120

Stock Markings and Symbols

●: Standard stocked item
★: Worldwide Warehouse Item
▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

Square Endmill Selection Guide

◎: 1st Recommendation, ◎: 2nd Recommendation, ○: Good, Blank: Not recommended, ×: Unsuitable

Applications / Features	Diameter DC (Min. to Max.) inch (mm)	Series Name / Series Code	Ref. Page	Appearance	Work Material: P: General Structure Rolled Steel	P: Carbon Steel	P: Alloy Steel	P: Pre-hardened Steel	P: 30 to 45HRC Tempered Steel/Die Steel	H: Hardened Steel 45 to 55HRC	H: Hardened Steel 55 to 60HRC	H: Hardened Steel 60 up HRC	M: Stainless Steel	S: Titanium Alloy/Heat-Resistant Alloy	K: Cast Iron	N: Aluminum Alloy	N: Copper Alloy	N: Graphite	N: CFRP
General-purpose	ø0.0625" to ø1.0000" ø0.5 to 25mm	GSXMILL 2 Flutes GSX200C/ *GSX20000C*	I28-I31, *I40,I46, I50,I54*		◎	◎	◎	◎	◎	◎	○		◎	○	◎				
	ø0.0625" to ø1.0000" ø0.5 to 25mm	GSXMILL 2 Flutes GSX200S/ *GSX20000S*	I32, *I33,I42, I48,I52*		○	◎	◎	◎	◎	◎	○		◎	○	○				
	ø1 to 12	GSXMILL 3 Flutes GSX30000C	I56,I58		○	◎	◎	◎	◎	◎			◎	○	○				
	ø0.0625" to ø1.0000" *ø1 to 25mm*	GSXMILL 4 Flutes GSX400C/ *GSX40000C*	I34-I37, *I60,I64, I68,I72*		◎	◎	◎	◎	◎	◎	○		◎	○	◎				
	ø0.0625" to ø1.0000" *ø1 to 25mm*	GSXMILL 4 Flutes GSX400S/ *GSX40000S*	I38,I39 *I62,I66, I70*		○	◎	◎	◎	◎	◎	○		◎	○	○				
High Efficiency	*ø2 to 25 mm*	GSXMILL Anti-vibration 4 Flutes GSXVL 4000	I76, I78		◎	◎	◎	◎	◎	◎	○		◎	○	○				
	ø2 to 25 mm	GSV Anti-vibration 4 Flutes GSV 4000	I74		◎	◎	◎	◎	◎	◎	○		◎	○	○				
Hardened Steel	*ø6 to 16 mm*	CBN - SUMIBORON Helical Master BNES BNES	I80					○		○	◎	◎				×	×		

④⑥⑧: Number of teeth

◎: 1st Recommendation, ◎: 2nd Recommendation, ○: Good, Blank: Not recommended, ×: Unsuitable

Applications / Features	Diameter DC (Min. to Max.) inch (mm)	Series Name / Series Code	Appearance	Work Material: P: General Structure Rolled Steel	P: Carbon Steel	P: Alloy Steel	P: Pre-hardened Steel	P: 30 to 45HRC Tempered Steel/Die Steel	H: Hardened Steel 45 to 55HRC	H: Hardened Steel 55 to 60HRC	H: Hardened Steel 60 up HRC	M: Stainless Steel	S: Titanium Alloy/Heat-Resistant Alloy	K: Cast Iron	N: Aluminum Alloy	N: Copper Alloy	N: Graphite	N: CFRP
Aluminum and Non-Ferrous Metal	*ø2 to 16*	DLC - AURORA Coat 2 Flutes ASM 2000DL													◎	○		
	ø2 to 16	DLC - AURORA Coat 4 Flutes ASM 4000DL													◎	◎		
	ø2 to 16	Solid Carbide Endmills for Non-ferrous Cutting ASM 2000													◎	○		
	① *ø4 to 5* ② *ø6 to 12*	SUMIDIA Endmills DAE Type DAE		×	×	×	×	×	×	×	×	×	×	×	◎	◎	○	
	② *ø4 to 10* ④ *ø9 to 13*	SUMIDIA Endmills DFE Type DFE		×	×	×	×	×	×	×	×	×	×	×	◎	◎	○	
CFRP/ Graphite	*ø6 to 12*	SUMIDIA Coated SSDC SSDC 4000		×	×	×	×	×	×	×	×	×	×	×			○	◎
	ø6 to 12	SUMIDIA Coated SSDCRL SSDC 4000RL		×	×	×	×	×	×	×	×	×	×	×			○	◎
Multi-Purpose	*ø1 to 12*	GSX MILL Slot 3 Flutes GSXSLT 30000C		○	◎	◎	◎	◎	◎			◎	○	○				

①②④: Number of teeth

Corner Radius & Ballnose Endmill Selection Guide

◎: 1st Recommendation, ◎: 2nd Recommendation, ○: Good, Blank: Not recommended, ×: Unsuitable

Applications / Features	Diameter DC (Min. to Max.) inch (mm)	Series Name / Series Code	Appearance	Material: P — General Structure Rolled Steel	Carbon Steel	Alloy Steel	Pre-hardened Steel	Tempered Steel/Die Steel	H — Hardened Steel 45 to 55HRC	55 to 60HRC	60 up HRC	M — Stainless Steel	S — Titanium Alloy/Heat-Resistant Alloy	K — Cast Iron	N — Aluminum Alloy	Copper Alloy	Graphite	CFRP
General Endmilling with Corner Radius	ø3 to 12	GSX MILL Radius GSX 40000-R		◎	◎	◎	◎	◎	◎			◎	○	○				
High Efficiency Endmill with Corner Radius	ø3 to 25	GSV Anti-vibration Radius GSV 4000-R		○	◎	◎	◎	◎	◎	○		◎	○	○				
Exotic Material	ø4.5 to 16	SSEH Anti-vibration Radius SSEHVL 4000-R										○	◎					
	ø4.5 to 16	SSEH Radius SSEH 4000-R										○	◎					
High-precision Mold Profiling	ø0.2 to 2	MOLD FINISH MASTER SUMIBORON Radius Endmills BNBR					○		○	◎	◎				×	×		
Cemented Carbide and Hard Brittle Material	ø0.2 to 2	MOLD FINISH MASTER SUMIDIA BINDERLESS Radius Endmills NPDRS		Cemented Carbide						◎		Hard Brittle Material						○

◎: 1st Recommendation. ◎: 2nd Recommendation, ○: Good, Blank: Not recommended, ×: Unsuitable

Applications / Features	Ballnose Radius (Min. to Max.) / Tolerance inch (mm)	Series Name / Series Code	Appearance	Material: P — General Structure Rolled Steel	Carbon Steel	Alloy Steel	Pre-hardened Steel	Tempered Steel/Die Steel	H — Hardened Steel 45 to 55HRC	55 to 60HRC	60 up HRC	M — Stainless Steel	S — Titanium Alloy/Heat-Resistant Alloy	K — Cast Iron	N — Aluminum Alloy	Copper Alloy	Graphite	CFRP
General-purpose	R0.2 to 10 .0625-1.00" ± 0.01	GSXMILL Ballnose GSXB		◎	◎	◎	◎	◎	◎	○		◎	○	○				
Aluminum and Non-Ferrous Metal	R1 to 8 ± 0.01	DLC - AURORA Coat Ballnose SNB 2000DL													◎	◎		
Copper Electrodes	R0.05 to 2 ± 0.005	AURORA Coat Long Neck Ballnose Endmills SNB2													◎	◎		
	R0.1 to 0.5 ± 0.005	MOLD FINISH MASTER SUMIBORON Ballnose Endmills BNBC														◎		
High-precision Mold Profiling	R0.2 to 1 ± 0.005	MOLD FINISH MASTER SUMIBORON Ballnose Endmills BNBP					○		○	◎	◎				×	×		
	R1 to 6 ± 0.02	SUMIBORON Endmills BNBS					○		○	◎	◎				×	×		
Cemented Carbide and Hard Brittle Material	R0.1 to 1	MOLD FINISH MASTER SUMIDIA BINDERLESS Ballnose Endmills NPDBS (For Standard Finishing)		Cemented Carbide						◎		Hard Brittle Material						○
	R0.1 to 1	MOLD FINISH MASTER SUMIDIA BINDERLESS Ballnose Endmills NPDB (For Precision Finishing)		Cemented Carbide						◎		Hard Brittle Material						○
	R0.5 to 1	SUMIDIA Coat Ballnose Endmills SDCB		Cemented Carbide						◎		Hard Brittle Material						○

Cutting Edge Length List by Diameter

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
0.3	0.6	GSX20030S-2D	40.0
0.4	0.8	GSX20040S-2D	40.0
0.5	1.0	GSX20050C-1.5D	40.0
		GSX20050C-2D	40.0
	1.3	GSX20050S-2D	40.0
	1.5	GSX20050C-3D	40.0
		GSX20050S-3D	40.0
	2.0	GSX20050C-4D	40.0
		GSX20050S-4D	40.0
0.6	1.3	GSX20060S-2D	40.0
0.7	1.4	GSX20070S-2D	40.0
0.8	1.6	GSX20080S-2D	40.0
0.9	1.8	GSX20090S-2D	40.0
1.0	1.5	GSX20100C-1.5D	40.0
		GSX30100C-1.5D	40.0
		GSX40100C-1.5D	40.0
		GSXSLT30100C-1.5D	40.0
	2.0	GSX20100C-2D	40.0
		GSX40100C-2D	40.0
	2.5	GSX20100S-2D	40.0
		GSX30100C-2D	40.0
		GSX40100S-2D	40.0
		GSX40100S-2D-S3	38.0
	3.0	GSX20100C-3D	40.0
		GSX20100S-3D	40.0
		GSX40100C-3D	40.0
		GSX40100S-3D	40.0
	4.0	GSX20100C-4D	40.0
		GSX40100C-4D	40.0
		GSX40100S-4D	40.0
	5.0	GSX20100S-4D	40.0
1.1	2.5	GSX20110S-2D	40.0
1.2	2.5	GSX20120S-2D	40.0
1.3	2.6	GSX20130S-2D	40.0
1.4	2.8	GSX20140S-2D	40.0
1.5	2.3	GSX20150C-1.5D	40.0
		GSX30150C-1.5D	40.0
		GSX40150C-1.5D	40.0
		GSXSLT30150C-1.5D	40.0
	3.0	GSX20150C-2D	40.0
		GSX40150C-2D	40.0
	3.8	GSX20150S-2D	40.0
		GSX20150S-2D-S3	38.0
		GSX30150C-2D	40.0
		GSX40150S-2D	40.0
	4.5	GSX20150C-3D	40.0
		GSX20150S-3D	40.0
		GSX40150C-3D	40.0
		GSX40150S-3D	40.0
	6.0	GSX20150C-4D	40.0
		GSX40150C-4D	40.0
		GSX40150S-4D	40.0
	7.0	GSX20150S-4D	40.0
1.6	3.8	GSX20160S-2D	40.0
0.0625	0.0938	GSX204C-1.5D	1.5000
		GSX404C-1.5D	1.5000
	0.1250	GSX404C-2D	1.5000
		GSX204C-2D	1.5000
		GSX204C-3D	1.5000
		GSX204S-2D	1.5000
		GSX404S-2D	1.5000
	0.1875	GSX204S-3D	1.5000
		GSX404C-3D	1.5000
		GSX404S-3D	1.5000
	0.2500	GSX204C-4D	1.5000
	0.2500	GSX404C-4D	1.5000
1.7	3.8	GSX20170S-2D	40.0
1.8	3.8	GSX20180S-2D	40.0
1.9	3.8	GSX20190S-2D	40.0
2.0	3.0	GSX20200C-1.5D	40.0
		GSX30200C-1.5D	40.0
		GSX40200C-1.5D	40.0

: 0.5mm Increments

: Inch Diameters

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
2.0	3.0	GSXSLT30200C-1.5D	40.0
	4.0	GSX20200C-2D	40.0
		GSX40200C-2D	40.0
	5.0	GSV4020-2.5D	50.0
		GSX20200S-2D	40.0
		GSX20200S-2D-S3	38.0
		GSX30200C-2D	40.0
		GSX40200S-2D	40.0
		GSX40200S-2D-S3	38.0
		GSXVL4020-2.5D	50.0
	6.0	ASM2020	40.0
		ASM2020DL	40.0
		ASM4020DL	40.0
		GSX20200C-3D	40.0
		GSX20200S-3D	40.0
		GSX40200C-3D	40.0
		GSX40200S-3D	40.0
	8.0	GSX20200C-4D	40.0
		GSX40200C-4D	40.0
		GSX40200S-4D	40.0
	9.0	GSX20200S-4D	40.0
2.1	6.0	GSX20210S-2D	40.0
2.2	6.0	GSX20220S-2D	40.0
2.3	6.0	GSX20230S-2D	40.0
0.0938	0.1406	GSX206C-1.5D	1.5000
		GSX406C-1.5D	1.5000
	0.1875	GSX406C-2D	1.5000
		GSX206C-2D	1.5000
		GSX206C-3D	1.5000
		GSX206S-2D	1.5000
		GSX406S-2D	1.5000
	0.2813	GSX206S-3D	1.5000
		GSX406C-3D	1.5000
		GSX406S-3D	1.5000
	0.3750	GSX406C-4D	1.5000
		GSX206C-4D	2.0000
2.4	6.0	GSX20240S-2D	40.0
2.5	3.8	GSX20250C-1.5D	40.0
		GSX30250C-1.5D	40.0
		GSX40250C-1.5D	40.0
		GSXSLT30250C-1.5D	40.0
	5.0	GSX20250C-2D	40.0
		GSX40250C-2D	40.0
	6.3	GSX20250S-2D	40.0
		GSX30250C-2D	40.0
		GSX40250S-2D	40.0
	7.5	GSX20250C-3D	40.0
		GSX20250S-3D	40.0
		GSX40250C-3D	40.0
	8.0	GSX40250S-3D	40.0
	10.0	GSX20250C-4D	50.0
		GSX40250C-4D	50.0
		GSX40250S-4D	50.0
	12.0	GSX20250S-4D	50.0
2.6	7.0	GSX20260S-2D	40.0
	8.0	GSX20260S-3D	50.0
2.7	7.0	GSX20270S-2D	40.0
	8.5	GSX20270S-3D	50.0
2.8	7.0	GSX20280S-2D	40.0
	9.0	GSX20280S-3D	50.0
2.9	7.0	GSX20290S-2D	40.0
	9.0	GSX20290S-3D	50.0
3.0	4.5	GSX20300C-1.5D	45.0
		GSX30300C-1.5D	45.0
		GSX40300C-1.5D	45.0
		GSXSLT30300C-1.5D	45.0
	6.0	GSX20300C-2D	45.0
		GSX40300C-2D	45.0
	7.5	GSX20300S-2D	45.0
		GSX20300S-2D-S3	38.0
		GSX30300C-2D	45.0
		GSX40300S-2D	45.0

Cutting Edge Length List by Diameter

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
3.0	7.5	GSX40300S-2D-S3	38.0
	8.0	GSV4030-2.5D	50.0
		GSXVL4030-2.5D	50.0
	9.0	GSX20300C-3D	50.0
		GSX20300S-3D	50.0
		GSX40300C-3D	50.0
		GSX40300S-3D	50.0
	10.0	ASM2030	45.0
		ASM2030DL	45.0
		ASM4030DL	45.0
	12.0	GSX20300C-4D	50.0
		GSX20300S-4D	50.0
		GSX40300C-4D	50.0
		GSX40300S-4D	50.0
3.1	7.5	GSX20310S-2D	45.0
0.1250	0.1875	GSX208C-1.5D	2.0000
		GSX408C-1.5D	2.0000
	0.2500	GSX408C-2D	2.0000
		GSX208C-2D	2.0000
		GSX208C-3D	2.0000
		GSX208S-2D	2.0000
		GSX408S-2D	2.0000
	0.3750	GSX208S-3D	2.0000
		GSX408C-3D	2.0000
		GSX408S-3D	2.0000
	0.5000	GSX208C-4D	2.0000
		GSX408C-4D	2.0000
3.2	7.5	GSX20320S-2D	45.0
3.3	7.5	GSX20330S-2D	45.0
3.4	7.5	GSX20340S-2D	45.0
3.5	5.3	GSX20350C-1.5D	45.0
		GSX40350C-1.5D	45.0
	7.0	GSX20350C-2D	45.0
		GSX40350C-2D	45.0
	8.8	GSX20350S-2D	45.0
		GSX40350S-2D	45.0
	11.0	GSX20350C-3D	50.0
		GSX40350C-3D	50.0
		GSX40350S-3D	50.0
	12.0	GSX20350S-3D	50.0
	14.0	GSX20350C-4D	50.0
		GSX20350S-4D	50.0
		GSX40350C-4D	50.0
		GSX40350S-4D	50.0
3.6	8.8	GSX20360S-2D	45.0
3.7	8.8	GSX20370S-2D	45.0
3.8	8.8	GSX20380S-2D	45.0
3.9	8.8	GSX20390S-2D	45.0
0.1563	0.2344	GSX210C-1.5D	2.0000
		GSX410C-1.5D	2.0000
	0.3125	GSX410C-2D	2.0000
		GSX210C-2D	2.0000
		GSX210C-3D	2.0000
		GSX210S-2D	2.0000
		GSX410S-2D	2.0000
	0.4688	GSX210S-3D	2.0000
		GSX410C-3D	2.0000
		GSX410S-3D	2.0000
	0.6250	GSX210C-4D	2.0000
		GSX410C-4D	2.0000
4.0	6.0	GSX20400C-1.5D	45.0
		GSX30400C-1.5D	45.0
		GSX40400C-1.5D	45.0
		GSXSLT 30400C-1.5D	45.0
	8.0	GSX20400C-2D	45.0
		GSX40400C-2D	45.0
	10.0	GSV4040-2.5D	50.0
		GSXVL4040-2.5D	50.0
	11.0	GSX20400S-2D	45.0
		GSX20400S-2D-S4	45.0
		GSX30400C-2D	45.0
		GSX40400S-2D	45.0

: 0.5mm Increments

: Inch Diameters

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
4.0	11.0	GSX40400S-2D-S4	45.0
	12.0	ASM2040	45.0
		ASM2040DL	45.0
		ASM4040DL	45.0
		GSX20400C-3D	50.0
		GSX20400S-3D	50.0
		GSX40400C-3D	50.0
		GSX40400S-3D	50.0
	16.0	GSX20400C-4D	50.0
		GSX20400S-4D	50.0
		GSX40400C-4D	50.0
		GSX40400S-4D	50.0
4.1	11.0	GSX20410S-2D	45.0
4.2	11.0	GSX20420S-2D	45.0
4.3	11.0	GSX20430S-2D	45.0
4.4	11.0	GSX20440S-2D	45.0
4.5	6.8	GSX20450C-1.5D	50.0
		GSX40450C-1.5D	50.0
	9.0	GSX20450C-2D	50.0
		GSX40450C-2D	50.0
	11.3	GSX20450S-2D	50.0
		GSX40450S-2D	50.0
	14.0	GSX20450C-3D	50.0
		GSX40450C-3D	50.0
	15.0	GSX20450S-3D	50.0
		GSX40450S-3D	50.0
	18.0	GSX20450C-4D	60.0
		GSX20450S-4D	60.0
		GSX40450C-4D	60.0
		GSX40450S-4D	60.0
4.6	11.3	GSX20460S-2D	50.0
4.7	11.3	GSX20470S-2D	50.0
0.1875	0.2813	GSX212C-1.5D	2.0000
		GSX412C-1.5D	2.0000
	0.3750	GSX412C-2D	2.0000
		GSX212C-2D	2.0000
		GSX212C-3D	2.0000
		GSX212S-2D	2.0000
		GSX412S-2D	2.0000
	0.5625	GSX212S-3D	2.0000
		GSX412C-3D	2.0000
		GSX412S-3D	2.0000
	0.7500	GSX212C-4D	2.5000
		GSX412C-4D	2.5000
4.8	11.3	GSX20480S-2D	50.0
4.9	11.3	GSX20490S-2D	50.0
5.0	7.5	GSX20500C-1.5D	50.0
		GSX30500C-1.5D	50.0
		GSX40500C-1.5D	50.0
		GSXSLT30500C-1.5D	50.0
	10.0	GSX20500C-2D	50.0
		GSX40500C-2D	50.0
	13.0	GSV4050-2.5D	60.0
		GSX20500S-2D	50.0
		GSX30500C-2D	50.0
		GSX40500S-2D	50.0
		GSXVL4050-2.5D	60.0
	15.0	ASM2050	50.0
		ASM2050DL	50.0
		ASM4050DL	50.0
		GSX20500C-3D	50.0
		GSX20500S-3D	50.0
		GSX40500C-3D	50.0
		GSX40500S-3D	50.0
	20.0	GSX20500C-4D	60.0
		GSX20500S-4D	60.0
		GSX40500C-4D	60.0
		GSX40500S-4D	60.0
5.1	13.0	GSX20510S-2D	50.0
5.2	13.0	GSX20520S-2D	50.0
5.3	13.0	GSX20530S-2D	50.0
		GSX20540S-2D	50.0

Cutting Edge Length List by Diameter

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
5.5	8.3	GSX20550C-1.5D	50.0
		GSX40550C-1.5D	50.0
	11.0	GSX20550C-2D	50.0
		GSX40550C-2D	50.0
	13.0	GSX20550S-2D	50.0
		GSX40550S-2D	50.0
	17.0	GSX20550C-3D	50.0
		GSX40550C-3D	50.0
	18.0	GSX20550S-3D	50.0
		GSX40550S-3D	50.0
	22.0	GSX20550C-4D	60.0
		GSX20550S-4D	60.0
		GSX40550C-4D	60.0
		GSX40550S-4D	60.0
0.2188	0.3282	GSX214C-1.5D	2.0000
		GSX414C-1.5D	2.0000
	0.4376	GSX414C-2D	2.0000
		GSX214C-2D	2.0000
		GSX214C-3D	2.0000
		GSX214S-2D	2.0000
		GSX414S-2D	2.0000
	0.6564	GSX214S-3D	2.0000
		GSX414C-3D	2.0000
		GSX414S-3D	2.0000
	0.8752	GSX214C-4D	2.5000
		GSX414C-4D	2.5000
5.6	13.0	GSX20560S-2D	50.0
5.7	13.0	GSX20570S-2D	50.0
5.8	13.0	GSX20580S-2D	50.0
5.9	13.0	GSX20590S-2D	50.0
6.0	9.0	GSX20600C-1.5D	50.0
		GSX30600C-1.5D	50.0
		GSX40600C-1.5D	50.0
		GSXSLT30600C-1.5D	50.0
	12.0	GSX20600C-2D	50.0
		GSX40600C-2D	50.0
	13.0	GSX20600S-2D	50.0
		GSX30600C-2D	50.0
		GSX40600S-2D	50.0
	15.0	ASM2060	50.0
		ASM2060DL	50.0
		ASM4060DL	50.0
		GSV4060-2.5D	60.0
		GSXVL4060-2.5D	60.0
	18.0	GSX20600C-3D	50.0
		GSX20600S-3D	50.0
		GSX40600C-3D	50.0
		GSX40600S-3D	50.0
	24.0	GSX20600C-4D	60.0
		GSX20600S-4D	60.0
		GSX40600C-4D	60.0
		GSX40600S-4D	60.0
6.1	13.0	GSX20610S-2D	50.0
6.2	13.0	GSX20620S-2D	50.0
6.3	13.0	GSX20630S-2D	50.0
0.2500	0.3750	GSX216C-1.5D	2.0000
		GSX416C-1.5D	2.0000
	0.5000	GSX416C-2D	2.0000
		GSX216C-2D	2.0000
		GSX216C-3D	2.0000
		GSX216S-2D	2.0000
		GSX416S-2D	2.0000
	0.7500	GSX216S-3D	2.0000
		GSX416C-3D	2.0000
		GSX416S-3D	2.0000
	1.0000	GSX216C-4D	2.5000
		GSX416C-4D	2.5000
6.4	13.0	GSX20640S-2D	50.0
6.5	10.0	GSX20650C-1.5D	60.0
		GSX40650C-1.5D	60.0
	13.0	GSX20650C-2D	60.0
		GSX20650S-2D	60.0

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
6.5	13.0	GSX40650C-2D	60.0
		GSX40650S-2D	60.0
	20.0	GSX20650C-3D	70.0
		GSX20650S-3D	70.0
		GSX40650C-3D	70.0
		GSX40650S-3D	70.0
	26.0	GSX20650C-4D	70.0
		GSX20650S-4D	70.0
		GSX40650C-4D	70.0
		GSX40650S-4D	70.0
6.6	13.2	GSX20660S-2D	60.0
6.7	13.4	GSX20670S-2D	60.0
6.8	13.6	GSX20680S-2D	60.0
6.9	13.8	GSX20690S-2D	60.0
7.0	11.0	GSX20700C-1.5D	60.0
		GSX30700C-1.5D	60.0
		GSX40700C-1.5D	60.0
		GSXSLT30700C-1.5D	60.0
	14.0	GSX20700C-2D	60.0
		GSX40700C-2D	60.0
	16.0	GSX20700S-2D	60.0
		GSX30700C-2D	60.0
		GSX40700S-2D	60.0
	18.0	GSV4070-2.5D	70.0
		GSXVL4070-2.5D	70.0
	21.0	GSX20700C-3D	70.0
		GSX20700S-3D	70.0
		GSX40700C-3D	70.0
		GSX40700S-3D	70.0
	28.0	GSX20700C-4D	80.0
		GSX20700S-4D	80.0
		GSX40700C-4D	80.0
	28.0	GSX40700S-4D	80.0
7.1	16.0	GSX20710S-2D	60.0
0.2813	0.4220	GSX218C-1.5D	2.5000
		GSX418C-1.5D	2.5000
	0.5626	GSX418C-2D	2.5000
		GSX218C-2D	2.5000
		GSX218C-3D	2.5000
		GSX218S-2D	2.5000
		GSX418S-2D	2.5000
	0.8439	GSX218S-3D	3.0000
		GSX418C-3D	3.0000
		GSX418S-3D	3.0000
	1.1252	GSX218C-4D	3.0000
		GSX418C-4D	3.0000
7.2	16.0	GSX20720S-2D	60.0
7.3	16.0	GSX20730S-2D	60.0
7.4	16.0	GSX20740S-2D	60.0
7.5	12.0	GSX20750C-1.5D	60.0
		GSX40750C-1.5D	60.0
	15.0	GSX20750C-2D	60.0
		GSX40750C-2D	60.0
	16.0	GSX20750S-2D	60.0
		GSX40750S-2D	60.0
	23.0	GSX20750C-3D	70.0
		GSX20750S-3D	70.0
		GSX40750C-3D	70.0
		GSX40750S-3D	70.0
	30.0	GSX20750C-4D	80.0
		GSX20750S-4D	80.0
		GSX40750C-4D	80.0
		GSX40750S-4D	80.0
7.6	16.0	GSX20760S-2D	60.0
7.7	16.0	GSX20770S-2D	60.0
7.8	16.0	GSX20780S-2D	60.0
7.9	16.0	GSX20790S-2D	60.0
0.3125	0.4688	GSX220C-1.5D	2.5000
		GSX420C-1.5D	2.5000
	0.6250	GSX420C-2D	2.5000
		GSX220C-2D	2.5000
		GSX220C-3D	2.5000

: 0.5mm Increments

: Inch Diameters

Cutting Edge Length List by Diameter

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
0.3125	0.6250	GSX220S-2D	2.5000
		GSX420S-2D	2.5000
	0.9375	GSX220S-3D	3.0000
		GSX420C-3D	3.0000
		GSX420S-3D	3.0000
	1.2500	GSX220C-4D	3.0000
		GSX420C-4D	3.0000
8.0	12.0	GSX20800C-1.5D	60.0
		GSX30800C-1.5D	60.0
		GSX40800C-1.5D	60.0
		GSXSLT30800C-1.5D	60.0
	16.0	GSX20800C-2D	60.0
		GSX40800C-2D	60.0
	18.0	ASM2080	60.0
		ASM2080DL	60.0
		ASM4080DL	60.0
	19.0	GSX20800S-2D	60.0
		GSX30800C-2D	60.0
		GSX40800S-2D	60.0
	20.0	GSV4080-2.5D	80.0
		GSXVL4080-2.5D	80.0
	24.0	GSX20800C-3D	70.0
		GSX20800S-3D	70.0
		GSX40800C-3D	70.0
		GSX40800S-3D	70.0
	32.0	GSX20800C-4D	80.0
		GSX20800S-4D	80.0
		GSX40800C-4D	80.0
		GSX40800S-4D	80.0
8.1	19.0	GSX20810S-2D	60.0
8.2	19.0	GSX20820S-2D	60.0
8.3	19.0	GSX20830S-2D	60.0
8.4	19.0	GSX20840S-2D	60.0
8.5	13.0	GSX20850C-1.5D	70.0
		GSX40850C-1.5D	70.0
	17.0	GSX20850C-2D	70.0
		GSX40850C-2D	70.0
	19.0	GSX20850S-2D	70.0
		GSX40850S-2D	70.0
	26.0	GSX20850C-3D	75.0
		GSX20850S-3D	75.0
		GSX40850C-3D	75.0
		GSX40850S-3D	75.0
	34.0	GSX20850C-4D	90.0
		GSX20850S-4D	90.0
		GSX40850C-4D	90.0
		GSX40850S-4D	90.0
8.6	19.0	GSX20860S-2D	70.0
8.7	19.0	GSX20870S-2D	70.0
8.8	19.0	GSX20880S-2D	70.0
8.9	19.0	GSX20890S-2D	70.0
9.0	14.0	GSX20900C-1.5D	70.0
		GSX30900C-1.5D	70.0
		GSX40900C-1.5D	70.0
		GSXSLT30900C-1.5D	70.0
	18.0	GSX20900C-2D	70.0
		GSX40900C-2D	70.0
		GSX20900S-2D	70.0
		GSX30900C-2D	70.0
		GSX40900S-2D	70.0
	23.0	GSV4090-2.5D	90.0
		GSXVL4090-2.5D	90.0
	27.0	GSX20900C-3D	75.0
		GSX20900S-3D	75.0
		GSX40900C-3D	75.0
		GSX40900S-3D	75.0
	36.0	GSX20900C-4D	90.0
		GSX20900S-4D	90.0
		GSX40900C-4D	90.0
		GSX40900S-4D	90.0
9.1	19.0	GSX20910S-2D	70.0
9.2	19.0	GSX20920S-2D	70.0

: 0.5mm Increments

: Inch Diameters

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
9.3	19.0	GSX20930S-2D	70.0
9.4	19.0	GSX20940S-2D	70.0
9.5	15.0	GSX20950C-1.5D	70.0
		GSX40950C-1.5D	70.0
	19.0	GSX20950C-2D	70.0
		GSX40950C-2D	70.0
		GSX40950S-2D	70.0
	20.0	GSX20950S-2D	70.0
	29.0	GSX20950C-3D	75.0
		GSX20950S-3D	75.0
		GSX40950C-3D	75.0
		GSX40950S-3D	75.0
	38.0	GSX20950C-4D	90.0
		GSX20950S-4D	90.0
	39.0	GSX40950C-4D	90.0
		GSX40950S-4D	90.0
0.3750	0.5625	GSX224C-1.5D	3.0000
		GSX424C-1.5D	3.0000
	0.7500	GSX424C-2D	3.0000
		GSX224C-2D	3.0000
		GSX224C-3D	3.0000
		GSX224S-2D	3.0000
		GSX424S-2D	3.0000
	1.1250	GSX224S-3D	3.5000
		GSX424C-3D	3.5000
		GSX424S-3D	3.5000
	1.5000	GSX224C-4D	3.5000
		GSX424C-4D	3.5000
9.6	20.0	GSX20960S-2D	70.0
9.7	20.0	GSX20970S-2D	70.0
9.8	20.0	GSX20980S-2D	70.0
9.9	20.0	GSX20990S-2D	70.0
10.0	15.0	GSX21000C-1.5D	70.0
		GSX31000C-1.5D	70.0
		GSX41000C-1.5D	70.0
		GSXSLT 31000C-1.5D	70.0
	20.0	GSX21000C-2D	70.0
		GSX41000C-2D	70.0
	22.0	ASM2100	71.0
		ASM2100DL	71.0
		GSX21000S-2D	70.0
		GSX31000C-2D	70.0
		GSX41000S-2D	70.0
	25.0	GSV4100-2.5D	90.0
		GSXVL4100-2.5D	90.0
	30.0	GSX21000C-3D	90.0
		GSX21000S-3D	90.0
		GSX41000C-3D	90.0
		GSX41000S-3D	90.0
	40.0	GSX21000C-4D	90.0
		GSX21000S-4D	90.0
		GSX41000C-4D	90.0
		GSX41000S-4D	90.0
	22.0	ASM4100DL	71.0
10.5	16.0	GSX21050C-1.5D	75.0
		GSX41050C-1.5D	75.0
	21.0	GSX21050C-2D	75.0
		GSX41050C-2D	75.0
	22.0	GSX21050S-2D	75.0
		GSX41050S-2D	75.0
	32.0	GSX21050C-3D	90.0
		GSX21050S-3D	90.0
		GSX41050C-3D	90.0
		GSX41050S-3D	90.0
	42.0	GSX21050C-4D	100.0
		GSX21050S-4D	100.0
		GSX41050C-4D	100.0
		GSX41050S-4D	100.0
11.0	17.0	GSX21100C-1.5D	75.0
		GSX41100C-1.5D	75.0
	22.0	GSX21100C-2D	75.0
		GSX21100S-2D	75.0

Cutting Edge Length List by Diameter

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
11.0	28.0	GSX41100C-2D	75.0
		GSX41100S-2D	75.0
		GSV4110-2.5D	90.0
		GSXVL4110-2.5D	90.0
	33.0	GSX21100C-3D	90.0
		GSX21100S-3D	90.0
		GSX41100C-3D	90.0
		GSX41100S-3D	90.0
	44.0	GSX 21100C-4D	100.0
		GSX 21100S-4D	100.0
		GSX 41100C-4D	100.0
		GSX 41100S-4D	100.0
0.4375	0.6563	GSX228C-1.5D	3.0000
		GSX428C-1.5D	3.0000
	0.8750	GSX428C-2D	3.0000
		GSX228C-2D	3.0000
		GSX228C-3D	3.0000
		GSX228S-2D	3.0000
		GSX428S-2D	3.0000
	1.3125	GSX228S-3D	3.5000
		GSX428C-3D	3.5000
		GSX428S-3D	3.5000
	1.7500	GSX228C-4D	4.0000
		GSX428C-4D	4.0000
11.5	18.0	GSX21150C-1.5D	75.0
		GSX41150C-1.5D	75.0
	23.0	GSX21150C-2D	75.0
		GSX21150S-2D	75.0
		GSX41150C-2D	75.0
		GSX41150S-2D	75.0
	35.0	GSX21150C-3D	90.0
		GSX21150S-3D	90.0
		GSX41150C-3D	90.0
		GSX41150S-3D	90.0
	46.0	GSX21150C-4D	100.0
		GSX21150S-4D	100.0
		GSX41150C-4D	100.0
		GSX41150S-4D	100.0
12.0	18.0	GSX21200C-1.5D	75.0
		GSX31200C-1.5D	75.0
		GSX41200C-1.5D	75.0
		GSXSLT31200C-1.5D	75.0
	24.0	GSX21200C-2D	75.0
		GSX41200C-2D	75.0
	25.0	ASM2120	75.0
		ASM2120DL	75.0
		ASM4120DL	75.0
	26.0	GSX21200S-2D	75.0
		GSX31200C-2D	75.0
		GSX41200S-2D	75.0
	30.0	GSV4120-2.5D	90.0
		GSXVL4120-2.5D	90.0
	36.0	GSX21200C-3D	90.0
		GSX21200S-3D	90.0
		GSX41200C-3D	90.0
		GSX41200S-3D	90.0
	48.0	GSX21200C-4D	100.0
		GSX21200S-4D	100.0
		GSX41200C-4D	100.0
		GSX41200S-4D	100.0
12.5	26.0	GSX21250S-2D	75.0
0.5000	0.7500	GSX232C-1.5D	3.0000
		GSX432C-1.5D	3.0000
	1.0000	GSX432C-2D	3.0000
		GSX232C-2D	3.0000
		GSX232C-3D	3.0000
		GSX232S-2D	3.0000
		GSX432S-2D	3.0000
	1.5000	GSX232S-3D	3.5000
		GSX432C-3D	3.5000
		GSX432S-3D	3.5000
	2.0000	GSX232C-4D	4.0000

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
0.5000	2.0000	GSX432C-4D	4.0000
13.0	20.0	GSX21300C-1.5D	90.0
		GSX41300C-1.5D	90.0
	26.0	GSX21300C-2D	90.0
		GSX21300S-2D	90.0
		GSX41300C-2D	90.0
		GSX41300S-2D	90.0
	39.0	GSX21300C-3D	100.0
		GSX21300S-3D	100.0
		GSX41300C-3D	100.0
		GSX41300S-3D	100.0
	52.0	GSX21300C-4D	110.0
		GSX21300S-4D	110.0
		GSX41300C-4D	110.0
		GSX41300S-4D	110.0
13.5	27.0	GSX41350S-2D	90.0
14.0	21.0	GSX21400C-1.5D	90.0
		GSX41400C-1.5D	90.0
	28.0	GSX21400C-2D	90.0
		GSX21400S-2D	90.0
		GSX41400C-2D	90.0
		GSX41400S-2D	90.0
	32.0	ASM2140	90.0
	35.0	GSV4140-2.5D	110.0
		GSXVL4140-2.5D	110.0
	42.0	GSX21400C-3D	110.0
		GSX21400S-3D	110.0
		GSX41400C-3D	110.0
		GSX41400S-3D	110.0
	56.0	GSX21400C-4D	120.0
		GSX21400S-4D	120.0
		GSX41400C-4D	120.0
		GSX41400S-4D	120.0
0.5625	0.8438	GSX236C-1.5D	3.5000
		GSX436C-1.5D	3.5000
	1.1250	GSX436C-2D	3.5000
		GSX236C-2D	3.5000
		GSX236C-3D	3.5000
		GSX236S-2D	3.5000
		GSX436S-2D	3.5000
	1.6875	GSX236S-3D	4.5000
		GSX436C-3D	4.5000
		GSX436S-3D	4.5000
	2.2500	GSX236C-4D	5.0000
		GSX436C-4D	5.0000
15.0	23.0	GSX21500C-1.5D	90.0
		GSX41500C-1.5D	90.0
	30.0	GSX21500C-2D	90.0
		GSX21500S-2D	90.0
		GSX41500C-2D	90.0
		GSX41500S-2D	90.0
	32.0	ASM2150	90.0
	38.0	GSV4150-2.5D	110.0
		GSXVL4150-2.5D	110.0
	45.0	GSX21500C-3D	110.0
		GSX21500S-3D	110.0
		GSX41500C-3D	110.0
		GSX41500S-3D	110.0
	60.0	GSX21500C-4D	120.0
		GSX21500S-4D	120.0
		GSX41500C-4D	120.0
		GSX41500S-4D	120.0
0.6250	0.9375	GSX240C-1.5D	3.5000
		GSX440C-1.5D	3.5000
	1.2500	GSX440C-2D	3.5000
		GSX240C-2D	3.5000
		GSX240C-3D	3.5000
		GSX240S-2D	3.5000
		GSX440S-2D	3.5000
	1.8750	GSX240S-3D	4.5000
		GSX440C-3D	4.5000
		GSX440S-3D	4.5000

: 0.5mm Increments

: Inch Diameters

Cutting Edge Length List by Diameter

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
0.6250	2.5000	GSX240C-4D	5.0000
		GSX440C-4D	5.0000
16.0	24.0	GSX21600C-1.5D	90.0
		GSX41600C-1.5D	90.0
	32.0	ASM2160	90.0
		ASM2160DL	90.0
		ASM4160DL	90.0
		GSX21600C-2D	90.0
		GSX21600S-2D	90.0
		GSX41600C-2D	90.0
		GSX41600S-2D	90.0
	40.0	GSV4160-2.5D	115.0
		GSXVL4160-2.5D	115.0
	48.0	GSX21600C-3D	110.0
		GSX21600S-3D	110.0
		GSX41600C-3D	110.0
		GSX41600S-3D	110.0
	64.0	GSX21600C-4D	120.0
		GSX21600S-4D	120.0
		GSX41600C-4D	120.0
		GSX41600S-4D	120.0
17.0	26.0	GSX21700C-1.5D	100.0
		GSX41700C-1.5D	100.0
	34.0	GSX21700C-2D	100.0
		GSX41700C-2D	100.0
	35.0	GSX21700S-2D	100.0
		GSX41700S-2D	100.0
	51.0	GSX21700C-3D	110.0
		GSX21700S-3D	110.0
		GSX41700C-3D	110.0
		GSX41700S-3D	110.0
	68.0	GSX21700C-4D	130.0
		GSX21700S-4D	130.0
		GSX41700C-4D	130.0
		GSX41700S-4D	130.0
0.6875	1.0313	GSX244C-1.5D	4.0000
		GSX444C-1.5D	4.0000
	1.3750	GSX444C-2D	4.0000
		GSX244C-2D	4.0000
		GSX244C-3D	4.0000
		GSX244S-2D	4.0000
		GSX444S-2D	4.0000
	2.0625	GSX244S-3D	4.5000
		GSX444C-3D	4.5000
		GSX444S-3D	4.5000
	2.7500	GSX244C-4D	5.0000
		GSX444C-4D	5.0000
18.0	27.0	GSX21800C-1.5D	100.0
		GSX41800C-1.5D	100.0
	36.0	GSX21800C-2D	100.0
		GSX41800C-2D	100.0
	40.0	GSX21800S-2D	100.0
		GSX41800S-2D	100.0
	45.0	GSV4180-2.5D	120.0
		GSXVL4180-2.5D	120.0
	54.0	GSX21800C-3D	120.0
		GSX21800S-3D	120.0
		GSX41800C-3D	120.0
		GSX41800S-3D	120.0
	72.0	GSX21800C-4D	130.0
		GSX21800S-4D	130.0
		GSX41800C-4D	130.0
		GSX41800S-4D	130.0
19.0	29.0	GSX21900C-1.5D	100.0
		GSX41900C-1.5D	100.0
	38.0	GSX21900C-2D	100.0
		GSX41900C-2D	100.0
	40.0	GSX21900S-2D	100.0
		GSX41900S-2D	100.0
	57.0	GSX21900C-3D	120.0
		GSX21900S-3D	120.0
		GSX41900C-3D	120.0

: 0.5mm Increments

: Inch Diameters

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
19.0	57.0	GSX41900S-3D	120.0
	76.0	GSX21900C-4D	140.0
		GSX21900S-4D	140.0
		GSX41900C-4D	140.0
		GSX41900S-4D	140.0
0.7500	1.1250	GSX248C-1.5D	4.0000
		GSX448C-1.5D	4.0000
	1.5000	GSX448C-2D	4.0000
		GSX248C-2D	4.0000
		GSX248C-3D	4.0000
		GSX248S-2D	4.0000
		GSX448S-2D	4.0000
	2.2500	GSX248S-3D	5.0000
		GSX448C-3D	5.0000
		GSX448S-3D	5.0000
	3.0000	GSX248C-4D	5.5000
		GSX448C-4D	5.5000
20.0	30.0	GSX22000C-1.5D	100.0
		GSX42000C-1.5D	100.0
	40.0	GSX22000C-2D	100.0
		GSX22000S-2D	100.0
		GSX42000C-2D	100.0
		GSX42000S-2D	100.0
	50.0	GSV4200-2.5D	125.0
		GSXVL4200-2.5D	125.0
	60.0	GSX22000C-3D	120.0
		GSX22000S-3D	120.0
		GSX42000C-3D	120.0
		GSX42000S-3D	120.0
	80.0	GSX22000C-4D	140.0
		GSX22000S-4D	140.0
		GSX42000C-4D	140.0
		GSX42000S-4D	140.0
21.0	42.0	GSX22100S-2D	110.0
22.0	44.0	GSX22200S-2D	110.0
		GSX42200S-2D	110.0
	66.0	GSX42200S-3D	130.0
0.8750	1.3125	GSX256C-1.5D	4.0000
		GSX456C-1.5D	4.0000
	1.7500	GSX456C-2D	4.0000
		GSX256C-2D	4.0000
		GSX256C-3D	4.0000
		GSX256S-2D	4.0000
		GSX456S-2D	4.0000
	2.6250	GSX256S-3D	5.0000
		GSX456C-3D	5.0000
		GSX456S-3D	5.0000
	3.5000	GSX256C-4D	5.5000
		GSX456C-4D	5.5000
23.0	46.0	GSX22300S-2D	120.0
24.0	48.0	GSX22400S-2D	120.0
		GSX42400S-2D	120.0
	72.0	GSX22400S-3D	130.0
25.0	38.0	GSX22500C-1.5D	120.0
		GSX42500C-1.5D	120.0
	50.0	GSX22500C-2D	120.0
		GSX22500S-2D	120.0
		GSX42500C-2D	120.0
		GSX42500S-2D	120.0
	63.0	GSV4250-2.5D	140.0
		GSXVL4250-2.5D	140.0
	75.0	GSX22500C-3D	130.0
		GSX22500S-3D	130.0
		GSX42500C-3D	130.0
		GSX42500S-3D	130.0
	100.0	GSX22500C-4D	160.0
		GSX22500S-4D	160.0
		GSX42500C-4D	160.0
		GSX42500S-4D	160.0
1.0000	1.5000	GSX264C-1.5D	4.0000
		GSX464C-1.5D	4.0000
	2.0000	GSX464C-2D	4.0000

Cutting Edge Length List by Diameter

Endmill Sizes by Diameter — Square

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
1.0000	2.0000	GSX264C-2D	4.0000
		GSX264C-3D	4.0000
		GSX264S-2D	4.0000
		GSX464S-2D	4.0000
	3.0000	GSX264S-3D	5.5000
		GSX464C-3D	5.5000
		GSX464S-3D	5.5000
	4.0000	GSX264C-4D	6.0000
		GSX464C-4D	6.0000

Endmill Sizes by Diameter — Radius

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
3.0	8.0	GSV4030-R02-2.5D	50.0
		GSV4030-R05-2.5D	50.0
		GSX40300-R02-2D	45.0
		GSX40300-R05-2D	45.0
		GSXVL4030-R02-2.5D	50.0
		GSXVL4030-R05-2.5D	50.0
4.0	10.0	GSV4040-R02-2.5D	50.0
		GSV4040-R05-2.5D	50.0
		GSV4040-R10-2.5D	50.0
		GSXVL4040-R02-2.5D	50.0
		GSXVL4040-R05-2.5D	50.0
		GSXVL4040-R10-2.5D	50.0
	11.0	GSX40400-R02-2D	45.0
		GSX40400-R05-2D	45.0
		GSX40400-R10-2D	45.0
4.5	12.0	SSEH4045-R05	50.0
		SSEH4045W-R05	50.0
		SSEHVL4045-R05	50.0
		SSEHVL4045-R10	50.0
		SSEHVL4045W-R05	50.0
		SSEHVL4045W-R10	50.0
5.0	13.0	GSV4050-R02-2.5D	60.0
		GSV4050-R05-2.5D	60.0
		GSV4050-R10-2.5D	60.0
		GSX40500-R02-2D	50.0
		GSX40500-R05-2D	50.0
		GSX40500-R10-2D	50.0
		GSXVL4050-R02-2.5D	60.0
		GSXVL4050-R05-2.5D	60.0
		GSXVL4050-R10-2.5D	60.0
		SSEH4050-R05	60.0
		SSEH4050W-R05	60.0
		SSEHVL4050-R05	60.0
		SSEHVL4050-R10	60.0
		SSEHVL4050W-R05	60.0
		SSEHVL4050W-R10	60.0
6.0	13.0	GSX40600-R02-2D	50.0
		GSX40600-R05-2D	50.0
		GSX40600-R10-2D	50.0
		GSX40600-R15-2D	50.0
		SSEH4060-R10	60.0
		SSEH4060W-R10	60.0
		SSEHVL4060-R10	60.0
		SSEHVL4060W-R10	60.0
	15.0	GSV4060-R03-2.5D	60.0
		GSV4060-R05-2.5D	60.0
		GSV4060-R10-2.5D	60.0
		GSV4060-R15-2.5D	60.0
		GSXVL4060-R03-2.5D	60.0
		GSXVL4060-R05-2.5D	60.0
		GSXVL4060-R10-2.5D	60.0
		GSXVL4060-R15-2.5D	60.0
8.0	19.0	GSX40800-R02-2D	60.0
		GSX40800-R05-2D	60.0
		GSX40800-R10-2D	60.0
		GSX40800-R15-2D	60.0
		SSEH4080-R10	80.0
		SSEH4080W-R10	80.0

Endmill Sizes by Diameter — Radius

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
8.0	19.0	SSEHVL4080-R10	80.0
		SSEHVL4080W-R10	80.0
	20.0	GSV4080-R03-2.5D	80.0
		GSV4080-R05-2.5D	80.0
		GSV4080-R10-2.5D	80.0
		GSV4080-R15-2.5D	80.0
		GSV4080-R20-2.5D	80.0
		GSXVL4080-R03-2.5D	80.0
		GSXVL4080-R05-2.5D	80.0
		GSXVL4080-R10-2.5D	80.0
		GSXVL4080-R15-2.5D	80.0
		GSXVL4080-R20-2.5D	80.0
10.0	22.0	GSX41000-R02-2D	70.0
		GSX41000-R05-2D	70.0
		GSX41000-R10-2D	70.0
		GSX41000-R15-2D	70.0
		GSX41000-R20-2D	70.0
		SSEH4100-R10	90.0
		SSEH4100-R30	90.0
		SSEH4100W-R10	90.0
		SSEH4100W-R30	90.0
		SSEHVL4100-R10	90.0
		SSEHVL4100-R30	90.0
		SSEHVL4100W-R10	90.0
		SSEHVL4100W-R30	90.0
	25.0	GSV4100-R03-2.5D	90.0
		GSV4100-R05-2.5D	90.0
		GSV4100-R10-2.5D	90.0
		GSV4100-R15-2.5D	90.0
		GSV4100-R20-2.5D	90.0
		GSXVL4100-R03-2.5D	90.0
		GSXVL4100-R05-2.5D	90.0
		GSXVL4100-R10-2.5D	90.0
		GSXVL4100-R15-2.5D	90.0
		GSXVL4100-R20-2.5D	90.0
12.0	26.0	GSX41200-R02-2D	70.0
		GSX41200-R05-2D	70.0
		GSX41200-R10-2D	70.0
		GSX41200-R15-2D	70.0
		GSX41200-R20-2D	70.0
		SSEH4120-R10	90.0
		SSEH4120-R30	90.0
		SSEH4120W-R10	90.0
		SSEH4120W-R30	90.0
		SSEH4120WS-R10	90.0
		SSEH4120WS-R30	90.0
		SSEHVL4120-R10	90.0
		SSEHVL4120-R30	90.0
		SSEHVL4120W-R10	90.0
		SSEHVL4120W-R30	90.0
		SSEHVL4120WS-R10	90.0
		SSEHVL4120WS-R30	90.0
	30.0	GSV4120-R05-2.5D	90.0
		GSV4120-R10-2.5D	90.0
		GSV4120-R15-2.5D	90.0
		GSV4120-R20-2.5D	90.0
		GSV4120-R30-2.5D	90.0
		GSXVL4120-R05-2.5D	90.0
		GSXVL4120-R10-2.5D	90.0
		GSXVL4120-R15-2.5D	90.0
		GSXVL4120-R20-2.5D	90.0
		GSXVL4120-R30-2.5D	90.0
16.0	32.0	SSEH4160-R10	115.0
		SSEH4160-R30	115.0
		SSEH4160W-R10	115.0
		SSEH4160W-R30	115.0
		SSEH4160WS-R10	115.0
		SSEH4160WS-R30	115.0
		SSEHVL4160-R10	115.0
		SSEHVL4160-R30	115.0
		SSEHVL4160W-R10	115.0
		SSEHVL4160W-R30	115.0

: 0.5mm Increments

: Inch Diameters

Cutting Edge Length List by Diameter

Endmill Sizes by Diameter — Radius

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
16.0	32.0	SSEHVL4160WS-R10	115.0
		SSEHVL4160WS-R30	115.0
	40.0	GSV4160-R10-2.5D	115.0
		GSV4160-R15-2.5D	115.0
		GSV4160-R20-2.5D	115.0
		GSV4160-R30-2.5D	115.0
		GSXVL4160-R10-2.5D	115.0
		GSXVL4160-R15-2.5D	115.0
		GSXVL4160-R20-2.5D	115.0
		GSXVL4160-R30-2.5D	115.0
20.0	40.0	SSEH4200W-R10	125.0
		SSEH4200W-R30	125.0
		SSEH4200WS-R10	125.0
		SSEH4200WS-R30	125.0
		SSEHVL4200W-R10	125.0
		SSEHVL4200W-R30	125.0
		SSEHVL4200WS-R10	125.0
		SSEHVL4200WS-R30	125.0
	50.0	GSV4200-R10-2.5D	125.0
		GSV4200-R15-2.5D	125.0
		GSV4200-R20-2.5D	125.0
		GSV4200-R30-2.5D	125.0
		GSXVL4200-R10-2.5D	125.0
		GSXVL4200-R15-2.5D	125.0
		GSXVL4200-R20-2.5D	125.0
		GSXVL4200-R30-2.5D	125.0
25.0	50.0	SSEH4250W-R10	140.0
		SSEH4250W-R30	140.0
		SSEH4250WS-R10	140.0
		SSEH4250WS-R30	140.0
		SSEHVL4250W-R10	140.0
		SSEHVL4250W-R30	140.0
		SSEHVL4250WS-R10	140.0
		SSEHVL4250WS-R30	140.0
	63.0	GSV4250-R10-2.5D	140.0
		GSV4250-R15-2.5D	140.0
		GSV4250-R20-2.5D	140.0
		GSV4250-R30-2.5D	140.0
		GSXVL4250-R10-2.5D	140.0
		GSXVL4250-R15-2.5D	140.0
		GSXVL4250-R20-2.5D	140.0
		GSXVL4250-R30-2.5D	140.0

Endmill Sizes by Diameter — Ballnose

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
0.1	0.1	SNB200050034DL	45.0
		SNB200050064DL	45.0
0.2	0.2	SNB200100054DL	45.0
		SNB200100104DL	45.0
		SNB200100204DL	45.0
0.3	0.3	SNB200150054DL	45.0
		SNB200150104DL	45.0
		SNB200150204DL	45.0
		SNB200150304DL	45.0
0.4	0.4	SNB200200104DL	45.0
		SNB200200204DL	45.0
		SNB200200304DL	45.0
		SNB200200404DL	45.0
	0.6	GSXB20020	50.0
0.5	0.45	SNB200250104DL	45.0
		SNB200250204DL	45.0
		SNB200250304DL	45.0
		SNB200250404DL	45.0
0.6	0.6	SNB200300204DL	45.0
		SNB200300304DL	45.0
		SNB200300404DL	45.0
		SNB200300504DL	45.0
		SNB200300604DL	45.0
	0.9	GSXB20030	50.0

Endmill Sizes by Diameter — Ballnose

Dia. DC	Cutting Edge Length APMX	Cat. No.	Overall Length LF
1.0	1.5	GSXB20050	50.0
		SNB200500304DL	45.0
		SNB200500404DL	45.0
		SNB200500604DL	45.0
		SNB200500804DL	50.0
		SNB200501004DL	50.0
1.5	2.3	SNB200750304DL	45.0
		SNB200750604DL	45.0
		SNB200751004DL	50.0
	2.5	GSXB20075	50.0
0.0625	0.0938	GSXB204	2.0000
2.0	3.0	GSXB20100	60.0
		SNB2020DL	60.0
		SNB201000304DL	50.0
		SNB201000604DL	50.0
		SNB201001004DL	50.0
		SNB201001504DL	60.0
		SNB201002004DL	60.0
2.5	4.0	GSXB20125	60.0
3.0	4.5	GSXB20150	60.0
		SNB2030DL	80.0
0.0938	0.1406	GSXB206	2.5000
4.0	6.0	GSXB20200	70.0
		SNB2040DL	80.0
		SNB202001606DL	80.0
		SNB202002006DL	80.0
		SNB202003006DL	80.0
0.1250	0.1875	GSXB208	2.5000
5.0	7.5	GSXB20250	80.0
		SNB2050DL	90.0
0.1563	0.2344	GSXB210	3.0000
6.0	9.0	GSXB20300	80.0
		SNB2060DL	100.0
7.0	11.0	GSXB20350	90.0
0.1875	0.2813	GSXB212	3.0000
8.0	12.0	GSXB20400	90.0
		SNB2080DL	100.0
0.2188	0.3282	GSXB214	3.0000
0.2500	0.3750	GSXB216	3.0000
10.0	15.0	GSXB20500	100.0
		SNB2100DL	120.0
0.2813	0.4220	GSXB218	3.5000
0.3125	0.4688	GSXB220	3.5000
12.0	18.0	GSXB20600	110.0
		SNB2120DL	120.0
14.0	21.0	GSXB20700	110.0
0.3750	0.5625	GSXB224	4.0000
16.0	24.0	GSXB20800	140.0
		SNB2160DL	160.0
0.4375	0.6563	GSXB228	4.0000
18.0	27.0	GSXB20900	140.0
0.5000	0.7500	GSXB232	4.5000
20.0	30.0	GSXB21000	160.0
0.5625	0.8438	GSXB236	4.5000
0.6250	0.9375	GSXB240	5.5000
0.6875	1.0313	GSXB244	5.5000
0.7500	1.1250	GSXB248	6.0000
0.8750	1.3125	GSXB256	6.5000
1.0000	1.5000	GSXB264	7.0000

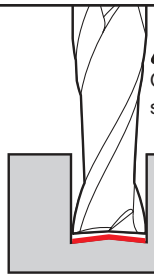
: Inch Diameters : 0.5mm Increments

Material Selection Guide

Target Material (What to machine?)	Cutting Applications	Recommended Tool	Ref. Page
Steel, Cast Iron, Stainless Steel, Titanium Alloy	High Efficiency Machining Chatter Countermeasures	GSXVL GSV	I76,I78 I74
	Medium Finishing to Finishing (Good Machining Accuracy)	GSX	I40 to I72
	Roughing (Large Stock Removal)	GSXVL	I76,I78
Aluminum Alloy	All Aluminum Alloys	ASM	I82 to I84

Target Material (What to machine?)	Cutting Applications	Recommended Tool	Ref. Page
Steel, Cast Iron, Stainless Steel, Titanium Alloy	High Efficiency Machining Chatter Countermeasures	GSXVL GSV	I76,I78 I92
	Medium Finishing to Finishing (Good Machining Accuracy)	GSX	I90
	Roughing (Large Stock Removal)	GSXVL	I76,I94
	Stainless Steel, Titanium Alloy	SSEH SSEHVL	I102,I104 I98,I100

Target Material (What to machine?)	Cutting Applications	Recommended Tool	Ref. Page
Steel, Cast Iron, Stainless Steel, Titanium Alloy	General Machining	GSXB	I27, I112
Aluminum Alloy Copper Alloy	All Aluminum Alloys, Copper	SNB	I115, I116



Our square endmill cutting edge shapes have concave ends.

Therefore, they do not make flat bottoms in spot facing.

If a flat bottom is required, we recommend using the **Flat Bottom MDF**.

Endmill Coating

■ Endmill Coating

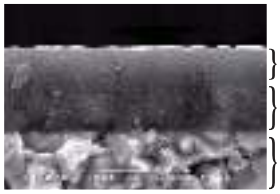
Coating Name	GSX Coat	ZX Coat	AURORA Coat	SUMIDIA Coat
Coating Type	TiAlCrN Type	TiAlN Type	DLC	Diamond
Wear Resistance	◎	○	○	◎
Adhesion Resistance	◎	○	◎	△
Thermal Resistance	◎	○	△	○
Coating Thickness	up to 2μm	up to 2μm	up to 0.5μm	up to 15μm
Features	Excellent thermal resistance and adhesion resistance	General-purpose	Low coefficient of friction and excellent adhesion resistance	Excellent hardness and wear resistance
Main Application	For general steel and stainless steel milling	For general steel and cast iron milling	For aluminum alloy and copper alloy milling	Milling of CFRP
Main Applicable Products	GSX/GSXB/GSXVL Type	UPMILL Type	ASM/SNB/SNB2 Type	SSDC Type

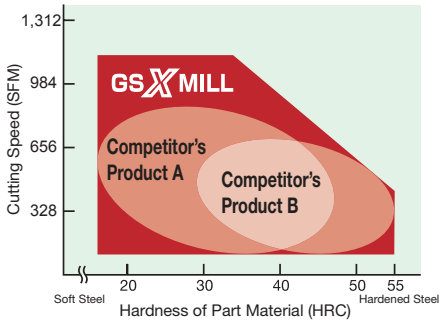
● GSX Coat

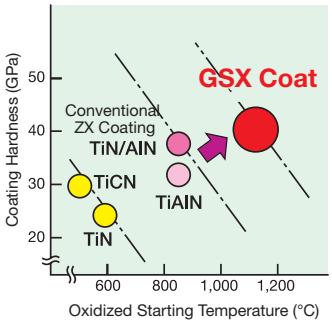
GSX Coat

- Micro-grain carbide substrate provides high transverse rupture strength and excellent thermal shock resistance, improving reliability in wet cutting applications.
- Adopts GSX Coat for better wear resistance and thermal resistance, improving reliability and tool life when machining a wide range of work materials.

[Coating Structure]



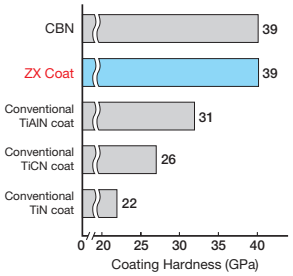


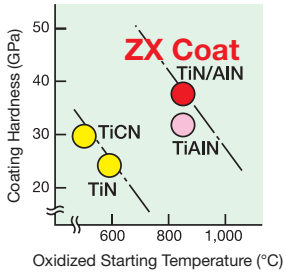


● ZX Coat

ZX Coat

- Hardness almost equivalent to that of CBN
- Improvement in wear resistance, oxidation resistance and peel-off resistance
- Approx. 6 times longer tool life compared with uncoated products





● AURORA Coat

Aurora DLC Coating

- Very smooth AURORA COAT results in low adhesion as well as good surface finish
- Low cutting force enables high feed machining and milling of low rigidity workpieces
- Ideal for machining non-ferrous metal/copper electrodes



AURORA Coat



Competitor's Diamond Coating

● SUMIDIA Coat

SUMIDIA Coat

- Our original polycrystalline diamond coating technology achieves over 10 times higher wear resistance than uncoated carbide.
- Provides a micro-grain diamond film that provides the required combination of high strength and high wear resistance on smooth surfaces for CFRP milling



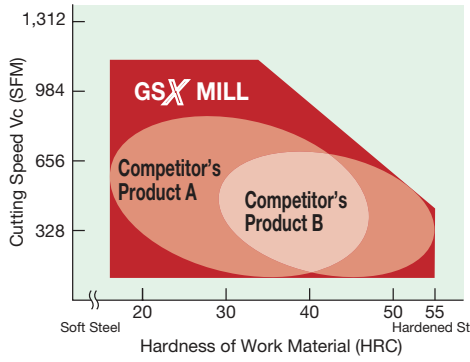
GSX MILL Series



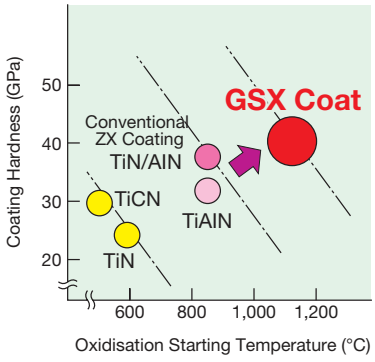
■ Features and Applications

- A wide selection from 3 types of cutting flute configuration and 4 cutting lengths to cover a wide range of applications.
- Micro-grain carbide substrate provides high transverse rupture strength and excellent thermal shock resistance, improving reliability in wet cutting applications
- GSX Coat has increased wear resistance and thermal resistance for improved reliability and longer tool life
- Large rake angle and unique flute design improve sharpness and chip evacuation
- Cutting teeth with gash land improve corner cutting edge strength
- New lineup of radius types and 4D size S types

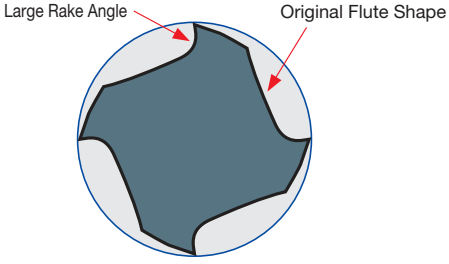
● Wear resistance



● Thermal resistance



● Improved chip evacuation

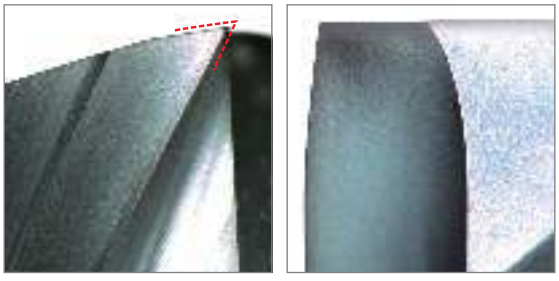


Large rake angle combined with our unique flute design improves sharpness and chip evacuation

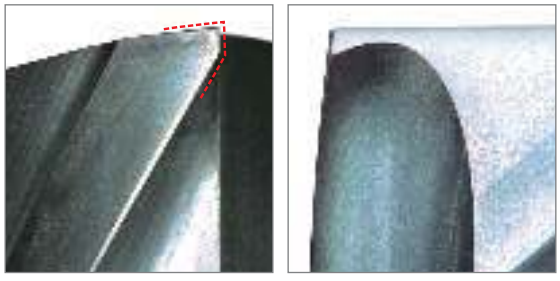
■ 2 cutting edge shapes, expanding machining applications

Sharper edge S type and fracture-resistant C type added to the 2D size series.

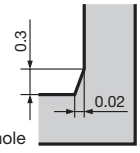
S Type — Sharp Corner: Sharper Edge Design



C Type — Gash Land: Fracture-Resistant Design



Note: When using endmills with gash land, some material remains as shown at right.
If you need sharp corners, use the S type.



Example: Corner on a ø10mm hole (Unit: mm)

■ Part Material

◎: Great, ○: Suitable, Blank: Not recommended

P					H			M	S		K	N			
General Structure Rolled Steel	Carbon Steel	Alloy Steel	Pre-hardened Steel	Die Steel	Hardened Steel 45 to 55HRC	Hardened Steel 55 to 60HRC	Hardened Steel 60HRC	Stainless Steel	Titanium Alloy	Heat-Resistant Alloy	Cast Iron	Aluminum Alloy	Copper Alloy	Graphite	CFRP
○	◎	◎	◎	◎	◎ *1			◎	○	○	○				

*1: GSXSLT30000C is recommended for 50 HRC or less.

■ Recommended Milling Examples

Application	Side Milling		Groove Milling		Groove Finishing	
Form						
	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
S Type		◎		○ *2		◎
C Type	◎	○	◎	◎	◎	○

The S type is best for removing inside corners.

*2: Use with low depth of cut.

■ Product Range

Applications	Number of Teeth	Cutting Edge Length						
		1.5D	2D		3D		4D	
		C Type	S Type	C Type	S Type	C Type	S Type	C Type
General-purpose	2 Flutes	GSX20000C-1.5D ø0.5 to ø25.0mm	GSX20000S-2D ø0.3 to ø25.0mm	GSX20000C-2D ø0.5 to ø25.0mm	GSX20000S-3D ø0.5 to ø25.0mm	GSX20000C-3D ø0.5 to ø25.0mm	GSX20000S-4D ø0.5 to ø25.0mm	GSX20000C-4D ø0.5 to ø25.0mm
	3 Flutes	GSX30000C-1.5D ø1.0 to ø12.0mm		GSX30000C-2D ø1.0 to ø20.0mm				
	4 Flutes	GSX40000C-1.5D ø1.0 to ø25.0mm	GSX40000S-2D ø1.0 to ø25.0mm	GSX40000C-2D ø1.0 to ø25.0mm	GSX40000S-3D ø1.0 to ø25.0mm	GSX40000C-3D ø1.0 to ø25.0mm	GSX40000S-4D ø1.0 to ø25.0mm	GSX40000C-4D ø1.0 to ø25.0mm
Multi-Purpose	3 Flutes	GSXSLT30000C-1.5D ø1.0 to ø12.0mm						
Radius	4 Flutes		GSX40000-R-2D ø3.0 to ø12.0mm					

■ High Precision

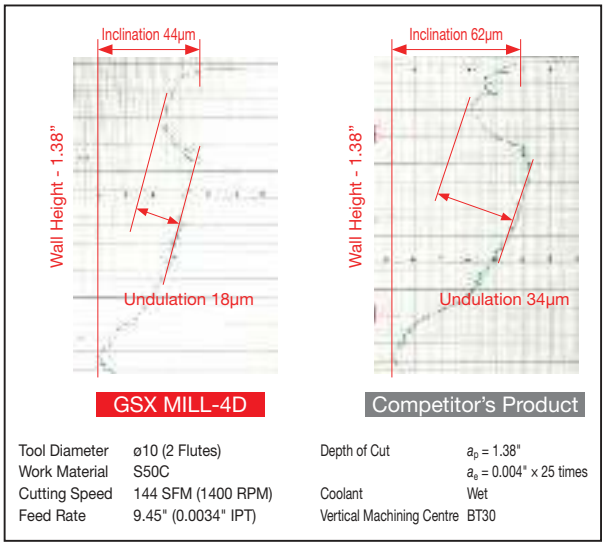
- Diametrical tolerance decreased to 2/3 of the previous type. Also features reduced variation and does not require tool diameter correction when replacing tools.

■ Multi-Purpose

- Optimized flute design of slotted 3 flute (short) type reduces cutting force.
  (1) Allows drilling, slot milling and other continuous (compound) applications
  (2) Perfect for use with thin sheets and small machining centers.



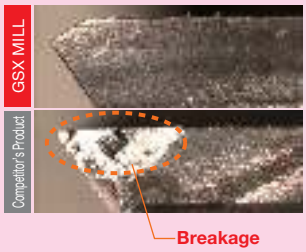
■ Long, High Rigidity Flutes (C Type)



Tool Diameter	ø10 (2 Flutes)	Depth of Cut	a_p = 1.38"
Work Material	S50C		a_e = 0.004" × 25 times
Cutting Speed	144 SFM (1400 RPM)	Coolant	Wet
Feed Rate	9.45" (0.0034" IPT)	Vertical Machining Centre	BT30

■ Application Examples

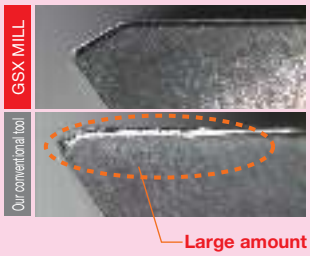
● Carbon Steel Groove Milling with GSX20000C



Gash land for stronger cutting edge.

Tool Diameter	ø6 (2 Flutes)
Part Material	1050 Steel
Cutting Speed	285 SFM (4,615 RPM)
Feed Rate	21.78" IPM (0.0024" IPT)
Depth of Cut	a_p = 0.118"
	a_e = 0.236"
Coolant	Dry
Vertical Machining Centre	BT50

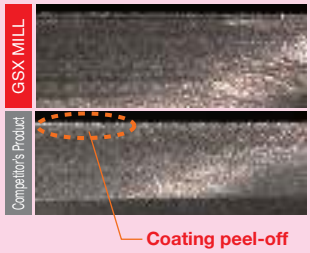
● Cast Iron Groove Milling with GSX20000C



GSX coat for improved wear resistance.

Tool Diameter	ø10 (2 Flutes)
Part Material	Cast Iron - FCD600
Cutting Speed	217 SFM (2,100 RPM)
Feed Rate	11.89" IPM (0.0028" IPT)
Depth of Cut	a_p = 0.197" x 5 times
	a_e = 0.394"
Coolant	Dry
Vertical Machining Centre	BT40

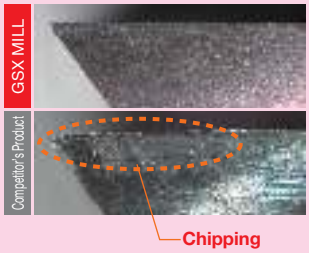
● Stainless Steel Machining with GSX20000C



Improved reliability even under wet machining.

Tool Diameter	ø10 (2 Flutes)
Part Material	304 Stainless
Cutting Speed	164 SFM (1,591 RPM)
Feed Rate	5.00" IPM (0.0016" IPT)
Depth of Cut	a_p = 0.394"
	a_e = 0.0197"
Coolant	Wet
Vertical Machining Centre	BT50

● 1050 Steel Side Milling with GSX20000S



The S type delivers optimum sharpness.

Tool Diameter	ø6 (2 Flutes)
Part Material	1050 Steel
Cutting Speed	285 SFM (4,615 RPM)
Feed Rate	21.8" IPM (0.0024" IPT)
Depth of Cut	a_p = 0.394"
	a_e = 0.012"
Coolant	Dry
Vertical Machining Centre	BT50

GSX MILL Series



■ Recommended Milling Examples

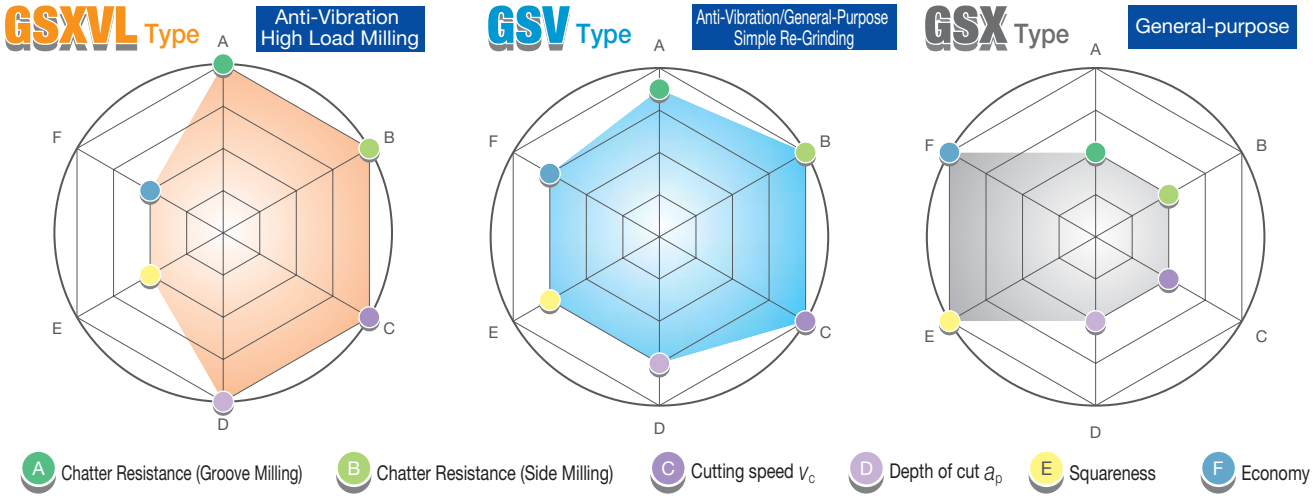
Application	Side Milling		Groove Milling		Groove Finishing	
	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
GSXVL Type	◎	○	◎	◎	◎	○
GSV Type	◎	◎	○	◎	◎	○

■ Diameter

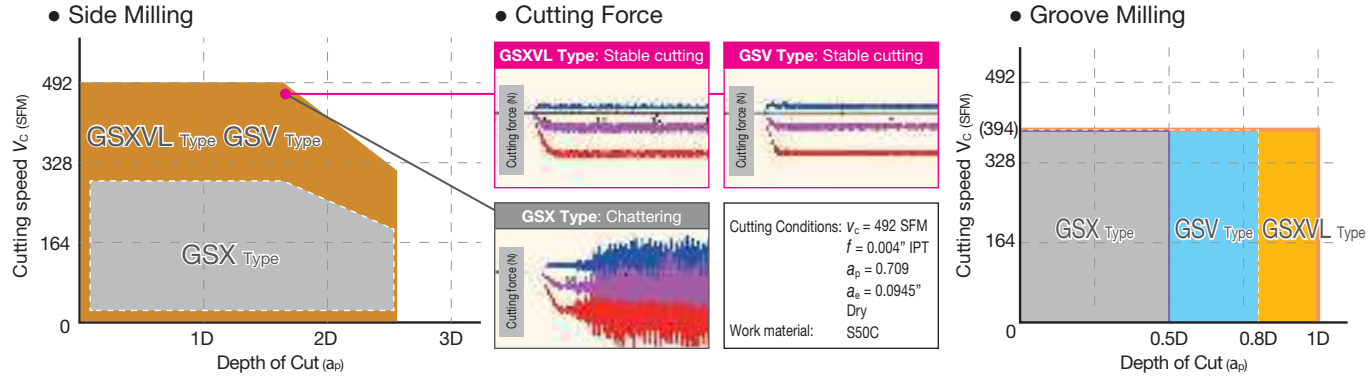


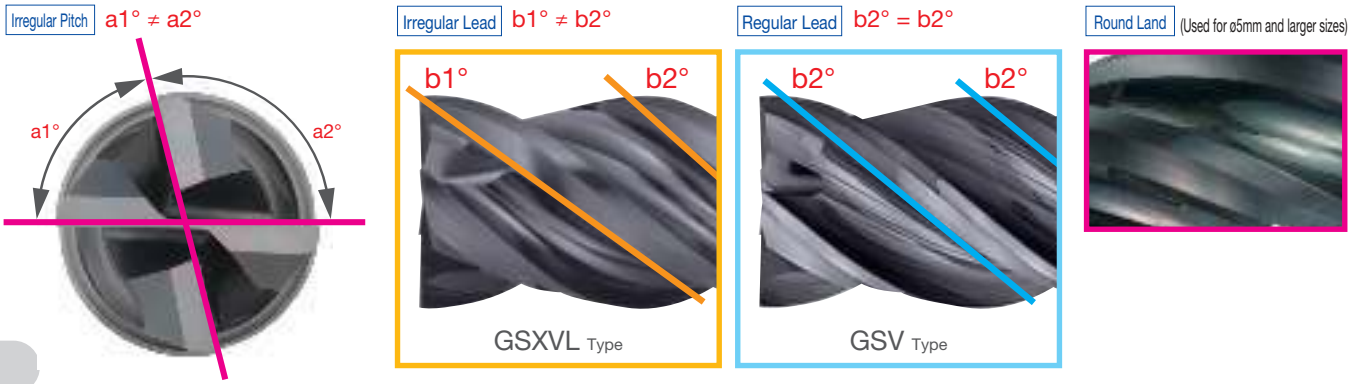
■ Differentiating GSXVL / GSV Type Use

GSXVL types exhibit outstanding performance for high load milling. GSV types are both chatter-resistant and economical.

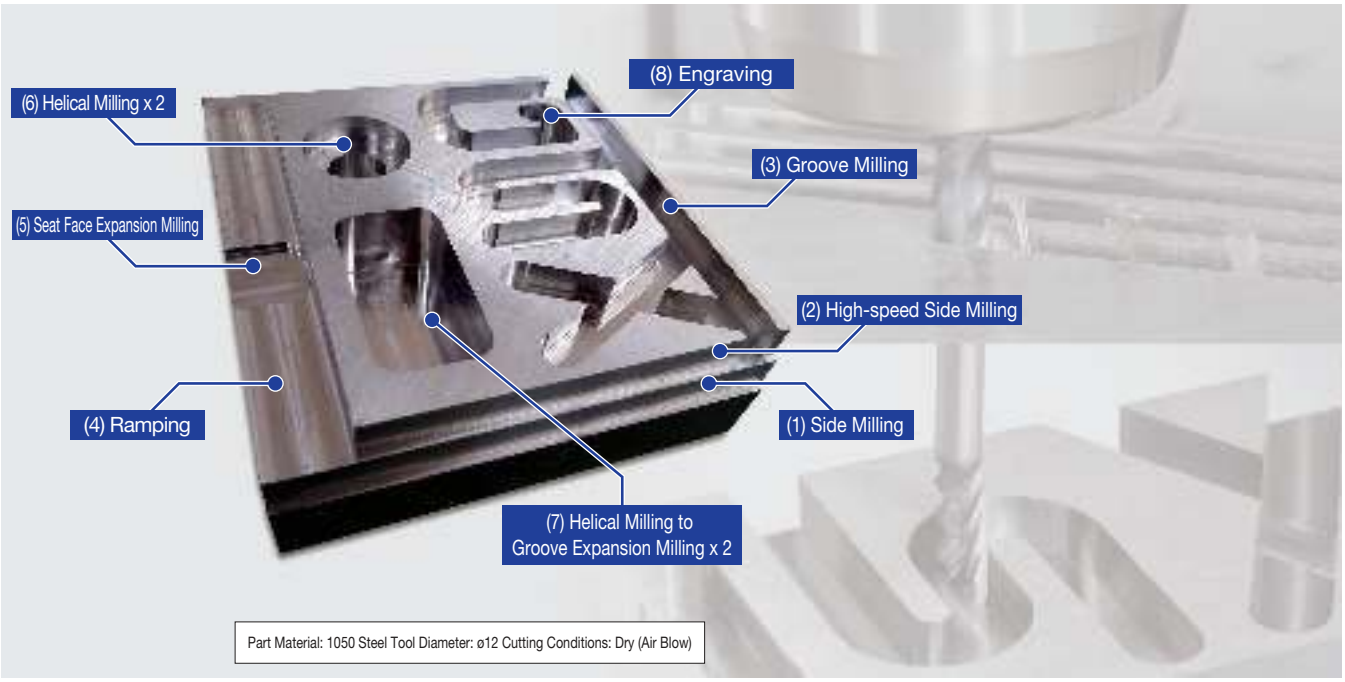


■ Cutting Range



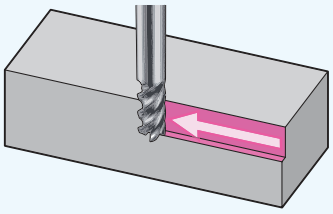


■ Application Examples



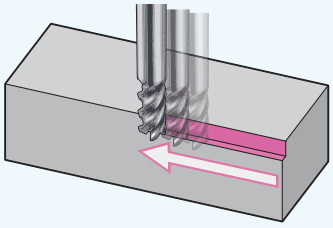
Part Material: 1050 Steel Tool Diameter: ø12 Cutting Conditions: Dry (Air Blow)

(1) Side Milling GSXVL Type ◯ / GSV Type ◎



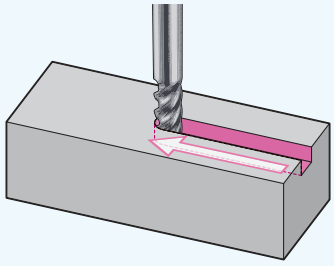
Cutting Conditions: V_c = 335 SFM (n = 4,100 RPM) Tool Diameter: ø8
V_f = 42.52" IPM (0.004" IPT)
a_p = 0.945", a_e = 0.787"

(2) High-speed Side Milling GSXVL Type ◎ / GSV Type ◎



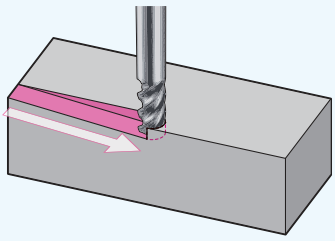
Cutting Conditions: V_c = 945 SFM (n = 4,000 RPM) Tool Diameter: ø12
V_f = 189" IPM (0.012' IPT)
a_p = 0.472" , a_e = 0.787"

(3) Groove Milling GSXVL Type ◎ / GSV Type ◯



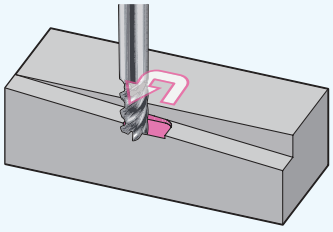
Cutting Conditions: V_c = 295 SFM (n = 2,400 RPM) Tool Diameter: ø12
V_f = 37.80" IPM (0.004" IPT)
a_p = 0.472"

(4) Ramping GSXVL Type ◎ / GSV Type ◯



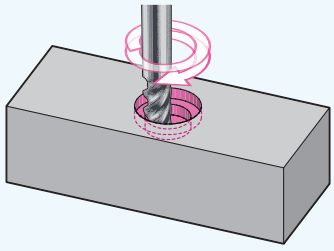
Cutting Conditions: V_c = 295 SFM (n = 2,400 RPM) Tool Diameter: ø12
V_f = 18.90" IPM (0.002" IPT)
Ramp Angle 5°

(5) Seat Face Expansion Milling GSXVL Type ◎ / GSV Type ◎



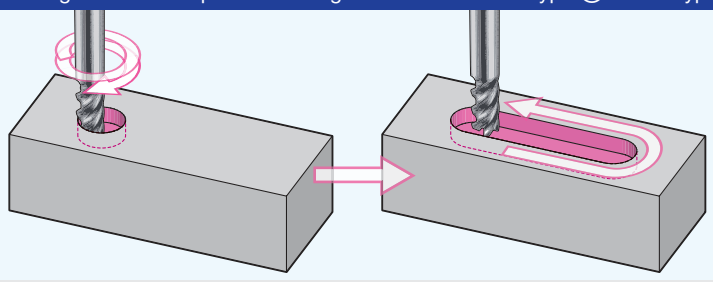
Cutting Conditions: V_c = 295 SFM (n = 2,400 RPM) Tool Diameter: ø12
V_f = 37.80" IPM (0.004" IPT)

(6) Helical Milling x 2 GSXVL Type ◎ / GSV Type ◎



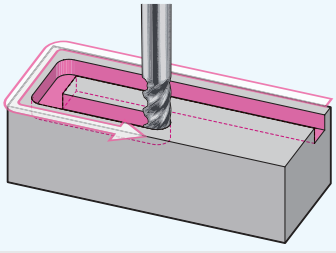
Cutting Conditions: V_c = 295 SFM (n = 2,400 RPM) Tool Diameter: ø12
V_f = 18.90" IPM (0.002" IPT)
Ramp Angle 3°

(7) Helical Milling to Groove Expansion Milling x 2 GSXVL Type ◎ / GSV Type ◎



Cutting Conditions: V_c = 295 SFM (n = 2,400 RPM) Tool Diameter: ø12
[Helical] V_f = 18.90" IPM (0.002" IPT) [Groove Expansion] V_f = 26.46" IPM (0.0028" IPT) [Finishing] V_f = 75.59" IPM (0.0079" IPT)
Ramp Angle 3°
a_p = 0.945", a_e = 0.004"

(8) Engraving GSXVL Type ◎ / GSV Type ◯



Cutting Conditions: V_c = 259 SFM (n = 2,100 RPM[1]) Tool Diameter: ø12
V_f = 23.19" IPM (0.0028" IPT)
a_p = 0.472"



■ Recommended Milling Examples

Application	Radius Milling		Profiling		Pocketing	
	Roughing	Finishing	Roughing	Finishing	Roughing	Finishing
Ballnose Type	◎	◎	◎	◎	◎	◎

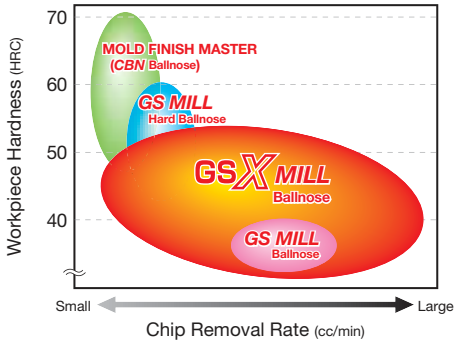
■ Diameter



■ Improved Thermal Resistance and Wear Resistance

New coating combined with an ultra-fine grain carbide substrate for better thermal and wear resistance.

■ Application Range





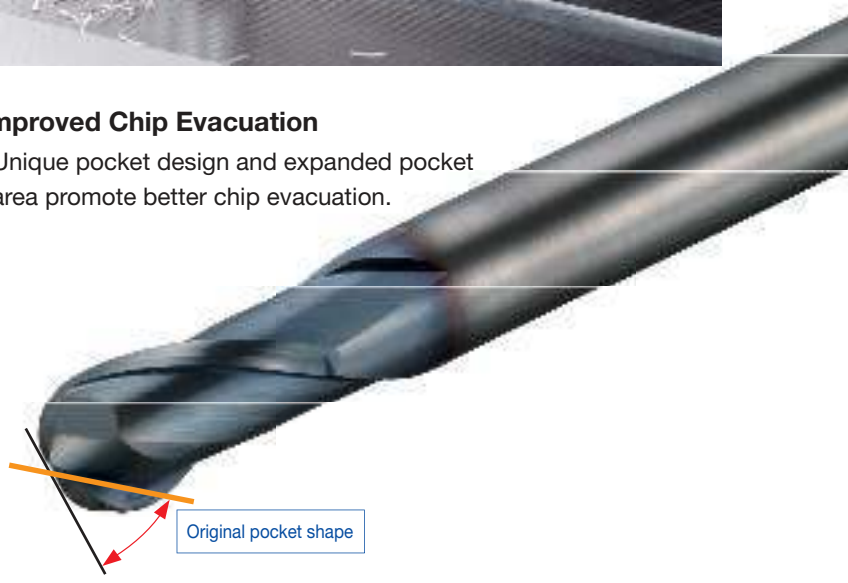
■ Reduced Cutting Force

Large helix angle on curved cutting edge reduces cutting force

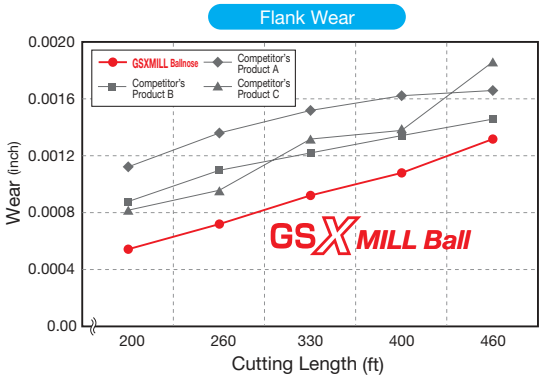


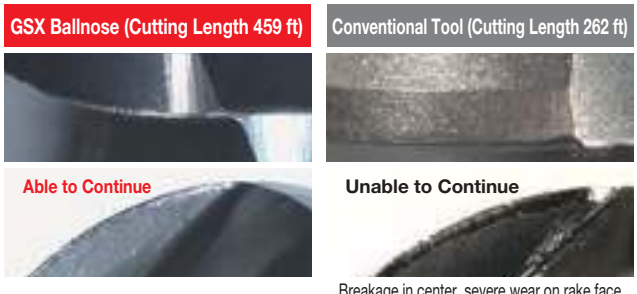
■ Improved Chip Evacuation

Unique pocket design and expanded pocket area promote better chip evacuation.



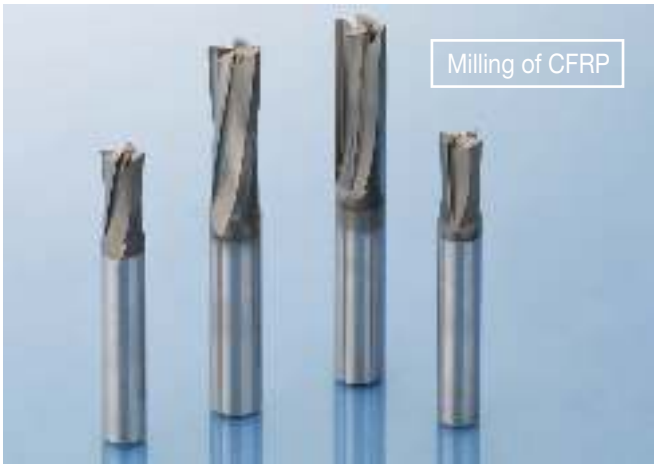
■ Application Examples





Part Material: H13 Tool Steel (50HRC)
Tool Diameter: R3 (2 Flutes)
Cutting Conditions: v_c = 587 SFM (n = 9,500 RPM), v_f = 88.58" IPM (f_z=0.0047" IPT)
a_p = 0.0787"~0.0393", p_f = 0.0118" Wet
Equipment: Vertical Machining Center BT40

SUMIDIA Coated SSDC Type Series



I89

■ Product Range

Cat. No.	Number of teeth	Shape	Diameter (mm)
SSDC 4000	4 Flutes	Right-hand Helix I89	ø6 to ø12
SSDC 4000RL	4 Flutes	Right/Left-hand Helix I89	ø6 to ø12

■ Features and Applications

- Two different types of flute shapes are available.

SSDC Type (Right-hand Helix Type)

Achieving both better sharpness and longer tool life through optimizing the rake and relief angles, along with a small helix angle.



SSDCRL Type (Right/Left-hand Helix Type)

Right-hand helix prevents delamination on top and bottom surfaces.
Cutting force is dispersed even with unstable clamping, improving surface quality.



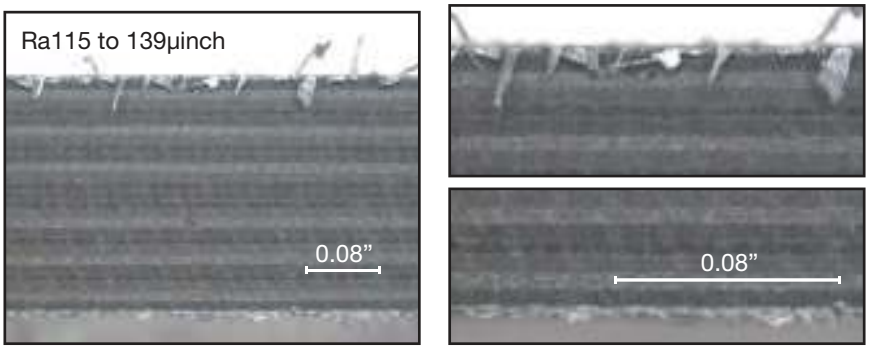
■ Performance

- Surface Finish Comparison

SSDC Type



Competitor’s Product



Work Material:	CFRP
Tool Diameter:	ø10 (4 Flutes)
Cutting Conditions:	v_c = 1,030 SFM
	(n = 10,000 RPM)
	v_f = 39.37”
	(f_z = 0.001” IPT))
	Dry

Results

SSDC Type

High surface quality with no burrs

Competitor’s Product

Burrs are formed. Low surface quality

SSEH Type Series



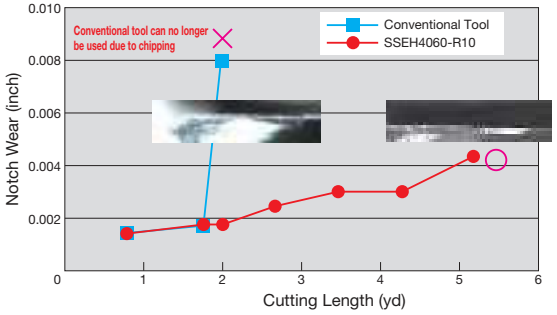
SSEH Type Radius

■ Features and Applications

- Steep helix (45° helix) improves sharpness
- Combination of unique flute design and semi-mirrored rake face improves chip evacuation and adhesion resistance.
- Ultra-smooth coating with improved hardness and thermal resistance combined with tough carbide substrate improves tool life when working with heat-resistant alloys.
- Unique, smooth radius shape mitigates cutting impact and improves fracture resistance.
- Both coated and uncoated types are in stock to meet various conditions.

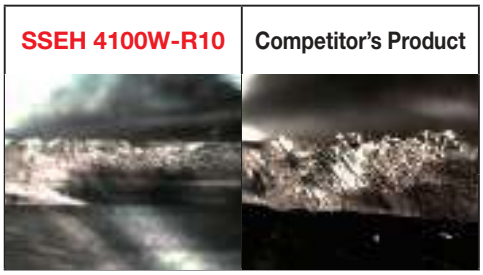
■ Application Examples

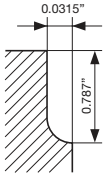
- Inconel 718 (Side Milling)



Tool Diameter: ø6 × R1
Cutting Conditions: v_c = 66 SFM, f_z = 0.001" IPT,
a_p = 0.197", a_e = 0.0197" Wet

- Inconel 713 (Side Milling)





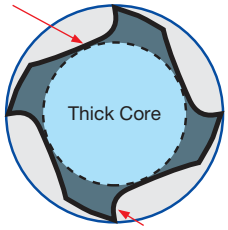
In Sumitomo Electric Hardmetal tests, the special coating with excellent adhesion resistance provided less cutting edge adhesion than the competitor's product and enabled fracture-free machining. The competitor's product suffered from edge adhesion leading to breakage.

Tool Diameter: ø10 × R1 Number of Workpieces: 150pcs/unit
Cutting Conditions: v_c = 105 SFM, f_z = 0.0007" IPT,
a_p = 0.787", a_e = 0.0315" Dry

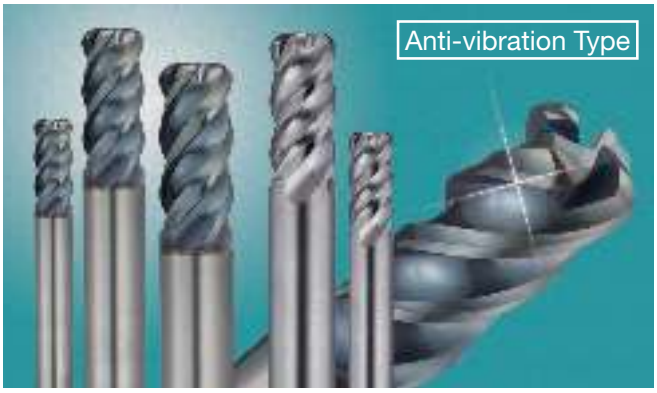
Unique, smooth radius design



Original wide arc flute



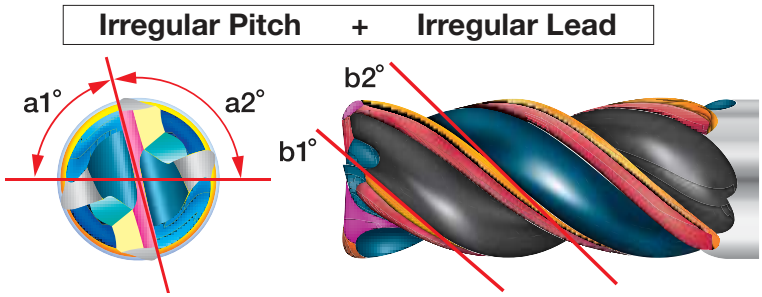
Semi-mirrored Rake Face



SSEH Radius Anti-vibration Type

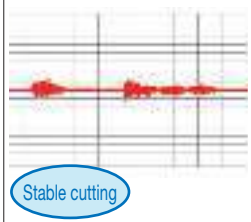
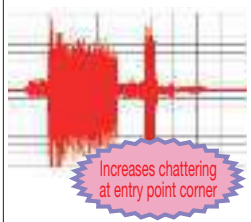
■ Features and Applications

- New anti-vibration type added to the SSEH type endmill for exotic alloys.
- Builds on the same features of existing endmills by adding an irregular lead for exceptional anti-vibration performance.
- Compatible with a wide range of milling for exotic alloys including Stainless Steel, Inconel and titanium.
- Reduces chattering for high-speed, high-feed cutting.
- Both coated and uncoated types are in stock to meet various conditions.



■ Application Examples

- Corner Finishing for Titanium Alloy

	SSEH Radius Anti-Vibration Endmill SSEHVL 4120W-30	No Anti-Vibration Mechanism Endmill ø12 × R3.0
Machined Surface		
Vibration Data		
Tool Breakage		

Cutting Conditions: v_c = 139 SFM (n = 1,125 RPM)
v_f = 7.87" IPM (f_z = 0.0017" IPT)
a_p = 0.197", a_e = 0.472" Wet

AURORA Coat Endmills





■ Features and Applications

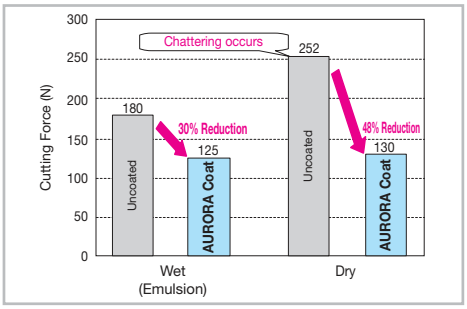
- Very smooth AURORA Coat results in low adhesion as well as a good surface finish
- With lower cutting forces and high rigidity, this series is suitable for low rigidity machines
- Available in 2- and 4-flute square type as well as ballnose type endmills
- Added R0.05 to R2.00mm long neck ballnose endmills for machining copper electrodes

■ Product Range

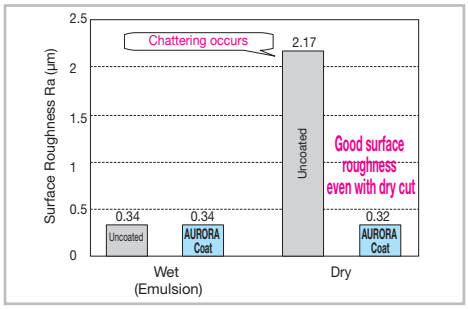
Cat. No.	No. of Teeth	Shape	Diameter (mm)
ASM 2000DL	2 Flutes	Square  I82	ø2 to ø16
ASM 4000DL	4 Flutes	Square  I83	ø2 to ø16
SNB 2000DL	2 Flutes	Ballnose  I115	R1 to R8 (ø2 to ø16)
SNB2	2 Flutes	Long Neck Ballnose  I116	R0.05 to R2 (ø0.1 to ø4)

■ Performance

● Comparison of Cutting Force



● Surface Roughness Comparison



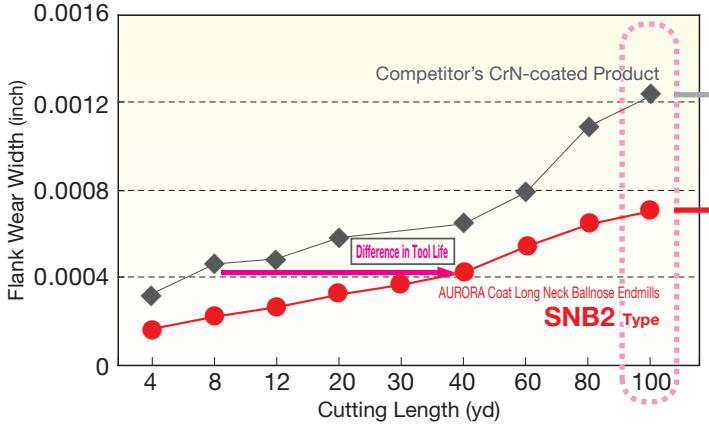
Work Material: A5052
Tool: ASM4100DL
ø10 (4 Flutes)
Cutting Conditions:
v_c = 656 SFM
n = 6,300 RPM
f_z = 0.002" IPT
v_f = 51.2" IPM
a_p = 0.40"
a_e = 0.04"
Down-cut

■ AURORA Coat Long Neck Ballnose Endmill SNB 2 Type

- Achieves longer tool life compared with chromium nitride (CrN)-coated carbide tools
- Products with ballnose radii of 0.05 to 2.00mm
- Reduced coefficient of friction
- Extremely smooth coating structure



● Tool Wear Comparison



Tool	Cutting Length 100m	Cutting Conditions
Competitor's CrN-coated Product	 Large amount of wear	Work Material: Tough-Pitch Copper Tool: R0.3mm Ballnose Endmill Cutting Conditions: v_c = 187 SFM n = 30,000 RPM a_p = 0.0014" a_e = 0.0012" Oil Mist
SNB2 Type		

Excellent adhesion resistance in copper alloy milling with long tool life!



MOLD FINISH MASTER

MOLD FINISH MASTER

SUMIDIA Binderless Endmills

NPDRS Type/NPDBS Type/NPDB Type

SUMIDIA Coated Endmills

SDCB Type

SUMIBORON Endmills

BNBR Type/BNBP Type/BNBC Type

SUMIDIA Binderless Radius Endmills

NPDRS Type

I102

Radius r



For Finishing of Cemented Carbide and Hard Brittle Material

SUMIDIA Binderless Ballnose Endmills

NPDBS Type/NPDB Type

I112, I113

Ball-nose R



For Finishing of Cemented Carbide and Hard Brittle Material

- Adopts nano-polycrystalline diamond for the cutting edge, with higher hardness than single-crystal diamond
- This enables direct engraving of cemented carbide, which is impossible for existing single-crystal or polycrystalline diamonds
- Ideal for finishing hard brittle materials, including cemented carbide. Provides high-precision machining and long tool life
- Standard finish NPDBS type dramatically reduces machining cost
- Precision finish NPDB type is polish-less to prevent shape deformation

SUMIDIA Coat Ballnose Endmills

SDCB Type

I114

Ball-nose R



For Rough/Medium Finishing of Cemented Carbide and Hard Brittle Materials

- Provides high efficiency rough/medium finishing of carbide molds
- Newly developed diamond coating exhibits stable tool life
- PCD - SUMIDIA Binderless Endmill combination provides the highest-level machining precision

CBN - SUMIBORON Radius Endmills

BNBR Type

Radius r



For Hardened Steel

CBN - SUMIBORON Ballnose Endmills

BNBP Type

Ball-nose R



For Hardened Steel

- Achieves longer tool life in high-speed, high-precision machining from pre-hardened steel to high-hardness steel in excess of 60HRC
- Excellent machined surface quality drastically reduces the grinding process
- Cutting edge design suited to profiling and face milling, plus an extensive selection of grades allows a wide range of machining applications

CBN -SUMIBORON Ballnose Endmills

BNBC Type

Ball-nose R



For Copper Electrodes

- Ballnose radii of R0.1mm to R0.5mm are covered by this series
- Adoption of grade with high CBN content provides excellent edge-sharpness performance and wear resistance
- Achieves high quality milling with high precision cutting edge

Radius
SUMIDIA Binderless Radius Endmills
NPDRS Type



Hard Brittle Material

Ball-nose
SUMIDIA Binderless Ballnose Endmills
NPDBS Type/NPDB Type



Hard Brittle Material

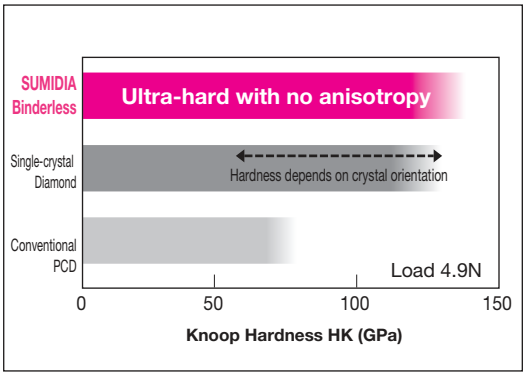
■ General Features

SUMIDIA Binderless is polycrystalline diamond that directly binds nano-order diamond particles with high strength without using any binders. Harder than single-crystal diamond, it has no cleavability, enabling machining of hard brittle material such as cemented carbide and making new machining methods possible.

■ Features

- SUMIDIA Binderless is a pure diamond material, but unlike single-crystal diamonds, it has no anisotropy. It therefore displays excellent wear resistance with less uneven wear.
- Thanks to its polycrystalline structure, SUMIDIA Binderless does not have the cleavability peculiar to single-crystal diamonds and displays excellent fracture resistance.

■ Hardness

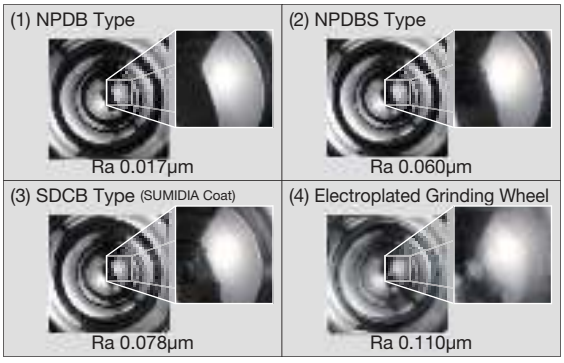


● Pocketing



Part Material:	Cemented Carbide AF1 (Ultra-Fine Grained Carbide)
Machining Details:	0.40" × 0.40" × depth 0.08"
Tool:	NPDRS 1100R005-030
Cutting Conditions:	n = 40,000 RPM, v_f = 7.87" IPM p_f = 0.0002", Oil Mist
Surface Roughness:	Ra 0.015μm
Cutting Time:	2 Hours

● Hemispherical Surface Milling



Part Material:	Cemented Carbide AF1 (Ultra-Fine Grained Carbide)
Machining Details:	ø6 (Hemispherical Surface Milling)
Tool:	(1) NPDB 1050-020 (2) NPDBS 1050-020 (3) SDCB 2R050-020 (4) R0.5, #400
Cutting Conditions:	n = 40,000 RPM, v_f = 4.72" IPM p_f = 0.0002", Oil Mist
Cutting Time:	1 Hour 30 Minutes

● Application to Medical Use (μ-TAS Mold)



Part Material:	Cemented Carbide AF1 (Ultra-Fine Grained Carbide)
Tool:	NPDB 1030-010 (*R*0.3)
Cutting Conditions:	n = 38,000 RPM, v_f = 3.74" IPM p_f = 0.00004", Wet (Oil-based)
Machining Allowance:	0.00012"
Surface Roughness:	Ra 0.016 to 0.020μm
Cutting Distance:	9 yds
Cutting Time:	Finishing 1 Hour 28 Minutes

● Application to Optical Use (Fly-Eye Lens Mold)

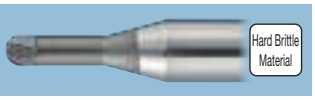


Part Material:	Cemented Carbide AF1 (Ultra-Fine Grained Carbide)
Tool:	Finishing NPDB 1050-020 (*R*0.5) Roughing Diamond Coated Endmill (*R*0.5)
Cutting Conditions:	n = 60,000 RPM, v_f = 11.8" IPM p_f = 0.0002", Oil Mist
Surface Roughness:	Ra 0.015μm
Cutting Time:	Finishing 2 Hour 40 Minutes Roughing 55 Minutes

MOLD FINISH MASTER

Ball-nose R

SUMIDIA Coat Ballnose Endmills SDCB Type



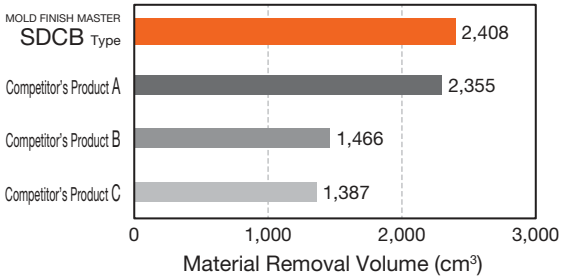
- Produces high efficiency roughing/medium finishing of carbide molds
- Newly developed diamond coating exhibits stable tool life
- SUMIDIA Binderless Endmill combination provides the highest-level machining precision

- ø10mm hemispherical machining

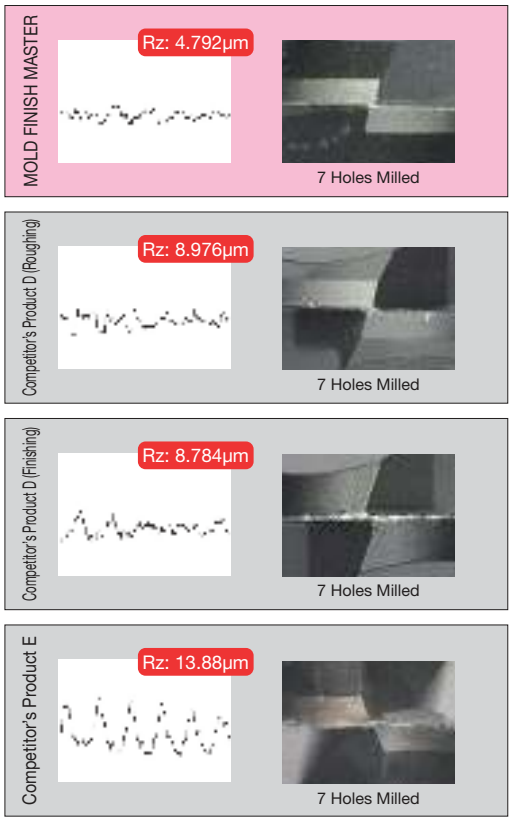


Part Material:	Cemented Carbide AF1 (Ultra-Fine Grained Carbide)
Tool:	SDCB 2R100-060
Cutting Conditions:	n = 30,000 RPM, v_f = 11.8" IPM
	a_e = 0.012", a_p = 0.004", Air Blow

Tool Life



- ø2.0 (R1.0) number of workpieces and tool damage (Delamination)



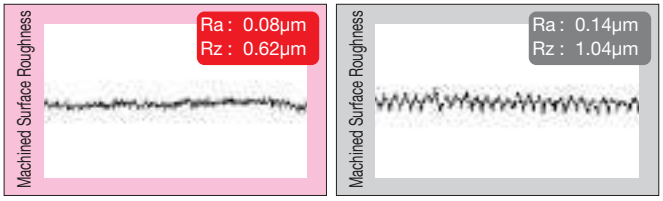
Radius r

SUMIBORON Mold Finish Master BNBR Type



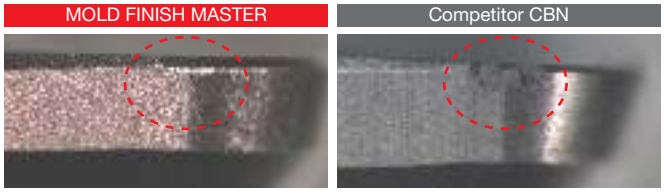
- Improved machined surface quality through use of a wiper edge (available on ø1.0mm drills and larger).

Machined Surface Comparison



With Wiper Edge | Without Wiper Edge

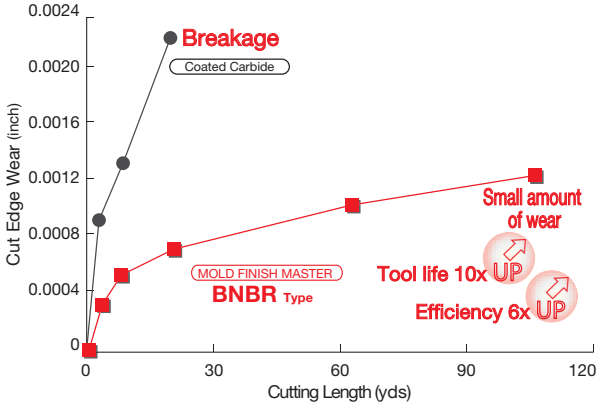
- Combination of CBN SUMIBORON BNX20 with excellent wear resistance and optimal cutting edge design provides longer tool life.



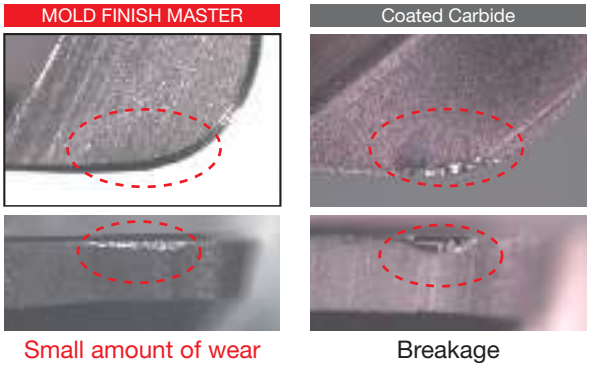
Small amount of wear | Breakage

Part Material:	STAVAX(52HRC)
Tool:	BNBR 2D200R050-0604 (ø2 × r 0.5)
Cutting Conditions:	n = 20,000 RPM, v_f = 15.75" IPM
	a_p = 0.0012", p_f = 0.0276" Oil Mist

- Excellent wear resistance delivers almost 10 times longer tool life than carbide endmills.



Tool Wear Comparison



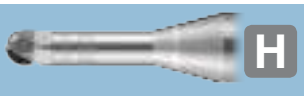
Small amount of wear | Breakage

Work Material: STAVAX(52HRC)
Tool: BNBR 2D200R050-0604 (ø2 × r 0.5)

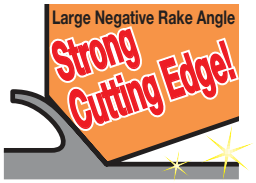
MOLD FINISH MASTER
Cutting Conditions: n = 20,000 RPM, v_f = 31.5" IPM
a_p = 0.0012", p_f = 0.0276" Oil Mist

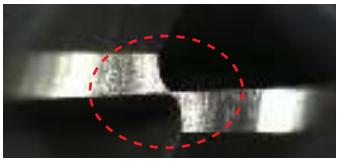
Coated Carbide
Cutting Conditions: n = 4,800 RPM, v_f = 4.72" IPM
a_p = 0.0012", p_f = 0.0276" Oil Mist

SUMIBORON Mold Finish Master BNBP Type



- Achieves high precision machining with precise ball radius of ±0.005mm.
- Combination of SUMIBORON BN350 with excellent fracture resistance and cutting edge designed with negative rake angle provides stable, interrupted cutting.





Central edge stabilizes machined surface quality

- Strong cutting edge enables use in roughing applications

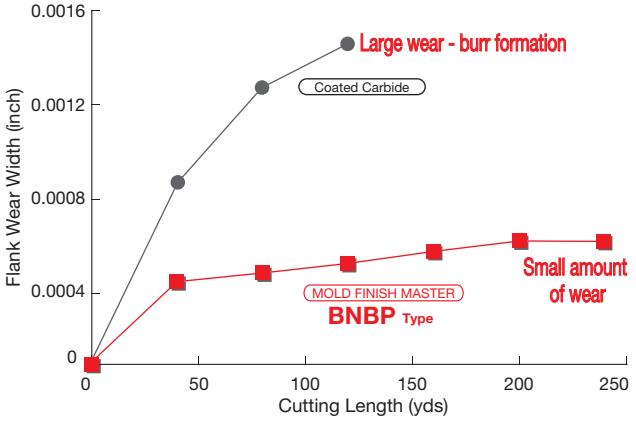
MOLD FINISH MASTER | Coated Carbide



No fracture | Breakage on central edge

Work Material:	STAVAX(52HRC)
Tool:	BNBP 2R100-0554 (*R*1.0)
Cutting Conditions:	n = 25,000 RPM, v_f = 59" IPM
	a_p = 0.004", p_f = 0.008" Oil Mist

- Excellent wear resistance and machined surface quality

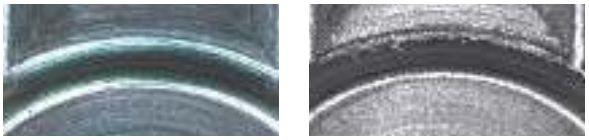


Tool Wear Comparison

MOLD FINISH MASTER (6 passes) | Coated Carbide (2 passes)



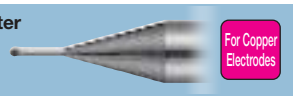
Small amount of wear | Large amount of wear



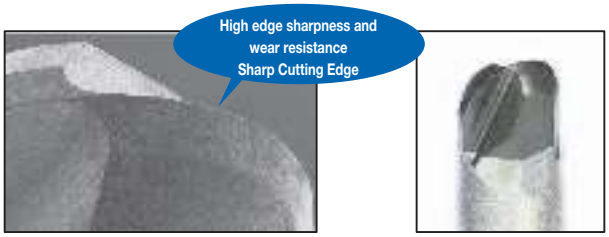
Good machined surface | Burr formation

Work Material:	STAVAX(52HRC)
Tool:	BNBP 2R030-0154 (*R*0.3)
Cutting Conditions:	n = 25,000 RPM, v_f = 59" IPM
	a_p = 0.002", p_f = 0.004" Oil Mist

SUMIBORON Mold Finish Master BNBC Type

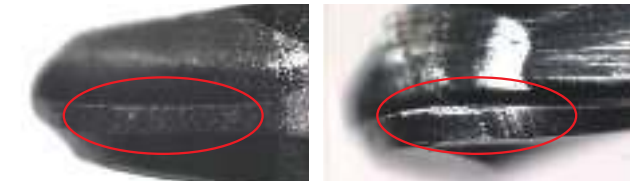


- Ballnose radii of 0.1 to 0.5mm are covered by this series.
- Achieves high quality milling with high precision cutting edge.



- Achieves further improved tool life

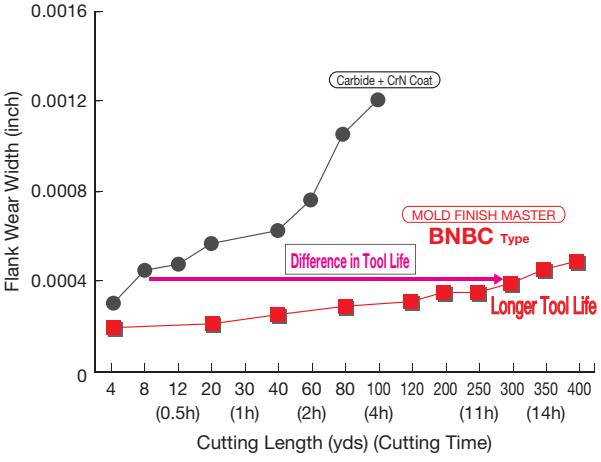
MOLD FINISH MASTER | Competitor's Carbide + CrN-Coated Product



Low Wear (Cutting Length 15.75") | High Wear (Cutting Length 3.94")

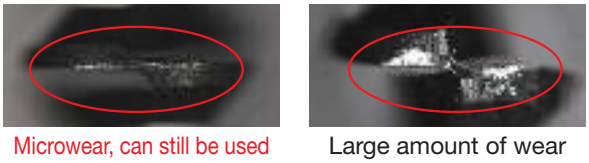
Work Material:	Tough-Pitch Copper (Side Milling)
Tool:	BNBC 2R030-0304 (*R*0.3)
Cutting Conditions:	n = 30,000 RPM, v_f = 27.56" IPM
	a_p = 0.014", a_e = 0.0012" Oil Mist

- Adoption of material with high CBN content provides excellent edge-sharpness performance and wear resistance.

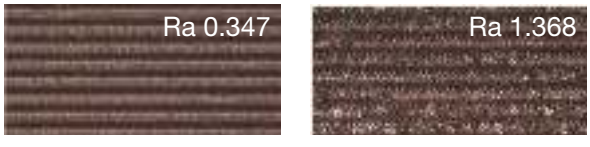


Tool Wear Comparison

MOLD FINISH MASTER | Competitor's Carbide + CrN-Coated Product



Microwear, can still be used | Large amount of wear



Good cutter mark surface on BNBC Type

Work Material:	Tough-Pitch Copper
Tool:	BNBC 2R030-0304 (*R*0.3)
Cutting Conditions:	v_c = 187 SFM, n = 30,000 RPM
	f_z = 0.0003" IPT, v_f = 15.75" IPM
	a_p = 0.0002", a_e = 0.002" Oil Mist

GSXB INCH Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Ballnose R | 30° Helix Angle | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1

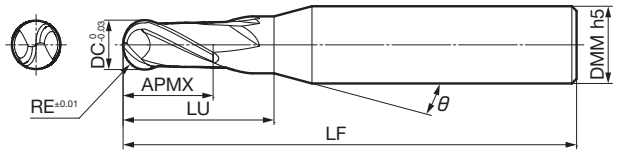
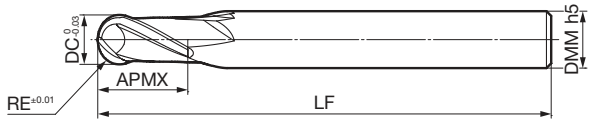


Fig 2



DC	θ
< ø2	10°
ø2 or more	15°

Body

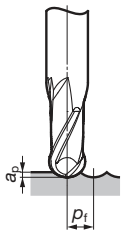
Dimensions (inch)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXB204	•	0.0313	0.0625	0.0938	0.1331	2.000	0.1250	1
GSXB206	•	0.0469	0.0938	0.1406	0.1800	2.500	0.1250	1
GSXB208	•	0.0625	0.1250	0.1875	-	2.500	0.1250	2
GSXB210	•	0.0781	0.1563	0.2344	0.2934	3.000	0.1875	1
GSXB212	•	0.0938	0.1875	0.2813	-	3.000	0.1875	2
GSXB214	•	0.1094	0.2188	0.3282	0.407	3.000	0.2500	1
GSXB216	•	0.1250	0.2500	0.3750	-	3.000	0.2500	2
GSXB218	•	0.1407	0.2813	0.4220	0.501	3.500	0.3125	1
GSXB220	•	0.1563	0.3125	0.4688	-	3.500	0.3125	2
GSXB224	•	0.1875	0.3750	0.5625	-	4.000	0.3750	2
GSXB228	•	0.2188	0.4375	0.6563	-	4.000	0.4375	2
GSXB232	•	0.2500	0.5000	0.7500	-	4.500	0.5000	2
GSXB236	•	0.2813	0.5625	0.8438	-	4.500	0.5625	2
GSXB240	•	0.3125	0.6250	0.9375	-	5.500	0.6250	2
GSXB244	•	0.3438	0.6875	1.0313	-	5.500	0.6875	2
GSXB248	•	0.3750	0.7500	1.1250	-	6.000	0.7500	2
GSXB256	•	0.4375	0.8750	1.3125	-	6.500	0.8750	2
GSXB264	•	0.5000	1.0000	1.5000	-	7.000	1.0000	2

Grade: ACB20

Recommended Cutting Conditions

1. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
2. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Radius Milling

Work Material / Cutting Conditions / RE (inch)		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 50HRC)		Cast Iron Special Cast Iron		Stainless Steel Titanium Alloy	
		Spindle Speed (min -1)	Feed Rate (mm/min)	Spindle Speed (min -1)	Feed Rate (mm/min)	Spindle Speed (min -1)	Feed Rate (mm/min)	Spindle Speed (min -1)	Feed Rate (mm/min)
0.0313		50,000	2,100	35,000	1,150	50,000	2,100	50,000	1,750
0.0469		50,000	2,500	35,000	1,350	50,000	2,500	50,000	2,100
0.0625		50,000	3,000	35,000	1,600	50,000	3,000	50,000	2,500
0.0781		35,000	3,000	24,000	1,650	35,000	3,200	34,000	2,500
0.0938		27,500	3,000	19,000	1,700	35,000	3,900	26,000	2,500
0.1094		22,500	3,000	15,500	1,700	28,000	3,900	21,000	2,500
0.1250		19,000	3,000	13,000	1,700	24,000	3,900	17,500	2,500
0.1407		17,000	3,800	12,000	2,100	20,000	4,100	15,000	2,700
0.1563		15,500	4,300	11,000	2,200	18,000	4,600	12,000	2,500
0.1875		14,000	4,700	10,500	2,500	16,500	5,300	10,500	2,500
0.2188		12,500	4,200	9,000	2,100	14,000	4,500	9,000	2,200
0.2500		11,000	3,500	7,900	1,900	12,500	4,000	7,800	1,900
0.2813		9,000	2,800	6,300	1,500	10,500	3,300	6,300	1,500
0.3125		7,500	2,400	5,200	1,250	8,700	2,800	5,200	1,250
0.3438		6,400	2,100	4,500	1,100	7,400	2,400	4,500	1,100
0.3750		5,600	1,800	3,900	950	6,500	2,100	3,900	950
0.4375		5,000	1,600	3,500	850	5,800	1,900	3,500	850
0.5000		4,500	1,450	3,100	750	5,200	1,700	3,150	750
Standard Depth of Cut	a_p	0.02DC		0.02DC		0.02DC		0.02DC	
	p_f	0.05DC		0.05DC		0.05DC		0.05DC	

GSX 200C-1.5D INCH Type

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

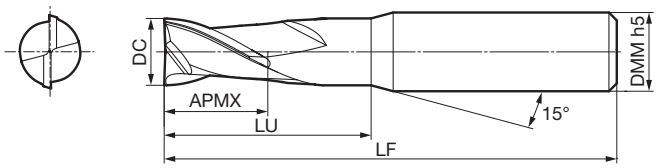
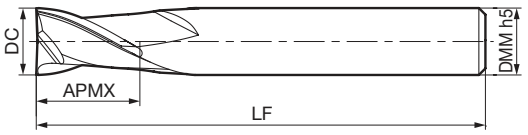


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX204C-1.5D		0.0625	0.0938	0.1331	1.500	0.1250	1
GSX206C-1.5D		0.0938	0.1406	0.1800	1.500	0.1250	1
GSX208C-1.5D		0.1250	0.1875	-	2.000	0.1250	2
GSX210C-1.5D		0.1563	0.2344	0.2934	2.000	0.1875	1
GSX212C-1.5D		0.1875	0.2813	-	2.000	0.1875	2
GSX214C-1.5D		0.2188	0.3282	0.407	2.000	0.2500	1
GSX216C-1.5D		0.2500	0.3750	-	2.000	0.2500	2
GSX218C-1.5D		0.2813	0.4219	0.501	2.500	0.3125	1
GSX220C-1.5D		0.3125	0.4688	-	2.500	0.3125	2
GSX224C-1.5D		0.3750	0.5625	-	3.000	0.3750	2
GSX228C-1.5D		0.4375	0.6563	-	3.000	0.4375	2
GSX232C-1.5D		0.5000	0.7500	-	3.000	0.5000	2
GSX236C-1.5D		0.5625	0.8438	-	3.500	0.5625	2
GSX240C-1.5D		0.6250	0.9375	-	3.500	0.6250	2
GSX244C-1.5D		0.6875	1.0313	-	4.000	0.6875	2
GSX248C-1.5D		0.7500	1.1250	-	4.000	0.7500	2
GSX256C-1.5D		0.8750	1.3125	-	4.000	0.8750	2
GSX264C-1.5D		1.0000	1.5000	-	4.000	1.0000	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

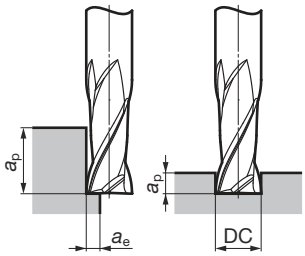
GSX 2 04 C - 1.5D

Series Code | Number of Flutes | Diameter in 64ths (4/64 = 0.0625") | Cutting Edge | Cutting Edge Length

C: Gash Land

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
< 0.039	19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
< 0.078	11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
< 0.156	6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
< 0.236	4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
< 0.315	3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
< 0.393	2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
< 0.472	2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
< 0.630	1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
< 0.787	1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
< 1.000	1,080	300	1,080	300	1,080	300	1,040	220	720	130	520	70	640	80	520	60
Standard Depth of Cut a_p	1.5DC										1.0DC					
Standard Depth of Cut a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
< 0.039	19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
< 0.078	11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
< 0.156	6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
< 0.236	4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
< 0.315	3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
< 0.393	2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
< 0.472	2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
< 0.630	1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
< 0.787	1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
< 1.000	1,080	240	1,080	304	1,080	304	1,040	224	720	128	520	72	640	56	256	24
Standard Depth of Cut a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 200C-2D INCH Type

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

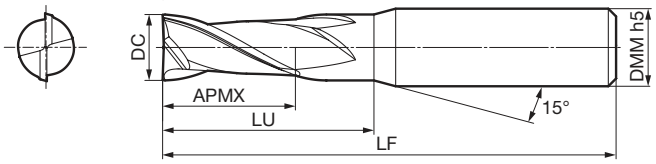
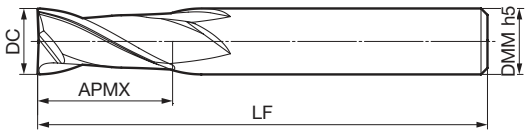


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX204C-2D		0.0625	0.1250	0.1644	1.500	0.1250	1
GSX206C-2D		0.0938	0.1875	0.2269	1.500	0.1250	1
GSX208C-2D		0.1250	0.2500	-	2.000	0.1250	2
GSX210C-2D		0.1563	0.3125	0.3716	2.000	0.1875	1
GSX212C-2D		0.1875	0.3750	-	2.000	0.1875	1
GSX214C-2D		0.2188	0.4376	0.516	2.000	0.2500	1
GSX216C-2D		0.2500	0.5000	-	2.000	0.2500	2
GSX218C-2D		0.2813	0.5626	0.641	2.500	0.3125	1
GSX220C-2D		0.3125	0.6250	-	2.500	0.3125	2
GSX224C-2D		0.3750	0.7500	-	3.000	0.3750	2
GSX228C-2D		0.4375	0.8750	-	3.000	0.4375	2
GSX232C-2D		0.5000	1.0000	-	3.000	0.5000	2
GSX236C-2D		0.5625	1.1250	-	3.500	0.5625	2
GSX240C-2D		0.6250	1.2500	-	3.500	0.6250	2
GSX244C-2D		0.6875	1.3750	-	4.000	0.6875	2
GSX248C-2D		0.7500	1.5000	-	4.000	0.7500	2
GSX256C-2D		0.8750	1.7500	-	4.000	0.8750	2
GSX264C-2D		1.0000	2.0000	-	4.000	1.0000	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

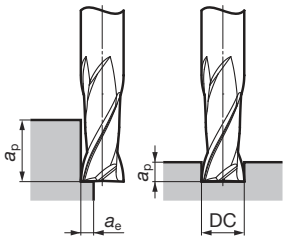
GSX 2 04 C - 2D

Series Code | Number of Flutes | Diameter in 64ths (4/64 = 0.0625") | Cutting Edge | Cutting Edge Length

C: Gash Land

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
< 0.039		19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
< 0.078		11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
< 0.156		6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
< 0.236		4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
< 0.315		3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
< 0.393		2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
< 0.472		2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
< 0.630		1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
< 0.787		1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
< 1.000		1,000	300	1,000	300	1,000	300	1,000	220	700	120	500	70	640	80	500	60
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
< 0.039		19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
< 0.078		11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
< 0.156		6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
< 0.236		4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
< 0.315		3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
< 0.393		2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
< 0.472		2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
< 0.630		1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
< 0.787		1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
< 1.000		1,000	240	1,000	300	1,000	300	1,000	220	700	120	500	70	640	55	250	25
Standard Depth of Cut	a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 200C-3D INCH Type

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing

Fig 1

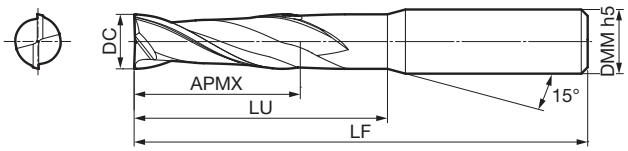
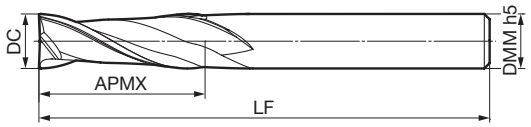


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX204C-3D		0.0625	0.1250	0.1644	1.500	0.1250	1
GSX206C-3D		0.0938	0.1875	0.2269	1.500	0.1250	1
GSX208C-3D		0.1250	0.2500	-	2.000	0.1250	2
GSX210C-3D		0.1563	0.3125	0.3716	2.000	0.1875	1
GSX212C-3D		0.1875	0.3750	-	2.000	0.1875	2
GSX214C-3D		0.2188	0.4376	0.516	2.000	0.2500	1
GSX216C-3D		0.2500	0.5000	-	2.000	0.2500	2
GSX218C-3D		0.2813	0.5626	0.641	2.500	0.3125	1
GSX220C-3D		0.3125	0.6250	-	2.500	0.3125	2
GSX224C-3D		0.3750	0.7500	-	3.000	0.3750	2
GSX228C-3D		0.4375	0.8750	-	3.000	0.4375	2
GSX232C-3D		0.5000	1.0000	-	3.000	0.5000	2
GSX236C-3D		0.5625	1.1250	-	3.500	0.5625	2
GSX240C-3D		0.6250	1.2500	-	3.500	0.6250	2
GSX244C-3D		0.6875	1.3750	-	4.000	0.6875	2
GSX248C-3D		0.7500	1.5000	-	4.000	0.7500	2
GSX256C-3D		0.8750	1.7500	-	4.000	0.8750	2
GSX264C-3D		1.0000	2.0000	-	4.000	1.0000	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

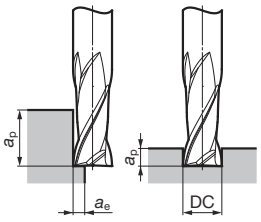
GSX 2 04 C - 3D

Series Code | Number of Flutes | Diameter in 64ths (4/64 = 0.0625") | Cutting Edge | Cutting Edge Length

C: Gash Land

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
< 0.039		16,600	190	16,600	190	16,600	190	15,500	140	10,500	70	7,500	45	9,400	50	7,500	35
< 0.078		9,500	250	9,500	250	9,500	250	9,000	200	6,200	120	4,500	60	5,200	70	4,500	50
< 0.156		5,200	330	5,200	330	5,200	330	4,800	200	3,400	150	2,250	75	2,600	90	2,250	65
< 0.236		3,500	360	3,500	360	3,500	360	3,200	250	2,550	170	1,500	90	1,700	100	1,500	80
< 0.315		2,600	320	2,600	320	2,600	320	2,400	240	1,900	170	1,100	90	1,300	100	1,100	80
< 0.393		2,100	300	2,100	300	2,100	300	1,900	230	1,500	170	900	90	1,000	100	900	80
< 0.472		1,750	280	1,750	280	1,750	280	1,600	230	1,250	170	750	90	850	100	750	80
< 0.630		1,300	240	1,300	240	1,300	240	1,200	200	950	150	550	75	650	85	550	65
< 0.787		1,050	220	1,050	220	1,050	220	950	180	750	140	450	70	500	75	450	60
< 1.000		840	180	840	180	840	180	760	140	600	110	360	55	400	60	360	45
Standard Depth of Cut	a_p	2.5DC								2.0DC							
	a_e	Below ø3: 0.05DC, Above ø3: 0.1DC								0.02DC							

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
< 0.039		16,600	70	16,600	80	16,600	80	15,500	50	10,500	50	7,500	35	9,400	30	3,750	10
< 0.078		9,500	80	9,500	100	9,500	100	9,000	90	6,200	60	4,500	45	5,200	40	2,250	15
< 0.156		5,200	120	5,200	150	5,200	150	4,800	120	3,400	80	2,200	50	2,600	50	1,250	20
< 0.236		3,500	140	3,500	170	3,500	170	3,200	130	2,550	100	1,500	50	1,700	60	950	25
< 0.315		2,600	140	2,600	160	2,600	160	2,400	130	1,900	100	1,100	50	1,300	60	700	25
< 0.393		2,100	130	2,100	150	2,100	150	1,900	120	1,500	90	900	50	1,000	60	550	25
< 0.472		1,750	130	1,750	150	1,750	150	1,600	120	1,250	90	750	50	850	60	450	25
< 0.630		1,300	110	1,300	130	1,300	130	1,200	110	950	80	550	45	650	50	350	20
< 0.787		1,050	100	1,050	120	1,050	120	950	100	750	70	450	40	500	40	280	15
< 1.000		840	80	840	96	840	96	760	80	600	56	360	32	400	32	224	12
Standard Depth of Cut	a_p	0.1DC		0.2DC								0.05DC		0.1DC			

GSX 200C-4D INCH Type

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing | Face Milling | Spot Facing

Fig 1

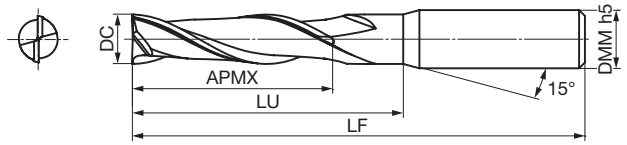
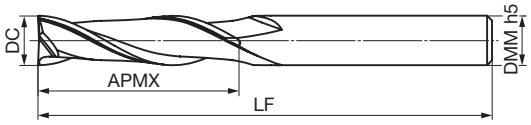


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX204C-4D		0.0625	0.2500	0.2894	1.500	0.1250	1
GSX206C-4D		0.0938	0.3750	0.4144	2.000	0.1250	1
GSX208C-4D		0.1250	0.5000	-	2.000	0.1250	2
GSX210C-4D		0.1563	0.6250	0.6841	2.000	0.1875	1
GSX212C-4D		0.1875	0.7500	-	2.500	0.1875	2
GSX214C-4D		0.2188	0.8752	0.954	2.500	0.2500	1
GSX216C-4D		0.2500	1.0000	-	2.500	0.2500	2
GSX218C-4D		0.2813	1.1252	1.204	3.000	0.3125	1
GSX220C-4D		0.3125	1.2500	-	3.000	0.3125	2
GSX224C-4D		0.3750	1.5000	-	3.500	0.3750	2
GSX228C-4D		0.4375	1.7500	-	4.000	0.4375	2
GSX232C-4D		0.5000	2.0000	-	4.000	0.5000	2
GSX236C-4D		0.5625	2.2500	-	5.000	0.5625	2
GSX240C-4D		0.6250	2.5000	-	5.000	0.6250	2
GSX244C-4D		0.6875	2.7500	-	5.000	0.6875	2
GSX248C-4D		0.7500	3.0000	-	5.500	0.7500	2
GSX256C-4D		0.8750	3.5000	-	5.500	0.8750	2
GSX264C-4D		1.0000	4.0000	-	6.000	1.0000	2

Grade: ACF20

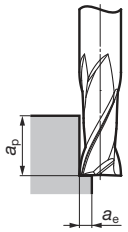
Endmill Identification (GSXMILL Series Only)

GSX 2 04 C - 4D

- GSX: Series Code
- 2: Number of Flutes
- 04: Diameter in 64ths (4/64 = 0.0625")
- C: Gash Land
- 4D: Cutting Edge Length

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for groove milling.
7. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039		9,000	130	9,000	130	9,000	130	7,000	95	6,500	50	4,500	30	5,400	40	4,500	25
< 0.078		4,500	180	4,500	180	4,500	180	3,500	120	3,200	70	2,300	40	2,700	50	2,300	35
< 0.156		2,250	240	2,250	240	2,250	240	1,750	160	1,600	95	1,200	60	1,350	65	1,200	40
< 0.236		1,500	300	1,500	300	1,500	300	1,150	170	1,050	110	800	70	900	70	800	50
< 0.315		1,100	260	1,100	260	1,100	260	850	170	800	110	600	70	660	70	600	50
< 0.393		900	250	900	250	900	250	700	160	650	110	460	70	540	70	460	50
< 0.472		750	240	750	240	750	240	580	160	520	110	400	70	450	70	400	50
< 0.630		550	200	550	200	550	200	440	140	400	95	300	55	330	60	300	45
< 0.787		450	180	450	180	450	180	350	120	320	85	240	45	270	50	240	40
< 1.000		360	140	360	140	360	140	280	95	250	65	190	35	210	40	192	30
Standard Depth of Cut	a_p	3.5DC										3.0DC					
	a_e	0.08DC						0.04DC									

GSX 200S-2D INCH Type

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

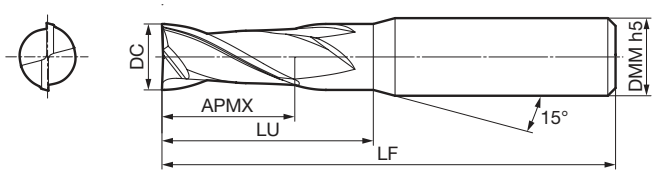
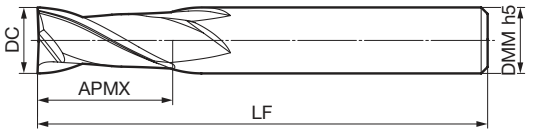


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX204S-2D		0.0625	0.1250	0.1644	1.500	0.1250	1
GSX206S-2D		0.0938	0.1875	0.2269	1.500	0.1250	1
GSX208S-2D		0.1250	0.2500	-	2.000	0.1250	2
GSX210S-2D		0.1563	0.3125	0.3716	2.000	0.1875	1
GSX212S-2D		0.1875	0.3750	-	2.000	0.1875	2
GSX214S-2D		0.2188	0.4376	0.516	2.000	0.2500	1
GSX216S-2D		0.2500	0.5000	-	2.000	0.2500	2
GSX218S-2D		0.2813	0.5626	0.641	2.500	0.3125	1
GSX220S-2D		0.3125	0.6250	-	2.500	0.3125	2
GSX224S-2D		0.3750	0.7500	-	3.000	0.3750	2
GSX228S-2D		0.4375	0.8750	-	3.000	0.4375	2
GSX232S-2D		0.5000	1.0000	-	3.000	0.5000	2
GSX236S-2D		0.5625	1.1250	-	3.500	0.5625	2
GSX240S-2D		0.6250	1.2500	-	3.500	0.6250	2
GSX244S-2D		0.6875	1.3750	-	4.000	0.6875	2
GSX248S-2D		0.7500	1.5000	-	4.000	0.7500	2
GSX256S-2D		0.8750	1.7500	-	4.000	0.8750	2
GSX264S-2D		1.0000	2.0000	-	4.000	1.0000	2

Grade: ACF20

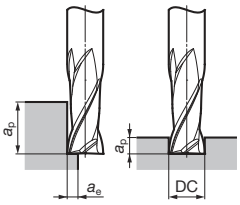
Endmill Identification (GSXMILL Series Only)

GSX 2 04 S - 2D

Series Code | Number of Flutes | Diameter in 64ths (4/64 = 0.0625") | Cutting Edge: S: Sharp Edge | Cutting Edge Length

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039	16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35
< 0.078	9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50
< 0.156	5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65
< 0.236	4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80
< 0.315	3,000	400	3,000	400	3,000	400	2,800	300	1,900	150	1,400	100	1,700	110	1,400	80
< 0.393	2,400	400	2,400	400	2,400	400	2,200	300	1,500	150	1,100	100	1,300	110	1,100	80
< 0.472	2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80
< 0.630	1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60
< 0.787	1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55
< 1.000	960	220	960	220	960	220	880	170	600	85	440	50	520	60	440	45
Standard Depth of Cut a_p	2.0DC															
Standard Depth of Cut a_e	0.02DC										0.01DC					

Groove Finishing

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039	16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35
< 0.078	9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50
< 0.156	5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65
< 0.236	4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80
< 0.315	3,000	400	3,000	400	3,000	400	2,800	300	1,900	150	1,400	100	1,700	110	1,400	80
< 0.393	2,400	400	2,400	400	2,400	400	2,200	300	1,500	150	1,100	100	1,300	110	1,100	80
< 0.472	2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80
< 0.630	1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60
< 0.787	1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55
< 1.000	960	220	960	220	960	220	880	170	600	85	440	50	520	60	440	45
Standard Depth of Cut a_p	1.5DC															
Standard Depth of Cut a_e	Below 0.02DC															

GSX 200S-3D INCH Type

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

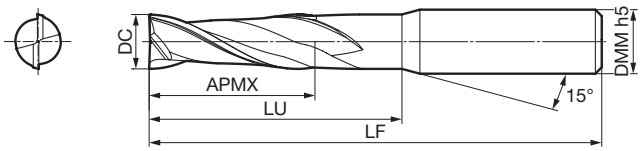
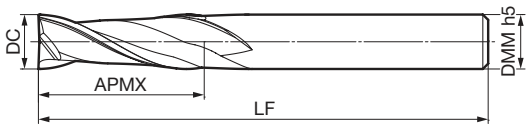


Fig 2



DC	Tolerance
D≤3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX204S-3D		0.0625	0.1875	0.2269	1.500	0.1250	1
GSX206S-3D		0.0938	0.2813	0.3206	1.500	0.1250	1
GSX208S-3D		0.1250	0.3750	-	2.000	0.1250	2
GSX210S-3D		0.1563	0.4688	0.5278	2.000	0.1875	1
GSX212S-3D		0.1875	0.5625	-	2.000	0.1875	2
GSX214S-3D		0.2188	0.6564	0.735	2.000	0.2500	1
GSX216S-3D		0.2500	0.7500	-	2.000	0.2500	2
GSX218S-3D		0.2813	0.8439	0.923	3.000	0.3125	1
GSX220S-3D		0.3125	0.9375	-	3.000	0.3125	2
GSX224S-3D		0.3750	1.1250	-	3.500	0.3750	2
GSX228S-3D		0.4375	1.3125	-	3.500	0.4375	2
GSX232S-3D		0.5000	1.5000	-	3.500	0.5000	2
GSX236S-3D		0.5625	1.6875	-	4.500	0.5625	2
GSX240S-3D		0.6250	1.8750	-	4.500	0.6250	2
GSX244S-3D		0.6875	2.0625	-	4.500	0.6875	2
GSX248S-3D		0.7500	2.2500	-	5.000	0.7500	2
GSX256S-3D		0.8750	2.6250	-	5.000	0.8750	2
GSX264S-3D		1.0000	3.0000	-	5.500	1.0000	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

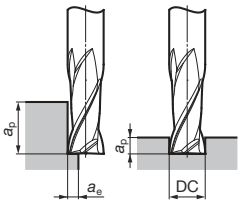
GSX 2 04 S - 3D

Series Code | Number of Flutes | Diameter in 64ths (4/64 = 0.0625") | Cutting Edge | Cutting Edge Length

S: Sharp Edge

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039		14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
< 0.078		8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
< 0.156		4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
< 0.236		2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60
< 0.315		2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
< 0.393		1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
< 0.472		1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
< 0.630		1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
< 0.787		850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
< 1.000		680	130	680	130	680	130	640	100	480	80	280	40	320	45	280	35
Standard Depth of Cut	a_p	2.5DC								2.0DC							
	a_e	Below ø3: 0.02DC, Above ø3: 0.05DC								0.01DC							

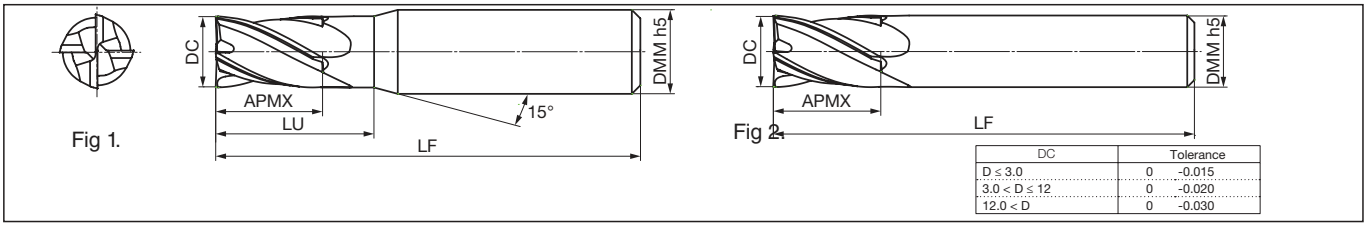
Groove Finishing

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039		14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
< 0.078		8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
< 0.156		4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
< 0.236		2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60
< 0.315		2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
< 0.393		1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
< 0.472		1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
< 0.630		1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
< 0.787		850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
< 1.000		680	130	680	130	680	130	640	100	480	80	280	40	320	45	280	35
Standard Depth of Cut	a_p	1.5DC															
	a_e	Below 0.02DC															

GSX 400C-1.5D INCH Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX404C-1.5D		0.0625	0.0938	0.1331	1.500	0.1250	1
GSX406C-1.5D		0.0938	0.1406	0.1800	1.500	0.1250	1
GSX408C-1.5D		0.1250	0.1875	-	2.000	0.1250	2
GSX410C-1.5D		0.1563	0.2344	0.2934	2.000	0.1875	1
GSX412C-1.5D		0.1875	0.2813	-	2.000	0.1875	2
GSX414C-1.5D		0.2188	0.3282	0.407	2.000	0.2500	1
GSX416C-1.5D		0.2500	0.3750	-	2.000	0.2500	2
GSX418C-1.5D		0.2813	0.4220	0.501	2.500	0.3125	1
GSX420C-1.5D		0.3125	0.4688	-	2.500	0.3125	2
GSX424C-1.5D		0.3750	0.5625	-	3.000	0.3750	2
GSX428C-1.5D		0.4375	0.6563	-	3.000	0.4375	2
GSX432C-1.5D		0.5000	0.7500	-	3.000	0.5000	2
GSX436C-1.5D		0.5625	0.8438	-	3.500	0.5625	2
GSX440C-1.5D		0.6250	0.9375	-	3.500	0.6250	2
GSX444C-1.5D		0.6875	1.0313	-	4.000	0.6875	2
GSX448C-1.5D		0.7500	1.1250	-	4.000	0.7500	2
GSX456C-1.5D		0.8750	1.3125	-	4.000	0.8750	2
GSX464C-1.5D		1.0000	1.5000	-	4.000	1.0000	2

Grade: ACF20

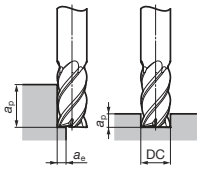
Endmill Identification (GSXMILL Series Only)

GSX 4 04 C - 1.5D

- GSX: Series Code
- 4: Number of Flutes
- 04: Diameter in 64ths (4/64 = 0.0625")
- C: Cutting Edge, C: Gash Land
- 1.5D: Cutting Edge Length

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039	24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
< 0.078	12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
< 0.156	6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
< 0.236	4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
< 0.315	3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
< 0.393	2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
< 0.472	2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
< 0.630	1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
< 0.787	1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
< 1.000	1,050	470	1,050	470	1,050	470	1,050	300	720	210	520	120	640	130	520	80
Standard Depth of Cut a_p	1.5DC										1.0DC					
Standard Depth of Cut a_e	0.05DC										0.02DC					

Side Milling (High Speed Machining Centre)

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039	60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300		
< 0.078	47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400		
< 0.156	23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490		
< 0.236	16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520		
< 0.315	12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520		
< 0.393	9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520		
< 0.472	8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520		
< 0.630	6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450		
< 0.787	4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380		
< 1.000	3,800	1,500	3,800	1,500	3,800	1,500	3,800	1,150	3,200	850	2,600	600	1,300	300		
Standard Depth of Cut a_p	1.5DC										1.0DC					
Standard Depth of Cut a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039	24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
< 0.078	12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
< 0.156	6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
< 0.236	4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
< 0.315	3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
< 0.393	2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
< 0.472	2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
< 0.630	1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
< 0.787	1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
< 1.000	1,080	384	1,080	480	1,080	480	1,040	304	720	208	520	120	640	88	256	40
Standard Depth of Cut a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 400C-2D INCH Type

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping

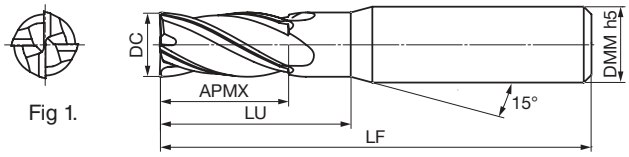


Fig 1.

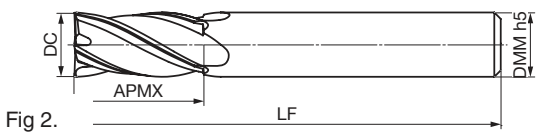


Fig 2.

DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX404C-2D		0.0625	0.1250	0.1644	1.500	0.1250	1
GSX406C-2D		0.0938	0.1875	0.2269	1.500	0.1250	1
GSX408C-2D		0.1250	0.2500	-	2.000	0.1250	2
GSX410C-2D		0.1563	0.3125	0.3716	2.000	0.1875	1
GSX412C-2D		0.1875	0.3750	-	2.000	0.1875	2
GSX414C-2D		0.2188	0.4376	0.516	2.000	0.2500	1
GSX416C-2D		0.2500	0.5000	-	2.000	0.2500	2
GSX418C-2D		0.2813	0.5626	0.641	2.500	0.3125	1
GSX420C-2D		0.3125	0.6250	-	2.500	0.3125	2
GSX424C-2D		0.3750	0.7500	-	3.000	0.3750	2
GSX428C-2D		0.4375	0.8750	-	3.000	0.4375	2
GSX432C-2D		0.5000	1.0000	-	3.000	0.5000	2
GSX436C-2D		0.5625	1.1250	-	3.500	0.5625	2
GSX440C-2D		0.6250	1.2500	-	3.500	0.6250	2
GSX444C-2D		0.6875	1.3750	-	4.000	0.6875	2
GSX448C-2D		0.7500	1.5000	-	4.000	0.7500	2
GSX456C-2D		0.8750	1.7500	-	4.000	0.8750	2
GSX464C-2D		1.0000	2.0000	-	4.000	1.0000	2

Grade: ACF20

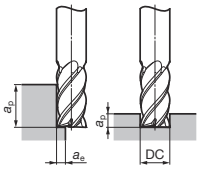
Endmill Identification (GSXMILL Series Only)

GSX 4 04 C - 2D

- GSX: Series Code
- 4: Number of Flutes
- 04: Diameter in 64ths (4/64 = 0.0625")
- C: Cutting Edge (C: Gash Land)
- 2D: Cutting Edge Length

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039	24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
< 0.078	12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
< 0.156	6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
< 0.236	4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
< 0.315	3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
< 0.393	2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
< 0.472	2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
< 0.630	1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
< 0.787	1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
< 1.000	1,000	480	1,000	480	1,000	480	1,000	300	700	200	500	120	640	120	500	80
Standard Depth of Cut a_p	1.5DC										1.0DC					
a_e	0.05DC										0.02DC					

Side Milling (High Speed Machining Centre)

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039	60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300	-	-
< 0.078	47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400	-	-
< 0.156	23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490	-	-
< 0.236	16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520	-	-
< 0.315	12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520	-	-
< 0.393	9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520	-	-
< 0.472	8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520	-	-
< 0.630	6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450	-	-
< 0.787	4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380	-	-
< 1.000	3,800	1,500	3,800	1,500	3,800	1,500	3,800	1,100	3,200	900	2,500	600	1,300	300	-	-
Standard Depth of Cut a_p	1.5DC										1.0DC					
a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039	24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
< 0.078	12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
< 0.156	6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
< 0.236	4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
< 0.315	3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
< 0.393	2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
< 0.472	2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
< 0.630	1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
< 0.787	1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
< 1.000	1,000	380	1,000	450	1,000	450	1,000	300	700	200	500	120	640	80	250	40
Standard Depth of Cut a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 400C-3D INCH Type

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling

Fig 1

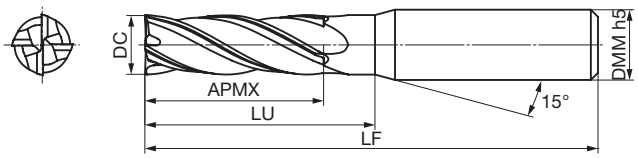
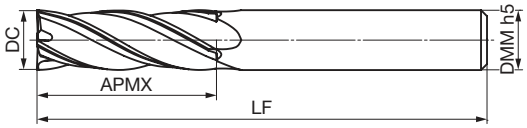


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX404C-3D		0.0625	0.1875	0.2269	1.500	0.1250	1
GSX406C-3D		0.0938	0.2813	0.3206	1.500	0.1250	1
GSX408C-3D		0.1250	0.3750	-	2.000	0.1250	2
GSX410C-3D		0.1563	0.4688	0.5278	2.000	0.1875	1
GSX412C-3D		0.1875	0.5625	-	2.000	0.1875	2
GSX414C-3D		0.2188	0.6564	0.735	2.000	0.2500	1
GSX416C-3D		0.2500	0.7500	-	2.000	0.2500	2
GSX418C-3D		0.2813	0.8439	0.923	3.000	0.3125	1
GSX420C-3D		0.3125	0.9375	-	3.000	0.3125	2
GSX424C-3D		0.3750	1.1250	-	3.500	0.3750	2
GSX428C-3D		0.4375	1.3125	-	3.500	0.4375	2
GSX432C-3D		0.5000	1.5000	-	3.500	0.5000	2
GSX436C-3D		0.5625	1.6875	-	4.500	0.5625	2
GSX440C-3D		0.6250	1.8750	-	4.500	0.6250	2
GSX444C-3D		0.6875	2.0625	-	4.500	0.6875	2
GSX448C-3D		0.7500	2.2500	-	5.000	0.7500	2
GSX456C-3D		0.8750	2.6250	-	5.000	0.8750	2
GSX464C-3D		1.0000	3.0000	-	5.500	1.0000	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

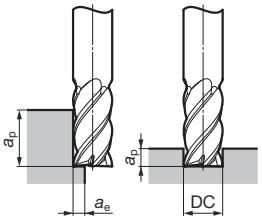
GSX 4 04 C - 3D

Series Code | Number of Flutes | Diameter in 64ths (4/64 = 0.0625") | Cutting Edge | Cutting Edge Length

C: Gash Land

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039		21,000	360	21,000	360	21,000	360	19,000	220	13,000	140	9,000	90	10,500	90	9,000	65
< 0.078		10,500	360	10,500	360	10,500	360	9,600	290	7,500	180	4,500	110	5,200	120	4,500	85
< 0.156		5,200	500	5,200	500	5,200	500	4,800	370	4,000	280	2,250	150	2,600	160	2,250	100
< 0.236		3,500	560	3,500	560	3,500	560	3,200	400	2,700	300	1,500	160	1,700	170	1,500	120
< 0.315		2,600	520	2,600	520	2,600	520	2,400	400	2,000	300	1,100	160	1,300	170	1,100	120
< 0.393		2,100	500	2,100	500	2,100	500	1,900	400	1,600	300	900	160	1,000	160	900	120
< 0.472		1,750	500	1,750	500	1,750	500	1,600	400	1,350	300	750	150	850	160	750	120
< 0.630		1,300	420	1,300	420	1,300	420	1,200	330	1,000	260	550	120	650	140	550	100
< 0.787		1,050	380	1,050	380	1,050	380	950	290	800	230	450	110	500	120	450	90
< 1.000		840	300	840	300	840	300	760	230	640	180	360	85	400	95	360	70
Standard Depth of Cut	a_p	2.5DC										2.0DC					
	a_e	Below ø3: 0.05DC , Above ø3 to Below ø8: 0.1DC, Above ø8: 0.15DC								0.02DC							

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039		16,600	140	16,600	140	16,600	140	15,500	100	10,500	100	7,500	70	9,400	60	3,750	20
< 0.078		9,500	160	9,500	160	9,500	160	9,000	180	6,200	120	4,500	90	5,200	80	2,250	30
< 0.156		5,200	160	5,200	180	5,200	180	4,800	160	3,400	110	2,200	65	2,600	70	1,250	25
< 0.236		3,500	160	3,500	200	3,500	200	3,200	160	2,550	120	1,500	65	1,700	70	950	25
< 0.315		2,600	160	2,600	200	2,600	200	2,400	160	1,900	120	1,100	65	1,300	70	700	25
< 0.393		2,100	160	2,100	200	2,100	200	1,900	160	1,500	120	900	65	1,000	70	550	25
< 0.472		1,750	160	1,750	200	1,750	200	1,600	160	1,250	120	750	65	850	70	450	25
< 0.630		1,300	160	1,300	200	1,300	200	1,200	160	950	120	550	65	650	70	350	25
< 0.787		1,050	160	1,050	200	1,050	200	950	160	750	120	450	65	500	70	280	55
< 1.000		840	128	840	160	840	160	760	128	600	96	360	52	400	56	224	44
Standard Depth of Cut	a_p	0.1DC		0.2DC								0.05DC		0.1DC			

GSX 400C-4D INCH Type

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

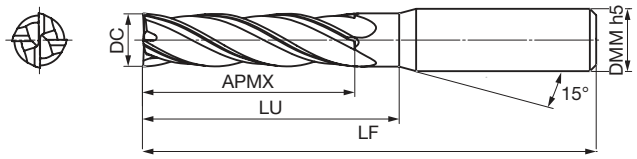
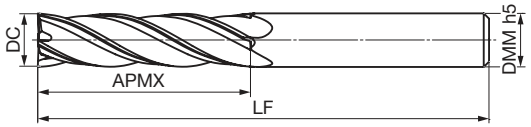


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX404C-4D		0.0625	0.2500	0.2894	1.500	0.1250	1
GSX406C-4D		0.0938	0.3750	0.4144	1.500	0.1250	1
GSX408C-4D		0.1250	0.5000	-	2.000	0.1250	2
GSX410C-4D		0.1563	0.6250	0.6841	2.000	0.1875	1
GSX412C-4D		0.1875	0.7500	-	2.500	0.1875	2
GSX414C-4D		0.2188	0.8752	0.954	2.500	0.2500	1
GSX416C-4D		0.2500	1.0000	-	2.500	0.2500	2
GSX418C-4D		0.2813	1.1252	1.204	3.000	0.3125	1
GSX420C-4D		0.3125	1.2500	-	3.000	0.3125	2
GSX424C-4D		0.3750	1.5000	-	3.500	0.3750	2
GSX428C-4D		0.4375	1.7500	-	4.000	0.4375	2
GSX432C-4D		0.5000	2.0000	-	4.000	0.5000	2
GSX436C-4D		0.5625	2.2500	-	5.000	0.5625	2
GSX440C-4D		0.6250	2.5000	-	5.000	0.6250	2
GSX444C-4D		0.6875	2.7500	-	5.000	0.6875	2
GSX448C-4D		0.7500	3.0000	-	5.500	0.7500	2
GSX456C-4D		0.8750	3.5000	-	5.500	0.8750	2
GSX464C-4D		1.0000	4.0000	-	6.000	1.0000	2

Grade: ACF20

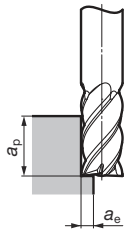
Endmill Identification (GSXMILL Series Only)

GSX 4 04 C - 4D

Series Code | Number of Flutes | Diameter in 64ths (4/64 = 0.0625") | Cutting Edge: C: Gash Land | Cutting Edge Length

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039		7,950	120	7,950	120	7,950	120	6,250	70	5,750	50	4,000	35	4,850	35	4,000	35
< 0.078		4,050	120	4,050	120	4,050	120	3,100	90	2,850	70	2,050	50	2,400	50	2,050	35
< 0.156		1,950	170	1,950	170	1,950	170	1,650	100	1,400	90	710	35	1,200	45	1,050	30
< 0.236		1,350	130	1,350	130	1,350	130	1,000	140	930	120	700	55	800	40	700	30
< 0.315		970	190	970	190	970	190	740	140	720	120	520	55	560	40	490	30
< 0.393		770	180	770	180	770	180	630	120	570	100	360	50	490	40	410	30
< 0.472		640	170	640	170	640	170	500	120	460	100	350	55	400	40	350	30
< 0.630		460	140	460	140	460	140	370	100	360	90	260	50	280	40	270	30
< 0.787		390	130	390	130	390	130	310	90	280	70	210	45	240	40	210	30
< 1.000		310	100	310	100	310	100	250	70	220	55	170	35	190	30	170	25
Standard Depth of Cut	a_p	2.5DC								2.0DC							
	a_e	Below ø3: 0.02DC , Above ø3 to Below ø8: 0.05DC, Above ø8: 0.07DC								0.01DC							

GSX 400S-2D INCH Type

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

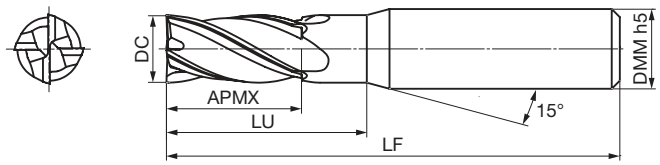
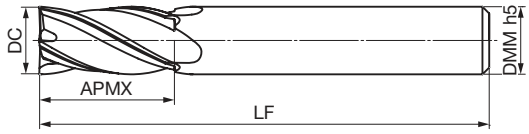


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX404S-2D		0.0625	0.1250	0.1644	1.500	0.1250	1
GSX406S-2D		0.0938	0.1875	0.2269	1.500	0.1250	1
GSX408S-2D		0.1250	0.2500	-	2.000	0.1250	2
GSX410S-2D		0.1563	0.3125	0.3716	2.000	0.1875	1
GSX412S-2D		0.1875	0.3750	-	2.000	0.1875	2
GSX414S-2D		0.2188	0.4376	0.516	2.000	0.2500	1
GSX416S-2D		0.2500	0.5000	-	2.000	0.2500	2
GSX418S-2D		0.2813	0.5626	0.641	2.500	0.3125	1
GSX420S-2D		0.3125	0.6250	-	2.500	0.3125	2
GSX424S-2D		0.3750	0.7500	-	3.000	0.3750	2
GSX428S-2D		0.4375	0.8750	-	3.000	0.4375	2
GSX432S-2D		0.5000	1.0000	-	3.000	0.5000	2
GSX436S-2D		0.5625	1.1250	-	3.500	0.5625	2
GSX440S-2D		0.6250	1.2500	-	3.500	0.6250	2
GSX444S-2D		0.6875	1.3750	-	4.000	0.6875	2
GSX448S-2D		0.7500	1.5000	-	4.000	0.7500	2
GSX456S-2D		0.8750	1.7500	-	4.000	0.8750	2
GSX464S-2D		1.0000	2.0000	-	4.000	1.0000	2

Grade: ACF20

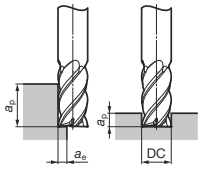
Endmill Identification (GSXMILL Series Only)

GSX 4 04 S - 2D

- GSX: Series Code
- 4: Number of Flutes
- 04: Diameter in 64ths (4/64 = 0.0625")
- S: Cutting Edge — S: Sharp Edge
- 2D: Cutting Edge Length

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039		22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
< 0.078		11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
< 0.156		6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
< 0.236		4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
< 0.315		3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
< 0.393		2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
< 0.472		2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
< 0.630		1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
< 0.787		1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
< 1.000		960	370	960	370	960	370	920	230	640	160	480	85	560	95	480	60
Standard Depth of Cut	a_p	2.0DC															
	a_e	0.03DC										0.01DC					

Groove Finishing

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
< 0.039		22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
< 0.078		11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
< 0.156		6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
< 0.236		4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
< 0.315		3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
< 0.393		2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
< 0.472		2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
< 0.630		1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
< 0.787		1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
< 1.000		960	370	960	370	960	370	920	230	640	160	480	85	560	95	480	60
Standard Depth of Cut	a_p	1.5DC															
	a_e	Below 0.02DC															

GSX 400S-3D INCH Type

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

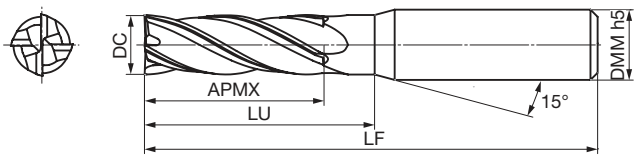
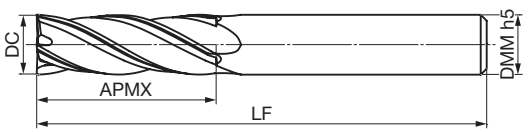


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

GSX Inch - Made to Order

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX404S-3D		0.0625	0.1875	0.2269	1.500	0.1250	1
GSX406S-3D		0.0938	0.2813	0.3206	1.500	0.1250	1
GSX408S-3D		0.1250	0.3750	-	2.000	0.1250	2
GSX410S-3D		0.1563	0.4688	0.5278	2.000	0.1875	1
GSX412S-3D		0.1875	0.5625	-	2.000	0.1875	2
GSX414S-3D		0.2188	0.6564	0.735	2.000	0.2500	1
GSX416S-3D		0.2500	0.7500	-	2.000	0.2500	2
GSX418S-3D		0.2813	0.8439	0.923	3.000	0.3125	1
GSX420S-3D		0.3125	0.9375	-	3.000	0.3125	2
GSX424S-3D		0.3750	1.1250	-	3.500	0.3750	2
GSX428S-3D		0.4375	1.3125	-	3.500	0.4375	2
GSX432S-3D		0.5000	1.5000	-	3.500	0.5000	2
GSX436S-3D		0.5625	1.6875	-	4.500	0.5625	2
GSX440S-3D		0.6250	1.8750	-	4.500	0.6250	2
GSX444S-3D		0.6875	2.0625	-	4.500	0.6875	2
GSX448S-3D		0.7500	2.2500	-	5.000	0.7500	2
GSX456S-3D		0.8750	2.6250	-	5.000	0.8750	2
GSX464S-3D		1.0000	3.0000	-	5.500	1.0000	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

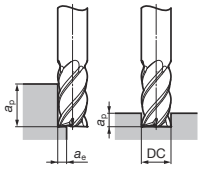
GSX 4 04 S - 3D

Series Code | Number of Flutes | Diameter in 64ths (4/64 = 0.0625") | Cutting Edge | Cutting Edge Length

S: Sharp Edge

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
< 0.039	18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
< 0.078	9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
< 0.156	4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
< 0.236	3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
< 0.315	2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
< 0.393	1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
< 0.472	1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
< 0.630	1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
< 0.787	900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
< 1.000	720	220	720	220	720	220	680	170	560	130	320	60	352	70	320	50
Standard Depth of Cut a_p	2.5DC								2.0DC							
Standard Depth of Cut a_e	Below ø3: 0.02DC , Above ø3 to Below ø8: 0.05DC, Above ø8: 0.07DC								0.01DC							

Groove Finishing

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (inch)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Spindle Speed (min⁻¹)	Feed Rate (mm/min)
< 0.039	18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
< 0.078	9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
< 0.156	4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
< 0.236	3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
< 0.315	2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
< 0.393	1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
< 0.472	1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
< 0.630	1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
< 0.787	900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
< 1.000	720	220	720	220	720	220	680	170	560	130	320	60	352	70	320	50
Standard Depth of Cut a_p	1.5DC															
Standard Depth of Cut a_e	Below 0.02DC															

GSX 20000C-1.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

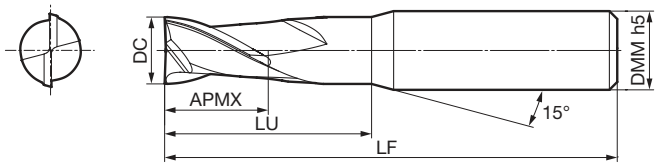
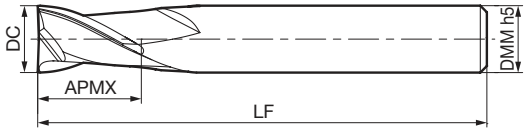


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20050C-1.5D	★	0.5	1.0	1.4	40	4	1
GSX20100C-1.5D	★	1.0	1.5	2.5	40	4	1
GSX20150C-1.5D	★	1.5	2.3	3.3	40	4	1
GSX20200C-1.5D	★	2.0	3.0	4.0	40	4	1
GSX20250C-1.5D	★	2.5	3.8	4.8	40	4	1
GSX20300C-1.5D	★	3.0	4.5	6.0	45	6	1
GSX20350C-1.5D	★	3.5	5.3	6.8	45	6	1
GSX20400C-1.5D	★	4.0	6.0	7.5	45	6	1
GSX20450C-1.5D	★	4.5	6.8	8.3	50	6	1
GSX20500C-1.5D	★	5.0	7.5	9.5	50	6	1
GSX20550C-1.5D	★	5.5	8.3	10.3	50	6	1
GSX20600C-1.5D	★	6.0	9.0	-	50	6	2
GSX20650C-1.5D	★	6.5	10.0	12.0	60	8	1
GSX20700C-1.5D	★	7.0	11.0	13.0	60	8	1
GSX20750C-1.5D	★	7.5	12.0	14.0	60	8	1
GSX20800C-1.5D	★	8.0	12.0	-	60	8	2
GSX20850C-1.5D	★	8.5	13.0	15.0	70	10	1
GSX20900C-1.5D	★	9.0	14.0	16.0	70	10	1
GSX20950C-1.5D	★	9.5	15.0	17.0	70	10	1
GSX21000C-1.5D	★	10.0	15.0	-	70	10	2
GSX21050C-1.5D	★	10.5	16.0	18.5	75	12	1
GSX21100C-1.5D	★	11.0	17.0	19.5	75	12	1
GSX21150C-1.5D	★	11.5	18.0	20.5	75	12	1
GSX21200C-1.5D	★	12.0	18.0	-	75	12	2
GSX21300C-1.5D	★	13.0	20.0	23.5	90	16	1
GSX21400C-1.5D	★	14.0	21.0	24.5	90	16	1
GSX21500C-1.5D	★	15.0	23.0	26.5	90	16	1
GSX21600C-1.5D	★	16.0	24.0	-	90	16	2
GSX21700C-1.5D	★	17.0	26.0	30.5	100	20	1
GSX21800C-1.5D	★	18.0	27.0	31.5	100	20	1
GSX21900C-1.5D	★	19.0	29.0	33.5	100	20	1
GSX22000C-1.5D	★	20.0	30.0	-	100	20	2
GSX22500C-1.5D	★	25.0	38.0	-	120	25	2

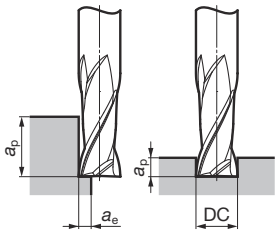
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 2 1000 C - 1.5D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 20000C-1.5D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
2.0		11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
4.0		6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
6.0		4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
8.0		3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
10.0		2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
12.0		2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
16.0		1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
20.0		1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
25.0		1,080	300	1,080	300	1,080	300	1,040	220	720	130	520	70	640	80	520	60
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
2.0		11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
4.0		6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
6.0		4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
8.0		3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
10.0		2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
12.0		2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
16.0		1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
20.0		1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
25.0		1,080	240	1,080	304	1,080	304	1,040	224	720	128	520	72	640	56	256	24
Standard Depth of Cut	a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 20000S-2D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

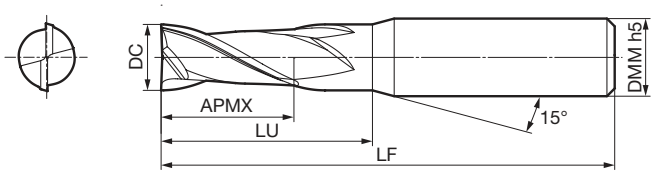
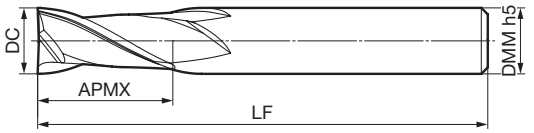


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body (Diameter ø0.3 to 4.3mm)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20030S-2D	★	*0.3*	*0.6*	*1.0*	*40*	*4*	1
GSX20040S-2D	★	*0.4*	*0.8*	*1.2*	*40*	*4*	1
GSX20050S-2D	★	*0.5*	*1.3*	*1.7*	*40*	*4*	1
GSX20060S-2D	★	*0.6*	*1.3*	*1.8*	*40*	*4*	1
GSX20070S-2D	★	*0.7*	*1.4*	*1.9*	*40*	*4*	1
GSX20080S-2D	★	*0.8*	*1.6*	*2.1*	*40*	*4*	1
GSX20090S-2D	★	*0.9*	*1.8*	*2.3*	*40*	*4*	1
GSX20100S-2D	★	*1.0*	*2.5*	*3.5*	*40*	*4*	1
GSX20110S-2D	★	*1.1*	*2.5*	*3.5*	*40*	*4*	1
GSX20120S-2D	★	*1.2*	*2.5*	*3.5*	*40*	*4*	1
GSX20130S-2D	★	*1.3*	*2.6*	*3.6*	*40*	*4*	1
GSX20140S-2D	★	*1.4*	*2.8*	*3.8*	*40*	*4*	1
GSX20150S-2D	★	*1.5*	*3.8*	*4.8*	*40*	*4*	1
GSX20150S-2D-S3	★	*1.5*	*3.8*	*4.8*	*38*	*3*	1
GSX20160S-2D	★	*1.6*	*3.8*	*4.8*	*40*	*4*	1
GSX20170S-2D	★	*1.7*	*3.8*	*4.8*	*40*	*4*	1
GSX20180S-2D	★	*1.8*	*3.8*	*4.8*	*40*	*4*	1
GSX20190S-2D	★	*1.9*	*3.8*	*4.8*	*40*	*4*	1
GSX20200S-2D	★	*2.0*	*5.0*	*6.0*	*40*	*4*	1
GSX20200S-2D-S3	★	*2.0*	*5.0*	*6.0*	*38*	*3*	1
GSX20210S-2D	★	*2.1*	*6.0*	*7.0*	*40*	*4*	1
GSX20220S-2D	★	*2.2*	*6.0*	*7.0*	*40*	*4*	1
GSX20230S-2D	★	*2.3*	*6.0*	*7.0*	*40*	*4*	1
GSX20240S-2D	★	*2.4*	*6.0*	*7.0*	*40*	*4*	1
GSX20250S-2D	★	*2.5*	*6.3*	*7.3*	*40*	*4*	1
GSX20260S-2D	★	*2.6*	*7.0*	*8.0*	*40*	*4*	1
GSX20270S-2D	★	*2.7*	*7.0*	*8.0*	*40*	*4*	1
GSX20280S-2D	★	*2.8*	*7.0*	*8.0*	*40*	*4*	1
GSX20290S-2D	★	*2.9*	*7.0*	*8.0*	*40*	*4*	1
GSX20300S-2D	★	*3.0*	*7.5*	*9.0*	*45*	*6*	1
GSX20300S-2D-S3	★	*3.0*	*7.5*	-	*38*	*3*	2
GSX20310S-2D	★	*3.1*	*7.5*	*9.0*	*45*	*6*	1
GSX20320S-2D	★	*3.2*	*7.5*	*9.0*	*45*	*6*	1
GSX20330S-2D	★	*3.3*	*7.5*	*9.0*	*45*	*6*	1
GSX20340S-2D	★	*3.4*	*7.5*	*9.0*	*45*	*6*	1
GSX20350S-2D	★	*3.5*	*8.8*	*10.3*	*45*	*6*	1
GSX20360S-2D	★	*3.6*	*8.8*	*10.3*	*45*	*6*	1
GSX20370S-2D	★	*3.7*	*8.8*	*10.3*	*45*	*6*	1
GSX20380S-2D	★	*3.8*	*8.8*	*10.3*	*45*	*6*	1
GSX20390S-2D	★	*3.9*	*8.8*	*10.3*	*45*	*6*	1
GSX20400S-2D	★	*4.0*	*11.0*	*14.0*	*45*	*6*	1
GSX20400S-2D-S4	★	*4.0*	*11.0*	-	*45*	*4*	2
GSX20410S-2D	★	*4.1*	*11.0*	*14.0*	*45*	*6*	1
GSX20420S-2D	★	*4.2*	*11.0*	*14.0*	*45*	*6*	1
GSX20430S-2D	★	*4.3*	*11.0*	*14.0*	*45*	*6*	1

Grade: ACF20

GSX 20000S-2D Type

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

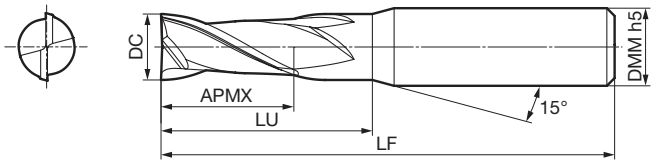
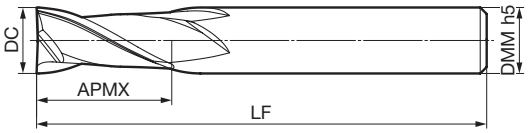


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body (Diameter ø4.4 to 8.8mm)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20440S-2D	★	*4.4*	*11.0*	*14.0*	*45*	*6*	1
GSX20450S-2D	★	*4.5*	*11.3*	*12.8*	*50*	*6*	1
GSX20460S-2D	★	*4.6*	*11.3*	*12.8*	*50*	*6*	1
GSX20470S-2D	★	*4.7*	*11.3*	*12.8*	*50*	*6*	1
GSX20480S-2D	★	*4.8*	*11.3*	*12.8*	*50*	*6*	1
GSX20490S-2D	★	*4.9*	*11.3*	*12.8*	*50*	*6*	1
GSX20500S-2D	★	*5.0*	*13.0*	*19.6*	*50*	*6*	1
GSX20510S-2D	★	*5.1*	*13.0*	*19.6*	*50*	*6*	1
GSX20520S-2D	★	*5.2*	*13.0*	*19.6*	*50*	*6*	1
GSX20530S-2D	★	*5.3*	*13.0*	*19.6*	*50*	*6*	1
GSX20540S-2D	★	*5.4*	*13.0*	*19.6*	*50*	*6*	1
GSX20550S-2D	★	*5.5*	*13.0*	*19.6*	*50*	*6*	1
GSX20560S-2D	★	*5.6*	*13.0*	*19.6*	*50*	*6*	1
GSX20570S-2D	★	*5.7*	*13.0*	*19.6*	*50*	*6*	1
GSX20580S-2D	★	*5.8*	*13.0*	*19.6*	*50*	*6*	1
GSX20590S-2D	★	*5.9*	*13.0*	*19.6*	*50*	*6*	1
GSX20600S-2D	★	*6.0*	*13.0*	-	*50*	*6*	2
GSX20610S-2D	★	*6.1*	*13.0*	*19.6*	*50*	*8*	1
GSX20620S-2D	★	*6.2*	*13.0*	*19.6*	*50*	*8*	1
GSX20630S-2D	★	*6.3*	*13.0*	*19.6*	*50*	*8*	1
GSX20640S-2D	★	*6.4*	*13.0*	*19.6*	*50*	*8*	1
GSX20650S-2D	★	*6.5*	*13.0*	*19.6*	*60*	*8*	1
GSX20660S-2D	★	*6.6*	*13.2*	*19.8*	*60*	*8*	1
GSX20670S-2D	★	*6.7*	*13.4*	*20.0*	*60*	*8*	1
GSX20680S-2D	★	*6.8*	*13.6*	*20.2*	*60*	*8*	1
GSX20690S-2D	★	*6.9*	*13.8*	*20.4*	*60*	*8*	1
GSX20700S-2D	★	*7.0*	*16.0*	*21.1*	*60*	*8*	1
GSX20710S-2D	★	*7.1*	*16.0*	*21.1*	*60*	*8*	1
GSX20720S-2D	★	*7.2*	*16.0*	*21.1*	*60*	*8*	1
GSX20730S-2D	★	*7.3*	*16.0*	*21.1*	*60*	*8*	1
GSX20740S-2D	★	*7.4*	*16.0*	*21.1*	*60*	*8*	1
GSX20750S-2D	★	*7.5*	*16.0*	*21.1*	*60*	*8*	1
GSX20760S-2D	★	*7.6*	*16.0*	*21.1*	*60*	*8*	1
GSX20770S-2D	★	*7.7*	*16.0*	*21.1*	*60*	*8*	1
GSX20780S-2D	★	*7.8*	*16.0*	*21.1*	*60*	*8*	1
GSX20790S-2D	★	*7.9*	*16.0*	*21.1*	*60*	*8*	1
GSX20800S-2D	★	*8.0*	*19.0*	-	*60*	*8*	2
GSX20810S-2D	★	*8.1*	*19.0*	*24.1*	*60*	*10*	1
GSX20820S-2D	★	*8.2*	*19.0*	*24.1*	*60*	*10*	1
GSX20830S-2D	★	*8.3*	*19.0*	*24.1*	*60*	*10*	1
GSX20840S-2D	★	*8.4*	*19.0*	*24.1*	*60*	*10*	1
GSX20850S-2D	★	*8.5*	*19.0*	*24.1*	*70*	*10*	1
GSX20860S-2D	★	*8.6*	*19.0*	*24.1*	*70*	*10*	1
GSX20870S-2D	★	*8.7*	*19.0*	*24.1*	*70*	*10*	1
GSX20880S-2D	★	*8.8*	*19.0*	*24.1*	*70*	*10*	1

Grade: ACF20

GSX 20000S-2D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

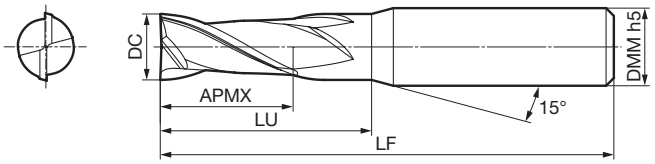
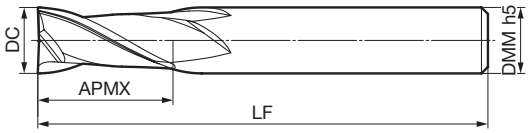


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body (Diameter ø8.9 to 25.0mm)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20890S-2D	★	8.9	19.0	24.1	70	10	1
GSX20900S-2D	★	9.0	19.0	24.1	70	10	1
GSX20910S-2D	★	9.1	19.0	24.1	70	10	1
GSX20920S-2D	★	9.2	19.0	24.1	70	10	1
GSX20930S-2D	★	9.3	19.0	24.1	70	10	1
GSX20940S-2D	★	9.4	19.0	24.1	70	10	1
GSX20950S-2D	★	9.5	20.0	25.1	70	10	1
GSX20960S-2D	★	9.6	20.0	25.1	70	10	1
GSX20970S-2D	★	9.7	20.0	25.1	70	10	1
GSX20980S-2D	★	9.8	20.0	25.1	70	10	1
GSX20990S-2D	★	9.9	20.0	25.1	70	10	1
GSX21000S-2D	★	10.0	22.0	-	70	10	2
GSX21050S-2D	★	10.5	22.0	24.5	75	12	1
GSX21100S-2D	★	11.0	22.0	24.5	75	12	1
GSX21150S-2D	★	11.5	23.0	25.5	75	12	1
GSX21200S-2D	★	12.0	26.0	-	75	12	2
GSX21250S-2D	★	12.5	26.0	29.5	75	16	1
GSX21300S-2D	★	13.0	26.0	29.5	90	16	1
GSX21400S-2D	★	14.0	28.0	31.5	90	16	1
GSX21500S-2D	★	15.0	30.0	33.5	90	16	1
GSX21600S-2D	★	16.0	32.0	-	90	16	2
GSX21700S-2D	★	17.0	35.0	39.5	100	20	1
GSX21800S-2D	★	18.0	40.0	44.5	100	20	1
GSX21900S-2D	★	19.0	40.0	44.5	100	20	1
GSX22000S-2D	★	20.0	40.0	-	100	20	2
GSX22100S-2D	★	21.0	42.0	47.0	110	25	1
GSX22200S-2D	★	22.0	44.0	49.0	110	25	1
GSX22300S-2D	★	23.0	46.0	51.0	120	25	1
GSX22400S-2D	★	24.0	48.0	53.0	120	25	1
GSX22500S-2D	★	25.0	50.0	-	120	25	2

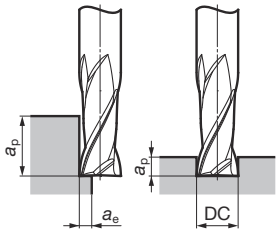
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 2 0150 S - 2D - S3

Series Code	Number of Teeth	Dia.	Cutting Edge (S: Sharp Edge)	Cutting Edge Length	Shank Dia.

GSX 20000S-2D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35
2.0		9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50
4.0		5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65
6.0		4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80
8.0		3,000	400	3,000	400	3,000	400	2,800	300	1,900	150	1,400	100	1,700	110	1,400	80
10.0		2,400	400	2,400	400	2,400	400	2,200	300	1,500	150	1,100	100	1,300	110	1,100	80
12.0		2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80
16.0		1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60
20.0		1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55
25.0		960	220	960	220	960	220	880	170	600	85	440	50	520	60	440	45
Standard Depth of Cut	a_p	2.0DC															
	a_e	0.02DC										0.01DC					

Groove Finishing

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		16,600	180	16,600	180	16,600	180	15,500	130	10,500	70	7,500	45	9,400	50	7,500	35
2.0		9,500	250	9,500	250	9,500	250	9,000	200	6,200	100	4,500	60	5,400	70	4,500	50
4.0		5,400	330	5,400	330	5,400	330	5,000	250	3,400	120	2,500	75	3,000	90	2,500	65
6.0		4,000	400	4,000	400	4,000	400	3,700	300	2,550	150	1,900	100	2,300	110	1,900	80
8.0		3,000	400	3,000	400	3,000	400	2,800	300	1,900	150	1,400	100	1,700	110	1,400	80
10.0		2,400	400	2,400	400	2,400	400	2,200	300	1,500	150	1,100	100	1,300	110	1,100	80
12.0		2,000	400	2,000	400	2,000	400	1,850	300	1,300	150	950	100	1,100	110	950	80
16.0		1,500	330	1,500	330	1,500	330	1,400	250	950	120	700	75	850	85	700	60
20.0		1,200	280	1,200	280	1,200	280	1,100	220	750	110	550	65	650	75	550	55
25.0		960	220	960	220	960	220	880	170	600	85	440	50	520	60	440	45
Standard Depth of Cut	a_p	1.5DC															
	a_e	Below 0.02DC															

GSX 20000C-2D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

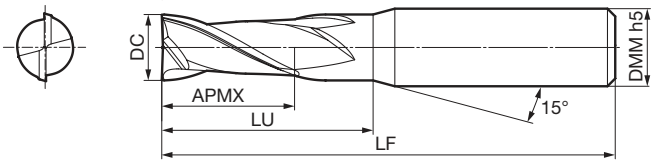
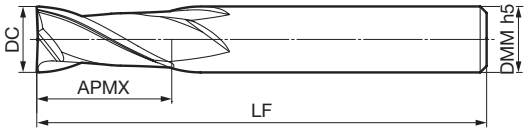


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20050C-2D	★	0.5	1.0	1.4	40	4	1
GSX20100C-2D	★	1.0	2.0	3.0	40	4	1
GSX20150C-2D	★	1.5	3.0	4.0	40	4	1
GSX20200C-2D	★	2.0	4.0	5.0	40	4	1
GSX20250C-2D	★	2.5	5.0	6.0	40	4	1
GSX20300C-2D	★	3.0	6.0	7.5	45	6	1
GSX20350C-2D	★	3.5	7.0	8.5	45	6	1
GSX20400C-2D	★	4.0	8.0	9.5	45	6	1
GSX20450C-2D	★	4.5	9.0	10.5	50	6	1
GSX20500C-2D	★	5.0	10.0	12.0	50	6	1
GSX20550C-2D	★	5.5	11.0	13.0	50	6	1
GSX20600C-2D	★	6.0	12.0	-	50	6	2
GSX20650C-2D	★	6.5	13.0	15.0	60	8	1
GSX20700C-2D	★	7.0	14.0	16.0	60	8	1
GSX20750C-2D	★	7.5	15.0	17.0	60	8	1
GSX20800C-2D	★	8.0	16.0	-	60	8	2
GSX20850C-2D	★	8.5	17.0	19.0	70	10	1
GSX20900C-2D	★	9.0	18.0	20.0	70	10	1
GSX20950C-2D	★	9.5	19.0	21.0	70	10	1
GSX21000C-2D	★	10.0	20.0	-	70	10	2
GSX21050C-2D	★	10.5	21.0	23.5	75	12	1
GSX21100C-2D	★	11.0	22.0	24.5	75	12	1
GSX21150C-2D	★	11.5	23.0	25.5	75	12	1
GSX21200C-2D	★	12.0	24.0	-	75	12	2
GSX21300C-2D	★	13.0	26.0	29.5	90	16	1
GSX21400C-2D	★	14.0	28.0	31.5	90	16	1
GSX21500C-2D	★	15.0	30.0	33.5	90	16	1
GSX21600C-2D	★	16.0	32.0	-	90	16	2
GSX21700C-2D	★	17.0	34.0	38.5	100	20	1
GSX21800C-2D	★	18.0	36.0	40.5	100	20	1
GSX21900C-2D	★	19.0	38.0	42.5	100	20	1
GSX22000C-2D	★	20.0	40.0	-	100	20	2
GSX22500C-2D	★	25.0	50.0	-	120	25	2

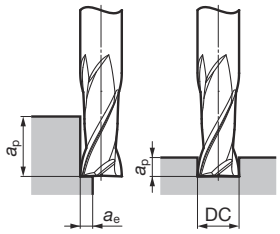
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 2 0050 C - 2D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 20000C-2D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
1.0		19,600	250	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	70	9,000	50
2.0		11,200	340	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	90	5,300	70
4.0		6,400	460	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	120	3,000	90
6.0		4,600	560	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	140	2,200	100
8.0		3,400	560	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	140	1,600	100
10.0		2,800	560	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	140	1,300	100
12.0		2,300	560	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	140	1,100	100
16.0		1,700	450	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	110	800	85
20.0		1,350	380	1,350	380	1,350	380	1,300	280	900	160	650	90	800	100	650	75
25.0		1,000	300	1,000	300	1,000	300	1,000	220	700	120	500	70	640	80	500	60
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)	Spindle Speed (min-1)	Feed Rate (mm/min)
1.0		19,600	200	19,600	250	19,600	250	18,300	180	12,700	100	9,000	60	11,000	50	4,500	20
2.0		11,200	270	11,200	340	11,200	340	10,500	240	7,300	130	5,300	80	6,400	65	2,650	25
4.0		6,400	370	6,400	460	6,400	460	6,000	320	4,200	180	3,000	110	3,600	80	1,500	35
6.0		4,600	450	4,600	560	4,600	560	4,300	400	3,000	210	2,200	130	2,700	100	1,100	40
8.0		3,400	450	3,400	560	3,400	560	3,200	400	2,200	210	1,600	130	2,000	100	800	40
10.0		2,800	450	2,800	560	2,800	560	2,600	400	1,800	210	1,300	130	1,600	100	650	40
12.0		2,300	450	2,300	560	2,300	560	2,200	400	1,500	210	1,100	130	1,300	100	500	40
16.0		1,700	360	1,700	450	1,700	450	1,600	320	1,100	180	800	100	1,000	80	400	35
20.0		1,350	300	1,350	380	1,350	380	1,300	280	900	160	650	90	800	70	320	30
25.0		1,000	240	1,000	300	1,000	300	1,000	220	700	120	500	70	640	55	250	25
Standard Depth of Cut	a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 20000S-3D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

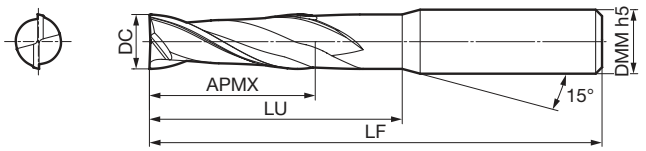
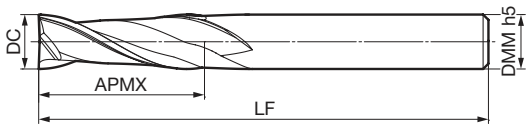


Fig 2



DC	Tolerance
D≤3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20050S-3D	★	0.5	1.5	1.9	40	4	1
GSX20100S-3D	★	1.0	3.0	4.0	40	4	1
GSX20150S-3D	★	1.5	4.5	5.5	40	4	1
GSX20200S-3D	★	2.0	6.0	7.0	40	4	1
GSX20250S-3D	★	2.5	7.5	8.5	40	4	1
GSX20260S-3D	★	2.6	8.0	9.5	50	4	1
GSX20270S-3D	★	2.7	8.5	10.0	50	4	1
GSX20280S-3D	★	2.8	9.0	10.5	50	4	1
GSX20290S-3D	★	2.9	9.0	10.5	50	4	1
GSX20300S-3D	★	3.0	9.0	10.5	50	6	1
GSX20350S-3D	★	3.5	12.0	13.5	50	6	1
GSX20400S-3D	★	4.0	12.0	13.5	50	6	1
GSX20450S-3D	★	4.5	15.0	16.5	50	6	1
GSX20500S-3D	★	5.0	15.0	17.0	50	6	1
GSX20550S-3D	★	5.5	18.0	20.0	50	6	1
GSX20600S-3D	★	6.0	18.0	-	50	6	2
GSX20650S-3D	★	6.5	20.0	22.0	70	8	1
GSX20700S-3D	★	7.0	21.0	23.0	70	8	1
GSX20750S-3D	★	7.5	23.0	25.0	70	8	1
GSX20800S-3D	★	8.0	24.0	-	70	8	2
GSX20850S-3D	★	8.5	26.0	28.0	75	10	1
GSX20900S-3D	★	9.0	27.0	29.0	75	10	1
GSX20950S-3D	★	9.5	29.0	31.0	75	10	1
GSX21000S-3D	★	10.0	30.0	-	90	10	2
GSX21050S-3D	★	10.5	32.0	34.5	90	12	1
GSX21100S-3D	★	11.0	33.0	35.5	90	12	1
GSX21150S-3D	★	11.5	35.0	37.5	90	12	1
GSX21200S-3D	★	12.0	36.0	-	90	12	2
GSX21300S-3D	★	13.0	39.0	42.5	100	16	1
GSX21400S-3D	★	14.0	42.0	45.5	110	16	1
GSX21500S-3D	★	15.0	45.0	48.5	110	16	1
GSX21600S-3D	★	16.0	48.0	-	110	16	2
GSX21700S-3D	★	17.0	51.0	55.5	110	20	1
GSX21800S-3D	★	18.0	54.0	58.5	120	20	1
GSX21900S-3D	★	19.0	57.0	61.5	120	20	1
GSX22000S-3D	★	20.0	60.0	-	120	20	2
GSX22400S-3D	★	24.0	72.0	77.0	130	25	1
GSX22500S-3D	★	25.0	75.0	-	130	25	2

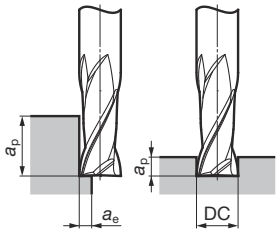
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 2 0050 S - 3D

Series Code	Number of Teeth	Dia.	Cutting Edge S: Sharp Edge	Cutting Edge Length

GSX 20000S-3D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
2.0		8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
4.0		4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
6.0		2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60
8.0		2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
10.0		1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
12.0		1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
16.0		1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
20.0		850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
25.0		680	130	680	130	680	130	640	100	480	80	280	40	320	45	280	35
Standard Depth of Cut	a_p	2.5DC								2.0DC							
	a_e	Below ø3: 0.02DC, Above ø3: 0.05DC								0.01DC							

Groove Finishing

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		14,000	140	14,000	140	14,000	140	13,200	100	8,900	50	6,300	30	8,000	35	6,300	25
2.0		8,100	180	8,100	180	8,100	180	7,600	150	5,300	90	3,700	45	4,400	50	3,800	40
4.0		4,400	240	4,400	240	4,400	240	4,000	150	2,900	110	1,900	55	2,200	65	1,900	50
6.0		2,900	260	2,900	260	2,900	260	2,700	180	2,100	130	1,200	65	1,400	75	1,200	60
8.0		2,200	230	2,200	230	2,200	230	2,000	180	1,600	130	900	65	1,100	75	900	60
10.0		1,800	220	1,800	220	1,800	220	1,600	170	1,300	130	750	65	850	75	750	60
12.0		1,500	200	1,500	200	1,500	200	1,300	170	1,000	130	630	65	700	75	600	60
16.0		1,100	170	1,100	170	1,100	170	1,000	150	800	110	450	55	550	65	450	50
20.0		850	160	850	160	850	160	800	130	600	100	350	50	400	55	350	45
25.0		680	130	680	130	680	130	640	100	480	80	280	40	320	45	280	35
Standard Depth of Cut	a_p	1.5DC															
	a_e	*Below* 0.02DC															

GSX 20000C-3D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing

Fig 1

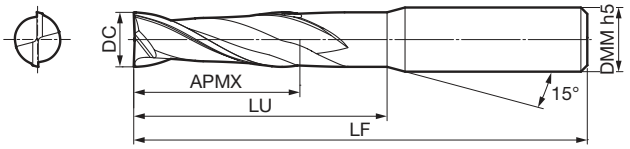
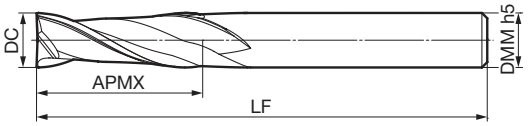


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20050C-3D	★	0.5	1.5	1.9	40	4	1
GSX20100C-3D	★	1.0	3.0	4.0	40	4	1
GSX20150C-3D	★	1.5	4.5	5.5	40	4	1
GSX20200C-3D	★	2.0	6.0	7.0	40	4	1
GSX20250C-3D	★	2.5	7.5	8.5	40	4	1
GSX20300C-3D	★	3.0	9.0	10.5	50	6	1
GSX20350C-3D	★	3.5	11.0	12.5	50	6	1
GSX20400C-3D	★	4.0	12.0	13.5	50	6	1
GSX20450C-3D	★	4.5	14.0	15.5	50	6	1
GSX20500C-3D	★	5.0	15.0	17.0	50	6	1
GSX20550C-3D	★	5.5	17.0	19.0	50	6	1
GSX20600C-3D	★	6.0	18.0	-	50	6	2
GSX20650C-3D	★	6.5	20.0	22.0	70	8	1
GSX20700C-3D	★	7.0	21.0	23.0	70	8	1
GSX20750C-3D	★	7.5	23.0	25.0	70	8	1
GSX20800C-3D	★	8.0	24.0	-	70	8	2
GSX20850C-3D	★	8.5	26.0	28.0	75	10	1
GSX20900C-3D	★	9.0	27.0	29.0	75	10	1
GSX20950C-3D	★	9.5	29.0	31.0	75	10	1
GSX21000C-3D	★	10.0	30.0	-	90	10	2
GSX21050C-3D	★	10.5	32.0	34.5	90	12	1
GSX21100C-3D	★	11.0	33.0	35.5	90	12	1
GSX21150C-3D	★	11.5	35.0	37.5	90	12	1
GSX21200C-3D	★	12.0	36.0	-	90	12	2
GSX21300C-3D	★	13.0	39.0	42.5	100	16	1
GSX21400C-3D	★	14.0	42.0	45.5	110	16	1
GSX21500C-3D	★	15.0	45.0	48.5	110	16	1
GSX21600C-3D	★	16.0	48.0	-	110	16	2
GSX21700C-3D	★	17.0	51.0	55.5	110	20	1
GSX21800C-3D	★	18.0	54.0	58.5	120	20	1
GSX21900C-3D	★	19.0	57.0	61.5	120	20	1
GSX22000C-3D	★	20.0	60.0	-	120	20	2
GSX22500C-3D	★	25.0	75.0	-	130	25	2

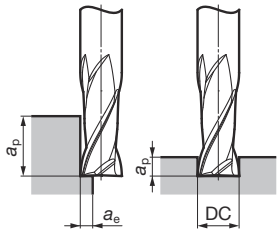
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 2 0100 C - 3D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 20000C-3D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		16,600	190	16,600	190	16,600	190	15,500	140	10,500	70	7,500	45	9,400	50	7,500	35
2.0		9,500	250	9,500	250	9,500	250	9,000	200	6,200	120	4,500	60	5,200	70	4,500	50
4.0		5,200	330	5,200	330	5,200	330	4,800	200	3,400	150	2,250	75	2,600	90	2,250	65
6.0		3,500	360	3,500	360	3,500	360	3,200	250	2,550	170	1,500	90	1,700	100	1,500	80
8.0		2,600	320	2,600	320	2,600	320	2,400	240	1,900	170	1,100	90	1,300	100	1,100	80
10.0		2,100	300	2,100	300	2,100	300	1,900	230	1,500	170	900	90	1,000	100	900	80
12.0		1,750	280	1,750	280	1,750	280	1,600	230	1,250	170	750	90	850	100	750	80
16.0		1,300	240	1,300	240	1,300	240	1,200	200	950	150	550	75	650	85	550	65
20.0		1,050	220	1,050	220	1,050	220	950	180	750	140	450	70	500	75	450	60
25.0		840	180	840	180	840	180	760	140	600	110	360	55	400	60	360	45
Standard Depth of Cut	a_p	2.5DC								2.0DC							
	a_e	Below ø3: 0.05DC, Above ø3: 0.1DC								0.02DC							

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		16,600	70	16,600	80	16,600	80	15,500	50	10,500	50	7,500	35	9,400	30	3,750	10
2.0		9,500	80	9,500	100	9,500	100	9,000	90	6,200	60	4,500	45	5,200	40	2,250	15
4.0		5,200	120	5,200	150	5,200	150	4,800	120	3,400	80	2,200	50	2,600	50	1,250	20
6.0		3,500	140	3,500	170	3,500	170	3,200	130	2,550	100	1,500	50	1,700	60	950	25
8.0		2,600	140	2,600	160	2,600	160	2,400	130	1,900	100	1,100	50	1,300	60	700	25
10.0		2,100	130	2,100	150	2,100	150	1,900	120	1,500	90	900	50	1,000	60	550	25
12.0		1,750	130	1,750	150	1,750	150	1,600	120	1,250	90	750	50	850	60	450	25
16.0		1,300	110	1,300	130	1,300	130	1,200	110	950	80	550	45	650	50	350	20
20.0		1,050	100	1,050	120	1,050	120	950	100	750	70	450	40	500	40	280	15
25.0		840	80	840	96	840	96	760	80	600	56	360	32	400	32	224	12
Standard Depth of Cut	a_p	0.1DC		0.2DC								0.05DC		0.1DC			

GSX 20000S-4D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

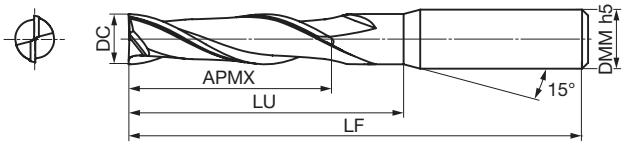
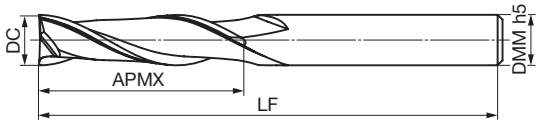


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20050S-4D	★	0.5	2.0	2.4	40	4	1
GSX20100S-4D	★	1.0	5.0	6.0	40	4	1
GSX20150S-4D	★	1.5	7.0	8.0	40	4	1
GSX20200S-4D	★	2.0	9.0	10.0	40	4	1
GSX20250S-4D	★	2.5	12.0	13.0	50	4	1
GSX20300S-4D	★	3.0	12.0	13.5	50	6	1
GSX20350S-4D	★	3.5	14.0	15.5	50	6	1
GSX20400S-4D	★	4.0	16.0	17.5	50	6	1
GSX20450S-4D	★	4.5	18.0	19.5	60	6	1
GSX20500S-4D	★	5.0	20.0	22.0	60	6	1
GSX20550S-4D	★	5.5	22.0	24.0	60	6	1
GSX20600S-4D	★	6.0	24.0	-	60	6	2
GSX20650S-4D	★	6.5	26.0	28.0	70	8	1
GSX20700S-4D	★	7.0	28.0	30.0	80	8	1
GSX20750S-4D	★	7.5	30.0	32.0	80	8	1
GSX20800S-4D	★	8.0	32.0	-	80	8	2
GSX20850S-4D	★	8.5	34.0	36.0	90	10	1
GSX20900S-4D	★	9.0	36.0	38.0	90	10	1
GSX20950S-4D	★	9.5	38.0	40.0	90	10	1
GSX21000S-4D	★	10.0	40.0	-	90	10	2
GSX21050S-4D	★	10.5	42.0	44.5	100	12	1
GSX21100S-4D	★	11.0	44.0	46.5	100	12	1
GSX21150S-4D	★	11.5	46.0	48.5	100	12	1
GSX21200S-4D	★	12.0	48.0	-	100	12	2
GSX21300S-4D	★	13.0	52.0	55.5	110	16	1
GSX21400S-4D	★	14.0	56.0	59.5	120	16	1
GSX21500S-4D	★	15.0	60.0	63.5	120	16	1
GSX21600S-4D	★	16.0	64.0	-	120	16	2
GSX21700S-4D	★	17.0	68.0	72.5	130	20	1
GSX21800S-4D	★	18.0	72.0	76.5	130	20	1
GSX21900S-4D	★	19.0	76.0	80.5	140	20	1
GSX22000S-4D	★	20.0	80.0	-	140	20	2
GSX22500S-4D	★	25.0	100.0	-	160	25	2

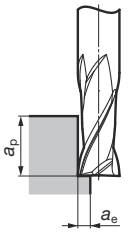
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 2 0100 S - 4D

Series Code	Number of Teeth	Dia.	Cutting Edge S: Sharp Edge	Cutting Edge Length

GSX 20000S-4D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		7,600	110	7,600	110	7,600	110	6,000	80	5,500	40	3,800	25	4,600	35	3,800	20
2.0		3,850	150	3,850	150	3,850	150	2,950	100	2,750	60	1,900	30	2,300	40	1,950	30
4.0		1,900	200	1,900	200	1,900	200	1,450	130	1,350	80	1,000	50	1,150	55	1,000	35
6.0		1,250	250	1,250	250	1,250	250	970	140	860	90	640	60	740	60	640	40
8.0		930	220	930	220	930	220	700	140	670	90	500	60	560	60	490	40
10.0		770	210	770	210	770	210	190	130	560	95	380	60	460	60	380	40
12.0		650	200	650	200	650	200	470	130	420	85	330	60	370	60	320	40
16.0		450	170	450	170	450	170	370	120	340	80	250	45	280	50	250	35
20.0		360	140	360	140	360	140	300	100	260	70	190	35	220	40	190	30
25.0		190	120	190	120	190	120	230	80	200	55	150	30	170	30	150	25
Standard Depth of Cut	a_p	2.5DC								2.0DC							
	a_e	Below ø3: 0.02DC, Above ø3: 0.05DC								0.01DC							

GSX 20000C-4D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

2 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing | Face Milling | Spot Facing

Fig 1

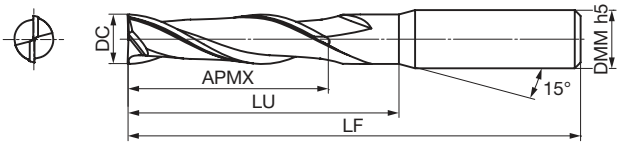
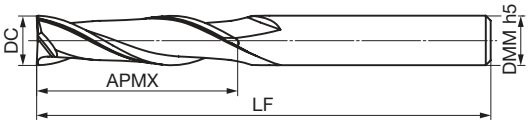


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX20050C-4D	★	0.5	2.0	2.4	40	4	1
GSX20100C-4D	★	1.0	4.0	5.0	40	4	1
GSX20150C-4D	★	1.5	6.0	7.0	40	4	1
GSX20200C-4D	★	2.0	8.0	9.0	40	4	1
GSX20250C-4D	★	2.5	10.0	11.0	50	4	1
GSX20300C-4D	★	3.0	12.0	13.5	50	6	1
GSX20350C-4D	★	3.5	14.0	15.5	50	6	1
GSX20400C-4D	★	4.0	16.0	17.5	50	6	1
GSX20450C-4D	★	4.5	18.0	19.5	60	6	1
GSX20500C-4D	★	5.0	20.0	22.0	60	6	1
GSX20550C-4D	★	5.5	22.0	24.0	60	6	1
GSX20600C-4D	★	6.0	24.0	-	60	6	2
GSX20650C-4D	★	6.5	26.0	28.0	70	8	1
GSX20700C-4D	★	7.0	28.0	30.0	80	8	1
GSX20750C-4D	★	7.5	30.0	32.0	80	8	1
GSX20800C-4D	★	8.0	32.0	-	80	8	2
GSX20850C-4D	★	8.5	34.0	36.0	90	10	1
GSX20900C-4D	★	9.0	36.0	38.0	90	10	1
GSX20950C-4D	★	9.5	38.0	40.0	90	10	1
GSX21000C-4D	★	10.0	40.0	-	90	10	2
GSX21050C-4D	★	10.5	42.0	44.5	100	12	1
GSX21100C-4D	★	11.0	44.0	46.5	100	12	1
GSX21150C-4D	★	11.5	46.0	48.5	100	12	1
GSX21200C-4D	★	12.0	48.0	-	100	12	2
GSX21300C-4D	★	13.0	52.0	55.5	110	16	1
GSX21400C-4D	★	14.0	56.0	59.5	120	16	1
GSX21500C-4D	★	15.0	60.0	63.5	120	16	1
GSX21600C-4D	★	16.0	64.0	-	120	16	2
GSX21700C-4D	★	17.0	68.0	72.5	130	20	1
GSX21800C-4D	★	18.0	72.0	76.5	130	20	1
GSX21900C-4D	★	19.0	76.0	80.5	140	20	1
GSX22000C-4D	★	20.0	80.0	-	140	20	2
GSX22500C-4D	★	25.0	100.0	-	160	25	2

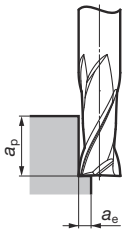
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 2 0100 C - 4D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 20000C-4D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for groove milling.
7. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		9,000	130	9,000	130	9,000	130	7,000	95	6,500	50	4,500	30	5,400	40	4,500	25
2.0		4,500	180	4,500	180	4,500	180	3,500	120	3,200	70	2,300	40	2,700	50	2,300	35
4.0		2,250	240	2,250	240	2,250	240	1,750	160	1,600	95	1,200	60	1,350	65	1,200	40
6.0		1,500	300	1,500	300	1,500	300	1,150	170	1,050	110	800	70	900	70	800	50
8.0		1,100	260	1,100	260	1,100	260	850	170	800	110	600	70	660	70	600	50
10.0		900	250	900	250	900	250	700	160	650	110	460	70	540	70	460	50
12.0		750	240	750	240	750	240	580	160	520	110	400	70	450	70	400	50
16.0		550	200	550	200	550	200	440	140	400	95	300	55	330	60	300	45
20.0		450	180	450	180	450	180	350	120	320	85	240	45	270	50	240	40
25.0		360	140	360	140	360	140	280	95	250	65	190	35	210	40	192	30
Standard Depth of Cut	a_p	3.5DC										3.0DC					
	a_e	0.08DC						0.04DC									

GSX 30000C-1.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

3 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

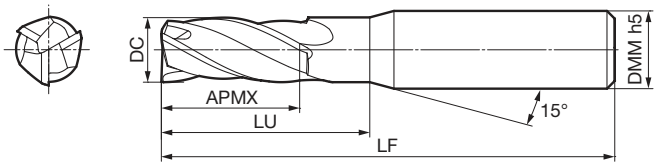
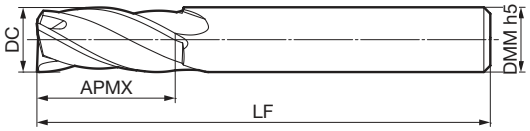


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX30100C-1.5D	★	*1.0*	*1.5*	*2.5*	*40*	*4*	1
GSX30150C-1.5D	★	*1.5*	*2.3*	*3.3*	*40*	*4*	1
GSX30200C-1.5D	★	*2.0*	*3.0*	*4.0*	*40*	*4*	1
GSX30250C-1.5D	★	*2.5*	*3.8*	*4.8*	*40*	*4*	1
GSX30300C-1.5D	★	*3.0*	*4.5*	*6.0*	*45*	*6*	1
GSX30400C-1.5D	★	*4.0*	*6.0*	*7.5*	*45*	*6*	1
GSX30500C-1.5D	★	*5.0*	*7.5*	*9.5*	*50*	*6*	1
GSX30600C-1.5D	★	*6.0*	*9.0*	-	*50*	*6*	2
GSX30700C-1.5D	★	*7.0*	*11.0*	*13.0*	*60*	*8*	1
GSX30800C-1.5D	★	*8.0*	*12.0*	-	*60*	*8*	2
GSX30900C-1.5D	★	*9.0*	*14.0*	*16.0*	*70*	*10*	1
GSX31000C-1.5D	★	*10.0*	*15.0*	-	*70*	*10*	2
GSX31200C-1.5D	★	*12.0*	*18.0*	-	*75*	*12*	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

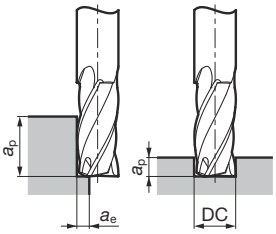
GSX 3 0100 C - 1.5D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 30000C-1.5D Type

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0		11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0		6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0		4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0		3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0		2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0		2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0		11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0		6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0		4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0		3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0		2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0		2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut	a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 30000C-2D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

3 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

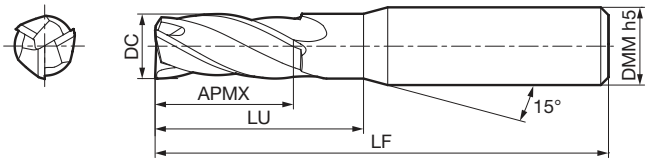
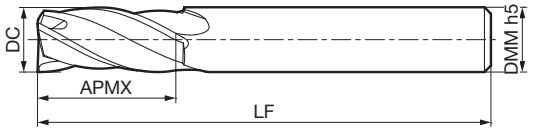


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX30100C-2D	★	*1.0*	*2.5*	*3.5*	*40*	*4*	1
GSX30150C-2D	★	*1.5*	*3.8*	*4.8*	*40*	*4*	1
GSX30200C-2D	★	*2.0*	*5.0*	*6.0*	*40*	*4*	1
GSX30250C-2D	★	*2.5*	*6.3*	*7.3*	*40*	*4*	1
GSX30300C-2D	★	*3.0*	*7.5*	*9.0*	*45*	*6*	1
GSX30400C-2D	★	*4.0*	*11.0*	*12.5*	*45*	*6*	1
GSX30500C-2D	★	*5.0*	*13.0*	*15.0*	*50*	*6*	1
GSX30600C-2D	★	*6.0*	*13.0*	-	*50*	*6*	2
GSX30700C-2D	★	*7.0*	*16.0*	*18.0*	*60*	*8*	1
GSX30800C-2D	★	*8.0*	*19.0*	-	*60*	*8*	2
GSX30900C-2D	★	*9.0*	*19.0*	*21.0*	*70*	*10*	1
GSX31000C-2D	★	*10.0*	*22.0*	-	*70*	*10*	2
GSX31200C-2D	★	*12.0*	*26.0*	-	*75*	*12*	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

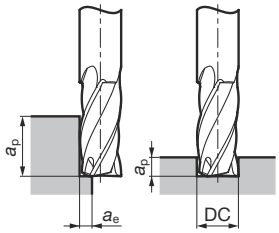
GSX 3 0100 C - 2D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 30000C-2D Type

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0	11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0	6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0	4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0	3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0	2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0	2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
Standard Depth of Cut a_p	1.5DC										1.0DC					
Standard Depth of Cut a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions	Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0	19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0	11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0	6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0	4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0	3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0	2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0	2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 40000C-1.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

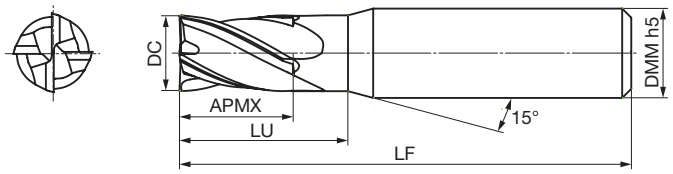
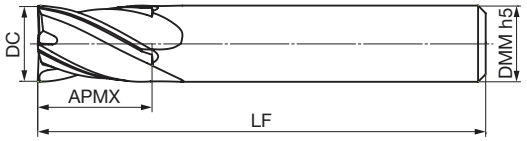


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX40100C-1.5D	★	1.0	1.5	2.5	40	4	1
GSX40150C-1.5D	★	1.5	2.3	3.3	40	4	1
GSX40200C-1.5D	★	2.0	3.0	4.0	40	4	1
GSX40250C-1.5D	★	2.5	3.8	4.8	40	4	1
GSX40300C-1.5D	★	3.0	4.5	6.0	45	6	1
GSX40350C-1.5D	★	3.5	5.3	6.8	45	6	1
GSX40400C-1.5D	★	4.0	6.0	7.5	45	6	1
GSX40450C-1.5D	★	4.5	6.8	8.3	50	6	1
GSX40500C-1.5D	★	5.0	7.5	9.5	50	6	1
GSX40550C-1.5D	★	5.5	8.3	10.3	50	6	1
GSX40600C-1.5D	★	6.0	9.0	-	50	6	2
GSX40650C-1.5D	★	6.5	10.0	12.0	60	8	1
GSX40700C-1.5D	★	7.0	11.0	13.0	60	8	1
GSX40750C-1.5D	★	7.5	12.0	14.0	60	8	1
GSX40800C-1.5D	★	8.0	12.0	-	60	8	2
GSX40850C-1.5D	★	8.5	13.0	15.0	70	10	1
GSX40900C-1.5D	★	9.0	14.0	16.0	70	10	1
GSX40950C-1.5D	★	9.5	15.0	17.0	70	10	1
GSX41000C-1.5D	★	10.0	15.0	-	70	10	2
GSX41050C-1.5D	★	10.5	16.0	18.5	75	12	1
GSX41100C-1.5D	★	11.0	17.0	19.5	75	12	1
GSX41150C-1.5D	★	11.5	18.0	20.5	75	12	1
GSX41200C-1.5D	★	12.0	18.0	-	75	12	2
GSX41300C-1.5D	★	13.0	20.0	23.5	90	16	1
GSX41400C-1.5D	★	14.0	21.0	24.5	90	16	1
GSX41500C-1.5D	★	15.0	23.0	26.5	90	16	1
GSX41600C-1.5D	★	16.0	24.0	-	90	16	2
GSX41700C-1.5D	★	17.0	26.0	30.5	100	20	1
GSX41800C-1.5D	★	18.0	27.0	31.5	100	20	1
GSX41900C-1.5D	★	19.0	29.0	33.5	100	20	1
GSX42000C-1.5D	★	20.0	30.0	-	100	20	2
GSX42500C-1.5D	★	25.0	38.0	-	120	25	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

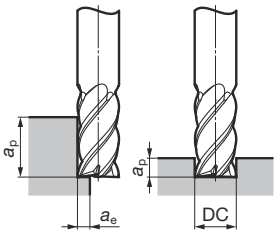
GSX 4 0100 C - 1.5D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 40000C-1.5D Type

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
2.0		12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
4.0		6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
6.0		4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
8.0		3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
10.0		2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
12.0		2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
16.0		1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
20.0		1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
25.0		1,050	470	1,050	470	1,050	470	1,050	300	720	210	520	120	640	130	520	80
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Side Milling (High Speed Machining Centre)

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300		
2.0		47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400		
4.0		23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490		
6.0		16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520		
8.0		12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520		
10.0		9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520		
12.0		8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520		
16.0		6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450		
20.0		4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380		
25.0		3,800	1,500	3,800	1,500	3,800	1,500	3,800	1,150	3,200	850	2,600	600	1,300	300		
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
2.0		12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
4.0		6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
6.0		4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
8.0		3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
10.0		2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
12.0		2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
16.0		1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
20.0		1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
25.0		1,080	384	1,080	480	1,080	480	1,040	304	720	208	520	120	640	88	256	40
Standard Depth of Cut	a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 40000S-2D Type

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

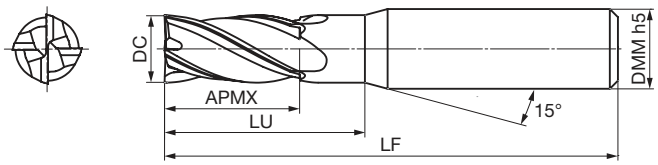
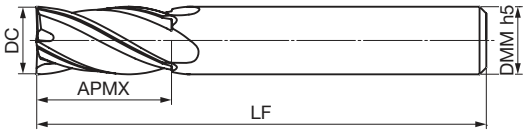


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX40100S-2D	★	1.0	2.5	3.5	40	4	1
GSX40100S-2D-S3	★	1.0	2.5	3.5	38	3	1
GSX40150S-2D	★	1.5	3.8	4.8	40	4	1
GSX40200S-2D	★	2.0	5.0	6.0	40	4	1
GSX40200S-2D-S3	★	2.0	5.0	6.0	38	3	1
GSX40250S-2D	★	2.5	6.3	7.3	40	4	1
GSX40300S-2D	★	3.0	7.5	9.0	45	6	1
GSX40300S-2D-S3	★	3.0	7.5	-	38	3	2
GSX40350S-2D	★	3.5	8.8	10.0	45	6	1
GSX40400S-2D	★	4.0	11.0	14.0	45	6	1
GSX40400S-2D-S4	★	4.0	11.0	-	45	4	2
GSX40450S-2D	★	4.5	11.3	12.8	50	6	1
GSX40500S-2D	★	5.0	13.0	19.6	50	6	1
GSX40550S-2D	★	5.5	13.0	19.6	50	6	1
GSX40600S-2D	★	6.0	13.0	-	50	6	2
GSX40650S-2D	★	6.5	13.0	19.6	60	8	1
GSX40700S-2D	★	7.0	16.0	21.1	60	8	1
GSX40750S-2D	★	7.5	16.0	21.1	60	8	1
GSX40800S-2D	★	8.0	19.0	-	60	8	2
GSX40850S-2D	★	8.5	19.0	24.1	70	10	1
GSX40900S-2D	★	9.0	19.0	24.1	70	10	1
GSX40950S-2D	★	9.5	19.0	24.1	70	10	1
GSX41000S-2D	★	10.0	22.0	-	70	10	2
GSX41050S-2D	★	10.5	22.0	24.5	75	12	1
GSX41100S-2D	★	11.0	22.0	24.5	75	12	1
GSX41150S-2D	★	11.5	23.0	25.5	75	12	1
GSX41200S-2D	★	12.0	26.0	-	75	12	2
GSX41300S-2D	★	13.0	26.0	29.5	90	16	1
GSX41350S-2D	★	13.5	27.0	30.5	90	16	1
GSX41400S-2D	★	14.0	28.0	31.5	90	16	1
GSX41500S-2D	★	15.0	30.0	33.5	90	16	1
GSX41600S-2D	★	16.0	32.0	-	90	16	2
GSX41700S-2D	★	17.0	35.0	39.5	100	20	1
GSX41800S-2D	★	18.0	40.0	44.5	100	20	1
GSX41900S-2D	★	19.0	40.0	44.5	100	20	1
GSX42000S-2D	★	20.0	40.0	-	100	20	2
GSX42200S-2D	★	22.0	44.0	49.0	110	25	1
GSX42400S-2D	★	24.0	48.0	53.0	120	25	1
GSX42500S-2D	★	25.0	50.0	-	120	25	2

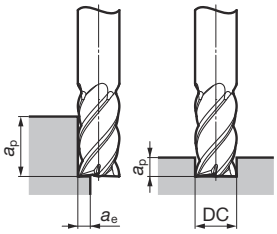
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 4 0100 S - 2D - S3

Series Code	Number of Teeth	Dia.	Cutting Edge S: Sharp Edge	Cutting Edge Length	Shank Dia.

GSX 40000S-2D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. This series is not recommended for groove milling.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
2.0		11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
4.0		6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
6.0		4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
8.0		3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
10.0		2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
12.0		2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
16.0		1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
20.0		1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
25.0		960	370	960	370	960	370	920	230	640	160	480	85	560	95	480	60
Standard Depth of Cut	a_p	2.0DC															
	a_e	0.03DC										0.01DC					

Groove Finishing

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		22,000	360	22,000	360	22,000	360	19,000	220	13,000	140	9,500	90	11,300	90	9,500	65
2.0		11,500	440	11,500	440	11,500	440	11,000	290	7,500	180	5,400	110	6,500	120	5,400	85
4.0		6,000	560	6,000	560	6,000	560	5,800	370	4,000	230	2,900	150	3,400	160	2,900	100
6.0		4,200	600	4,200	600	4,200	600	4,000	400	2,700	240	2,000	160	2,400	170	2,000	120
8.0		3,000	600	3,000	600	3,000	600	2,800	400	2,000	240	1,450	160	1,800	170	1,450	120
10.0		2,500	600	2,500	600	2,500	600	2,350	400	1,600	240	1,200	160	1,450	170	1,200	120
12.0		2,100	600	2,100	600	2,100	600	2,000	400	1,350	240	1,000	160	1,200	170	1,000	120
16.0		1,500	500	1,500	500	1,500	500	1,450	320	1,000	210	750	130	900	140	750	90
20.0		1,200	460	1,200	460	1,200	460	1,150	290	800	200	600	110	700	120	600	75
25.0		960	370	960	370	960	370	920	230	640	160	480	85	560	95	480	60
Standard Depth of Cut	a_p	1.5DC															
	a_e	Below 0.02DC															

GSX 40000C-2D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

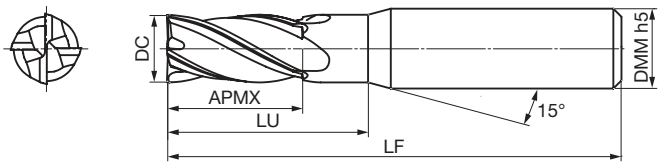
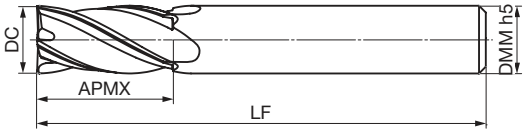


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX40100C-2D	★	1.0	2.0	3.0	40	4	1
GSX40150C-2D	★	1.5	3.0	4.0	40	4	1
GSX40200C-2D	★	2.0	4.0	5.0	40	4	1
GSX40250C-2D	★	2.5	5.0	6.0	40	4	1
GSX40300C-2D	★	3.0	6.0	7.5	45	6	1
GSX40350C-2D	★	3.5	7.0	8.5	45	6	1
GSX40400C-2D	★	4.0	8.0	9.5	45	6	1
GSX40450C-2D	★	4.5	9.0	10.5	50	6	1
GSX40500C-2D	★	5.0	10.0	12.0	50	6	1
GSX40550C-2D	★	5.5	11.0	13.0	50	6	1
GSX40600C-2D	★	6.0	12.0	-	50	6	2
GSX40650C-2D	★	6.5	13.0	15.0	60	8	1
GSX40700C-2D	★	7.0	14.0	16.0	60	8	1
GSX40750C-2D	★	7.5	15.0	17.0	60	8	1
GSX40800C-2D	★	8.0	16.0	-	60	8	2
GSX40850C-2D	★	8.5	17.0	19.0	70	10	1
GSX40900C-2D	★	9.0	18.0	20.0	70	10	1
GSX40950C-2D	★	9.5	19.0	21.0	70	10	1
GSX41000C-2D	★	10.0	20.0	-	70	10	2
GSX41050C-2D	★	10.5	21.0	23.5	75	12	1
GSX41100C-2D	★	11.0	22.0	24.5	75	12	1
GSX41150C-2D	★	11.5	23.0	25.5	75	12	1
GSX41200C-2D	★	12.0	24.0	-	75	12	2
GSX41300C-2D	★	13.0	26.0	29.5	90	16	1
GSX41400C-2D	★	14.0	28.0	31.5	90	16	1
GSX41500C-2D	★	15.0	30.0	33.5	90	16	1
GSX41600C-2D	★	16.0	32.0	-	90	16	2
GSX41700C-2D	★	17.0	34.0	39.5	100	20	1
GSX41800C-2D	★	18.0	36.0	40.5	100	20	1
GSX41900C-2D	★	19.0	38.0	42.5	100	20	1
GSX42000C-2D	★	20.0	40.0	-	100	20	2
GSX42500C-2D	★	25.0	50.0	-	120	25	2

Grade: ACF20

Endmill Identification (GSXMILL Series Only)

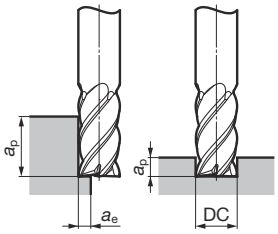
GSX 4 0100 C - 2D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 40000C-2D Type

Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.



Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		24,000	470	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	120	10,500	85
2.0		12,800	570	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	160	6,000	110
4.0		6,800	730	6,800	730	6,800	730	6,400	490	4,400	300	3,200	200	3,800	210	3,200	130
6.0		4,600	780	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	220	2,200	150
8.0		3,400	780	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	220	1,600	150
10.0		2,800	780	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,500	220	1,300	150
12.0		2,300	780	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	220	1,100	150
16.0		1,700	650	1,700	650	1,700	650	1,600	420	1,100	280	800	170	1,000	180	800	120
20.0		1,350	600	1,350	600	1,350	600	1,300	380	900	260	650	150	800	160	650	100
25.0		1,000	480	1,000	480	1,000	480	1,000	300	700	200	500	120	640	120	500	80
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Side Milling (High Speed Machining Centre)

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		60,000	1,200	60,000	1,200	60,000	1,200	60,000	850	60,000	720	48,000	500	32,000	300		
2.0		47,800	2,200	47,800	2,200	47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400		
4.0		23,900	2,600	23,900	2,600	23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490		
6.0		16,000	2,700	16,000	2,700	16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	520		
8.0		12,000	2,700	12,000	2,700	12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520		
10.0		9,600	2,700	9,600	2,700	9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520		
12.0		8,000	2,700	8,000	2,700	8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520		
16.0		6,000	2,200	6,000	2,200	6,000	2,200	6,000	1,600	5,000	1,200	4,000	900	2,000	450		
20.0		4,800	2,000	4,800	2,000	4,800	2,000	4,800	1,400	4,000	1,100	3,200	750	1,600	380		
25.0		3,800	1,500	3,800	1,500	3,800	1,500	3,800	1,100	3,200	900	2,500	600	1,300	300		
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		24,000	380	24,000	470	24,000	470	21,000	290	14,500	180	10,500	120	12,600	85	5,200	30
2.0		12,800	460	12,800	570	12,800	570	12,000	380	8,300	230	6,000	150	7,200	110	3,000	40
4.0		6,800	580	6,800	730	6,800	730	5,400	490	4,400	300	3,200	200	3,800	130	1,600	55
6.0		4,600	620	4,600	780	4,600	780	4,300	520	3,000	320	2,200	210	2,650	160	1,100	65
8.0		3,400	620	3,400	780	3,400	780	3,200	520	2,200	320	1,600	210	2,000	160	800	65
10.0		2,800	620	2,800	780	2,800	780	2,600	520	1,800	320	1,300	210	1,600	160	650	65
12.0		2,300	620	2,300	780	2,300	780	2,200	520	1,500	320	1,100	210	1,300	160	550	65
16.0		1,700	520	1,700	560	1,700	560	1,600	420	1,100	280	800	170	1,000	130	400	55
20.0		1,350	480	1,350	600	1,350	600	1,300	380	900	260	650	150	800	110	320	50
25.0		1,000	380	1,000	450	1,000	450	1,000	300	700	200	500	120	640	80	250	40
Standard Depth of Cut	a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

GSX 40000S-3D Type

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

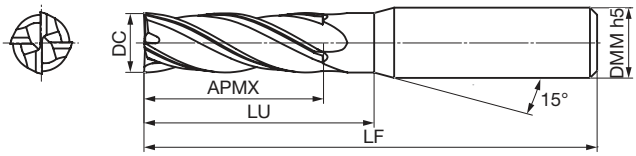
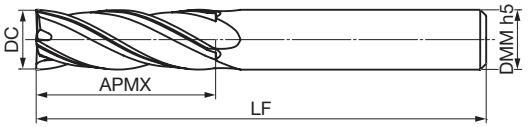


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX40100S-3D	★	1.0	3.0	4.0	40	4	1
GSX40150S-3D	★	1.5	4.5	5.5	40	4	1
GSX40200S-3D	★	2.0	6.0	7.0	40	4	1
GSX40250S-3D	★	2.5	8.0	9.0	40	4	1
GSX40300S-3D	★	3.0	9.0	10.5	50	6	1
GSX40350S-3D	★	3.5	11.0	12.5	50	6	1
GSX40400S-3D	★	4.0	12.0	13.5	50	6	1
GSX40450S-3D	★	4.5	15.0	16.5	50	6	1
GSX40500S-3D	★	5.0	15.0	17.0	50	6	1
GSX40550S-3D	★	5.5	18.0	20.0	50	6	1
GSX40600S-3D	★	6.0	18.0	-	50	6	2
GSX40650S-3D	★	6.5	20.0	22.0	70	8	1
GSX40700S-3D	★	7.0	21.0	23.0	70	8	1
GSX40750S-3D	★	7.5	23.0	25.0	70	8	1
GSX40800S-3D	★	8.0	24.0	-	70	8	2
GSX40850S-3D	★	8.5	26.0	28.0	75	10	1
GSX40900S-3D	★	9.0	27.0	29.0	75	10	1
GSX40950S-3D	★	9.5	29.0	31.0	75	10	1
GSX41000S-3D	★	10.0	30.0	-	90	10	2
GSX41050S-3D	★	10.5	32.0	34.5	90	12	1
GSX41100S-3D	★	11.0	33.0	35.5	90	12	1
GSX41150S-3D	★	11.5	35.0	37.5	90	12	1
GSX41200S-3D	★	12.0	36.0	-	90	12	2
GSX41300S-3D	★	13.0	39.0	42.5	100	16	1
GSX41400S-3D	★	14.0	42.0	45.5	110	16	1
GSX41500S-3D	★	15.0	45.0	48.5	110	16	1
GSX41600S-3D	★	16.0	48.0	-	110	16	2
GSX41700S-3D	★	17.0	51.0	55.5	110	20	1
GSX41800S-3D	★	18.0	54.0	58.5	120	20	1
GSX41900S-3D	★	19.0	57.0	61.5	120	20	1
GSX42000S-3D	★	20.0	60.0	-	120	20	2
GSX42200S-3D	★	22.0	66.0	71.0	130	25	1
GSX42500S-3D	★	25.0	75.0	-	130	25	2

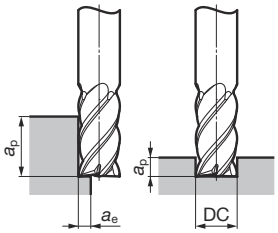
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 4 0100 S - 3D

Series Code	Number of Teeth	Dia.	Cutting Edge S: Sharp Edge	Cutting Edge Length

GSX 40000S-3D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
2.0		9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
4.0		4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
6.0		3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
8.0		2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
10.0		1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
12.0		1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
16.0		1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
20.0		900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
25.0		720	220	720	220	720	220	680	170	560	130	320	60	352	70	320	50
Standard Depth of Cut	a_p	2.5DC								2.0DC							
	a_e	Below ø3: 0.02DC , Above ø3 to Below ø8: 0.05DC, Above ø8: 0.07DC								0.01DC							

Groove Finishing

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		18,500	250	18,500	250	18,500	250	17,000	150	11,500	100	8,000	65	9,400	65	8,000	45
2.0		9,400	250	9,400	250	9,400	250	8,500	200	6,700	130	4,000	65	4,600	90	4,000	60
4.0		4,500	350	4,500	350	4,500	350	4,300	250	3,500	210	2,000	110	2,300	110	2,000	70
6.0		3,100	400	3,100	400	3,100	400	2,800	300	2,400	220	1,300	120	1,500	120	1,300	90
8.0		2,300	380	2,300	380	2,300	380	2,100	300	1,800	220	950	120	1,100	120	900	90
10.0		1,800	350	1,800	350	1,800	350	1,700	300	1,400	220	700	120	900	120	800	90
12.0		1,500	350	1,500	350	1,500	350	1,400	300	1,200	220	650	110	750	120	650	90
16.0		1,100	300	1,100	300	1,100	300	1,000	240	900	190	480	90	550	100	490	70
20.0		900	280	900	280	900	280	850	210	700	170	400	80	440	90	400	60
25.0		720	220	720	220	720	220	680	170	560	130	320	60	352	70	320	50
Standard Depth of Cut	a_p	1.5DC															
	a_e	Below 0.02DC															

GSX 40000C-3D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling

Fig 1

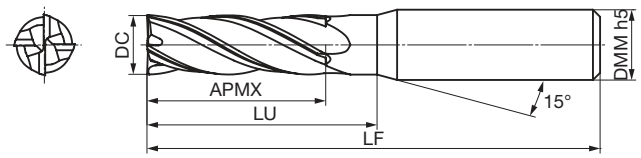
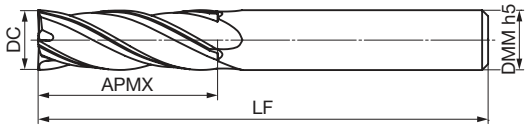


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX40100C-3D	★	1.0	3.0	4.0	40	4	1
GSX40150C-3D	★	1.5	4.5	5.5	40	4	1
GSX40200C-3D	★	2.0	6.0	7.0	40	4	1
GSX40250C-3D	★	2.5	7.5	8.5	40	4	1
GSX40300C-3D	★	3.0	9.0	10.5	50	6	1
GSX40350C-3D	★	3.5	11.0	12.5	50	6	1
GSX40400C-3D	★	4.0	12.0	13.5	50	6	1
GSX40450C-3D	★	4.5	14.0	15.5	50	6	1
GSX40500C-3D	★	5.0	15.0	17.0	50	6	1
GSX40550C-3D	★	5.5	17.0	19.0	50	6	1
GSX40600C-3D	★	6.0	18.0	-	50	6	2
GSX40650C-3D	★	6.5	20.0	22.0	70	8	1
GSX40700C-3D	★	7.0	21.0	23.0	70	8	1
GSX40750C-3D	★	7.5	23.0	25.0	70	8	1
GSX40800C-3D	★	8.0	24.0	-	70	8	2
GSX40850C-3D	★	8.5	26.0	28.0	75	10	1
GSX40900C-3D	★	9.0	27.0	29.0	75	10	1
GSX40950C-3D	★	9.5	29.0	31.0	75	10	1
GSX41000C-3D	★	10.0	30.0	-	90	10	2
GSX41050C-3D	★	10.5	32.0	34.5	90	12	1
GSX41100C-3D	★	11.0	33.0	35.5	90	12	1
GSX41150C-3D	★	11.5	35.0	37.5	90	12	1
GSX41200C-3D	★	12.0	36.0	-	90	12	2
GSX41300C-3D	★	13.0	39.0	42.5	100	16	1
GSX41400C-3D	★	14.0	42.0	45.5	110	16	1
GSX41500C-3D	★	15.0	45.0	48.5	110	16	1
GSX41600C-3D	★	16.0	48.0	-	110	16	2
GSX41700C-3D	★	17.0	51.0	55.5	110	20	1
GSX41800C-3D	★	18.0	54.0	58.5	120	20	1
GSX41900C-3D	★	19.0	57.0	61.5	120	20	1
GSX42000C-3D	★	20.0	60.0	-	120	20	2
GSX42500C-3D	★	25.0	75.0	-	130	25	2

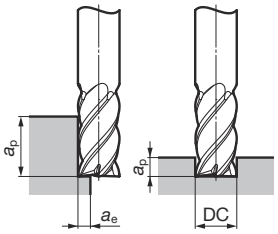
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 4 0100 C - 3D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 40000C-3D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		21,000	360	21,000	360	21,000	360	19,000	220	13,000	140	9,000	90	10,500	90	9,000	65
2.0		10,500	360	10,500	360	10,500	360	9,600	290	7,500	180	4,500	110	5,200	120	4,500	85
4.0		5,200	500	5,200	500	5,200	500	4,800	370	4,000	280	2,250	150	2,600	160	2,250	100
6.0		3,500	560	3,500	560	3,500	560	3,200	400	2,700	300	1,500	160	1,700	170	1,500	120
8.0		2,600	520	2,600	520	2,600	520	2,400	400	2,000	300	1,100	160	1,300	170	1,100	120
10.0		2,100	500	2,100	500	2,100	500	1,900	400	1,600	300	900	160	1,000	160	900	120
12.0		1,750	500	1,750	500	1,750	500	1,600	400	1,350	300	750	150	850	160	750	120
16.0		1,300	420	1,300	420	1,300	420	1,200	330	1,000	260	550	120	650	140	550	100
20.0		1,050	380	1,050	380	1,050	380	950	290	800	230	450	110	500	120	450	90
25.0		840	300	840	300	840	300	760	230	640	180	360	85	400	95	360	70
Standard Depth of Cut	a_p	2.5DC										2.0DC					
	a_e	Below ø3: 0.05DC , Above ø3 to Below ø8: 0.1DC, Above ø8: 0.15DC								0.02DC							

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		16,600	140	16,600	140	16,600	140	15,500	100	10,500	100	7,500	70	9,400	60	3,750	20
2.0		9,500	160	9,500	160	9,500	160	9,000	180	6,200	120	4,500	90	5,200	80	2,250	30
4.0		5,200	160	5,200	180	5,200	180	4,800	160	3,400	110	2,200	65	2,600	70	1,250	25
6.0		3,500	160	3,500	200	3,500	200	3,200	160	2,550	120	1,500	65	1,700	70	950	25
8.0		2,600	160	2,600	200	2,600	200	2,400	160	1,900	120	1,100	65	1,300	70	700	25
10.0		2,100	160	2,100	200	2,100	200	1,900	160	1,500	120	900	65	1,000	70	550	25
12.0		1,750	160	1,750	200	1,750	200	1,600	160	1,250	120	750	65	850	70	450	25
16.0		1,300	160	1,300	200	1,300	200	1,200	160	950	120	550	65	650	70	350	25
20.0		1,050	160	1,050	200	1,050	200	950	160	750	120	450	65	500	70	280	55
25.0		840	128	840	160	840	160	760	128	600	96	360	52	400	56	224	44
Standard Depth of Cut	a_p	0.1DC		0.2DC								0.05DC		0.1DC			

GSX 40000S-4D Type

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing

Fig 1

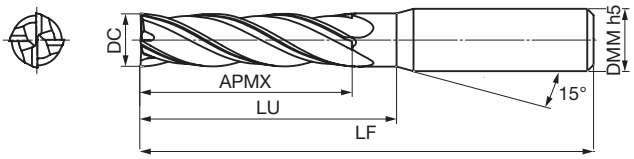
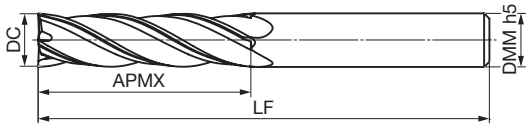


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX40100S-4D	★	1.0	4.0	5.0	40	4	1
GSX40150S-4D	★	1.5	6.0	7.0	40	4	1
GSX40200S-4D	★	2.0	8.0	9.0	40	4	1
GSX40250S-4D	★	2.5	10.0	11.0	50	4	1
GSX40300S-4D	★	3.0	12.0	13.5	50	6	1
GSX40350S-4D	★	3.5	14.0	15.5	50	6	1
GSX40400S-4D	★	4.0	16.0	17.5	50	6	1
GSX40450S-4D	★	4.5	18.0	19.5	60	6	1
GSX40500S-4D	★	5.0	20.0	22.0	60	6	1
GSX40550S-4D	★	5.5	22.0	24.0	60	6	1
GSX40600S-4D	★	6.0	24.0	-	60	6	2
GSX40650S-4D	★	6.5	26.0	28.0	70	8	1
GSX40700S-4D	★	7.0	28.0	30.0	80	8	1
GSX40750S-4D	★	7.5	30.0	32.0	80	8	1
GSX40800S-4D	★	8.0	32.0	-	80	8	2
GSX40850S-4D	★	8.5	34.0	36.0	90	10	1
GSX40900S-4D	★	9.0	36.0	38.0	90	10	1
GSX40950S-4D	★	9.5	39.0	41.0	90	10	1
GSX41000S-4D	★	10.0	40.0	-	90	10	2
GSX41050S-4D	★	10.5	42.0	44.5	100	12	1
GSX41100S-4D	★	11.0	44.0	46.5	100	12	1
GSX41150S-4D	★	11.5	46.0	48.5	100	12	1
GSX41200S-4D	★	12.0	48.0	-	100	12	2
GSX41300S-4D	★	13.0	52.0	55.5	110	16	1
GSX41400S-4D	★	14.0	56.0	59.5	120	16	1
GSX41500S-4D	★	15.0	60.0	63.5	120	16	1
GSX41600S-4D	★	16.0	64.0	-	120	16	2
GSX41700S-4D	★	17.0	68.0	72.5	130	20	1
GSX41800S-4D	★	18.0	72.0	76.5	130	20	1
GSX41900S-4D	★	19.0	76.0	80.5	140	20	1
GSX42000S-4D	★	20.0	80.0	-	140	20	2
GSX42500S-4D	★	25.0	100.0	-	160	25	2

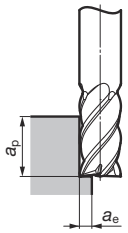
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 4 0100 S - 4D

Series Code	Number of Teeth	Dia.	Cutting Edge S: Sharp Edge	Cutting Edge Length

GSX 40000S-4D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		7,950	120	7,950	120	7,950	120	6,250	70	5,750	50	4,000	35	4,850	35	4,000	35
2.0		4,050	120	4,050	120	4,050	120	3,100	90	2,850	70	2,050	50	2,400	50	2,050	35
4.0		1,950	170	1,950	170	1,950	170	1,650	100	1,400	90	710	35	1,200	45	1,050	30
6.0		1,350	130	1,350	130	1,350	130	1,000	140	930	120	700	55	800	40	700	30
8.0		970	190	970	190	970	190	740	140	720	120	520	55	560	40	490	30
10.0		770	180	770	180	770	180	630	120	570	100	360	50	490	40	410	30
12.0		640	170	640	170	640	170	500	120	460	100	350	55	400	40	350	30
16.0		460	140	460	140	460	140	370	100	360	90	260	50	280	40	270	30
20.0		390	130	390	130	390	130	310	90	280	70	210	45	240	40	210	30
25.0		310	100	310	100	310	100	250	70	220	55	170	35	190	30	170	25
Standard Depth of Cut	a_p	2.5DC								2.0DC							
	a_e	Below ø3: 0.02DC , Above ø3 to Below ø8: 0.05DC, Above ø8: 0.07DC								0.01DC							

GSX 40000C-4D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner | 30° Helix Angle | Side Milling | Groove Finishing | Face Milling

Fig 1

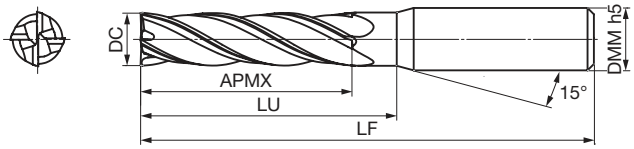
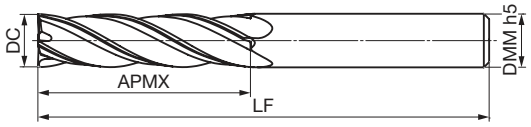


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX40100C-4D	★	1.0	4.0	5.0	40	4	1
GSX40150C-4D	★	1.5	6.0	7.0	40	4	1
GSX40200C-4D	★	2.0	8.0	9.0	40	4	1
GSX40250C-4D	★	2.5	10.0	11.0	50	4	1
GSX40300C-4D	★	3.0	12.0	13.5	50	6	1
GSX40350C-4D	★	3.5	14.0	15.5	50	6	1
GSX40400C-4D	★	4.0	16.0	17.5	50	6	1
GSX40450C-4D	★	4.5	18.0	19.5	60	6	1
GSX40500C-4D	★	5.0	20.0	22.0	60	6	1
GSX40550C-4D	★	5.5	22.0	24.0	60	6	1
GSX40600C-4D	★	6.0	24.0	-	60	6	2
GSX40650C-4D	★	6.5	26.0	28.0	70	8	1
GSX40700C-4D	★	7.0	28.0	30.0	80	8	1
GSX40750C-4D	★	7.5	30.0	32.0	80	8	1
GSX40800C-4D	★	8.0	32.0	-	80	8	2
GSX40850C-4D	★	8.5	34.0	36.0	90	10	1
GSX40900C-4D	★	9.0	36.0	28.0	90	10	1
GSX40950C-4D	★	9.5	39.0	41.0	90	10	1
GSX41000C-4D	★	10.0	40.0	-	90	10	2
GSX41050C-4D	★	10.5	42.0	44.5	100	12	1
GSX41100C-4D	★	11.0	44.0	46.5	100	12	1
GSX41150C-4D	★	11.5	46.0	48.5	100	12	1
GSX41200C-4D	★	12.0	48.0	-	100	12	2
GSX41300C-4D	★	13.0	52.0	55.5	110	16	1
GSX41400C-4D	★	14.0	56.0	59.5	120	16	1
GSX41500C-4D	★	15.0	60.0	63.5	120	16	1
GSX41600C-4D	★	16.0	64.0	-	120	16	2
GSX41700C-4D	★	17.0	68.0	72.5	130	20	1
GSX41800C-4D	★	18.0	72.0	76.5	130	20	1
GSX41900C-4D	★	19.0	76.0	80.5	140	20	1
GSX42000C-4D	★	20.0	80.0	-	140	20	2
GSX42500C-4D	★	25.0	100.0	-	160	25	2

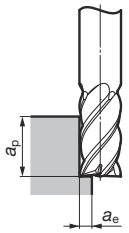
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSX 4 0100 C - 4D

Series Code	Number of Teeth	Dia.	Cutting Edge C: Gash Land	Cutting Edge Length

GSX 40000C-4D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. In some cases, chattering may occur in early stages of milling but will cease after 2m of cutting.
5. If chatter is a problem, reduce the spindle speed and feed rate indicated in the table below by the same ratio, or reduce the depth of cut.
6. This series is not recommended for groove milling.
7. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		9,000	140	9,000	140	9,000	140	7,000	80	6,500	60	4,500	40	5,400	40	4,500	40
2.0		4,500	140	4,500	140	4,500	140	3,500	100	3,200	80	2,300	55	2,700	55	2,300	40
4.0		2,250	200	2,250	200	2,250	200	1,750	120	1,600	100	1,200	60	1,350	50	1,200	35
6.0		1,500	250	1,500	250	1,500	250	1,150	160	1,050	140	800	65	900	45	800	35
8.0		1,100	220	1,100	220	1,100	220	850	160	800	130	600	65	660	45	600	35
10.0		900	210	900	210	900	210	700	140	650	120	460	65	540	45	460	35
12.0		750	200	750	200	750	200	580	140	520	110	400	65	450	45	400	35
16.0		550	170	550	170	550	170	440	120	400	95	300	55	330	45	300	35
20.0		450	150	450	150	450	150	350	100	320	80	240	50	270	45	240	35
25.0		360	120	360	120	360	120	280	80	250	60	190	40	210	35	190	30
Standard Depth of Cut	a_p	3.5DC										3.0DC					
	a_e	Below ø3: 0.04DC, ø3 ≤ D < ø8: 0.08DC, ø8 and above: 0.1DC										0.02DC					

GSV 4000-2.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner | 40° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

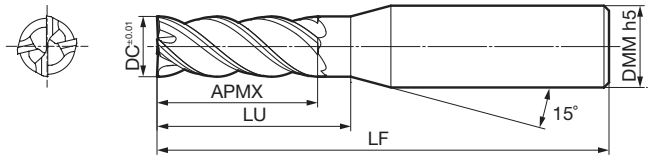
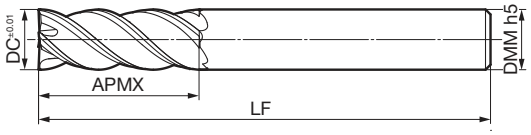


Fig 2



Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSV4020-2.5D	★	*2.0*	*5*	*6.5*	*50*	*4*	1
GSV4030-2.5D	★	*3.0*	*8*	*9.5*	*50*	*6*	1
GSV4040-2.5D	★	*4.0*	*10*	*11.5*	*50*	*6*	1
GSV4050-2.5D	★	*5.0*	*13*	*14.5*	*60*	*6*	1
GSV4060-2.5D	★	*6.0*	*15*	-	*60*	*6*	2
GSV4070-2.5D	★	*7.0*	*18*	*20.0*	*70*	*8*	1
GSV4080-2.5D	★	*8.0*	*20*	-	*80*	*8*	2
GSV4090-2.5D	★	*9.0*	*23*	*25.0*	*90*	*10*	1
GSV4100-2.5D	★	*10.0*	*25*	-	*90*	*10*	2
GSV4110-2.5D	★	*11.0*	*28*	*30.5*	*90*	*12*	1
GSV4120-2.5D	★	*12.0*	*30*	-	*90*	*12*	2
GSV4140-2.5D	★	*14.0*	*35*	*37.5*	*110*	*16*	1
GSV4150-2.5D	★	*15.0*	*38*	*41.0*	*110*	*16*	1
GSV4160-2.5D	★	*16.0*	*40*	-	*115*	*16*	2
GSV4180-2.5D	★	*18.0*	*45*	*48.0*	*120*	*20*	1
GSV4200-2.5D	★	*20.0*	*50*	-	*125*	*20*	2
GSV4250-2.5D	★	*25.0*	*63*	-	*140*	*25*	2

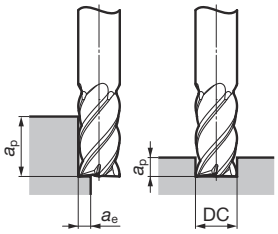
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSV 4 120 - 2.5D

Series Code | Number of Teeth | Dia. | Cutting Edge Length

GSV 4000-2.5D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0		9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0		6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0		5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0		4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	a_p	1.5DC									
	a_e	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0		8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0		6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0		4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0		3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	a_p	0.8DC				0.16DC		0.4DC		0.16DC	

GSXVL 4000-2.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner | Helix Angle 40° 43° | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

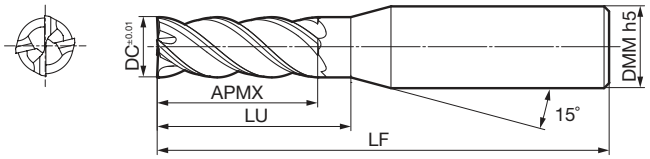
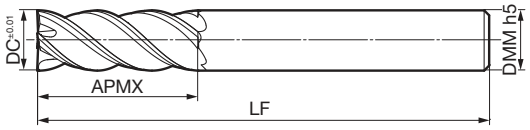


Fig 2



Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXVL4020-2.5D	★	*2.0*	*5*	*6.5*	*50*	*4*	1
GSXVL4030-2.5D	★	*3.0*	*8*	*9.5*	*50*	*6*	1
GSXVL4040-2.5D	★	*4.0*	*10*	*11.5*	*50*	*6*	1
GSXVL4050-2.5D	★	*5.0*	*13*	*14.5*	*60*	*6*	1
GSXVL4060-2.5D	★	*6.0*	*15*	-	*60*	*6*	2
GSXVL4070-2.5D	★	*7.0*	*18*	*20.0*	*70*	*8*	1
GSXVL4080-2.5D	★	*8.0*	*20*	-	*80*	*8*	2
GSXVL4090-2.5D	★	*9.0*	*23*	*25.0*	*90*	*10*	1
GSXVL4100-2.5D	★	*10.0*	*25*	-	*90*	*10*	2
GSXVL4110-2.5D	★	*11.0*	*28*	*30.5*	*90*	*12*	1
GSXVL4120-2.5D	★	*12.0*	*30*	-	*90*	*12*	2
GSXVL4140-2.5D	★	*14.0*	*35*	*37.5*	*110*	*16*	1
GSXVL4150-2.5D	★	*15.0*	*38*	*41.0*	*110*	*16*	1
GSXVL4160-2.5D	★	*16.0*	*40*	-	*115*	*16*	2
GSXVL4180-2.5D	★	*18.0*	*45*	*48.0*	*120*	*20*	1
GSXVL4200-2.5D	★	*20.0*	*50*	-	*125*	*20*	2
GSXVL4250-2.5D	★	*25.0*	*63*	-	*140*	*25*	2

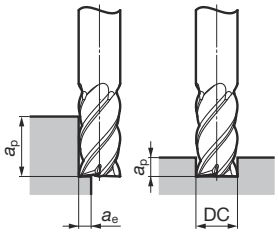
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSXVL 4 020 - 2.5D

Series Code	Number of Teeth	Dia.	Cutting Edge Length

GSXVL 4000-2.5D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0		9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0		6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0		5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0		4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	a_p	1.5DC									
	a_e	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0		8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0		6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0		4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0		3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	a_p	1.0DC				0.2DC		0.5DC		0.2DC	

GSXVL 4000S-2.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner | 40° 43° Helix Angle | SAFE-LOCK Applicable Products | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

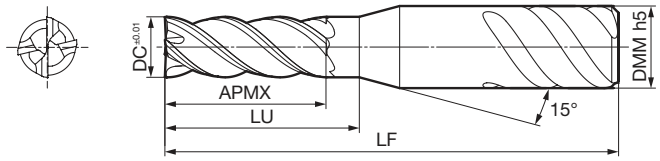
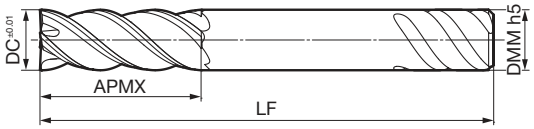


Fig 2



Body (SAFE-LOCK® Product)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXVL4120S-2.5D	★	*12.0*	*30*	-	*90*	*12*	2
GSXVL4140S-2.5D	★	*14.0*	*35*	*37.5*	*110*	*16*	1
GSXVL4150S-2.5D	★	*15.0*	*38*	*41.0*	*110*	*16*	1
GSXVL4160S-2.5D	★	*16.0*	*40*	-	*115*	*16*	2
GSXVL4180S-2.5D	★	*18.0*	*45*	*48.0*	*120*	*20*	1
GSXVL4200S-2.5D	★	*20.0*	*50*	-	*125*	*20*	2
GSXVL4250S-2.5D	★	*25.0*	*63*	-	*140*	*25*	2

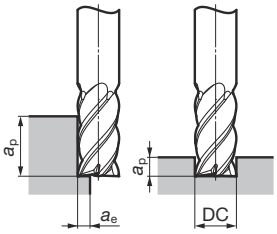
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSXVL 4 120 S - 2.5D

Series Code	Number of Teeth	Dia.	Safelock	Cutting Edge Length

GSXVL 4000S-2.5D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

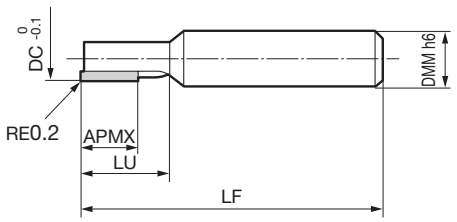
Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	a_p	1.5DC									
	a_e	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	a_p	1.0DC				0.2DC		0.5DC		0.2DC	

1 Flute | CBN | 15° Helix Angle | Side Milling

Fig 1



Body

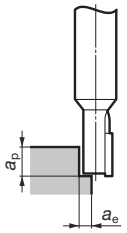
Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
BNES1060	★	*6.0*	*7.0*	*11.0*	*60*	*10*	1
BNES1080	★	*8.0*	*10.0*	*14.0*	*70*	*10*	1
BNES1100	★	*10.0*	*12.0*	*17.0*	*75*	*12*	1
BNES1120	★	*12.0*	*14.0*	*20.0*	*80*	*12*	1
BNES1140	★	*14.0*	*16.0*	*21.5*	*80*	*16*	1
BNES1160	★	*16.0*	*18.0*	*24.0*	*80*	*16*	1

Grade: BN350

Recommended Cutting Conditions

1. Use dry cutting (air blow) conditions.
2. Down cut is recommended.
3. Make overhang as short as possible and use a rigid machine.



Side Milling

Work Material (Hardness)	High-Hardness Hardened Steel (50 to 57HRC)		
Cutting Conditions	Cutting Speed V_C 100 to 170m/min		
DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Depth of Cut a_e (mm)
ø6 to 8	4,000 to 9,000	240 to 540	up to 0.1
ø10 to 12	2,700 to 5,400	180 to 360	up to 0.15
ø14 to 16	2,000 to 3,800	140 to 260	up to 0.2

Work Material (Hardness)	High-Hardness Hardened Steel (58 to 65HRC)		
Cutting Conditions	Cutting Speed V_C 80 to 150m/min		
DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Depth of Cut a_e (mm)
ø6 to 8	3,200 to 8,000	150 to 370	up to 0.08
ø10 to 12	2,100 to 4,800	120 to 370	up to 0.12
ø14 to 16	1,600 to 3,400	110 to 230	up to 0.15

MEMO

ASM 2000DL Type

Aluminum Alloy | Copper Alloy

2 Flutes | Aurora DLC Coating | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

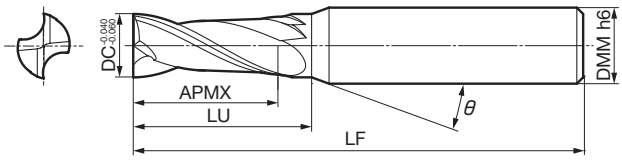
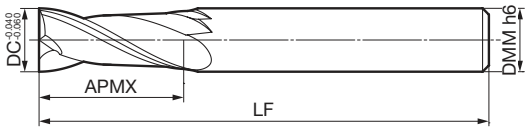


Fig 2



DC	θ
< ø3	10°
≥ ø3	15°

Body

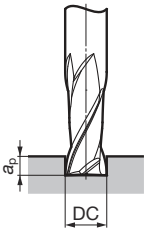
Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
ASM2020DL	★	*2.0*	*6.0*	*6.8*	*40*	*4*	1
ASM2030DL	★	*3.0*	*10.0*	*12.9*	*45*	*6*	1
ASM2040DL	★	*4.0*	*12.0*	*14.7*	*45*	*6*	1
ASM2050DL	★	*5.0*	*15.0*	*18.6*	*50*	*6*	1
ASM2060DL	★	*6.0*	*15.0*	-	*50*	*6*	2
ASM2080DL	★	*8.0*	*18.0*	-	*60*	*8*	2
ASM2100DL	★	*10.0*	*22.0*	-	*71*	*10*	2
ASM2120DL	★	*12.0*	*25.0*	-	*75*	*12*	2
ASM2160DL	★	*16.0*	*32.0*	-	*90*	*16*	2

Grade: DL1000

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Groove Milling

Work Material / Cutting Conditions		Aluminum Alloy			
		Wet		Dry	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		28,000	280	28,000	200
3.0		22,000	400	22,000	280
4.0		18,000	520	18,000	360
5.0		14,000	520	14,000	360
6.0		12,000	540	12,000	370
8.0		9,000	540	9,000	370
10.0		7,200	560	7,200	390
12.0		6,000	560	6,000	390
16.0		4,500	560	4,500	390
Standard Depth of Cut	a_p	1.0DC		0.5DC	
	a_e	1.0DC		1.0DC	

ASM 4000DL Type

Aluminum Alloy | Copper Alloy

4 Flutes | Aurora DLC Coating | Corner | 30° Helix Angle | Side Milling | Groove Finishing | Face Milling | Helical Milling | Ramping

Fig 1

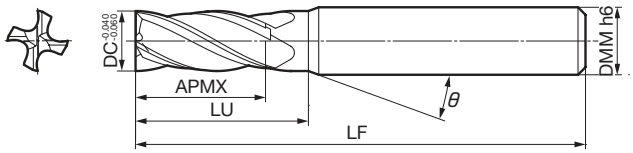
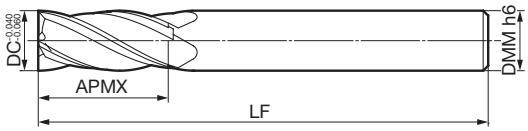


Fig 2



DC	θ
< ø3	10°
≥ ø3	15°

Body

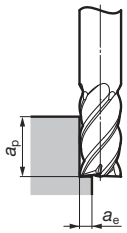
Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
ASM4020DL	★	*2.0*	*6.0*	*6.8*	*40*	*4*	1
ASM4030DL	★	*3.0*	*10.0*	*12.9*	*45*	*6*	1
ASM4040DL	★	*4.0*	*12.0*	*14.7*	*45*	*6*	1
ASM4050DL	★	*5.0*	*15.0*	*18.6*	*50*	*6*	1
ASM4060DL	★	*6.0*	*15.0*	-	*50*	*6*	2
ASM4080DL	★	*8.0*	*18.0*	-	*60*	*8*	2
ASM4100DL	★	*10.0*	*22.0*	-	*71*	*10*	2
ASM4120DL	★	*12.0*	*25.0*	-	*75*	*12*	2
ASM4160DL	★	*16.0*	*32.0*	-	*90*	*16*	2

Grade: DL1000

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

Work Material / Cutting Conditions / DC (mm)		Aluminum Alloy			
		Wet		Dry	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		40,000	1,400	40,000	980
3.0		32,000	2,000	32,000	1,400
4.0		26,000	2,600	26,000	1,800
5.0		20,000	2,600	20,000	1,800
6.0		17,000	2,700	17,000	1,900
8.0		13,000	2,700	13,000	1,900
10.0		11,000	2,800	11,000	2,000
12.0		8,500	2,800	8,500	2,000
16.0		6,400	2,800	6,400	2,000
Standard Depth of Cut	a_p	1.5DC		1.5DC	
	a_e	0.2DC		0.2DC	

ASM 2000 Type

Aluminum Alloy | Copper Alloy

2 Flutes | Uncoated Carbide | Corner | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

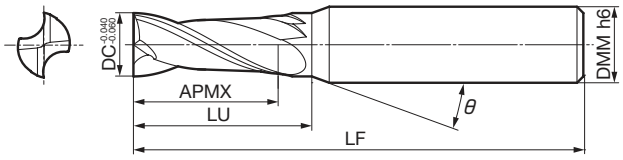


Fig 2



DC	θ
< ø3	10°
≥ ø3 < ø6	15°
> ø6	20°

Body

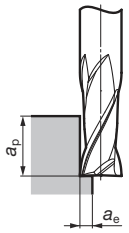
Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
ASM2020	★	*2.0*	*6*	*6.8*	*40*	*4*	1
ASM2030	★	*3.0*	*10*	*12.9*	*45*	*6*	1
ASM2040	★	*4.0*	*12*	*14.7*	*45*	*6*	1
ASM2050	★	*5.0*	*15*	*18.6*	*50*	*6*	1
ASM2060	★	*6.0*	*15*	-	*50*	*6*	2
ASM2080	★	*8.0*	*18*	-	*60*	*8*	2
ASM2100	★	*10.0*	*22*	-	*71*	*10*	2
ASM2120	★	*12.0*	*25*	-	*75*	*12*	2
ASM2140	★	*14.0*	*32*	*44.2*	*90*	*16*	1
ASM2150	★	*15.0*	*32*	*44.1*	*90*	*16*	1
ASM2160	★	*16.0*	*32*	-	*90*	*16*	2

Grade: H1

Recommended Cutting Conditions

1. If the machine cannot achieve the standard spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



Side Milling

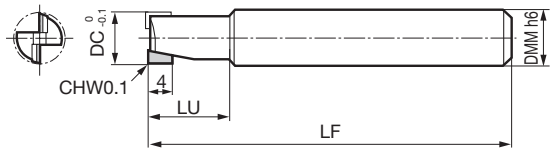
Work Material / Cutting Conditions		Aluminum Alloy		Cast Iron Special Cast Iron	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		35,000	460	13,000	240
3.0		23,400	770	8,750	275
4.0		17,500	800	6,550	310
6.0		11,700	910	4,370	340
8.0		8,750	980	3,280	390
10.0		7,000	1,100	2,620	400
12.0		5,850	1,150	2,185	430
16.0		4,380	1,150	1,640	430
Standard Depth of Cut	a_p	1.5DC		1.5DC	
	a_e	0.1DC		0.1DC	

DFE Type

Aluminum Alloy | Copper Alloy | Graphite

2 Flutes | PCD | Side Milling | Face Milling

Fig 1

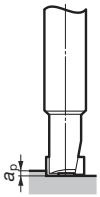


Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
DFE2040S	★	*4.0*	*15*	*50*	*6*	1
DFE2050S	★	*5.0*	*15*	*50*	*6*	1
DFE2080S	★	*8.0*	*15*	*60*	*10*	1
DFE2090S	★	*9.0*	*15*	*70*	*10*	1
DFE2100S	★	*10.0*	*15*	*70*	*10*	1

Grade: DA2200



Recommended Cutting Conditions

1. If the machine cannot achieve the standard spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Face Milling (2 Flutes)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.0		40,000	4,000
5.0		32,000	3,200
8.0		20,000	2,000
9.0		17,800	1,780
10.0		16,000	1,600
Standard Depth of Cut	a_p	0.4DC	

DFE Type

Aluminum Alloy | Copper Alloy | Graphite

4 Flutes | PCD | Side Milling | Face Milling

Fig 1

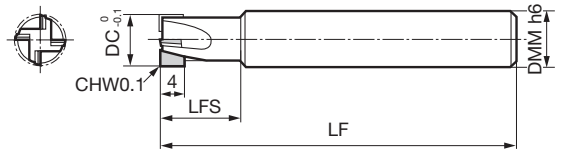
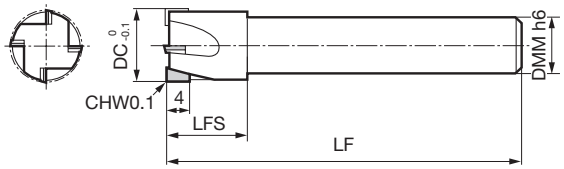


Fig 2

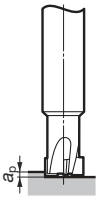


Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DFE4090S	★	*9.0*	*15*	*70*	*10*	1
DFE4100S	★	*10.0*	*15*	*70*	*10*	1
DFE4130GS	★	*13.0*	*15*	*70*	*10*	2

Grade: DA2200



Recommended Cutting Conditions

1. If the machine cannot achieve the standard spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

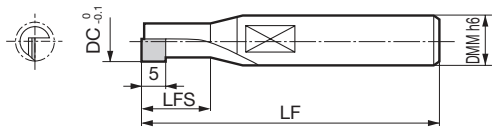
Face Milling (4 Flutes)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC (mm)		Spindle Speed (RPM)	Feed Rate (IPM)
9.0		17,800	5.512
10.0		16,000	4.961
13.0		12,300	3.819
Standard Depth of Cut	a_p	0.4DC	

Aluminum Alloy | Copper Alloy | Graphite

1 Flute | PCD | Side Milling | Face Milling

Fig 1

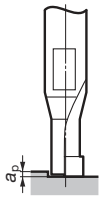


Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DAE1040	★	*4.0*	*10*	*45*	*6*	1
DAE1050	★	*5.0*	*12*	*50*	*6*	1

Grade: DA200



Recommended Cutting Conditions

1. If the machine cannot achieve the standard spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.

Face Milling (1 Flute)

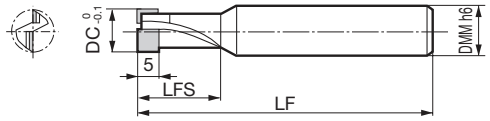
Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC (mm)		Spindle Speed (RPM)	Feed Rate (IPM)
4.0		6,000	8.268
5.0		5,000	6.890
Standard Depth of Cut	a_p	0.4DC	

DAE Type

Aluminum Alloy | Copper Alloy | Graphite

2 Flutes | PCD | Side Milling | Face Milling

Fig 1



Body (2 Flutes)

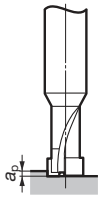
Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Neck Length LFS	Overall Length LF	Shank Dia. DMM	Fig
DAE2060	★	*6.0*	*20*	*50*	*6*	1
DAE2070	★	*7.0*	*20*	*60*	*8*	1
DAE2080	★	*8.0*	*20*	*60*	*8*	1
DAE2090	★	*9.0*	*25*	*71*	*10*	1
DAE2100	★	*10.0*	*25*	*71*	*10*	1
DAE2110	★	*11.0*	*25*	*75*	*12*	1
DAE2120	★	*12.0*	*25*	*75*	*12*	1

Grade: DA200

Recommended Cutting Conditions

1. If the machine cannot achieve the standard spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



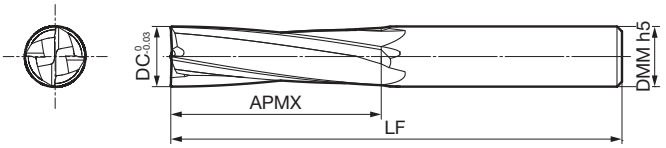
Face Milling (2 Flutes)

Work Material / Cutting Conditions		Aluminum Alloy Copper Alloy	
DC (mm)		Spindle Speed (RPM)	Feed Rate (IPM)
6.0		6,400	22.83
7.0		5,500	19.69
8.0		5,400	19.69
9.0		5,300	18.90
10.0		4,800	17.32
11.0		4,400	15.75
12.0		4,000	14.17
Standard Depth of Cut	a_p	0.4DC	

SSDC 4000(RL) Type

4 Flutes | SUMIDIA Coat | Corner | Helix Angle 10° | Side Milling | Grooving | Groove Finishing | Cut-off

Fig 1



Body Right-hand Helix Type

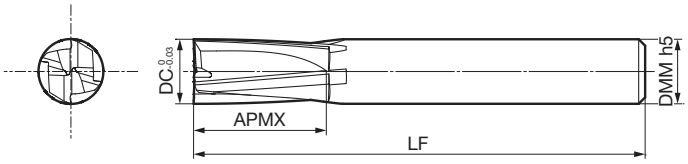
Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
SSDC4060	★	*6.0*	*20*	*70*	*6*	1
SSDC4080	★	*8.0*	*30*	*80*	*8*	1
SSDC4100	★	*10.0*	*30*	*90*	*10*	1
SSDC4120	★	*12.0*	*30*	*100*	*12*	1

Grade: DCX20

4 Flutes | SUMIDIA Coat | Corner | Helix Angle 5° 5° | Side Milling | Grooving | Groove Finishing | Cut-off

Fig 2



Body Right/Left-hand Helix Type

Dimensions (*mm*)

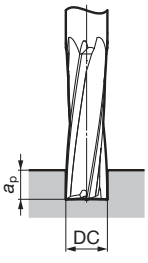
Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
SSDC4060RL	★	*6.0*	*20*	*70*	*6*	2
SSDC4080RL	★	*8.0*	*30*	*80*	*8*	2
SSDC4100RL	★	*10.0*	*30*	*90*	*10*	2
SSDC4120RL	★	*12.0*	*30*	*100*	*12*	2

Grade: DCX20

Identification Code

SSDC 4 060 RL

Series Code	Number of Teeth	Dia.	Helix Shape (RL: Right/Left-hand Helix)



Recommended Cutting Conditions

1. The cutting conditions are guidelines.
   Cutting conditions are greatly influenced by clamping, work material grade, work material thickness and machine rigidity. Adjust the conditions accordingly.
2. Take sufficient dust control measures.
3. When radial depth of cut is 0.7D or more in groove milling and trimming, reduce feed rate accordingly.

Groove Milling (Common)

Work Material / Cutting Conditions	CFRP			
	Dry			
DC (mm)	Spindle Speed (SFM)	Spindle Speed (RPM)	Feed Rate (IPM)	Feed Rate (IPR)
6.0	649.0	10,500	37.01	0.0035
8.0	659.5	8,000	31.50	0.0039
10.0	669.7	6,500	28.34	0.0044
12.0	679.8	5,500	26.38	0.0048

GSX 40000-R-2D Type

4 Flutes | GSX Coat | Corner r | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling

Fig 1

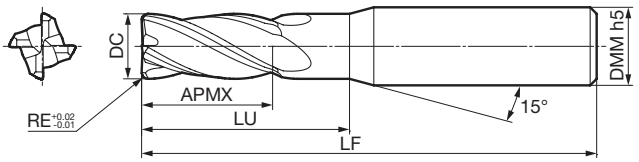
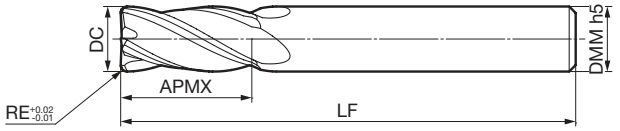


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D	0 -0.03

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSX40300-R02-2D	★	*3.0*	*0.2*	*8.0*	*9.5*	*45*	*6*	1
GSX40300-R05-2D	★	*3.0*	*0.5*	*8.0*	*9.5*	*45*	*6*	1
GSX40400-R02-2D	★	*4.0*	*0.2*	*11.0*	*14.0*	*45*	*6*	1
GSX40400-R05-2D	★	*4.0*	*0.5*	*11.0*	*14.0*	*45*	*6*	1
GSX40400-R10-2D	★	*4.0*	*1.0*	*11.0*	*14.0*	*45*	*6*	1
GSX40500-R02-2D	★	*5.0*	*0.2*	*13.0*	*19.6*	*50*	*6*	1
GSX40500-R05-2D	★	*5.0*	*0.5*	*13.0*	*19.6*	*50*	*6*	1
GSX40500-R10-2D	★	*5.0*	*1.0*	*13.0*	*19.6*	*50*	*6*	1
GSX40600-R02-2D	★	*6.0*	*0.2*	*13.0*	-	*50*	*6*	2
GSX40600-R05-2D	★	*6.0*	*0.5*	*13.0*	-	*50*	*6*	2
GSX40600-R10-2D	★	*6.0*	*1.0*	*13.0*	-	*50*	*6*	2
GSX40600-R15-2D	★	*6.0*	*1.5*	*13.0*	-	*50*	*6*	2
GSX40800-R02-2D	★	*8.0*	*0.2*	*19.0*	-	*60*	*8*	2
GSX40800-R05-2D	★	*8.0*	*0.5*	*19.0*	-	*60*	*8*	2
GSX40800-R10-2D	★	*8.0*	*1.0*	*19.0*	-	*60*	*8*	2
GSX40800-R15-2D	★	*8.0*	*1.5*	*19.0*	-	*60*	*8*	2
GSX41000-R02-2D	★	*10.0*	*0.2*	*22.0*	-	*70*	*10*	2
GSX41000-R05-2D	★	*10.0*	*0.5*	*22.0*	-	*70*	*10*	2
GSX41000-R10-2D	★	*10.0*	*1.0*	*22.0*	-	*70*	*10*	2
GSX41000-R15-2D	★	*10.0*	*1.5*	*22.0*	-	*70*	*10*	2
GSX41000-R20-2D	★	*10.0*	*2.0*	*22.0*	-	*70*	*10*	2
GSX41200-R02-2D	★	*12.0*	*0.2*	*26.0*	-	*70*	*12*	2
GSX41200-R05-2D	★	*12.0*	*0.5*	*26.0*	-	*70*	*12*	2
GSX41200-R10-2D	★	*12.0*	*1.0*	*26.0*	-	*70*	*12*	2
GSX41200-R15-2D	★	*12.0*	*1.5*	*26.0*	-	*70*	*12*	2
GSX41200-R20-2D	★	*12.0*	*2.0*	*26.0*	-	*70*	*12*	2

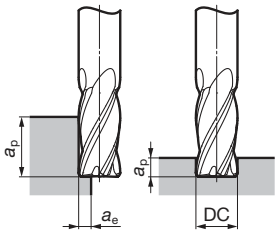
Grade: ACF20

Identification Code

GSX 4 0300 - R 02 - 2D

- GSX: Series Code
- 4: Number of Teeth
- 0300: Dia.
- R: Cutting Edge (R: Radius)
- 02: Corner Radius
- 2D: Cutting Edge Length

GSX 40000-R-2D Type



Recommended Cutting Conditions

1. If the machine cannot achieve the standard spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
3. For groove milling of stainless steel, use 60% of the recommended spindle speed and 40% of the recommended feed rate. (*)

Side Milling

Work Material / Cutting Conditions		Steel for Structure, Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel (*) SUS304, SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		12,800	570	12,000	380	8,300	230	6,000	150	6,000	130	3,700	70
4.0		6,800	730	6,400	490	4,400	300	3,200	200	3,200	170	2,000	90
6.0		4,600	770	4,300	520	3,000	320	2,200	210	2,200	180	1,400	100
8.0		3,400	770	3,200	520	2,200	320	1,600	210	1,600	180	1,000	100
10.0		2,800	780	2,600	520	1,800	320	1,300	210	1,300	180	800	100
12.0		2,300	780	2,200	530	1,500	320	1,100	210	1,100	180	700	100
Standard Depth of Cut	a_p	1.5DC		1.5DC		1.5DC		1.0DC		1.5DC		1.0DC	
	a_e	0.1DC		0.1DC		0.05DC		0.02DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Steel for Structure, Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel (*) SUS304, SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		12,800	570	12,000	380	8,300	230	6,000	150	6,000	130	3,700	70
4.0		6,800	730	6,400	490	4,400	300	3,200	200	3,200	170	2,000	90
6.0		4,600	770	4,300	520	3,000	320	2,200	210	2,200	180	1,400	100
8.0		3,400	770	3,200	520	2,200	320	1,600	210	1,600	180	1,000	100
10.0		2,800	780	2,600	520	1,800	320	1,300	210	1,300	180	800	100
12.0		2,300	780	2,200	530	1,500	320	1,100	210	1,100	180	700	100
Groove Milling	a_p	0.5DC		0.5DC		0.2DC		0.05DC		0.3DC		0.1DC	

Side Milling (High Speed Machining Centre)

Work Material / Cutting Conditions		Steel for Structure, Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK, HPM (35 to 45HRC)		Hardened Steel (45 to 55HRC)		Stainless Steel (*) SUS304, SUS316	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		47,800	2,200	47,800	1,600	39,800	1,200	31,800	900	15,900	400
4.0		23,900	2,600	23,900	1,900	19,900	1,400	15,900	1,100	8,000	490
6.0		16,000	2,700	16,000	2,000	13,300	1,500	10,600	1,200	5,300	510
8.0		12,000	2,700	12,000	2,000	10,000	1,500	8,000	1,200	4,000	520
10.0		9,600	2,700	9,600	2,000	8,000	1,500	6,400	1,200	3,200	520
12.0		8,000	2,700	8,000	2,000	6,700	1,500	5,300	1,200	2,700	520
Standard Depth of Cut	a_p	1.5DC		1.5DC		1.5DC		1.0DC		1.5DC	
	a_e	0.05DC		0.05DC		0.05DC		0.02DC		0.05DC	

GSV 4000-R-2.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner r | 40° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling

Fig 1

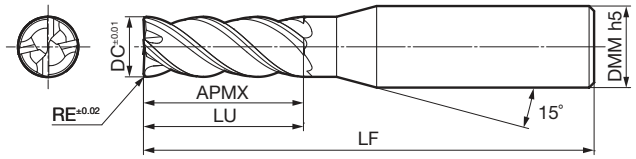
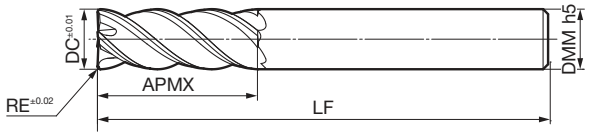


Fig 2



Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSV4030-R02-2.5D	★	3.0	0.2	8.0	9.5	50	6	1
GSV4030-R05-2.5D	★	3.0	0.5	8.0	9.5	50	6	1
GSV4040-R02-2.5D	★	4.0	0.2	10.0	11.5	50	6	1
GSV4040-R05-2.5D	★	4.0	0.5	10.0	11.5	50	6	1
GSV4040-R10-2.5D	★	4.0	1.0	10.0	11.5	50	6	1
GSV4050-R02-2.5D	★	5.0	0.2	13.0	14.5	60	6	1
GSV4050-R05-2.5D	★	5.0	0.5	13.0	14.5	60	6	1
GSV4050-R10-2.5D	★	5.0	1.0	13.0	14.5	60	6	1
GSV4060-R03-2.5D	★	6.0	0.3	15.0	-	60	6	2
GSV4060-R05-2.5D	★	6.0	0.5	15.0	-	60	6	2
GSV4060-R10-2.5D	★	6.0	1.0	15.0	-	60	6	2
GSV4060-R15-2.5D	★	6.0	1.5	15.0	-	60	6	2
GSV4080-R03-2.5D	★	8.0	0.3	20.0	-	80	8	2
GSV4080-R05-2.5D	★	8.0	0.5	20.0	-	80	8	2
GSV4080-R10-2.5D	★	8.0	1.0	20.0	-	80	8	2
GSV4080-R15-2.5D	★	8.0	1.5	20.0	-	80	8	2
GSV4080-R20-2.5D	★	8.0	2.0	20.0	-	80	8	2
GSV4100-R03-2.5D	★	10.0	0.3	25.0	-	90	10	2
GSV4100-R05-2.5D	★	10.0	0.5	25.0	-	90	10	2
GSV4100-R10-2.5D	★	10.0	1.0	25.0	-	90	10	2
GSV4100-R15-2.5D	★	10.0	1.5	25.0	-	90	10	2
GSV4100-R20-2.5D	★	10.0	2.0	25.0	-	90	10	2
GSV4120-R05-2.5D	★	12.0	0.5	30.0	-	90	12	2
GSV4120-R10-2.5D	★	12.0	1.0	30.0	-	90	12	2
GSV4120-R15-2.5D	★	12.0	1.5	30.0	-	90	12	2
GSV4120-R20-2.5D	★	12.0	2.0	30.0	-	90	12	2
GSV4120-R30-2.5D	★	12.0	3.0	30.0	-	90	12	2
GSV4160-R10-2.5D	★	16.0	1.0	40.0	-	115	16	2
GSV4160-R15-2.5D	★	16.0	1.5	40.0	-	115	16	2
GSV4160-R20-2.5D	★	16.0	2.0	40.0	-	115	16	2
GSV4160-R30-2.5D	★	16.0	3.0	40.0	-	115	16	2
GSV4200-R10-2.5D	★	20.0	1.0	50.0	-	125	20	2
GSV4200-R15-2.5D	★	20.0	1.5	50.0	-	125	20	2
GSV4200-R20-2.5D	★	20.0	2.0	50.0	-	125	20	2
GSV4200-R30-2.5D	★	20.0	3.0	50.0	-	125	20	2
GSV4250-R10-2.5D	★	25.0	1.0	63.0	-	140	25	2
GSV4250-R15-2.5D	★	25.0	1.5	63.0	-	140	25	2
GSV4250-R20-2.5D	★	25.0	2.0	63.0	-	140	25	2
GSV4250-R30-2.5D	★	25.0	3.0	63.0	-	140	25	2

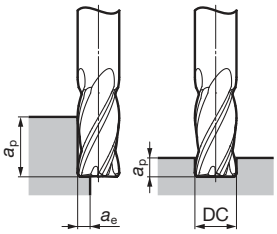
Grade: ACF20

Identification Code

GSV 4 030 - R 02 - 2.5D

- GSV — Series Code
- 4 — Number of Teeth
- 030 — Dia.
- R — Cutting Edge (R: Radius)
- 02 — Nose Radius
- 2.5D — Cutting Edge Length

GSV 4000-R-2.5D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)
2.0		13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0		9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0		6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0		5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0		4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	a_p	1.5DC									
	a_e	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)
2.0		13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0		8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0		6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0		4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0		3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	a_p	0.8DC				0.16DC		0.4DC		0.16DC	

GSXVL 4000-R-2.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

4 Flutes | GSX Coat | Corner r | 40° 43° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Helical Milling | Ramping | Profiling

Fig 1

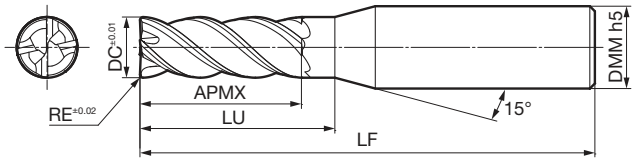
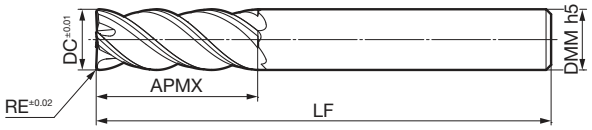


Fig 2



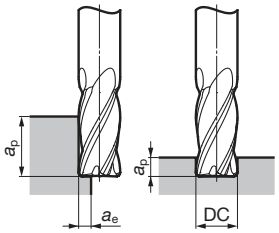
Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXVL4030-R02-2.5D	★	*3.0*	*0.2*	*8.0*	*9.5*	*50*	*6*	1
GSXVL4030-R05-2.5D	★	*3.0*	*0.5*	*8.0*	*9.5*	*50*	*6*	1
GSXVL4040-R02-2.5D	★	*4.0*	*0.2*	*10.0*	*11.5*	*50*	*6*	1
GSXVL4040-R05-2.5D	★	*4.0*	*0.5*	*10.0*	*11.5*	*50*	*6*	1
GSXVL4040-R10-2.5D	★	*4.0*	*1.0*	*10.0*	*11.5*	*50*	*6*	1
GSXVL4050-R02-2.5D	★	*5.0*	*0.2*	*13.0*	*14.5*	*60*	*6*	1
GSXVL4050-R05-2.5D	★	*5.0*	*0.5*	*13.0*	*14.5*	*60*	*6*	1
GSXVL4050-R10-2.5D	★	*5.0*	*1.0*	*13.0*	*14.5*	*60*	*6*	1
GSXVL4060-R03-2.5D	★	*6.0*	*0.3*	*15.0*	-	*60*	*6*	2
GSXVL4060-R05-2.5D	★	*6.0*	*0.5*	*15.0*	-	*60*	*6*	2
GSXVL4060-R10-2.5D	★	*6.0*	*1.0*	*15.0*	-	*60*	*6*	2
GSXVL4060-R15-2.5D	★	*6.0*	*1.5*	*15.0*	-	*60*	*6*	2
GSXVL4080-R03-2.5D	★	*8.0*	*0.3*	*20.0*	-	*80*	*8*	2
GSXVL4080-R05-2.5D	★	*8.0*	*0.5*	*20.0*	-	*80*	*8*	2
GSXVL4080-R10-2.5D	★	*8.0*	*1.0*	*20.0*	-	*80*	*8*	2
GSXVL4080-R15-2.5D	★	*8.0*	*1.5*	*20.0*	-	*80*	*8*	2
GSXVL4080-R20-2.5D	★	*8.0*	*2.0*	*20.0*	-	*80*	*8*	2
GSXVL4100-R03-2.5D	★	*10.0*	*0.3*	*25.0*	-	*90*	*10*	2
GSXVL4100-R05-2.5D	★	*10.0*	*0.5*	*25.0*	-	*90*	*10*	2
GSXVL4100-R10-2.5D	★	*10.0*	*1.0*	*25.0*	-	*90*	*10*	2
GSXVL4100-R15-2.5D	★	*10.0*	*1.5*	*25.0*	-	*90*	*10*	2
GSXVL4100-R20-2.5D	★	*10.0*	*2.0*	*25.0*	-	*90*	*10*	2
GSXVL4120-R05-2.5D	★	*12.0*	*0.5*	*30.0*	-	*90*	*12*	2
GSXVL4120-R10-2.5D	★	*12.0*	*1.0*	*30.0*	-	*90*	*12*	2
GSXVL4120-R15-2.5D	★	*12.0*	*1.5*	*30.0*	-	*90*	*12*	2
GSXVL4120-R20-2.5D	★	*12.0*	*2.0*	*30.0*	-	*90*	*12*	2
GSXVL4120-R30-2.5D	★	*12.0*	*3.0*	*30.0*	-	*90*	*12*	2
GSXVL4160-R10-2.5D	★	*16.0*	*1.0*	*40.0*	-	*115*	*16*	2
GSXVL4160-R15-2.5D	★	*16.0*	*1.5*	*40.0*	-	*115*	*16*	2
GSXVL4160-R20-2.5D	★	*16.0*	*2.0*	*40.0*	-	*115*	*16*	2
GSXVL4160-R30-2.5D	★	*16.0*	*3.0*	*40.0*	-	*115*	*16*	2
GSXVL4200-R10-2.5D	★	*20.0*	*1.0*	*50.0*	-	*125*	*20*	2
GSXVL4200-R15-2.5D	★	*20.0*	*1.5*	*50.0*	-	*125*	*20*	2
GSXVL4200-R20-2.5D	★	*20.0*	*2.0*	*50.0*	-	*125*	*20*	2
GSXVL4200-R30-2.5D	★	*20.0*	*3.0*	*50.0*	-	*125*	*20*	2
GSXVL4250-R10-2.5D	★	*25.0*	*1.0*	*63.0*	-	*140*	*25*	2
GSXVL4250-R15-2.5D	★	*25.0*	*1.5*	*63.0*	-	*140*	*25*	2
GSXVL4250-R20-2.5D	★	*25.0*	*2.0*	*63.0*	-	*140*	*25*	2
GSXVL4250-R30-2.5D	★	*25.0*	*3.0*	*63.0*	-	*140*	*25*	2

Grade: ACF20

GSXVL 4000-R-2.5D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	1,000	10,000	800	8,000	700	10,000	580	5,000	200
4.0		9,600	1,200	8,000	1,000	6,000	800	5,500	650	3,000	230
6.0		6,800	1,500	5,600	1,200	4,200	900	3,800	680	2,100	240
8.0		5,200	1,600	4,400	1,300	3,200	950	2,800	650	1,600	250
10.0		4,200	1,500	3,500	1,200	2,600	800	2,300	600	1,300	210
12.0		3,500	1,400	3,000	1,200	2,200	700	1,900	550	1,100	180
14.0		3,000	1,200	2,600	1,100	1,800	600	1,600	500	900	150
16.0		2,700	1,100	2,200	1,000	1,600	600	1,400	480	760	130
18.0		2,400	1,000	2,000	900	1,400	570	1,300	450	680	120
20.0		2,200	900	1,700	800	1,200	550	1,100	400	600	100
25.0		1,700	680	1,400	630	1,000	450	890	310	480	82
Standard Depth of Cut	a_p	1.5DC									
	a_e	0.2DC				0.05DC		0.1DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions		Carbon Steel, Cast Iron SS, SC, FC (150 to 250HB)		Alloy Steel SCM (25 to 35HRC)		Tempered Steel / Hardened Steel NAK, HPM (40 to 50HRC)		Stainless Steel SUS304,SUS316		Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
2.0		13,000	750	10,000	550	8,400	500	6,500	300	4,000	140
4.0		8,200	800	6,000	600	5,200	500	4,000	330	2,000	130
6.0		6,100	1,100	4,000	600	3,500	580	2,700	350	1,350	150
8.0		4,600	1,000	3,000	580	2,600	570	2,000	330	1,000	140
10.0		3,600	1,000	2,400	550	2,100	510	1,600	200	800	130
12.0		3,100	920	2,000	500	1,700	450	1,300	280	660	110
14.0		2,600	750	1,700	450	1,500	400	1,100	250	570	100
16.0		2,300	670	1,500	420	1,300	350	1,000	230	500	90
18.0		2,000	620	1,300	380	1,100	330	900	200	430	80
20.0		1,900	600	1,200	360	1,000	320	800	180	380	70
25.0		1,500	470	1,000	300	790	250	640	140	300	55
Standard Depth of Cut	a_p	1.0DC				0.2DC		0.5DC		0.2DC	

SSEHVL 4000W-R Type

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | GS HARD Coat | Corner r | Helix Angle 42° 45° | Side Milling | Grooving | Groove Finishing | Face Milling | Profiling

Fig 1

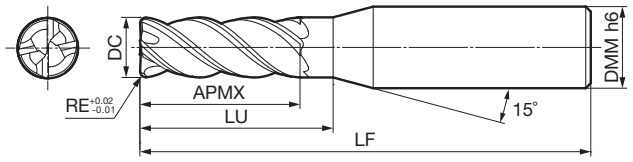
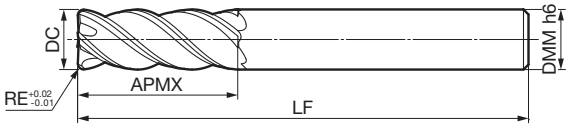


Fig 2



DC	Tolerance
4.0 < D ≤ 6.0	-0.020 to -0.038
6.0 < D	-0.025 to -0.047

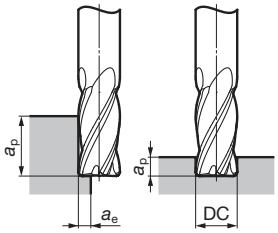
Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSEHVL4045W-R05	★	*4.5*	*0.5*	*12.0*	*14.5*	*50*	*6*	1
SSEHVL4045W-R10	★	*4.5*	*1.0*	*12.0*	*14.5*	*50*	*6*	1
SSEHVL4050W-R05	★	*5.0*	*0.5*	*13.0*	*15.5*	*60*	*6*	1
SSEHVL4050W-R10	★	*5.0*	*1.0*	*13.0*	*15.5*	*60*	*6*	1
SSEHVL4060W-R10	★	*6.0*	*1.0*	*13.0*	-	*60*	*6*	2
SSEHVL4080W-R10	★	*8.0*	*1.0*	*19.0*	-	*80*	*8*	2
SSEHVL4100W-R10	★	*10.0*	*1.0*	*22.0*	-	*90*	*10*	2
SSEHVL4100W-R30	★	*10.0*	*3.0*	*22.0*	-	*90*	*10*	2
SSEHVL4120W-R10	★	*12.0*	*1.0*	*26.0*	-	*90*	*12*	2
SSEHVL4120W-R30	★	*12.0*	*3.0*	*26.0*	-	*90*	*12*	2
SSEHVL4160W-R10	★	*16.0*	*1.0*	*32.0*	-	*115*	*16*	2
SSEHVL4160W-R30	★	*16.0*	*3.0*	*32.0*	-	*115*	*16*	2
SSEHVL4200W-R10	★	*20.0*	*1.0*	*40.0*	-	*125*	*20*	2
SSEHVL4200W-R30	★	*20.0*	*3.0*	*40.0*	-	*125*	*20*	2
SSEHVL4250W-R10	★	*25.0*	*1.0*	*50.0*	-	*140*	*25*	2
SSEHVL4250W-R30	★	*25.0*	*3.0*	*50.0*	-	*140*	*25*	2

Grade: ACW52

SSEHVL 4000W-R Type



Recommended Cutting Conditions

1. For stable machining, a high-rigidity machine is recommended.
2. Wet machining is recommended for stainless steel and heat-resistant alloy applications.
3. If cutting noise and vibration are present, please change the cutting conditions accordingly.

Side Milling

Work Material / Cutting Conditions / DC (mm)		Stainless Steel SUS304,SUS316		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		5,100	480	5,300	600	2,500	200
5.0		4,600	520	4,800	700	2,200	220
6.0		3,800	560	4,000	800	1,800	210
8.0		2,900	520	3,000	780	1,400	200
10.0		2,300	500	2,400	640	1,100	180
12.0		1,900	470	2,000	600	930	160
16.0		1,400	430	1,500	500	700	140
20.0		1,100	330	1,200	260	560	110
25.0		890	270	950	290	450	90
Standard Depth of Cut	a_p	1.5DC		1.5DC		1.5DC	
	a_e	0.1DC		0.05DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions / DC (mm)		Stainless Steel SUS304,SUS316		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		4,200	200	3,900	270	1,400	100
5.0		3,800	240	3,500	300	1,300	120
6.0		3,200	260	2,900	300	1,100	140
8.0		2,400	240	2,200	270	800	120
10.0		1,900	220	1,700	250	650	110
12.0		1,600	200	1,400	230	550	100
16.0		1,200	130	1,100	200	400	80
20.0		950	95	890	90	320	60
25.0		760	75	700	70	250	50
Standard Depth of Cut	a_p	0.3DC		0.2DC		0.15DC	

SSEH 4000W-R Type

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | GS HARD Coat | Corner | 45° Helix Angle | Side Milling | Groove Finishing | Face Milling | Profiling

Fig 1

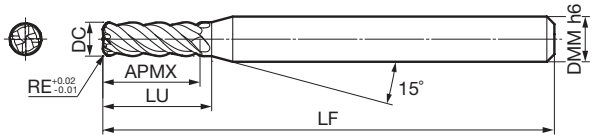
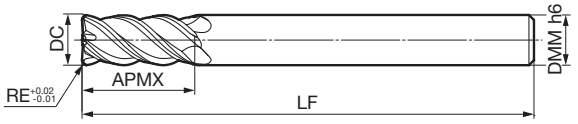


Fig 2



DC	Tolerance
4.0 < D ≤ 6.0	-0.020 to -0.038
6.0 < D	-0.025 to -0.047

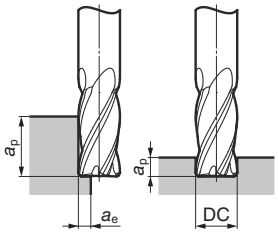
Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSEH4045W-R05	★	*4.5*	*0.5*	*12.0*	*14.5*	*50*	*6*	1
SSEH4050W-R05	★	*5.0*	*0.5*	*13.0*	*15.5*	*60*	*6*	1
SSEH4060W-R10	★	*6.0*	*1.0*	*13.0*	-	*60*	*6*	2
SSEH4080W-R10	★	*8.0*	*1.0*	*19.0*	-	*80*	*8*	2
SSEH4100W-R10	★	*10.0*	*1.0*	*22.0*	-	*90*	*10*	2
SSEH4100W-R30	★	*10.0*	*3.0*	*22.0*	-	*90*	*10*	2
SSEH4120W-R10	★	*12.0*	*1.0*	*26.0*	-	*90*	*12*	2
SSEH4120W-R30	★	*12.0*	*3.0*	*26.0*	-	*90*	*12*	2
SSEH4160W-R10	★	*16.0*	*1.0*	*32.0*	-	*115*	*16*	2
SSEH4160W-R30	★	*16.0*	*3.0*	*32.0*	-	*115*	*16*	2
SSEH4200W-R10	★	*20.0*	*1.0*	*40.0*	-	*125*	*20*	2
SSEH4200W-R30	★	*20.0*	*3.0*	*40.0*	-	*125*	*20*	2
SSEH4250W-R10	★	*25.0*	*1.0*	*50.0*	-	*140*	*25*	2
SSEH4250W-R30	★	*25.0*	*3.0*	*50.0*	-	*140*	*25*	2

Grade: ACW52

SSEH 4000W-R Type



Recommended Cutting Conditions

1. For stable machining, a high-rigidity machine is recommended.
2. Wet machining is recommended for stainless steel and heat-resistant alloy applications.
3. If cutting noise and vibration are present, please change the cutting conditions accordingly.

Side Milling

Work Material / Cutting Conditions / DC (mm)	Stainless Steel SUS304,SUS316		Titanium Alloy		Heat-Resistant Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5	3,500	350	3,500	280	2,100	170
5.0	3,200	380	3,200	320	1,900	190
6.0	2,700	430	2,700	320	1,600	190
8.0	2,000	400	2,000	280	1,200	170
10.0	1,600	380	1,600	260	1,000	160
12.0	1,300	360	1,300	230	800	140
16.0	1,000	320	1,000	200	600	120
20.0	800	260	800	160	480	100
25.0	640	200	640	130	380	80
Standard Depth of Cut a_p	1.5DC		1.5DC		1.5DC	
Standard Depth of Cut a_e	0.1DC		0.05DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions / DC (mm)	Stainless Steel SUS304,SUS316		Titanium Alloy		Heat-Resistant Alloy	
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5	2,800	140	2,500	200	1,300	100
5.0	2,500	150	2,200	220	1,100	110
6.0	2,100	170	1,900	230	1,000	120
8.0	1,600	160	1,400	200	700	100
10.0	1,300	160	1,100	180	600	100
12.0	1,100	150	900	160	500	90
16.0	800	130	700	140	400	80
20.0	640	100	560	110	320	65
25.0	510	85	450	90	250	50
Standard Depth of Cut a_p	0.3DC		0.2DC		0.15DC	

SSEHVL 4000-R Type

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | Uncoated Carbide | Corner r | Helix Angle 42° 45° | Side Milling | Groove Finishing | Face Milling | Profiling

Fig 1

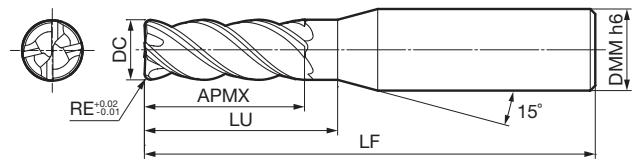
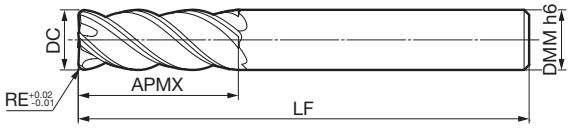


Fig 2



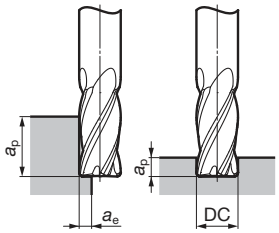
DC	Tolerance
D ≤ 6.0	-0.028 to -0.043
6.0 < D	-0.033 to -0.052

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSEHVL4045-R05	★	*4.5*	*0.5*	*12.0*	*14.5*	*50*	*6*	1
SSEHVL4045-R10	★	*4.5*	*1.0*	*12.0*	*14.5*	*50*	*6*	1
SSEHVL4050-R05	★	*5.0*	*0.5*	*13.0*	*15.5*	*60*	*6*	1
SSEHVL4050-R10	★	*5.0*	*1.0*	*13.0*	*15.5*	*60*	*6*	1
SSEHVL4060-R10	★	*6.0*	*1.0*	*13.0*	-	*60*	*6*	2
SSEHVL4080-R10	★	*8.0*	*1.0*	*19.0*	-	*80*	*8*	2
SSEHVL4100-R10	★	*10.0*	*1.0*	*22.0*	-	*90*	*10*	2
SSEHVL4100-R30	★	*10.0*	*3.0*	*22.0*	-	*90*	*10*	2
SSEHVL4120-R10	★	*12.0*	*1.0*	*26.0*	-	*90*	*12*	2
SSEHVL4120-R30	★	*12.0*	*3.0*	*26.0*	-	*90*	*12*	2
SSEHVL4160-R10	★	*16.0*	*1.0*	*32.0*	-	*115*	*16*	2
SSEHVL4160-R30	★	*16.0*	*3.0*	*32.0*	-	*115*	*16*	2

Grade: EH520



Recommended Cutting Conditions

1. For stable machining, a high-rigidity machine is recommended.
2. Wet machining is recommended for stainless steel and heat-resistant alloy applications.
3. If cutting noise and vibration are present, please change the cutting conditions accordingly.

Side Milling

Work Material / Cutting Conditions / DC (mm)		Stainless Steel SUS304,SUS316		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		2,300	120	4,600	370	1,600	130
5.0		2,000	130	4,100	410	1,500	150
6.0		1,700	130	3,400	400	1,200	140
8.0		1,300	130	2,600	360	900	130
10.0		1,000	130	2,100	340	700	110
12.0		800	110	1,700	300	600	100
16.0		600	90	1,300	260	500	100
Standard Depth of Cut	a_p	1.5DC		1.5DC		1.5DC	
	p_f	0.1DC		0.05DC		0.05DC	

Groove Milling

Work Material / Cutting Conditions / DC (mm)		Stainless Steel SUS304,SUS316		Titanium Alloy		Heat-Resistant Alloy	
		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		1,800	50	3,200	250	1,300	110
5.0		1,600	50	2,900	290	1,200	120
6.0		1,400	50	2,400	290	1,000	120
8.0		1,000	50	1,800	250	700	90
10.0		800	50	1,400	230	600	100
12.0		600	50	1,200	210	500	90
16.0		500	40	900	180	400	80
Standard Depth of Cut	a_p	0.3DC		0.2DC		0.15DC	

SSEH 4000-R Type

Stainless Steel | Ti Alloy / Heat Resistant Alloy

4 Flutes | Uncoated Carbide | Corner r | 45° Helix Angle | Side Milling | Groove Finishing | Face Milling | Profiling

Fig 1

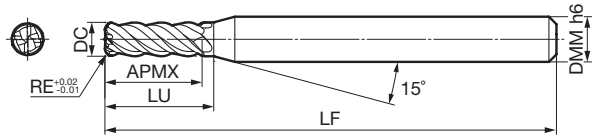
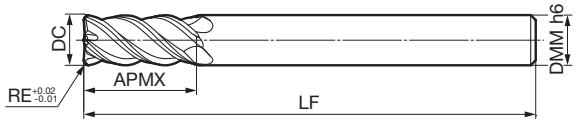


Fig 2



DC	Tolerance
D ≤ 6.0	-0.028 to -0.043
6.0 < D	-0.033 to -0.052

Body

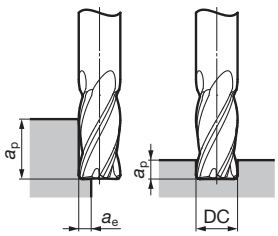
Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SSEH4045-R05	★	*4.5*	*0.5*	*12.0*	*14.5*	*50*	*6*	1
SSEH4050-R05	★	*5.0*	*0.5*	*13.0*	*15.5*	*60*	*6*	1
SSEH4060-R10	★	*6.0*	*1.0*	*13.0*	-	*60*	*6*	2
SSEH4080-R10	★	*8.0*	*1.0*	*19.0*	-	*80*	*8*	2
SSEH4100-R10	★	*10.0*	*1.0*	*22.0*	-	*90*	*10*	2
SSEH4100-R30	★	*10.0*	*3.0*	*22.0*	-	*90*	*10*	2
SSEH4120-R10	★	*12.0*	*1.0*	*26.0*	-	*90*	*12*	2
SSEH4120-R30	★	*12.0*	*3.0*	*26.0*	-	*90*	*12*	2
SSEH4160-R10	★	*16.0*	*1.0*	*32.0*	-	*115*	*16*	2
SSEH4160-R30	★	*16.0*	*3.0*	*32.0*	-	*115*	*16*	2

Grade: EH520

Recommended Cutting Conditions

1. For stable machining, a high-rigidity machine is recommended.
2. Wet machining is recommended for stainless steel and heat-resistant alloy applications.
3. If cutting noise and vibration are present, please change the cutting conditions accordingly.



Side Milling

Work Material		Stainless Steel SUS304,SUS316		Titanium Alloy		Heat-Resistant Alloy	
Cutting Conditions / DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		1,800	90	3,500	280	1,400	110
5.0		1,600	100	3,200	320	1,300	130
6.0		1,300	100	2,700	320	1,100	130
8.0		1,000	100	2,000	280	800	110
10.0		800	100	1,600	260	600	100
12.0		700	100	1,300	230	500	90
16.0		500	80	1,000	200	400	80
Standard Depth of Cut	a_p	1.5DC		1.5DC		1.5DC	
	a_e	0.1DC		0.05DC		0.05DC	

Groove Milling

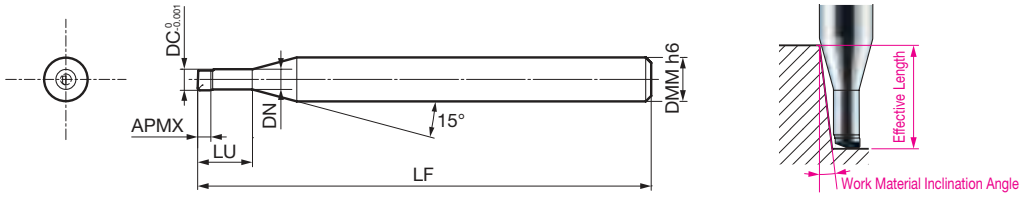
Work Material		Stainless Steel SUS304,SUS316		Titanium Alloy		Heat-Resistant Alloy	
Cutting Conditions / DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
4.5		1,400	40	2,500	200	1,100	90
5.0		1,300	40	2,200	220	1,000	100
6.0		1,100	40	1,900	230	800	100
8.0		800	40	1,400	200	600	80
10.0		600	40	1,100	180	500	80
12.0		500	40	900	160	400	70
16.0		400	30	700	140	300	60
Standard Depth of Cut	a_p	0.3DC		0.2DC		0.15DC	

NPDRS Type

Carbide | Hard Brittle Material

1 Flute | Binderless PCD | Corner r | Side Milling | Face Milling | Profiling

Fig 1



Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Effective Length for Work Material Inclination Angle 0.5°	1°	1.5°	2°	3°	Wiper Edge	Fig
NPDRS1020R002-006	★	0.2	0.02	0.1	0.6	40	0.175	4	0.63	0.65	0.67	0.70	0.75	No	1
NPDRS1020R005-006	★	0.2	0.05	0.1	0.6	40	0.175	4	0.63	0.65	0.67	0.69	0.74	No	1
NPDRS1030R002-010	★	0.3	0.02	0.15	1.0	40	0.27	4	1.04	1.08	1.11	1.15	1.24	No	1
NPDRS1030R005-010	★	0.3	0.05	0.15	1.0	40	0.27	4	1.04	1.08	1.11	1.15	1.23	No	1
NPDRS1050R005-015	★	0.5	0.05	0.25	1.5	40	0.47	4	1.56	1.61	1.66	1.72	1.84	No	1
NPDRS1050R010-015	★	0.5	0.10	0.25	1.5	40	0.47	4	1.56	1.60	1.65	1.71	1.83	No	1
NPDRS1100R005-030	★	1.0	0.05	0.55	3.0	40	0.95	4	3.14	3.24	3.35	3.46	3.72	No	1
NPDRS1100R010-030	★	1.0	0.10	0.55	3.0	40	0.95	4	3.14	3.24	3.34	3.46	3.71	No	1
NPDRS1100R020-030	★	1.0	0.20	0.55	3.0	40	0.95	4	3.14	3.23	3.33	3.44	3.69	No	1
NPDRS1200R005-040	★	2.0	0.05	0.55	4.0	40	1.95	4	4.17	4.31	4.45	4.60	4.94	No	1
NPDRS1200R010-040	★	2.0	0.10	0.55	4.0	40	1.95	4	4.17	4.30	4.44	4.60	4.93	No	1
NPDRS1200R020-040	★	2.0	0.20	0.55	4.0	40	1.95	4	4.17	4.30	4.43	4.58	4.91	No	1

Grade: NPD10

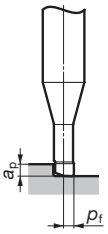
Identification Code

NPDR S 1 020 R002 - 006

NPDR	S	1	020	R002	- 006
Type	For Standard Finishing	Number of Teeth	Dia.	Nose Radius	Neck Length

Recommended Cutting Conditions

1. Use a precision machine for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant. Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as equipment performance and other conditions may vary.
5. Values shown in the table of conditions are guidelines. Adjust the actual cutting conditions to the desired machined surface quality.



Work Material		Cemented Carbide			
DC (mm)	LU (mm)	Spindle Speed (RPM)	Feed Rate (IPM)	a_p(inch)	p_f(inch)
0.2	0.6	40,000	3.937	0.00004	0.00004
0.3	1.0	40,000	5.906	0.00008	0.00004
0.5	1.5	40,000	7.874	0.00012	0.00004
1.0	3.0	40,000	15.748	0.00020	0.00012
2.0	4.0	40,000	23.622	0.00039	0.00020

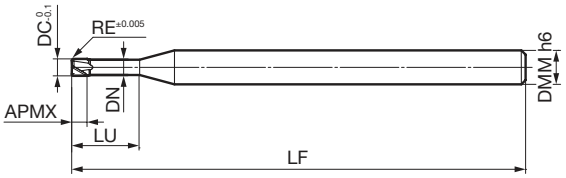
MEMO

BNBR Type

Pre-hardened Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | CBN | Corner r | Side Milling | Face Milling | Profiling

Fig 1



Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Wiper Edge	Fig
BNBR2D020R005-0054	★	*0.2*	*0.05*	*0.1*	*0.5*	*50*	*0.17*	*4*	No	1
BNBR2D030R005-0054	★	*0.3*	*0.05*	*0.15*	*0.5*	*50*	*0.27*	*4*	No	1
BNBR2D040R005-0054	★	*0.4*	*0.05*	*0.2*	*0.5*	*50*	*0.37*	*4*	No	1
BNBR2D050R005-0054	★	*0.5*	*0.05*	*0.3*	*0.5*	*50*	*0.47*	*4*	No	1
BNBR2D050R005-0154	★	*0.5*	*0.05*	*0.3*	*1.5*	*50*	*0.47*	*4*	No	1
BNBR2D050R005-0254	★	*0.5*	*0.05*	*0.3*	*2.5*	*50*	*0.47*	*4*	No	1
BNBR2D050R010-0154	★	*0.5*	*0.10*	*0.3*	*1.5*	*50*	*0.47*	*4*	No	1
BNBR2D050R010-0254	★	*0.5*	*0.10*	*0.3*	*2.5*	*50*	*0.47*	*4*	No	1
BNBR2D100R005-0304	★	*1.0*	*0.05*	*0.7*	*3.0*	*50*	*0.97*	*4*	Yes	1
BNBR2D100R005-0504	★	*1.0*	*0.05*	*0.7*	*5.0*	*50*	*0.97*	*4*	Yes	1
BNBR2D100R010-0304	★	*1.0*	*0.10*	*0.7*	*3.0*	*50*	*0.97*	*4*	Yes	1
BNBR2D100R010-0504	★	*1.0*	*0.10*	*0.7*	*5.0*	*50*	*0.97*	*4*	Yes	1
BNBR2D100R020-0304	★	*1.0*	*0.20*	*0.7*	*3.0*	*50*	*0.97*	*4*	Yes	1
BNBR2D100R020-0504	★	*1.0*	*0.20*	*0.7*	*5.0*	*50*	*0.97*	*4*	Yes	1
BNBR2D100R030-0304	★	*1.0*	*0.30*	*0.7*	*3.0*	*50*	*0.97*	*4*	Yes	1
BNBR2D100R030-0504	★	*1.0*	*0.30*	*0.7*	*5.0*	*50*	*0.97*	*4*	Yes	1
BNBR2D150R010-0454	★	*1.5*	*0.10*	*1.2*	*4.5*	*50*	*1.47*	*4*	Yes	1
BNBR2D150R010-0754	★	*1.5*	*0.10*	*1.2*	*7.5*	*50*	*1.47*	*4*	Yes	1
BNBR2D150R020-0454	★	*1.5*	*0.20*	*1.2*	*4.5*	*50*	*1.47*	*4*	Yes	1
BNBR2D150R020-0754	★	*1.5*	*0.20*	*1.2*	*7.5*	*50*	*1.47*	*4*	Yes	1
BNBR2D150R030-0454	★	*1.5*	*0.30*	*1.2*	*4.5*	*50*	*1.47*	*4*	Yes	1
BNBR2D150R030-0754	★	*1.5*	*0.30*	*1.2*	*7.5*	*50*	*1.47*	*4*	Yes	1
BNBR2D200R010-0604	★	*2.0*	*0.10*	*1.5*	*6.0*	*50*	*1.97*	*4*	Yes	1
BNBR2D200R020-0604	★	*2.0*	*0.20*	*1.5*	*6.0*	*50*	*1.97*	*4*	Yes	1
BNBR2D200R030-0604	★	*2.0*	*0.30*	*1.5*	*6.0*	*50*	*1.97*	*4*	Yes	1
BNBR2D200R050-0604	★	*2.0*	*0.50*	*1.5*	*6.0*	*50*	*1.97*	*4*	Yes	1

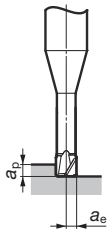
Grade: BNX20

Identification Code

BNBR 2 D050 R010 - 015 4

Series Code	Number of Teeth	Dia.	Nose Radius		Neck Length	Shank Dia.

BNBR Type



Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant.
   Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

Work Material			STAVAX, NAK80, SKD61 (Up to 52HRC)				ELMAX, DC53, SKD11 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
DC (mm)	RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	a_e (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	a_e (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	a_e (mm)
0.2	0.05	0.5	40,000	400	0.005	0.03	40,000	400	0.005	0.03	40,000	250	0.005	0.02
0.3	0.05	0.5	40,000	500	0.010	0.05	40,000	500	0.010	0.05	40,000	300	0.005	0.03
0.4	0.05	0.5	40,000	600	0.015	0.1	40,000	600	0.015	0.1	40,000	400	0.01	0.05
0.5	0.05	0.5	40,000	600	0.02	0.15	40,000	600	0.02	0.15	40,000	400	0.01	0.1
	0.05	1.5	40,000		0.02	0.1	40,000		0.02	0.1	35,000			0.05
	0.1		40,000				40,000				35,000			
	0.05	2.5	40,000		0.01	0.05	40,000		0.01	0.05	35,000			
	0.1		40,000				40,000				35,000			
1.0	0.05	3.0	35,000	800	0.03	0.3	35,000	800	0.03	0.2	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
	0.05	5.0	35,000		0.02	0.2	35,000		0.02	0.1	30,000			
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
1.5	0.1	4.5	26,000	800	0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
	0.1	7.5	26,000		0.03	0.5	26,000		0.03	0.3	20,000			
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
2.0	0.1	6.0	20,000	800	0.03	0.7	20,000	800	0.03	0.7	15,000	600	0.03	0.7
	0.2		20,000				20,000				15,000			
	0.3		20,000				20,000				15,000			
	0.5		20,000				20,000				15,000			

GSXB 20000 Type

2 Flutes | GSX Coat | Ballnose R | 30° Helix Angle | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1

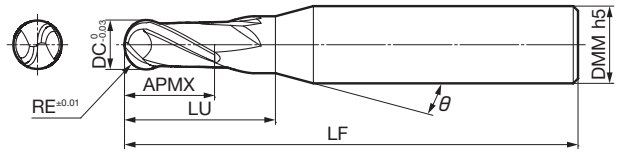
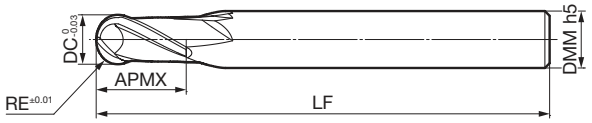


Fig 2



DC	θ
< ø2	10°
ø2 or more	15°

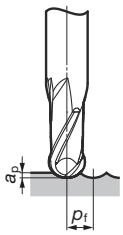
Body

Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXB20020	★	*0.20*	*0.4*	*0.6*	*0.8*	*50*	*4*	1
GSXB20030	★	*0.30*	*0.6*	*0.9*	*1.2*	*50*	*4*	1
GSXB20050	★	*0.50*	*1.0*	*1.5*	*2.0*	*50*	*4*	1
GSXB20075	★	*0.75*	*1.5*	*2.5*	*3.0*	*50*	*4*	1
GSXB20100	★	*1.00*	*2.0*	*3.0*	*4.0*	*60*	*6*	1
GSXB20125	★	*1.25*	*2.5*	*4.0*	*5.0*	*60*	*6*	1
GSXB20150	★	*1.50*	*3.0*	*4.5*	*6.0*	*60*	*6*	1
GSXB20200	★	*2.00*	*4.0*	*6.0*	*8.0*	*70*	*6*	1
GSXB20250	★	*2.50*	*5.0*	*7.5*	*10.0*	*80*	*6*	1
GSXB20300	★	*3.00*	*6.0*	*9.0*	-	*80*	*6*	2
GSXB20350	★	*3.50*	*7.0*	*11.0*	*20.0*	*90*	*8*	1
GSXB20400	★	*4.00*	*8.0*	*12.0*	-	*90*	*8*	2
GSXB20500	★	*5.00*	*10.0*	*15.0*	-	*100*	*10*	2
GSXB20600	★	*6.00*	*12.0*	*18.0*	-	*110*	*12*	2
GSXB20700	★	*7.00*	*14.0*	*21.0*	*38.0*	*110*	*16*	1
GSXB20800	★	*8.00*	*16.0*	*24.0*	-	*140*	*16*	2
GSXB20900	★	*9.00*	*18.0*	*27.0*	*50.0*	*140*	*20*	1
GSXB21000	★	*10.00*	*20.0*	*30.0*	-	*160*	*20*	2

Grade: ACB20

GSXB 20000 Type



Recommended Cutting Conditions

1. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.
2. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Radius Milling

Work Material / Cutting Conditions RE (mm)		Carbon Steel / Alloy Steel (Below 25HRC)		Carbon Steel / Alloy Steel (Below 50HRC)		Cast Iron Special Cast Iron		Stainless Steel Titanium Alloy	
		Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)	Spindle Speed (min $^{-1}$)	Feed Rate (mm/min)
0.20		50,000	2,100	35,000	1,150	50,000	2,100	50,000	1,750
0.30		50,000	2,500	35,000	1,350	50,000	2,500	50,000	2,100
0.50		50,000	3,000	35,000	1,600	50,000	3,000	50,000	2,500
0.75		35,000	3,000	24,000	1,650	35,000	3,200	34,000	2,500
1.00		27,500	3,000	19,000	1,700	35,000	3,900	26,000	2,500
1.25		22,500	3,000	15,500	1,700	28,000	3,900	21,000	2,500
1.50		19,000	3,000	13,000	1,700	24,000	3,900	17,500	2,500
2.00		17,000	3,800	12,000	2,100	20,000	4,100	15,000	2,700
2.50		15,500	4,300	11,000	2,200	18,000	4,600	12,000	2,500
3.00		14,000	4,700	10,500	2,500	16,500	5,300	10,500	2,500
3.50		12,500	4,200	9,000	2,100	14,000	4,500	9,000	2,200
4.00		11,000	3,500	7,900	1,900	12,500	4,000	7,800	1,900
5.00		9,000	2,800	6,300	1,500	10,500	3,300	6,300	1,500
6.00		7,500	2,400	5,200	1,250	8,700	2,800	5,200	1,250
7.00		6,400	2,100	4,500	1,100	7,400	2,400	4,500	1,100
8.00		5,600	1,800	3,900	950	6,500	2,100	3,900	950
9.00		5,000	1,600	3,500	850	5,800	1,900	3,500	850
10.00		4,500	1,450	3,100	750	5,200	1,700	3,150	750
Standard Depth of Cut	a_p	0.02DC		0.02DC		0.02DC		0.02DC	
	p_f	0.05DC		0.05DC		0.05DC		0.05DC	

MEMO

SNB 2000DL Type

Aluminum Alloy | Copper Alloy

2 Flutes | Aurora DLC Coating | Ballnose R | 30° Helix Angle | Side Milling | Grooving | Groove Finishing | R-Grooving | Profiling

Fig 1

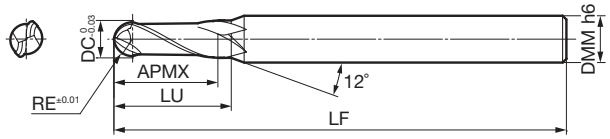


Fig 2



Body

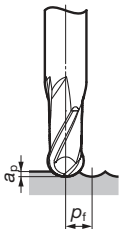
Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
SNB2020DL	★	*1.0*	*2.0*	*3.0*	*5*	*60*	*6*	1
SNB2030DL	★	*1.5*	*3.0*	*4.5*	*8*	*80*	*6*	1
SNB2040DL	★	*2.0*	*4.0*	*6.0*	*12*	*80*	*6*	1
SNB2050DL	★	*2.5*	*5.0*	*7.5*	*14*	*90*	*6*	1
SNB2060DL	★	*3.0*	*6.0*	*9.0*	-	*100*	*6*	2
SNB2080DL	★	*4.0*	*8.0*	*12.0*	-	*100*	*8*	2
SNB2100DL	★	*5.0*	*10.0*	*15.0*	-	*120*	*10*	2
SNB2120DL	★	*6.0*	*12.0*	*18.0*	-	*120*	*12*	2
SNB2160DL	★	*8.0*	*16.0*	*24.0*	-	*160*	*16*	2

Grade: DL1200

Recommended Cutting Conditions

1. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.
2. If cutting noise and vibration occur, please reduce the cutting conditions accordingly.



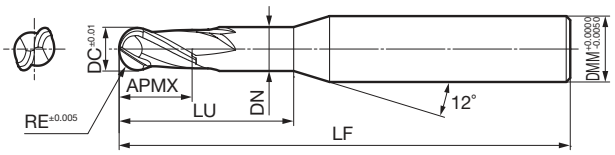
Radius Milling

Work Material		Aluminum Alloy			
Cutting Conditions		Wet		Dry	
RE (mm)		Spindle Speed (RPM)	Feed Rate (mm/min)	Spindle Speed (RPM)	Feed Rate (mm/min)
1.0		48,000	1,500	48,000	1,000
1.5		38,000	2,100	38,000	1,500
2.0		31,000	2,800	31,000	2,000
2.5		24,000	2,800	24,000	2,000
3.0		20,000	2,800	20,000	2,000
4.0		15,000	2,800	15,000	2,000
5.0		13,000	3,000	13,000	2,100
6.0		10,000	3,000	10,000	2,100
8.0		7,700	3,000	7,700	2,100
Standard Depth of Cut	a_p	0.1DC		0.1DC	
	p_f	0.2DC		0.2DC	

Aluminum Alloy | Copper Alloy

2 Flutes | Aurora DLC Coating | Ballnose R | 30° Helix Angle | Side Milling | Groove Finishing | R-Grooving | Profiling | For Copper Electrodes

Fig 1



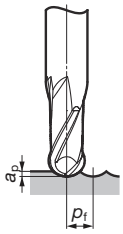
Body

Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Fig
SNB200050034DL	★	*0.05*	*0.1*	*0.1*	*0.3*	*45*	*0.09*	*4*	1
SNB200050064DL	★	*0.05*	*0.1*	*0.1*	*0.6*	*45*	*0.09*	*4*	1
SNB200100054DL	★	*0.10*	*0.2*	*0.2*	*0.5*	*45*	*0.18*	*4*	1
SNB200100104DL	★	*0.10*	*0.2*	*0.2*	*1.0*	*45*	*0.18*	*4*	1
SNB200100204DL	★	*0.10*	*0.2*	*0.2*	*2.0*	*45*	*0.18*	*4*	1
SNB200150054DL	★	*0.15*	*0.3*	*0.3*	*0.5*	*45*	*0.27*	*4*	1
SNB200150104DL	★	*0.15*	*0.3*	*0.3*	*1.0*	*45*	*0.27*	*4*	1
SNB200150204DL	★	*0.15*	*0.3*	*0.3*	*2.0*	*45*	*0.27*	*4*	1
SNB200150304DL	★	*0.15*	*0.3*	*0.3*	*3.0*	*45*	*0.27*	*4*	1
SNB200200104DL	★	*0.20*	*0.4*	*0.4*	*1.0*	*45*	*0.36*	*4*	1
SNB200200204DL	★	*0.20*	*0.4*	*0.4*	*2.0*	*45*	*0.36*	*4*	1
SNB200200304DL	★	*0.20*	*0.4*	*0.4*	*3.0*	*45*	*0.36*	*4*	1
SNB200200404DL	★	*0.20*	*0.4*	*0.4*	*4.0*	*45*	*0.36*	*4*	1
SNB200250104DL	★	*0.25*	*0.5*	*0.45*	*1.0*	*45*	*0.45*	*4*	1
SNB200250204DL	★	*0.25*	*0.5*	*0.45*	*2.0*	*45*	*0.45*	*4*	1
SNB200250304DL	★	*0.25*	*0.5*	*0.45*	*3.0*	*45*	*0.45*	*4*	1
SNB200250404DL	★	*0.25*	*0.5*	*0.45*	*4.0*	*45*	*0.45*	*4*	1
SNB200300204DL	★	*0.30*	*0.6*	*0.6*	*2.0*	*45*	*0.54*	*4*	1
SNB200300304DL	★	*0.30*	*0.6*	*0.6*	*3.0*	*45*	*0.54*	*4*	1
SNB200300404DL	★	*0.30*	*0.6*	*0.6*	*4.0*	*45*	*0.54*	*4*	1
SNB200300504DL	★	*0.30*	*0.6*	*0.6*	*5.0*	*45*	*0.54*	*4*	1
SNB200300604DL	★	*0.30*	*0.6*	*0.6*	*6.0*	*45*	*0.54*	*4*	1
SNB200500304DL	★	*0.50*	*1.0*	*1.5*	*3.0*	*45*	*0.90*	*4*	1
SNB200500404DL	★	*0.50*	*1.0*	*1.5*	*4.0*	*45*	*0.90*	*4*	1
SNB200500604DL	★	*0.50*	*1.0*	*1.5*	*6.0*	*45*	*0.90*	*4*	1
SNB200500804DL	★	*0.50*	*1.0*	*1.5*	*8.0*	*50*	*0.90*	*4*	1
SNB200501004DL	★	*0.50*	*1.0*	*1.5*	*10.0*	*50*	*0.90*	*4*	1
SNB200750304DL	★	*0.75*	*1.5*	*2.3*	*3.0*	*45*	*1.35*	*4*	1
SNB200750604DL	★	*0.75*	*1.5*	*2.3*	*6.0*	*45*	*1.35*	*4*	1
SNB200751004DL	★	*0.75*	*1.5*	*2.3*	*10.0*	*50*	*1.35*	*4*	1
SNB201000304DL	★	*1.00*	*2.0*	*3.0*	*3.0*	*50*	*1.80*	*4*	1
SNB201000604DL	★	*1.00*	*2.0*	*3.0*	*6.0*	*50*	*1.80*	*4*	1
SNB201001004DL	★	*1.00*	*2.0*	*3.0*	*10.0*	*50*	*1.80*	*4*	1
SNB201001504DL	★	*1.00*	*2.0*	*3.0*	*15.0*	*60*	*1.80*	*4*	1
SNB201002004DL	★	*1.00*	*2.0*	*3.0*	*20.0*	*60*	*1.80*	*4*	1
SNB202001606DL	★	*2.00*	*4.0*	*6.0*	*16.0*	*80*	*3.60*	*6*	1
SNB202002006DL	★	*2.00*	*4.0*	*6.0*	*20.0*	*80*	*3.60*	*6*	1
SNB202003006DL	★	*2.00*	*4.0*	*6.0*	*30.0*	*80*	*3.60*	*6*	1

Grade: DL1200

SNB2 Type



Recommended Cutting Conditions

1. For radius processing, reduce the feed to half the recommended feed.
2. Non-water soluble cutting oil is recommended.
3. Because of the high spindle speeds, runout of the endmill when mounted should be less than 10 µm.

Side Milling

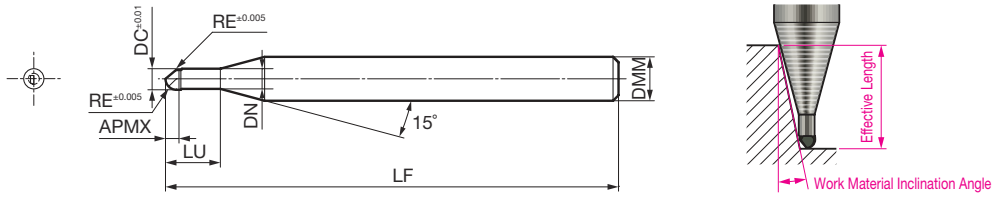
Work Material / Cutting Conditions / Cat. No.	Copper Alloy			
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Standard depth of cut (mm) a_p	Standard depth of cut (mm) a_e
SNB200050034DL	20,000 -50,000	90	0.005	0.005
SNB200050064DL		80	0.005	0.005
SNB200100054DL	20,000 -50,000	350	0.01	0.02
SNB200100104DL		350	0.007	0.015
SNB200100204DL		200	0.005	0.005
SNB200150054DL	20,000 -50,000	400	0.015	0.025
SNB200150104DL		400	0.01	0.02
SNB300150204DL		300	0.007	0.01
SNB200150304DL		250	0.005	0.008
SNB200200104DL	20,000 -30,000	800	0.025	0.05
SNB200200204DL		700	0.02	0.03
SNB200200304DL		600	0.015	0.02
SNB200200404DL		400	0.007	0.015
SNB200250104DL	20,000 -30,000	1,000	0.04	0.07
SNB200250204DL		800	0.03	0.06
SNB200250304DL		700	0.02	0.05
SNB200250404DL		600	0.015	0.04
SNB200300204DL	20,000 -30,000	1,400	0.05	0.15
SNB200300304DL		1,200	0.04	0.1
SNB200300404DL		1,000	0.03	0.07
SNB200300504DL		700	0.03	0.06
SNB200300604DL		600	0.015	0.03
SNB200500304DL	20,000 -30,000	3,500	0.2	0.4
SNB200500404DL		3,000	0.15	0.4
SNB200500604DL		2,500	0.13	0.3
SNB200500804DL		2,000	0.07	0.15
SNB200501004DL		1,200	0.04	0.07
SNB200750304DL	20,000	4,000	0.25	0.4
SNB200750604DL	20,000	3,200	0.15	0.4
SNB200751004DL	20,000	2,000	0.1	0.3
SNB201000304DL	16,000	4,500	0.4	0.6
SNB201000604DL	16,000	3,500	0.35	0.6
SNB201001004DL	16,000	3,000	0.25	0.4
SNB201001504DL	12,000	2,000	0.15	0.3
SNB201002004DL	10,000	1,500	0.1	0.2
SNB202001606DL	16,000	4,000	0.4	0.8
SNB202002006DL	16,000	3,500	0.4	0.8
SNB202003006DL	12,000	3,000	0.2	0.4

NPDBS Type

Carbide | Hard Brittle Material

1 Flute | Binderless PCD | Ballnose R | Side Milling | Face Milling | Profiling

Fig 1



Body (for Standard Finishing)

Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Effective Length for Work Material Inclination Angle 0.5°	1°	1.5°	2°	3°	Fig
NPDBS1010-004	★	*0.1*	*0.2*	*0.1*	*0.4*	*40*	*0.18*	*4*	*0.42*	*0.43*	*0.44*	*0.46*	*0.48*	1
NPDBS1020-008	★	*0.2*	*0.4*	*0.2*	*0.8*	*40*	*0.38*	*4*	*0.83*	*0.85*	*0.87*	*0.90*	*0.95*	1
NPDBS1030-010	★	*0.3*	*0.6*	*0.3*	*1.0*	*40*	*0.58*	*4*	*1.03*	*1.06*	*1.08*	*1.11*	*1.17*	1
NPDBS1050-020	★	*0.5*	*1.0*	*0.5*	*2.0*	*40*	*0.95*	*4*	*2.10*	*2.15*	*2.20*	*2.26*	*2.39*	1
NPDBS1100-030	★	*1.0*	*2.0*	*1.0*	*3.0*	*40*	*1.95*	*4*	*3.18*	*3.18*	*3.25*	*3.33*	*3.51*	1

Grade: NPD10

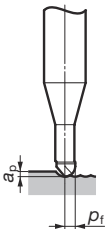
Identification Code

NPDB (S) 1 030 - 010

Type	For Standard Finishing	Number of Teeth	Ballnose Radius	Neck Length

Recommended Cutting Conditions

1. Use a precision machine for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant.
   Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as equipment performance and other conditions may vary.
5. Values shown in the table of conditions are guidelines. Adjust the actual cutting conditions to the desired machined surface quality.



Flat Surface Finishing

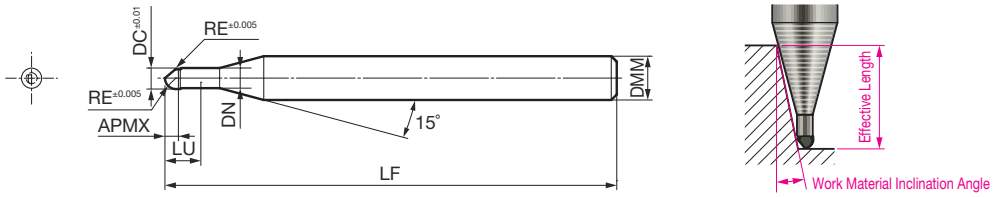
Work Material		Cemented Carbide			
RE (mm)	LU (mm)	Spindle Speed (RPM)	Feed Rate (IPM)	a_p (in)	p_f (in)
0.1	0.4	40,000	3.937	0.00004	0.00004
0.2	0.8	40,000	5.906	0.00008	0.00004
0.3	1.0	40,000	7.874	0.00012	0.00004
0.5	2.0	40,000	15.748	0.00020	0.00012
1.0	3.0	40,000	23.622	0.00040	0.00020

*Radius accuracy inspection test results are included in the case. *Also applicable for long neck types, depending on the size. For details, please contact us.

NPDB Type

1 Flute | Binderless PCD | Ballnose R | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body (for Precision Finishing)

Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Effective Length for Work Material Inclination Angle 0.5°	1°	1.5°	2°	3°	Fig
NPDB1010-004	★	*0.1*	*0.2*	*0.1*	*0.4*	*40*	*0.18*	*4*	*0.42*	*0.43*	*0.44*	*0.46*	*0.48*	1
NPDB1020-008	★	*0.2*	*0.4*	*0.2*	*0.8*	*40*	*0.38*	*4*	*0.83*	*0.85*	*0.87*	*0.90*	*0.95*	1
NPDB1030-010	★	*0.3*	*0.6*	*0.3*	*1.0*	*40*	*0.58*	*4*	*1.03*	*1.06*	*1.08*	*1.11*	*1.17*	1
NPDB1050-020	★	*0.5*	*1.0*	*0.5*	*2.0*	*40*	*0.95*	*4*	*2.10*	*2.15*	*2.20*	*2.26*	*2.39*	1
NPDB1100-030	★	*1.0*	*2.0*	*1.0*	*3.0*	*40*	*1.95*	*4*	*3.11*	*3.18*	*3.25*	*3.33*	*3.51*	1

Grade: NPDB10

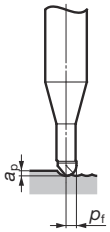
Identification Code

NPDB 1 030 - 010

Type | Number of Teeth | Ballnose Radius | Neck Length

Recommended Cutting Conditions

1. Use a precision machine for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant. Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as equipment performance and other conditions may vary.
5. Values shown in the table of conditions are guidelines. Adjust the actual cutting conditions to the desired machined surface quality.



Flat Surface Finishing

Work Material		Cemented Carbide			
RE (mm)	LU (mm)	Spindle Speed (RPM)	Feed Rate (IPM)	a_p (in)	p_f (in)
0.1	0.4	40,000	3.937	0.00004	0.00004
0.2	0.8	40,000	5.906	0.00008	0.00004
0.3	1.0	40,000	7.874	0.00012	0.00004
0.5	2.0	40,000	15.748	0.00020	0.00012
1.0	3.0	40,000	23.622	0.00040	0.00020

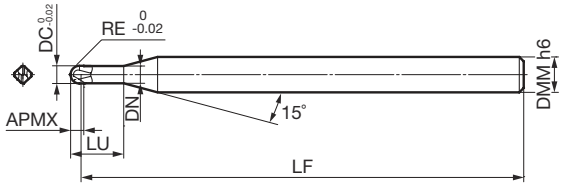
*Radius accuracy inspection test results are included in the case. *Also applicable for long neck types, depending on the size. For details, please contact us.

SDCB Type

Carbide | Hard Brittle Material

2 Flutes | SUMIDIA Coat | Ballnose R | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Fig
SDCB2R050-015	★	*0.5*	*1.0*	*0.6*	*1.5*	*50*	*0.94*	*4*	1
SDCB2R050-020	★	*0.5*	*1.0*	*0.6*	*2.0*	*50*	*0.94*	*4*	1
SDCB2R050-030	★	*0.5*	*1.0*	*0.6*	*3.0*	*50*	*0.94*	*4*	1
SDCB2R050-050	★	*0.5*	*1.0*	*0.6*	*5.0*	*50*	*0.94*	*4*	1
SDCB2R100-025	★	*1.0*	*2.0*	*1.4*	*2.5*	*50*	*1.92*	*4*	1
SDCB2R100-040	★	*1.0*	*2.0*	*1.4*	*4.0*	*50*	*1.92*	*4*	1
SDCB2R100-060	★	*1.0*	*2.0*	*1.4*	*6.0*	*50*	*1.92*	*4*	1
SDCB2R100-100	★	*1.0*	*2.0*	*1.4*	*10.0*	*50*	*1.92*	*4*	1

Grade: DCM20

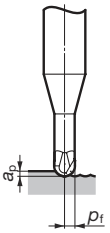
Identification Code

SDCB 2 R050 - 015

Type	Number of Teeth	Ballnose Radius	Neck Length

Recommended Cutting Conditions

1. Use a precision machine for stable cutting.
2. Air blow is recommended, but oil mist or external coolant supply can also be used. Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as equipment performance and other conditions may vary.
5. Values shown in the table of conditions are guidelines. Adjust the actual cutting conditions to the desired machined surface quality.



Work Material		Cemented Carbide			
RE (mm)	LU (mm)	Spindle Speed (RPM)	Feed Rate (IPM)	a_p (inch)	a_e (inch)
0.5	1.5	30,000	11.811	0.00197	0.00984
1.0	2.5	30,000	11.811	0.00394	0.01181

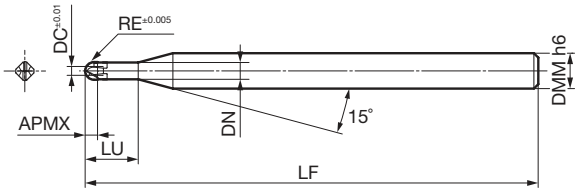
MEMO

BNBP Type

Pre-hardened Steel | Hardened Steel 45 to 55HRC | Hardened Steel 55 to 60HRC | Hardened Steel 60 to 65HRC

2 Flutes | CBN | Ballnose R | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Fig
BNBP2R020-0124	★	*0.20*	*0.4*	*0.3*	*1.2*	*50*	*0.37*	*4*	1
BNBP2R020-0126	★	*0.20*	*0.4*	*0.3*	*1.2*	*50*	*0.37*	*6*	1
BNBP2R020-0204	★	*0.20*	*0.4*	*0.3*	*2.0*	*50*	*0.37*	*4*	1
BNBP2R020-0304	★	*0.20*	*0.4*	*0.3*	*3.0*	*50*	*0.37*	*4*	1
BNBP2R020-0404	★	*0.20*	*0.4*	*0.3*	*4.0*	*50*	*0.37*	*4*	1
BNBP2R030-0154	★	*0.30*	*0.6*	*0.4*	*1.5*	*50*	*0.57*	*4*	1
BNBP2R030-0156	★	*0.30*	*0.6*	*0.4*	*1.5*	*50*	*0.57*	*6*	1
BNBP2R030-0304	★	*0.30*	*0.6*	*0.4*	*3.0*	*50*	*0.57*	*4*	1
BNBP2R030-0404	★	*0.30*	*0.6*	*0.4*	*4.0*	*50*	*0.57*	*4*	1
BNBP2R030-0504	★	*0.30*	*0.6*	*0.4*	*5.0*	*50*	*0.57*	*4*	1
BNBP2R030-0604	★	*0.30*	*0.6*	*0.4*	*6.0*	*50*	*0.57*	*4*	1
BNBP2R050-0254	★	*0.50*	*1.0*	*0.6*	*2.5*	*50*	*0.97*	*4*	1
BNBP2R050-0256	★	*0.50*	*1.0*	*0.6*	*2.5*	*50*	*0.97*	*6*	1
BNBP2R050-0304	★	*0.50*	*1.0*	*0.6*	*3.0*	*50*	*0.97*	*4*	1
BNBP2R050-0404	★	*0.50*	*1.0*	*0.6*	*4.0*	*50*	*0.97*	*4*	1
BNBP2R050-0604	★	*0.50*	*1.0*	*0.6*	*6.0*	*50*	*0.97*	*4*	1
BNBP2R050-0804	★	*0.50*	*1.0*	*0.6*	*8.0*	*50*	*0.97*	*4*	1
BNBP2R075-0404	★	*0.75*	*1.5*	*0.9*	*4.0*	*50*	*1.47*	*4*	1
BNBP2R075-0406	★	*0.75*	*1.5*	*0.9*	*4.0*	*50*	*1.47*	*6*	1
BNBP2R100-0554	★	*1.00*	*2.0*	*1.4*	*5.5*	*50*	*1.97*	*4*	1
BNBP2R100-0556	★	*1.00*	*2.0*	*1.4*	*5.5*	*50*	*1.97*	*6*	1
BNBP2R100-0804	★	*1.00*	*2.0*	*1.4*	*8.0*	*50*	*1.97*	*4*	1

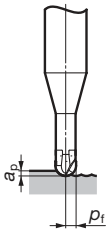
Grade: BN350

Identification Code

BNBP 2 R030 - 015 4

Series Code	Number of Teeth	Ballnose Radius	Neck Length	Shank Dia.

BNBP Type



Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant.
   Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions according to actual conditions as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

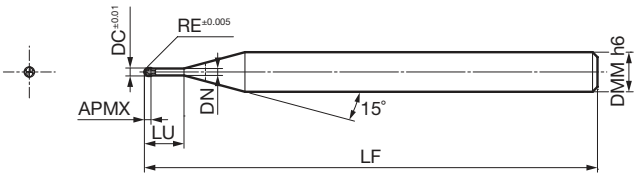
Work Material		STAVAX, NAK80, SKD61 (Up to 52HRC)				ELMAX, DC53, SKD11 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
RE (mm)	LU (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	p_f (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	p_f (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (mm)	p_f (mm)
0.2	1.2	40,000	1,000	0.005	0.010	40,000	800	0.005	0.010	40,000	600	0.005	0.005
	2.0	40,000	800	0.005	0.010	40,000	600	0.005	0.010	40,000	400	0.005	0.005
	3.0	40,000	600	0.005	0.010	40,000	500	0.005	0.010	40,000	300	0.005	0.005
	4.0	40,000	500	0.005	0.010	40,000	400	0.005	0.005	40,000	200	0.005	0.005
0.3	1.5	40,000	1,600	0.020	0.020	40,000	1,400	0.010	0.020	40,000	1,200	0.010	0.020
	2.0	40,000	1,500	0.010	0.020	40,000	1,300	0.010	0.020	40,000	1,100	0.010	0.010
	3.0	40,000	1,400	0.010	0.020	40,000	1,200	0.010	0.020	40,000	1,000	0.010	0.010
	4.0	30,000	1,200	0.010	0.010	30,000	1,000	0.010	0.010	30,000	700	0.005	0.010
	5.0	30,000	800	0.010	0.010	30,000	700	0.005	0.010	30,000	600	0.005	0.005
	6.0	30,000	600	0.005	0.010	30,000	500	0.005	0.005	30,000	400	0.005	0.005
0.5	2.5	40,000	2,800	0.040	0.050	40,000	2,800	0.030	0.040	40,000	2,200	0.020	0.030
	3.0	40,000	2,600	0.040	0.050	40,000	2,600	0.030	0.040	40,000	2,100	0.020	0.030
	4.0	40,000	2,400	0.030	0.050	40,000	2,400	0.020	0.030	40,000	2,000	0.020	0.020
	6.0	25,000	1,500	0.020	0.030	25,000	1,500	0.010	0.020	25,000	1,300	0.010	0.010
	8.0	16,000	1,200	0.020	0.020	16,000	1,100	0.010	0.020	16,000	850	0.010	0.010
0.75	4.0	32,000	2,400	0.030	0.030	32,000	2,200	0.020	0.030	32,000	2,000	0.020	0.020
1.0	5.5	40,000	4,000	0.050	0.050	40,000	4,000	0.030	0.030	40,000	3,000	0.020	0.030
	8.0	32,000	3,000	0.030	0.050	32,000	2,600	0.020	0.030	32,000	2,200	0.010	0.020

BNBC Type

Copper Alloy

2 Flutes | CBN | Ballnose R | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Fig
BNBC2R010-0034	★	*0.1*	*0.2*	*0.2*	*0.3*	*50*	*0.17*	*4*	1
BNBC2R010-0104	★	*0.1*	*0.2*	*0.2*	*1.0*	*50*	*0.17*	*4*	1
BNBC2R020-0054	★	*0.2*	*0.4*	*0.3*	*0.5*	*50*	*0.37*	*4*	1
BNBC2R020-0204	★	*0.2*	*0.4*	*0.3*	*2.0*	*50*	*0.37*	*4*	1
BNBC2R030-0104	★	*0.3*	*0.6*	*0.4*	*1.0*	*50*	*0.57*	*4*	1
BNBC2R030-0304	★	*0.3*	*0.6*	*0.4*	*3.0*	*50*	*0.57*	*4*	1
BNBC2R050-0304	★	*0.5*	*1.0*	*0.6*	*3.0*	*50*	*0.97*	*4*	1

Grade: BN700

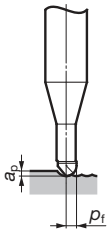
Identification Code

BNBC 2 R030 - 010 4

Series Code	Number of Teeth	Ballnose Radius	Neck Length	Shank Dia.

Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant.
   Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions according to actual conditions as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.



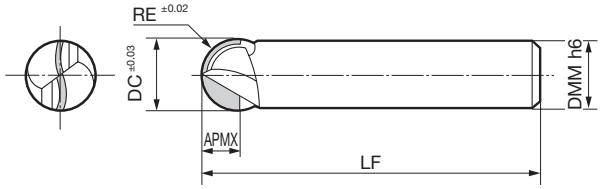
Side Milling

Work Material / Cutting Conditions / Cat. No.	Copper Alloy			
	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Standard depth of cut (mm) a_p	Standard depth of cut (mm) p_f
BNBC2R010-0034	20,000 -50,000	350	0.01	0.02
BNBC2R010-0104		350	0.007	0.015
BNBC2R020-0054	20,000 -50,000	800	0.025	0.05
BNBC2R020-0204		700	0.02	0.03
BNBC2R030-0104	20,000 -50,000	1,400	0.05	0.15
BNBC2R030-0304		1,200	0.04	0.1
BNBC2R050-0304	20,000 -50,000	2,200	0.15	0.35

BNBS Type

2 Flutes | CBN | Ballnose R | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

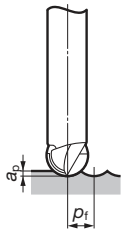
Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
BNBS2020S	★	*1.0*	*2.0*	*1.5*	*50*	*4*	1
BNBS2030S	★	*1.5*	*3.0*	*2.0*	*60*	*6*	1
BNBS2040S	★	*2.0*	*4.0*	*3.0*	*70*	*6*	1
BNBS2060S	★	*3.0*	*6.0*	*4.5*	*80*	*6*	1
BNBS2080S	★	*4.0*	*8.0*	*5.5*	*90*	*8*	1
BNBS2100S	★	*5.0*	*10.0*	*6.5*	*100*	*10*	1
BNBS2120S	★	*6.0*	*12.0*	*7.5*	*110*	*12*	1

Grade: BN350

Recommended Cutting Conditions

1. Use a rigid machine and select a high cutting speed with a low feed rate.
2. Use dry cutting conditions.
3. Make overhang as short as possible.
4. If the work material hardness is lower than 50HRC, try the GS MILL Hard Ballnose instead (→ I132).



Radius Milling

Work Material / Cutting Conditions		Hardened Steel (50-57HRC)		Hardened Steel (58-65HRC)	
RE (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		26,000	1,100	22,000	670
1.5		18,000	700	15,000	450
2.0		13,000	530	11,000	330
3.0		8,800	610	7,400	450
4.0		6,600	460	5,600	330
5.0		5,300	630	4,500	400
6.0		4,400	530	3,700	330
Standard Depth of Cut	a_p	0.01DC		0.01DC	
	p_f	0.02DC		0.02DC	

GSXSLT 30000C-1.5D Type

General Steel | Carbon Steel | Alloy Steel | Pre-hardened Steel | Tempered Steel/Die Steel | Hardened Steel 45 to 55HRC | Stainless Steel | Ti Alloy / Heat Resistant Alloy | Cast Iron

3 Flutes | GSX Coat | Corner | 40° Helix Angle | Side Milling | Grooving | Groove Finishing | Face Milling | Spot Facing | Helical Milling | Ramping

Fig 1

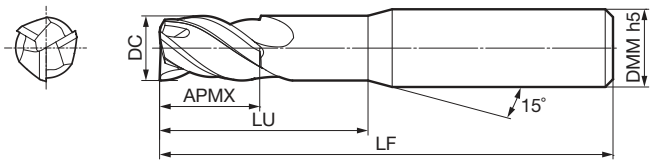
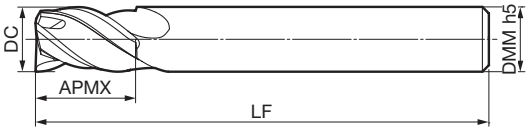


Fig 2



DC	Tolerance
D ≤ 3.0	0 -0.015
3.0 < D ≤ 12	0 -0.020
12.0 < D	0 -0.030

Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
GSXSLT30100C-1.5D	★	*1.0*	*1.5*	*2.5*	*40*	*4*	1
GSXSLT30150C-1.5D	★	*1.5*	*2.3*	*3.3*	*40*	*4*	1
GSXSLT30200C-1.5D	★	*2.0*	*3.0*	*4.0*	*40*	*4*	1
GSXSLT30250C-1.5D	★	*2.5*	*3.8*	*4.8*	*40*	*4*	1
GSXSLT30300C-1.5D	★	*3.0*	*4.5*	*6.0*	*45*	*6*	1
GSXSLT30400C-1.5D	★	*4.0*	*6.0*	*7.5*	*45*	*6*	1
GSXSLT30500C-1.5D	★	*5.0*	*7.5*	*9.5*	*50*	*6*	1
GSXSLT30600C-1.5D	★	*6.0*	*9.0*	-	*50*	*6*	2
GSXSLT30700C-1.5D	★	*7.0*	*11.0*	*13.0*	*60*	*8*	1
GSXSLT30800C-1.5D	★	*8.0*	*12.0*	-	*60*	*8*	2
GSXSLT30900C-1.5D	★	*9.0*	*14.0*	*16.0*	*70*	*10*	1
GSXSLT31000C-1.5D	★	*10.0*	*15.0*	-	*70*	*10*	2
GSXSLT31200C-1.5D	★	*12.0*	*18.0*	-	*75*	*12*	2

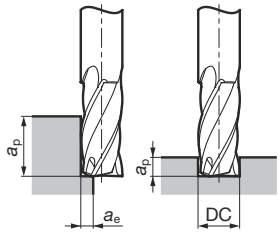
Grade: ACF20

Endmill Identification (GSXMILL Series Only)

GSXSLT 3 0100 C - 1.5D

Series Code	Number of Teeth	Dia.	Cutting Edge	Cutting Edge Length
			C: Gash Land	

GSXSLT 30000C-1.5D Type



Recommended Cutting Conditions

1. For stable machining performance use rigid, high-precision machines and holders.
2. Use air blow when dry machining.
3. Use wet machining for stainless steel, heat-resistant alloy, and titanium alloy applications.
4. Use step machining of 0.1 DC when drilling stainless steel, heat-resistant alloy, and titanium alloy.
5. If the machine cannot achieve the recommended spindle speed, please use the maximum spindle speed available.

Side Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 50HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	300	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	90	9,000	65
2.0		11,200	410	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	120	5,300	90
4.0		6,400	550	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	150	3,000	120
6.0		4,600	670	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,700	180	2,200	130
8.0		3,400	670	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	180	1,600	130
10.0		2,800	670	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	180	1,300	130
12.0		2,300	670	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	180	1,100	130
Standard Depth of Cut	a_p	1.5DC										1.0DC					
	a_e	0.05DC										0.02DC					

Groove Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 50HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	240	19,600	300	19,600	300	18,300	210	12,700	130	9,000	80	11,000	65	4,500	25
2.0		11,200	320	11,200	410	11,200	410	10,500	280	7,300	170	5,300	100	6,400	85	2,650	35
4.0		6,400	450	6,400	550	6,400	550	6,000	370	4,200	230	3,000	140	3,600	100	1,500	50
6.0		4,600	540	4,600	670	4,600	670	4,300	460	3,000	270	2,200	170	2,650	130	1,150	55
8.0		3,400	540	3,400	670	3,400	670	3,200	460	2,200	270	1,600	170	2,000	130	800	55
10.0		2,800	540	2,800	670	2,800	670	2,600	460	1,800	270	1,300	170	1,600	130	650	55
12.0		2,300	540	2,300	670	2,300	670	2,200	460	1,500	270	1,100	170	1,300	130	500	55
Standard Depth of Cut	a_p	0.2DC		0.5DC						0.2DC		0.05DC		0.2DC			

Slot Milling

Work Material / Cutting Conditions		Steel for Structure SS		Carbon Steel SC (150 to 250HB)		Cast Iron FC		Alloy Steel SCM (25 to 35HRC)		Tempered Steel, Hardened Steel NAK , HPM (35 to 45HRC)		Hardened Steel (45 to 50HRC)		Stainless Steel SUS304,SUS316		Heat-Resistant Alloy Titanium Alloy	
DC (mm)		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Spindle Speed (min^{-1})	Feed Rate (mm/min)
1.0		19,600	70	19,600	90	19,600	90	18,300	60	12,700	40	9,000	25	11,000	20	4,500	10
2.0		11,200	90	11,200	120	11,200	120	10,500	80	7,300	50	5,300	30	6,400	25	2,650	15
4.0		6,400	130	6,400	160	6,400	160	6,000	110	4,200	70	3,000	40	3,600	30	1,500	20
6.0		4,600	160	4,600	200	4,600	200	4,300	130	3,000	80	2,200	50	2,650	40	1,150	20
8.0		3,400	160	3,400	200	3,400	200	3,200	130	2,200	80	1,600	50	2,000	40	800	20
10.0		2,800	160	2,800	200	2,800	200	2,600	130	1,800	80	1,300	50	1,600	40	650	20
12.0		2,300	160	2,300	200	2,300	200	2,200	130	1,500	80	1,100	50	1,300	40	500	20

MEMO

Drills J

J1 to J148



Drill Selection Guide J2
Application Range of Main Drills J6
Drill Coating J7

Solid Carbide Drills	For High Efficiency	**MDW-GS / MDW-HGS** J8
	For Stainless Steel	**MDM** J36
	For Spot Facing	**MDF Flat Bottom Drills** J44
	For Thin Sheets	**WGS** J56
	For Cast Iron	**HX** J58
	For High-efficiency Steel and Cast Iron	**HY** J65
	For Heat-Resistant Alloy	**SGS** J67
	Deep Hole Drilling	**XHGS / PHT** J69
	For Non-Ferrous Metals	**XHV / PHV** J76
	For CFRP	**NHGS** J77
	For Aluminum Alloy	**SDC Diamond (SUMIDIA) Coated Drills** J83
	For Small Diameter Deep Holes	**DAL / DDL (SUMIDIA)** J84
	For Very Small Holes	**MLDH-L Type / MLDH-P Micro Long Drills** J85
		MDUS Micro Drills / MDSS Type (MDUP Type) Mini Drills J88
Indexable Tip Drills	Indexable Drill Head	**SMD Replaceable Tip Drills** J90
		MTL / MEL / MTL-C: Tips for General Steel / Cast Iron / Exotic Alloys ... J91
		SMDH: SMD Drill Bodies J97
		SMD: MFS J102
Indexable Insert Drills	General-purpose	**WDX Indexable Insert Drills** J106
	For Deep Drilling/Pocketing	**Plunge Drill: PDL / Plunge Mill: PCT** J125
Indexable Insert Reamers	High Efficiency Reamers	**SumiReamer SR** J132

Stock Markings and Symbols

●: USA Standard stocked item
★: Worldwide Warehouse Item
▲: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

Drill Selection Guide

Applications	Part Material	Series	Cat. No.	Dia. (inch / *mm*)	Image	Stock	Ref. Page
High Efficiency	P K	Solid Carbide Drills **GS**	MDW○○○○GS2	ø.059 - .787" , *ø1.0 - 20.0mm*		●	J8
			MDW○○○○GS4	ø.059 - .787" , *ø1.0 - 20.0mm*			
	P M K S	Solid Carbide Drills **HGS**	MDW○○○○HGS3	ø.059 - .787" , *ø1.0 - 20.0mm*		●	J8
			MDW○○○○HGS5	ø.059 - .787" , *ø1.0 - 20.0mm*			
			MDW○○○○HGS8	ø.059 - .787" , *ø1.0 - 20.0mm*			
	P K	Solid Carbide Drills **HY**	MDW○○○○HY3	ø.197 - .629" , *ø5.0 - 16.0mm*		★	J65
			MDW○○○○HY5	ø.197 - .629" , *ø5.0 - 16.0mm*			
			MDW○○○○HY8	ø.197 - .629" , *ø5.0 - 16.0mm*			
Spot Facing	P M K N	Flat Bottom Drills **MDF**	MDF○○○○S2D	ø.012 - .787" , *ø0.3 - 20.0mm*		★	J44
			MDF○○○○L2D	ø.118 - .787" , *ø3.0 - 20.0mm*			
			MDF○○○○H3D	ø.118 - .629" , *ø3.0 - 16.0mm*			
			MDF○○○○H5D	ø.118 - .629" , *ø3.0 - 16.0mm*			
Deep Hole	P M K P M K N	Deep Hole Drills **XHGS**	MDW○○○○XHGS10	ø.083 - .630" , *ø2.1 - 16.0mm*		★	J69
			MDW○○○○XHGS12	ø.098 - .630" , *ø2.5 - 16.0mm*			
			MDW○○○○XHGS15	ø.083 - .630" , *ø2.1 - 16.0mm*			
			MDW○○○○XHGS20	ø.083 - .551" , *ø2.1 - 14.0mm*			
			MDW○○○○XHGS25	ø.083 - .472" , *ø2.1 - 12.0mm*			
			MDW○○○○XHGS30	ø.083 - .393" , *ø2.1 - 10.0mm*			
	P M K	Guide Drill for Long Drills **PHT**	MDW○○○○PHT	ø.083 - .630" , *ø2.1 - 16.0mm*		★	J69
	P	Deep Hole Drills **XHV**	MDW○○○○XHV12	ø.125 - .750" , *ø3.0 - 19.05mm*		●	J76
			MDW○○○○XHV20	ø.125 - .531" , *ø3.0 - 13.49mm*			
	M S	Guide Drill for Long Drills **PHV**	MDW○○○○PHV	ø.118 - .750" , *ø3.0 - 19.05mm*		●	J76
Thin Sheet	K	Solid Carbide Drills **WGS**	MDW○○○○WGS2	ø.268 - .630" , *ø6.8 - 16.0mm*			J56
Stainless Steel	N	Solid Carbide Drills for Stainless **MDM**	MDM○○○○S○○H03	ø.118 - .629" , *ø3.0 - 16.0mm*		★	J36
			MDM○○○○S○○H05	ø.118 - .629" , *ø3.0 - 16.0mm*			
Cast Iron	N	Solid Carbide Drills fo Cast Iron **HX**	MDW○○○○HX3	ø.118 - .787" , *ø3.0 - 20.0mm*		★	J58
			MDW○○○○HX5	ø.118 - .787" , *ø3.0 - 20.0mm*			
			MDW○○○○HX8	ø.118 - .709" , *ø3.0 - 18.0mm*			
Non-ferrous Metal	N	Solid Carbide Drills for Aluminum **NHGS**	MDW○○○○NHGS3	ø.118 - .629" , *ø3.0 - 16.0mm*		★	J77
			MDW○○○○NHGS5	ø.118 - .629" , *ø3.0 - 16.0mm*			
			MDW○○○○NHGS10	ø.118 - .629" , *ø3.0 - 16.0mm*			
	S H	Diamond (SUMIDIA) Drills **DAL**	DAL○○○○H	ø.197 - .472" , *ø5.0 - 12.0mm*			J84
	S	Diamond (SUMIDIA) Drills **DDL**	DDL○○○○H	ø.197 - .472" , *ø5.0 - 12.0mm*			J84
Heat-Resistant Alloy		Drills for Heat-Resistant Alloys **SGS**	MDW○○○○SGS3	ø.118 - .472" , *ø3.0 - 12.0mm*		★	J67
CFRP	CFRP	Diamond Coated (SUMIDIA) Drills **SDC**	MDS○○○○○SDC3	ø.079 - .393" , *ø2.1 - 10.0mm*		★	J83

Drill Selection Guide

Series	Drilling Depth (L/D)	Coating	Coolant Supply	P			H		M	S		K		N			Ref. Page
				Carbon Steel Alloy Steel up to 35HRC		Tempered Steel	Hardened Steel		Stainless Steel	Titanium Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite	
				C 0.28% or less	C 0.29%	SKD SKS	45HRC or less	46HRC or more	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP	
GS	2D 4D	DEX Coating	External	○	⊙	⊙	○	○	○	○	○	○	⊙				J8
HGS	3D 5D 8D	DEX Coating	Internal	⊙	⊙	⊙	○	○	⊙	⊙	○	○	⊙		○		J8
HY	3D 5D 8D	DEX Coating	Internal	⊙	⊙							⊙	⊙				J65
MDF	2D 3D 5D	PVD Coat	External S2D	⊙	⊙	⊙	○		○	○	○	○	○	○			J44
			External L2D	⊙	⊙	⊙	○		○			○	○	○			
			Internal	⊙	⊙	⊙	○		○			○	○	○			
XHGS	10D 12D 15D 20D 25D 30D	DEX Coating	Internal	○	⊙	⊙	○		○			○	⊙				J69
PHT	Pilot 3D	DEX Coating	Internal	○	⊙	⊙	○		○			○	⊙				J69
XHV	12D 20D	DEX Coating	Internal	○	⊙	⊙	○		○			○	⊙				J76
PHV	Pilot 3D	DEX Coating	Internal	○	⊙	⊙	○		○			○	⊙				J76
WGS	2D	DEX Coating	External	○	⊙	⊙	○		○			○	○				J56
MDM	3D 5D	NX Coat	Internal	○	○				⊙	⊙	○	○	○				J36
HX	3D 5D 8D	DEX Coating	Internal									⊙	⊙				J58
NHGS	3D 5D 10D	Aurora DLC Coating	Internal											⊙	⊙		J77
DAL	3D	–	External											⊙		○	J84
DDL	3D	–	External											⊙		○	J84
SGS	3D	PVD Coat	External						○	○	⊙						J67
SDC	3D	SUMIDIA Coat	Dry											○		⊙	J83

Drill Selection Guide

Applications/ Specifications	Work Material	Series	Cat. No.	Dia. (inch / *mm*)	Image	Stock	Ref. Page
Small Diameter Deep Hole	P M K	Micro Long Drills **MLDH**	MLDH○○○○L5	ø.031 - .079" , *ø0.8 - 2.0mm*		metric ★	J85
			MLDH○○○○L12	ø.031 - .079" , *ø0.8 - 2.0mm*			
			MLDH○○○○L20	ø.031 - .079" , *ø0.8 - 2.0mm*			
			MLDH○○○○L30	ø.031 - .079" , *ø0.8 - 2.0mm*			
		Guide Drill for MLDH **MLDH-P**	MLDH○○○○P	ø.031 - .079" , *ø0.8 - 2.0mm*		metric ★	J85
Very Small Diameter	P M H K	MINI-Drills **MDSS**	MDSS○○○○	ø.0079 - .039" , *ø0.2 - 1.0mm*		metric ★	J88
	P M N	Micro Drills **MDUS**	MDUS○○○○-30C	ø.0012 - .0075" ,*ø0.03 - 0.19mm*		metric ★	J88
		Micro Multi Pointing Drill **MDUP**	MDUP○○○○-30C	ø.0012 - .0071" ,*ø0.03 - 0.18mm*		metric ★	J88
Replacable Tip High Efficiency	P K	Replacable Tip Drills **SMD-MTL** Tip **SMD-MTL-C** Tip	SMDH○○○S	ø.472 - 1.213" ,*ø12.0 - 30.8mm*		inch ● metric ★	J90
			SMDH○○○M	ø.472 - 1.673" ,*ø12.0 - 42.5mm*			
			SMDH○○○L	ø.472 - 1.673" ,*ø12.0 - 42.5mm*			
			SMDH○○○D	ø.472 - 1.673" ,*ø12.0 - 42.5mm*			
			SMDH○○○-12D	ø.531 - 1.016" ,*ø13.5 - 25.8mm*			
Replacable Tip Low Resistance	P M K	Replacable Tip Drills **SMD-MEL** Tip	SMDH○○○S	ø.472 - 1.213" ,*ø12.0 - 30.8mm*		inch ● metric ★	J90
			SMDH○○○M	ø.472 - 1.213" ,*ø12.0 - 30.8mm*			
			SMDH○○○L	ø.472 - 1.213" ,*ø12.0 - 30.8mm*			
			SMDH○○○D	ø.531 - 1.213" ,*ø13.5 - 30.8mm*			
			SMDH○○○-12D	ø.531 - 1.016" ,*ø13.5 - 25.8mm*			
Replacable Tip For Spot Facing	P M N K	Replacable Tip Drills **SMD-MFS** Tip	SMDH○○○S	ø.472 - 1.213" ,*ø12.0 - 30.8mm*		inch ● metric ★	J102
Indexable Insert	P M N K	Indexable Insert Drills **WDX**	WDX○○○D2S○○	ø.512 - 2.68" ,*ø13.0 - 68.0mm*		inch ● metric ★	J106
			WDX○○○D3S○○	ø.512 - 2.68" ,*ø13.0 - 68.0mm*			
			WDX○○○D4S○○	ø.512 - 2.48" ,*ø13.0 - 63.0mm*			
			WDX○○○D5S○○	ø.512 - 2.17" ,*ø13.0 to 55.0mm*			
	P K N S	Plunge Drils **PDL**	PDL○○○D2S○○	ø.629 - 1.57" ,*ø16.0 - 40.0mm*		metric ★	J125
			PDL○○○D3S○○	ø.629 - 1.57" ,*ø16.0 - 40.0mm*			
	P K N S	Plunge Mills **PCT**	PCT○○○D3S○○	ø.629 - 1.57" ,*ø16.0 - 40.0mm*		metric ★	J125
			PCT○○○D5S○○	ø.629 - 1.57" ,*ø16.0 - 40.0mm*			
Indexable Insert Reamer	P M N K	SumiReamer **SR**	SRG○○.○H7-○○○-○○○12R1	ø.469 - 5.51" ,*ø11.9 - 140.6mm*		metric ★	J132
			SRL○○.○H7-○○○-○○○12R1	ø.469 - 5.51" ,*ø11.9 - 140.6mm*			

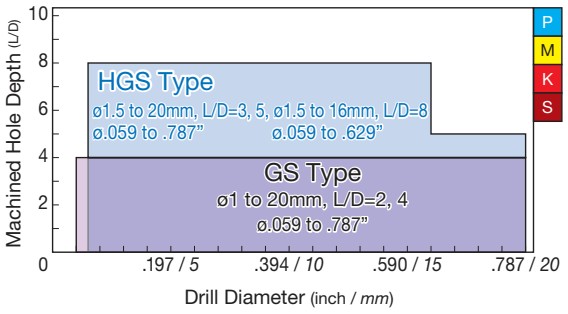
Drill Selection Guide

Series	Drilling Depth (L/D)	Coating	Coolant Supply	P			H		M	S		K		N			Ref. Page
				Carbon Steel Alloy Steel up to 35HRC		Tempered Steel	Hardened Steel		Stainless Steel	Titanium Alloy	Heat-resistant Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite	
				C 0.28% or less	C 0.29%	SKD SKS	45HRC or less	46HRC or more	SUS	Ti	Inconel	FC	FCD	Al	Cu	CFRP	
MLDH	5D 12D 20D 30D	PVD Coat	Internal	⊙	⊙	○	○		⊙	○	○	⊙	⊙	○			J85
MLDH-P	Pilot 2D	PVD Coat	Internal	⊙	⊙	○	○		⊙	○	○	⊙	⊙	○			J85
MDSS	10D	FB Coat	External	⊙	⊙	⊙	⊙	○	⊙		○	⊙	⊙	○			J88
MDUS	10D	PVD Coat	External	⊙	⊙				⊙					○	⊙		J88
MDUP	Pilot 1D	PVD Coat	External	⊙	⊙				⊙					○	⊙		J88
SMD -MTL Tip **SMD -MTL-C** Tip	1.5D 3D 5D 8D 12D	DEX Coating	Internal	⊙	⊙	○	○		○			⊙	⊙				J90
SMD -MEL Tip	1.5D 3D 5D 8D 12D	DEX Coating	Internal	⊙	○		○		⊙	○	○	⊙	⊙	○			J90
SMD -MFS Tip	1.5D 3D 5D 8D 12D	DEX Coating	Internal	⊙	⊙		○		○			○	○	○			J102
WDX	2D 3D 4D 5D	PVD Coat / Aurora DLC Coating / CVD Coat	Internal	⊙	⊙		○		⊙			⊙	⊙	⊙			J106
PDL	2D 3D	PVD Coat / Aurora DLC Coating / CVD Coat	Internal	⊙	⊙		○		○			⊙	⊙	⊙	○		J125
PCT	3D 5D	PVD Coat / Aurora DLC Coating / CVD Coat	Internal	⊙	⊙		○		○	⊙		⊙	⊙	⊙	○		J125
SR		PVD Coat / Aurora DLC Coating	Internal	⊙	⊙	⊙	○		⊙	⊙		⊙	⊙	○	○		J132

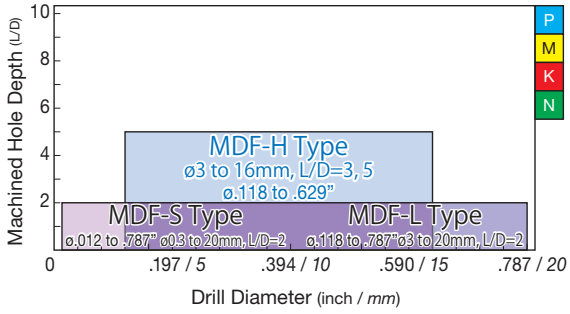
Application Range of Sumitomo Drills

Coolant: External supply / Internal supply

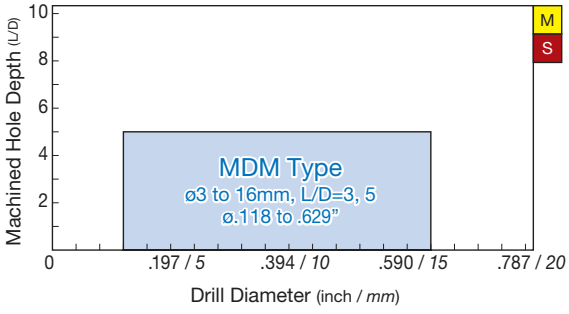
GS/HGS for General-Purpose High Efficiency Drilling J8



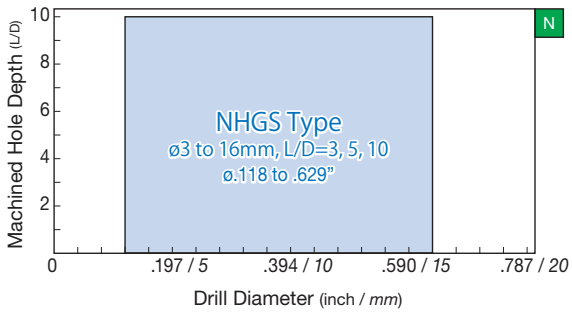
MDF Flat Bottom Drilling J44



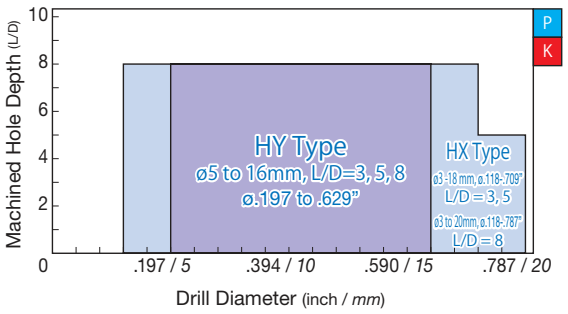
MDM for Stainless Steel & Exotic Alloy Cutting J36



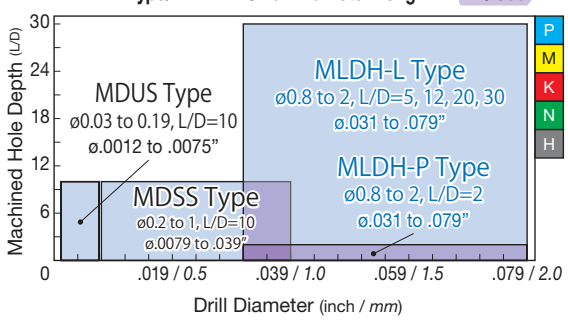
NHGS for High-efficiency Drilling of Aluminum Alloy J77



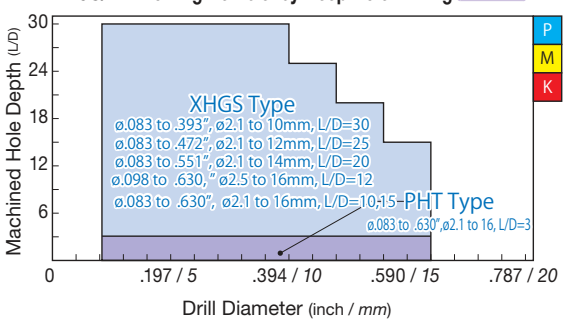
HX: for Cast Iron J58
HY: for High-efficiency Steel and Cast Iron J65



MDUS Type/MDSS Very Small Diameter Drills J88
MLDH-L Type/MLDH-P Small Diameter Long Drill J85

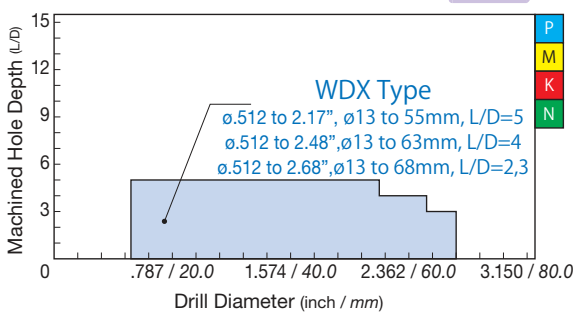


XHGS/PHT for High-efficiency Deep Hole Drilling J69



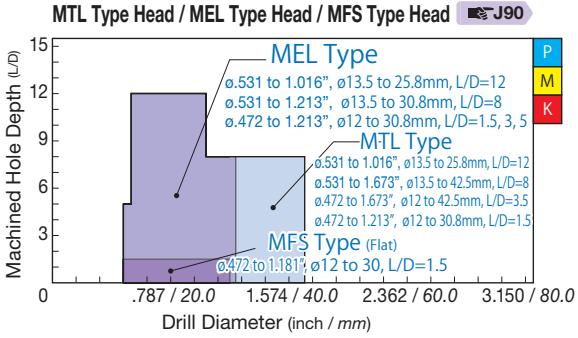
■ Indexable Insert Type Drill

WDX Indexable Drills J106



■ Indexable Tip Drills

SMD Replaceable Tip Drills
MTL Type Head / MEL Type Head / MFS Type Head J90



Drill Coating



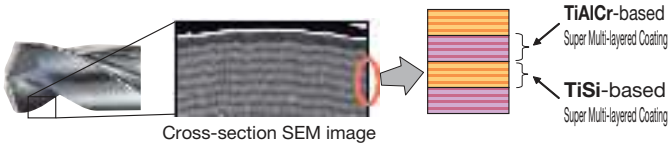
DEX Coating

■ General Features

Sumitomo's next-generation drill coating utilizes nano-coating technology to provide more than **double the tool life** of conventional coatings.

■ Features

- Coating Design
  World's first combined super multi-layered coating made from alternate layers of two super multi-layered substrates.



Cross-section SEM image

- Silicon and chrome improve wear, thermal and adhesion resistance.
- Super multi-layered structure offers improved chipping resistance.

■ DEX Coating Application Examples

GS Type MultiDrill with DEX Coating (after machining 100 holes)	
Competitor's product A (after machining 70 holes)	

Tool: MDW0800GS4
Part Material: Carbon Steel (200HB)
Cutting Conditions: v_c=230 SFM, f=0.0098 IPR, H=1.260", external coolant supply (water soluble)



DLC Coating (AURORA)

DL1300 DL1500

■ General Features

DLC Coating - AURORA is a high-hardness, low-friction coefficient layer of DLC (Diamond-like Carbon) which dramatically improves adhesion resistance in drilling of aluminum alloy and non-ferrous metals, and works with combinations of special shapes to achieve stable long tool life.

■ Features

- Thin, ultra-smooth DLC coating with a low coefficient of friction
  Helps prevent adhesion to the cutting edge and requires significantly less cutting force during drilling of aluminum alloy and non-ferrous metals.
- High adhesion strength withstands stringent cutting conditions
  The world's first coating applicable to cutting tools, with a special coating technique that significantly improves adhesion strength.
- A spectrum of colors
  Glossy colours are achieved by the special coating technique.

■ DLC Coating - AURORA Application Examples

AURORA Coating Super MultiDrill NHGS Type (after drilling 100 holes)	 Clean cutting edge with no adhesion
Competitor's Product B (after drilling 20 holes)	 Severe adhesion

Tool: MDW0800NHGS5
Part Material: Aluminum Alloy
Cutting Conditions: v_c= 650 SFM, f= .0394 IPR, H=1.260", internal coolant supply



Diamond Coating - SUMIDIA®

■ General Features

Our original polycrystalline diamond coating technology achieves over 10 times the wear resistance of uncoated carbide.
Excellent diamond film adhesion is achieved with a combination of a dedicated diamond coating alloy and a proprietary coating pre-treatment technique.

■ Features

- Micro-grain diamond coating that provides the combination of high strength and high wear resistance on smooth surfaces that is required for CFRP drilling





■ Diamond Coating - SUMIDIA® Application Examples

SUMIDIA Coat	Competitor's Diamond Coating
	
No. of Workpieces: 600 holes Able to continue 	No. of Workpieces: 50 holes Coating peels and burrs are formed 

Tool: Diamond Coating SUMIDIA® Drill ø6.35mm
Part Material: CFRP
Cutting Conditions: v_c=430 SFM, f=0.003 IPR, H=.590", through hole, dry



■ General Features

The GS and HGS styles (Super MultiDrill) are solid carbide drills that employ a new flute design and wide chip pocket to achieve excellent chip control and evacuation.
DEX coating enables long, stable tool life over a wide cutting range, with various work materials and applications.

DEX Coating

■ Features and Applications

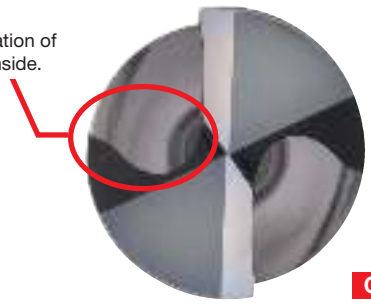
- Long tool life
  New cutting edge design and special DEX Coating provide long tool life for a wide variety of work materials.
- Stable chip evacuation
  New flute shape significantly improves chip control and evacuation.
- Quiet cutting and stable cutting force
  Stable drilling with little wobble even in small machine applications.
- Environmentally friendly
  Also compatible with the MQL (Minimum Quantity Lubrication) system.

Jflute
*"J flute" is a registered trademark.



HGS

Wide chip pocket for smooth evacuation of chips generated inside.



GS

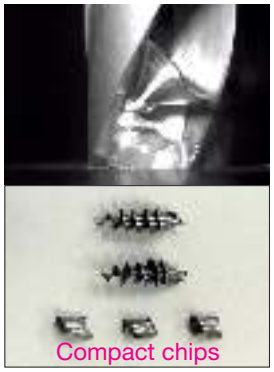
■ Product Range

Coolant Supply	Cat. No.	Diameter Range (inch)	Hole Depth (L/D)
External (GS)	MDW□□□□GS2	ø.0394 to ø.7874	up to 2
	MDW□□□□GS4		up to 4
Internal (HGS)	MDW□□□□HGS3	ø.0591 to ø.7874	up to 3
	MDW□□□□HGS5		up to 5
	MDW□□□□HGS8	ø.0591 to ø.6299	up to 8

■ Performance

Chip control

GS

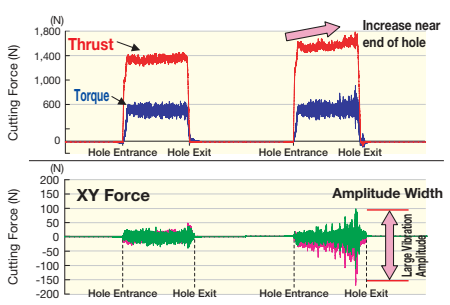


Compact chips

Conventional Tool



Comparison of Cutting Force

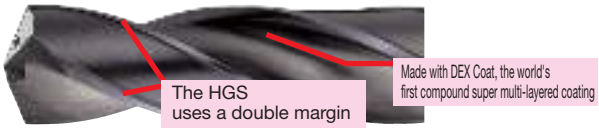


GS provides stable drill behaviour throughout the drilling process

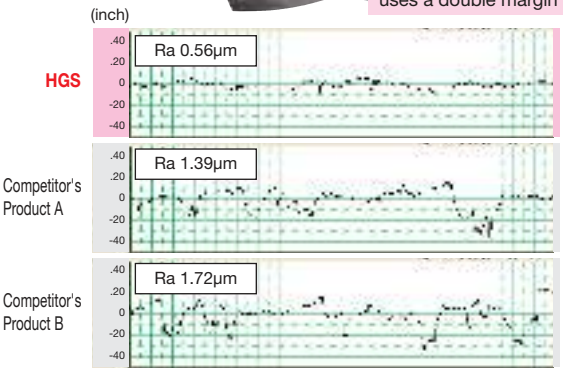
Tool: MDW0800GS4
Part Material: 1049 Steel (200HB)
Cutting Conditions: v_c=262sfm, f=.0098inch/rev, H=.9449inch,
external coolant supply (water soluble)

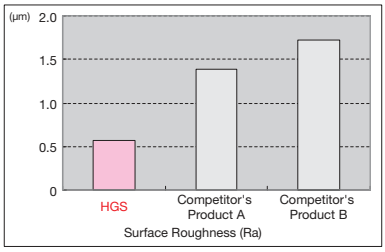
■ Uses double margin (HGS) (excluding ø.0591 to ø.0945 sizes)

The HGS uses a double margin for greater stability and hole precision in deep drilling



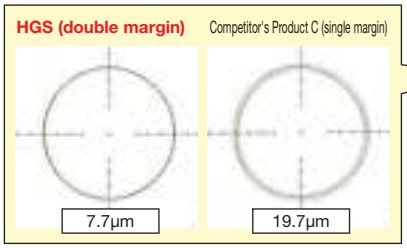
● Surface Roughness Comparison

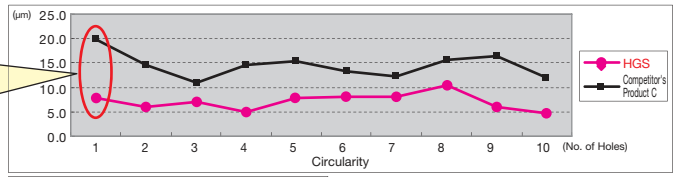




Part Material: Alloy Structural Steel (120HB)
Tool: MDW0800HGS5
Cutting Conditions: v_c=262sfm, f=.0098inch/rev, H=1.4961inch
Internal coolant supply: Water soluble

● Circularity Comparison



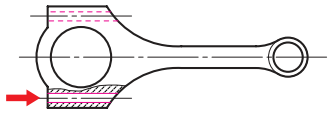


Part Material: 1049 Steel (200HB)
Tool: MDW0800HGS8
Cutting Conditions: v_c=262sfm, f=.0098inch/rev
H=2.5197inch, internal coolant supply (water soluble)

4-point guide design thanks to double margin reduces runout for improved stability.
Good surface roughness and circularity.

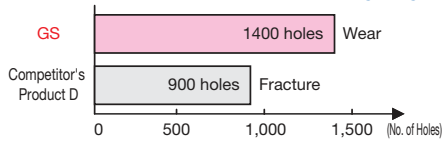
■ Application Examples for GS Drills

● Medium Carbon Steel (250HB) for Automotive

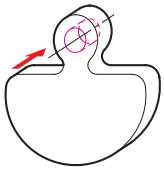


·Tool: MDW0970GS4
·Cutting Conditions: v_c=262sfm, f=.0098inch/rev
H=.9843inch, external coolant supply (water soluble)

Achieves 1.5 times the tool life!
Reduces wear on peripheral cutting edge

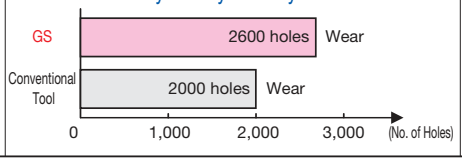


● Prehardened Mold Steel Machine Components

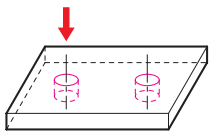


·Tool: MDW0980GS2
·Cutting Conditions: v_c=230sfm, f=.0059inch/rev
H=.2756inch, external coolant supply (water soluble)

1.3 times longer tool life than conventional tools.
Good circularity and cylindricity.

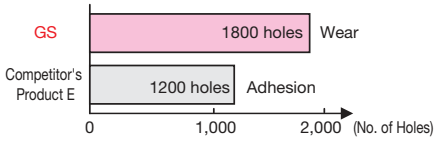


● Structural Steel Machine Components



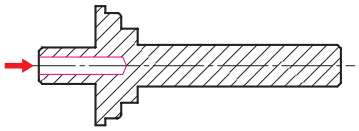
·Tool: MDW 050GS4
·Cutting Conditions: v_c=492sfm, f=.0118inch/rev
H=.4724inch, external coolant supply (water soluble)

Achieves 1.5 times the tool life!
Good chip control



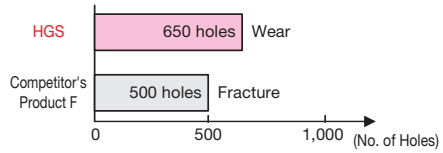
■ Application Examples for HGS Drills

● Structural Alloy Steel for Automotive

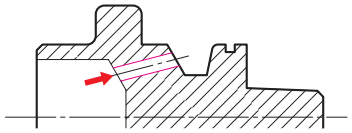


·Tool: MDW 0600HGS8
·Cutting Conditions: v_c=262sfm, f=.0098inch/rev
H=1.8898inch, internal coolant supply (oil-based)

Achieves 1.3 times the tool life!

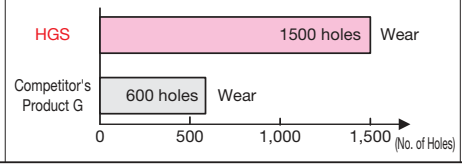


● Alloy Bearing Steel Automotive Components

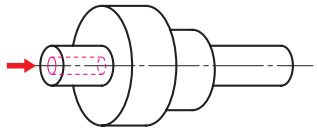


·Tool: MDW0570HGS5
·Cutting Conditions: v_c=262sfm, f=.0039inch/rev
H=1.378inch, internal coolant supply (water soluble)

Achieves 2.5 times the tool life!

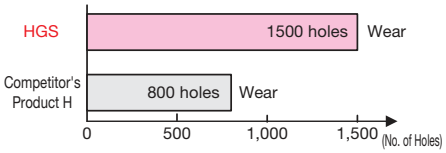


● Low Carbon Steel Machine Components



·Tool: MDW0860HGS3
·Cutting Conditions: v_c=171sfm, f=.0079inch/rev
H=.9843inch, internal coolant supply (water soluble)

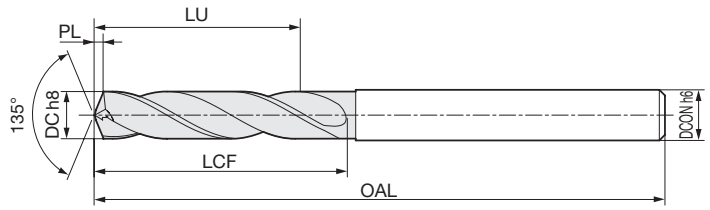
Achieves 1.8 times the tool life!



Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter *ø2.00 to 4.04mm* (0.0787"- 0.1590") Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
1.00	0.0394				2	★	**MDW0100GS2**	*4.70*	0.1850	*6.20*	0.2441	*45.20*	1.7795	*0.20*	0.0079	*3.00*	0.1181	1
					4	★	**MDW0100GS4**	*10.70*	0.4213	*12.20*	0.4803	*49.20*	1.9370					1
1.10	0.0433				2	★	**MDW0110GS2**	*4.60*	0.1811	*6.20*	0.2441	*45.20*	1.7795	*0.20*	0.0079	*3.00*	0.1181	1
					4	★	**MDW0110GS4**	*10.60*	0.4173	*12.20*	0.4803	*49.20*	1.9370					1
1.20	0.0472				2	★	**MDW0120GS2**	*4.40*	0.1732	*6.20*	0.2441	*45.20*	1.7795	*0.20*	0.0079	*3.00*	0.1181	1
					4	★	**MDW0120GS4**	*10.40*	0.4094	*12.20*	0.4803	*49.20*	1.9370					1
1.30	0.0512				2	★	**MDW0130GS2**	*4.40*	0.1732	*6.30*	0.2480	*45.30*	1.7835	*0.30*	0.0118	*3.00*	0.1181	1
					4	★	**MDW0130GS4**	*10.40*	0.4094	*12.30*	0.4843	*49.30*	1.9409					1
1.40	0.0551				2	★	**MDW0140GS2**	*4.20*	0.1654	*6.30*	0.2480	*45.30*	1.7835	*0.30*	0.0118	*3.00*	0.1181	1
					4	★	**MDW0140GS4**	*10.20*	0.4016	*12.30*	0.4843	*49.30*	1.9409					1
1.50	0.0591				2	★	**MDW0150GS2**	*4.10*	0.1614	*6.30*	0.2480	*45.30*	1.7835	*0.30*	0.0118	*3.00*	0.1181	1
					4	★	**MDW0150GS4**	*10.10*	0.3976	*12.30*	0.4843	*49.30*	1.9409					1
1.60	0.0630				2	★	**MDW0160GS2**	*5.90*	0.2323	*8.30*	0.3268	*45.30*	1.7835	*0.30*	0.0118	*3.00*	0.1181	1
					4	★	**MDW0160GS4**	*12.90*	0.5079	*15.30*	0.6024	*49.30*	1.9409					1
1.70	0.0669				2	★	**MDW0170GS2**	*5.90*	0.2323	*8.40*	0.3307	*45.40*	1.7874	*0.40*	0.0157	*3.00*	0.1181	1
					4	★	**MDW0170GS4**	*12.90*	0.5079	*15.40*	0.6063	*49.40*	1.9449					1
1.80	0.0709				2	★	**MDW0180GS2**	*5.70*	0.2244	*8.40*	0.3307	*45.40*	1.7874	*0.40*	0.0157	*3.00*	0.1181	1
					4	★	**MDW0180GS4**	*12.70*	0.5000	*15.40*	0.6063	*49.40*	1.9449					1
1.90	0.0748				2	★	**MDW0190GS2**	*5.60*	0.2205	*8.40*	0.3307	*45.40*	1.7874	*0.40*	0.0157	*3.00*	0.1181	1
					4	★	**MDW0190GS4**	*12.60*	0.4961	*15.40*	0.6063	*49.40*	1.9449					1
2.00	0.0787			2-56 2-64	2	●	**MDW0200GS2**	*5.00*	0.1969	*8.00*	0.3150	*45.00*	1.7717	*0.41*	0.0163	*3.00*	0.1181	1
					4	●	**MDW0200GS4**	*12.00*	0.4724	*15.00*	0.5906	*49.00*	1.9291					1
2.10	0.0827		3-56		2	●	**MDW0210GS2**	*6.85*	0.2697	*10.00*	0.3937	*45.00*	1.7717	*0.43*	0.0171	*3.00*	0.1181	1
					4	●	**MDW0210GS4**	*13.85*	0.5453	*17.00*	0.6693	*49.00*	1.9291					1
2.20	0.0866				2	●	**MDW0220GS2**	*6.70*	0.2638	*10.00*	0.3937	*45.00*	1.7717	*0.46*	0.0179	*3.00*	0.1181	1
					4	●	**MDW0220GS4**	*13.70*	0.5394	*17.00*	0.6693	*49.00*	1.9291					1
2.30	0.0906		4-40	3-48	2	●	**MDW0230GS2**	*6.55*	0.2579	*10.00*	0.3937	*45.00*	1.7717	*0.48*	0.0188	*3.00*	0.1181	1
					4	●	**MDW0230GS4**	*13.55*	0.5335	*17.00*	0.6693	*49.00*	1.9291					1
2.38	0.0937	3/32	4-48		2	●	**MDW00937GS2**	*6.43*	0.2531	*10.00*	0.3937	*45.00*	1.7717	*0.49*	0.0194	*3.18*	0.1250	1
					4	●	**MDW00937GS4**	*13.43*	0.5287	*17.00*	0.6693	*49.00*	1.9291					1
2.40	0.0945				2	●	**MDW0240GS2**	*6.40*	0.2520	*10.00*	0.3937	*45.00*	1.7717	*0.50*	0.0196	*3.00*	0.1181	1
					4	●	**MDW0240GS4**	*13.40*	0.5276	*17.00*	0.6693	*49.00*	1.9291					1
2.50	0.0984		M3x.5		2	●	**MDW0250GS2**	*6.25*	0.2461	*10.00*	0.3937	*45.00*	1.7717	*0.52*	0.0204	*3.00*	0.1181	1
					4	●	**MDW0250GS4**	*13.25*	0.5217	*17.00*	0.6693	*49.00*	1.9291					1
2.60	0.1024			4-48	2	●	**MDW0260GS2**	*9.10*	0.3583	*13.00*	0.5118	*45.00*	1.7717	*0.54*	0.0212	*3.00*	0.1181	1
					4	●	**MDW0260GS4**	*15.10*	0.5945	*19.00*	0.7480	*49.00*	1.9291					1
2.70	0.1063		5-44 M3x.35		2	●	**MDW0270GS2**	*8.95*	0.3524	*13.00*	0.5118	*45.00*	1.7717	*0.56*	0.0220	*3.00*	0.1181	1
					4	●	**MDW0270GS4**	*14.95*	0.5886	*19.00*	0.7480	*49.00*	1.9291					1
2.80	0.1102				2	●	**MDW0280GS2**	*8.80*	0.3465	*13.00*	0.5118	*45.00*	1.7717	*0.58*	0.0228	*3.00*	0.1181	1
					4	●	**MDW0280GS4**	*14.80*	0.5827	*19.00*	0.7480	*49.00*	1.9291					1
2.82	0.1110	#34	6-32		2	●	**MDW01110GS2**	*8.77*	0.3453	*13.00*	0.5118	*45.00*	1.7717	*0.58*	0.0228	*3.18*	0.1250	1
2.87	0.1130	#33			2	●	**MDW01130GS2**	*8.70*	0.3423	*13.00*	0.5118	*45.00*	1.7717	*0.60*	0.0236	*3.18*	0.1250	1
2.90	0.1142			5-40	2	●	**MDW0290GS2**	*8.65*	0.3406	*13.00*	0.5118	*45.00*	1.7717	*0.60*	0.0236	*3.00*	0.1181	1
					4	●	**MDW0290GS4**	*14.65*	0.5768	*19.00*	0.7480	*49.00*	1.9291					1
2.95	0.1160	#32	6-40,M3.5x6	5-44	2	●	**MDW01160GS2**	*8.58*	0.3376	*13.00*	0.5118	*45.00*	1.7717	*0.61*	0.0240	*3.18*	0.1250	1
3.00	0.1181				2	●	**MDW0300GS2**	*8.50*	0.3346	*13.00*	0.5118	*45.00*	1.7717	*0.60*	0.0236	*3.00*	0.1181	1
					4	●	**MDW0300GS4**	*14.50*	0.5709	*19.00*	0.7480	*49.00*	1.9291					1
3.05	0.1200	#31			2	●	**MDW01200GS2**	*8.43*	0.3317	*13.00*	0.5118	*45.00*	1.7717	*0.60*	0.0236	*3.18*	0.1250	1
3.10	0.1220				2	●	**MDW0310GS2**	*14.35*	0.5650	*19.00*	0.7480	*54.00*	2.1260	*0.62*	0.0240	*4.00*	0.1575	1
					4	●	**MDW0310GS4**	*19.35*	0.7618	*24.00*	0.9449	*60.00*	2.3622					1
3.18	0.1250	1/8		6-32	2	●	**MDW01250GS2**	*14.23*	0.5602	*19.00*	0.7480	*45.00*	1.7717	*0.66*	0.0259	*3.18*	0.1250	1
3.20	0.1260				2	●	**MDW0320GS2**	*14.20*	0.5591	*19.00*	0.7480	*54.00*	2.1260	*0.66*	0.0261	*4.00*	0.1575	1
					4	●	**MDW0320GS4**	*19.20*	0.7559	*24.00*	0.9449	*60.00*	2.3622					1
3.26	0.1285	#30		M3.5x6,6-40	2	●	**MDW01285GS2**	*14.11*	0.5555	*19.00*	0.7480	*54.00*	2.1260	*0.68*	0.0266	*3.97*	0.1562	1
3.30	0.1299				2	●	**MDW0330GS2**	*14.05*	0.5531	*19.00*	0.7480	*54.00*	2.1260	*0.68*	0.0269	*4.00*	0.1575	1
					4	●	**MDW0330GS4**	*19.05*	0.7500	*24.00*	0.9449	*60.00*	2.3622					1
3.40	0.1339		M4x.7		2	●	**MDW0340GS2**	*13.90*	0.5472	*19.00*	0.7480	*54.00*	2.1260	*0.70*	0.0276	*4.00*	0.1575	1
					4	●	**MDW0340GS4**	*18.90*	0.7441	*24.00*	0.9449	*60.00*	2.3622					1
3.45	0.1360	#29			2	●	**MDW01360GS2**	*13.83*	0.5443	*19.00*	0.7480	*54.00*	2.1260	*0.72*	0.0282	*3.97*	0.1562	1
3.50	0.1378		8-32		2	●	**MDW0350GS2**	*13.75*	0.5413	*19.00*	0.7480	*54.00*	2.1260	*0.72*	0.0285	*4.00*	0.1575	1
					4	●	**MDW0350GS4**	*18.75*	0.7382	*24.00*	0.9449	*60.00*	2.3622					1

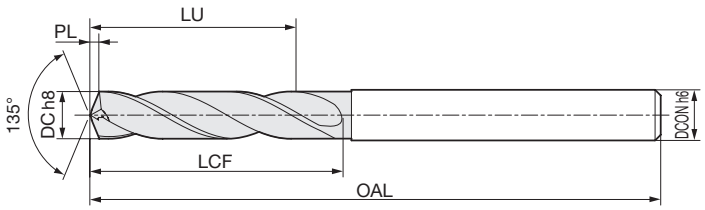
Grade: ACX70

DEX Coating 2D 4D

Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter *ø4.09 to 5.80mm* (0.1610"- 0.2283") Dimensions (inch/*mm*)

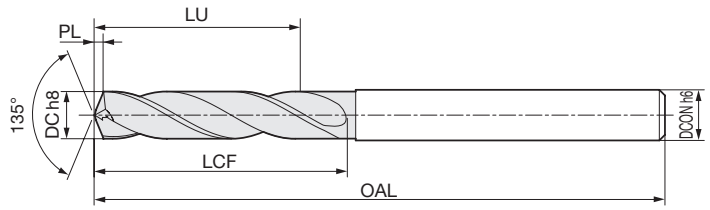
Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
3.57	0.1405	#28	8-36		2	●	**MDW01405GS2**	*15.65*	0.6159	*21.00*	0.8268	*54.00*	2.1260					1
	0.1406				2	●	**MDW01406GS2**	*15.65*	0.6159	*21.00*	0.8268	*54.00*	2.1260	*0.74*	0.0291	*3.97*	0.1562	1
		9/64			4	●	**MDW01406GS4**	*21.64*	0.8521	*27.00*	1.0630	*60.00*	2.3622					1
3.60	0.1417				2	●	**MDW0360GS2**	*15.60*	0.6142	*21.00*	0.8268	*54.00*	2.1260	*0.75*	0.0294	*4.00*	0.1575	1
					4	●	**MDW0360GS4**	*21.60*	0.8504	*27.00*	1.0630	*60.00*	2.3622					1
3.66	0.1440	#27		M4x.7	2	●	**MDW01440GS2**	*15.51*	0.6106	*21.00*	0.8268	*54.00*	2.1260	*0.76*	0.0298	*3.97*	0.1562	1
3.70	0.1457		M4.5x.7		2	●	**MDW0370GS2**	*15.45*	0.6083	*21.00*	0.8268	*54.00*	2.1260	*0.77*	0.0302	*4.00*	0.1575	1
					4	●	**MDW0370GS4**	*21.45*	0.8445	*27.00*	1.0630	*60.00*	2.3622					1
3.73	0.1470	#26			2	●	**MDW01470GS2**	*15.41*	0.6065	*21.00*	0.8268	*54.00*	2.1260	*0.80*	0.0315	*3.97*	0.1562	1
3.80	0.1495				2	●	**MDW01495GS2**	*15.30*	0.6025	*21.00*	0.8268	*54.00*	2.1260			*3.97*	0.1562	1
	0.1496			8-32	2	●	**MDW0380GS2**	*15.30*	0.6024	*21.00*	0.8268	*54.00*	2.1260	*0.79*	0.0310	*4.00*	0.1575	1
					4	●	**MDW0380GS4**	*21.30*	0.8386	*27.00*	1.0630	*60.00*	2.3622					1
3.86	0.1520	#24	M4.5x.75	8-36	2	●	**MDW01520GS2**	*15.21*	0.5988	*21.00*	0.8268	*54.00*	2.1260	*0.80*	0.0315	*3.97*	0.1562	1
3.90	0.1535				2	●	**MDW0390GS2**	*15.15*	0.5965	*21.00*	0.8268	*54.00*	2.1260	*0.81*	0.0318	*4.00*	0.1575	1
					4	●	**MDW0390GS4**	*21.15*	0.8327	*27.00*	1.0630	*60.00*	2.3622					1
3.91	0.1540	#23	10-24		2	●	**MDW01540GS2**	*15.14*	0.5959	*21.00*	0.8268	*54.00*	2.1260	*0.81*	0.0319	*3.97*	0.1562	1
3.97	0.1562	5/32			2	●	**MDW01562GS2**	*15.05*	0.5923	*21.00*	0.8268	*54.00*	2.1260	*0.82*	0.0326	*3.97*	0.1562	1
3.99	0.1570	#22			2	●	**MDW01570GS2**	*17.02*	0.6699	*23.00*	0.9055	*61.00*	2.4016	*0.82*	0.0326	*4.76*	0.1875	1
4.00	0.1575				2	●	**MDW0400GS2**	*15.00*	0.5906	*21.00*	0.8268	*54.00*	2.1260	*0.83*	0.0327	*4.00*	0.1575	1
					4	●	**MDW0400GS4**	*21.00*	0.8268	*27.00*	1.0630	*60.00*	2.3622					1
4.04	0.1590	#21			2	●	**MDW01590GS2**	*16.94*	0.6669	*23.00*	0.9055	*61.00*	2.4016	*0.84*	0.0329	*4.76*	0.1875	1
4.09	0.1610	#20			2	●	**MDW01610GS2**	*16.87*	0.6640	*23.00*	0.9055	*61.00*	2.4016	*0.85*	0.0345	*4.76*	0.1875	1
4.10	0.1614		10-32		2	●	**MDW0410GS2**	*16.85*	0.6634	*23.00*	0.9055	*61.00*	2.4016	*0.85*	0.0334	*5.00*	0.1969	1
					4	●	**MDW0410GS4**	*24.85*	0.9783	*31.00*	1.2205	*76.00*	2.9921					1
4.20	0.1654				2	●	**MDW0420GS2**	*16.70*	0.6575	*23.00*	0.9055	*61.00*	2.4016	*0.87*	0.0342	*5.00*	0.1969	1
					4	●	**MDW0420GS4**	*24.70*	0.9724	*31.00*	1.2205	*76.00*	2.9921					1
4.22	0.1660	#19		M4.5x.75	2	●	**MDW01660GS2**	*16.67*	0.6563	*23.00*	0.9055	*61.00*	2.4016	*0.87*	0.0344	*4.76*	0.1875	1
4.30	0.1693		M5x.8		2	●	**MDW0430GS2**	*16.55*	0.6516	*23.00*	0.9055	*61.00*	2.4016	*0.89*	0.0351	*5.00*	0.1969	1
					4	●	**MDW0430GS4**	*24.55*	0.9665	*31.00*	1.2205	*76.00*	2.9921					1
4.31	0.1695	#18			2	●	**MDW01695GS2**	*16.54*	0.6510	*23.00*	0.9055	*61.00*	2.4016	*0.90*	0.0354	*4.76*	0.1875	1
4.37	0.1719	11/64		10-24	2	●	**MDW01719GS2**	*16.45*	0.6474	*23.00*	0.9055	*61.00*	2.4016	*0.90*	0.0356	*4.76*	0.1875	1
4.39	0.1730	#17			2	●	**MDW01730GS2**	*16.42*	0.6463	*23.00*	0.9055	*61.00*	2.4016	*0.90*	0.0356	*4.76*	0.1875	1
4.40	0.1732				2	●	**MDW0440GS2**	*16.40*	0.6457	*23.00*	0.9055	*61.00*	2.4016	*0.91*	0.0359	*5.00*	0.1969	1
					4	●	**MDW0440GS4**	*24.40*	0.9606	*31.00*	1.2205	*76.00*	2.9921					1
4.49	0.1770	#16			2	●	**MDW01770GS2**	*16.27*	0.6404	*23.00*	0.9055	*61.00*	2.4016	*0.91*	0.0359	*4.76*	0.1875	1
4.50	0.1772			10-32	2	●	**MDW0450GS2**	*16.25*	0.6398	*23.00*	0.9055	*61.00*	2.4016	*0.93*	0.0360	*5.00*	0.1969	1
					4	●	**MDW0450GS4**	*24.25*	0.9547	*31.00*	1.2205	*76.00*	2.9921					1
4.57	0.1800	#15	12-24,M5x.5		2	●	**MDW01800GS2**	*18.15*	0.7144	*25.00*	0.9843	*61.00*	2.4016	*0.95*	0.0373	*4.76*	0.1875	1
4.60	0.1811				2	●	**MDW0460GS2**	*18.10*	0.7126	*25.00*	0.9843	*61.00*	2.4016	*0.95*	0.0375	*5.00*	0.1969	1
					4	●	**MDW0460GS4**	*31.10*	1.2244	*38.00*	1.4961	*76.00*	2.9921					1
4.62	0.1820	#14		M5x.8	2	●	**MDW01820GS2**	*18.07*	0.7114	*25.00*	0.9843	*61.00*	2.4016	*0.96*	0.0378	*4.76*	0.1875	1
4.70	0.1850		12-28		2	●	**MDW01850GS2**	*17.95*	0.7067	*25.00*	0.9843	*61.00*	2.4016			*4.76*	0.1875	1
					2	●	**MDW0470GS2**	*17.95*	0.7067	*25.00*	0.9843	*61.00*	2.4016	*0.97*	0.0383	*5.00*	0.1969	1
					4	●	**MDW0470GS4**	*30.95*	1.2185	*38.00*	1.4961	*76.00*	2.9921					1
4.76	0.1875	3/16		M5x.5	2	●	**MDW01875GS2**	*17.86*	0.7031	*25.00*	0.9843	*61.00*	2.4016	*0.99*	0.0388	*4.76*	0.1875	1
4.80	0.1890				2	●	**MDW01890GS2**	*17.80*	0.7008	*25.00*	0.9843	*65.00*	2.5591			*5.95*	0.2344	1
					2	●	**MDW0480GS2**	*17.80*	0.7008	*25.00*	0.9843	*61.00*	2.4016	*0.99*	0.0391	*5.00*	0.1969	1
					4	●	**MDW0480GS4**	*30.80*	1.2126	*38.00*	1.4961	*76.00*	2.9921					1
4.85	0.1910	#11			2	●	**MDW01910GS2**	*17.73*	0.6978	*25.00*	0.9843	*65.00*	2.5591	*1.00*	0.0394	*5.95*	0.2344	1
4.90	0.1929				2	●	**MDW0490GS2**	*17.65*	0.6949	*25.00*	0.9843	*61.00*	2.4016	*1.01*	0.0400	*5.00*	0.1969	1
					4	●	**MDW0490GS4**	*30.65*	1.2067	*38.00*	1.4961	*76.00*	2.9921					1
4.91	0.1935	#10			2	●	**MDW01935GS2**	*17.64*	0.6943	*25.00*	0.9843	*65.00*	2.5591	*1.00*	0.0394	*5.95*	0.2344	1
4.98	0.1960	#9			2	●	**MDW01960GS2**	*17.53*	0.6902	*25.00*	0.9843	*65.00*	2.5591	*1.00*	0.0394	*5.95*	0.2344	1
5.00	0.1969			12-24	2	●	**MDW0500GS2**	*17.50*	0.6890	*25.00*	0.9843	*61.00*	2.4016	*1.04*	0.0408	*5.00*	0.1969	1
					4	●	**MDW0500GS4**	*30.50*	1.2008	*38.00*	1.4961	*76.00*	2.9921					1
5.10	0.2008			12-28	2	●	**MDW0510GS2**	*17.35*	0.6831	*25.00*	0.9843	*65.00*	2.5591	*1.06*	0.0416	*6.00*	0.2362	1
					4	●	**MDW0510GS4**	*31.35*	1.2343	*39.00*	1.5354	*81.00*	3.1890					1
5.11	0.2010	#7			2	●	**MDW02010GS2**	*17.34*	0.6825	*25.00*	0.9843	*65.00*	2.5591	*1.06*	0.0416	*5.95*	0.2344	1
					4	●	**MDW02010GS4**	*31.34*	1.2337	*39.00*	1.5354	*81.00*	3.1890					1
5.16	0.2031	13/64	M6x1		2	●	**MDW02031GS2**	*17.26*	0.6795	*25.00*	0.9843	*65.00*	2.5591	*1.07*	0.0421	*5.95*	0.2344	1
					4	●	**MDW02031GS4**	*31.26*	1.2308	*39.00*	1.5354	*81.00*	3.1890					1
5.18	0.2040	#6			2	●	**MDW02040GS2**	*17.23*	0.6783	*25.00*	0.9843	*65.00*	2.5591	*1.08*	0.0424	*5.95*	0.2344	1

DEX Coating 2D 4D

Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø*5.90 to 7.49mm* (0.2323"- 0.2950") Dimensions (inch/*mm*)

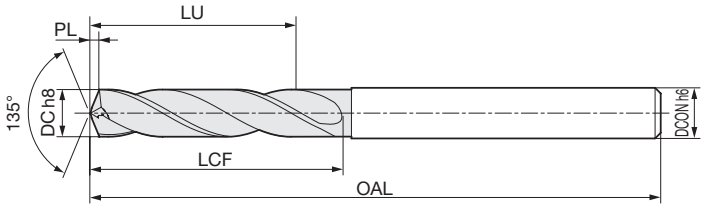
Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
5.20	0.2047				2	●	**MDW0520GS2**	*17.20*	0.6772	*25.00*	0.9843	*65.00*	2.5591	*1.08*	0.0424	*6.00*	0.2362	1
					4	●	**MDW0520GS4**	*31.20*	1.2283	*39.00*	1.5354	*81.00*	3.1890					1
5.22	0.2055	#5			2	●	**MDW02055GS2**	*17.17*	0.6760	*25.00*	0.9843	*65.00*	2.5591	*1.10*	0.0433	*5.95*	0.2344	1
5.30	0.2087				2	●	**MDW0530GS2**	*17.05*	0.6713	*25.00*	0.9843	*65.00*	2.5591	*1.10*	0.0433	*6.00*	0.2362	1
					4	●	**MDW0530GS4**	*31.05*	1.2224	*39.00*	1.5354	*81.00*	3.1890					1
5.31	0.2090	#4	1/4-20,M6x.75	M5.5x.5	2	●	**MDW02090GS2**	*17.04*	0.6707	*25.00*	0.9843	*65.00*	2.5591	*1.10*	0.0433	*5.95*	0.2344	1
5.40	0.2126				2	●	**MDW0540GS2**	*16.90*	0.6654	*25.00*	0.9843	*65.00*	2.5591	*1.12*	0.0440	*6.00*	0.2362	1
					4	●	**MDW0540GS4**	*30.90*	1.2165	*39.00*	1.5354	*81.00*	3.1890					1
5.41	0.2130	#3			2	●	**MDW02130GS2**	*16.89*	0.6648	*25.00*	0.9843	*65.00*	2.5591	*1.12*	0.0441	*5.95*	0.2344	1
5.50	0.2165				2	●	**MDW0550GS2**	*16.75*	0.6594	*25.00*	0.9843	*65.00*	2.5591	*1.14*	0.0448	*6.00*	0.2362	1
					4	●	**MDW0550GS4**	*30.75*	1.2106	*39.00*	1.5354	*81.00*	3.1890					1
5.56	0.2188	7/32	1/4-28 M6x.5	M6x1	2	●	**MDW02188GS2**	*18.66*	0.7346	*27.00*	1.0630	*65.00*	2.5591	*1.15*	0.0453	*5.95*	0.2344	1
					4	●	**MDW02188GS4**	*30.66*	1.2072	*39.00*	1.5354	*81.00*	3.1890					1
5.60	0.2205				2	●	**MDW0560GS2**	*18.60*	0.7323	*27.00*	1.0630	*65.00*	2.5591	*1.16*	0.0457	*6.00*	0.2362	1
					4	●	**MDW0560GS4**	*32.60*	1.2835	*41.00*	1.6142	*81.00*	3.1890					1
5.61	0.2210	#2		M6x.75	2	●	**MDW02210GS2**	*18.59*	0.7317	*27.00*	1.0630	*65.00*	2.5591	*1.16*	0.0458	*5.95*	0.2344	1
5.70	0.2244				2	●	**MDW0570GS2**	*18.45*	0.7264	*27.00*	1.0630	*65.00*	2.5591	*1.18*	0.0465	*6.00*	0.2362	1
					4	●	**MDW0570GS4**	*32.45*	1.2776	*41.00*	1.6142	*81.00*	3.1890					1
5.79	0.2280	#1			2	●	**MDW02280GS2**	*18.32*	0.7211	*27.00*	1.0630	*65.00*	2.5591	*1.20*	0.0472	*5.95*	0.2344	1
5.80	0.2283			1/4-20	2	●	**MDW0580GS2**	*18.30*	0.7205	*27.00*	1.0630	*65.00*	2.5591	*1.20*	0.0472	*6.00*	0.2362	1
					4	●	**MDW0580GS4**	*32.30*	1.2717	*41.00*	1.6142	*81.00*	3.1890					1
5.90	0.2323				2	●	**MDW0590GS2**	*18.15*	0.7146	*27.00*	1.0630	*65.00*	2.5591	*1.22*	0.0481	*6.00*	0.2362	1
					4	●	**MDW0590GS4**	*32.15*	1.2657	*41.00*	1.6142	*81.00*	3.1890					1
5.94	0.2340	A			2	●	**MDW02340GS2**	*18.09*	0.7122	*27.00*	1.0630	*65.00*	2.5591	*1.23*	0.0484	*5.95*	0.2344	1
5.95	0.2344	15/64			2	●	**MDW02344GS2**	*18.08*	0.7116	*27.00*	1.0630	*65.00*	2.5591	*1.23*	0.0485	*5.95*	0.2344	1
6.00	0.2362	15/64		1/4-28	2	●	**MDW0600GS2**	*18.00*	0.7087	*27.00*	1.0630	*65.00*	2.5591	*1.24*	0.0489	*6.00*	0.2362	1
					4	●	**MDW0600GS4**	*32.00*	1.2598	*41.00*	1.6142	*81.00*	3.1890					1
6.05	0.2380	B			2	●	**MDW02380GS2**	*21.93*	0.8632	*31.00*	1.2205	*73.00*	2.8740	*1.24*	0.0489	*7.14*	0.2812	1
6.10	0.2402				2	●	**MDW0610GS2**	*21.85*	0.8602	*31.00*	1.2205	*73.00*	2.8740	*1.26*	0.0497	*7.00*	0.2756	1
					4	●	**MDW0610GS4**	*32.85*	1.2933	*42.00*	1.6535	*83.00*	3.2677					1
6.15	0.2420	C	M7x1		2	●	**MDW02420GS2**	*21.78*	0.8573	*31.00*	1.2205	*73.00*	2.8740	*1.27*	0.0500	*7.14*	0.2812	1
6.20	0.2441				2	●	**MDW0620GS2**	*21.70*	0.8543	*31.00*	1.2205	*73.00*	2.8740	*1.28*	0.0506	*7.00*	0.2756	1
					4	●	**MDW0620GS4**	*32.70*	1.2874	*42.00*	1.6535	*83.00*	3.2677					1
6.25	0.2460	D			2	●	**MDW02460GS2**	*21.63*	0.8514	*31.00*	1.2205	*73.00*	2.8740	*1.30*	0.0512	*7.14*	0.2812	1
					4	●	**MDW02460GS4**	*32.63*	1.2844	*42.00*	1.6535	*83.00*	3.2677					1
6.30	0.2480				2	●	**MDW0630GS2**	*21.55*	0.8484	*31.00*	1.2205	*73.00*	2.8740	*1.30*	0.0514	*7.00*	0.2756	1
					4	●	**MDW0630GS4**	*32.55*	1.2815	*42.00*	1.6535	*83.00*	3.2677					1
6.35	0.2500	1/4	M7x.75		2	●	**MDW02500GS2**	*21.48*	0.8455	*31.00*	1.2205	*73.00*	2.8740	*1.32*	0.0518	*7.14*	0.2812	1
					4	●	**MDW02500GS4**	*32.48*	1.2785	*42.00*	1.6535	*83.00*	3.2677					1
6.40	0.2520				2	●	**MDW0640GS2**	*21.40*	0.8425	*31.00*	1.2205	*73.00*	2.8740	*1.33*	0.0522	*7.00*	0.2756	1
					4	●	**MDW0640GS4**	*32.40*	1.2756	*42.00*	1.6535	*83.00*	3.2677					1
6.50	0.2559				2	●	**MDW0650GS2**	*21.25*	0.8366	*31.00*	1.2205	*73.00*	2.8740	*1.35*	0.0530	*7.00*	0.2756	1
					4	●	**MDW0650GS4**	*32.25*	1.2697	*42.00*	1.6535	*83.00*	3.2677					1
6.53	0.2570	F	5/16-18	M7x1	2	●	**MDW02570GS2**	*23.21*	0.9136	*33.00*	1.2992	*73.00*	2.8740	*1.35*	0.0532	*7.14*	0.2812	1
					4	●	**MDW02570GS4**	*33.21*	1.3073	*43.00*	1.6929	*83.00*	3.2677					1
6.60	0.2598				2	●	**MDW0660GS2**	*23.10*	0.9094	*33.00*	1.2992	*73.00*	2.8740	*1.37*	0.0538	*7.00*	0.2756	1
					4	●	**MDW0660GS4**	*33.10*	1.3031	*43.00*	1.6929	*83.00*	3.2677					1
	0.2600				2	●	**MDW02600GS2**	*23.09*	0.9092	*33.00*	1.2992	*73.00*	2.8740			*7.14*	0.2812	1
6.63	0.2610	G			2	●	**MDW02610GS2**	*23.06*	0.9077	*33.00*	1.2992	*73.00*	2.8740	*1.38*	0.0542	*7.14*	0.2812	1
					4	●	**MDW02610GS4**	*33.06*	1.3014	*43.00*	1.6929	*83.00*	3.2677					1
6.70	0.2638				2	●	**MDW0670GS2**	*22.95*	0.9035	*33.00*	1.2992	*73.00*	2.8740	*1.39*	0.0546	*7.00*	0.2756	1
					4	●	**MDW0670GS4**	*32.95*	1.2972	*43.00*	1.6929	*83.00*	3.2677					1
6.75	0.2656	17/64	5/6-18		2	●	**MDW02656GS2**	*22.88*	0.9006	*33.00*	1.2992	*73.00*	2.8740	*1.40*	0.0550	*7.14*	0.2812	1
					4	●	**MDW02656GS4**	*32.88*	1.2943	*43.00*	1.6929	*83.00*	3.2677					1
6.76	0.2660	H	5/6-18		2	●	**MDW02660GS2**	*22.86*	0.9000	*33.00*	1.2992	*73.00*	2.8740	*1.40*	0.0551	*7.14*	0.2812	1
					4	●	**MDW02660GS4**	*32.86*	1.2937	*43.00*	1.6929	*83.00*	3.2677					1
6.80	0.2677				2	●	**MDW02677GS2**	*22.80*	0.8976	*33.00*	1.2992	*73.00*	2.8740			*7.14*	0.2812	1
					2	●	**MDW0680GS2**	*22.80*	0.8976	*33.00*	1.2992	*73.00*	2.8740	*1.41*	0.0554	*7.00*	0.2756	1
					4	●	**MDW0680GS4**	*32.80*	1.2913	*43.00*	1.6929	*83.00*	3.2677					1
6.90	0.2717		M8x1.25		2	●	**MDW0690GS2**	*22.65*	0.8917	*33.00*	1.2992	*73.00*	2.8740	*1.43*	0.0563	*7.00*	0.2756	1
					4	●	**MDW0690GS4**	*32.65*	1.2854	*43.00*	1.6929	*83.00*	3.2677					1
6.91	0.2720	I	5/16-24		2	●	**MDW02720GS2**	*22.64*	0.8911	*33.00*	1.2992	*73.00*	2.8740	*1.43*	0.0563	*7.14*	0.2812	1
					4	●	**MDW02720GS4**	*32.64*	1.2848	*43.00*	1.6929	*83.00*	3.2677					1

DEX Coating 2D 4D

Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application

*Refer to N74 for the tolerance of h6 and h8

Fig 1



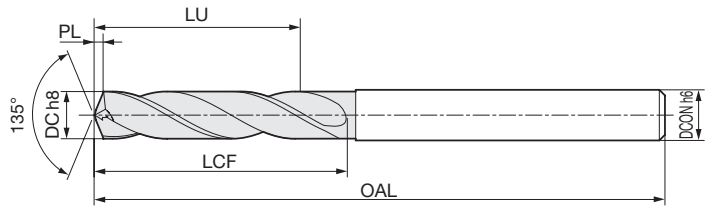
Diameter ø7.50 to 9.20mm (0.2953"- 0.3622") Dimensions (inch/mm)

Dia. DC			Cut Tap	Roll Form	Hole Depth	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction	Size	Tap Size	(L/D)			mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	
7.00	0.2756				2	●	MDW02756GS2	22.50	0.8858	33.00	1.2992	73.00	2.8740			7.14	0.2812	1
					2	●	MDW0700GS2	22.50	0.8858	33.00	1.2992	73.00	2.8740	1.45	0.0571	7.00	0.2756	1
					4	●	MDW0700GS4	32.50	1.2795	43.00	1.6929	83.00	3.2677					1
7.04	0.2770	J			2	●	MDW02770GS2	22.44	0.8835	33.00	1.2992	73.00	2.8740	1.46	0.0574	7.14	0.2812	1
					4	●	MDW02770GS4	32.44	1.2772	43.00	1.6929	83.00	3.2677					1
7.10	0.2795				2	●	MDW0710GS2	22.35	0.8799	33.00	1.2992	78.00	3.0709	1.47	0.0579	8.00	0.3150	1
					4	●	MDW0710GS4	34.35	1.3524	45.00	1.7717	90.00	3.5433					1
7.14	0.2810	K	M8x1		2	●	MDW02810GS2	22.29	0.8776	33.00	1.2992	73.00	2.8740	1.48	0.0582	7.14	0.2812	1
					4	●	MDW02810GS4	32.29	1.2713	43.00	1.6929	83.00	3.2677					1
	0.2812	9/32			2	●	MDW02812GS2	22.29	0.8774	33.00	1.2992	73.00	2.8740					1
					4	●	MDW02812GS4	32.29	1.2711	43.00	1.6929	83.00	3.2677					1
7.20	0.2835				2	●	MDW0720GS2	22.20	0.8740	33.00	1.2992	78.00	3.0709	1.49	0.0587	8.00	0.3150	1
					4	●	MDW0720GS4	34.20	1.3465	45.00	1.7717	90.00	3.5433					1
7.30	0.2874		M8x.75	5/16-18	2	●	MDW0730GS2	22.05	0.8681	33.00	1.2992	78.00	3.0709	1.51	0.0595	8.00	0.3150	1
					4	●	MDW0730GS4	34.05	1.3406	45.00	1.7717	90.00	3.5433					1
7.37	0.2900	L			2	●	MDW02900GS2	21.95	0.8640	33.00	1.2992	78.00	3.0709	1.50	0.0591	7.94	0.3125	1
					4	●	MDW02900GS4	33.95	1.3364	45.00	1.7717	90.00	3.5433					1
7.40	0.2913			M8x1.25	2	●	MDW0740GS2	21.90	0.8622	33.00	1.2992	78.00	3.0709	1.53	0.0603	8.00	0.3150	1
					4	●	MDW0740GS4	33.90	1.3346	45.00	1.7717	90.00	3.5433					1
7.49	0.2950	M		5/16-24	2	●	MDW02950GS2	21.77	0.8569	33.00	1.2992	78.00	3.0709	1.55	0.0610	7.94	0.3125	1
					4	●	MDW02950GS4	33.77	1.3293	45.00	1.7717	90.00	3.5433					1
7.50	0.2953		M8x.5		2	●	MDW0750GS2	21.75	0.8563	33.00	1.2992	78.00	3.0709	1.55	0.0612	8.00	0.3150	1
					4	●	MDW0750GS4	33.75	1.3287	45.00	1.7717	90.00	3.5433					1
7.54	0.2969			M8x1	2	●	MDW02969GS2	24.69	0.9720	36.00	1.4173	78.00	3.0709	1.56	0.0615	7.94	0.3125	1
					4	●	MDW02969GS4	36.69	1.4445	48.00	1.8898	90.00	3.5433					1
7.60	0.2992				2	●	MDW0760GS2	24.60	0.9685	36.00	1.4173	78.00	3.0709	1.57	0.0620	8.00	0.3150	1
					4	●	MDW0760GS4	36.60	1.4409	48.00	1.8898	90.00	3.5433					1
7.67	0.3020	N		M8x.75	2	●	MDW03020GS2	24.50	0.9644	36.00	1.4173	78.00	3.0709	1.59	0.0625	7.94	0.3125	1
					4	●	MDW03020GS4	36.50	1.4368	48.00	1.8898	90.00	3.5433					1
7.70	0.3031				2	●	MDW0770GS2	24.45	0.9626	36.00	1.4173	78.00	3.0709	1.59	0.0628	8.00	0.3150	1
					4	●	MDW0770GS4	36.45	1.4350	48.00	1.8898	90.00	3.5433					1
7.80	0.3071		M9x1.25		2	●	MDW0780GS2	24.30	0.9567	36.00	1.4173	78.00	3.0709	1.62	0.0636	8.00	0.3150	1
					4	●	MDW0780GS4	36.30	1.4291	48.00	1.8898	90.00	3.5433					1
7.90	0.3110				2	●	MDW0790GS2	24.15	0.9508	36.00	1.4173	78.00	3.0709	1.64	0.0644	8.00	0.3150	1
					4	●	MDW0790GS4	36.15	1.4232	48.00	1.8898	90.00	3.5433					1
7.94	0.3125	5/16			2	●	MDW03125GS2	24.09	0.9484	36.00	1.4173	78.00	3.0709	1.64	0.0647	7.94	0.3125	1
					4	●	MDW03125GS4	36.09	1.4209	48.00	1.8898	90.00	3.5433					1
8.00	0.3150				2	●	MDW0800GS2	24.00	0.9449	36.00	1.4173	78.00	3.0709	1.66	0.0652	8.00	0.3150	1
					4	●	MDW0800GS4	36.00	1.4173	48.00	1.8898	90.00	3.5433					1
8.03	0.3160	O			2	●	MDW03160GS2	23.96	0.9431	36.00	1.4173	82.00	3.2283	1.66	0.0652	9.13	0.3594	1
					4	●	MDW03160GS4	40.96	1.6124	53.00	2.0866	98.00	3.8583					1
8.10	0.3189		M9x1		2	●	MDW0810GS2	23.85	0.9390	36.00	1.4173	82.00	3.2283	1.68	0.0660	9.00	0.3543	1
					4	●	MDW0810GS4	40.85	1.6083	53.00	2.0866	98.00	3.8583					1
8.20	0.3228				2	●	MDW0820GS2	23.70	0.9331	36.00	1.4173	82.00	3.2283	1.70	0.0669	9.00	0.3543	1
					4	●	MDW0820GS4	40.70	1.6024	53.00	2.0866	98.00	3.8583					1
	0.3230	P			2	●	MDW03230GS2	23.69	0.9328	36.00	1.4173	82.00	3.2283	1.70	0.0669	9.13	0.3594	1
					4	●	MDW03230GS4	40.69	1.6021	53.00	2.0866	98.00	3.8583					1
8.30	0.3268				2	●	MDW0830GS2	23.55	0.9272	36.00	1.4173	82.00	3.2283	1.72	0.0677	9.00	0.3543	1
					4	●	MDW0830GS4	40.55	1.5965	53.00	2.0866	98.00	3.8583					1
8.33	0.3281	21/64	M7x1		2	●	MDW03281GS2	23.51	0.9254	36.00	1.4173	82.00	3.2283	1.73	0.0680	9.13	0.3594	1
					4	●	MDW03281GS4	40.51	1.5947	53.00	2.0866	98.00	3.8583					1
8.40	0.3307				2	●	MDW03307GS2	23.40	0.9213	36.00	1.4173	82.00	3.2283			9.13	0.3594	1
					2	●	MDW0840GS2	23.40	0.9213	36.00	1.4173	82.00	3.2283	1.74	0.0685	9.00	0.3543	1
					4	●	MDW0840GS4	40.40	1.5906	53.00	2.0866	98.00	3.8583					1
8.43	0.3320	Q		M9x1.25	2	●	MDW03320GS2	23.36	0.9195	36.00	1.4173	82.00	3.2283	1.75	0.0688	9.13	0.3594	1
					4	●	MDW03320GS4	40.36	1.5888	53.00	2.0866	98.00	3.8583					1
8.50	0.3346				2	●	MDW0850GS2	23.25	0.9154	36.00	1.4173	82.00	3.2283	1.76	0.0693	9.00	0.3543	1
					4	●	MDW0850GS4	40.25	1.5846	53.00	2.0866	98.00	3.8583					1
8.60	0.3386		M10x1.5	M9x.75	2	●	MDW03386GS2	25.10	0.9882	38.00	1.4961	82.00	3.2283			9.13	0.3594	1
					2	●	MDW0860GS2	25.10	0.9882	38.00	1.4961	82.00	3.2283	1.78	0.0701	9.00	0.3543	1
					4	●	MDW0860GS4	42.10	1.6575	55.00	2.1654	98.00	3.8583					1
8.61	0.3390	R			2	●	MDW03390GS2	25.09	0.9876	38.00	1.4961	82.00	3.2283	1.80	0.0709	9.13	0.3594	1
					4	●	MDW03390GS4	42.09	1.6569	55.00	2.1654	98.00	3.8583					1

Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter *ø9.30 to 11.20mm* (0.3661"- 0.4409") Dimensions (inch/*mm*)

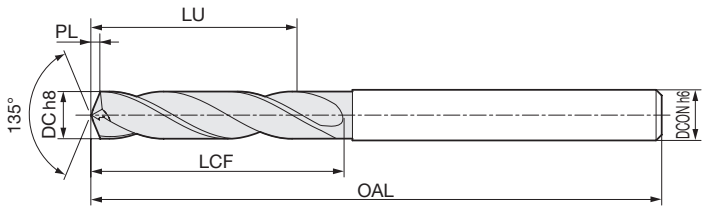
Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
8.70	0.3425			3/8-16	2	●	**MDW0870GS2**	*24.95*	0.9823	*38.00*	1.4961	*82.00*	3.2283	*1.80*	0.0709	*9.00*	0.3543	1
					4	●	**MDW0870GS4**	*41.95*	1.6516	*55.00*	2.1654	*98.00*	3.8583					1
8.73	0.3438	11/32			2	●	**MDW03438GS2**	*24.91*	0.9805	*38.00*	1.4961	*82.00*	3.2283	*1.81*	0.0712	*9.13*	0.3594	1
					4	●	**MDW03438GS4**	*41.91*	1.6498	*55.00*	2.1654	*98.00*	3.8583					1
8.80	0.3465				2	●	**MDW0880GS2**	*24.80*	0.9764	*38.00*	1.4961	*82.00*	3.2283	*1.82*	0.0718	*9.00*	0.3543	1
					4	●	**MDW0880GS4**	*41.80*	1.6457	*55.00*	2.1654	*98.00*	3.8583					1
8.83	0.3475				2	●	**MDW03475GS2**	*24.76*	0.9746	*38.00*	1.4961	*82.00*	3.2283	*1.80*	0.0709	*9.13*	0.3594	1
8.84	0.3480	S			2	●	**MDW03480GS2**	*24.74*	0.9740	*38.00*	1.4961	*82.00*	3.2283	*1.80*	0.0709	*9.13*	0.3594	1
					4	●	**MDW03480GS4**	*41.74*	1.6433	*55.00*	2.1654	*98.00*	3.8583					1
8.90	0.3504		M10x1.25		2	●	**MDW0890GS2**	*24.65*	0.9705	*38.00*	1.4961	*82.00*	3.2283	*1.84*	0.0726	*9.00*	0.3543	1
					4	●	**MDW0890GS4**	*41.65*	1.6398	*55.00*	2.1654	*98.00*	3.8583					1
9.00	0.3543				2	●	**MDW0900GS2**	*24.50*	0.9646	*38.00*	1.4961	*82.00*	3.2283	*1.86*	0.0734	*9.00*	0.3543	1
					4	●	**MDW0900GS4**	*41.50*	1.6339	*55.00*	2.1654	*98.00*	3.8583					1
9.09	0.3580	T			2	●	**MDW03580GS2**	*24.37*	0.9593	*38.00*	1.4961	*82.00*	3.2283	*1.86*	0.0734	*9.13*	0.3594	1
					4	●	**MDW03580GS4**	*41.37*	1.6285	*55.00*	2.1654	*98.00*	3.8583					1
9.10	0.3583				2	●	**MDW0910GS2**	*24.35*	0.9587	*38.00*	1.4961	*87.00*	3.4252	*1.88*	0.0742	*10.00*	0.3937	1
					4	●	**MDW0910GS4**	*44.35*	1.7461	*58.00*	2.2835	*105.00*	4.1339					1
9.13	0.3594	23/64	M10x1	3/8-24	2	●	**MDW03594GS2**	*24.31*	0.9569	*38.00*	1.4961	*82.00*	3.2283	*1.89*	0.0744	*9.13*	0.3594	1
					4	●	**MDW03594GS4**	*41.31*	1.6262	*55.00*	2.1654	*98.00*	3.8583					1
9.20	0.3622				2	●	**MDW0920GS2**	*24.20*	0.9528	*38.00*	1.4961	*87.00*	3.4252	*1.91*	0.0750	*10.00*	0.3937	1
					4	●	**MDW0920GS4**	*44.20*	1.7402	*58.00*	2.2835	*105.00*	4.1339					1
9.30	0.3661				2	●	**MDW0930GS2**	*24.05*	0.9469	*38.00*	1.4961	*87.00*	3.4252	*1.93*	0.0758	*10.00*	0.3937	1
					4	●	**MDW0930GS4**	*44.05*	1.7343	*58.00*	2.2835	*105.00*	4.1339					1
9.35	0.3680	U	7/16-14	M10x1.5	2	●	**MDW03680GS2**	*23.98*	0.9439	*38.00*	1.4961	*87.00*	3.4252	*1.94*	0.0762	*9.92*	0.3906	1
					4	●	**MDW03680GS4**	*43.98*	1.7313	*58.00*	2.2835	*105.00*	4.1339					1
9.40	0.3701				2	●	**MDW0940GS2**	*23.90*	0.9409	*38.00*	1.4961	*87.00*	3.4252	*1.95*	0.0766	*10.00*	0.3937	1
					4	●	**MDW0940GS4**	*43.90*	1.7283	*58.00*	2.2835	*105.00*	4.1339					1
9.50	0.3740			M10x1.25	2	●	**MDW0950GS2**	*23.75*	0.9350	*38.00*	1.4961	*87.00*	3.4252	*1.97*	0.0775	*10.00*	0.3937	1
					4	●	**MDW0950GS4**	*43.75*	1.7224	*58.00*	2.2835	*105.00*	4.1339					1
9.53	0.3750	3/8			2	●	**MDW03750GS2**	*26.71*	1.0514	*41.00*	1.6142	*87.00*	3.4252	*1.97*	0.0777	*9.92*	0.3906	1
					4	●	**MDW03750GS4**	*45.71*	1.7994	*60.00*	2.3622	*105.00*	4.1339					1
9.58	0.3770	V		M10x1	2	●	**MDW03770GS2**	*26.63*	1.0484	*41.00*	1.6142	*87.00*	3.4252	*1.98*	0.0781	*9.92*	0.3906	1
					4	●	**MDW03770GS4**	*45.63*	1.7965	*60.00*	2.3622	*105.00*	4.1339					1
9.60	0.3780				2	●	**MDW03780GS2**	*26.60*	1.0472	*41.00*	1.6142	*87.00*	3.4252	*1.99*	0.0783	*9.92*	0.3906	1
					2	●	**MDW0960GS2**	*26.60*	1.0472	*41.00*	1.6142	*87.00*	3.4252			*10.00*	0.3937	1
					4	●	**MDW0960GS4**	*45.60*	1.7953	*60.00*	2.3622	*105.00*	4.1339					1
9.70	0.3819			M10x.75	2	●	**MDW0970GS2**	*26.45*	1.0413	*41.00*	1.6142	*87.00*	3.4252	*2.01*	0.0791	*10.00*	0.3937	1
					4	●	**MDW0970GS4**	*45.45*	1.7894	*60.00*	2.3622	*105.00*	4.1339					1
9.80	0.3858				2	●	**MDW0980GS2**	*26.30*	1.0354	*41.00*	1.6142	*87.00*	3.4252	*2.03*	0.0799	*10.00*	0.3937	1
					4	●	**MDW0980GS4**	*45.30*	1.7835	*60.00*	2.3622	*105.00*	4.1339					1
	0.3860	W			2	●	**MDW03860GS2**	*26.29*	1.0352	*41.00*	1.6142	*87.00*	3.4252			*9.92*	0.3906	1
					4	●	**MDW03860GS4**	*45.29*	1.7832	*60.00*	2.3622	*105.00*	4.1339					1
9.90	0.3898				2	●	**MDW0990GS2**	*26.15*	1.0295	*41.00*	1.6142	*87.00*	3.4252	*2.05*	0.0807	*10.00*	0.3937	1
					4	●	**MDW0990GS4**	*45.15*	1.7776	*60.00*	2.3622	*105.00*	4.1339					1
9.92	0.3906	25/64	7/16-20		2	●	**MDW03906GS2**	*26.12*	1.0283	*41.00*	1.6142	*87.00*	3.4252	*2.05*	0.0809	*9.92*	0.3906	1
					4	●	**MDW03906GS4**	*45.12*	1.7764	*60.00*	2.3622	*105.00*	4.1339					1
10.00	0.3937				2	●	**MDW1000GS2**	*26.00*	1.0236	*41.00*	1.6142	*87.00*	3.4252	*2.07*	0.0827	*10.00*	0.3937	1
					4	●	**MDW1000GS4**	*45.00*	1.7717	*60.00*	2.3622	*105.00*	4.1339					1
10.08	0.3970	X			2	●	**MDW03970GS2**	*25.88*	1.0189	*41.00*	1.6142	*93.00*	3.6614	*2.10*	0.0827	*11.11*	0.4375	1
					4	●	**MDW03970GS4**	*50.88*	2.0031	*66.00*	2.5984	*114.00*	4.4882					1
10.10	0.3976		M11x1		2	●	**MDW1010GS2**	*25.85*	1.0177	*41.00*	1.6142	*93.00*	3.6614	*2.09*	0.0830	*11.00*	0.4331	1
					4	●	**MDW1010GS4**	*50.85*	2.0020	*66.00*	2.5984	*114.00*	4.4882					1
10.20	0.4016				2	●	**MDW1020GS2**	*25.70*	1.0118	*41.00*	1.6142	*93.00*	3.6614	*2.11*	0.0832	*11.00*	0.4331	1
					4	●	**MDW1020GS4**	*50.70*	1.9961	*66.00*	2.5984	*114.00*	4.4882					1
10.26	0.4040	Y	7/16-14		2	●	**MDW04040GS2**	*25.61*	1.0083	*41.00*	1.6142	*93.00*	3.6614	*2.11*	0.0832	*11.11*	0.4375	1
					4	●	**MDW04040GS4**	*50.61*	1.9925	*66.00*	2.5984	*114.00*	4.4882					1
10.30	0.4055				2	●	**MDW1030GS2**	*25.55*	1.0059	*41.00*	1.6142	*93.00*	3.6614	*2.13*	0.0837	*11.00*	0.4331	1
					4	●	**MDW1030GS4**	*50.55*	1.9902	*66.00*	2.5984	*114.00*	4.4882					1
10.32	0.4062	13/32		M11x1.5	2	●	**MDW04062GS2**	*25.52*	1.0047	*41.00*	1.6142	*93.00*	3.6614	*2.14*	0.0841	*11.11*	0.4375	1
					4	●	**MDW04062GS4**	*50.52*	1.9890	*66.00*	2.5984	*114.00*	4.4882					1
10.40	0.4094				2	●	**MDW1040GS2**	*25.40*	1.0000	*41.00*	1.6142	*93.00*	3.6614	*2.14*	0.0848	*11.00*	0.4331	1
					4	●	**MDW1040GS4**	*50.40*	1.9843	*66.00*	2.5984	*114.00*	4.4882					1
10.49	0.4130	Z	M12x1.75		2	●	**MDW04130GS2**	*25.27*	0.9947	*41.00*	1.6142	*93.00*	3.6614	*2.17*	0.0855	*11.11*	0.4375	1
					4	●	**MDW04130GS4**	*50.27*	1.9789	*66.00*	2.5984	*114.00*	4.4882					1

DEX Coating 2D 4D

Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter *ø11.30 to 13.60mm* (0.4449"- 0.5354") Dimensions (inch/*mm*)

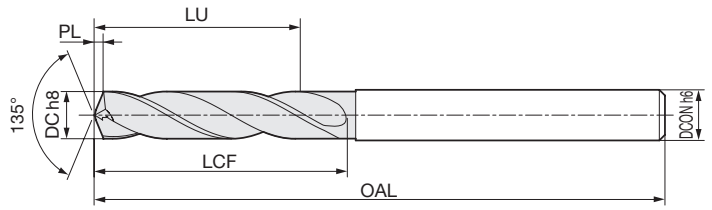
Dia. DC			Cut Tap	Roll Form	Hole Depth	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction	Size	Tap Size	(L/D)			*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
10.50	0.4134		7/16-20		2	●	**MDW1050GS2**	*25.25*	0.9941	*41.00*	1.6142	*93.00*	3.6614	*2.17*	0.0856	*11.00*	0.4331	1
					4	●	**MDW1050GS4**	*50.25*	1.9783	*66.00*	2.5984	*114.00*	4.4882					1
10.60	0.4173			M11x1	2	●	**MDW1060GS2**	*29.10*	1.1457	*45.00*	1.7717	*93.00*	3.6614	*2.20*	0.0866	*11.00*	0.4331	1
					4	●	**MDW1060GS4**	*52.10*	2.0512	*68.00*	2.6772	*114.00*	4.4882					1
10.70	0.4213				2	●	**MDW1070GS2**	*28.95*	1.1398	*45.00*	1.7717	*93.00*	3.6614	*2.22*	0.0872	*11.00*	0.4331	1
					4	●	**MDW1070GS4**	*51.95*	2.0453	*68.00*	2.6772	*114.00*	4.4882					1
10.72	0.4219	27/64	M12x1.5	M11x1.75	2	●	**MDW04219GS2**	*28.92*	1.1386	*45.00*	1.7717	*93.00*	3.6614	*2.22*	0.0874	*11.11*	0.4375	1
					4	●	**MDW04219GS4**	*51.92*	2.0441	*68.00*	2.6772	*114.00*	4.4882					1
10.80	0.4252				2	●	**MDW1080GS2**	*28.80*	1.1339	*45.00*	1.7717	*93.00*	3.6614	*2.24*	0.0881	*11.00*	0.4331	1
					4	●	**MDW1080GS4**	*51.80*	2.0394	*68.00*	2.6772	*114.00*	4.4882					1
10.90	0.4291		M12x1.25	7/16-14	2	●	**MDW1090GS2**	*28.65*	1.1280	*45.00*	1.7717	*93.00*	3.6614	*2.26*	0.0889	*11.00*	0.4331	1
					4	●	**MDW1090GS4**	*51.65*	2.0335	*68.00*	2.6772	*114.00*	4.4882					1
11.00	0.4331				2	●	**MDW1100GS2**	*28.50*	1.1220	*45.00*	1.7717	*93.00*	3.6614	*2.28*	0.0897	*11.00*	0.4331	1
					4	●	**MDW1100GS4**	*51.50*	2.0276	*68.00*	2.6772	*114.00*	4.4882					1
11.10	0.4370		1/2-13		2	●	**MDW1110GS2**	*28.35*	1.1161	*45.00*	1.7717	*100.00*	3.9370	*2.30*	0.0906	*12.00*	0.4724	1
					4	●	**MDW1110GS4**	*54.35*	2.1398	*71.00*	2.7953	*121.00*	4.7638					1
11.11	0.4375	7/16	M12x1		2	●	**MDW04375GS2**	*28.34*	1.1156	*45.00*	1.7717	*93.00*	3.6614	*2.30*	0.0907	*11.11*	0.4375	1
					4	●	**MDW04375GS4**	*54.34*	2.1392	*71.00*	2.7953	*114.00*	4.4882					1
11.20	0.4409				2	●	**MDW1120GS2**	*28.20*	1.1102	*45.00*	1.7717	*100.00*	3.9370	*2.32*	0.0913	*12.00*	0.4724	1
					4	●	**MDW1120GS4**	*54.20*	2.1339	*71.00*	2.7953	*121.00*	4.7638					1
11.30	0.4449			M12x1.5 M12x1.75	2	●	**MDW1130GS2**	*28.05*	1.1043	*45.00*	1.7717	*100.00*	3.9370	*2.34*	0.0921	*12.00*	0.4724	1
					4	●	**MDW1130GS4**	*54.05*	2.1280	*71.00*	2.7953	*121.00*	4.7638					1
11.40	0.4488				2	●	**MDW1140GS2**	*27.90*	1.0984	*45.00*	1.7717	*100.00*	3.9370	*2.36*	0.0930	*12.00*	0.4724	1
					4	●	**MDW1140GS4**	*53.90*	2.1220	*71.00*	2.7953	*121.00*	4.7638					1
11.50	0.4528			M12x1.25	2	●	**MDW1150GS2**	*27.75*	1.0925	*45.00*	1.7717	*100.00*	3.9370	*2.40*	0.0945	*12.00*	0.4724	1
					4	●	**MDW1150GS4**	*53.75*	2.1161	*71.00*	2.7953	*121.00*	4.7638					1
11.51	0.4531	29/64			2	●	**MDW04531GS2**	*29.74*	1.1707	*47.00*	1.8504	*100.00*	3.9370	*2.38*	0.0938	*11.91*	0.4688	1
					4	●	**MDW04531GS4**	*55.74*	2.1943	*73.00*	2.8740	*121.00*	4.7638					1
11.60	0.4567		1/2-20	M12x1	2	●	**MDW1160GS2**	*29.60*	1.1654	*47.00*	1.8504	*100.00*	3.9370	*2.40*	0.0945	*12.00*	0.4724	1
					4	●	**MDW1160GS4**	*55.60*	2.1890	*73.00*	2.8740	*121.00*	4.7638					1
11.61	0.4570				2	●	**MDW04570GS2**	*29.59*	1.1648	*47.00*	1.8504	*100.00*	3.9370	*2.40*	0.0945	*11.91*	0.4688	1
11.70	0.4606				2	●	**MDW1170GS2**	*29.45*	1.1594	*47.00*	1.8504	*100.00*	3.9370	*2.42*	0.0954	*12.00*	0.4724	1
					4	●	**MDW1170GS4**	*55.45*	2.1831	*73.00*	2.8740	*121.00*	4.7638					1
11.80	0.4646				2	●	**MDW1180GS2**	*29.30*	1.1535	*47.00*	1.8504	*100.00*	3.9370	*2.44*	0.0962	*12.00*	0.4724	1
					4	●	**MDW1180GS4**	*55.30*	2.1772	*73.00*	2.8740	*121.00*	4.7638					1
11.90	0.4685			1/2-13	2	●	**MDW1190GS2**	*29.15*	1.1476	*47.00*	1.8504	*100.00*	3.9370	*2.46*	0.0970	*12.00*	0.4724	1
					4	●	**MDW1190GS4**	*55.15*	2.1713	*73.00*	2.8740	*121.00*	4.7638					1
11.91	0.4688	15/32			2	●	**MDW04688GS2**	*29.14*	1.1470	*47.00*	1.8504	*100.00*	3.9370	*2.47*	0.0971	*11.91*	0.4688	1
					4	●	**MDW04688GS4**	*55.14*	2.1707	*73.00*	2.8740	*121.00*	4.7638					1
12.00	0.4724				2	●	**MDW1200GS2**	*29.00*	1.1417	*47.00*	1.8504	*100.00*	3.9370	*2.49*	0.0978	*12.00*	0.4724	1
					4	●	**MDW1200GS4**	*55.00*	2.1654	*73.00*	2.8740	*121.00*	4.7638					1
12.10	0.4764				2	●	**MDW1210GS2**	*28.85*	1.1358	*47.00*	1.8504	*100.00*	3.9370	*2.51*	0.0987	*13.00*	0.5118	1
					4	●	**MDW1210GS4**	*57.85*	2.2776	*76.00*	2.9921	*137.00*	5.3937					1
12.20	0.4803				2	●	**MDW1220GS2**	*28.70*	1.1299	*47.00*	1.8504	*100.00*	3.9370	*2.53*	0.0984	*13.00*	0.5118	1
					4	●	**MDW1220GS4**	*57.70*	2.2717	*76.00*	2.9921	*137.00*	5.3937					1
12.30	0.4843				2	●	**MDW1230GS2**	*28.55*	1.1240	*47.00*	1.8504	*100.00*	3.9370	*2.55*	0.0984	*13.00*	0.5118	1
					4	●	**MDW1230GS4**	*57.55*	2.2657	*76.00*	2.9921	*137.00*	5.3937					1
12.31	0.4844	31/64			2	●	**MDW04844GS2**	*28.54*	1.1238	*47.00*	1.8504	*100.00*	3.9370	*2.56*	0.1003	*13.10*	0.5156	1
					4	●	**MDW04844GS4**	*57.54*	2.2653	*76.00*	2.9921	*137.00*	5.3937					1
12.40	0.4882				2	●	**MDW1240GS2**	*28.40*	1.1181	*47.00*	1.8504	*100.00*	3.9370	*2.57*	0.1011	*13.00*	0.5118	1
					4	●	**MDW1240GS4**	*57.40*	2.2598	*76.00*	2.9921	*137.00*	5.3937					1
12.50	0.4921		9/16-12		2	●	**MDW1250GS2**	*28.25*	1.1122	*47.00*	1.8504	*100.00*	3.9370	*2.59*	0.1019	*13.00*	0.5118	1
					4	●	**MDW1250GS4**	*57.25*	2.2539	*76.00*	2.9921	*137.00*	5.3937					1
12.60	0.4961				2	●	**MDW1260GS2**	*30.10*	1.1850	*49.00*	1.9291	*100.00*	3.9370	*2.61*	0.1027	*13.00*	0.5118	1
					4	●	**MDW1260GS4**	*59.10*	2.3268	*78.00*	3.0709	*137.00*	5.3937					1
12.70	0.5000	1/2	M14x1.5		2	●	**MDW05000GS2**	*29.95*	1.1791	*49.00*	1.9291	*100.00*	3.9370	*2.63*	0.1036	*13.10*	0.5156	1
					4	●	**MDW05000GS4**	*58.95*	2.3209	*78.00*	3.0709	*137.00*	5.3937					1
					2	●	**MDW1270GS2**	*29.95*	1.1791	*49.00*	1.9291	*100.00*	3.9370			*13.00*	0.5118	1
					4	●	**MDW1270GS4**	*58.95*	2.3209	*78.00*	3.0709	*137.00*	5.3937					1
12.80	0.5039				2	●	**MDW1280GS2**	*29.80*	1.1732	*49.00*	1.9291	*100.00*	3.9370	*2.65*	0.1024	*13.00*	0.5118	1
					4	●	**MDW1280GS4**	*58.80*	2.3150	*78.00*	3.0709	*137.00*	5.3937					1
12.83	0.5050				2	●	**MDW05050GS2**	*29.76*	1.1715	*49.00*	1.9291	*100.00*	3.9370	*2.66*	0.1046	*13.10*	0.5156	1
					4	●	**MDW05050GS4**	*58.76*	2.3132	*78.00*	3.0709	*137.00*	5.3937					1

DEX Coating 2D 4D

Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter *ø13.70 to 16.27mm* (0.5394"- 0.6406") Dimensions (inch/*mm*)

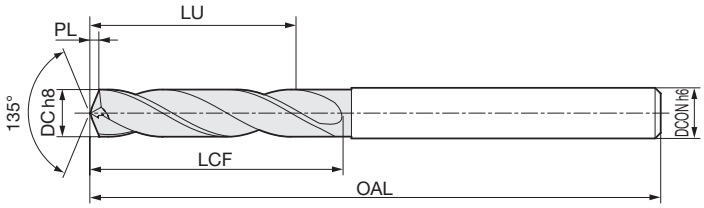
Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
12.90	0.5079		M14x1.25		2	●	**MDW1290GS2**	*29.65*	1.1673	*49.00*	1.9291	*100.00*	3.9370	*2.67*	0.1052	*13.00*	0.5118	1
					4	●	**MDW1290GS4**	*58.65*	2.3091	*78.00*	3.0709	*137.00*	5.3937					1
13.00	0.5118				2	●	**MDW1300GS2**	*29.50*	1.1614	*49.00*	1.9291	*100.00*	3.9370	*2.69*	0.1060	*13.00*	0.5118	1
					4	●	**MDW1300GS4**	*58.50*	2.3031	*78.00*	3.0709	*137.00*	5.3937					1
13.09	0.5156	33/64			2	●	**MDW05156GS2**	*29.37*	1.1561	*49.00*	1.9291	*100.00*	3.9370	*2.71*	0.1068	*13.10*	0.5156	1
					4	●	**MDW05156GS4**	*58.37*	2.2978	*78.00*	3.0709	*137.00*	5.3937					1
13.10	0.5157		9/16-18 M14x1	M14x2	2	●	**MDW1310GS2**	*30.35*	1.1949	*50.00*	1.9685	*105.00*	4.1339	*2.71*	0.1068	*14.00*	0.5512	1
					4	●	**MDW1310GS4**	*64.35*	2.5335	*84.00*	3.3071	*147.00*	5.7874					1
13.20	0.5197				2	●	**MDW1320GS2**	*30.20*	1.1890	*50.00*	1.9685	*105.00*	4.1339	*2.73*	0.1076	*14.00*	0.5512	1
					4	●	**MDW1320GS4**	*64.20*	2.5276	*84.00*	3.3071	*147.00*	5.7874					1
13.30	0.5236			M14x1.5	2	●	**MDW1330GS2**	*30.05*	1.1831	*50.00*	1.9685	*105.00*	4.1339	*2.75*	0.1084	*14.00*	0.5512	1
					4	●	**MDW1330GS4**	*64.05*	2.5217	*84.00*	3.3071	*147.00*	5.7874					1
13.40	0.5276			9/16-12 M14x1.25	2	●	**MDW1340GS2**	*29.90*	1.1772	*50.00*	1.9685	*105.00*	4.1339	*2.78*	0.1093	*14.00*	0.5512	1
					4	●	**MDW1340GS4**	*63.90*	2.5157	*84.00*	3.3071	*147.00*	5.7874					1
13.49	0.5312	17/32	5/8-11	M14x1	2	●	**MDW05312GS2**	*29.77*	1.1719	*50.00*	1.9685	*105.00*	4.1339	*2.79*	0.1100	*13.89*	0.5469	1
					4	●	**MDW05312GS4**	*63.77*	2.5104	*84.00*	3.3071	*147.00*	5.7874					1
13.50	0.5315				2	●	**MDW1350GS2**	*29.75*	1.1713	*50.00*	1.9685	*105.00*	4.1339	*2.80*	0.1102	*14.00*	0.5512	1
					4	●	**MDW1350GS4**	*63.75*	2.5098	*84.00*	3.3071	*147.00*	5.7874					1
13.60	0.5354				2	●	**MDW1360GS2**	*31.60*	1.2441	*52.00*	2.0472	*105.00*	4.1339	*2.82*	0.1109	*14.00*	0.5512	1
					4	●	**MDW1360GS4**	*65.60*	2.5827	*86.00*	3.3858	*147.00*	5.7874					1
13.70	0.5394		M15x1.5	9/16-18	2	●	**MDW1370GS2**	*31.45*	1.2382	*52.00*	2.0472	*105.00*	4.1339	*2.84*	0.1117	*14.00*	0.5512	1
					4	●	**MDW1370GS4**	*65.45*	2.5768	*86.00*	3.3858	*147.00*	5.7874					1
13.80	0.5433				2	●	**MDW1380GS2**	*31.30*	1.2323	*52.00*	2.0472	*105.00*	4.1339	*2.86*	0.1125	*14.00*	0.5512	1
					4	●	**MDW1380GS4**	*65.30*	2.5709	*86.00*	3.3858	*147.00*	5.7874					1
13.89	0.5469	35/64	5/8-11		2	●	**MDW05469GS2**	*31.17*	1.2270	*52.00*	2.0472	*105.00*	4.1339	*2.88*	0.1133	*13.89*	0.5469	1
					4	●	**MDW05469GS4**	*65.17*	2.5656	*86.00*	3.3858	*147.00*	5.7874					1
13.90	0.5472				2	●	**MDW1390GS2**	*31.15*	1.2264	*52.00*	2.0472	*105.00*	4.1339	*2.88*	0.1133	*14.00*	0.5512	1
					4	★	**MDW1390GS4**	*65.15*	2.5650	*86.00*	3.3858	*147.00*	5.7874					1
14.00	0.5512				2	●	**MDW1400GS2**	*31.00*	1.2205	*52.00*	2.0472	*105.00*	4.1339	*2.90*	0.1142	*14.00*	0.5512	1
					4	●	**MDW1400GS4**	*65.00*	2.5591	*86.00*	3.3858	*147.00*	5.7874					1
14.10	0.5551		M15x1		2	●	**MDW1410GS2**	*30.85*	1.2146	*52.00*	2.0472	*108.00*	4.2520	*2.92*	0.1149	*15.00*	0.5906	1
					4	●	**MDW1410GS4**	*67.85*	2.6713	*89.00*	3.5039	*153.00*	6.0236					1
14.20	0.5591				2	●	**MDW1420GS2**	*30.70*	1.2087	*52.00*	2.0472	*108.00*	4.2520	*2.94*	0.1158	*15.00*	0.5906	1
					4	●	**MDW1420GS4**	*67.70*	2.6654	*89.00*	3.5039	*153.00*	6.0236					1
14.29	0.5625	9/16	M16x2	M15x1.5	2	●	**MDW05625GS2**	*30.57*	1.2033	*52.00*	2.0472	*108.00*	4.2520	*2.96*	0.1166	*15.08*	0.5937	1
					4	●	**MDW05625GS4**	*67.57*	2.6600	*89.00*	3.5039	*153.00*	6.0236					1
14.30	0.5630				2	●	**MDW1430GS2**	*30.55*	1.2028	*52.00*	2.0472	*108.00*	4.2520	*2.96*	0.1166	*15.00*	0.5906	1
					4	●	**MDW1430GS4**	*67.55*	2.6594	*89.00*	3.5039	*153.00*	6.0236					1
14.40	0.5669				2	●	**MDW1440GS2**	*30.40*	1.1969	*52.00*	2.0472	*108.00*	4.2520	*2.98*	0.1174	*15.00*	0.5906	1
					4	●	**MDW1440GS4**	*67.40*	2.6535	*89.00*	3.5039	*153.00*	6.0236					1
14.50	0.5709			M15x1	2	●	**MDW1450GS2**	*30.25*	1.1909	*52.00*	2.0472	*108.00*	4.2520	*3.00*	0.1181	*15.00*	0.5906	1
					4	●	**MDW1450GS4**	*67.25*	2.6476	*89.00*	3.5039	*153.00*	6.0236					1
14.60	0.5748				2	●	**MDW1460GS2**	*31.10*	1.2244	*53.00*	2.0866	*108.00*	4.2520	*3.02*	0.1190	*15.00*	0.5906	1
					4	●	**MDW1460GS4**	*69.10*	2.7205	*91.00*	3.5827	*153.00*	6.0236					1
14.68	0.5781	37/64	5/8-18 M16x1.5		2	●	**MDW05781GS2**	*30.98*	1.2197	*53.00*	2.0866	*108.00*	4.2520	*3.04*	0.1197	*15.08*	0.5937	1
					4	●	**MDW05781GS4**	*68.98*	2.7157	*91.00*	3.5827	*153.00*	6.0236					1
14.70	0.5787				2	●	**MDW1470GS2**	*30.95*	1.2185	*53.00*	2.0866	*108.00*	4.2520	*3.04*	0.1199	*15.00*	0.5906	1
					4	●	**MDW1470GS4**	*68.95*	2.7146	*91.00*	3.5827	*153.00*	6.0236					1
14.80	0.5827				2	●	**MDW1480GS2**	*30.80*	1.2126	*53.00*	2.0866	*108.00*	4.2520	*3.07*	0.1207	*15.00*	0.5906	1
					4	●	**MDW1480GS4**	*68.80*	2.7087	*91.00*	3.5827	*153.00*	6.0236					1
14.90	0.5866			5/8-11	2	●	**MDW1490GS2**	*30.65*	1.2067	*53.00*	2.0866	*108.00*	4.2520	*3.09*	0.1215	*15.00*	0.5906	1
					4	●	**MDW1490GS4**	*68.65*	2.7028	*91.00*	3.5827	*153.00*	6.0236					1
15.00	0.5906				2	●	**MDW1500GS2**	*30.50*	1.2008	*53.00*	2.0866	*108.00*	4.2520	*3.11*	0.1223	*15.00*	0.5906	1
					4	●	**MDW1500GS4**	*68.50*	2.6969	*91.00*	3.5827	*153.00*	6.0236					1
15.08	0.5937	19/32	M16x1	M16x2	2	●	**MDW05937GS2**	*30.38*	1.1961	*53.00*	2.0866	*108.00*	4.2520	*3.12*	0.1230	*15.08*	0.5937	1
					4	●	**MDW05937GS4**	*68.38*	2.6921	*91.00*	3.5827	*153.00*	6.0236					1
15.10	0.5945				2	●	**MDW1510GS2**	*30.35*	1.1949	*53.00*	2.0866	*112.00*	4.4094	*3.13*	0.1231	*16.00*	0.6299	1
					4	●	**MDW1510GS4**	*71.35*	2.8091	*94.00*	3.7008	*160.00*	6.2992					1
15.20	0.5984				2	●	**MDW1520GS2**	*30.20*	1.1890	*53.00*	2.0866	*112.00*	4.4094	*3.15*	0.1239	*16.00*	0.6299	1
					4	●	**MDW1520GS4**	*71.20*	2.8031	*94.00*	3.7008	*160.00*	6.2992					1
15.30	0.6024			5/8-18 M16x1.5	2	●	**MDW1530GS2**	*30.05*	1.1831	*53.00*	2.0866	*112.00*	4.4094	*3.17*	0.1248	*16.00*	0.6299	1
					4	●	**MDW1530GS4**	*71.05*	2.7972	*94.00*	3.7008	*160.00*	6.2992					1

DEX Coating 2D 4D

Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter *ø16.50 to 20.00mm* (0.6496"- 0.7874") Dimensions (inch/*mm*)

Dia. DC mm	Dia. DC in.	Dia. DC Fraction	Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU mm	Effective Length LU in.	Flute Length LCF mm	Flute Length LCF in.	Overall Length OAL mm	Overall Length OAL in.	Tip PL mm	Tip PL in.	Shank Dia. DCON mm	Shank Dia. DCON in.	Fig
15.40	0.6063				2	●	MDW1540GS2	29.90	1.1772	53.00	2.0866	112.00	4.4094	3.19	0.1256	16.00	0.6299	1
					4	●	MDW1540GS4	70.90	2.7913	94.00	3.7008	160.00	6.2992					1
15.48	0.6094	39/64	11/16-12		2	●	MDW06094GS2	29.78	1.1724	53.00	2.0866	112.00	4.4094	3.21	0.1262	15.88	0.6250	1
					4	●	MDW06094GS4	70.78	2.7866	94.00	3.7008	160.00	6.2992					1
15.50	0.6102				2	●	MDW1550GS2	29.75	1.1713	53.00	2.0866	112.00	4.4094	3.21	0.1264	16.00	0.6299	1
					4	●	MDW1550GS4	70.75	2.7854	94.00	3.7008	160.00	6.2992					1
15.60	0.6142			M16x1	2	●	MDW1560GS2	31.60	1.2441	55.00	2.1654	112.00	4.4094	3.23	0.1272	16.00	0.6299	1
					4	●	MDW1560GS4	72.60	2.8583	96.00	3.7795	160.00	6.2992					1
15.70	0.6181		M18x2.5		2	●	MDW1570GS2	31.45	1.2382	55.00	2.1654	112.00	4.4094	3.25	0.1280	16.00	0.6299	1
					4	●	MDW1570GS4	72.45	2.8524	96.00	3.7795	160.00	6.2992					1
15.80	0.6220				2	●	MDW1580GS2	31.30	1.2323	55.00	2.1654	112.00	4.4094	3.27	0.1288	16.00	0.6299	1
					4	●	MDW1580GS4	72.30	2.8465	96.00	3.7795	160.00	6.2992					1
15.88	0.6250	5/8	11/16-16		2	●	MDW06250GS2	31.18	1.2276	55.00	2.1654	112.00	4.4094	3.29	0.1294	15.88	0.6250	1
					4	●	MDW06250GS4	72.18	2.8417	96.00	3.7795	160.00	6.2992					1
15.90	0.6260				2	●	MDW1590GS2	31.15	1.2264	55.00	2.1654	112.00	4.4094	3.29	0.1296	16.00	0.6299	1
					4	●	MDW1590GS4	72.15	2.8406	96.00	3.7795	160.00	6.2992					1
16.00	0.6299				2	●	MDW1600GS2	31.00	1.2205	55.00	2.1654	112.00	4.4094	3.31	0.1329	16.00	0.6299	1
					4	●	MDW1600GS4	72.00	2.8346	96.00	3.7795	160.00	6.2992					1
16.27	0.6406	41/64			2	●	MDW06406GS2	31.60	1.2441	55.00	2.1654	116.00	4.5669	3.33	0.1339	17.06	0.6718	1
					4	●	MDW06406GS4	73.59	2.8974	98.00	3.8583	167.00	6.5748					1
16.50	0.6496			M17x1	2	★	MDW1650GS2	31.25	1.2303	56.00	2.2047	116.00	4.5669	3.42	0.1345	17.00	0.6693	1
					4	●	MDW1650GS4	73.25	2.8839	98.00	3.8583	167.00	6.5748					1
16.67	0.6562	21/32			2	●	MDW06562GS2	32.00	1.2597	56.00	2.2047	116.00	4.5669	3.45	0.1359	17.06	0.6718	1
					4	●	MDW06562GS4	73.00	2.8740	98.00	3.8583	167.00	6.5748					1
17.00	0.6693				2	★	MDW1700GS2	31.50	1.2402	57.00	2.2441	116.00	4.5669	3.52	0.1386	17.00	0.6693	1
					4	★	MDW1700GS4	72.50	2.8543	98.00	3.8583	167.00	6.5748					1
17.46	0.6875	11/16			2	●	MDW06875GS2	31.79	1.2518	57.00	2.2441	120.00	4.7244	3.62	0.1424	17.86	0.7031	1
					4	●	MDW06875GS4	73.81	2.9058	100.00	3.9370	167.00	6.5748					1
17.50	0.6890			M18x1	2	★	MDW1750GS2	31.75	1.2500	58.00	2.2835	120.00	4.7244	3.62	0.1427	18.00	0.7087	1
					4	★	MDW1750GS4	73.75	2.9035	100.00	3.9370	167.00	6.5748					1
17.86	0.7031	45/64			2	●	MDW07031GS2	32.22	1.2684	59.00	2.3228	120.00	4.7244	3.70	0.1457	17.86	0.7031	1
					4	●	MDW07031GS4	75.21	2.9611	102.00	4.0157	167.00	6.5748					1
18.00	0.7087			3/4-10	2	★	MDW1800GS2	32.00	1.2598	59.00	2.3228	120.00	4.7244	3.73	0.1468	18.00	0.7087	1
					4	●	MDW1800GS4	75.00	2.9528	102.00	4.0157	167.00	6.5748					1
18.25	0.7187	23/32			2	●	MDW07187GS2	31.62	1.2450	59.00	2.3228	123.00	4.8425	3.78	0.1488	19.05	0.7500	1
					4	●	MDW07187GS4	76.62	3.0164	104.00	4.0945	179.00	7.0472					1
18.50	0.7283				2	★	MDW1850GS2	31.25	1.2303	59.00	2.3228	123.00	4.8425	3.83	0.1508	19.00	0.7480	1
					4	★	MDW1850GS4	76.25	3.0020	104.00	4.0945	179.00	7.0472					1
18.65	0.7344	47/64			2	●	MDW07344GS2	32.01	1.2604	60.00	2.3622	123.00	4.8425	3.86	0.1521	19.05	0.7500	1
					4	●	MDW07344GS4	78.02	3.0716	106.00	4.1732	179.00	7.0472					1
19.00	0.7480				2	★	MDW1900GS2	31.50	1.2402	60.00	2.3622	123.00	4.8425	3.91	0.1541	19.00	0.7480	1
					4	★	MDW1900GS4	77.50	3.0512	106.00	4.1732	179.00	7.0472					1
19.05	0.7500	3/4			2	●	MDW07500GS2	32.44	1.2770	61.00	2.4016	127.00	5.0000	3.95	0.1553	19.05	0.7500	1
					4	●	MDW07500GS4	81.43	3.2057	110.00	4.3307	179.00	7.0472					1
19.50	0.7677				2	★	MDW1950GS2	31.75	1.2500	61.00	2.4016	127.00	5.0000	4.02	0.1582	20.00	0.7874	1
					4	★	MDW1950GS4	80.75	3.1791	110.00	4.3307	179.00	7.0472					1
19.84	0.7812	25/32			2	●	MDW07812GS2	32.24	1.2692	62.00	2.4409	127.00	5.0000	4.11	0.1618	19.84	0.7812	1
					4	●	MDW07812GS4	84.24	3.3164	114.00	4.4882	179.00	7.0472					1
20.00	0.7874				2	★	MDW2000GS2	32.00	1.2598	62.00	2.4409	127.00	5.0000	4.14	0.1631	20.00	0.7874	1
					4	★	MDW2000GS4	84.00	3.3071	114.00	4.4882	179.00	7.0472					1

MDW		Part Material	Hardness HB	Speed	Drill Diameter (inch) ø < - ø0.196	ø0.197 - ø0.394	ø0.395 > ø
GS 2D 4D	P	Low Carbon Steel	<190	SFM	110 - 250	160 - 275	210 - 360
			190 ~ 250		110 - 250	160 - 275	210 - 360
			250 ~ 300		100 - 225	140 - 250	190 - 325
		Medium Carbon Steel	180 ~ 275		110 - 250	160 - 275	210 - 360
			275 ~ 350		100 - 225	140 - 250	190 - 325
		Alloy Steel	200		110 - 250	160 - 275	210 - 360
			350		80 - 210	115 - 220	115 - 250
	M	300 Austenitic Stainless Steel	160 ~ 280		50 -115	60 - 160	80 - 210
		400 Martensitic Stainless Steel	160 ~ 240		60 - 120	75 - 180	90 - 225
	K	Cast Iron			115 - 300	195 - 390	250 -415
		Ductile Iron			115 - 185	160 - 300	210 - 375
	H	Hardened Steel	45-60 Rc		40 - 60	40 - 80	50 - 100
	S	Titanium Alloy Ti-6Al-4V			40 - 80	40 - 100	50 - 110
		Exotics - Inconel, Monel			30 - 60	30 - 60	40 - 80
	N	Aluminum alloy			300 - 700	400 - 800	400 - 800
		Copper Alloy			300 - 700	400 - 800	400 - 800

MDW		Part Material	Hardness HB	Feed	Drill Diameter (inch) ø < - ø0.196	ø0.197 - ø0.394	ø0.395 > ø
GS 2D 4D	P	Low Carbon Steel	<190	IPR	.004 - .008	.006 - .010	.008 - .012
			190 ~ 250		.004 - .008	.006 - .010	.008 - .012
			250 ~ 300		.003 - .006	.004 - .008	.006 - .010
		Medium Carbon Steel	180 ~ 275		.004 - .008	.006 - .010	.008 - .012
			275 ~ 350		.003 - .006	.004 - .008	.006 - .010
		Alloy Steel	200		.004 - .008	.006 - .010	.008 - .012
			350		.003 - .006	.004 - .008	.006 - .010
	M	300 Austenitic Stainless Steel	160 ~ 280		.002 - .006	.003 - .008	.004 - .010
		400 Martensitic Stainless Steel	160 ~ 240		.002 - .006	.003 - .008	.006 - .010
	K	Cast Iron			.006 - .010	.006 - .014	.006 - .014
		Ductile Iron			.006 - .010	.006 - .014	.006 - .014
	H	Hardened Steel	45-60 Rc		.002 - .004	.003 - .006	.004 - .008
	S	Titanium Alloy Ti-6Al-4V			.003 - .004	.003 - .005	.003 - .006
		Exotics - Inconel, Monel			.002 - .003	.003 - .005	.003 - .006
	N	Aluminum alloy			.003 - .006	.004 - .008	.006 - .012
		Copper Alloy			.003 - .006	.004 - .008	.006 - .010

*Refer to N74 for the tolerance of h6 and h8

Fig. 1 (diameter ø1.5 to 2.4mm 0.059"-0.095", single margin)

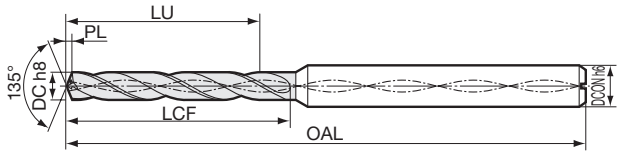
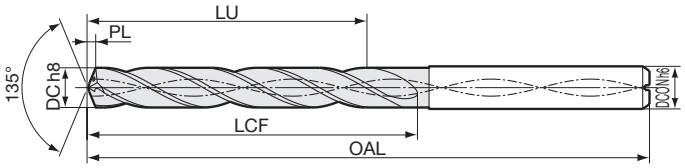


Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



Diameter *ø1.50 to 2.82mm* (0.0591" to 0.1110") Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
1.50	0.0591				3	●	**MDW0150HGS3**	*8.10*	0.3189	*10.31*	0.4059	*63.31*	2.4925					1
					5	●	**MDW0150HGS5**	*12.10*	0.4764	*14.31*	0.5634	*70.31*	2.7681	*0.30*	0.0118	*3.00*	0.1181	1
					8	●	**MDW0150HGS8**	*16.60*	0.6535	*18.81*	0.7406	*76.31*	3.0044					1
1.59	0.0625	1/16	M2x.4	M1.7x.35	3	●	**MDW00625HGS3S**	*8.33*	0.3281	*12.83*	0.5051	*63.33*	2.4933	*0.33*	0.0130	*3.00*	0.1181	1
					5	●	**MDW00625HGS5S**	*12.67*	0.4987	*19.33*	0.7610	*70.33*	2.7689					1
1.60	0.0630				3	●	**MDW0160HGS3**	*10.40*	0.4094	*12.83*	0.5052	*63.33*	2.4934					1
					5	●	**MDW0160HGS5**	*16.90*	0.6654	*19.33*	0.7611	*70.33*	2.7690	*0.33*	0.0130	*3.00*	0.1181	1
					8	★	**MDW0160HGS8**	*21.90*	0.8622	*24.33*	0.9579	*76.33*	3.0052					1
1.70	0.0669			1-64	3	●	**MDW0170HGS3**	*10.40*	0.4094	*12.85*	0.5060	*63.35*	2.4942					1
					5	●	**MDW0170HGS5**	*16.90*	0.6654	*19.35*	0.7619	*70.35*	2.7698	*0.35*	0.0139	*3.00*	0.1181	1
					8	★	**MDW0170HGS8**	*21.90*	0.8622	*24.35*	0.9587	*76.35*	3.0060					1
1.80	0.0709				3	●	**MDW0180HGS3**	*10.20*	0.4016	*12.87*	0.5068	*63.37*	2.4950					1
					5	●	**MDW0180HGS5**	*16.70*	0.6575	*19.37*	0.7627	*70.37*	2.7706	*0.37*	0.0147	*3.00*	0.1181	1
					8	★	**MDW0180HGS8**	*21.70*	0.8543	*24.37*	0.9596	*76.37*	3.0068					1
1.85	0.0730	#49	2-56	M2x.4	3	●	**MDW00730HGS3S**	*8.33*	0.3281	*12.88*	0.5072	*63.38*	2.4954	*0.38*	0.0150	*3.00*	0.1181	1
					5	●	**MDW00730HGS5S**	*12.67*	0.4987	*19.38*	0.7631	*70.38*	2.7710					1
1.90	0.0748				3	●	**MDW0190HGS3**	*10.10*	0.3976	*12.89*	0.5076	*63.39*	2.4958					1
					5	●	**MDW0190HGS5**	*16.60*	0.6535	*19.39*	0.7635	*70.39*	2.7714	*0.39*	0.0155	*3.00*	0.1181	1
					8	★	**MDW0190HGS8**	*21.60*	0.8504	*24.39*	0.9604	*76.39*	3.0076					1
2.00	0.0787			2-56 2-64	3	●	**MDW0200HGS3**	*9.90*	0.3898	*12.91*	0.5084	*63.41*	2.4966					1
					5	●	**MDW0200HGS5**	*16.40*	0.6457	*19.41*	0.7643	*70.41*	2.7722	*0.41*	0.0163	*3.00*	0.1181	1
					8	●	**MDW0200HGS8**	*21.40*	0.8425	*24.41*	0.9612	*76.41*	3.0084					1
2.06	0.0810	#46	3-48 M2.5x.45	2-64	3	●	**MDW00810HGS3S**	*10.00*	0.3937	*15.43*	0.6073	*68.43*	2.6940	*0.43*	0.0169	*3.00*	0.1181	1
					5	●	**MDW00810HGS5S**	*16.00*	0.6299	*24.43*	0.9617	*78.43*	3.0877					1
2.10	0.0827		3-56		3	●	**MDW0210HGS3**	*12.30*	0.4843	*15.43*	0.6077	*68.43*	2.6943					1
					5	●	**MDW0210HGS5**	*21.30*	0.8386	*24.43*	0.9620	*78.43*	3.0880	*0.43*	0.0171	*3.00*	0.1181	1
					8	★	**MDW0210HGS8**	*24.80*	0.9764	*27.93*	1.0998	*81.43*	3.2061					1
2.20	0.0866				3	●	**MDW0220HGS3**	*12.20*	0.4803	*15.46*	0.6085	*68.46*	2.6951					1
					5	●	**MDW0220HGS5**	*21.20*	0.8346	*24.46*	0.9628	*78.46*	3.0888	*0.46*	0.0179	*3.00*	0.1181	1
					8	★	**MDW0220HGS8**	*24.70*	0.9724	*27.96*	1.1006	*81.46*	3.2069					1
2.30	0.0906		4-40	3-48	3	●	**MDW0230HGS3**	*12.10*	0.4764	*15.48*	0.6093	*68.48*	2.6959					1
					5	●	**MDW0230HGS5**	*21.10*	0.8307	*24.48*	0.9636	*78.48*	3.0896	*0.48*	0.0188	*3.00*	0.1181	1
					8	★	**MDW0230HGS8**	*24.60*	0.9685	*27.98*	1.1014	*81.48*	3.2077					1
2.38	0.0937	3/32	4-48		3	●	**MDW00937HGS3**	*13.93*	0.5484	*15.49*	0.6100	*68.49*	2.6966			*3.18*	0.1250	1
					3	●	**MDW00937HGS3S**	*13.93*	0.5484	*15.49*	0.6100	*68.49*	2.6966			*3.00*	0.1181	1
					5	●	**MDW00937HGS5**	*20.43*	0.8043	*24.49*	0.9643	*78.49*	3.0903	*0.49*	0.0194	*3.18*	0.1250	1
					5	●	**MDW00937HGS5S**	*20.43*	0.8043	*24.49*	0.9643	*78.49*	3.0903			*3.00*	0.1181	1
					8	●	**MDW00937HGS8**	*23.93*	0.9421	*27.99*	1.1021	*81.49*	3.2084			*3.18*	0.1250	1
					8		**MDW00937HGS8S**	*23.93*	0.9421	*27.99*	1.1021	*81.49*	3.2084			*3.00*	0.1181	1
2.40	0.0945				3	●	**MDW0240HGS3**	*11.90*	0.4685	*15.50*	0.6101	*68.50*	2.6967					1
					5	●	**MDW0240HGS5**	*20.90*	0.8228	*24.50*	0.9645	*78.50*	3.0904	*0.50*	0.0196	*3.00*	0.1181	1
					8	★	**MDW0240HGS8**	*24.40*	0.9606	*28.00*	1.1022	*81.50*	3.2085					1
2.50	0.0984		M3x.5		3	●	**MDW0250HGS3**	*11.80*	0.4646	*15.52*	0.6109	*68.52*	2.6975					2
					5	●	**MDW0250HGS5**	*20.80*	0.8189	*24.52*	0.9653	*78.52*	3.0913	*0.52*	0.0204	*3.00*	0.1181	2
					8	●	**MDW0250HGS8**	*24.30*	0.9567	*28.02*	1.1031	*81.52*	3.2094					2
2.57	0.1010			4-40	3	●	**MDW01010HGS3S**	*11.67*	0.4593	*18.03*	0.7099	*68.53*	2.6981	*0.53*	0.0209	*3.00*	0.1181	2
					5	●	**MDW01010HGS5S**	*18.67*	0.7349	*28.53*	1.1233	*78.53*	3.0918					2
2.60	0.1024		5-40	4-48	3	●	**MDW0260HGS3**	*14.10*	0.5551	*18.04*	0.7102	*68.54*	2.6984					2
					5	●	**MDW0260HGS5**	*24.60*	0.9685	*28.54*	1.1236	*78.54*	3.0921	*0.54*	0.0212	*3.00*	0.1181	2
					8	★	**MDW0260HGS8**	*29.60*	1.1654	*33.54*	1.3204	*81.54*	3.2102					2
2.70	0.1063		5-44 M3x.35		3	●	**MDW0270HGS3**	*14.10*	0.5551	*18.06*	0.7110	*68.56*	2.6992					2
					5	●	**MDW0270HGS5**	*24.60*	0.9685	*28.56*	1.1244	*78.56*	3.0929	*0.56*	0.0220	*3.00*	0.1181	2
					8	★	**MDW0270HGS8**	*29.60*	1.1654	*33.56*	1.3212	*81.56*	3.2110					2
2.78	0.1094	7/64		M3x.5	3	●	**MDW01094HGS3**	*13.33*	0.5248	*18.08*	0.7116	*68.58*	2.6998			*3.18*	0.1250	2
					3	●	**MDW01094HGS3S**	*13.33*	0.5248	*18.08*	0.7116	*68.58*	2.6998	*0.58*	0.0227			2
					5	●	**MDW01094HGS5S**	*23.77*	0.9358	*28.58*	1.1250	*78.58*	3.0935			*3.00*	0.1181	2
					8		**MDW01094HGS8S**	*28.82*	1.1348	*33.58*	1.3219	*81.58*	3.2116					2
2.80	0.1102				3	●	**MDW0280HGS3**	*13.90*	0.5472	*18.08*	0.7118	*68.58*	2.7000					2
					5	●	**MDW0280HGS5**	*24.40*	0.9606	*28.58*	1.1252	*78.58*	3.0937	*0.58*	0.0228	*3.00*	0.1181	2
					8	★	**MDW0280HGS8**	*29.40*	1.1575	*33.58*	1.3220	*81.58*	3.2118					2
2.82	0.1110	#34	6-32	M3x.5	3	●	**MDW01110HGS3S**	*11.67*	0.4593	*18.08*	0.7120	*68.58*	2.7002	*0.58*	0.0230	*3.00*	0.1181	2
					5	●	**MDW01110HGS5S**	*18.67*	0.7349	*28.58*	1.1254	*78.58*	3.0939					2

Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

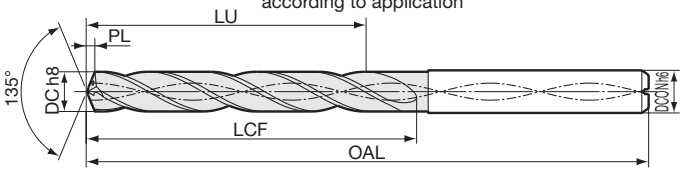
Grade: ACX70

● USA stocked item ★ Worldwide Warehouse Item

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)

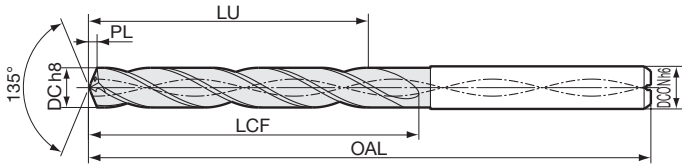
Tap Size values fall between 55% and 75% of thread engagement, and should be adjusted according to application



Diameter *ø2.90 to 3.86mm* (0.1142" to 0.1520") Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
2.90	0.1142		6-40	5-40/ M3x.35	3	●	**MDW0290HGS3**	*13.80*	0.5433	*18.10*	0.7126	*68.60*	2.7008	*0.60*	0.0236	*3.00*	0.1181	2
					5	●	**MDW0290HGS5**	*24.30*	0.9567	*28.60*	1.1260	*78.60*	3.0945					2
					8	★	**MDW0290HGS8**	*29.30*	1.1535	*33.60*	1.3229	*81.60*	3.2126					2
2.95	0.1160	#32	6-40 / M3.5x.6	5-40	3	●	**MDW01160HGS3**	*11.67*	0.4593	*18.11*	0.7130	*68.61*	2.7012	*0.61*	0.0240	*3.00*	0.1181	2
						●	**MDW01160HGS5**	*18.67*	0.7349	*28.61*	1.1264	*78.61*	3.0949					2
3.00	0.1181				3	●	**MDW0300HGS3**	*13.60*	0.5354	*18.12*	0.7134	*68.62*	2.7016	*0.62*	0.0245	*3.00*	0.1181	2
					5	●	**MDW0300HGS5**	*24.10*	0.9488	*28.62*	1.1268	*78.62*	3.0953					2
					8	●	**MDW0300HGS8**	*29.10*	1.1457	*33.62*	1.3237	*81.62*	3.2134					2
					8		**MDW0300HGS8S**	*29.10*	1.1457	*33.62*	1.3237	*81.62*	3.2134			*6.00*	0.2362	2
3.10	0.1220				3	●	**MDW0310HGS3**	*16.00*	0.6299	*20.64*	0.8127	*72.64*	2.8599	*0.64*	0.0253	*4.00*	0.1575	2
					5	●	**MDW0310HGS5**	*28.00*	1.1024	*32.64*	1.2851	*86.64*	3.4111					2
					8	★	**MDW0310HGS8**	*34.50*	1.3583	*39.14*	1.5410	*92.64*	3.6473					2
					8		**MDW0310HGS8S**	*34.50*	1.3583	*39.14*	1.5410	*92.64*	3.6473			*6.00*	0.2362	2
3.18	0.1250	1/8		6-32	3	●	**MDW01250HGS3**	*12.73*	0.5012	*18.16*	0.7149	*68.66*	2.7031	*0.66*	0.0259	*3.18*	0.1250	2
					3	●	**MDW01250HGS3S**	*12.73*	0.5012	*20.66*	0.8133	*72.66*	2.8606			*4.00*	0.1575	2
					5	●	**MDW01250HGS5**	*23.23*	0.9146	*28.66*	1.1283	*78.66*	3.0968			*3.18*	0.1250	2
					5	●	**MDW01250HGS5S**	*23.23*	0.9146	*32.66*	1.2858	*86.66*	3.4118			*4.00*	0.1575	2
					8	●	**MDW01250HGS8**	*28.23*	1.1114	*33.66*	1.3251	*81.66*	3.2149			*3.18*	0.1250	2
					8		**MDW01250HGS8S**	*28.23*	1.1114	*39.16*	1.5417	*92.66*	3.6480			*4.00*	0.1575	2
3.20	0.1260			6-40	3	●	**MDW0320HGS3**	*15.90*	0.6260	*20.66*	0.8135	*72.66*	2.8607	*0.66*	0.0261	*4.00*	0.1575	2
					5	●	**MDW0320HGS5**	*27.90*	1.0984	*32.66*	1.2859	*86.66*	3.4119					2
					8	★	**MDW0320HGS8**	*34.40*	1.3543	*39.16*	1.5418	*92.66*	3.6481					2
					8		**MDW0320HGS8S**	*34.40*	1.3543	*39.16*	1.5418	*92.66*	3.6481			*6.00*	0.2362	2
3.26	0.1285	#30		M3.5x6	3	●	**MDW01285HGS3S**	*13.33*	0.5249	*20.68*	0.8140	*72.68*	2.8612	*0.68*	0.0266	*4.00*	0.1575	2
					5	●	**MDW01285HGS5S**	*21.33*	0.8399	*32.68*	1.2864	*86.68*	3.4124					2
3.30	0.1299				3	●	**MDW0330HGS3**	*15.80*	0.6220	*20.68*	0.8143	*72.68*	2.8616	*0.68*	0.0269	*4.00*	0.1575	2
					5	●	**MDW0330HGS5**	*27.80*	1.0945	*32.68*	1.2868	*86.68*	3.4127					2
					8	●	**MDW0330HGS8**	*34.30*	1.3504	*39.18*	1.5427	*92.68*	3.6490					2
					8		**MDW0330HGS8S**	*34.30*	1.3504	*39.18*	1.5427	*92.68*	3.6490			*6.00*	0.2362	2
3.40	0.1339		M4x.7		3	●	**MDW0340HGS3**	*15.60*	0.6142	*20.70*	0.8151	*72.70*	2.8624	*0.70*	0.0276	*4.00*	0.1575	2
					5	●	**MDW0340HGS5**	*27.60*	1.0866	*32.70*	1.2876	*86.70*	3.4135					2
					8	★	**MDW0340HGS8**	*34.10*	1.3425	*39.20*	1.5435	*92.70*	3.6498					2
					8		**MDW0340HGS8S**	*34.10*	1.3425	*39.20*	1.5435	*92.70*	3.6498			*6.00*	0.2362	2
3.45	0.1360	#29	8-32		3	●	**MDW01360HGS3S**	*13.33*	0.5249	*20.71*	0.8155	*72.71*	2.8628	*0.72*	0.0282	*4.00*	0.1575	2
					5	●	**MDW01360HGS5S**	*21.33*	0.8399	*32.71*	1.2880	*86.71*	3.4140					2
3.50	0.1378				3	●	**MDW0350HGS3**	*15.50*	0.6102	*20.72*	0.8159	*72.72*	2.8632	*0.72*	0.0285	*4.00*	0.1575	2
					5	●	**MDW0350HGS5**	*27.50*	1.0827	*32.72*	1.2884	*86.72*	3.4144					2
					8	●	**MDW0350HGS8**	*34.00*	1.3386	*39.22*	1.5443	*92.72*	3.6506					2
					8		**MDW0350HGS8S**	*34.00*	1.3386	*39.22*	1.5443	*92.72*	3.6506			*6.00*	0.2362	2
3.57	0.1405	#28	8-36		3	●	**MDW01405HGS3S**	*15.00*	0.5906	*23.24*	0.9149	*72.74*	2.8638	*0.74*	0.0291	*4.00*	0.1575	2
					5	●	**MDW01405HGS5S**	*24.00*	0.9449	*36.74*	1.4464	*86.74*	3.4149					2
	0.1406	9/64	M4x .5		3	●	**MDW01406HGS3**	*17.14*	0.6750	*23.24*	0.9149	*72.74*	2.8638	*0.74*	0.0291	*3.97*	0.1562	2
					3	●	**MDW01406HGS3S**	*17.14*	0.6750	*23.24*	0.9149	*72.74*	2.8638			*4.00*	0.1575	2
					5	●	**MDW01406HGS5**	*30.64*	1.2065	*36.74*	1.4464	*86.74*	3.4149			*3.97*	0.1562	2
					5	●	**MDW01406HGS5S**	*30.64*	1.2065	*36.74*	1.4464	*86.74*	3.4149			*4.00*	0.1575	2
					8	●	**MDW01406HGS8**	*38.65*	1.5215	*44.74*	1.7614	*92.74*	3.6512			*3.97*	0.1562	2
					8		**MDW01406HGS8S**	*38.65*	1.5215	*44.74*	1.7614	*92.74*	3.6512			*4.00*	0.1575	2
3.60	0.1417				3	●	**MDW0360HGS3**	*17.80*	0.7008	*23.25*	0.9152	*72.75*	2.8640	*0.75*	0.0294	*4.00*	0.1575	2
					5	●	**MDW0360HGS5**	*31.30*	1.2323	*36.75*	1.4467	*86.75*	3.4152					2
					8	★	**MDW0360HGS8**	*39.30*	1.5472	*44.75*	1.7616	*92.75*	3.6514					2
					8		**MDW0360HGS8S**	*39.30*	1.5472	*44.75*	1.7616	*92.75*	3.6514			*6.00*	0.2362	2
3.66	0.1440	#27		M4x.7	3	●	**MDW01440HGS3S**	*15.00*	0.5906	*23.26*	0.9157	*72.76*	2.8645	*0.76*	0.0298	*4.00*	0.1575	2
					5	●	**MDW01440HGS5S**	*24.00*	0.9449	*36.76*	1.4472	*86.76*	3.4157					2
3.70	0.1457		M4.5x.7		3	●	**MDW0370HGS3**	*17.80*	0.7008	*23.27*	0.9160	*72.77*	2.8648	*0.77*	0.0302	*4.00*	0.1575	2
					5	●	**MDW0370HGS5**	*31.30*	1.2323	*36.77*	1.4475	*86.77*	3.4160					2
					8	★	**MDW0370HGS8**	*39.30*	1.5472	*44.77*	1.7625	*92.77*	3.6522					2
					8		**MDW0370HGS8S**	*39.30*	1.5472	*44.77*	1.7625	*92.77*	3.6522			*6.00*	0.2362	2
3.80	0.1496		M4.5x.75	8-32 / M4x.5	3	●	**MDW0380HGS3**	*17.60*	0.6929	*23.29*	0.9168	*72.79*	2.8656	*0.79*	0.0310	*4.00*	0.1575	2
					3	●	**MDW0380HGS3S**	*17.60*	0.6929	*23.29*	0.9168	*72.79*	2.8656			*6.00*	0.2362	2
					5	●	**MDW0380HGS5**	*31.10*	1.2244	*36.79*	1.4483	*86.79*	3.4168			*4.00*	0.1575	2
					5	●	**MDW0380HGS5S**	*31.10*	1.2244	*36.79*	1.4483	*86.79*	3.4168			*6.00*	0.2362	2
					8	●	**MDW0380HGS8**	*39.10*	1.5394	*44.79*	1.7633	*92.79*	3.6530			*4.00*	0.1575	2
					8		**MDW0380HGS8S**	*39.10*	1.5394	*44.79*	1.7633	*92.79*	3.6530			*6.00*	0.2362	2
3.86	0.1520	#24	10-24/ M4.5x.75	8-36	3	●	**MDW01520HGS3S**	*15.00*	0.5906	*23.30*	0.9173	*72.80*	2.8661	*0.80*	0.0315	*4.00*	0.1575	2
					5	●	**MDW01520HGS5S**	*24.00*	0.9449	*36.80*	1.4488	*86.80*	3.4173					2

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



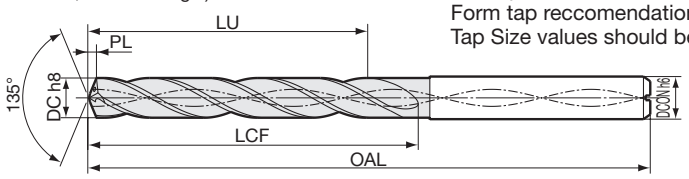
Diameter *ø3.90 to 4.50mm* (0.1535" to 0.1772") Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
3.90	0.1535		10-24/ M4.5x.75	8-36	3	●	**MDW0390HGS3**	*17.50*	0.6890	*23.31*	0.9176	*72.81*	2.8664	*0.81*	0.0318	*4.00*	0.1575	2
					5	●	**MDW0390HGS5**	*31.00*	1.2205	*36.81*	1.4491	*86.81*	3.4176					2
					8	★	**MDW0390HGS8**	*39.00*	1.5354	*44.81*	1.7641	*92.81*	3.6538					2
					8		**MDW0390HGS8S**	*39.00*	1.5354	*44.81*	1.7641	*92.81*	3.6538			*6.00*	0.2362	2
3.91	0.1540	#23	10-24/ M4.5x.75		3	●	**MDW01540HGS3S**	*15.00*	0.5906	*23.31*	0.9177	*72.81*	2.8665	*0.81*	0.0319	*4.00*	0.1575	2
					5	●	**MDW01540HGS5S**	*24.00*	0.9449	*36.81*	1.4492	*86.81*	3.4177					2
3.97	0.1562	5/32			3	●	**MDW01562HGS3**	*16.55*	0.6515	*23.32*	0.9182	*72.82*	2.8670	*0.82*	0.0326	*3.97*	0.1562	2
					3	●	**MDW01562HGS3S**	*16.55*	0.6515	*23.32*	0.9182	*72.82*	2.8670			*4.00*	0.1575	2
					5	●	**MDW01562HGS5**	*30.05*	1.1830	*36.82*	1.4497	*86.82*	3.4182			*3.97*	0.1562	2
					5	●	**MDW01562HGS5S**	*30.05*	1.1830	*36.82*	1.4497	*86.82*	3.4182			*4.00*	0.1575	2
					8	●	**MDW01562HGS8**	*38.05*	1.4980	*44.82*	1.7647	*92.82*	3.6544			*3.97*	0.1562	2
					8		**MDW01562HGS8S**	*38.05*	1.4979	*44.82*	1.7647	*92.82*	3.6544			*4.00*	0.1575	2
4.00	0.1575				3	●	**MDW0400HGS3**	*17.30*	0.6811	*23.33*	0.9184	*72.83*	2.8673	*0.83*	0.0315	*4.00*	0.1575	2
					3	●	**MDW0400HGS3S**	*17.30*	0.6811	*23.33*	0.9184	*72.83*	2.8673			*6.00*	0.2362	2
					5	●	**MDW0400HGS5**	*30.80*	1.2126	*36.83*	1.4499	*86.83*	3.4184			*4.00*	0.1575	2
					5	●	**MDW0400HGS5S**	*30.80*	1.2126	*36.83*	1.4499	*86.83*	3.4184			*6.00*	0.2362	2
					8	●	**MDW0400HGS8**	*38.80*	1.5276	*44.83*	1.7649	*92.83*	3.6547			*4.00*	0.1575	2
					8		**MDW0400HGS8S**	*38.80*	1.5276	*44.83*	1.7649	*92.83*	3.6547			*6.00*	0.2362	2
4.04	0.1590	#21			3	●	**MDW01590HGS3**	*18.94*	0.7458	*25.84*	1.0172	*80.84*	3.1825	*0.84*	0.0329	*4.76*	0.1875	2
					3	●	**MDW01590HGS3S**	*18.94*	0.7458	*25.84*	1.0172	*80.84*	3.1825			*6.00*	0.2362	2
					5	●	**MDW01590HGS5**	*33.94*	1.3363	*40.84*	1.6077	*98.84*	3.8912			*4.76*	0.1875	2
					5	●	**MDW01590HGS5S**	*33.94*	1.3363	*40.84*	1.6077	*98.84*	3.8912			*6.00*	0.2362	2
					8	●	**MDW01590HGS8**	*43.44*	1.7103	*50.34*	1.9818	*105.84*	4.1668			*4.76*	0.1875	2
					8		**MDW01590HGS8S**	*43.44*	1.7102	*50.34*	1.9818	*105.84*	4.1668			*6.00*	0.2362	2
4.10	0.1614		10-32		3	●	**MDW0410HGS3**	*19.70*	0.7756	*25.85*	1.0177	*80.85*	3.1830	*0.85*	0.0334	*5.00*	0.1969	2
					3	●	**MDW0410HGS3S**	*19.70*	0.7756	*25.85*	1.0177	*80.85*	3.1830			*6.00*	0.2362	2
					10-32	●	**MDW0410HGS5**	*34.70*	1.3661	*40.85*	1.6082	*98.85*	3.8917			*5.00*	0.1969	2
					5	●	**MDW0410HGS5S**	*34.70*	1.3661	*40.85*	1.6082	*98.85*	3.8917			*6.00*	0.2362	2
					8	●	**MDW0410HGS8**	*44.20*	1.7402	*50.35*	1.9822	*105.85*	4.1673			*5.00*	0.1969	2
					8		**MDW0410HGS8S**	*44.20*	1.7402	*50.35*	1.9822	*105.85*	4.1673			*6.00*	0.2362	2
4.20	0.1654		10-32	M4.5x.75	3	●	**MDW0420HGS3**	*19.60*	0.7717	*25.87*	1.0185	*80.87*	3.1839	*0.87*	0.0342	*5.00*	0.1969	2
					3	●	**MDW0420HGS3S**	*19.60*	0.7717	*25.87*	1.0185	*80.87*	3.1839			*6.00*	0.2362	2
					10-32	●	**MDW0420HGS5**	*34.60*	1.3622	*40.87*	1.6090	*98.87*	3.8925			*5.00*	0.1969	2
					5	●	**MDW0420HGS5S**	*34.60*	1.3622	*40.87*	1.6090	*98.87*	3.8925			*6.00*	0.2362	2
					8	●	**MDW0420HGS8**	*44.10*	1.7362	*50.37*	1.9831	*105.87*	4.1681			*5.00*	0.1969	2
					8		**MDW0420HGS8S**	*44.10*	1.7362	*50.37*	1.9831	*105.87*	4.1681			*6.00*	0.2362	2
4.22	0.1660	#19		M4.5x.75	3	●	**MDW01660HGS3S**	*16.67*	0.6562	*25.87*	1.0187	*80.87*	3.1840	*0.87*	0.0344	*6.00*	0.2362	2
					5	●	**MDW01660HGS5S**	*26.67*	1.0499	*40.87*	1.6092	*98.87*	3.8927					2
4.30	0.1693		M5x.8		3	●	**MDW0430HGS3**	*19.50*	0.7677	*25.89*	1.0193	*80.89*	3.1847	*0.89*	0.0351	*5.00*	0.1969	2
					3	●	**MDW0430HGS3S**	*19.50*	0.7677	*25.89*	1.0193	*80.89*	3.1847			*6.00*	0.2362	2
					5	●	**MDW0430HGS5**	*34.50*	1.3583	*40.89*	1.6099	*98.89*	3.8933			*5.00*	0.1969	2
					5	●	**MDW0430HGS5S**	*34.50*	1.3583	*40.89*	1.6099	*98.89*	3.8933			*6.00*	0.2362	2
					8	★	**MDW0430HGS8**	*44.00*	1.7323	*50.39*	1.9839	*105.89*	4.1689			*5.00*	0.1969	2
					8		**MDW0430HGS8S**	*44.00*	1.7323	*50.39*	1.9839	*105.89*	4.1689			*6.00*	0.2362	2
4.37	0.1719	11/64	M5x.8	10-24	3	●	**MDW01719HGS3**	*18.45*	0.7265	*25.91*	1.0199	*80.91*	3.1852	*0.90*	0.0356	*4.76*	0.1875	2
					3	●	**MDW01719HGS3S**	*18.45*	0.7265	*25.91*	1.0199	*80.91*	3.1852			*6.00*	0.2362	2
					5	●	**MDW01719HGS5**	*33.45*	1.3170	*40.91*	1.6104	*98.91*	3.8939			*4.76*	0.1875	2
					5	●	**MDW01719HGS5S**	*33.45*	1.3170	*40.91*	1.6104	*98.91*	3.8939			*6.00*	0.2362	2
					8	●	**MDW01719HGS8**	*42.95*	1.6910	*50.41*	1.9845	*105.91*	4.1695			*4.76*	0.1875	2
					8		**MDW01719HGS8S**	*42.94*	1.6907	*50.41*	1.9845	*105.91*	4.1695			*6.00*	0.2362	2
4.40	0.1732			10-24	3	●	**MDW0440HGS3**	*19.30*	0.7598	*25.91*	1.0201	*80.91*	3.1855	*0.91*	0.0359	*5.00*	0.1969	2
					3	●	**MDW0440HGS3S**	*19.30*	0.7598	*25.91*	1.0201	*80.91*	3.1855			*6.00*	0.2362	2
					5	●	**MDW0440HGS5**	*34.30*	1.3504	*40.91*	1.6107	*98.91*	3.8941			*5.00*	0.1969	2
					5	●	**MDW0440HGS5S**	*34.30*	1.3504	*40.91*	1.6107	*98.91*	3.8941			*6.00*	0.2362	2
					8	★	**MDW0440HGS8**	*43.80*	1.7244	*50.41*	1.9847	*105.91*	4.1697			*5.00*	0.1969	2
					8		**MDW0440HGS8S**	*43.80*	1.7244	*50.41*	1.9847	*105.91*	4.1697			*6.00*	0.2362	2
4.50	0.1772		12-24	10-32	3	●	**MDW0450HGS3**	*19.20*	0.7559	*25.93*	1.0209	*80.93*	3.1863	*0.93*	0.036	*5.00*	0.1969	2
					3	●	**MDW0450HGS3S**	*19.20*	0.7559	*25.93*	1.0209	*80.93*	3.1863			*6.00*	0.2362	2
					5	●	**MDW0450HGS5**	*34.20*	1.3465	*40.93*	1.6115	*98.93*	3.8950			*5.00*	0.1969	2
					5	●	**MDW0450HGS5S**	*34.20*	1.3465	*40.93*	1.6115	*98.93*	3.8950			*6.00*	0.2362	2
					8	●	**MDW0450HGS8**	*43.70*	1.7205	*50.43*	1.9855	*105.93*	4.1706			*5.00*	0.1969	2
					8		**MDW0450HGS8S**	*43.70*	1.7205	*50.43*	1.9855	*105.93*	4.1706			*6.00*	0.2362	2

Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



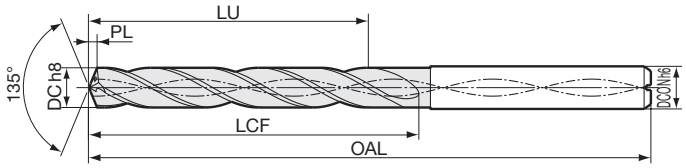
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø4.57 to 5.40mm* (0.1800" to 0.2126") Dimensions (inch/*mm*)

Dia. DC			Cut Tap	Roll Form	Hole Depth	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction	Size	Tap Size	(L/D)			*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
4.57	0.1800	#15	12-24 / M5x.5		3	●	**MDW01800HGS3S**	*18.33*	0.7218	*28.45*	1.1199	*80.95*	3.1869	*0.95*	0.0373	*6.00*	0.2362	2
					5	●	**MDW01800HGS5S**	*29.33*	1.1549	*44.95*	1.7695	*98.95*	3.8955					2
4.60	0.1811		12-24 / M5x.5		3	●	**MDW0460HGS3**	*21.60*	0.8504	*28.45*	1.1202	*80.95*	3.1871	*0.95*	0.0375	*5.00*	0.1969	2
					3	●	**MDW0460HGS3S**	*21.60*	0.8504	*28.45*	1.1202	*80.95*	3.1871			*6.00*	0.2362	2
					5	●	**MDW0460HGS5**	*38.10*	1.5000	*44.95*	1.7698	*98.95*	3.8958			*5.00*	0.1969	2
					5	●	**MDW0460HGS5S**	*38.10*	1.5000	*44.95*	1.7698	*98.95*	3.8958			*6.00*	0.2362	2
					8	★	**MDW0460HGS8**	*49.10*	1.9331	*55.95*	2.2029	*105.95*	4.1714			*5.00*	0.1969	2
					8		**MDW0460HGS8S**	*49.10*	1.9331	*55.95*	2.2029	*105.95*	4.1714			*6.00*	0.2362	2
4.62	0.1819		12-24 / 12-28	M5x.8	3	●	**MDW01819HGS3**	*20.57*	0.8099	*28.46*	1.1203	*80.96*	3.1873	*0.96*	0.0377	*4.76*	0.1875	2
					5	●	**MDW01819HGS5**	*37.07*	1.4594	*44.96*	1.7700	*98.96*	3.8959					2
4.70	0.1850	#13	12-28	M5x.8	3	●	**MDW0470HGS3**	*21.50*	0.8465	*28.47*	1.1210	*80.97*	3.1879	*0.97*	0.0383	*5.00*	0.1969	2
					5	●	**MDW0470HGS5S**	*21.50*	0.8465	*28.47*	1.1210	*80.97*	3.1879			*6.00*	0.2362	2
					5	●	**MDW0470HGS5**	*38.00*	1.4961	*44.97*	1.7706	*98.97*	3.8966			*5.00*	0.1969	2
					5	●	**MDW0470HGS5S**	*38.00*	1.4961	*44.97*	1.7706	*98.97*	3.8966			*6.00*	0.2362	2
					8	★	**MDW0470HGS8**	*49.00*	1.9291	*55.97*	2.2037	*105.97*	4.1722			*5.00*	0.1969	2
					8		**MDW0470HGS8S**	*49.00*	1.9291	*55.97*	2.2037	*105.97*	4.1722			*6.00*	0.2362	2
4.76	0.1875	3/16			3	●	**MDW01875HGS3**	*20.36*	0.8015	*28.49*	1.1215	*80.99*	3.1884	*0.99*	0.0388	*4.76*	0.1875	2
					3	●	**MDW01875HGS3S**	*20.36*	0.8015	*28.49*	1.1215	*80.99*	3.1884			*6.00*	0.2362	2
					5	●	**MDW01875HGS5**	*36.86*	1.4511	*44.99*	1.7711	*98.99*	3.8971			*4.76*	0.1875	2
					5	●	**MDW01875HGS5S**	*36.86*	1.4511	*44.99*	1.7711	*98.99*	3.8971			*6.00*	0.2362	2
					8	●	**MDW01875HGS8**	*47.86*	1.8842	*55.99*	2.2042	*105.99*	4.1727			*4.76*	0.1875	2
					8		**MDW01875HGS8S**	*47.86*	1.8843	*55.99*	2.2042	*105.99*	4.1727			*6.00*	0.2362	2
4.80	0.1890	#12		M5x.5	3	●	**MDW0480HGS3**	*21.30*	0.8386	*28.49*	1.1218	*80.99*	3.1887	*0.99*	0.0391	*5.00*	0.1969	2
					3	●	**MDW0480HGS3S**	*21.30*	0.8386	*28.49*	1.1218	*80.99*	3.1887			*6.00*	0.2362	2
					5	●	**MDW0480HGS5**	*37.80*	1.4882	*44.99*	1.7714	*98.99*	3.8974			*5.00*	0.1969	2
					5	●	**MDW0480HGS5S**	*37.80*	1.4882	*44.99*	1.7714	*98.99*	3.8974			*6.00*	0.2362	2
					8	★	**MDW0480HGS8**	*48.80*	1.9213	*55.99*	2.2045	*105.99*	4.1730			*5.00*	0.1969	2
					8		**MDW0480HGS8S**	*48.80*	1.9213	*55.99*	2.2045	*105.99*	4.1730			*6.00*	0.2362	2
4.90	0.1929				3	●	**MDW0490HGS3**	*21.20*	0.8346	*28.51*	1.1226	*81.01*	3.1896	*1.01*	0.040	*5.00*	0.1969	2
					3	●	**MDW0490HGS3S**	*21.20*	0.8346	*28.51*	1.1226	*81.01*	3.1896			*6.00*	0.2362	2
					5	●	**MDW0490HGS5**	*37.70*	1.4843	*45.01*	1.7722	*99.01*	3.8982			*5.00*	0.1969	2
					5	●	**MDW0490HGS5S**	*37.70*	1.4843	*45.01*	1.7722	*99.01*	3.8982			*6.00*	0.2362	2
					8	★	**MDW0490HGS8**	*48.70*	1.9173	*56.01*	2.2053	*106.01*	4.1738			*5.00*	0.1969	2
					8		**MDW0490HGS8S**	*48.70*	1.9173	*56.01*	2.2053	*106.01*	4.1738			*6.00*	0.2362	2
5.00	0.1969			12-24	3	●	**MDW0500HGS3**	*21.00*	0.8268	*28.54*	1.1234	*81.04*	3.1904	*1.04*	0.0408	*5.00*	0.1969	2
					3	●	**MDW0500HGS3S**	*21.00*	0.8268	*28.54*	1.1234	*81.04*	3.1904			*6.00*	0.2362	2
					5	●	**MDW0500HGS5**	*37.50*	1.4764	*45.04*	1.7731	*99.04*	3.8990			*5.00*	0.1969	2
					5	●	**MDW0500HGS5S**	*37.50*	1.4764	*45.04*	1.7731	*99.04*	3.8990			*6.00*	0.2362	2
					8	●	**MDW0500HGS8**	*48.50*	1.9094	*56.04*	2.2061	*106.04*	4.1746			*5.00*	0.1969	2
					8		**MDW0500HGS8S**	*48.50*	1.9094	*56.04*	2.2061	*106.04*	4.1746			*6.00*	0.2362	2
5.10	0.2008		M6x1	12-28	3	●	**MDW0510HGS3**	*21.00*	0.8268	*28.56*	1.1243	*83.06*	3.2699	*1.06*	0.0416	*6.00*	0.2362	2
					5	●	**MDW0510HGS5**	*37.50*	1.4764	*45.06*	1.7739	*101.06*	3.9786					2
					8	★	**MDW0510HGS8**	*54.00*	2.1260	*61.56*	2.4235	*119.06*	4.6873					2
5.11	0.2010	#7	1/4-20 / M6x1	12-28	3	●	**MDW02010HGS3**	*19.84*	0.7812	*28.56*	1.1243	*83.06*	3.2700	*1.06*	0.0416	*5.95*	0.2344	2
					3	●	**MDW02010HGS3S**	*19.84*	0.7812	*28.56*	1.1243	*83.06*	3.2700			*6.00*	0.2362	2
					8	●	**MDW02010HGS8**	*52.84*	2.0804	*61.56*	2.4236	*119.06*	4.6873			*5.95*	0.2344	2
5.16	0.2031	13/64	1/4-20 / M6x1		3	●	**MDW02031HGS3**	*19.76*	0.7781	*28.57*	1.1248	*83.07*	3.2704	*1.07*	0.0421	*5.95*	0.2344	2
					3	●	**MDW02031HGS3S**	*19.76*	0.7781	*28.57*	1.1248	*83.07*	3.2704			*6.00*	0.2362	2
					5	●	**MDW02031HGS5**	*36.26*	1.4277	*45.07*	1.7744	*101.07*	3.9791			*5.95*	0.2344	2
					5	●	**MDW02031HGS5S**	*36.26*	1.4277	*45.07*	1.7744	*101.07*	3.9791			*6.00*	0.2362	2
					8	●	**MDW02031HGS8**	*52.76*	2.0773	*61.57*	2.4240	*119.07*	4.6877			*5.95*	0.2344	2
					8		**MDW02031HGS8S**	*52.76*	2.0772	*61.57*	2.4240	*119.07*	4.6877			*6.00*	0.2362	2
5.20	0.2047		1/4-20		3	●	**MDW0520HGS3**	*20.80*	0.8189	*28.58*	1.1251	*83.08*	3.2707	*1.08*	0.0424	*6.00*	0.2362	2
					5	●	**MDW0520HGS5**	*37.30*	1.4685	*45.08*	1.7747	*101.08*	3.9794					2
					8	★	**MDW0520HGS8**	*53.80*	2.1181	*61.58*	2.4243	*119.08*	4.6881					2
5.30	0.2087		1/4-20/ M6x.75		3	●	**MDW0530HGS3**	*20.70*	0.8150	*28.60*	1.1259	*83.10*	3.2716	*1.10*	0.0433	*6.00*	0.2362	2
					5	●	**MDW0530HGS5**	*37.20*	1.4646	*45.10*	1.7755	*101.10*	3.9802					2
					8	★	**MDW0530HGS8**	*53.70*	2.1142	*61.60*	2.4251	*119.10*	4.6889					2
5.31	0.2090	#4			3	●	**MDW02090HGS3S**	*18.33*	0.7218	*28.60*	1.1260	*83.10*	3.2716	*1.10*	0.0433	*6.00*	0.2362	2
					5	●	**MDW02090HGS5S**	*29.33*	1.1549	*45.10*	1.7756	*101.10*	3.9803					2
5.40	0.2126				3	●	**MDW0540HGS3**	*20.50*	0.8071	*28.62*	1.1267	*83.12*	3.2724	*1.12*	0.0440	*6.00*	0.2362	2
					5	●	**MDW0540HGS5**	*37.00*	1.4567	*45.12*	1.7763	*101.12*	3.9810					2
						★	**MDW0540HGS8**	*53.50*	2.1063	*61.62*	2.4259	*119.12*	4.6897					2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



Diameter *ø5.41 to 6.30mm* (0.2130" to 0.2480") Dimensions (inch/*mm*)

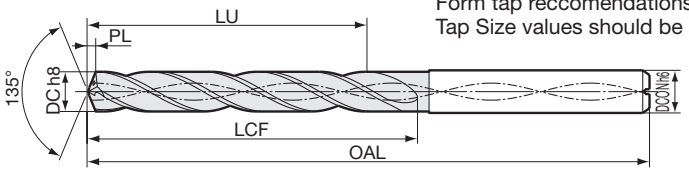
Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
5.41	0.2130	#3			3	●	**MDW02130HGS3**	*19.39*	0.7632	*28.62*	1.1268	*83.12*	3.2725	*1.12*	0.0441	*5.95*	0.2344	2
					3	●	**MDW02130HGS3S**	*19.39*	0.7632	*28.62*	1.1268	*83.12*	3.2725			*6.00*	0.2362	2
					5	●	**MDW02130HGS5**	*35.89*	1.4128	*45.12*	1.7764	*101.12*	3.9811			*5.95*	0.2344	2
					5	●	**MDW02130HGS5S**	*35.89*	1.4128	*45.12*	1.7764	*101.12*	3.9811			*6.00*	0.2362	2
					8	●	**MDW02130HGS8**	*52.38*	2.0624	*61.62*	2.4260	*119.12*	4.6898			*5.95*	0.2344	2
					8		**MDW02130HGS8S**	*53.50*	2.1063	*61.62*	2.4260	*119.12*	4.6898			*6.00*	0.2362	2
5.50	0.2165		1/4-28		3	●	**MDW0550HGS3**	*20.40*	0.8031	*28.64*	1.1275	*83.14*	3.2732	*1.14*	0.0448	*6.00*	0.2362	2
					5	●	**MDW0550HGS5**	*36.90*	1.4528	*45.14*	1.7771	*101.14*	3.9819					2
					8	●	**MDW0550HGS8**	*53.40*	2.1024	*61.64*	2.4267	*119.14*	4.6905					2
5.56	0.2188	7/32	1/4-28	M6x1	3	●	**MDW02188HGS3**	*21.66*	0.8529	*31.15*	1.2264	*83.15*	3.2737	*1.15*	0.0453	*5.95*	0.2344	2
					3	●	**MDW02188HGS3S**	*21.66*	0.8529	*31.15*	1.2264	*83.15*	3.2737			*6.00*	0.2362	2
					5	●	**MDW02188HGS5**	*39.66*	1.5616	*49.15*	1.9351	*101.15*	3.9823			*5.95*	0.2344	2
					5	●	**MDW02188HGS5S**	*39.66*	1.5616	*49.15*	1.9351	*101.15*	3.9823			*6.00*	0.2362	2
					8	●	**MDW02188HGS8**	*57.66*	2.2702	*67.15*	2.6438	*119.15*	4.6910			*5.95*	0.2344	2
					8		**MDW02188HGS8S**	*57.66*	2.2701	*67.15*	2.6438	*119.15*	4.6910			*6.00*	0.2362	2
5.60	0.2205		1/4-28	M6x1	3	●	**MDW0560HGS3**	*22.80*	0.8976	*31.16*	1.2268	*83.16*	3.2740	*1.16*	0.0457	*6.00*	0.2362	2
					5	●	**MDW0560HGS5**	*40.80*	1.6063	*49.16*	1.9354	*101.16*	3.9827					2
					8	★	**MDW0560HGS8**	*58.80*	2.3150	*67.16*	2.6441	*119.16*	4.6913					2
5.61	0.2210	#2			3	●	**MDW02210HGS3**	*21.58*	0.8495	*31.16*	1.2268	*83.16*	3.2741	*1.16*	0.0458	*5.94*	0.2344	2
					3	●	**MDW02210HGS3S**	*21.58*	0.8495	*31.16*	1.2268	*83.16*	3.2741			*6.00*	0.2362	2
					5	●	**MDW02210HGS5**	*39.58*	1.5583	*49.16*	1.9355	*101.16*	3.9828			*5.95*	0.2344	2
					5	●	**MDW02210HGS5S**	*39.58*	1.5583	*49.16*	1.9355	*101.16*	3.9828			*6.00*	0.2362	2
					8	●	**MDW02210HGS8**	*57.58*	2.2669	*67.16*	2.6442	*119.16*	4.6914			*5.95*	0.2344	2
					8		**MDW02210HGS8S**	*58.80*	2.3150	*67.16*	2.6442	*119.16*	4.6914			*6.00*	0.2362	2
5.70	0.2244			M6x.75	3	●	**MDW0570HGS3**	*22.70*	0.8937	*31.18*	1.2276	*83.18*	3.2748	*1.18*	0.0465	*6.00*	0.2362	2
					5	●	**MDW0570HGS5**	*40.70*	1.6024	*49.18*	1.9362	*101.18*	3.9835					2
					8	★	**MDW0570HGS8**	*58.70*	2.3110	*67.18*	2.6449	*119.18*	4.6921					2
5.80	0.2283			1/4-20	3	●	**MDW0580HGS3**	*22.50*	0.8858	*31.20*	1.2284	*83.20*	3.2756	*1.20*	0.0472	*6.00*	0.2362	2
					5	●	**MDW0580HGS5**	*40.50*	1.5945	*49.20*	1.9371	*101.20*	3.9843					2
					8	★	**MDW0580HGS8**	*58.50*	2.3031	*67.20*	2.6457	*119.20*	4.6930					2
5.90	0.2323			1/4-20	3	●	**MDW0590HGS3**	*22.40*	0.8819	*31.22*	1.2292	*83.22*	3.2765	*1.22*	0.0481	*6.00*	0.2362	2
					5	●	**MDW0590HGS5**	*40.40*	1.5906	*49.22*	1.9379	*101.22*	3.9851					2
					8	★	**MDW0590HGS8**	*58.40*	2.2992	*67.22*	2.6465	*119.22*	4.6938					2
5.95	0.2344	15/64		1/4-28	3	●	**MDW02344HGS3**	*21.08*	0.8300	*31.23*	1.2296	*83.23*	3.2769	*1.23*	0.0485	*5.94*	0.2344	2
					3	●	**MDW02344HGS3S**	*21.08*	0.8300	*31.23*	1.2296	*83.23*	3.2769			*6.00*	0.2362	2
					5	●	**MDW02344HGS5**	*39.07*	1.5382	*49.23*	1.9383	*101.23*	3.9855			*5.95*	0.2344	2
					5	●	**MDW02344HGS5S**	*39.07*	1.5382	*49.23*	1.9383	*101.23*	3.9855			*6.00*	0.2362	2
					8	●	**MDW02344HGS8**	*57.07*	2.2468	*67.23*	2.6469	*119.23*	4.6942			*5.95*	0.2344	2
					8		**MDW02344HGS8S**	*57.01*	2.2444	*67.24*	2.6473	*119.24*	4.6946			*6.00*	0.2362	2
6.00	0.2362			1/4-28	3	●	**MDW0600HGS3**	*22.20*	0.8740	*31.24*	1.2300	*83.24*	3.2773	*1.24*	0.0489	*6.00*	0.2362	2
					5	●	**MDW0600HGS5**	*40.20*	1.5827	*49.24*	1.9387	*101.24*	3.9859					2
					8	●	**MDW0600HGS8**	*58.20*	2.2913	*67.24*	2.6473	*119.24*	4.6946					2
6.10	0.2402		M7x1		3	●	**MDW0610HGS3**	*24.70*	0.9724	*33.76*	1.3293	*89.26*	3.5143	*1.26*	0.0497	*7.00*	0.2756	2
					3	●	**MDW0610HGS3S**	*24.70*	0.9724	*33.76*	1.3293	*89.26*	3.5143			*8.00*	0.3150	2
					5	●	**MDW0610HGS5**	*44.20*	1.7402	*53.26*	2.0970	*110.26*	4.3411			*7.00*	0.2756	2
					5	●	**MDW0610HGS5S**	*44.20*	1.7402	*53.26*	2.0970	*110.26*	4.3411			*8.00*	0.3150	2
					8	★	**MDW0610HGS8**	*63.70*	2.5079	*72.76*	2.8647	*131.26*	5.1678			*7.00*	0.2756	2
					8		**MDW0610HGS8S**	*63.70*	2.5079	*72.76*	2.8647	*131.26*	5.1678			*8.00*	0.3150	2
6.15	0.2420	C	M7x1		3	●	**MDW02420HGS3**	*23.29*	0.9170	*33.77*	1.3297	*89.27*	3.5147	*1.27*	0.0501	*7.14*	0.2810	2
					3	●	**MDW02420HGS3S**	*23.29*	0.9170	*33.77*	1.3297	*89.27*	3.5147			*8.00*	0.3150	2
6.20	0.2441				3	●	**MDW0620HGS3**	*24.50*	0.9646	*33.78*	1.3301	*89.28*	3.5151	*1.28*	0.0506	*7.00*	0.2756	2
					3	●	**MDW0620HGS3S**	*24.50*	0.9646	*33.78*	1.3301	*89.28*	3.5151			*8.00*	0.3150	2
					5	●	**MDW0620HGS5**	*44.00*	1.7323	*53.28*	2.0978	*110.28*	4.3419			*7.00*	0.2756	2
					5	●	**MDW0620HGS5S**	*44.00*	1.7323	*53.28*	2.0978	*110.28*	4.3419			*8.00*	0.3150	2
					8	★	**MDW0620HGS8**	*63.50*	2.5000	*72.78*	2.8655	*131.28*	5.1687			*7.00*	0.2756	2
					8		**MDW0620HGS8S**	*63.50*	2.5000	*72.78*	2.8655	*131.28*	5.1687			*8.00*	0.3150	2
6.30	0.2480				3	●	**MDW0630HGS3**	*24.40*	0.9606	*33.80*	1.3309	*89.30*	3.5159	*1.30*	0.0514	*7.00*	0.2756	2
					3	●	**MDW0630HGS3S**	*24.40*	0.9606	*33.80*	1.3309	*89.30*	3.5159			*8.00*	0.3150	2
					5	●	**MDW0630HGS5**	*43.90*	1.7283	*53.30*	2.0986	*110.30*	4.3427			*7.00*	0.2756	2
					5	●	**MDW0630HGS5S**	*43.90*	1.7283	*53.30*	2.0986	*110.30*	4.3427			*8.00*	0.3150	2
					8	★	**MDW0630HGS8**	*63.40*	2.4961	*72.80*	2.8663	*131.30*	5.1695			*7.00*	0.2756	2
					8		**MDW0630HGS8S**	*63.40*	2.4961	*72.80*	2.8663	*131.30*	5.1695			*8.00*	0.3150	2

Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

DEX Coating | Coolant Hole | 3D | 5D | 8D

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



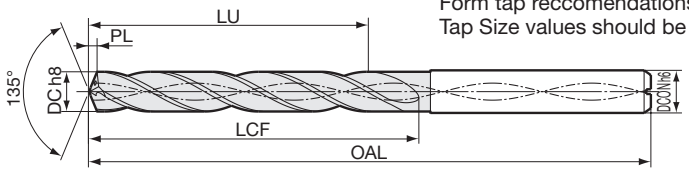
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø6.35 to 6.90mm* (0.2500" to 0.2717") Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
6.35	0.2500	1/4 E			3	●	**MDW02500HGS3**	*22.99*	0.9050	*33.82*	1.3313	*89.32*	3.5163	*1.32*	0.0518	*7.14*	0.2812	2
					3	●	**MDW02500HGS3S**	*22.99*	0.9050	*33.82*	1.3313	*89.32*	3.5163			*8.00*	0.3150	2
					5	●	**MDW02500HGS5**	*42.47*	1.6722	*53.32*	2.0990	*110.32*	4.3431			*7.14*	0.2812	2
					5	●	**MDW02500HGS5S**	*42.47*	1.6722	*53.32*	2.0990	*110.32*	4.3431			*8.00*	0.3150	2
					8	●	**MDW02500HGS8**	*61.98*	2.4400	*72.82*	2.8667	*131.32*	5.1699			*7.14*	0.2812	2
							MDW02500HGS8S	*61.98*	2.4400	*72.82*	2.8667	*131.32*	5.1699			*8.00*	0.3150	2
6.40	0.2520				3	●	**MDW0640HGS3**	*24.20*	0.9528	*33.83*	1.3317	*89.33*	3.5168	*1.33*	0.0522	*7.00*	0.2756	2
					3	●	**MDW0640HGS3S**	*24.20*	0.9528	*33.83*	1.3317	*89.33*	3.5168			*8.00*	0.3150	2
					5	●	**MDW0640HGS5**	*43.70*	1.7205	*53.33*	2.0994	*110.33*	4.3435			*7.00*	0.2756	2
					5	●	**MDW0640HGS5S**	*43.70*	1.7205	*53.33*	2.0994	*110.33*	4.3435			*8.00*	0.3150	2
					8	★	**MDW0640HGS8**	*63.20*	2.4882	*72.83*	2.8671	*131.33*	5.1703			*7.00*	0.2756	2
					8		**MDW0640HGS8S**	*63.20*	2.4882	*72.83*	2.8671	*131.33*	5.1703			*8.00*	0.3150	2
6.50	0.2559				3	●	**MDW0650HGS3**	*24.10*	0.9488	*33.85*	1.3325	*89.35*	3.5176	*1.35*	0.0530	*7.00*	0.2756	2
					3	●	**MDW0650HGS3S**	*24.10*	0.9488	*33.85*	1.3325	*89.35*	3.5176			*8.00*	0.3150	2
					5	●	**MDW0650HGS5**	*43.60*	1.7165	*53.35*	2.1002	*110.35*	4.3443			*7.00*	0.2756	2
					5	●	**MDW0650HGS5S**	*43.60*	1.7165	*53.35*	2.1002	*110.35*	4.3443			*8.00*	0.3150	2
					8	●	**MDW0650HGS8**	*63.10*	2.4843	*72.85*	2.8680	*131.35*	5.1711			*7.00*	0.2756	2
					8		**MDW0650HGS8S**	*63.10*	2.4843	*72.85*	2.8680	*131.35*	5.1711			*8.00*	0.3150	2
6.53	0.2570	F		M7x1	3	●	**MDW02570HGS3**	*25.21*	0.9925	*36.35*	1.4312	*89.35*	3.5178	*1.35*	0.0532	*7.14*	0.2812	2
					3	●	**MDW02570HGS3S**	*25.21*	0.9925	*36.35*	1.4312	*89.35*	3.5178			*8.00*	0.3150	2
					5	●	**MDW02570HGS5**	*46.21*	1.8192	*57.35*	2.2580	*110.35*	4.3446			*7.14*	0.2812	2
					5	●	**MDW02570HGS5S**	*46.21*	1.8192	*57.35*	2.2580	*110.35*	4.3446			*8.00*	0.3150	2
					8	●	**MDW02570HGS8**	*67.21*	2.6460	*78.35*	3.0847	*131.35*	5.1714			*7.14*	0.2812	2
					8		**MDW02570HGS8S**	*67.21*	2.6459	*78.35*	3.0847	*131.35*	5.1714			*8.00*	0.3150	2
				M7x1	5	●	**MDW0653HGS5**	*46.20*	1.8191	*57.35*	2.2580	*110.35*	4.3446	*1.35*	0.0532	*7.00*	0.2756	2
					5	●	**MDW0653HGS5S**	*46.20*	1.8191	*57.35*	2.2580	*110.35*	4.3446			*8.00*	0.3150	2
					8		**MDW0653HGS8S**	*67.19*	2.6454	*78.35*	3.0847	*131.35*	5.1714					2
6.60	0.2598		5/16-18	M7x1	3	●	**MDW0660HGS3**	*26.50*	1.0433	*36.37*	1.4318	*89.37*	3.5184	*1.37*	0.0538	*7.00*	0.2756	2
					3	●	**MDW0660HGS3S**	*26.50*	1.0433	*36.37*	1.4318	*89.37*	3.5184			*8.00*	0.3150	2
					5	●	**MDW0660HGS5**	*47.50*	1.8701	*57.37*	2.2585	*110.37*	4.3452			*7.00*	0.2756	2
					5	●	**MDW0660HGS5S**	*47.50*	1.8701	*57.37*	2.2585	*110.37*	4.3452			*8.00*	0.3150	2
					8	★	**MDW0660HGS8**	*68.50*	2.6969	*78.37*	3.0853	*131.37*	5.1719			*7.00*	0.2756	2
					8		**MDW0660HGS8S**	*68.50*	2.6969	*78.37*	3.0853	*131.37*	5.1719			*8.00*	0.3150	2
6.70	0.2638		5/16-18		3	●	**MDW0670HGS3**	*26.40*	1.0394	*36.39*	1.4326	*89.39*	3.5192	*1.39*	0.0546	*7.00*	0.2756	2
					3	●	**MDW0670HGS3S**	*26.40*	1.0394	*36.39*	1.4326	*89.39*	3.5192			*8.00*	0.3150	2
					5	●	**MDW0670HGS5**	*47.40*	1.8661	*57.39*	2.2594	*110.39*	4.3460			*7.00*	0.2756	2
					5	●	**MDW0670HGS5S**	*47.40*	1.8661	*57.39*	2.2594	*110.39*	4.3460			*8.00*	0.3150	2
					8	★	**MDW0670HGS8**	*68.40*	2.6929	*78.39*	3.0861	*131.39*	5.1727			*7.00*	0.2756	2
					8		**MDW0670HGS8S**	*68.40*	2.6929	*78.39*	3.0861	*131.39*	5.1727			*8.00*	0.3150	2
6.75	0.2656	17/64	5/16-18		3	●	**MDW02656HGS3**	*24.87*	0.9790	*36.40*	1.4330	*89.40*	3.5196	*1.40*	0.0550	*7.14*	0.2812	2
					3	●	**MDW02656HGS3S**	*24.87*	0.9790	*36.40*	1.4331	*89.40*	3.5196			*8.00*	0.3150	2
					5	●	**MDW02656HGS5**	*45.88*	1.8063	*57.40*	2.2598	*110.40*	4.3464			*7.14*	0.2812	2
					5	●	**MDW02656HGS5S**	*45.88*	1.8063	*57.40*	2.2598	*110.40*	4.3464			*8.00*	0.3150	2
					8	●	**MDW02656HGS8**	*66.88*	2.6331	*78.40*	3.0865	*131.40*	5.1731			*7.14*	0.2812	2
					8		**MDW02656HGS8S**	*66.88*	2.6329	*78.40*	3.0865	*131.40*	5.1731			*8.00*	0.3150	2
6.76	0.2660	H			3	●	**MDW02660HGS3**	*24.87*	0.9790	*36.40*	1.4331	*89.40*	3.5197	*1.40*	0.0551	*7.14*	0.2812	2
					3	●	**MDW02660HGS3S**	*24.87*	0.9790	*36.40*	1.4331	*89.40*	3.5197			*8.00*	0.3150	2
					5	●	**MDW02660HGS5**	*45.86*	1.8057	*57.40*	2.2598	*110.40*	4.3465			*7.14*	0.2812	2
					5	●	**MDW02660HGS5S**	*45.86*	1.8057	*57.40*	2.2598	*110.40*	4.3465			*8.00*	0.3150	2
					8	●	**MDW02660HGS8**	*66.87*	2.6325	*78.40*	3.0866	*131.40*	5.1732			*7.14*	0.2812	2
					8		**MDW02660HGS8S**	*66.86*	2.6323	*78.40*	3.0866	*131.40*	5.1732			*8.00*	0.3150	2
6.80	0.2677				3	●	**MDW0680HGS3**	*26.20*	1.0315	*36.41*	1.4334	*89.41*	3.5200	*1.41*	0.0554	*7.00*	0.2756	2
					3	●	**MDW0680HGS3S**	*26.20*	1.0315	*36.41*	1.4334	*89.41*	3.5200			*8.00*	0.3150	2
					5	●	**MDW0680HGS5**	*47.20*	1.8583	*57.41*	2.2602	*110.41*	4.3468			*7.00*	0.2756	2
					5	●	**MDW0680HGS5S**	*47.20*	1.8583	*57.41*	2.2602	*110.41*	4.3468			*8.00*	0.3150	2
					8	●	**MDW0680HGS8**	*68.20*	2.6850	*78.41*	3.0869	*131.41*	5.1736			*7.00*	0.2756	2
					8		**MDW0680HGS8S**	*68.20*	2.6850	*78.41*	3.0869	*131.41*	5.1736			*8.00*	0.3150	2
6.90	0.2717		M8x1.25		3	●	**MDW0690HGS3**	*26.10*	1.0276	*36.43*	1.4342	*89.43*	3.5208	*1.43*	0.0563	*7.00*	0.2756	2
					3	●	**MDW0690HGS3S**	*26.10*	1.0276	*36.43*	1.4342	*89.43*	3.5208			*8.00*	0.3150	2
					5	●	**MDW0690HGS5**	*47.10*	1.8543	*57.43*	2.2610	*110.43*	4.3476			*7.00*	0.2756	2
					5	●	**MDW0690HGS5S**	*47.10*	1.8543	*57.43*	2.2610	*110.43*	4.3476			*8.00*	0.3150	2
					8	★	**MDW0690HGS8**	*68.10*	2.6811	*78.43*	3.0878	*131.43*	5.1744			*7.00*	0.2756	2
					8		**MDW0690HGS8S**	*68.10*	2.6811	*78.43*	3.0878	*131.43*	5.1744			*8.00*	0.3150	2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



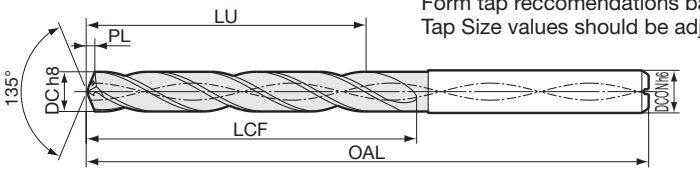
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø6.91 to 7.90mm* (0.2720" to 0.3110") Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
6.91	0.2720	I	M8x1.25		3	●	**MDW02720HGS3**	*24.64*	0.9700	*36.43*	1.4343	*89.43*	3.5209	*1.43*	0.0563	*7.14*	0.2810	2
					3	●	**MDW02720HGS3S**	*24.64*	0.9700	*36.43*	1.4343	*89.43*	3.5209			*8.00*	0.3150	2
					5	●	**MDW02720HGS5**	*45.64*	1.7967	*57.43*	2.2611	*110.43*	4.3477			*7.14*	0.2812	2
					5	●	**MDW02720HGS5S**	*45.64*	1.7967	*57.43*	2.2611	*110.43*	4.3477			*8.00*	0.3150	2
					8	●	**MDW02720HGS8**	*66.64*	2.6235	*78.43*	3.0878	*131.43*	5.1745			*7.14*	0.2812	2
					8		**MDW02720HGS8S**	*66.64*	2.6234	*78.43*	3.0878	*131.43*	5.1745			*8.00*	0.3150	2
7.00	0.2756		5/16-24		3	●	**MDW0700HGS3**	*25.90*	1.0197	*36.45*	1.4350	*89.45*	3.5216	*1.45*	0.0571	*7.00*	0.2756	2
					3	●	**MDW0700HGS3S**	*25.90*	1.0197	*36.45*	1.4350	*89.45*	3.5216			*8.00*	0.3150	2
					5	●	**MDW0700HGS5**	*46.90*	1.8465	*57.45*	2.2618	*110.45*	4.3484			*7.00*	0.2756	2
					5	●	**MDW0700HGS5S**	*46.90*	1.8465	*57.45*	2.2618	*110.45*	4.3484			*8.00*	0.3150	2
					8	●	**MDW0700HGS8**	*67.90*	2.6732	*78.45*	3.0886	*131.45*	5.1752			*7.00*	0.2756	2
							MDW0700HGS8S	*67.90*	2.6732	*78.45*	3.0886	*131.45*	5.1752			*8.00*	0.3150	2
7.04	0.2770	J	5/16-24		3	●	**MDW02770HGS3**	*24.45*	0.9625	*36.46*	1.4354	*89.46*	3.5220	*1.46*	0.0574	*7.14*	0.2810	2
					3	●	**MDW02770HGS3S**	*24.45*	0.9625	*38.96*	1.5338	*95.46*	3.7582			*8.00*	0.3150	2
					5	●	**MDW02770HGS5**	*45.45*	1.7892	*57.46*	2.2621	*110.46*	4.3487			*7.14*	0.2812	2
					5	●	**MDW02770HGS5S**	*45.45*	1.7892	*61.46*	2.4196	*119.46*	4.7031			*8.00*	0.3150	2
					8	●	**MDW02770HGS8**	*66.45*	2.6160	*78.46*	3.0889	*131.46*	5.1755			*7.14*	0.2812	2
					8		**MDW02770HGS8S**	*66.44*	2.6158	*83.96*	3.3054	*143.46*	5.6480			*8.00*	0.3150	2
7.10	0.2795		M8x1		3	●	**MDW0710HGS3**	*28.40*	1.1181	*38.97*	1.5343	*95.47*	3.7587	*1.47*	0.0579	*8.00*	0.3150	2
					5	●	**MDW0710HGS5**	*50.90*	2.0039	*61.47*	2.4201	*119.47*	4.7036					2
					8	★	**MDW0710HGS8**	*73.40*	2.8898	*83.97*	3.3059	*143.47*	5.6484					2
7.14	0.2812	9/32	M8x1		3	●	**MDW02812HGS3**	*24.30*	0.9565	*36.48*	1.4362	*89.48*	3.5228	*1.48*	0.0582	*7.14*	0.2812	2
					3	●	**MDW02812HGS3S**	*24.30*	0.9565	*38.98*	1.5346	*95.48*	3.7590			*8.00*	0.3150	2
					5	●	**MDW02812HGS5**	*45.29*	1.7829	*57.48*	2.2629	*110.48*	4.3496			*7.14*	0.2812	2
					5	●	**MDW02812HGS5S**	*45.29*	1.7829	*61.48*	2.4204	*119.48*	4.7039			*8.00*	0.3150	2
					8	●	**MDW02812HGS8**	*66.29*	2.6097	*78.48*	3.0897	*131.48*	5.1763			*7.14*	0.2812	2
					8		**MDW02812HGS8S**	*66.29*	2.6098	*83.98*	3.3062	*143.48*	5.6488			*8.00*	0.3150	2
7.20	0.2835				3	●	**MDW0720HGS3**	*28.20*	1.1102	*38.99*	1.5351	*95.49*	3.7595	*1.49*	0.0587	*8.00*	0.3150	2
					5	●	**MDW0720HGS5**	*50.70*	1.9961	*61.49*	2.4209	*119.49*	4.7044					2
					8	★	**MDW0720HGS8**	*73.20*	2.8819	*83.99*	3.3067	*143.49*	5.6493					2
7.30	0.2874		M8x.75	5/16-18	3	●	**MDW0730HGS3**	*28.10*	1.1063	*39.01*	1.5359	*95.51*	3.7603	*1.51*	0.0595	*8.00*	0.3150	2
					5	●	**MDW0730HGS5**	*50.60*	1.9921	*61.51*	2.4217	*119.51*	4.7052					2
					8	★	**MDW0730HGS8**	*73.10*	2.8780	*84.01*	3.3076	*143.51*	5.6501					2
7.37	0.2900	L	M8x.75	5/16-18	3	●	**MDW02900HGS3S**	*30.20*	1.1890	*41.57*	1.6368	*95.57*	3.7628	*1.60*	0.0630	*8.00*	0.3150	2
					5	●	**MDW02900HGS5S**	*54.20*	2.1339	*65.57*	2.5817	*119.57*	4.7076					2
7.40	0.2913			5/16-18	3	●	**MDW0740HGS3**	*27.90*	1.0984	*39.03*	1.5367	*95.53*	3.7611	*1.53*	0.0603	*8.00*	0.3150	2
					5	●	**MDW0740HGS5**	*50.40*	1.9843	*61.53*	2.4225	*119.53*	4.7060					2
					8	★	**MDW0740HGS8**	*72.90*	2.8701	*84.03*	3.3084	*143.53*	5.6509					2
7.49	0.2950	M		5/16-24 / M8x1.25	3	●	**MDW02950HGS3S**	*25.00*	0.9843	*39.05*	1.5374	*95.55*	3.7619	*1.55*	0.0610	*8.00*	0.3150	2
					5	●	**MDW02950HGS5S**	*40.00*	1.5748	*61.55*	2.4233	*119.55*	4.7067					2
7.50	0.2953				3	●	**MDW0750HGS3**	*27.90*	1.0984	*39.05*	1.5375	*95.55*	3.7619	*1.55*	0.0612	*8.00*	0.3150	2
					5	●	**MDW0750HGS5**	*50.40*	1.9843	*61.55*	2.4234	*119.55*	4.7068					2
					8	●	**MDW0750HGS8**	*72.90*	2.8701	*84.05*	3.3092	*143.55*	5.6517					2
7.54	0.2969	19/64		M8x1	3	●	**MDW02969HGS3**	*28.69*	1.1295	*41.56*	1.6363	*95.56*	3.7623	*1.56*	0.0615	*7.94*	0.3130	2
					3	●	**MDW02969HGS3S**	*28.69*	1.1295	*41.56*	1.6363	*95.56*	3.7623			*8.00*	0.3150	2
					5	●	**MDW02969HGS5**	*52.69*	2.0744	*65.56*	2.5812	*119.56*	4.7071			*7.94*	0.3125	2
					5	●	**MDW02969HGS5S**	*52.69*	2.0744	*65.56*	2.5812	*119.56*	4.7071			*8.00*	0.3150	2
					8	●	**MDW02969HGS8**	*76.69*	3.0193	*89.56*	3.5260	*143.56*	5.6520			*7.94*	0.3125	2
					8		**MDW02969HGS8S**	*76.69*	3.0193	*89.56*	3.5260	*143.56*	5.6520			*8.00*	0.3150	2
7.60	0.2992				3	●	**MDW0760HGS3**	*30.20*	1.1890	*41.57*	1.6368	*95.57*	3.7628	*1.57*	0.0620	*8.00*	0.3150	2
					5	●	**MDW0760HGS5**	*54.20*	2.1339	*65.57*	2.5817	*119.57*	4.7076					2
					8	★	**MDW0760HGS8**	*78.20*	3.0787	*89.57*	3.5265	*143.57*	5.6525					2
7.67	0.3020	N		M8x.75	3	●	**MDW03020HGS3S**	*26.67*	1.0499	*41.59*	1.6373	*95.59*	3.7633	*1.59*	0.0625	*8.00*	0.3150	2
					5	●	**MDW03020HGS5S**	*42.67*	1.6798	*65.59*	2.5822	*119.59*	4.7082					2
7.70	0.3031			M8x.75	3	●	**MDW0770HGS3**	*30.10*	1.1850	*41.59*	1.6376	*95.59*	3.7636	*1.59*	0.0628	*8.00*	0.3150	2
					5	●	**MDW0770HGS5**	*54.10*	2.1299	*65.59*	2.5825	*119.59*	4.7085					2
					8	★	**MDW0770HGS8**	*78.10*	3.0748	*89.59*	3.5274	*143.59*	5.6533					2
7.80	0.3071				3	●	**MDW0780HGS3**	*29.90*	1.1772	*41.62*	1.6384	*95.62*	3.7644	*1.62*	0.0636	*8.00*	0.3150	2
					5	●	**MDW0780HGS5**	*53.90*	2.1220	*65.62*	2.5833	*119.62*	4.7093					2
					8	★	**MDW0780HGS8**	*77.90*	3.0669	*89.62*	3.5282	*143.62*	5.6542					2
7.90	0.3110				3	●	**MDW0790HGS3**	*29.80*	1.1732	*41.64*	1.6392	*95.64*	3.7652	*1.64*	0.0644	*8.00*	0.3150	2
					5	●	**MDW0790HGS5**	*53.80*	2.1181	*65.64*	2.5841	*119.64*	4.7101					2
					8	★	**MDW0790HGS8**	*77.80*	3.0630	*89.64*	3.5290	*143.64*	5.6550					2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



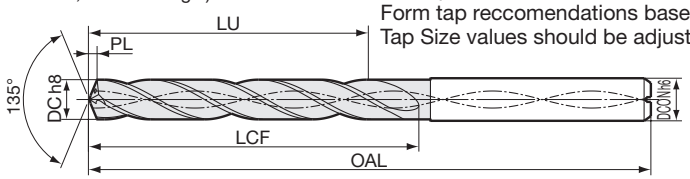
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter 7.94 to 8.60 (.3125" to .3386") Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
7.94	0.3125	5/16			3	●	**MDW03125HGS3**	*28.09*	1.1060	*41.64*	1.6395	*95.64*	3.7655	*1.64*	0.0647	*7.94*	0.3125	2
					3	●	**MDW03125HGS3S**	*28.09*	1.1060	*41.64*	1.6395	*95.64*	3.7655			*8.00*	0.3150	2
					5	●	**MDW03125HGS5**	*52.09*	2.0510	*65.64*	2.5844	*119.64*	4.7104			*7.94*	0.3125	2
					5	●	**MDW03125HGS5S**	*52.09*	2.0510	*65.64*	2.5844	*119.64*	4.7104			*8.00*	0.3150	2
					8	●	**MDW03125HGS8**	*76.09*	2.9959	*89.64*	3.5293	*143.64*	5.6553			*7.94*	0.3125	2
					8		**MDW03125HGS8S**	*76.09*	2.9957	*89.64*	3.5293	*143.64*	5.6553			*8.00*	0.3150	2
8.00	0.3150				3	●	**MDW0800HGS3**	*29.70*	1.1693	*41.66*	1.6400	*95.66*	3.7660	*1.66*	0.0652	*8.00*	0.3150	2
					5	●	**MDW0800HGS5**	*53.70*	2.1142	*65.66*	2.5849	*119.66*	4.7109					2
					8	●	**MDW0800HGS8**	*77.70*	3.0591	*89.66*	3.5298	*143.66*	5.6558					2
8.10	0.3189				3	●	**MDW0810HGS3**	*32.10*	1.2638	*44.18*	1.7393	*101.68*	4.0031	*1.68*	0.0660	*9.00*	0.3543	2
					3	●	**MDW0810HGS3S**	*32.10*	1.2638	*44.18*	1.7393	*101.68*	4.0031			*10.00*	0.3937	2
					5	●	**MDW0810HGS5**	*57.60*	2.2677	*69.68*	2.7432	*128.68*	5.0660			*9.00*	0.3543	2
					5	●	**MDW0810HGS5S**	*57.60*	2.2677	*69.68*	2.7432	*128.68*	5.0660			*10.00*	0.3937	2
					5	★	**MDW0810HGS8**	*83.10*	3.2717	*95.18*	3.7471	*155.68*	6.1290			*9.00*	0.3543	2
					8		**MDW0810HGS8S**	*81.35*	3.2027	*95.18*	3.7471	*155.68*	6.1290			*10.00*	0.3937	2
8.20	0.3228				3	●	**MDW0820HGS3**	*31.90*	1.2559	*44.20*	1.7401	*101.70*	4.0039	*1.70*	0.0669	*9.00*	0.3543	2
					3	●	**MDW0820HGS3S**	*31.90*	1.2559	*44.20*	1.7401	*101.70*	4.0039			*10.00*	0.3937	2
					5	●	**MDW0820HGS5**	*57.40*	2.2598	*69.70*	2.7440	*128.70*	5.0669			*9.00*	0.3543	2
					5	●	**MDW0820HGS5S**	*57.40*	2.2598	*69.70*	2.7440	*128.70*	5.0669			*10.00*	0.3937	2
					8	★	**MDW0820HGS8**	*82.90*	3.2638	*95.20*	3.7480	*155.70*	6.1299			*9.00*	0.3543	2
					8		**MDW0820HGS8S**	*82.90*	3.2638	*95.20*	3.7480	*155.70*	6.1299			*10.00*	0.3937	2
8.21	0.3230	P	3/8-16		3	●	**MDW03230HGS3**	*30.19*	1.1885	*44.20*	1.7401	*101.70*	4.0039	*1.70*	0.0669	*9.13*	0.3594	2
					3	●	**MDW03230HGS3S**	*30.19*	1.1885	*44.20*	1.7401	*101.70*	4.0039			*10.00*	0.3937	2
					5	●	**MDW03230HGS5**	*55.69*	2.1927	*69.70*	2.7440	*128.70*	5.0669			*9.13*	0.3594	2
					5	●	**MDW03230HGS5S**	*55.69*	2.1927	*69.70*	2.7440	*128.70*	5.0669			*10.00*	0.3937	2
					8	●	**MDW03230HGS8**	*81.19*	3.1966	*95.20*	3.7480	*155.70*	6.1299			*9.13*	0.3594	2
					8		**MDW03230HGS8S**	*81.19*	3.1966	*95.20*	3.7480	*155.70*	6.1299			*10.00*	0.3937	2
8.30	0.3268				3	●	**MDW0830HGS3**	*31.80*	1.2520	*44.22*	1.7409	*101.72*	4.0047	*1.72*	0.0677	*9.00*	0.3543	2
					3	●	**MDW0830HGS3S**	*31.80*	1.2520	*44.22*	1.7409	*101.72*	4.0047			*10.00*	0.3937	2
					5	●	**MDW0830HGS5**	*57.30*	2.2559	*69.72*	2.7448	*128.72*	5.0677			*9.00*	0.3543	2
					5	●	**MDW0830HGS5S**	*57.30*	2.2559	*69.72*	2.7448	*128.72*	5.0677			*10.00*	0.3937	2
					8	★	**MDW0830HGS8**	*82.80*	3.2598	*95.22*	3.7488	*155.72*	6.1307			*9.00*	0.3543	2
					8		**MDW0830HGS8S**	*82.80*	3.2598	*95.22*	3.7488	*155.72*	6.1307			*10.00*	0.3937	2
8.33	0.3281	21/64			3	●	**MDW03281HGS3**	*30.00*	1.1810	*44.23*	1.7411	*101.73*	4.0049	*1.73*	0.0680	*9.13*	0.3594	2
					3	●	**MDW03281HGS3S**	*30.00*	1.1810	*44.23*	1.7411	*101.73*	4.0049			*10.00*	0.3937	2
					5	●	**MDW03281HGS5**	*55.50*	2.1851	*69.73*	2.7451	*128.73*	5.0679			*9.13*	0.3594	2
					5	●	**MDW03281HGS5S**	*55.50*	2.1851	*69.73*	2.7451	*128.73*	5.0679			*10.00*	0.3937	2
					8	●	**MDW03281HGS8**	*81.00*	3.1890	*95.23*	3.7490	*155.73*	6.1309			*9.13*	0.3594	2
					8		**MDW03281HGS8S**	*81.00*	3.1892	*95.23*	3.7490	*155.73*	6.1309			*10.00*	0.3937	2
8.40	0.3307				3	●	**MDW0840HGS3**	*31.60*	1.2441	*44.24*	1.7417	*101.74*	4.0055	*1.74*	0.0685	*9.00*	0.3543	2
					3	●	**MDW0840HGS3S**	*31.60*	1.2441	*44.24*	1.7417	*101.74*	4.0055			*10.00*	0.3937	2
					5	●	**MDW0840HGS5**	*57.10*	2.2480	*69.74*	2.7457	*128.74*	5.0685			*9.00*	0.3543	2
					5	●	**MDW0840HGS5S**	*57.10*	2.2480	*69.74*	2.7457	*128.74*	5.0685			*10.00*	0.3937	2
					8	★	**MDW0840HGS8**	*82.60*	3.2520	*95.24*	3.7496	*155.74*	6.1315			*9.00*	0.3543	2
					8		**MDW0840HGS8S**	*82.60*	3.2520	*95.24*	3.7496	*155.74*	6.1315			*10.00*	0.3937	2
8.43	0.3320	Q			3	●	**MDW03320HGS3**	*29.85*	1.1750	*44.25*	1.7420	*101.75*	4.0057	*1.75*	0.0688	*9.13*	0.3594	2
					3	●	**MDW03320HGS3S**	*29.85*	1.1750	*44.25*	1.7420	*101.75*	4.0057			*10.00*	0.3937	2
					5	●	**MDW03320HGS5**	*55.35*	2.1792	*69.75*	2.7459	*128.75*	5.0687			*9.13*	0.3594	2
					5	●	**MDW03320HGS5S**	*55.35*	2.1792	*69.75*	2.7459	*128.75*	5.0687			*10.00*	0.3937	2
					8	●	**MDW03320HGS8**	*80.85*	3.1831	*95.25*	3.7498	*155.75*	6.1317			*9.13*	0.3594	2
					8		**MDW03320HGS8S**	*80.85*	3.1833	*95.25*	3.7498	*155.75*	6.1317			*10.00*	0.3937	2
8.50	0.3346				3	●	**MDW0850HGS3**	*31.60*	1.2441	*44.26*	1.7425	*101.76*	4.0063	*1.76*	0.0693	*9.00*	0.3543	2
					3	●	**MDW0850HGS3S**	*31.60*	1.2441	*44.26*	1.7425	*101.76*	4.0063			*10.00*	0.3937	2
					5	●	**MDW0850HGS5**	*57.10*	2.2480	*69.76*	2.7465	*128.76*	5.0693			*9.00*	0.3543	2
					5	●	**MDW0850HGS5S**	*57.10*	2.2480	*69.76*	2.7465	*128.76*	5.0693			*10.00*	0.3937	2
					8	●	**MDW0850HGS8**	*82.60*	3.2520	*95.26*	3.7504	*155.76*	6.1323			*9.00*	0.3543	2
					8		**MDW0850HGS8S**	*82.60*	3.2520	*95.26*	3.7504	*155.76*	6.1323			*10.00*	0.3937	2
8.60	0.3386		3/8-24 / M10x1.5		3	●	**MDW0860HGS3**	*33.90*	1.3346	*46.78*	1.8418	*101.78*	4.0071	*1.78*	0.0701	*9.00*	0.3543	2
					3	●	**MDW0860HGS3S**	*33.90*	1.3346	*46.78*	1.8418	*101.78*	4.0071			*10.00*	0.3937	2
					5	●	**MDW0860HGS5**	*60.90*	2.3976	*73.78*	2.9048	*128.78*	5.0701			*9.00*	0.3543	2
					5	●	**MDW0860HGS5S**	*60.90*	2.3976	*73.78*	2.9048	*128.78*	5.0701			*10.00*	0.3937	2
					8	★	**MDW0860HGS8**	*87.90*	3.4606	*100.78*	3.9678	*155.78*	6.1331			*9.00*	0.3543	2
					8		**MDW0860HGS8S**	*87.90*	3.4606	*100.78*	3.9678	*155.78*	6.1331			*10.00*	0.3937	2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



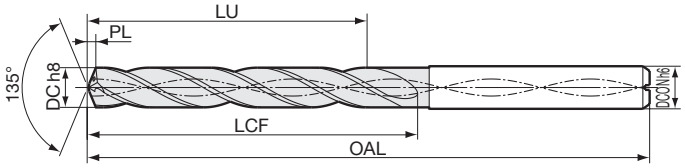
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø8.70 to 9.53mm* (0.3425" to 0.3750") Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
8.70	0.3425		M10x1.5		3	●	**MDW0870HGS3**	*33.80*	1.3307	*46.80*	1.8426	*101.80*	4.0079	*1.80*	0.0709	*9.00*	0.3543	2
					3	●	**MDW0870HGS3S**	*33.80*	1.3307	*46.80*	1.8426	*101.80*	4.0079			*10.00*	0.3937	2
					5	●	**MDW0870HGS5**	*60.80*	2.3937	*73.80*	2.9056	*128.80*	5.0709			*9.00*	0.3543	2
					5	●	**MDW0870HGS5S**	*60.80*	2.3937	*73.80*	2.9056	*128.80*	5.0709			*10.00*	0.3937	2
					8	★	**MDW0870HGS8**	*87.80*	3.4567	*100.80*	3.9686	*155.80*	6.1339			*9.00*	0.3543	2
					8		**MDW0870HGS8S**	*87.80*	3.4567	*100.80*	3.9686	*155.80*	6.1339			*10.00*	0.3937	2
8.73	0.3438	11/32	M10x1.5		3	●	**MDW03438HGS3**	*31.90*	1.2560	*46.81*	1.8429	*101.81*	4.0083	*1.81*	0.0712	*9.13*	0.3594	2
					3	●	**MDW03438HGS3S**	*31.90*	1.2560	*46.81*	1.8429	*101.81*	4.0083			*10.00*	0.3937	2
					5	●	**MDW03438HGS5**	*58.90*	2.3189	*73.81*	2.9058	*128.81*	5.0712			*9.13*	0.3594	2
					5	●	**MDW03438HGS5S**	*58.90*	2.3189	*73.81*	2.9058	*128.81*	5.0712			*10.00*	0.3937	2
					8	●	**MDW03438HGS8**	*85.90*	3.3819	*100.81*	3.9688	*155.81*	6.1342			*9.13*	0.3594	2
					8		**MDW03438HGS8S**	*85.90*	3.3820	*100.81*	3.9688	*155.81*	6.1342			*10.00*	0.3937	2
8.80	0.3465			3/8-16	3	●	**MDW0880HGS3**	*33.60*	1.3228	*46.82*	1.8434	*101.82*	4.0088	*1.82*	0.0718	*9.00*	0.3543	2
					3	●	**MDW0880HGS3S**	*33.60*	1.3228	*46.82*	1.8434	*101.82*	4.0088			*10.00*	0.3937	2
					5	●	**MDW0880HGS5**	*60.60*	2.3858	*73.82*	2.9064	*128.82*	5.0718			*9.00*	0.3543	2
					5	●	**MDW0880HGS5S**	*60.60*	2.3858	*73.82*	2.9064	*128.82*	5.0718			*10.00*	0.3937	2
					8	★	**MDW0880HGS8**	*87.60*	3.4488	*100.82*	3.9694	*155.82*	6.1347			*9.00*	0.3543	2
					8		**MDW0880HGS8S**	*87.60*	3.4488	*100.82*	3.9694	*155.82*	6.1347			*10.00*	0.3937	2
8.90	0.3504		M10x1.25		3	●	**MDW0890HGS3**	*33.50*	1.3189	*46.84*	1.8442	*101.84*	4.0096	*1.84*	0.0726	*9.00*	0.3543	2
					3	●	**MDW0890HGS3S**	*33.50*	1.3189	*46.84*	1.8442	*101.84*	4.0096			*10.00*	0.3937	2
					5	●	**MDW0890HGS5**	*60.50*	2.3819	*73.84*	2.9072	*128.84*	5.0726			*9.00*	0.3543	2
					5	●	**MDW0890HGS5S**	*60.50*	2.3819	*73.84*	2.9072	*128.84*	5.0726			*10.00*	0.3937	2
					8	★	**MDW0890HGS8**	*87.50*	3.4449	*100.84*	3.9702	*155.84*	6.1356			*9.00*	0.3543	2
							MDW0890HGS8S	*87.50*	3.4449	*100.84*	3.9702	*155.84*	6.1356			*10.00*	0.3937	2
9.00	0.3543				3	●	**MDW0900HGS3**	*33.40*	1.3150	*46.86*	1.8450	*101.86*	4.0104	*1.86*	0.0734	*9.00*	0.3543	2
					3	●	**MDW0900HGS3S**	*33.40*	1.3150	*46.86*	1.8450	*101.86*	4.0104			*10.00*	0.3937	2
					5	●	**MDW0900HGS5**	*60.40*	2.3780	*73.86*	2.9080	*128.86*	5.0734			*9.00*	0.3543	2
					5	●	**MDW0900HGS5S**	*60.40*	2.3780	*73.86*	2.9080	*128.86*	5.0734			*10.00*	0.3937	2
					8	●	**MDW0900HGS8**	*87.40*	3.4409	*100.86*	3.9710	*155.86*	6.1364			*9.00*	0.3543	2
					8		**MDW0900HGS8S**	*87.40*	3.4409	*100.86*	3.9710	*155.86*	6.1364			*10.00*	0.3937	2
9.10	0.3583		M10x1	3/8-24	3	●	**MDW0910HGS3**	*35.80*	1.4094	*49.38*	1.9443	*107.88*	4.2474	*1.88*	0.0742	*10.00*	0.3937	2
					5	●	**MDW0910HGS5**	*64.30*	2.5315	*77.88*	3.0663	*137.88*	5.4285					2
					8	★	**MDW0910HGS8**	*92.80*	3.6535	*106.38*	4.1884	*167.88*	6.6096					2
9.13	0.3594	23/64	M10x1		3	●	**MDW03594HGS3**	*31.33*	1.2335	*46.89*	1.8461	*101.89*	4.0115	*1.89*	0.0744	*9.13*	0.3594	2
					3	●	**MDW03594HGS3S**	*31.33*	1.2335	*49.39*	1.9445	*107.89*	4.2477			*10.00*	0.3937	2
					5	●	**MDW03594HGS5**	*58.31*	2.2955	*73.89*	2.9091	*128.89*	5.0744			*9.13*	0.3594	2
					5	●	**MDW03594HGS5S**	*58.31*	2.2955	*77.89*	3.0666	*137.89*	5.4288			*10.00*	0.3937	2
					8	●	**MDW03594HGS8**	*85.31*	3.3585	*100.89*	3.9721	*155.89*	6.1374			*9.13*	0.3594	2
					8		**MDW03594HGS8S**	*85.30*	3.3584	*106.39*	4.1886	*167.89*	6.6099			*10.00*	0.3937	2
9.20	0.3622				3	●	**MDW0920HGS3**	*35.60*	1.4016	*49.41*	1.9451	*107.91*	4.2482	*1.91*	0.0750	*10.00*	0.3937	2
					5	●	**MDW0920HGS5**	*64.10*	2.5236	*77.91*	3.0671	*137.91*	5.4293					2
					8	★	**MDW0920HGS8**	*92.60*	3.6457	*106.41*	4.1892	*167.91*	6.6104					2
9.30	0.3661		M10x.75	M10x1.5	3	●	**MDW0930HGS3**	*35.50*	1.3976	*49.43*	1.9459	*107.93*	4.2491	*1.93*	0.0758	*10.00*	0.3937	2
					5	●	**MDW0930HGS5**	*64.00*	2.5197	*77.93*	3.0680	*137.93*	5.4302					2
					8	★	**MDW0930HGS8**	*92.50*	3.6417	*106.43*	4.1900	*167.93*	6.6113					2
9.35	0.3680	U	M10x.75	M10x1.5	3	●	**MDW03680HGS3**	*33.48*	1.3180	*49.44*	1.9463	*107.94*	4.2495	*1.94*	0.0762	*9.92*	0.3906	2
					3	●	**MDW03680HGS3S**	*33.48*	1.3180	*49.44*	1.9463	*107.94*	4.2495			*10.00*	0.3937	2
					5	●	**MDW03680HGS5**	*61.98*	2.4401	*77.94*	3.0684	*137.94*	5.4306			*9.92*	0.3906	2
					5	●	**MDW03680HGS5S**	*61.98*	2.4401	*77.94*	3.0684	*137.94*	5.4306			*10.00*	0.3937	2
					8	●	**MDW03680HGS8**	*90.48*	3.5622	*106.44*	4.1904	*167.94*	6.6117			*9.92*	0.3906	2
					8		**MDW03680HGS8S**	*90.48*	3.5620	*106.44*	4.1904	*167.94*	6.6117			*10.00*	0.3937	2
9.40	0.3701		7/16-14	M10x1.5	3	●	**MDW0940HGS3**	*35.30*	1.3898	*49.45*	1.9467	*107.95*	4.2499	*1.95*	0.0766	*10.00*	0.3937	2
					5	●	**MDW0940HGS5**	*63.80*	2.5118	*77.95*	3.0688	*137.95*	5.4310					2
					8	★	**MDW0940HGS8**	*92.30*	3.6339	*106.45*	4.1908	*167.95*	6.6121					2
9.50	0.3740		7/16-14	M10x1.25	3	●	**MDW0950HGS3**	*35.30*	1.3898	*49.47*	1.9475	*107.97*	4.2507	*1.97*	0.0775	*10.00*	0.3937	2
					5	●	**MDW0950HGS5**	*63.80*	2.5118	*77.97*	3.0696	*137.97*	5.4318					2
					8	●	**MDW0950HGS8**	*92.30*	3.6339	*106.47*	4.1916	*167.97*	6.6129					2
9.53	0.3750	3/8	7/16-14		3	●	**MDW03750HGS3**	*35.73*	1.4065	*51.97*	2.0462	*107.97*	4.2509	*1.97*	0.0777	*9.92*	0.3906	2
					3	●	**MDW03750HGS3S**	*35.73*	1.4065	*51.97*	2.0462	*107.97*	4.2509			*10.00*	0.3937	2
					5	●	**MDW03750HGS5**	*65.71*	2.5871	*81.97*	3.2273	*137.97*	5.4320			*9.92*	0.3906	2
					5	●	**MDW03750HGS5S**	*65.71*	2.5871	*81.97*	3.2273	*137.97*	5.4320			*10.00*	0.3937	2
					8	●	**MDW03750HGS8**	*95.71*	3.7682	*111.97*	4.4084	*167.97*	6.6131			*9.92*	0.3906	2
					8		**MDW03750HGS8S**	*95.70*	3.7679	*111.97*	4.4084	*167.97*	6.6131			*10.00*	0.3937	2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



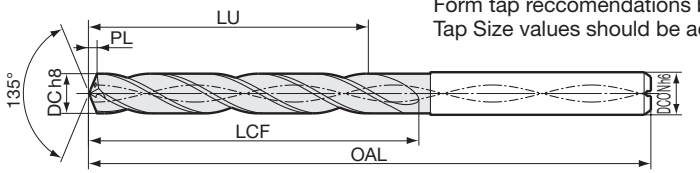
Diameter 9.58 to 10.49 (.3770" to .4130") Dimensions (inch/*mm*)

Dia. DC			Cut Tap	Roll Form	Hole Depth	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction	Size	Tap Size	(L/D)			*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
9.58	0.3770	V	7/16-14	M10x1	3	●	**MDW03770HGS3S**	*33.33*	1.3123	*51.98*	2.0466	*107.98*	4.2513	*1.98*	0.0781	*10.00*	0.3937	2
					5	●	**MDW03770HGS5S**	*53.33*	2.0997	*81.98*	3.2277	*137.98*	5.4324					2
9.60	0.3780			M10x1	3	●	**MDW0960HGS3**	*37.60*	1.4803	*51.99*	2.0468	*107.99*	4.2515	*1.99*	0.0783	*10.00*	0.3937	2
					5	●	**MDW0960HGS5**	*67.60*	2.6614	*81.99*	3.2279	*137.99*	5.4326					2
					8	●	**MDW0960HGS8**	*97.60*	3.8425	*111.99*	4.4090	*167.99*	6.6137					2
9.70	0.3819			M10x.75	3	●	**MDW0970HGS3**	*37.50*	1.4764	*52.01*	2.0476	*108.01*	4.2523	*2.01*	0.0791	*10.00*	0.3937	2
					5	●	**MDW0970HGS5**	*67.50*	2.6575	*82.01*	3.2287	*138.01*	5.4334					2
					8	★	**MDW0970HGS8**	*97.50*	3.8386	*112.01*	4.4098	*168.01*	6.6145					2
9.80	0.3858				3	●	**MDW0980HGS3**	*37.30*	1.4685	*52.03*	2.0484	*108.03*	4.2531	*2.03*	0.0799	*10.00*	0.3937	2
					5	●	**MDW0980HGS5**	*67.30*	2.6496	*82.03*	3.2295	*138.03*	5.4342					2
					8	★	**MDW0980HGS8**	*97.30*	3.8307	*112.03*	4.4106	*168.03*	6.6153					2
9.90	0.3898				3	●	**MDW0990HGS3**	*37.20*	1.4646	*52.05*	2.0492	*108.05*	4.2540	*2.05*	0.0807	*10.00*	0.3937	2
					5	●	**MDW0990HGS5**	*67.20*	2.6457	*82.05*	3.2303	*138.05*	5.4351					2
					8	★	**MDW0990HGS8**	*97.20*	3.8268	*112.05*	4.4114	*168.05*	6.6162					2
9.92	0.3906	25/64	7/16-20		3	●	**MDW03906HGS3**	*35.12*	1.3825	*52.05*	2.0494	*108.05*	4.2541	*2.05*	0.0809	*9.92*	0.3906	2
					3	●	**MDW03906HGS3S**	*35.12*	1.3825	*52.05*	2.0494	*108.05*	4.2541			*10.00*	0.3937	2
					5	●	**MDW03906HGS5**	*65.12*	2.5637	*82.05*	3.2305	*138.05*	5.4352			*9.92*	0.3906	2
					5	●	**MDW03906HGS5S**	*65.12*	2.5637	*82.05*	3.2305	*138.05*	5.4352			*10.00*	0.3937	2
					8	●	**MDW03906HGS8**	*95.12*	3.7448	*112.05*	4.4116	*168.05*	6.6163			*9.92*	0.3906	2
					8		**MDW03906HGS8S**	*97.20*	3.8268	*112.05*	4.4116	*168.05*	6.6163			*10.00*	0.3937	2
10.00	0.3937		7/16-20		3	●	**MDW1000HGS3**	*37.10*	1.4606	*52.07*	2.0500	*108.07*	4.2548	*2.07*	0.0827	*10.00*	0.3937	2
					5	●	**MDW1000HGS5**	*67.10*	2.6417	*82.07*	3.2311	*138.07*	5.4359					2
					8	●	**MDW1000HGS8**	*97.10*	3.8228	*112.07*	4.4122	*168.07*	6.6170					2
10.10	0.3976				3	●	**MDW1010HGS3**	*39.50*	1.5551	*54.59*	2.1493	*118.09*	4.6493	*2.09*	0.0815	*11.00*	0.4331	2
					3	●	**MDW1010HGS3S**	*39.50*	1.5551	*54.59*	2.1493	*118.09*	4.6493			*12.00*	0.4724	**2**
					5	●	**MDW1010HGS5**	*71.00*	2.7953	*86.09*	3.3894	*151.09*	5.9485			*11.00*	0.4331	2
					5	●	**MDW1010HGS5S**	*71.00*	2.7953	*86.09*	3.3894	*151.09*	5.9485			*12.00*	0.4724	**2**
					8	★	**MDW1010HGS8**	*102.50*	4.0354	*117.59*	4.6296	*184.09*	7.2477			*11.00*	0.4331	2
							MDW1010HGS8S	*102.50*	4.0354	*117.59*	4.6296	*184.09*	7.2477			*12.00*	0.4724	2
10.20	0.4016				3	●	**MDW1020HGS3**	*39.30*	1.5472	*54.61*	2.1501	*118.11*	4.6501	*2.11*	0.0832	*11.00*	0.4331	2
					3	●	**MDW1020HGS3S**	*39.30*	1.5472	*54.61*	2.1501	*118.11*	4.6501			*12.00*	0.4724	2
					5	●	**MDW1020HGS5**	*70.80*	2.7874	*86.11*	3.3903	*151.11*	5.9493			*11.00*	0.4331	2
					5	●	**MDW1020HGS5S**	*70.80*	2.7874	*86.11*	3.3903	*151.11*	5.9493			*12.00*	0.4724	2
					8	★	**MDW1020HGS8**	*102.30*	4.0276	*117.61*	4.6304	*184.11*	7.2485			*11.00*	0.4331	2
					8		**MDW1020HGS8S**	*102.30*	4.0276	*117.61*	4.6304	*184.11*	7.2485			*12.00*	0.4724	2
10.25	0.4035				3	●	**MDW04035HGS3S**	*35.00*	1.3780	*54.62*	2.1506	*118.12*	4.6506	*2.11*	0.0832	*12.00*	0.4724	2
					5	●	**MDW04035HGS5S**	*56.00*	2.2047	*86.12*	3.3907	*151.12*	5.9498					2
10.30	0.4055			7/16-14	3	●	**MDW1030HGS3**	*39.20*	1.5433	*54.63*	2.1509	*118.13*	4.6509	*2.13*	0.0849	*11.00*	0.4331	2
					3	●	**MDW1030HGS3S**	*39.20*	1.5433	*54.63*	2.1509	*118.13*	4.6509			*12.00*	0.4724	2
					5	●	**MDW1030HGS5**	*70.70*	2.7835	*86.13*	3.3911	*151.13*	5.9501			*11.00*	0.4331	2
					5	●	**MDW1030HGS5S**	*70.70*	2.7835	*86.13*	3.3911	*151.13*	5.9501			*12.00*	0.4724	2
					8	●	**MDW1030HGS8**	*102.20*	4.0236	*117.63*	4.6312	*184.13*	7.2493			*11.00*	0.4331	2
					8		**MDW1030HGS8S**	*102.20*	4.0236	*117.63*	4.6312	*184.13*	7.2493			*12.00*	0.4724	2
10.32	0.4062	13/32		7/16-14	3	●	**MDW04062HGS3**	*37.03*	1.4580	*54.64*	2.1511	*118.14*	4.6511	*2.14*	0.0841	*11.11*	0.4375	2
					3	●	**MDW04062HGS3S**	*37.03*	1.4580	*54.64*	2.1511	*118.14*	4.6511			*12.00*	0.4724	2
					5	●	**MDW04062HGS5**	*68.52*	2.6978	*86.14*	3.3912	*151.14*	5.9503			*11.11*	0.4375	2
					5	●	**MDW04062HGS5S**	*68.52*	2.6978	*86.14*	3.3912	*151.14*	5.9503			*12.00*	0.4724	2
					8	●	**MDW04062HGS8**	*100.02*	3.9379	*117.64*	4.6314	*184.14*	7.2495			*11.11*	0.4375	2
					8		**MDW04062HGS8S**	*100.02*	3.9378	*117.64*	4.6314	*184.14*	7.2495			*12.00*	0.4724	2
10.40	0.4094		M12x1.75		3	●	**MDW1040HGS3**	*39.10*	1.5394	*54.65*	2.1517	*118.15*	4.6517	*2.14*	0.0848	*11.00*	0.4331	2
					3	●	**MDW1040HGS3S**	*39.10*	1.5394	*54.65*	2.1517	*118.15*	4.6517			*12.00*	0.4724	2
					5	●	**MDW1040HGS5**	*70.60*	2.7795	*86.15*	3.3919	*151.15*	5.9509			*11.00*	0.4331	2
					5	●	**MDW1040HGS5S**	*70.60*	2.7795	*86.15*	3.3919	*151.15*	5.9509			*12.00*	0.4724	2
					8	★	**MDW1040HGS8**	*102.10*	4.0197	*117.65*	4.6320	*184.15*	7.2502			*11.00*	0.4331	2
					8		**MDW1040HGS8S**	*102.10*	4.0197	*117.65*	4.6320	*184.15*	7.2502			*12.00*	0.4724	2
10.49	0.4130	Z	M12x1.75		3	●	**MDW04130HGS3S**	*35.00*	1.3780	*54.67*	2.1525	*118.17*	4.6525	*2.17*	0.0855	*12.00*	0.4724	2
					5	●	**MDW04130HGS5S**	*56.00*	2.2047	*86.17*	3.3926	*151.17*	5.9517					2

Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



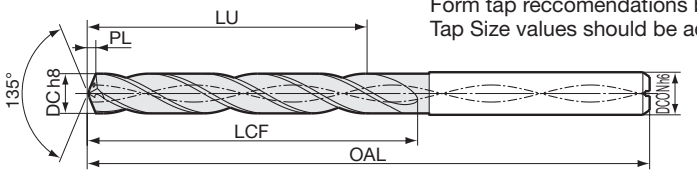
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø10.50 to 11.50 (.4134" to .4528")* Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
10.50	0.4134		M12x1.75		3	●	**MDW1050HGS3**	*39.00*	1.5354	*54.67*	2.1525	*118.17*	4.6525	*2.17*	0.0856	*11.00*	0.4331	2
					3	●	**MDW1050HGS3S**	*39.00*	1.5354	*54.67*	2.1525	*118.17*	4.6525			*12.00*	0.4724	2
					5	●	**MDW1050HGS5**	*70.50*	2.7756	*86.17*	3.3927	*151.17*	5.9518			*11.00*	0.4331	2
					5	●	**MDW1050HGS5S**	*70.50*	2.7756	*86.17*	3.3927	*151.17*	5.9518			*12.00*	0.4724	2
					8	●	**MDW1050HGS8**	*102.00*	4.0157	*117.67*	4.6329	*184.17*	7.2510			*11.00*	0.4331	2
					8		**MDW1050HGS8S**	*102.00*	4.0157	*117.67*	4.6329	*184.17*	7.2510			*12.00*	0.4724	2
10.60	0.4173			7/16-20	3	●	**MDW1060HGS3**	*41.30*	1.6260	*57.20*	2.2518	*118.20*	4.6534	*2.20*	0.0864	*11.00*	0.4331	2
					3	●	**MDW1060HGS3S**	*41.30*	1.6260	*57.20*	2.2518	*118.20*	4.6534			*12.00*	0.4724	2
					5	●	**MDW1060HGS5**	*74.30*	2.9252	*90.20*	3.5510	*151.20*	5.9526			*11.00*	0.4331	2
					5	●	**MDW1060HGS5S**	*74.30*	2.9252	*90.20*	3.5510	*151.20*	5.9526			*12.00*	0.4724	2
					8	★	**MDW1060HGS8**	*107.30*	4.2244	*123.20*	4.8502	*184.20*	7.2518			*11.00*	0.4331	2
					8		**MDW1060HGS8S**	*107.30*	4.2244	*123.20*	4.8502	*184.20*	7.2518			*12.00*	0.4724	2
10.70	0.4213		M12X1.5		3	●	**MDW1070HGS3**	*41.20*	1.6220	*57.22*	2.2526	*118.22*	4.6542	*2.22*	0.0872	*11.00*	0.4331	2
					3	●	**MDW1070HGS3S**	*41.20*	1.6220	*57.22*	2.2526	*118.22*	4.6542			*12.00*	0.4724	2
					5	●	**MDW1070HGS5**	*74.20*	2.9213	*90.22*	3.5518	*151.22*	5.9534			*11.00*	0.4331	2
					5	●	**MDW1070HGS5S**	*74.20*	2.9213	*90.22*	3.5518	*151.22*	5.9534			*12.00*	0.4724	2
					8	★	**MDW1070HGS8**	*107.20*	4.2205	*123.22*	4.8510	*184.22*	7.2526			*11.00*	0.4331	2
					8		**MDW1070HGS8S**	*107.20*	4.2205	*123.22*	4.8510	*184.22*	7.2526			*12.00*	0.4724	2
10.72	0.4219	27/64	M12X1.5		3	●	**MDW04219HGS3**	*38.91*	1.5320	*57.22*	2.2528	*118.22*	4.6543	*2.22*	0.0874	*11.11*	0.4375	2
					3	●	**MDW04219HGS3S**	*38.91*	1.5320	*57.22*	2.2528	*118.22*	4.6543			*12.00*	0.4724	2
					5	●	**MDW04219HGS5**	*71.93*	2.8318	*90.22*	3.5520	*151.22*	5.9536			*11.11*	0.4375	2
					5	●	**MDW04219HGS5S**	*71.93*	2.8318	*90.22*	3.5520	*151.22*	5.9536			*12.00*	0.4724	2
					8	●	**MDW04219HGS8**	*104.93*	4.1310	*123.22*	4.8512	*184.22*	7.2528			*11.11*	0.4375	2
					8		**MDW04219HGS8S**	*104.93*	4.1310	*123.22*	4.8512	*184.22*	7.2528			*12.00*	0.4724	2
10.80	0.4252				3	●	**MDW1080HGS3**	*41.00*	1.6142	*57.24*	2.2534	*118.24*	4.6550	*2.24*	0.0881	*11.00*	0.4331	2
					3	●	**MDW1080HGS3S**	*41.00*	1.6142	*57.24*	2.2534	*118.24*	4.6550			*12.00*	0.4724	2
					5	●	**MDW1080HGS5**	*74.00*	2.9134	*90.24*	3.5526	*151.24*	5.9542			*11.00*	0.4331	2
					5	●	**MDW1080HGS5S**	*74.00*	2.9134	*90.24*	3.5526	*151.24*	5.9542			*12.00*	0.4724	2
					8	★	**MDW1080HGS8**	*107.00*	4.2126	*123.24*	4.8518	*184.24*	7.2534			*11.00*	0.4331	2
					8		**MDW1080HGS8S**	*107.00*	4.2126	*123.24*	4.8518	*184.24*	7.2534			*12.00*	0.4724	2
10.90	0.4291		1/2-13 / M12x1.25		3	●	**MDW1090HGS3**	*41.00*	1.6142	*57.26*	2.2542	*118.26*	4.6558	*2.26*	0.0889	*11.00*	0.4331	2
					3	●	**MDW1090HGS3S**	*41.00*	1.6142	*57.26*	2.2542	*118.26*	4.6558			*12.00*	0.4724	2
					5	●	**MDW1090HGS5**	*74.00*	2.9134	*90.26*	3.5534	*151.26*	5.9550			*11.00*	0.4331	2
					5	●	**MDW1090HGS5S**	*74.00*	2.9134	*90.26*	3.5534	*151.26*	5.9550			*12.00*	0.4724	2
					8	★	**MDW1090HGS8**	*107.00*	4.2126	*123.26*	4.8527	*184.26*	7.2542			*11.00*	0.4331	2
					8		**MDW1090HGS8S**	*107.00*	4.2126	*123.26*	4.8527	*184.26*	7.2542			*12.00*	0.4724	2
11.00	0.4331		1/2-13 EE677:F742		3	●	**MDW1100HGS3**	*40.80*	1.6063	*57.28*	2.2550	*118.28*	4.6566	*2.28*	0.0897	*11.00*	0.4331	2
					3	●	**MDW1100HGS3S**	*40.80*	1.6063	*57.28*	2.2550	*118.28*	4.6566			*12.00*	0.4724	2
					5	●	**MDW1100HGS5**	*73.80*	2.9055	*90.28*	3.5543	*151.28*	5.9558			*11.00*	0.4331	2
					5	●	**MDW1100HGS5S**	*73.80*	2.9055	*90.28*	3.5543	*151.28*	5.9558			*12.00*	0.4724	2
					8	●	**MDW1100HGS8**	*106.80*	4.2047	*123.28*	4.8535	*184.28*	7.2550			*11.00*	0.4331	2
					8		**MDW1100HGS8S**	*106.80*	4.2047	*123.28*	4.8535	*184.28*	7.2550			*12.00*	0.4724	2
11.10	0.4370		1/2-13 / M12x1		3	●	**MDW1110HGS3**	*43.20*	1.7008	*59.80*	2.3543	*124.30*	4.8937	*2.30*	0.0906	*12.00*	0.4724	2
					5	●	**MDW1110HGS5**	*77.70*	3.0591	*94.30*	3.7126	*160.30*	6.3110					2
					8	★	**MDW1110HGS8**	*112.20*	4.4173	*128.80*	5.0708	*196.30*	7.7283					2
11.11	0.4375	7/16	M12x1		3	●	**MDW04375HGS3**	*38.30*	1.5080	*57.30*	2.2559	*118.30*	4.6575	*2.30*	0.0906	*11.11*	0.4375	2
					3	●	**MDW04375HGS3S**	*38.30*	1.5080	*59.80*	2.3544	*124.30*	4.8937			*12.00*	0.4724	2
					5	●	**MDW04375HGS5**	*71.33*	2.8084	*90.30*	3.5552	*151.30*	5.9567			*11.11*	0.4375	2
					5	●	**MDW04375HGS5S**	*71.33*	2.8084	*94.30*	3.7126	*160.30*	6.3111			*12.00*	0.4724	2
					8	●	**MDW04375HGS8**	*104.33*	4.1076	*123.30*	4.8544	*184.30*	7.2559			*11.11*	0.4375	2
					8		**MDW04375HGS8S**	*112.20*	4.4173	*128.80*	5.0709	*196.30*	7.7284			*12.00*	0.4724	2
11.20	0.4409		M12x1		3	●	**MDW1120HGS3**	*43.00*	1.6929	*59.82*	2.3551	*124.32*	4.8945	*2.32*	0.0913	*12.00*	0.4724	2
					5	●	**MDW1120HGS5**	*77.50*	3.0512	*94.32*	3.7134	*160.32*	6.3118					2
						★	**MDW1120HGS8**	*112.00*	4.4094	*128.82*	5.0716	*196.32*	7.7291					2
11.30	0.4449			M12x1.75	3	●	**MDW1130HGS3**	*42.90*	1.6890	*59.84*	2.3559	*124.34*	4.8953	*2.34*	0.0921	*12.00*	0.4724	2
					5	●	**MDW1130HGS5**	*77.40*	3.0472	*94.34*	3.7142	*160.34*	6.3126					2
					8	★	**MDW1130HGS8**	*111.90*	4.4055	*128.84*	5.0725	*196.34*	7.7299					2
11.40	0.4488			M12x1.5	3	●	**MDW1140HGS3**	*42.80*	1.6850	*59.86*	2.3567	*124.36*	4.8961	*2.36*	0.0930	*12.00*	0.4724	2
					5	●	**MDW1140HGS5**	*77.30*	3.0433	*94.36*	3.7150	*160.36*	6.3134					2
					8	★	**MDW1140HGS8**	*111.80*	4.4016	*128.86*	5.0733	*196.36*	7.7307					2
11.50	0.4528		1/2-20	M12x1.25	3	●	**MDW1150HGS3**	*42.70*	1.6811	*59.88*	2.3575	*124.38*	4.8969	*2.40*	0.0945	*12.00*	0.4724	2
					5	●	**MDW1150HGS5**	*77.20*	3.0394	*94.38*	3.7158	*160.38*	6.3142					2
					8	●	**MDW1150HGS8**	*111.70*	4.3976	*128.88*	5.0741	*196.38*	7.7316					2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



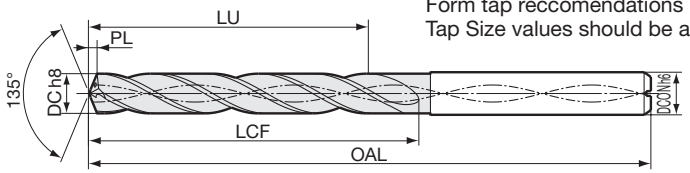
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø11.51mm to 12.50mm (.4531" to .4921")* Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
11.51	0.4531	29/64	1/2-20		3	●	**MDW04531HGS3**	*42.74*	1.6825	*62.38*	2.4561	*124.38*	4.8970	*2.38*	0.0938	*11.91*	0.4688	2
					3	●	**MDW04531HGS3S**	*42.74*	1.6825	*62.38*	2.4561	*124.38*	4.8970			*12.00*	0.4724	2
					5	●	**MDW04531HGS5**	*78.74*	3.0999	*98.38*	3.8734	*160.38*	6.3143			*11.91*	0.4688	2
					5	●	**MDW04531HGS5S**	*78.74*	3.0999	*98.38*	3.8734	*160.38*	6.3143			*12.00*	0.4724	2
					8	●	**MDW04531HGS8**	*114.74*	4.5173	*134.38*	5.2907	*196.38*	7.7316			*11.91*	0.4688	2
					8		**MDW04531HGS8S**	*114.74*	4.5172	*134.38*	5.2907	*196.38*	7.7316			*12.00*	0.4724	2
11.60	0.4567		1/2-20	M12x1	3	●	**MDW1160HGS3**	*45.00*	1.7717	*62.40*	2.4568	*124.40*	4.8977	*2.40*	0.0945	*12.00*	0.4724	2
					5	●	**MDW1160HGS5**	*81.00*	3.1890	*98.40*	3.8741	*160.40*	6.3151					2
					8	★	**MDW1160HGS8**	*117.00*	4.6063	*134.40*	5.2914	*196.40*	7.7324					2
11.70	0.4606				3	●	**MDW1170HGS3**	*44.90*	1.7677	*62.42*	2.4576	*124.42*	4.8985	*2.42*	0.0954	*12.00*	0.4724	2
					5	●	**MDW1170HGS5**	*80.90*	3.1850	*98.42*	3.8749	*160.42*	6.3159					2
					8	★	**MDW1170HGS8**	*116.90*	4.6024	*134.42*	5.2922	*196.42*	7.7332					2
11.80	0.4646				3	●	**MDW1180HGS3**	*44.70*	1.7598	*62.44*	2.4584	*124.44*	4.8994	*2.44*	0.0962	*12.00*	0.4724	2
					5	●	**MDW1180HGS5**	*80.70*	3.1772	*98.44*	3.8757	*160.44*	6.3167					2
					8	★	**MDW1180HGS8**	*116.70*	4.5945	*134.44*	5.2931	*196.44*	7.7340					2
11.90	0.4685			1/2-13	3	●	**MDW1190HGS3**	*44.70*	1.7598	*62.46*	2.4592	*124.46*	4.9002	*2.46*	0.0970	*12.00*	0.4724	2
					5	●	**MDW1190HGS5**	*80.70*	3.1772	*98.46*	3.8766	*160.46*	6.3175					2
					8	★	**MDW1190HGS8**	*116.70*	4.5945	*134.46*	5.2939	*196.46*	7.7348					2
11.91	0.4688	15/32		1/2-13	3	●	**MDW04688HGS3**	*42.13*	1.6585	*62.47*	2.4593	*124.47*	4.9003	*2.47*	0.0971	*11.91*	0.4688	2
					3	●	**MDW04688HGS3S**	*42.13*	1.6585	*62.47*	2.4593	*124.47*	4.9003			*12.00*	0.4724	2
					5	●	**MDW04688HGS5**	*78.14*	3.0763	*98.47*	3.8766	*160.47*	6.3176			*11.91*	0.4688	2
					5	●	**MDW04688HGS5S**	*78.14*	3.0763	*98.47*	3.8766	*160.47*	6.3176			*12.00*	0.4724	2
					8	●	**MDW04688HGS8**	*114.14*	4.4937	*134.47*	5.2940	*196.47*	7.7349			*11.91*	0.4688	2
					8		**MDW04688HGS8S**	*114.14*	4.4936	*134.47*	5.2940	*196.47*	7.7349			*12.00*	0.4724	2
12.00	0.4724				3	●	**MDW1200HGS3**	*44.50*	1.7520	*62.49*	2.4601	*124.49*	4.9010	*2.49*	0.0978	*12.00*	0.4724	2
					5	●	**MDW1200HGS5**	*80.50*	3.1693	*98.49*	3.8774	*160.49*	6.3183					2
					8	●	**MDW1200HGS8**	*116.50*	4.5866	*134.49*	5.2947	*196.49*	7.7356					2
12.10	0.4764				3	●	**MDW1210HGS3**	*46.90*	1.8465	*65.01*	2.5593	*130.51*	5.1380	*2.51*	0.0987	*13.00*	0.5118	2
					3	●	**MDW1210HGS3S**	*46.90*	1.8465	*65.01*	2.5593	*130.51*	5.1380			*14.00*	0.5512	2
					5	●	**MDW1210HGS5**	*84.40*	3.3228	*102.51*	4.0357	*169.51*	6.6735			*13.00*	0.5118	2
					5	●	**MDW1210HGS5S**	*84.40*	3.3228	*102.51*	4.0357	*169.51*	6.6735			*14.00*	0.5512	2
					8		**MDW1210HGS8**	*121.90*	4.7992	*140.01*	5.5120	*208.51*	8.2089			*13.00*	0.5118	2
					8		**MDW1210HGS8S**	*121.90*	4.7992	*140.01*	5.5120	*208.51*	8.2089			*14.00*	0.5512	2
12.20	0.4803		M14x2	1/2-20	3	●	**MDW1220HGS3**	*46.70*	1.8386	*65.03*	2.5601	*130.53*	5.1388	*2.53*	0.0995	*13.00*	0.5118	2
					3	●	**MDW1220HGS3S**	*46.70*	1.8386	*65.03*	2.5601	*130.53*	5.1388			*14.00*	0.5512	2
					5	●	**MDW1220HGS5**	*84.20*	3.3150	*102.53*	4.0365	*169.53*	6.6743			*13.00*	0.5118	2
					5	●	**MDW1220HGS5S**	*84.20*	3.3150	*102.53*	4.0365	*169.53*	6.6743			*14.00*	0.5512	2
					8		**MDW1220HGS8**	*121.70*	4.7913	*140.03*	5.5129	*208.53*	8.2097			*13.00*	0.5118	2
					8		**MDW1220HGS8S**	*121.70*	4.7913	*140.03*	5.5129	*208.53*	8.2097			*14.00*	0.5512	2
12.30	0.4843		9/16-12 / M14x2		3	●	**MDW1230HGS3**	*46.60*	1.8346	*65.05*	2.5609	*130.55*	5.1397	*2.55*	0.0984	*13.00*	0.5118	2
					3	●	**MDW1230HGS3S**	*46.60*	1.8346	*65.05*	2.5609	*130.55*	5.1397			*14.00*	0.5512	2
					5	●	**MDW1230HGS5**	*84.10*	3.3110	*102.55*	4.0373	*169.55*	6.6751			*13.00*	0.5118	2
					5	●	**MDW1230HGS5S**	*84.10*	3.3110	*102.55*	4.0373	*169.55*	6.6751			*14.00*	0.5512	2
					8		**MDW1230HGS8**	*121.60*	4.7874	*140.05*	5.5137	*208.55*	8.2105			*13.00*	0.5118	2
					8		**MDW1230HGS8S**	*121.60*	4.7874	*140.05*	5.5137	*208.55*	8.2105			*14.00*	0.5512	2
	0.4844	31/64	9/16-12 / M14x2		3	●	**MDW04844HGS3**	*44.07*	1.7350	*65.05*	2.5609	*130.55*	5.1397	*2.55*	0.1003	*13.11*	0.5156	2
					3	●	**MDW04844HGS3S**	*44.07*	1.7350	*65.05*	2.5609	*130.55*	5.1397			*14.00*	0.5512	2
					5	●	**MDW04844HGS5**	*81.54*	3.2104	*102.55*	4.0373	*169.55*	6.6751			*13.10*	0.5156	2
					5	●	**MDW04844HGS5S**	*81.54*	3.2104	*102.55*	4.0373	*169.55*	6.6751			*14.00*	0.5512	2
					8	●	**MDW04844HGS8**	*119.04*	4.6868	*140.05*	5.5137	*208.55*	8.2105			*13.10*	0.5156	2
					8		**MDW04844HGS8S**	*119.04*	4.6864	*140.05*	5.5137	*208.55*	8.2105			*14.00*	0.5512	2
12.40	0.4882		9/16-12		3	●	**MDW1240HGS3**	*46.50*	1.8307	*65.07*	2.5617	*130.57*	5.1405	*2.57*	0.1011	*13.00*	0.5118	2
					3	●	**MDW1240HGS3S**	*46.50*	1.8307	*65.07*	2.5617	*130.57*	5.1405			*14.00*	0.5512	2
					5	●	**MDW1240HGS5**	*84.00*	3.3071	*102.57*	4.0381	*169.57*	6.6759			*13.00*	0.5118	2
					5	●	**MDW1240HGS5S**	*84.00*	3.3071	*102.57*	4.0381	*169.57*	6.6759			*14.00*	0.5512	2
					8		**MDW1240HGS8**	*121.50*	4.7835	*140.07*	5.5145	*208.57*	8.2113			*13.00*	0.5118	2
					8		**MDW1240HGS8S**	*121.50*	4.7835	*140.07*	5.5145	*208.57*	8.2113			*14.00*	0.5512	2
12.50	0.4921		9/16-12		3	●	**MDW1250HGS3**	*46.40*	1.8268	*65.09*	2.5626	*130.59*	5.1413	*2.59*	0.1019	*13.00*	0.5118	2
					3	●	**MDW1250HGS3S**	*46.40*	1.8268	*65.09*	2.5626	*130.59*	5.1413			*14.00*	0.5512	2
					5	●	**MDW1250HGS5**	*83.90*	3.3031	*102.59*	4.0389	*169.59*	6.6767			*13.00*	0.5118	2
					5	●	**MDW1250HGS5S**	*83.90*	3.3031	*102.59*	4.0389	*169.59*	6.6767			*14.00*	0.5512	2
					8	●	**MDW1250HGS8**	*121.40*	4.7795	*140.09*	5.5153	*208.59*	8.2122			*13.00*	0.5118	2
					8		**MDW1250HGS8S**	*121.40*	4.7795	*140.09*	5.5153	*208.59*	8.2122			*14.00*	0.5512	2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



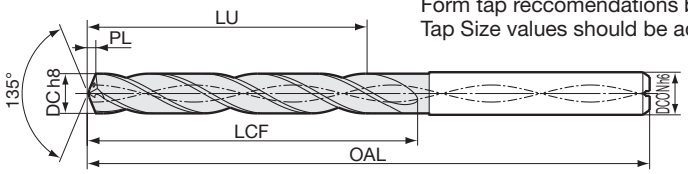
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter ø12.60mm to 13.49mm (.4961" to .5312") Dimensions (inch/mm)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	
12.60	0.4961				3	●	MDW1260HGS3	48.70	1.9173	67.61	2.6618	130.61	5.1421	2.61	0.1027	13.00	0.5118	2
					3	●	MDW1260HGS3S	48.70	1.9173	67.61	2.6618	130.61	5.1421			14.00	0.5512	2
					5	●	MDW1260HGS5	87.70	3.4528	106.61	4.1972	169.61	6.6775			13.00	0.5118	2
					5	●	MDW1260HGS5S	87.70	3.4528	106.61	4.1972	169.61	6.6775			14.00	0.5512	2
					8		MDW1260HGS8	126.70	4.9882	145.61	5.7327	208.61	8.2130			13.00	0.5118	2
					8		MDW1260HGS8S	126.70	4.9882	145.61	5.7327	208.61	8.2130			14.00	0.5512	2
12.70	0.5000	1/2	M14x1.5		3	●	MDW1270HGS3	48.60	1.9134	67.63	2.6626	130.63	5.1429	2.63	0.1036	13.00	0.5118	2
					3	●	MDW1270HGS3S	48.60	1.9134	67.63	2.6626	130.63	5.1429			14.00	0.5512	2
					5	●	MDW1270HGS5	87.60	3.4488	106.63	4.1980	169.63	6.6784			13.00	0.5118	2
					5	●	MDW1270HGS5S	87.60	3.4488	106.63	4.1980	169.63	6.6784			14.00	0.5512	2
					8		MDW1270HGS8	126.60	4.9843	145.63	5.7335	208.63	8.2138			13.00	0.5118	2
					3	●	MDW05000HGS3	45.95	1.8090	67.63	2.6626	130.63	5.1429	2.63	0.1036	13.11	0.5156	2
					3	●	MDW05000HGS3S	45.95	1.8090	67.63	2.6626	130.63	5.1429			14.00	0.5512	2
					5	●	MDW05000HGS5	84.95	3.3445	106.63	4.1980	169.63	6.6784			13.10	0.5156	2
					5	●	MDW05000HGS5S	84.95	3.3445	106.63	4.1980	169.63	6.6784			14.00	0.5512	2
					8	●	MDW05000HGS8	123.95	4.8799	145.63	5.7335	208.63	8.2138			13.10	0.5156	2
					8		MDW05000HGS8S	126.60	4.9843	145.63	5.7335	208.63	8.2138			14.00	0.5512	2
12.80	0.5039				3	●	MDW1280HGS3	48.40	1.9055	67.65	2.6634	130.65	5.1437	2.65	0.1024	13.00	0.5118	2
					3	●	MDW1280HGS3S	48.40	1.9055	67.65	2.6634	130.65	5.1437			14.00	0.5512	2
					5	●	MDW1280HGS5	87.40	3.4409	106.65	4.1989	169.65	6.6792			13.00	0.5118	2
					5	●	MDW1280HGS5S	87.40	3.4409	106.65	4.1989	169.65	6.6792			14.00	0.5512	2
					8		MDW1280HGS8	126.40	4.9764	145.65	5.7343	208.65	8.2146			13.00	0.5118	2
					8		MDW1280HGS8S	126.40	4.9764	145.65	5.7343	208.65	8.2146			14.00	0.5512	2
12.83	0.5051				5	●	MDW1283HGS5	84.76	3.3368	106.66	4.1991	169.66	6.6794	2.66	0.1046	13.00	0.5118	2
					5	●	MDW1283HGS5S	84.76	3.3368	106.66	4.1991	169.66	6.6794			14.00	0.5512	2
					8		MDW1283HGS8S	84.76	3.3368	145.66	5.7345	208.66	8.2148					2
12.90	0.5079				3	●	MDW1290HGS3	48.40	1.9055	67.67	2.6642	130.67	5.1446	2.67	0.1052	13.00	0.5118	2
					3	●	MDW1290HGS3S	48.40	1.9055	67.67	2.6642	130.67	5.1446			14.00	0.5512	2
					5	●	MDW1290HGS5	87.40	3.4409	106.67	4.1997	169.67	6.6800			13.00	0.5118	2
					5	●	MDW1290HGS5S	87.40	3.4409	106.67	4.1997	169.67	6.6800			14.00	0.5512	2
					8		MDW1290HGS8	126.40	4.9764	145.67	5.7351	208.67	8.2154			13.00	0.5118	2
					8		MDW1290HGS8S	126.40	4.9764	145.67	5.7351	208.67	8.2154			14.00	0.5512	2
13.00	0.5118		9/16-18		3	●	MDW1300HGS3	48.20	1.8976	67.69	2.6651	130.69	5.1454	2.69	0.1060	13.00	0.5118	2
					3	●	MDW1300HGS3S	48.20	1.8976	67.69	2.6651	130.69	5.1454			14.00	0.5512	2
					5	●	MDW1300HGS5	87.20	3.4331	106.69	4.2005	169.69	6.6808			13.00	0.5118	2
					5	●	MDW1300HGS5S	87.20	3.4331	106.69	4.2005	169.69	6.6808			14.00	0.5512	2
					8	●	MDW1300HGS8	126.20	4.9685	145.69	5.7359	208.69	8.2162			13.00	0.5118	2
					8		MDW1300HGS8S	126.20	4.9685	145.69	5.7359	208.69	8.2162			14.00	0.5512	2
13.10	0.5156	33/64	9/16-18	M14x2	3	●	MDW05156HGS3	45.35	1.7856	67.71	2.6659	130.71	5.1462	2.71	0.1068	13.10	0.5156	2
					3	●	MDW05156HGS3S	45.35	1.7856	70.21	2.7643	136.71	5.3824			14.00	0.5512	2
					5	●	MDW05156HGS5	84.36	3.3211	106.71	4.2013	169.71	6.6816			13.10	0.5156	2
					5	●	MDW05156HGS5S	84.36	3.3211	110.71	4.3588	178.71	7.0359			14.00	0.5512	2
					8	●	MDW05156HGS8	123.36	4.8565	145.71	5.7367	208.71	8.2171			13.10	0.5156	2
					8		MDW05156HGS8S	123.36	4.8565	151.21	5.9533	220.71	8.6895			14.00	0.5512	2
13.10	0.5157		9/16-18	M14x2	3	●	MDW1310HGS3	50.60	1.9921	70.21	2.7643	136.71	5.3824	2.71	0.1068	14.00	0.5512	2
					5	●	MDW1310HGS5	91.10	3.5866	110.71	4.3588	178.71	7.0359					2
							MDW1310HGS8	131.60	5.1811	151.21	5.9533	220.71	8.6895					2
13.20	0.5197				3	●	MDW1320HGS3	50.40	1.9843	70.23	2.7651	136.73	5.3832	2.73	0.1076	14.00	0.5512	2
					5	●	MDW1320HGS5	90.90	3.5787	110.73	4.3596	178.73	7.0368					2
					8		MDW1320HGS8	131.40	5.1732	151.23	5.9541	220.73	8.6903					2
13.30	0.5236				3	●	MDW1330HGS3	50.40	1.9843	70.25	2.7659	136.75	5.3840	2.75	0.1084	14.00	0.5512	2
					5	●	MDW1330HGS5	90.90	3.5787	110.75	4.3604	178.75	7.0376					2
					8		MDW1330HGS8	131.40	5.1732	151.25	5.9549	220.75	8.6911					2
13.40	0.5276			9/16-12 / M14x1.5	3	●	MDW1340HGS3	50.20	1.9764	70.28	2.7667	136.78	5.3849	2.78	0.1093	14.00	0.5512	2
					5	●	MDW1340HGS5	90.70	3.5709	110.78	4.3612	178.78	7.0384					2
					8		MDW1340HGS8	131.20	5.1654	151.28	5.9557	220.78	8.6919					2
13.49	0.5312	17/32			3	●	MDW05312HGS3	47.28	1.8615	70.29	2.7675	136.79	5.3856	2.79	0.1100	13.89	0.5469	2
					3	●	MDW05312HGS3S	47.28	1.8615	70.29	2.7675	136.79	5.3856			14.00	0.5512	2
					5	●	MDW05312HGS5	87.76	3.4552	110.79	4.3620	178.79	7.0391			13.89	0.5469	2
					5	●	MDW05312HGS5S	87.76	3.4552	110.79	4.3620	178.79	7.0391			14.00	0.5512	2
					8	●	MDW05312HGS8	128.26	5.0497	151.29	5.9565	220.79	8.6927			13.89	0.5469	2
					8		MDW05312HGS8S	128.26	5.0497	151.29	5.9565	220.79	8.6927			14.00	0.5512	2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



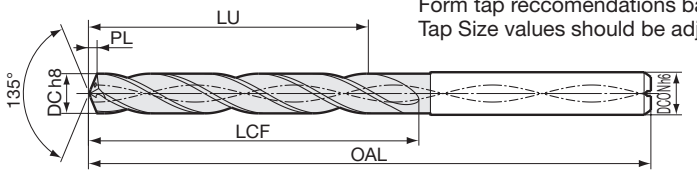
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø13.50mm to 14.50mm (.5315" to .5709")* Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
13.50	0.5315				3	●	**MDW1350HGS3**	*50.10*	1.9724	*70.30*	2.7676	*136.80*	5.3857					2
					5	●	**MDW1350HGS5**	*90.60*	3.5669	*110.80*	4.3620	*178.80*	7.0392	*2.80*	0.1102	*14.00*	0.5512	2
					8	●	**MDW1350HGS8**	*131.10*	5.1614	*151.30*	5.9565	*220.80*	8.6928					2
13.60	0.5354				3	●	**MDW1360HGS3**	*52.40*	2.0630	*72.82*	2.8668	*136.82*	5.3865					2
					5	●	**MDW1360HGS5**	*94.40*	3.7165	*114.82*	4.5203	*178.82*	7.0400	*2.82*	0.1109	*14.00*	0.5512	2
					8		**MDW1360HGS8**	*136.40*	5.3701	*156.82*	6.1739	*220.82*	8.6936					2
13.70	0.5394		5/8-11	9/16-18	3	●	**MDW1370HGS3**	*52.30*	2.0591	*72.84*	2.8676	*136.84*	5.3873					2
					5	●	**MDW1370HGS5**	*94.30*	3.7126	*114.84*	4.5212	*178.84*	7.0408	*2.84*	0.1117	*14.00*	0.5512	2
					8		**MDW1370HGS8**	*136.30*	5.3661	*156.84*	6.1747	*220.84*	8.6944					2
13.80	0.5433		5/8-11		3	●	**MDW1380HGS3**	*52.20*	2.0551	*72.86*	2.8684	*136.86*	5.3881					2
					5	●	**MDW1380HGS5**	*94.20*	3.7087	*114.86*	4.5220	*178.86*	7.0417	*2.86*	0.1125	*14.00*	0.5512	2
					8		**MDW1380HGS8**	*136.20*	5.3622	*156.86*	6.1755	*220.86*	8.6952					2
13.89	0.5469	35/64	5/8-11		3	●	**MDW05469HGS3**	*49.17*	1.9357	*72.88*	2.8692	*136.88*	5.3888			*13.89*	0.5469	2
					3	●	**MDW05469HGS3S**	*49.17*	1.9357	*72.88*	2.8692	*136.88*	5.3888			*14.00*	0.5512	2
					5	●	**MDW05469HGS5**	*91.16*	3.5891	*114.88*	4.5227	*178.88*	7.0424	*2.88*	0.1133	*13.89*	0.5469	2
					5	●	**MDW05469HGS5S**	*91.16*	3.5891	*114.88*	4.5227	*178.88*	7.0424			*14.00*	0.5512	2
					8	●	**MDW05469HGS8**	*133.16*	5.2427	*156.88*	6.1762	*220.88*	8.6959			*13.89*	0.5469	2
					8		**MDW05469HGS8S**	*133.17*	5.2427	*156.88*	6.1762	*220.88*	8.6959			*14.00*	0.5512	2
13.90	0.5472		5/8-11		3	●	**MDW1390HGS3**	*52.10*	2.0512	*72.88*	2.8692	*136.88*	5.3889					2
					5	●	**MDW1390HGS5**	*94.10*	3.7047	*114.88*	4.5228	*178.88*	7.0425	*2.88*	0.1133	*14.00*	0.5512	2
					8		**MDW1390HGS8**	*136.10*	5.3583	*156.88*	6.1763	*220.88*	8.6960					2
14.00	0.5512		5/8-11		3	●	**MDW1400HGS3**	*51.90*	2.0433	*72.90*	2.8701	*136.90*	5.3897					2
					5	●	**MDW1400HGS5**	*93.90*	3.6969	*114.90*	4.5236	*178.90*	7.0433	*2.90*	0.1142	*14.00*	0.5512	2
					8	●	**MDW1400HGS8**	*135.90*	5.3504	*156.90*	6.1771	*220.90*	8.6968					2
14.10	0.5551				3	●	**MDW1410HGS3**	*54.30*	2.1378	*75.42*	2.9693	*142.92*	5.6268			*15.00*	0.5906	2
					3	●	**MDW1410HGS3S**	*54.30*	2.1378	*75.42*	2.9693	*142.92*	5.6268			*16.00*	0.6299	2
					5	●	**MDW1410HGS5**	*97.80*	3.8504	*118.92*	4.6819	*187.92*	7.3984	*2.92*	0.1159	*15.00*	0.5906	2
					5	●	**MDW1410HGS5S**	*97.80*	3.8504	*118.92*	4.6819	*187.92*	7.3984			*16.00*	0.6299	2
					8		**MDW1410HGS8**	*141.30*	5.5630	*162.42*	6.3945	*232.92*	9.1701			*15.00*	0.5906	2
					8		**MDW1410HGS8S**	*141.30*	5.5630	*162.42*	6.3945	*232.92*	9.1701			*16.00*	0.6299	2
14.20	0.5591		M16x2		3	●	**MDW1420HGS3**	*54.10*	2.1299	*75.44*	2.9701	*142.94*	5.6276			*15.00*	0.5906	2
					3	●	**MDW1420HGS3S**	*54.10*	2.1299	*75.44*	2.9701	*142.94*	5.6276			*16.00*	0.6299	2
					5	●	**MDW1420HGS5**	*97.60*	3.8425	*118.94*	4.6827	*187.94*	7.3992	*2.94*	0.1158	*15.00*	0.5906	2
					5	●	**MDW1420HGS5S**	*97.60*	3.8425	*118.94*	4.6827	*187.94*	7.3992			*16.00*	0.6299	2
					8		**MDW1420HGS8**	*141.10*	5.5551	*162.44*	6.3953	*232.94*	9.1709			*15.00*	0.5906	2
					8		**MDW1420HGS8S**	*141.10*	5.5551	*162.44*	6.3953	*232.94*	9.1709			*16.00*	0.6299	2
14.29	0.5625	9/16	M16x2		3	●	**MDW05625HGS3**	*51.04*	2.0095	*75.46*	2.9708	*142.96*	5.6283			*15.08*	0.5937	2
					3	●	**MDW05625HGS3S**	*51.04*	2.0095	*75.46*	2.9708	*142.96*	5.6283			*16.00*	0.6299	2
					5	●	**MDW05625HGS5**	*94.57*	3.7232	*118.96*	4.6834	*187.96*	7.4000	*2.96*	0.1165	*15.08*	0.5937	2
					5	●	**MDW05625HGS5S**	*94.57*	3.7232	*118.96*	4.6834	*187.96*	7.4000			*16.00*	0.6299	2
					8	●	**MDW05625HGS8**	*138.07*	5.4358	*162.46*	6.3960	*232.96*	9.1716			*15.08*	0.5937	2
					8		**MDW05625HGS8S**	*138.06*	5.4356	*162.46*	6.3960	*232.96*	9.1716			*16.00*	0.6299	2
14.30	0.5630		M16x2		3	●	**MDW1430HGS3**	*54.10*	2.1299	*75.46*	2.9709	*142.96*	5.6284			*15.00*	0.5906	2
					3	●	**MDW1430HGS3S**	*54.10*	2.1299	*75.46*	2.9709	*142.96*	5.6284			*16.00*	0.6299	2
					5	●	**MDW1430HGS5**	*97.60*	3.8425	*118.96*	4.6835	*187.96*	7.4001	*2.96*	0.1166	*15.00*	0.5906	2
					5	●	**MDW1430HGS5S**	*97.60*	3.8425	*118.96*	4.6835	*187.96*	7.4001			*16.00*	0.6299	2
					8		**MDW1430HGS8**	*141.10*	5.5551	*162.46*	6.3961	*232.96*	9.1717			*15.00*	0.5906	2
					8		**MDW1430HGS8S**	*141.10*	5.5551	*162.46*	6.3961	*232.96*	9.1717			*16.00*	0.6299	2
14.40	0.5669				3	●	**MDW1440HGS3**	*53.90*	2.1220	*75.48*	2.9717	*142.98*	5.6292			*15.00*	0.5906	2
					3	●	**MDW1440HGS3S**	*53.90*	2.1220	*75.48*	2.9717	*142.98*	5.6292			*16.00*	0.6299	2
					5	●	**MDW1440HGS5**	*97.40*	3.8346	*118.98*	4.6843	*187.98*	7.4009	*2.98*	0.1174	*15.00*	0.5906	2
					5	●	**MDW1440HGS5S**	*97.40*	3.8346	*118.98*	4.6843	*187.98*	7.4009			*16.00*	0.6299	2
					8		**MDW1440HGS8**	*140.90*	5.5472	*162.48*	6.3969	*232.98*	9.1725			*15.00*	0.5906	2
							MDW1440HGS8S	*140.90*	5.5472	*162.48*	6.3969	*232.98*	9.1725			*16.00*	0.6299	2
14.50	0.5709				3	●	**MDW1450HGS3**	*53.80*	2.1181	*75.50*	2.9726	*143.00*	5.6300			*15.00*	0.5906	2
					3	●	**MDW1450HGS3S**	*53.80*	2.1181	*75.50*	2.9726	*143.00*	5.6300			*16.00*	0.6299	2
					5	●	**MDW1450HGS5**	*97.30*	3.8307	*119.00*	4.6852	*188.00*	7.4017	*3.00*	0.1181	*15.00*	0.5906	2
					5	●	**MDW1450HGS5S**	*97.30*	3.8307	*119.00*	4.6852	*188.00*	7.4017			*16.00*	0.6299	2
					8	●	**MDW1450HGS8**	*140.80*	5.5433	*162.50*	6.3978	*233.00*	9.1733			*15.00*	0.5906	2
					8		**MDW1450HGS8S**	*140.80*	5.5433	*162.50*	6.3978	*233.00*	9.1733			*16.00*	0.6299	2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



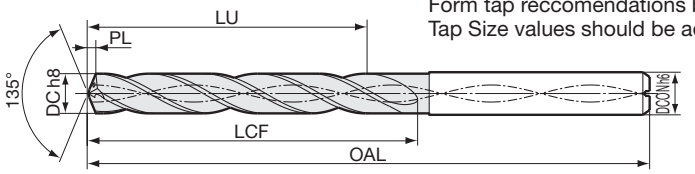
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø14.60mm to 15.50mm (.5748" to .6102")* Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
14.60	0.5748		5/8-18 / M16x1.5		3	●	**MDW1460HGS3**	*56.10*	2.2087	*78.02*	3.0718	*143.02*	5.6309	*3.02*	0.1190	*15.00*	0.5906	2
					3	●	**MDW1460HGS3S**	*56.10*	2.2087	*78.02*	3.0718	*143.02*	5.6309			*16.00*	0.6299	2
					5	●	**MDW1460HGS5**	*101.10*	3.9803	*123.02*	4.8435	*188.02*	7.4025			*15.00*	0.5906	2
					5	●	**MDW1460HGS5S**	*101.10*	3.9803	*123.02*	4.8435	*188.02*	7.4025			*16.00*	0.6299	2
					8		**MDW1460HGS8**	*146.10*	5.7520	*168.02*	6.6151	*233.02*	9.1742			*15.00*	0.5906	2
					8		**MDW1460HGS8S**	*146.10*	5.7520	*168.02*	6.6151	*233.02*	9.1742			*16.00*	0.6299	2
14.68	0.5781	37/64	5/8-18 / M16x1.5		3	●	**MDW05781HGS3**	*52.98*	2.0860	*78.04*	3.0725	*143.04*	5.6315	*3.04*	0.1197	*15.08*	0.5937	2
					3	●	**MDW05781HGS3S**	*52.98*	2.0860	*78.04*	3.0725	*143.04*	5.6315			*16.00*	0.6299	2
					5	●	**MDW05781HGS5**	*97.97*	3.8573	*123.04*	4.8441	*188.04*	7.4032			*15.08*	0.5937	2
					5	●	**MDW05781HGS5S**	*97.97*	3.8573	*123.04*	4.8441	*188.04*	7.4032			*16.00*	0.6299	2
					8	●	**MDW05781HGS8**	*142.98*	5.6290	*168.04*	6.6158	*233.04*	9.1748			*15.08*	0.5937	2
					8		**MDW05781HGS8S**	*142.98*	5.6292	*168.04*	6.6158	*233.04*	9.1748			*16.00*	0.6299	2
14.70	0.5787		5/8-18 / M16x1.5		3	●	**MDW1470HGS3**	*56.00*	2.2047	*78.04*	3.0726	*143.04*	5.6317	*3.04*	0.1199	*15.00*	0.5906	2
					3	●	**MDW1470HGS3S**	*56.00*	2.2047	*78.04*	3.0726	*143.04*	5.6317			*16.00*	0.6299	2
					5	●	**MDW1470HGS5**	*101.00*	3.9764	*123.04*	4.8443	*188.04*	7.4033			*15.00*	0.5906	2
					5	●	**MDW1470HGS5S**	*101.00*	3.9764	*123.04*	4.8443	*188.04*	7.4033			*16.00*	0.6299	2
					8		**MDW1470HGS8**	*146.00*	5.7480	*168.04*	6.6159	*233.04*	9.1750			*15.00*	0.5906	2
					8		**MDW1470HGS8S**	*146.00*	5.7480	*168.04*	6.6159	*233.04*	9.1750			*16.00*	0.6299	2
14.80	0.5827				3	●	**MDW1480HGS3**	*55.90*	2.2008	*78.07*	3.0734	*143.07*	5.6325	*3.07*	0.1207	*15.00*	0.5906	2
					3	●	**MDW1480HGS3S**	*55.90*	2.2008	*78.07*	3.0734	*143.07*	5.6325			*16.00*	0.6299	2
					5	●	**MDW1480HGS5**	*100.90*	3.9724	*123.07*	4.8451	*188.07*	7.4041			*15.00*	0.5906	2
					5	●	**MDW1480HGS5S**	*100.90*	3.9724	*123.07*	4.8451	*188.07*	7.4041			*16.00*	0.6299	2
					8		**MDW1480HGS8**	*145.90*	5.7441	*168.07*	6.6167	*233.07*	9.1758			*15.00*	0.5906	2
					8		**MDW1480HGS8S**	*145.90*	5.7441	*168.07*	6.6167	*233.07*	9.1758			*16.00*	0.6299	2
14.90	0.5866			5/8-11	3	●	**MDW1490HGS3**	*55.80*	2.1969	*78.09*	3.0742	*143.09*	5.6333	*3.09*	0.1215	*15.00*	0.5906	2
					3	●	**MDW1490HGS3S**	*55.80*	2.1969	*78.09*	3.0742	*143.09*	5.6333			*16.00*	0.6299	2
					5	●	**MDW1490HGS5**	*100.80*	3.9685	*123.09*	4.8459	*188.09*	7.4050			*15.00*	0.5906	2
					5	●	**MDW1490HGS5S**	*100.80*	3.9685	*123.09*	4.8459	*188.09*	7.4050			*16.00*	0.6299	2
					8		**MDW1490HGS8**	*145.80*	5.7402	*168.09*	6.6176	*233.09*	9.1766			*15.00*	0.5906	2
					8		**MDW1490HGS8S**	*145.80*	5.7402	*168.09*	6.6176	*233.09*	9.1766			*16.00*	0.6299	2
15.00	0.5906			5/8-11	3	●	**MDW1500HGS3**	*55.60*	2.1890	*78.11*	3.0751	*143.11*	5.6341	*3.11*	0.1223	*15.00*	0.5906	2
					3	●	**MDW1500HGS3S**	*55.60*	2.1890	*78.11*	3.0751	*143.11*	5.6341			*16.00*	0.6299	2
					5	●	**MDW1500HGS5**	*100.60*	3.9606	*123.11*	4.8467	*188.11*	7.4058			*15.00*	0.5906	2
					5	●	**MDW1500HGS5S**	*100.60*	3.9606	*123.11*	4.8467	*188.11*	7.4058			*16.00*	0.6299	2
					8	●	**MDW1500HGS8**	*145.60*	5.7323	*168.11*	6.6184	*233.11*	9.1774			*15.00*	0.5906	2
					8		**MDW1500HGS8S**	*145.60*	5.7323	*168.11*	6.6184	*233.11*	9.1774			*16.00*	0.6299	2
15.08	0.5937	19/32		M16x2	3	●	**MDW05937HGS3**	*52.37*	2.0620	*78.13*	3.0758	*143.13*	5.6349	*3.12*	0.1230	*15.08*	0.5937	2
					3	●	**MDW05937HGS3S**	*52.37*	2.0620	*80.63*	3.1742	*149.13*	5.8711			*16.00*	0.6299	2
					5	●	**MDW05937HGS5**	*97.38*	3.8339	*123.12*	4.8474	*188.12*	7.4064			*15.08*	0.5937	2
					5	●	**MDW05937HGS5S**	*97.38*	3.8339	*127.12*	5.0048	*197.12*	7.7608			*16.00*	0.6299	2
					8	●	**MDW05937HGS8**	*142.38*	5.6056	*168.12*	6.6190	*233.12*	9.1781			*15.08*	0.5937	2
					8		**MDW05937HGS8S**	*142.38*	5.6055	*173.62*	6.8356	*245.12*	9.6505			*16.00*	0.6299	2
15.10	0.5945			M16x2	3	●	**MDW1510HGS3**	*58.00*	2.2835	*80.63*	3.1743	*149.13*	5.8712	*3.13*	0.1231	*16.00*	0.6299	2
					5	●	**MDW1510HGS5**	*104.50*	4.1142	*127.13*	5.0050	*197.13*	7.7609					2
					8		**MDW1510HGS8**	*151.00*	5.9449	*173.63*	6.8357	*245.13*	9.6507					2
15.20	0.5984			5/8-18	3	●	**MDW1520HGS3**	*57.80*	2.2756	*80.65*	3.1751	*149.15*	5.8720	*3.15*	0.1239	*16.00*	0.6299	2
					5	●	**MDW1520HGS5**	*104.30*	4.1063	*127.15*	5.0058	*197.15*	7.7617					2
					8		**MDW1520HGS8**	*150.80*	5.9370	*173.65*	6.8365	*245.15*	9.6515					2
15.30	0.6024			5/8-18	3	●	**MDW1530HGS3**	*57.80*	2.2756	*80.67*	3.1759	*149.17*	5.8728	*3.17*	0.1248	*16.00*	0.6299	2
					5	●	**MDW1530HGS5**	*104.30*	4.1063	*127.17*	5.0066	*197.17*	7.7625					2
					8		**MDW1530HGS8**	*150.80*	5.9370	*173.67*	6.8374	*245.17*	9.6523					2
15.40	0.6063			M16x1.5	3	●	**MDW1540HGS3**	*57.60*	2.2677	*80.69*	3.1767	*149.19*	5.8736	*3.19*	0.1256	*16.00*	0.6299	2
					5	●	**MDW1540HGS5**	*104.10*	4.0984	*127.19*	5.0075	*197.19*	7.7634					2
					8		**MDW1540HGS8**	*150.60*	5.9291	*173.69*	6.8382	*245.19*	9.6531					2
15.48	0.6094	39/64			3	●	**MDW06094HGS3**	*54.29*	2.1375	*80.70*	3.1773	*149.20*	5.8742	*3.21*	0.1262	*15.88*	0.6250	2
					3	●	**MDW06094HGS3S**	*54.29*	2.1375	*80.70*	3.1773	*149.20*	5.8742			*16.00*	0.6299	2
					5	●	**MDW06094HGS5**	*100.78*	3.9678	*127.21*	5.0081	*197.21*	7.7640			*15.88*	0.6250	2
					5	●	**MDW06094HGS5S**	*100.78*	3.9678	*127.21*	5.0081	*197.21*	7.7640			*16.00*	0.6299	2
					8	●	**MDW06094HGS8**	*147.28*	5.7985	*173.71*	6.8388	*245.21*	9.6538			*15.88*	0.6250	2
					8		**MDW06094HGS8S**	*147.28*	5.7984	*173.71*	6.8388	*245.21*	9.6538			*16.00*	0.6299	2
15.50	0.6102				3	●	**MDW1550HGS3**	*57.50*	2.2638	*80.71*	3.1776	*149.21*	5.8744	*3.21*	0.1264	*16.00*	0.6299	2
					5	●	**MDW1550HGS5**	*104.00*	4.0945	*127.21*	5.0083	*197.21*	7.7642					2
						●	**MDW1550HGS8**	*150.50*	5.9252	*173.71*	6.8390	*245.21*	9.6539					2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



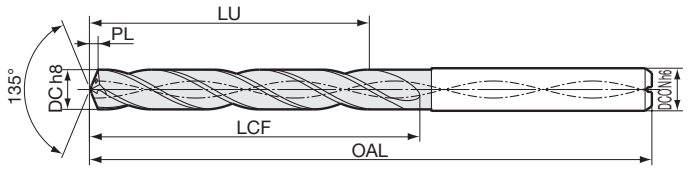
Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Diameter *ø15.60mm to 17.70mm (.6142" to .6969")* Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
15.60	0.6142				3	●	**MDW1560HGS3**	*59.80*	2.3543	*83.23*	3.2768	*149.23*	5.8752					2
					5	●	**MDW1560HGS5**	*107.80*	4.2441	*131.23*	5.1666	*197.23*	7.7650	*3.23*	0.1272	*16.00*	0.6299	2
					8		**MDW1560HGS8**	*155.80*	6.1339	*179.23*	7.0563	*245.23*	9.6548					2
15.70	0.6181		M18x2.5		3	●	**MDW1570HGS3**	*59.70*	2.3504	*83.25*	3.2776	*149.25*	5.8760					2
					5	★	**MDW1570HGS5**	*107.70*	4.2402	*131.25*	5.1674	*197.25*	7.7658	*3.25*	0.1280	*16.00*	0.6299	2
					8		**MDW1570HGS8**	*155.70*	6.1299	*179.25*	7.0571	*245.25*	9.6556					2
15.80	0.6220		M18x2.5		3	●	**MDW1580HGS3**	*59.60*	2.3465	*83.27*	3.2784	*149.27*	5.8769					2
					5	●	**MDW1580HGS5**	*107.60*	4.2362	*131.27*	5.1682	*197.27*	7.7666	*3.27*	0.1288	*16.00*	0.6299	2
					8		**MDW1580HGS8**	*155.60*	6.1260	*179.27*	7.0580	*245.27*	9.6564					2
15.88	0.6250	5/8	M18x2.5		3	●	**MDW06250HGS3**	*56.20*	2.2125	*83.29*	3.2791	*149.29*	5.8775			*15.88*	0.6250	2
					3	●	**MDW06250HGS3S**	*56.20*	2.2125	*83.29*	3.2791	*149.29*	5.8775			*16.00*	0.6299	2
					5	●	**MDW06250HGS5**	*104.19*	4.1019	*131.29*	5.1689	*197.29*	7.7673	*3.29*	0.1294	*15.88*	0.6250	2
					5	●	**MDW06250HGS5S**	*104.19*	4.1019	*131.29*	5.1689	*197.29*	7.7673			*16.00*	0.6299	2
					8	●	**MDW06250HGS8**	*152.19*	5.9916	*179.29*	7.0586	*245.29*	9.6570			*15.88*	0.6250	2
					8		**MDW06250HGS8S**	*152.18*	5.9913	*179.29*	7.0586	*245.29*	9.6570			*16.00*	0.6299	2
15.90	0.6260		M18x2.5		3	●	**MDW1590HGS3**	*59.50*	2.3425	*83.29*	3.2793	*149.29*	5.8777					2
					5	●	**MDW1590HGS5**	*107.50*	4.2323	*131.29*	5.1690	*197.29*	7.7674	*3.29*	0.1296	*16.00*	0.6299	2
					8		**MDW1590HGS8**	*155.50*	6.1220	*179.29*	7.0588	*245.29*	9.6572					2
16.00	0.6299				3	●	**MDW1600HGS3**	*59.30*	2.3346	*83.31*	3.2801	*149.31*	5.8785					2
					5	●	**MDW1600HGS5**	*107.30*	4.2244	*131.31*	5.1698	*197.31*	7.7683	*3.31*	0.1305	*16.00*	0.6299	2
					8	●	**MDW1600HGS8**	*155.30*	6.1142	*179.31*	7.0596	*245.31*	9.6580					2
16.10	0.6339				3		**MDW1610HGS3**	*61.70*	2.4291	*85.83*	3.3793	*155.33*	6.1155	*3.33*	0.1313	*17.00*	0.6693	2
					5		**MDW1610HGS5**	*111.20*	4.3780	*135.33*	5.3281	*206.33*	8.1234					2
16.20	0.6378				3		**MDW1620HGS3**	*61.60*	2.4252	*85.86*	3.3801	*155.36*	6.1163	*3.36*	0.1321	*17.00*	0.6693	2
					5		**MDW1620HGS5**	*111.10*	4.3740	*135.36*	5.3289	*206.36*	8.1242					2
16.27	0.6406	41/64			3	●	**MDW06406HGS3**	*58.09*	2.2870	*85.87*	3.3807	*155.37*	6.1169	*3.37*	0.1327	*17.06*	0.6718	2
					5	●	**MDW06406HGS5**	*107.60*	4.2360	*135.37*	5.3295	*206.37*	8.1248					2
16.30	0.6417				3		**MDW1630HGS3**	*61.50*	2.4213	*85.88*	3.3809	*155.38*	6.1172	*3.38*	0.1329	*17.00*	0.6693	2
					5		**MDW1630HGS5**	*111.00*	4.3701	*135.38*	5.3298	*206.38*	8.1250					2
16.40	0.6457				3		**MDW1640HGS3**	*61.30*	2.4134	*85.90*	3.3818	*155.40*	6.1180	*3.40*	0.1339	*17.00*	0.6693	2
					5		**MDW1640HGS5**	*110.80*	4.3622	*135.40*	5.3306	*206.40*	8.1258					2
16.50	0.6496				3	●	**MDW1650HGS3**	*61.20*	2.4094	*85.92*	3.3826	*155.42*	6.1188	*3.42*	0.1345	*17.00*	0.6693	2
					5	★	**MDW1650HGS5**	*110.70*	4.3583	*135.42*	5.3314	*206.42*	8.1267					2
16.60	0.6535				3		**MDW1660HGS3**	*63.50*	2.5000	*88.44*	3.4818	*155.44*	6.1196	*3.44*	0.1354	*17.00*	0.6693	2
					5		**MDW1660HGS5**	*114.50*	4.5079	*139.44*	5.4897	*206.44*	8.1275					2
16.67	0.6562	21/32	3/4-10 / M18x1.5		3	●	**MDW06562HGS3**	*60.00*	2.3622	*88.45*	3.4824	*155.45*	6.1202	*3.45*	0.1359	*17.06*	0.6718	2
					5	●	**MDW06562HGS5**	*110.99*	4.3697	*139.45*	5.4903	*206.45*	8.1281					2
16.70	0.6575		3/4-10 / M18x1.5		3		**MDW1670HGS3**	*63.50*	2.5000	*88.46*	3.4826	*155.46*	6.1204	*3.46*	0.1378	*17.00*	0.6693	2
					5		**MDW1670HGS5**	*114.50*	4.5079	*139.46*	5.4905	*206.46*	8.1283					2
16.80	0.6614		3/4-10		3		**MDW1680HGS3**	*63.30*	2.4921	*88.48*	3.4834	*155.48*	6.1212	*3.48*	0.1362	*17.00*	0.6693	2
					5		**MDW1680HGS5**	*114.30*	4.5000	*139.48*	5.4913	*206.48*	8.1291					2
16.90	0.6654		3/4-10	M18x2.5	3		**MDW1690HGS3S**	*63.20*	2.4882	*88.50*	3.4843	*155.50*	6.1221	*3.50*	0.1370	*18.00*	0.7087	2
					5		**MDW1690HGS5S**	*114.20*	4.4961	*139.50*	5.4921	*206.50*	8.1299					2
17.00	0.6693			M18x2.5	3	●	**MDW1700HGS3**	*63.00*	2.4803	*88.52*	3.4851	*155.52*	6.1229	*3.52*	0.1386	*17.00*	0.6693	2
					5	●	**MDW1700HGS5**	*114.00*	4.4882	*139.52*	5.4929	*206.52*	8.1307					2
17.07	0.6719	43/64			3	●	**MDW06719HGS3S**	*58.33*	2.2966	*91.04*	3.5841	*161.54*	6.3597	*3.53*	0.1392	*18.00*	0.7087	2
					5	●	**MDW06719HGS5S**	*93.33*	3.6745	*143.54*	5.6510	*217.54*	8.5644					2
17.10	0.6732				3		**MDW1710HGS3**	*65.40*	2.5748	*91.04*	3.5843	*161.54*	6.3599	*3.54*	0.1394	*18.00*	0.7087	2
					5		**MDW1710HGS5**	*117.90*	4.6417	*143.54*	5.6512	*217.54*	8.5646					2
17.20	0.6772				3		**MDW1720HGS3**	*65.30*	2.5709	*91.06*	3.5851	*161.56*	6.3607	*3.56*	0.1402	*18.00*	0.7087	2
					5		**MDW1720HGS5**	*117.80*	4.6378	*143.56*	5.6521	*217.56*	8.5654					2
17.30	0.6811			M18x1.5	3		**MDW1730HGS3**	*65.20*	2.5669	*91.08*	3.5859	*161.58*	6.3615	*3.58*	0.1411	*18.00*	0.7087	2
					5		**MDW1730HGS5**	*117.70*	4.6339	*143.58*	5.6529	*217.58*	8.5663					2
17.40	0.6850			M18x1.5	3		**MDW1740HGS3**	*65.00*	2.5591	*91.10*	3.5868	*161.60*	6.3623	*3.60*	0.1417	*18.00*	0.7087	2
					5		**MDW1740HGS5**	*117.50*	4.6260	*143.60*	5.6537	*217.60*	8.5671					2
17.46	0.6875	11/16			3	●	**MDW06875HGS3**	*61.31*	2.4136	*91.12*	3.5872	*161.62*	6.3628	*3.62*	0.1424	*17.86*	0.7031	2
					5	●	**MDW06875HGS5**	*113.81*	4.4808	*143.62*	5.6542	*217.62*	8.5676					2
17.50	0.6890				3	●	**MDW1750HGS3**	*64.90*	2.5551	*91.12*	3.5876	*161.62*	6.3632	*3.62*	0.1427	*18.00*	0.7087	2
					5	★	**MDW1750HGS5**	*117.40*	4.6220	*143.62*	5.6545	*217.62*	8.5679					2
17.60	0.6929		3/4-16		3		**MDW1760HGS3**	*67.20*	2.6457	*93.65*	3.6868	*161.65*	6.3640	*3.65*	0.1435	*18.00*	0.7087	2
					5		**MDW1760HGS5**	*121.20*	4.7717	*147.65*	5.8128	*217.65*	8.5687					2
17.70	0.6969		3/4-16 / M20x2.5		3		**MDW1770HGS3**	*67.20*	2.6457	*93.67*	3.6876	*161.67*	6.3648	*3.67*	0.1443	*18.00*	0.7087	2
					5		**MDW1770HGS5**	*121.20*	4.7717	*147.67*	5.8136	*217.67*	8.5695					2

*Refer to N74 for the tolerance of h6 and h8

Fig. 2 (diameter ø2.5 to 20.0mm 0.098"-0.787", double margin)



Diameter *ø17.80mm to 20.00mm (.7008" to .7874")* Dimensions (inch/*mm*)

Dia. DC			Cut Tap Size	Roll Form Tap Size	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Dia. DCON		Fig
mm	in.	Fraction						*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	*mm*	in.	
17.80	0.7008		M20x2.5		3		**MDW1780HGS3**	*67.00*	2.6378	*93.69*	3.6884	*161.69*	6.3656	*3.69*	0.1451	*18.00*	0.7087	2
					5	●	**MDW1780HGS5**	*121.00*	4.7638	*147.69*	5.8144	*217.69*	8.5703					2
17.86	0.7031	45/64	M20x2.5		3	●	**MDW07031HGS3**	*63.21*	2.4887	*93.70*	3.6889	*161.70*	6.3661	*3.70*	0.1457	*17.86*	0.7031	2
					5	●	**MDW07031HGS5**	*96.00*	3.7795	*147.70*	5.8149	*217.70*	8.5708					2
17.90	0.7047		M20x2.5	3/4-10	3		**MDW1790HGS3**	*66.90*	2.6339	*93.71*	3.6893	*161.71*	6.3664	*3.71*	0.1460	*18.00*	0.7087	2
							MDW1790HGS5	*120.90*	4.7598	*147.71*	5.8152	*217.71*	8.5712					2
18.00	0.7087			3/4-10	3	★	**MDW1800HGS3**	*66.70*	2.6260	*93.73*	3.6901	*161.73*	6.3672	*3.73*	0.1468	*18.00*	0.7087	2
					5	★	**MDW1800HGS5**	*120.70*	4.7520	*147.73*	5.8161	*217.73*	8.5720					2
18.10	0.7126				3		**MDW1810HGS3**	*69.10*	2.7205	*96.25*	3.7893	*167.75*	6.6043	*3.75*	0.1476	*19.00*	0.7480	2
					5		**MDW1810HGS5**	*124.60*	4.9055	*151.75*	5.9744	*224.75*	8.8484					2
18.20	0.7165				3		**MDW1820HGS3**	*69.00*	2.7165	*96.27*	3.7901	*167.77*	6.6051	*3.77*	0.1484	*19.00*	0.7480	2
					5		**MDW1820HGS5**	*124.50*	4.9016	*151.77*	5.9752	*224.77*	8.8492					2
18.25	0.7187	23/32			3	●	**MDW07187HGS3**	*65.12*	2.5637	*96.28*	3.7905	*167.78*	6.6055	*3.78*	0.1488	*19.05*	0.7480	2
					5	●	**MDW07187HGS5**	*98.67*	3.8845	*151.78*	5.9757	*224.78*	8.8497					2
18.30	0.7205			3/4-16	3		**MDW1830HGS3**	*68.90*	2.7126	*96.29*	3.7909	*167.79*	6.6059	*3.79*	0.1492	*19.00*	0.7480	2
					5		**MDW1830HGS5**	*124.40*	4.8976	*151.79*	5.9760	*224.79*	8.8500					2
18.40	0.7244			3/4-16	3		**MDW1840HGS3**	*68.70*	2.7047	*96.31*	3.7918	*167.81*	6.6067	*3.81*	0.1500	*19.00*	0.7480	2
					5		**MDW1840HGS5**	*124.20*	4.8898	*151.81*	5.9768	*224.81*	8.8508					2
18.50	0.7283				3	★	**MDW1850HGS3**	*68.60*	2.7008	*96.33*	3.7926	*167.83*	6.6075	*3.83*	0.1508	*19.00*	0.7480	2
					5	★	**MDW1850HGS5**	*124.10*	4.8858	*151.83*	5.9776	*224.83*	8.8516					2
18.60	0.7323		M20x1.5		3		**MDW1860HGS3**	*71.00*	2.7953	*98.85*	3.8918	*167.85*	6.6084	*3.85*	0.1517	*19.00*	0.7480	2
					5		**MDW1860HGS5**	*128.00*	5.0394	*155.85*	6.1359	*224.85*	8.8524					2
18.65	0.7344	47/64	M20x1.5		3	●	**MDW07344HGS3**	*67.02*	2.6386	*98.86*	3.8922	*167.86*	6.6088	*3.86*	0.1521	*19.05*	0.7500	2
					5	●	**MDW07344HGS5**	*101.33*	3.9895	*155.86*	6.1363	*224.86*	8.8529					2
18.70	0.7362		M20x1.5		3		**MDW1870HGS3**	*70.90*	2.7913	*98.87*	3.8926	*167.87*	6.6092	*3.87*	0.1525	*19.00*	0.7480	2
					5		**MDW1870HGS5**	*127.90*	5.0354	*155.87*	6.1367	*224.87*	8.8533					2
18.80	0.7402				3		**MDW1880HGS3**	*70.70*	2.7835	*98.89*	3.8934	*167.89*	6.6100	*3.89*	0.1533	*19.00*	0.7480	2
					5		**MDW1880HGS5**	*127.70*	5.0276	*155.89*	6.1375	*224.89*	8.8541					2
18.90	0.7441			M20x2.5	3		**MDW1890HGS3**	*70.60*	2.7795	*98.91*	3.8943	*167.91*	6.6108	*3.90*	0.1535	*19.00*	0.7480	2
					5		**MDW1890HGS5**	*127.60*	5.0236	*155.91*	6.1384	*224.91*	8.8549					2
19.00	0.7480				3	●	**MDW1900HGS3**	*70.40*	2.7717	*98.94*	3.8951	*167.94*	6.6116	*3.91*	0.1541	*19.00*	0.7480	2
					5	★	**MDW1900HGS5**	*127.40*	5.0157	*155.94*	6.1392	*224.94*	8.8557					2
19.05	0.7500	3/4			3	●	**MDW07500HGS3**	*68.93*	2.7136	*98.95*	3.8955	*167.95*	6.6120	*3.95*	0.1553	*19.05*	0.7500	2
19.10	0.7520		M20x1		3		**MDW1910HGS3**	*72.90*	2.8701	*101.46*	3.9943	*173.96*	6.8487	*3.96*	0.1557	*20.00*	0.7874	2
					5		**MDW1910HGS5**	*131.40*	5.1732	*159.96*	6.2975	*233.96*	9.2109					2
19.20	0.7559		M20x1		3		**MDW1920HGS3**	*72.70*	2.8622	*101.48*	3.9951	*173.98*	6.8495	*3.98*	0.1566	*20.00*	0.7874	2
					5		**MDW1920HGS5**	*131.20*	5.1654	*159.98*	6.2983	*233.98*	9.2117					2
19.30	0.7598			M20x1.5	3		**MDW1930HGS3**	*72.60*	2.8583	*101.50*	3.9960	*174.00*	6.8503	*4.00*	0.1575	*20.00*	0.7874	2
					5		**MDW1930HGS5**	*131.10*	5.1614	*160.00*	6.2991	*234.00*	9.2125					2
19.40	0.7638			M20x1.5	3		**MDW1940HGS3**	*72.40*	2.8504	*101.52*	3.9968	*174.02*	6.8511	*4.02*	0.1582	*20.00*	0.7874	2
					5		**MDW1940HGS5**	*130.90*	5.1535	*160.02*	6.2999	*234.02*	9.2133					2
19.50	0.7677				3	★	**MDW1950HGS3**	*72.30*	2.8465	*101.54*	3.9976	*174.04*	6.8519	*4.04*	0.1590	*20.00*	0.7874	2
					5	★	**MDW1950HGS5**	*130.80*	5.1496	*160.04*	6.3007	*234.04*	9.2141					2
19.60	0.7717			M20x1	3		**MDW1960HGS3**	*74.70*	2.9409	*104.06*	4.0968	*174.06*	6.8527	*4.06*	0.1598	*20.00*	0.7874	2
					5		**MDW1960HGS5**	*134.70*	5.3031	*164.06*	6.4590	*234.06*	9.2149					2
19.70	0.7756		7/8-9 / M22x2.5		3		**MDW1970HGS3**	*74.60*	2.9370	*104.08*	4.0976	*174.08*	6.8535	*4.08*	0.1606	*20.00*	0.7874	2
					5		**MDW1970HGS5**	*134.60*	5.2992	*164.08*	6.4598	*234.08*	9.2157					2
19.80	0.7795		7/8-9 / M22x2.5		3		**MDW1980HGS3**	*74.40*	2.9291	*104.10*	4.0985	*174.10*	6.8544	*4.10*	0.1614	*20.00*	0.7874	2
					5		**MDW1980HGS5**	*134.40*	5.2913	*164.10*	6.4607	*234.10*	9.2166					2
19.84	0.7812	25/32	7/8-9 / M22x2.5		3	●	**MDW07812HGS3**	*70.24*	2.7652	*104.11*	4.0988	*174.11*	6.8547	*4.11*	0.1618	*19.84*	0.7812	2
					5	●	**MDW07812HGS5S**	*106.67*	4.1995	*164.11*	6.4610	*234.11*	9.2169			*20.00*	0.7874	2
19.90	0.7835		7/8-9 / M22x2.5		3		**MDW1990HGS3**	*74.30*	2.9252	*104.12*	4.0993	*174.12*	6.8552	*4.12*	0.1623	*20.00*	0.7874	2
							MDW1990HGS5	*134.30*	5.2874	*164.12*	6.4615	*234.12*	9.2174					2
20.00	0.7874				3	★	**MDW2000HGS3**	*74.10*	2.9173	*104.14*	4.1001	*174.14*	6.8560	*4.14*	0.1631	*20.00*	0.7874	2
					5	★	**MDW2000HGS5**	*134.10*	5.2795	*164.14*	6.4623	*234.14*	9.2182					2

Cut tap reccomendations based on 60-75% full thread.
Form tap reccomendations based on 55-70% full thread.
Tap Size values should be adjusted according to application.

Grade: ACX70 ★: Worldwide Warehouse Item

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Hardened Steel from 46HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Copper Alloy

DEX Coating | Coolant Hole | 3D | 5D | 8D

MDW		Work Material	Hardness HB	Speed = SFM Feed = IPR	Drill Diameter (inch)		
					ø < - ø0.196	ø0.197 - ø0.394	ø0.395 > ø
HGS 3D 5D 8D	P	Low Carbon Steel	<190	SFM	300 - 475	400 - 550	450 - 650
				IPR	.004 - .008	.006 - .010	.008 - .014
			190 ~ 250	SFM	225 - 425	265 - 530	425 - 625
				IPR	.004 - .008	.006 - .010	.008 - .014
			250 ~ 300	SFM	175 - 375	225 - 495	250 - 525
				IPR	.003 - .006	.004 - .008	.006 - .012
		Medium Carbon Steel	180 ~ 275	SFM	225 - 425	265 - 530	350 - 575
				IPR	.004 - .008	.006 - .010	.008 - .014
			275 ~ 350	SFM	175 - 375	225 - 495	305 - 525
				IPR	.003 - .006	.004 - .008	.006 - .012
		Alloy Steel	200	SFM	190 - 380	225 - 475	275 - 525
				IPR	.003 - .008	.006 - .010	.008 - .014
			350	SFM	125 - 300	155 - 325	155 - 350
				IPR	.003 - .006	.004 - .008	.006 - .010
	M	300 Austenitic Stainless Steel	160 ~ 280	SFM	120 - 225	150 - 325	150 - 325
				IPR	.002 - .006	.004 - .010	.006 - .012
		400 Martensitic Stainless Steel	160 ~ 240	SFM	120 - 250	175 - 350	175 - 350
				IPR	.002 - .006	.004 - .010	.006 - .012
	K	Cast Iron		SFM	150 - 380	250 - 475	275 - 530
				IPR	.006 - .010	.006 - .014	.006 - .014
		Ductile Iron		SFM	150 - 350	225 - 450	250 - 500
				IPR	.006 - .010	.006 - .014	.006 - .014
	H	Hardened Steel	45-60 Rc	SFM	60 - 190	80 - 225	80 - 225
				IPR	.002 - .004	.003 - .006	.004 - .008
	S	Titanium Alloy Ti-6Al-4V		SFM	65 - 130	80 - 130	80 - 160
				IPR	.003 - .004	.003 - .005	.003 - .006
		Exotics - Inconel, Monel		SFM	40 - 85	40 - 100	50 - 120
				IPR	.002 - .003	.003 - .005	.003 - .006
	N	Aluminum alloy		SFM	500 - 800	600 - 1000	600 - 1000
				IPR	.003 - .006	.004 - .008	.006 - .012
		Copper Alloy		SFM	400 - 800	500 - 800	500 - 800
				IPR	.003 - .006	.004 - .008	.006 - .010

New



■ General Features

- Newly developed oil hole shape with excellent cooling performance achieves longer tool life.
- Effective cooling of the cutting edge created through fluid analysis.
  Reduces adhesion breakage.
- Chip control and work hardening problems resolved, all in one.
- Outstanding stability in machining of stainless steel and exotic alloys.

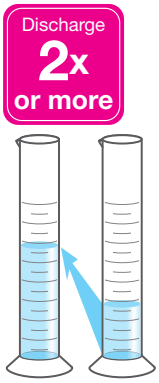
■ Features and Applications

- Greater discharge of coolant for effective cooling of the cutting edge.

Bean Jet Cooling

*Suitable for drill diameters of ø4.1 or larger

Newly developed bean-shaped oil hole supplies coolant on cutting edge for effective cooling of the cutting edge

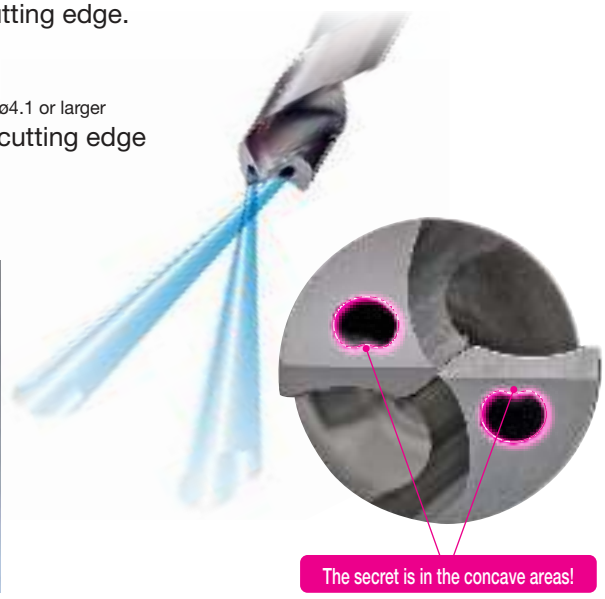


MDM Type



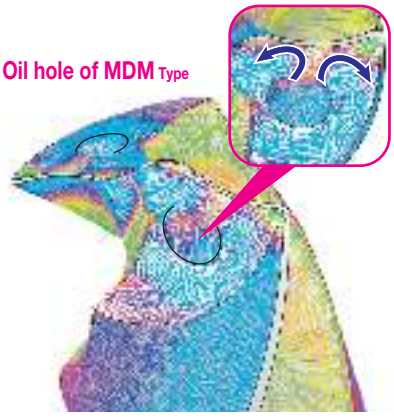
Conventional Tool





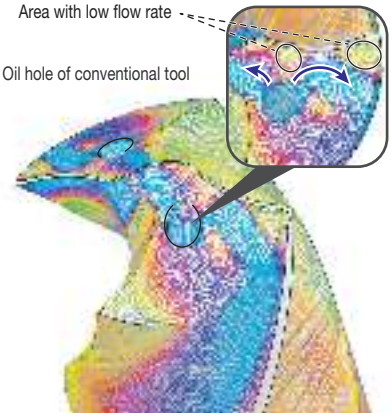
- New technology created through fluid analysis for effective cooling of the cutting edge

Oil hole of MDM Type



Area with low flow rate

Oil hole of conventional tool



Analysed at tool rotation speed of 3,200min^{-1}

Low flow rate High flow rate

- Significantly reduces adhesion on the cutting edge, preventing adhesion breakage

MDM Type



Minimal adhesion, able to continue

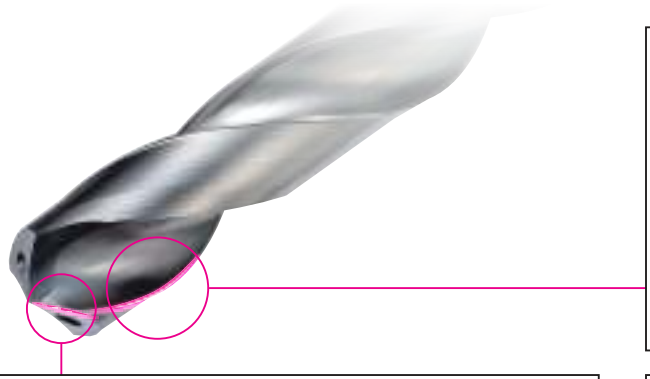
Competitor's Product



Adhesion breakage in outer edge

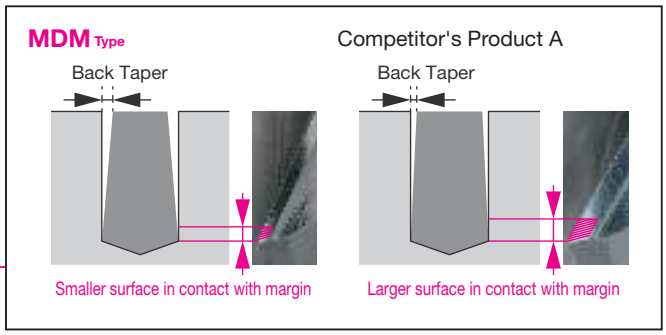
Part Material	: 304 Stainless Steel
Machine	: BT30 vertical machining center
Tool	: MDM 0800S08H05 (ø8mmx5D)
Cutting Conditions	: v_c=262 SFM, f=0.010 IPR, H=1.57" (through), internal coolant supply (water soluble)
Drilling Distance	: 131ft

● New cutting edge design that emphasises sharpness for good chip control



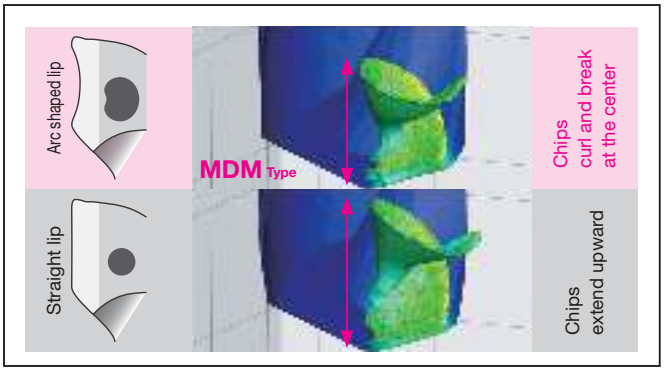
● Narrow margin and large back taper

Reducing the contact area with the workpiece, suppressing temperature rise at the margin



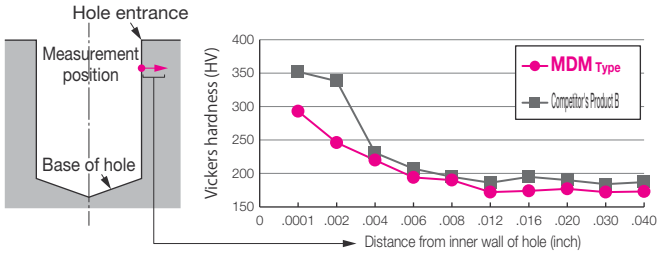


Part Material : 304 Stianless Steel
Machine : BT30 vertical machining centre
Tool : MDM 0400S04H05 (ø4.0mmx5D)
Cutting Conditions : v_c=262 SFM, f=0.004 IPR, internal coolant supply (water soluble)



● Suppressing work hardening on drilled hole wall

Reduces cutting load, reducing damage to the drill and increasing the life of the reamer and tap used in post-processing



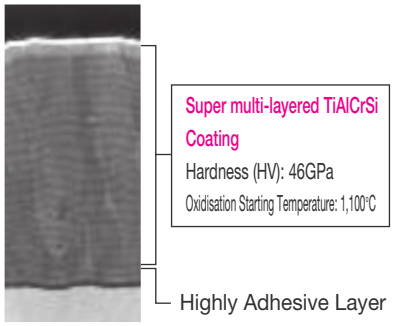
Part Material : 304 Stainless Steel
Machine : BT30 vertical machining center
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : v_c=262 SFM, f=0.008 IPR, H=1.57" (through), internal coolant supply (water soluble)

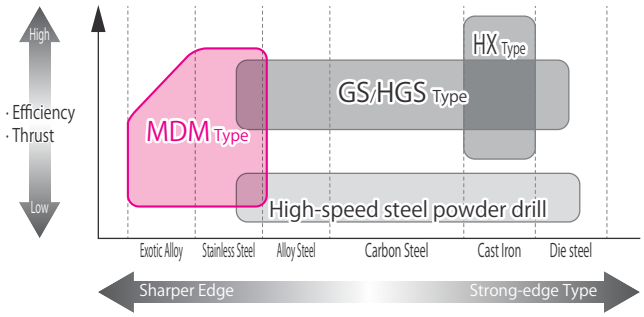
● New grades ideal for stainless steel and exotic alloy drilling

ACT70

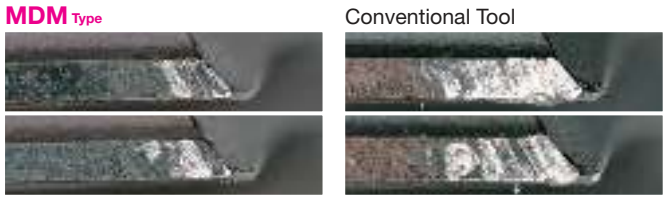
● NX Coating

Made with Absotech™ technology for high quality, high hardness, high strength and excellent wear resistance and thermal resistance.



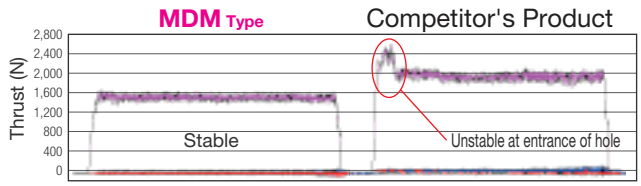


● New coating reduces margin wear



Part Material : 304 Stainless Steel, Machine: BT30 vertical machining center
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : v_c=262 SFM, f=0.008 IPR, H=1.57" (through), internal coolant supply (water soluble)

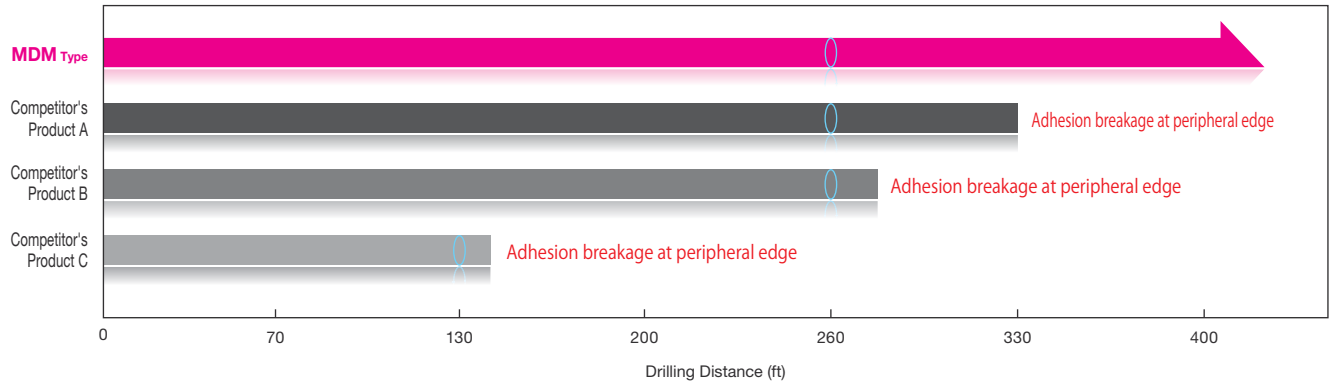
● Reduces thrust for stable drilling from the entrance to the exit of the hole



Work Material : SUS304, Machine: BT30 vertical machining centre
Tool : MDM 0800S08H05 (ø8.0mmx5D)
Cutting Conditions : v_c=262 SFM, f=0.008 IPR, H=1.57" (through), internal coolant supply (water soluble)

■ Application Examples

Austenitic Stainless Steel (Machining Center)



MDM Type after 262ft of drilling



Competitor's product A after 262ft of drilling



Competitor's product B after 262ft of drilling

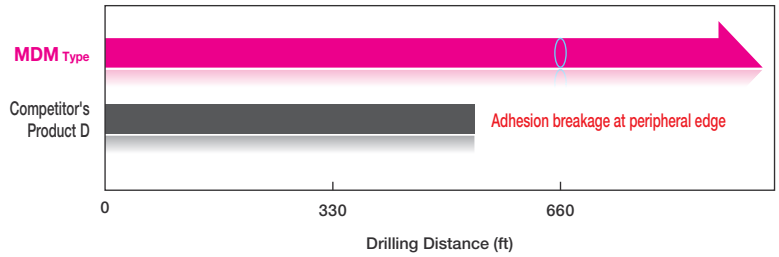


Competitor's product C after 131ft of drilling



Part Material: 304 Stainless Steel, Machine: BT30 vertical machining center, Tool: MDM 0800S08H05 (ø8mm×5D)
Cutting Conditions: v_c=262 SFM, f=0.008 IPR, H=1.57" (through), internal coolant supply (water soluble)

Austenitic Stainless Steel (Small Lathe)

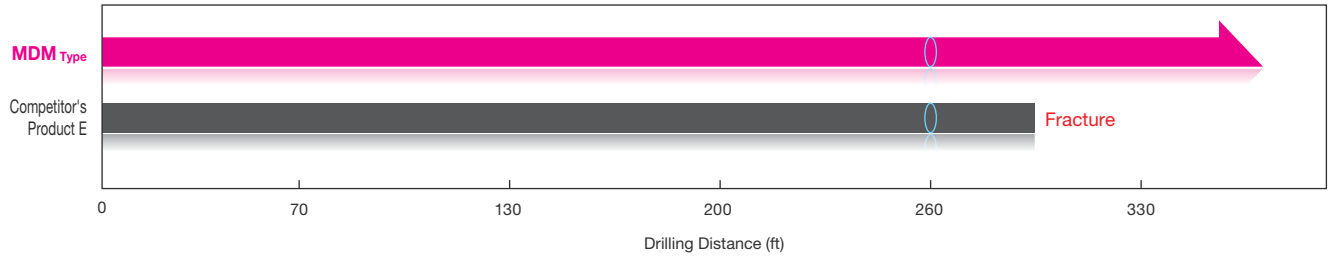


MDM Type after 656ft of drilling



Part Material: 304 Stainless Steel, Machine: CNC autolathe (workpiece rotates), Tool: MDM 0540S06H03 (ø5.4mmx3D)
Cutting Conditions: v_c=154 SFM, f=0.0047 IPR, H=0.984" (stop), internal coolant supply (non-water soluble)

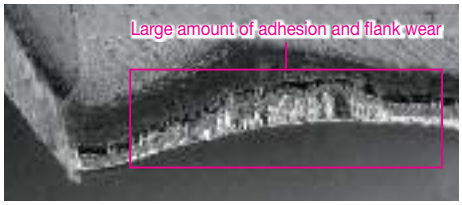
Precipitation Hardening Stainless Steel



MDM Type after 262ft of drilling

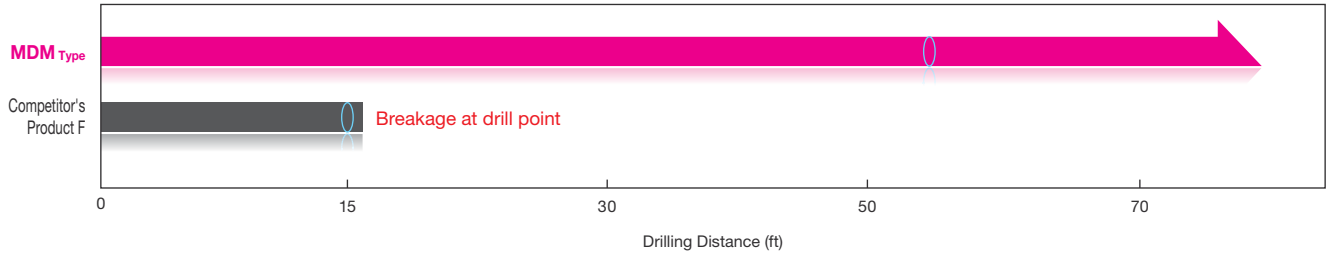


Competitor's product E after 262ft of drilling



Part Material: Precipitation Hardening Stainless Steel, Machine: BT30 vertical machining center, Tool: MDM 0400S04H05 (ø4mm×5D)
Cutting Conditions: v_c=164 SFM, f=0.004 IPR, H=0.551" (stop), internal coolant supply (water soluble)

Duplex Stainless Steel



MDM Type after 52ft of drilling

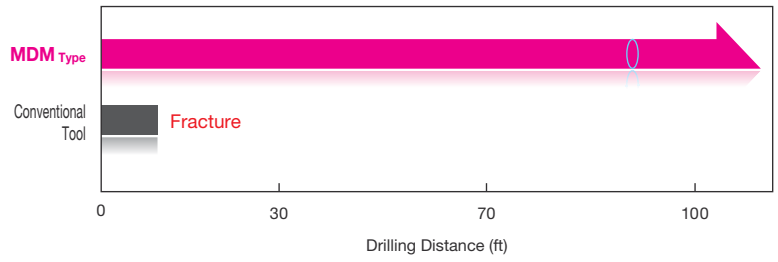


Competitor's product F after 16ft of drilling

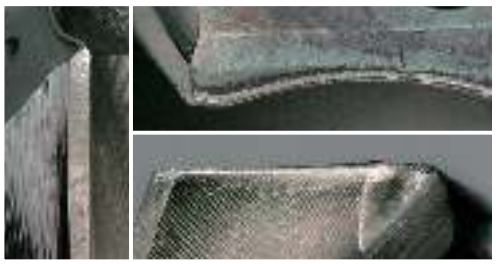


Part Material: Austenitic-ferritic (Duplex) Stainless Steel, Machine: BT30 vertical machining center, Tool: MDM 0800S05H05 (ø8mm×5D)
Cutting Conditions: v_c=197 SFM, f=0.008 IPR, H=1.181" (through), internal coolant supply (water soluble)

Titanium Alloy



MDM Type after 89ft of drilling



MDM Type

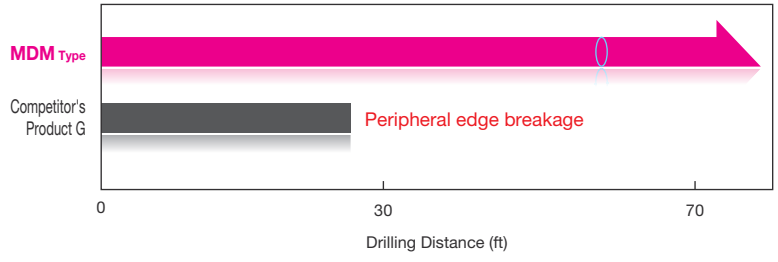


Conventional Tool

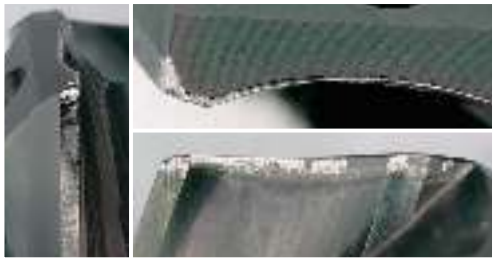


Part Material: Ti-6Al-4V, Machine: BT50 vertical machining center, Tool: MDM 0500S05H05 (ø5mm×5D)
Cutting Conditions: v_c=131 SFM, f=0.0047 IPR, H=0.748" (stop), internal coolant supply (water soluble)

Heat-resistant cast steel



MDM Type after 56ft of drilling



Part Material: SCH13X equivalent, Machine: BT50 vertical machining center, Tool: MDM 0880S09H03 (ø8.8mmx3D)
Cutting Conditions: v_c=164 SFM, f=0.0043 IPR, H=0.709" (stop), internal coolant supply (water soluble)

MDM Type (Internal Coolant Supply)

NX Coat | 3D | 5D

*Refer to N74 for the tolerance of h6 and h8

Fig. 1 (diameter under ø4.1)

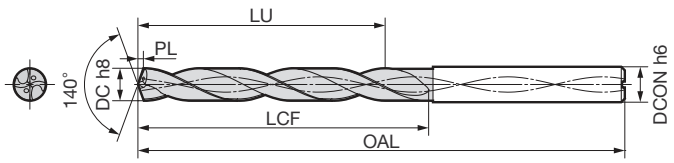
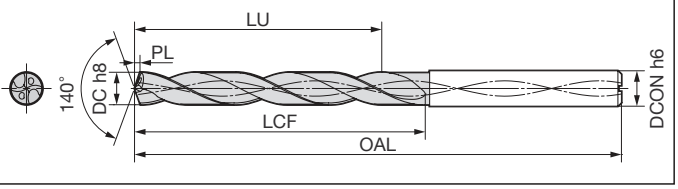


Fig. 2 (diameter ø4.1 or larger)



Diameter ø3.0 to 5.6mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	★	**MDM0300S03H03**	14.0	18.5	68.5	0.5	3.0	1
	5	★	**MDM0300S03H05**	24.0	28.5	78.5			1
3.1	3	★	**MDM0310S04H03**	16.0	20.6	72.6	0.6	4.0	1
	5	★	**MDM0310S04H05**	28.0	32.6	86.6			1
3.2	3	★	**MDM0320S04H03**	15.8	20.6	72.6	0.6	4.0	1
	5	★	**MDM0320S04H05**	27.8	32.6	86.6			1
3.3	3	★	**MDM0330S04H03**	15.7	20.6	72.6	0.6	4.0	1
	5	★	**MDM0330S04H05**	27.7	32.6	86.6			1
3.4	3	★	**MDM0340S04H03**	15.5	20.6	72.6	0.6	4.0	1
	5	★	**MDM0340S04H05**	27.5	32.6	86.6			1
3.5	3	★	**MDM0350S04H03**	15.4	20.6	72.6	0.6	4.0	1
	5	★	**MDM0350S04H05**	27.4	32.6	86.6			1
3.6	3	★	**MDM0360S04H03**	17.8	23.2	72.7	0.7	4.0	1
	5	★	**MDM0360S04H05**	31.3	36.7	86.7			1
3.7	3	★	**MDM0370S04H03**	17.7	23.2	72.7	0.7	4.0	1
	5	★	**MDM0370S04H05**	31.2	36.7	86.7			1
3.8	3	★	**MDM0380S04H03**	17.5	23.2	72.7	0.7	4.0	1
	5	★	**MDM0380S04H05**	31.0	36.7	86.7			1
3.9	3	★	**MDM0390S04H03**	17.4	23.2	72.7	0.7	4.0	1
	5	★	**MDM0390S04H05**	30.9	36.7	86.7			1
4.0	3	★	**MDM0400S04H03**	17.2	23.2	72.7	0.7	4.0	1
	5	★	**MDM0400S04H05**	30.7	36.7	86.7			1
4.1	3	★	**MDM0410S05H03**	19.6	25.7	80.7	0.7	5.0	2
	5	★	**MDM0410S05H05**	34.6	40.7	98.7			2
4.2	3	★	**MDM0420S05H03**	19.5	25.8	80.8	0.8	5.0	2
	5	★	**MDM0420S05H05**	34.5	40.8	98.8			2
4.3	3	★	**MDM0430S05H03**	19.4	25.8	80.8	0.8	5.0	2
	5	★	**MDM0430S05H05**	34.4	40.8	98.8			2
4.4	3	★	**MDM0440S05H03**	19.2	25.8	80.8	0.8	5.0	2
	5	★	**MDM0440S05H05**	34.2	40.8	98.8			2
4.5	3	★	**MDM0450S05H03**	19.1	25.8	80.8	0.8	5.0	2
	5	★	**MDM0450S05H05**	34.1	40.8	98.8			2
4.6	3	★	**MDM0460S05H03**	21.4	28.3	80.8	0.8	5.0	2
	5	★	**MDM0460S05H05**	37.9	44.8	98.8			2
4.7	3	★	**MDM0470S05H03**	21.4	28.4	80.9	0.9	5.0	2
	5	★	**MDM0470S05H05**	37.9	44.9	98.9			2
4.8	3	★	**MDM0480S05H03**	21.2	28.4	80.9	0.9	5.0	2
	5	★	**MDM0480S05H05**	37.7	44.9	98.9			2
4.9	3	★	**MDM0490S05H03**	21.1	28.4	80.9	0.9	5.0	2
	5	★	**MDM0490S05H05**	37.6	44.9	98.9			2
5.0	3	★	**MDM0500S05H03**	20.9	28.4	80.9	0.9	5.0	2
	5	★	**MDM0500S05H05**	37.4	44.9	98.9			2
5.1	3	★	**MDM0510S06H03**	20.8	28.4	82.9	0.9	6.0	2
	5	★	**MDM0510S06H05**	37.3	44.9	100.9			2
5.2	3	★	**MDM0520S06H03**	20.6	28.4	82.9	0.9	6.0	2
	5	★	**MDM0520S06H05**	37.1	44.9	100.9			2
5.3	3	★	**MDM0530S06H03**	20.6	28.5	83.0	1.0	6.0	2
	5	★	**MDM0530S06H05**	37.1	45.0	101.0			2
5.4	3	★	**MDM0540S06H03**	20.4	28.5	83.0	1.0	6.0	2
	5	★	**MDM0540S06H05**	36.9	45.0	101.0			2
5.5	3	★	**MDM0550S06H03**	20.3	28.5	83.0	1.0	6.0	2
	5	★	**MDM0550S06H05**	36.8	45.0	101.0			2
5.6	3	★	**MDM0560S06H03**	22.6	31.0	83.0	1.0	6.0	2
	5	★	**MDM0560S06H05**	40.6	49.0	101.0			2

Grade: ACT70

Diameter ø5.7 to 8.3mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.7	3	★	**MDM0570S06H03**	22.5	31.0	83.0	1.0	6.0	2
	5	★	**MDM0570S06H05**	40.5	49.0	101.0			2
5.8	3	★	**MDM0580S06H03**	22.4	31.1	83.1	1.1	6.0	2
	5	★	**MDM0580S06H05**	40.4	49.1	101.1			2
5.9	3	★	**MDM0590S06H03**	22.3	31.1	83.1	1.1	6.0	2
	5	★	**MDM0590S06H05**	40.3	49.1	101.1			2
6.0	3	★	**MDM0600S06H03**	22.1	31.1	83.1	1.1	6.0	2
	5	★	**MDM0600S06H05**	40.1	49.1	101.1			2
6.1	3	★	**MDM0610S07H03**	24.5	33.6	89.1	1.1	7.0	2
	5	★	**MDM0610S07H05**	44.0	53.1	110.1			2
6.2	3	★	**MDM0620S07H03**	24.3	33.6	89.1	1.1	7.0	2
	5	★	**MDM0620S07H05**	43.8	53.1	110.1			2
6.3	3	★	**MDM0630S07H03**	24.2	33.6	89.1	1.1	7.0	2
	5	★	**MDM0630S07H05**	43.7	53.1	110.1			2
6.4	3	★	**MDM0640S07H03**	24.1	33.7	89.2	1.2	7.0	2
	5	★	**MDM0640S07H05**	43.6	53.2	110.2			2
6.5	3	★	**MDM0650S07H03**	24.0	33.7	89.2	1.2	7.0	2
	5	★	**MDM0650S07H05**	43.5	53.2	110.2			2
6.6	3	★	**MDM0660S07H03**	26.3	36.2	89.2	1.2	7.0	2
	5	★	**MDM0660S07H05**	47.3	57.2	110.2			2
6.7	3	★	**MDM0670S07H03**	26.2	36.2	89.2	1.2	7.0	2
	5	★	**MDM0670S07H05**	47.2	57.2	110.2			2
6.8	3	★	**MDM0680S07H03**	26.0	36.2	89.2	1.2	7.0	2
	5	★	**MDM0680S07H05**	47.0	57.2	110.2			2
6.9	3	★	**MDM0690S07H03**	26.0	36.3	89.3	1.3	7.0	2
	5	★	**MDM0690S07H05**	47.0	57.3	110.3			2
7.0	3	★	**MDM0700S07H03**	25.8	36.3	89.3	1.3	7.0	2
	5	★	**MDM0700S07H05**	46.8	57.3	110.3			2
7.1	3	★	**MDM0710S08H03**	28.2	38.8	95.3	1.3	8.0	2
	5	★	**MDM0710S08H05**	50.7	61.3	119.3			2
7.2	3	★	**MDM0720S08H03**	28.0	38.8	95.3	1.3	8.0	2
	5	★	**MDM0720S08H05**	50.5	61.3	119.3			2
7.3	3	★	**MDM0730S08H03**	27.9	38.8	95.3	1.3	8.0	2
	5	★	**MDM0730S08H05**	50.4	61.3	119.3			2
7.4	3	★	**MDM0740S08H03**	27.7	38.8	95.3	1.3	8.0	2
	5	★	**MDM0740S08H05**	50.2	61.3	119.3			2
7.5	3	★	**MDM0750S08H03**	27.7	38.9	95.4	1.4	8.0	2
	5	★	**MDM0750S08H05**	50.2	61.4	119.4			2
7.6	3	★	**MDM0760S08H03**	30.0	41.4	95.4	1.4	8.0	2
	5	★	**MDM0760S08H05**	54.0	65.4	119.4			2
7.7	3	★	**MDM0770S08H03**	29.9	41.4	95.4	1.4	8.0	2
	5	★	**MDM0770S08H05**	53.9	65.4	119.4			2
7.8	3	★	**MDM0780S08H03**	29.7	41.4	95.4	1.4	8.0	2
	5	★	**MDM0780S08H05**	53.7	65.4	119.4			2
7.9	3	★	**MDM0790S08H03**	29.6	41.4	95.4	1.4	8.0	2
	5	★	**MDM0790S08H05**	53.6	65.4	119.4			2
8.0	3	★	**MDM0800S08H03**	29.5	41.5	95.5	1.5	8.0	2
	5	★	**MDM0800S08H05**	53.5	65.5	119.5			2
8.1	3	★	**MDM0810S09H03**	31.9	44.0	101.5	1.5	9.0	2
	5	★	**MDM0810S09H05**	57.4	69.5	128.5			2
8.2	3	★	**MDM0820S09H03**	31.7	44.0	101.5	1.5	9.0	2
	5	★	**MDM0820S09H05**	57.2	69.5	128.5			2
8.3	3	★	**MDM0830S09H03**	31.6	44.0	101.5	1.5	9.0	2
	5	★	**MDM0830S09H05**	57.1	69.5	128.5			2

Grade: ACT70

★: Worldwide Warehouse Item

Fig. 1 (diameter under ø4.1)

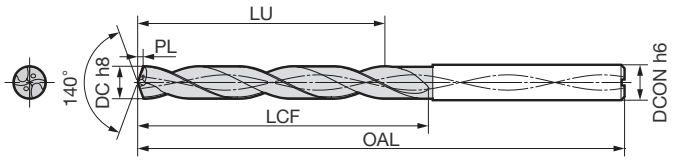
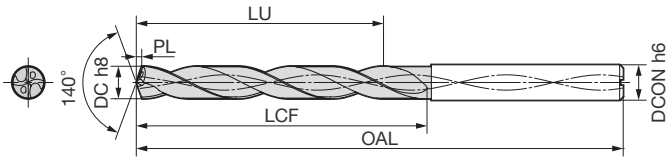


Fig. 2 (diameter ø4.1 or larger)



Diameter ø8.4 to 11.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.4	3	★	MDM0840S09H03	31.4	44.0	101.5	1.5	9.0	2
	5	★	MDM0840S09H05	56.9	69.5	128.5			2
8.5	3	★	MDM0850S09H03	31.3	44.0	101.5	1.5	9.0	2
	5	★	MDM0850S09H05	56.8	69.5	128.5			2
8.6	3	★	MDM0860S09H03	33.7	46.6	101.6	1.6	9.0	2
	5	★	MDM0860S09H05	60.7	73.6	128.6			2
8.7	3	★	MDM0870S09H03	33.6	46.6	101.6	1.6	9.0	2
	5	★	MDM0870S09H05	60.6	73.6	128.6			2
8.8	3	★	MDM0880S09H03	33.4	46.6	101.6	1.6	9.0	2
	5	★	MDM0880S09H05	60.4	73.6	128.6			2
8.9	3	★	MDM0890S09H03	33.3	46.6	101.6	1.6	9.0	2
	5	★	MDM0890S09H05	60.3	73.6	128.6			2
9.0	3	★	MDM0900S09H03	33.1	46.6	101.6	1.6	9.0	2
	5	★	MDM0900S09H05	60.1	73.6	128.6			2
9.1	3	★	MDM0910S10H03	35.6	49.2	107.7	1.7	10.0	2
	5	★	MDM0910S10H05	64.1	77.7	137.7			2
9.2	3	★	MDM0920S10H03	35.4	49.2	107.7	1.7	10.0	2
	5	★	MDM0920S10H05	63.9	77.7	137.7			2
9.3	3	★	MDM0930S10H03	35.3	49.2	107.7	1.7	10.0	2
	5	★	MDM0930S10H05	63.8	77.7	137.7			2
9.4	3	★	MDM0940S10H03	35.1	49.2	107.7	1.7	10.0	2
	5	★	MDM0940S10H05	63.6	77.7	137.7			2
9.5	3	★	MDM0950S10H03	35.0	49.2	107.7	1.7	10.0	2
	5	★	MDM0950S10H05	63.5	77.7	137.7			2
9.6	3	★	MDM0960S10H03	37.3	51.7	107.7	1.7	10.0	2
	5	★	MDM0960S10H05	67.3	81.7	137.7			2
9.7	3	★	MDM0970S10H03	37.3	51.8	107.8	1.8	10.0	2
	5	★	MDM0970S10H05	67.3	81.8	137.8			2
9.8	3	★	MDM0980S10H03	37.1	51.8	107.8	1.8	10.0	2
	5	★	MDM0980S10H05	67.1	81.8	137.8			2
9.9	3	★	MDM0990S10H03	37.0	51.8	107.8	1.8	10.0	2
	5	★	MDM0990S10H05	67.0	81.8	137.8			2
10.0	3	★	MDM1000S10H03	36.8	51.8	107.8	1.8	10.0	2
	5	★	MDM1000S10H05	66.8	81.8	137.8			2
10.1	3	★	MDM1010S11H03	39.2	54.3	117.8	1.8	11.0	2
	5	★	MDM1010S11H05	70.7	85.8	150.8			2
10.2	3	★	MDM1020S11H03	39.1	54.4	117.9	1.9	11.0	2
	5	★	MDM1020S11H05	70.6	85.9	150.9			2
10.3	3	★	MDM1030S11H03	39.0	54.4	117.9	1.9	11.0	2
	5	★	MDM1030S11H05	70.5	85.9	150.9			2
10.4	3	★	MDM1040S11H03	38.8	54.4	117.9	1.9	11.0	2
	5	★	MDM1040S11H05	70.3	85.9	150.9			2
10.5	3	★	MDM1050S11H03	38.7	54.4	117.9	1.9	11.0	2
	5	★	MDM1050S11H05	70.2	85.9	150.9			2
10.6	3	★	MDM1060S11H03	41.0	56.9	117.9	1.9	11.0	2
	5	★	MDM1060S11H05	74.0	89.9	150.9			2
10.7	3	★	MDM1070S11H03	40.9	56.9	117.9	1.9	11.0	2
	5	★	MDM1070S11H05	73.9	89.9	150.9			2
10.8	3	★	MDM1080S11H03	40.8	57.0	118.0	2.0	11.0	2
	5	★	MDM1080S11H05	73.8	90.0	151.0			2
10.9	3	★	MDM1090S11H03	40.7	57.0	118.0	2.0	11.0	2
	5	★	MDM1090S11H05	73.7	90.0	151.0			2
11.0	3	★	MDM1100S11H03	40.5	57.0	118.0	2.0	11.0	2
	5	★	MDM1100S11H05	73.5	90.0	151.0			2

Grade: ACT70

Diameter ø11.1 to 13.7mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
11.1	3	★	MDM1110S12H03	42.9	59.5	124.0	2.0	12.0	2
	5	★	MDM1110S12H05	77.4	94.0	160.0			2
11.2	3	★	MDM1120S12H03	42.7	59.5	124.0	2.0	12.0	2
	5	★	MDM1120S12H05	77.2	94.0	160.0			2
11.3	3	★	MDM1130S12H03	42.7	59.6	124.1	2.1	12.0	2
	5	★	MDM1130S12H05	77.2	94.1	160.1			2
11.4	3	★	MDM1140S12H03	42.5	59.6	124.1	2.1	12.0	2
	5	★	MDM1140S12H05	77.0	94.1	160.1			2
11.5	3	★	MDM1150S12H03	42.4	59.6	124.1	2.1	12.0	2
	5	★	MDM1150S12H05	76.9	94.1	160.1			2
11.6	3	★	MDM1160S12H03	44.7	62.1	124.1	2.1	12.0	2
	5	★	MDM1160S12H05	80.7	98.1	160.1			2
11.7	3	★	MDM1170S12H03	44.6	62.1	124.1	2.1	12.0	2
	5	★	MDM1170S12H05	80.6	98.1	160.1			2
11.8	3	★	MDM1180S12H03	44.4	62.1	124.1	2.1	12.0	2
	5	★	MDM1180S12H05	80.4	98.1	160.1			2
11.9	3	★	MDM1190S12H03	44.4	62.2	124.2	2.2	12.0	2
	5	★	MDM1190S12H05	80.4	98.2	160.2			2
12.0	3	★	MDM1200S12H03	44.2	62.2	124.2	2.2	12.0	2
	5	★	MDM1200S12H05	57.2	75.2	160.2			2
12.1	3	★	MDM1210S13H03	46.6	64.7	130.2	2.2	13.0	2
	5	★	MDM1210S13H05	84.1	102.2	169.2			2
12.2	3	★	MDM1220S13H03	46.4	64.7	130.2	2.2	13.0	2
	5	★	MDM1220S13H05	83.9	102.2	169.2			2
12.3	3	★	MDM1230S13H03	46.3	64.7	130.2	2.2	13.0	2
	5	★	MDM1230S13H05	83.8	102.2	169.2			2
12.4	3	★	MDM1240S13H03	46.2	64.8	130.3	2.3	13.0	2
	5	★	MDM1240S13H05	83.7	102.3	169.3			2
12.5	3	★	MDM1250S13H03	46.1	64.8	130.3	2.3	13.0	2
	5	★	MDM1250S13H05	83.6	102.3	169.3			2
12.6	3	★	MDM1260S13H03	48.4	67.3	130.3	2.3	13.0	2
	5	★	MDM1260S13H05	87.4	106.3	169.3			2
12.7	3	★	MDM1270S13H03	48.3	67.3	130.3	2.3	13.0	2
	5	★	MDM1270S13H05	87.3	106.3	169.3			2
12.8	3	★	MDM1280S13H03	48.1	67.3	130.3	2.3	13.0	2
	5	★	MDM1280S13H05	87.1	106.3	169.3			2
12.9	3	★	MDM1290S13H03	48.0	67.3	130.3	2.3	13.0	2
	5	★	MDM1290S13H05	87.0	106.3	169.3			2
13.0	3	★	MDM1300S13H03	47.9	67.4	130.4	2.4	13.0	2
	5	★	MDM1300S13H05	86.9	106.4	169.4			2
13.1	3	★	MDM1310S14H03	50.3	69.9	136.4	2.4	14.0	2
	5	★	MDM1310S14H05	90.8	110.4	178.4			2
13.2	3	★	MDM1320S14H03	50.1	69.9	136.4	2.4	14.0	2
	5	★	MDM1320S14H05	90.6	110.4	178.4			2
13.3	3	★	MDM1330S14H03	50.0	69.9	136.4	2.4	14.0	2
	5	★	MDM1330S14H05	90.5	110.4	178.4			2
13.4	3	★	MDM1340S14H03	49.8	69.9	136.4	2.4	14.0	2
	5	★	MDM1340S14H05	90.3	110.4	178.4			2
13.5	3	★	MDM1350S14H03	49.8	70.0	136.5	2.5	14.0	2
	5	★	MDM1350S14H05	90.3	110.5	178.5			2
13.6	3	★	MDM1360S14H03	52.1	72.5	136.5	2.5	14.0	2
	5	★	MDM1360S14H05	94.1	114.5	178.5			2
13.7	3	★	MDM1370S14H03	52.0	72.5	136.5	2.5	14.0	2
	5	★	MDM1370S14H05	94.0	114.5	178.5			2

Grade: ACT70

NX Coat 3D 5D

*Refer to N74 for the tolerance of h6 and h8

Fig. 1 (diameter under ø4.1)

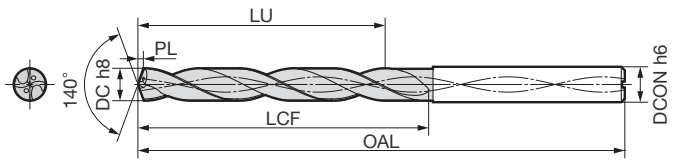
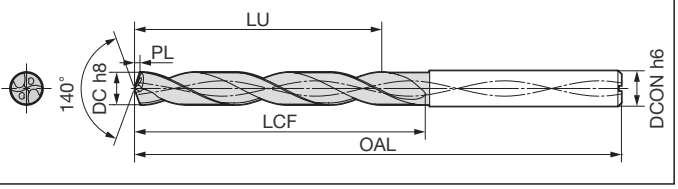


Fig. 2 (diameter ø4.1 or larger)



Diameter ø13.8 to 16.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
13.8	3	★	MDM1380S14H03	51.8	72.5	136.5	2.5	14.0	2
	5	★	MDM1380S14H05	93.8	114.5	178.5			2
13.9	3	★	MDM1390S14H03	51.7	72.5	136.5	2.5	14.0	2
	5	★	MDM1390S14H05	93.7	114.5	178.5			2
14.0	3	★	MDM1400S14H03	51.5	72.5	136.5	2.5	14.0	2
	5	★	MDM1400S14H05	93.5	114.5	178.5			2
14.1	3	★	MDM1410S15H03	54.0	75.1	142.6	2.6	15.0	2
	5	★	MDM1410S15H05	97.5	118.6	187.6			2
14.2	3	★	MDM1420S15H03	53.8	75.1	142.6	2.6	15.0	2
	5	★	MDM1420S15H05	97.3	118.6	187.6			2
14.3	3	★	MDM1430S15H03	53.7	75.1	142.6	2.6	15.0	2
	5	★	MDM1430S15H05	97.2	118.6	187.6			2
14.4	3	★	MDM1440S15H03	53.5	75.1	142.6	2.6	15.0	2
	5	★	MDM1440S15H05	97.0	118.6	187.6			2
14.5	3	★	MDM1450S15H03	53.4	75.1	142.6	2.6	15.0	2
	5	★	MDM1450S15H05	96.9	118.6	187.6			2
14.6	3	★	MDM1460S15H03	55.8	77.7	142.7	2.7	15.0	2
	5	★	MDM1460S15H05	100.8	122.7	187.7			2
14.7	3	★	MDM1470S15H03	55.7	77.7	142.7	2.7	15.0	2
	5	★	MDM1470S15H05	100.7	122.7	187.7			2
14.8	3	★	MDM1480S15H03	55.5	77.7	142.7	2.7	15.0	2
	5	★	MDM1480S15H05	100.5	122.7	187.7			2
14.9	3	★	MDM1490S15H03	55.4	77.7	142.7	2.7	15.0	2
	5	★	MDM1490S15H05	100.4	122.7	187.7			2
15.0	3	★	MDM1500S15H03	55.2	77.7	142.7	2.7	15.0	2
	5	★	MDM1500S15H05	100.2	122.7	187.7			2
15.1	3	★	MDM1510S16H03	57.6	80.2	148.7	2.7	16.0	2
	5	★	MDM1510S16H05	104.1	126.7	196.7			2
15.2	3	★	MDM1520S16H03	57.5	80.3	148.8	2.8	16.0	2
	5	★	MDM1520S16H05	104.0	126.8	196.8			2
15.3	3	★	MDM1530S16H03	57.4	80.3	148.8	2.8	16.0	2
	5	★	MDM1530S16H05	103.9	126.8	196.8			2
15.4	3	★	MDM1540S16H03	57.2	80.3	148.8	2.8	16.0	2
	5	★	MDM1540S16H05	103.7	126.8	196.8			2
15.5	3	★	MDM1550S16H03	57.1	80.3	148.8	2.8	16.0	2
	5	★	MDM1550S16H05	103.6	126.8	196.8			2
15.6	3	★	MDM1560S16H03	59.4	82.8	148.8	2.8	16.0	2
	5	★	MDM1560S16H05	107.4	130.8	196.8			2
15.7	3	★	MDM1570S16H03	59.4	82.9	148.9	2.9	16.0	2
	5	★	MDM1570S16H05	107.4	130.9	196.9			2
15.8	3	★	MDM1580S16H03	59.2	82.9	148.9	2.9	16.0	2
	5	★	MDM1580S16H05	107.2	130.9	196.9			2
15.9	3	★	MDM1590S16H03	59.1	82.9	148.9	2.9	16.0	2
	5	★	MDM1590S16H05	107.1	130.9	196.9			2
16.0	3	★	MDM1600S16H03	58.9	82.9	148.9	2.9	16.0	2
	5	★	MDM1600S16H05	106.9	130.9	196.9			2

Grade: ACT70

Metals Symbols Chart

Work Material	Hardness	US Standards ANSI	Japanese Industrial Standards JIS	International Standard ISO 15510	European Standards EN
Ferritic/ Martensitic Stainless Steel	≤ 200HB	405	SUS405	X6CrAl13	1.4002
		410	SUS410	X12Cr13	1.4006
		–	SUS410S	X6Cr13	1.4000
		430	SUS430	X6Cr17	1.4016
		434	SUS434	X6CrMo17-1	1.4113
	> 200HB	420	SUS420J1	X20Cr13	1.4021
		420	SUS420J2	X30Cr13	1.4028
		431	SUS431	X17CrNi16-2	1.4057
Austenitic Stainless Steel	≤ 200HB	304	SUS304	X5CrNi18-10	1.4301
		305	SUS305	X6CrNi18-12	1.4303
		303	SUS303	X10CrNiS18-9	1.4305
		304L	SUS304L	X2CrNi18-9	1.4307
		316	SUS316	X5CrNiMo17-12-2	1.4401
		316L	SUS316L	X2CrNiMo17-12-2	1.4404
		317L	SUS317L	X2CrNiMo19-14-4	1.4438
		321	SUS321	X6CrNiTi18-10	1.4541
		347	SUS347	X6CrNiNb18-10	1.4550
		–	SUS316Ti	X6CrNiMoTi17-12-2	1.4571
		309S	SUS309S	X6CrNi23-13	1.4950
		310S	SUS310S	X6CrNi25-20	1.4951
	> 200HB	304N	SUS304N1	X5CrNiN19-9	1.4315
		301	SUS301	X5CrNi17-7	1.4319
		–	SUS301L	X2CrNiN18-7	1.4318
Stainless steel with deposition hardened structure	≤ 340HB	17-4PH (S17400)	SUS630	X5CrNiCuNb16-4	1.4542
		15-5PH (S15500)	–	–	–
		17-7PH (S17700)	SUS631	X7CrNiAl17-7	1.4568
Duplex stainless steel	≤ 310HB	329	SUS329J1	X6CrNiMo26-4-2	–
		–	SUS329J3L	X2CrNiMoN22-5-3	1.4462
		–	SUS329J4L	X2CrNiMoN25-7-3	–

Recommended Cutting Conditions

1. The recommended cutting conditions below are for cases where an internal supply of a water soluble coolant is used.
2. If using non-water soluble coolant, reduce the cutting speed by 20-30% and ensure that sufficient coolant is supplied.
3. When mounting the drill in the collet, make sure that runout around the cutting edge is no greater than 0.02mm.
4. Make sure the flute does not enter the collet.
5. If the part entering the workpiece is abnormally shaped (tilted, interrupted etc.), reduce the feed rate to about half when inserting the drill in the workpiece.
   *If stable machining is still not possible, pre-machining of the flat surface with the MDF Flat MultiDrill is recommended.
6. When performing intermittent through drilling, reduce the feed rate to about half the feed rate used prior to this process.

Dia. DC (mm)	Material	Ferritic/Martensitic Stainless Steel		Austenitic Stainless Steel		Precipitation Hardening Stainless Steel (17-4 PH & 15-5 PH)	Duplex Stainless Steel (244, 2304, & 2507)	Titanium Alloy (y-TiAl, & Ti-6Al-4V)	Ni-Based Heat-resisiting Alloy (Inconel 718)
		≤ 200HB	> 200HB	≤ 200HB	> 200HB	<340 HB	<310 HB	260 to 340 HB	38 to 45 HRc
ø3	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0023 - .0035 - .0047	.0023 - .0035 - .0047	.0023 - .0035 - .0047	.0023 - .0035 - .0047	.0023 - .0035 - .0047	.0023 - .0035 - .0047	.0023 - .0035 - .0047	.002 - .0025 - .0031
ø4	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0031 - .0048 - .0066	.0031 - .0048 - .0066	.0031 - .0048 - .0066	.0031 - .0048 - .0066	.0031 - .0048 - .0066	.0031 - .0048 - .0066	.0031 - .0048 - .0066	.0023 - .0031 - .004
ø5	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0031 - .0054 - .0078	.0031 - .0054 - .0078	.0031 - .0054 - .0078	.0031 - .0054 - .0078	.0031 - .0054 - .0078	.0031 - .0054 - .0078	.0031 - .0054 - .0078	.0027 - .0037 - .0047
ø6	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0039 - .0058 - .0078	.0039 - .0058 - .0078	.0039 - .0058 - .0078	.0039 - .0058 - .0078	.0039 - .0058 - .0078	.0039 - .0058 - .0078	.0039 - .0058 - .0078	.0031 - .0045 - .0059
ø7	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0047 - .0068 - .009	.0047 - .0068 - .009	.0047 - .0068 - .009	.0047 - .0068 - .009	.0047 - .0068 - .009	.0047 - .0068 - .009	.0047 - .0068 - .009	.0031 - .0045 - .0059
ø8	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0047 - .0072 - .0098	.0047 - .0072 - .0098	.0047 - .0072 - .0098	.0047 - .0072 - .0098	.0047 - .0072 - .0098	.0047 - .0072 - .0098	.0047 - .0072 - .0098	.0039 - .0054- .007
ø9	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0066 - .0082 - .0098	.0066 - .0082 - .0098	.0066 - .0082 - .0098	.0066 - .0082 - .0098	.0066 - .0082 - .0098	.0066 - .0082 - .0098	.0066 - .0082 - .0098	.0047 - .0058 - .007
ø10	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.007 - .009 - .011	.007 - .009 - .011	.007 - .009 - .011	.007 - .009 - .011	.007 - .009 - .011	.007 - .009 - .011	.007 - .009 - .011	.0047 - .0062 - .0078
ø11	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0059 - .0068 - .0078
ø12	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0059 - .0068 - .0078
ø13	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0059 - .0068 - .0078
ø14	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0059 - .0068 - .0078
ø15	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0059 - .0068 - .0078
ø16	SFM	200 - 265 - 330	130 - 198 - 265	200 - 265 - 330	130 - 198 - 265	130 - 165 - 200	130 - 165 - 200	100 - 135 - 170	30 - 65 - 100
	IPR	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0078 - .0098 - .0118	.0059 - .0068 - .0078

Work Material	Ferritic/Martensitic Stainless Steel				Austenitic Stainless Steel			
	≤ 200HB		> 200HB		≤ 200HB		> 200HB	
Cutting Speed	60 to 100m/min		40 to 80m/min		60 to 100m/min		40 to 80m/min	
Dia. DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø3	8,500	0.06 to 0.12	6,400	0.06 to 0.12	8,500	0.06 to 0.12	6,400	0.06 to 0.12
ø4	6,400	0.08 to 0.17	4,800	0.08 to 0.17	6,400	0.08 to 0.17	4,800	0.08 to 0.17
ø5	5,100	0.08 to 0.20	3,900	0.08 to 0.20	5,100	0.08 to 0.20	3,900	0.08 to 0.20
ø6	4,300	0.10 to 0.20	3,200	0.10 to 0.20	4,300	0.10 to 0.20	3,200	0.10 to 0.20
ø7	3,700	0.12 to 0.23	2,800	0.12 to 0.23	3,700	0.12 to 0.23	2,800	0.12 to 0.23
ø8	3,200	0.15 to 0.25	2,400	0.15 to 0.25	3,200	0.15 to 0.25	2,400	0.15 to 0.25
ø9	2,900	0.17 to 0.25	2,200	0.17 to 0.25	2,900	0.17 to 0.25	2,200	0.17 to 0.25
ø10	2,600	0.18 to 0.28	2,000	0.18 to 0.28	2,600	0.18 to 0.28	2,000	0.18 to 0.28
ø11	2,400	0.20 to 0.30	1,800	0.20 to 0.30	2,400	0.20 to 0.30	1,800	0.20 to 0.30
ø12	2,200	0.20 to 0.30	1,600	0.20 to 0.30	2,200	0.20 to 0.30	1,600	0.20 to 0.30
ø13	2,000	0.20 to 0.30	1,500	0.20 to 0.30	2,000	0.20 to 0.30	1,500	0.20 to 0.30
ø14	1,900	0.20 to 0.30	1,400	0.20 to 0.30	1,900	0.20 to 0.30	1,400	0.20 to 0.30
ø15	1,700	0.20 to 0.30	1,300	0.20 to 0.30	1,700	0.20 to 0.30	1,300	0.20 to 0.30
ø16	1,600	0.20 to 0.30	1,200	0.20 to 0.30	1,600	0.20 to 0.30	1,200	0.20 to 0.30

Work Material	Stainless steel with deposition hardened structure ≤ 340HB		Duplex stainless steel ≤ 310HB		Titanium Alloy 260HB to 340HB		Ni-based Heat-resistant Alloy (Inconel 718) 38 to 45HRC	
Cutting Speed	40 to 60m/min		40 to 60m/min		30 to 50m/min		10 to 30m/min	
Dia. DC (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)	Spindle Speed (min^{-1})	Feed Rate (mm/rev)
ø3	5,300	0.06 to 0.12	5,300	0.06 to 0.12	4,200	0.06 to 0.12	2,100	0.05 to 0.08
ø4	4,000	0.08 to 0.17	4,000	0.08 to 0.17	3,200	0.08 to 0.17	1,600	0.06 to 0.10
ø5	3,200	0.08 to 0.20	3,200	0.08 to 0.20	2,500	0.08 to 0.20	1,300	0.07 to 0.12
ø6	2,700	0.10 to 0.20	2,700	0.10 to 0.20	2,100	0.10 to 0.20	1,000	0.08 to 0.15
ø7	2,300	0.12 to 0.23	2,300	0.12 to 0.23	1,800	0.12 to 0.23	900	0.08 to 0.15
ø8	2,000	0.15 to 0.25	2,000	0.15 to 0.25	1,600	0.15 to 0.25	800	0.10 to 0.18
ø9	1,800	0.17 to 0.25	1,800	0.17 to 0.25	1,400	0.17 to 0.25	700	0.12 to 0.18
ø10	1,600	0.18 to 0.28	1,600	0.18 to 0.28	1,300	0.18 to 0.28	600	0.12 to 0.18
ø11	1,400	0.20 to 0.30	1,400	0.20 to 0.30	1,200	0.20 to 0.30	600	0.15 to 0.20
ø12	1,300	0.20 to 0.30	1,300	0.20 to 0.30	1,100	0.20 to 0.30	500	0.15 to 0.20
ø13	1,200	0.20 to 0.30	1,200	0.20 to 0.30	1,000	0.20 to 0.30	500	0.15 to 0.20
ø14	1,100	0.20 to 0.30	1,100	0.20 to 0.30	900	0.20 to 0.30	450	0.15 to 0.20
ø15	1,050	0.20 to 0.30	1,050	0.20 to 0.30	850	0.20 to 0.30	400	0.15 to 0.20
ø16	1,000	0.20 to 0.30	1,000	0.20 to 0.30	800	0.20 to 0.30	400	0.15 to 0.20



■ General Features

The flat multidrill MDF type is a solid carbide drill that can be used for various applications, including high-efficiency spot facing and drilling in inclined and curved surfaces.

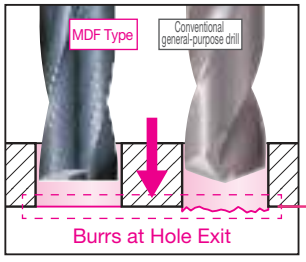


■ Features and Applications

- Suited to various types of drilling thanks to a point angle of 180°
  Can be used for high-efficiency spot facing, drilling in non-horizontal surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.
- Improves machining stability
  Achieves high rigidity by employing RS THINNING, which ensures thick web at the bottom.
- Excellent chip evacuation
  Achieves excellent chip evacuation thanks to the wide chip pocket and high-quality rake face shape.
- Excellent cutting edge strength
  Achieves excellent cutting edge strength through optimized cutting edge design.
- Long types available
  Overhang lengths up to L/D=10 can now be handled.
- Types with oil hole available
  Coolant can now be supplied internally. This enables deeper drilling.

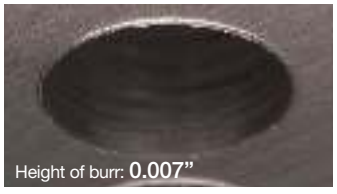


■ Reduction of Burrs at Hole Exit



Part Material: Alloy Steel
Tool: MDF 0500S2D (ø5.0mm 2D)
Cutting Conditions: V_c=213 SFM, f=0.0047", H=0.393", 150 holes, Wet
Machine: Vertical machining center (BT40)

Reduces exit burrs by **half** compared with general-purpose drills

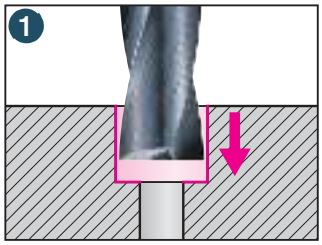


Flat MultiDrill MDF Type

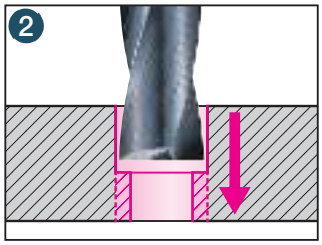


Conventional general-purpose drill

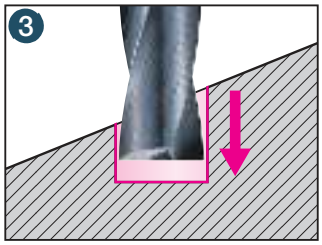
■ Machining Applications



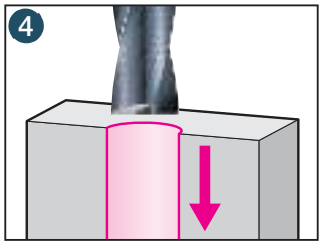
High-efficiency spot facing



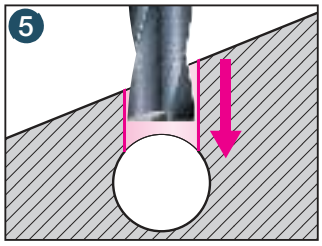
Hole expansion drilling



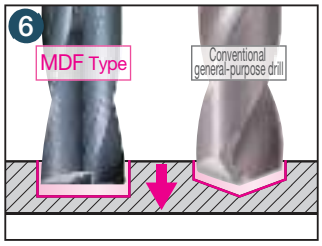
Drilling in non-horizontal surface (inclined surface, cylindrical surface, etc.)



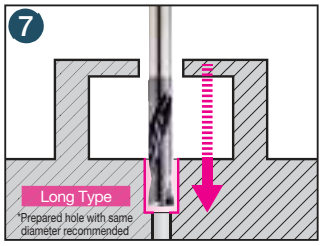
Interrupted drilling



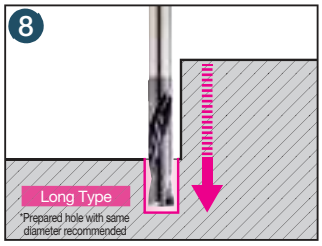
Cross drilling



Pre-tap hole drilling in thin sheets



Spot facing in deep positions



Avoids interference with work material

Long shanked type (L2D) for flat base drilling, hole expansion and burr control in long overhang conditions.

- For drilling with long overhang and to avoid interference with the workpiece

*A prepared hole with the same diameter or centering hole with a larger diameter than the tool is needed for drilling with the long type.

DC < 6mm, stepped shank

DC ≥ 6mm, relief shank



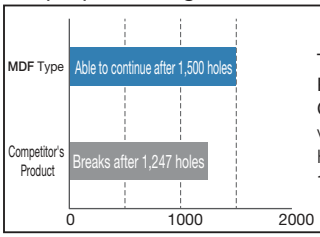
H Type with oil hole (3D/5D) for 2-5D deep hole applications

- Internal coolant supply enables deep flat hole drilling.

*A prepared hole with the same diameter or centering hole with a larger diameter than the tool is needed for drilling with an L/D=5 oil hole.

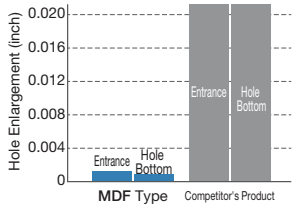


Deep Spot Facing



Tool: MDF 0600H5D
Part Material: Carbon Steel ø6mm
Cutting Conditions:
v_c=459 SFM, f=0.006 IPR
H = 1.181" (5D), Internal Coolant Supply
1.772" overhang, prepared hole depth 0.118" (ø6)

Long Overhang Spot Facing



Tool: MDF 0600H3D
Part Material: Carbon Steel
Cutting Conditions:
v_c=295 SFM, f=0.004 IPR
H = 0.709 (3D), Internal Coolant Supply
Overhang 1.378"

Drilling on slanted surfaces



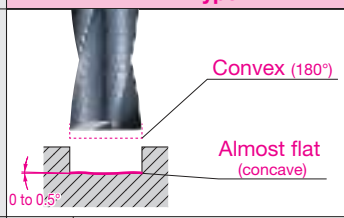
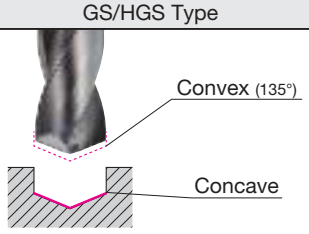
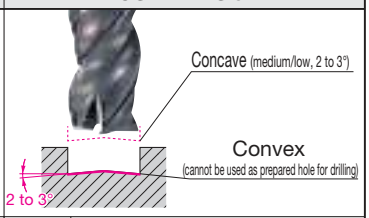
Tool: MDF 0500S2D
Part Material: Alloy Structural Steel
Cutting Conditions:
v_c=213 SFM, f=0.003 IPR
H = 0.393", External MQL

Prevents burrs and conical remnants on tool withdrawal



Tool: MDF 1000S2D
Part Material: Low Carbon Steel
Cutting Conditions:
v_c=246 SFM, f=0.0047 IPR
H = 0.197", External MQL

■ Distinguishing flat drills, general-purpose drills and endmills

Tool	Flat Drill MDF Type		General-Purpose Drill GS/HGS Type		Endmill for Spot Facing GSXMILL Slot	
Shape of hole base						
Drilling in flat surfaces	○	Approx. 1/2 the feed of a general-purpose drill	◎	Best	△	Only for low feed 1D or smaller ≤1/5 the feed of a general-purpose drill
Drilling non-flat surfaces	◎	Ideal (2D or smaller recommended)	×	Impossible	○	Only for low feed 1D or smaller ≤1/2 the feed of a flat drill
Traverse Cutting	×	Impossible	×	Impossible	◎	Best

■ Product Range

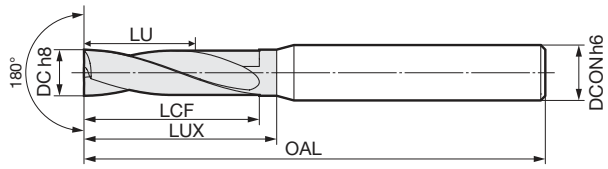
Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
External	MDF□□□□S2D	ø0.3 to 20.0	up to 2	188 items in stock
	MDF□□□□L2D	ø3.0 to 20.0	up to 2	115 items in stock
Internal	MDF□□□□H3D	ø3.0 to 16.0	up to 3	99 items in stock
	MDF□□□□H5D	ø3.0 to 16.0	up to 5	99 items in stock

MDF Type (External Coolant Supply)

PVD Coat | 2D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø0.3 to 5.2mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
0.3*		★	MDF0030S2D*	0.9	1.0	1.3			1
0.4*		★	MDF0040S2D*	1.2	1.4	1.8			1
0.5		★	MDF0050S2D	1.5	2.0	2.2			1
0.6	2	★	MDF0060S2D	1.8	2.4	2.6	40	3.0	1
0.7		★	MDF0070S2D	2.1	2.8	3.1			1
0.8		★	MDF0080S2D	2.4	3.2	3.5			1
0.9		★	MDF0090S2D	2.7	3.6	4.0			1
1.0		★	MDF0100S2D	3.0	4.0	4.4			1
1.1		★	MDF0110S2D	3.3	4.4	4.8			1
1.2		★	MDF0120S2D	3.6	4.8	5.3			1
1.3		★	MDF0130S2D	3.9	5.2	5.7			1
1.4	2	★	MDF0140S2D	4.2	5.6	6.2	45	3.0	1
1.5		★	MDF0150S2D	4.5	6.0	6.6			1
1.6		★	MDF0160S2D	4.8	6.4	7.0			1
1.7		★	MDF0170S2D	5.1	6.8	7.5			1
1.8		★	MDF0180S2D	5.4	7.2	7.9			1
1.9		★	MDF0190S2D	5.7	7.6	8.4			1
2.0		★	MDF0200S2D	6.0	8.0	8.8			1
2.1		★	MDF0210S2D	6.3	8.4	9.2			1
2.2		★	MDF0220S2D	6.6	8.8	9.7			1
2.3		★	MDF0230S2D	6.9	9.2	10.1			1
2.4		★	MDF0240S2D	7.2	9.6	10.6			1
2.5		★	MDF0250S2D	7.5	10.0	11.0		4.0	1
2.6		★	MDF0260S2D	7.8	10.4	11.4			1
2.7		★	MDF0270S2D	8.1	10.8	11.9			1
2.76		★	MDF0276S2D	6.9	11.0	12.0			1
2.78		★	MDF0278S2D	6.9	11.1	12.1			1
2.8		★	MDF0280S2D	8.4	11.2	12.3			1
2.9		★	MDF0290S2D	8.7	11.6	12.8			1
3.0	2	★	MDF0300S2D	9.0	12.0	13.2	50		1
3.1		★	MDF0310S2D	9.3	12.4	13.6			1
3.2		★	MDF0320S2D	9.6	12.8	14.1			1
3.3		★	MDF0330S2D	9.9	13.2	14.5		6.0	1
3.4		★	MDF0340S2D	10.2	13.6	15.0			1
3.5		★	MDF0350S2D	10.5	14.0	15.4			1
3.6		★	MDF0360S2D	10.8	14.4	15.8			1
3.66		★	MDF0366S2D	9.1	14.6	15.3		4.0	1
3.68		★	MDF0368S2D	9.2	14.7	15.4			1
3.7		★	MDF0370S2D	11.1	14.8	16.3			1
3.8		★	MDF0380S2D	11.4	15.2	16.7		6.0	1
3.9		★	MDF0390S2D	11.7	15.6	17.2			1
4.0		★	MDF0400S2D	12.0	16.0	17.6			1
4.1		★	MDF0410S2D	12.3	16.4	18.0			1
4.2		★	MDF0420S2D	12.6	16.8	18.5			1
4.3		★	MDF0430S2D	12.9	17.2	18.9			1
4.4		★	MDF0440S2D	13.2	17.6	19.4			1
4.5		★	MDF0450S2D	13.5	18.0	19.8			1
4.6		★	MDF0460S2D	13.8	18.4	20.2			1
4.62	2	★	MDF0462S2D	11.5	18.4	20.9	60	6.0	1
4.64		★	MDF0464S2D	11.6	18.5	21.0			1
4.7		★	MDF0470S2D	14.1	18.8	20.7			1
4.8		★	MDF0480S2D	14.4	19.2	21.1			1
4.9		★	MDF0490S2D	14.7	19.6	21.6			1
5.0		★	MDF0500S2D	15.0	20.0	22.0			1
5.1		★	MDF0510S2D	15.3	20.4	22.4			1
5.2		★	MDF0520S2D	15.6	20.8	22.9			1

*RS thinning is used for ø0.5mm and larger sizes.

Grade: ACF75

Diameter ø5.3 to 9.6mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
5.3		★	MDF0530S2D	15.9	21.2	23.3			1
5.4		★	MDF0540S2D	16.2	21.6	23.8			1
5.5		★	MDF0550S2D	16.5	22.0	24.2			1
5.52		★	MDF0552S2D	13.8	22.0	26.1			1
5.54	2	★	MDF0554S2D	13.8	22.1	26.2	60	6.0	1
5.6		★	MDF0560S2D	16.8	22.4	24.6			1
5.7		★	MDF0570S2D	17.1	22.8	25.1			1
5.8		★	MDF0580S2D	17.4	23.2	25.5			1
5.9		★	MDF0590S2D	17.7	23.6	26.0			1
6.0		★	MDF0600S2D	18.0	24.0	26.4			1
6.1		★	MDF0610S2D	18.3	24.4	26.8			1
6.2		★	MDF0620S2D	18.6	24.8	27.3			1
6.3		★	MDF0630S2D	18.9	25.2	27.7			1
6.4		★	MDF0640S2D	19.2	25.6	28.2			1
6.5		★	MDF0650S2D	19.5	26.0	28.6			1
6.6		★	MDF0660S2D	19.8	26.4	29.0			1
6.7		★	MDF0670S2D	20.1	26.8	29.5			1
6.8		★	MDF0680S2D	20.4	27.2	29.9			1
6.9		★	MDF0690S2D	20.7	27.6	30.4			1
7.0		★	MDF0700S2D	21.0	28.0	30.8			1
7.1		★	MDF0710S2D	21.3	28.4	31.2			1
7.2	2	★	MDF0720S2D	21.6	28.8	31.7	70	8.0	1
7.3		★	MDF0730S2D	21.9	29.2	32.1			1
7.36		★	MDF0736S2D	18.4	29.4	34.7			1
7.38		★	MDF0738S2D	18.4	29.5	34.8			1
7.4		★	MDF0740S2D	22.2	29.6	32.6			1
7.5		★	MDF0750S2D	22.5	30.0	33.0			1
7.52		★	MDF0752S2D	18.8	30.0	35.7			1
7.54		★	MDF0754S2D	18.8	30.1	35.8			1
7.6		★	MDF0760S2D	22.8	30.4	33.4			1
7.7		★	MDF0770S2D	23.1	30.8	33.9			1
7.8		★	MDF0780S2D	23.4	31.2	34.3			1
7.9		★	MDF0790S2D	23.7	31.6	34.8			1
8.0		★	MDF0800S2D	24.0	32.0	35.2			1
8.1		★	MDF0810S2D	24.3	32.4	35.6			1
8.2		★	MDF0820S2D	24.6	32.8	36.1			1
8.3		★	MDF0830S2D	24.9	33.2	36.5			1
8.4		★	MDF0840S2D	25.2	33.6	37.0			1
8.5		★	MDF0850S2D	25.5	34.0	37.4			1
8.6		★	MDF0860S2D	25.8	34.4	37.8			1
8.7		★	MDF0870S2D	26.1	34.8	38.3			1
8.8		★	MDF0880S2D	26.4	35.2	38.7			1
8.9		★	MDF0890S2D	26.7	35.6	39.2			1
9.0		★	MDF0900S2D	27.0	36.0	39.6			1
9.1	2	★	MDF0910S2D	27.3	36.4	40.0	80	10.0	1
9.2		★	MDF0920S2D	27.6	36.8	40.5			1
9.24		★	MDF0924S2D	23.1	36.9	43.6			1
9.26		★	MDF0926S2D	23.1	37.0	43.7			1
9.3		★	MDF0930S2D	27.9	37.2	40.9			1
9.36		★	MDF0936S2D	23.4	37.4	44.3			1
9.38		★	MDF0938S2D	23.4	37.5	44.4			1
9.4		★	MDF0940S2D	28.2	37.6	41.4			1
9.5		★	MDF0950S2D	28.5	38.0	41.8			1
9.52		★	MDF0952S2D	23.8	38.0	45.3			1
9.54		★	MDF0954S2D	23.8	38.1	45.4			1
9.6		★	MDF0960S2D	28.8	38.4	42.2			1

Grade: ACF75

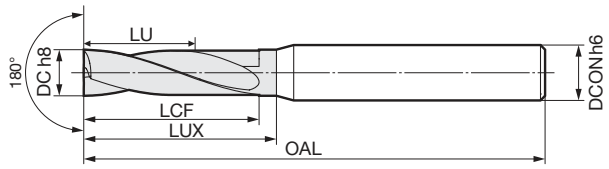
★: Worldwide Warehouse Item

MDF Type (External Coolant Supply)

PVD Coat | 2D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø9.7 to 13.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
9.7	2	★	MDF0970S2D	29.1	38.8	42.7	80	10.0	1
9.8		★	MDF0980S2D	29.4	39.2	43.1			1
9.9		★	MDF0990S2D	29.7	39.6	43.6			1
10.0		★	MDF1000S2D	30.0	40.0	44.0			1
10.1	2	★	MDF1010S2D	30.3	40.4	44.4	90	12.0	1
10.2		★	MDF1020S2D	30.6	40.8	44.9			1
10.3		★	MDF1030S2D	30.9	41.2	45.3			1
10.4		★	MDF1040S2D	31.2	41.6	45.8			1
10.5		★	MDF1050S2D	31.5	42.0	46.2			1
10.6		★	MDF1060S2D	31.8	42.4	46.6			1
10.7		★	MDF1070S2D	32.1	42.8	47.1			1
10.8		★	MDF1080S2D	32.4	43.2	47.5			1
10.9		★	MDF1090S2D	32.7	43.6	48.0			1
11.0		★	MDF1100S2D	33.0	44.0	48.4			1
11.1		★	MDF1110S2D	33.3	44.4	48.8			1
11.2		★	MDF1120S2D	33.6	44.8	49.3			1
11.22		★	MDF1122S2D	28.0	44.8	53.1			1
11.24		★	MDF1124S2D	28.1	44.9	53.2			1
11.3		★	MDF1130S2D	33.9	45.2	49.7			1
11.36		★	MDF1136S2D	28.4	45.4	53.9			1
11.38		★	MDF1138S2D	28.4	45.5	54.0			1
11.4		★	MDF1140S2D	34.2	45.6	50.2			1
11.5		★	MDF1150S2D	34.5	46.0	50.6			1
11.6		★	MDF1160S2D	34.8	46.4	51.0			1
11.7		★	MDF1170S2D	35.1	46.8	51.5			1
11.8		★	MDF1180S2D	35.4	47.2	51.9			1
11.9		★	MDF1190S2D	35.7	47.6	52.4			1
12.0		★	MDF1200S2D	36.0	48.0	52.8			1
12.1	2	★	MDF1210S2D	30.2	48.4	52.2	100	14.0	1
12.2		★	MDF1220S2D	30.5	48.8	52.7			1
12.3		★	MDF1230S2D	30.7	49.2	53.1			1
12.4		★	MDF1240S2D	31.0	49.6	53.5			1
12.5		★	MDF1250S2D	31.5	50.0	54.0			1
12.6		★	MDF1260S2D	31.5	50.4	55.0			1
12.7		★	MDF1270S2D	31.7	50.8	55.4			1
12.8		★	MDF1280S2D	32.0	51.2	55.9			1
12.9		★	MDF1290S2D	32.2	51.6	56.3			1
13.0		★	MDF1300S2D	39.0	52.0	56.8			1

Grade: ACF75

Diameter ø13.10 to 20.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
13.1	2	★	MDF1310S2D	32.7	52.4	57.8	110	14.0	1
13.2		★	MDF1320S2D	33.0	52.8	58.2			1
13.3		★	MDF1330S2D	33.2	53.2	58.7			1
13.4		★	MDF1340S2D	33.5	53.6	59.1			1
13.5		★	MDF1350S2D	40.5	54.0	59.6			1
13.6		★	MDF1360S2D	34.0	54.4	60.6			1
13.7		★	MDF1370S2D	34.2	54.8	61.0			1
13.8		★	MDF1380S2D	34.5	55.2	61.5			1
13.9		★	MDF1390S2D	34.7	55.6	61.9			1
14.0		★	MDF1400S2D	42.0	56.0	62.4			1
14.1		★	MDF1410S2D	35.2	56.4	63.4		16.0	1
14.2		★	MDF1420S2D	35.5	56.8	63.8			1
14.3		★	MDF1430S2D	35.7	57.2	64.3			1
14.4		★	MDF1440S2D	36.0	57.6	64.7			1
14.5		★	MDF1450S2D	43.5	58.0	65.2			1
14.6		★	MDF1460S2D	36.5	58.4	66.1			1
14.7		★	MDF1470S2D	36.7	58.8	66.6			1
14.8		★	MDF1480S2D	37.0	59.2	67.0			1
14.9		★	MDF1490S2D	37.2	59.6	67.5			1
15.0		★	MDF1500S2D	45.0	60.0	68.0			1
15.1	2	★	MDF1510S2D	37.7	60.4	68.9	115	16.0	1
15.2		★	MDF1520S2D	38.0	60.8	69.4			1
15.3		★	MDF1530S2D	38.2	61.2	69.8			1
15.4		★	MDF1540S2D	38.5	61.6	70.3			1
15.5		★	MDF1550S2D	46.5	62.0	70.8			1
15.6		★	MDF1560S2D	39.0	62.4	71.7			1
15.7		★	MDF1570S2D	39.2	62.8	72.2			1
15.8		★	MDF1580S2D	39.5	63.2	72.6			1
15.9		★	MDF1590S2D	39.7	63.6	73.1			1
16.0		★	MDF1600S2D	48.0	64.0	73.6			1
16.5	2	★	MDF1650S2D	49.5	66.0	72.4	125	18.0	1
17.0		★	MDF1700S2D	51.0	68.0	75.2			1
17.5	2	★	MDF1750S2D	52.5	70.0	78.0	130	18.0	1
18.0		★	MDF1800S2D	54.0	72.0	80.8			1
18.5	2	★	MDF1850S2D	55.5	74.0	83.6	140	20.0	1
19.0		★	MDF1900S2D	57.0	76.0	86.4			1
19.5		★	MDF1950S2D	58.5	78.0	89.2			1
20.0		★	MDF2000S2D	60.0	80.0	92.0			1

Grade: ACF75

★: Worldwide Warehouse Item

Recommended Cutting Conditions

1. The recommended hole depth is 2 x DC. The depth is measured from the highest point of the hole when drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling in flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30° or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø0.5	v_c	30 - **40** - 50	30 - **35** - 40	15 - **20** - 25	15 - **20** - 25	30 - **40** - 50	20 - **30** - 40	60 - **80** - 100
	f	0.004 - **0.005** - 0.006	0.004 - **0.005** - 0.006	0.001 - **0.002** - 0.003	0.003 - **0.004** - 0.005	0.004 - **0.005** - 0.006	0.001 - **0.003** - 0.005	0.003 - **0.005** - 0.007
ø1.0	v_c	45 - **55** - 65	35 - **45** - 55	20 - **30** - 40	20 - **25** - 30	45 - **55** - 65	30 - **40** - 50	80 - **100** - 120
	f	0.01 - **0.03** - 0.05	0.01 - **0.03** - 0.05	0.002 - **0.006** - 0.01	0.005 - **0.007** - 0.01	0.01 - **0.03** - 0.05	0.005 - **0.01** - 0.015	0.01 - **0.02** - 0.03
ø2.0	v_c	50 - **60** - 70	40 - **50** - 60	20 - **30** - 40	20 - **30** - 40	50 - **60** - 70	45 - **55** - 65	90 - **110** - 130
	f	0.02 - **0.04** - 0.06	0.02 - **0.04** - 0.06	0.01 - **0.018** - 0.025	0.01 - **0.015** - 0.02	0.02 - **0.04** - 0.06	0.015 - **0.03** - 0.045	0.03 - **0.05** - 0.07
ø4.0	v_c	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 40	60 - **75** - 90	55 - **65** - 75	90 - **110** - 130
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6.0	v_c	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8.0	v_c	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10.0	v_c	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.12 - **0.17** - 0.22	0.12 - **0.17** - 0.22	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.12 - **0.17** - 0.22	0.12 - **0.15** - 0.18	0.12 - **0.17** - 0.22
ø12.0	v_c	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.15 - **0.20** - 0.25	0.15 - **0.18** - 0.20	0.15 - **0.20** - 0.25
ø16.0	v_c	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.14 - **0.17** - 0.20	0.10 - **0.15** - 0.20	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.20 - **0.25** - 0.30
ø20.0	v_c	60 - **75** - 90	50 - **65** - 80	20 - **30** - 40	20 - **30** - 50	60 - **75** - 90	60 - **70** - 80	90 - **110** - 130
	f	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35	0.16 - **0.19** - 0.22	0.15 - **0.20** - 0.25	0.25 - **0.30** - 0.35	0.20 - **0.25** - 0.30	0.25 - **0.30** - 0.35

Min. - **Optimum** - Max.

MEMO

MDF-L Type Long Type (External Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.29% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

PVD Coat | 2D

*Refer to N74 for the tolerance of h6 and h8

Fig. 1 (DC ≤ DCON)

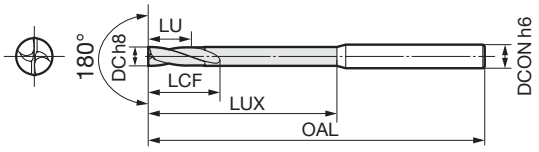
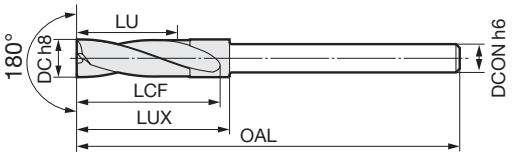


Fig. 2 (DC > DCON)



Diameter ø3.0 to 8.5mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
3.0		★	MDF0300L2D	9.0	13.5	30.0			1
3.1		★	MDF0310L2D	9.3	14.0	31.0			1
3.2		★	MDF0320L2D	9.6	14.4	32.0			1
3.3		★	MDF0330L2D	9.9	14.9	33.0			1
3.4		★	MDF0340L2D	10.2	15.3	34.0			1
3.5		★	MDF0350L2D	10.5	15.8	35.0			1
3.6		★	MDF0360L2D	10.8	16.2	36.0			1
3.7		★	MDF0370L2D	11.1	16.7	37.0			1
3.8		★	MDF0380L2D	11.4	17.1	38.0			1
3.9		★	MDF0390L2D	11.7	17.6	39.0			1
4.0	2	★	MDF0400L2D	12.0	18.0	40.0	100		1
4.1		★	MDF0410L2D	12.3	18.5	41.0			1
4.2		★	MDF0420L2D	12.6	18.9	42.0			1
4.3		★	MDF0430L2D	12.9	19.4	43.0			1
4.4		★	MDF0440L2D	13.2	19.8	44.0			1
4.5		★	MDF0450L2D	13.5	20.3	45.0		6.0	1
4.6		★	MDF0460L2D	13.8	20.7	46.0			1
4.7		★	MDF0470L2D	14.1	21.2	47.0			1
4.8		★	MDF0480L2D	14.4	21.6	48.0			1
4.9		★	MDF0490L2D	14.7	22.1	49.0			1
5.0		★	MDF0500L2D	15.0	22.5	50.0			1
5.1		★	MDF0510L2D	15.3	23.0	51.0			1
5.2		★	MDF0520L2D	15.6	23.4	52.0			1
5.3		★	MDF0530L2D	15.9	23.9	53.0			1
5.4		★	MDF0540L2D	16.2	24.3	54.0			1
5.5	2	★	MDF0550L2D	16.5	24.8	55.0	110		1
5.6		★	MDF0560L2D	16.8	25.2	56.0			1
5.7		★	MDF0570L2D	17.1	25.7	57.0			1
5.8		★	MDF0580L2D	17.4	26.1	58.0			1
5.9		★	MDF0590L2D	17.7	26.6	59.0			1
6.0	2	★	MDF0600L2D-S5	18.0	27.0	30.0	110	5.0	1
6.0	2	★	MDF0600L2D	18.0	27.0	60.0	110		1
6.1		★	MDF0610L2D	18.3	27.5	30.5			2
6.2		★	MDF0620L2D	18.6	27.9	30.9			2
6.3		★	MDF0630L2D	18.9	28.4	31.4			2
6.4		★	MDF0640L2D	19.2	28.8	31.8			2
6.5	2	★	MDF0650L2D	19.5	29.3	32.3	120		2
6.6		★	MDF0660L2D	19.8	29.7	32.7			2
6.7		★	MDF0670L2D	20.1	30.2	33.2			2
6.8		★	MDF0680L2D	20.4	30.6	33.6			2
6.9		★	MDF0690L2D	20.7	31.1	34.1			2
7.0		★	MDF0700L2D	21.0	31.5	34.5		6.0	2
7.1		★	MDF0710L2D	21.3	32.0	35.0			2
7.2		★	MDF0720L2D	21.6	32.4	35.4			2
7.3		★	MDF0730L2D	21.9	32.9	35.9			2
7.4		★	MDF0740L2D	22.2	33.3	36.3			2
7.5	2	★	MDF0750L2D	22.5	33.8	36.8	130		2
7.6		★	MDF0760L2D	22.8	34.2	37.2			2
7.7		★	MDF0770L2D	23.1	34.7	37.7			2
7.8		★	MDF0780L2D	23.4	35.1	38.1			2
7.9		★	MDF0790L2D	23.7	35.6	38.6			2
8.0		★	MDF0800L2D-S6	24.0	36.0	39.0			2
8.0	2	★	MDF0800L2D	24.0	36.0	80.0	130		1
8.1		★	MDF0810L2D	24.3	36.5	39.5			2
8.2		★	MDF0820L2D	24.6	36.9	39.9			2
8.3	2	★	MDF0830L2D	24.9	37.4	40.4	140	8.0	2
8.4		★	MDF0840L2D	25.2	37.8	40.8			2
8.5		★	MDF0850L2D	25.5	38.3	41.3			2

Grade: ACF75

Diameter ø8.6 to 20.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
8.6		★	MDF0860L2D	25.8	38.7	41.7			2
8.7		★	MDF0870L2D	26.1	39.2	42.2			2
8.8	2	★	MDF0880L2D	26.4	39.6	42.6	140		2
8.9		★	MDF0890L2D	26.7	40.1	43.1			2
9.0		★	MDF0900L2D	27.0	40.5	43.5			2
9.1		★	MDF0910L2D	27.3	41.0	44.0			2
9.2		★	MDF0920L2D	27.6	41.4	44.4			2
9.3		★	MDF0930L2D	27.9	41.9	44.9		8.0	2
9.4		★	MDF0940L2D	28.2	42.3	45.3			2
9.5	2	★	MDF0950L2D	28.5	42.8	45.8	150		2
9.6		★	MDF0960L2D	28.8	43.2	46.2			2
9.7		★	MDF0970L2D	29.1	43.7	46.7			2
9.8		★	MDF0980L2D	29.4	44.1	47.1			2
9.9		★	MDF0990L2D	29.7	44.6	47.6			2
10.0		★	MDF1000L2D-S8	30.0	45.0	48.0			2
10.0	2	★	MDF1000L2D	30.0	45.0	100.0	150		1
10.1		★	MDF1010L2D	30.3	45.5	48.5			2
10.2		★	MDF1020L2D	30.6	45.9	48.9			2
10.3		★	MDF1030L2D	30.9	46.4	49.4			2
10.4		★	MDF1040L2D	31.2	46.8	49.8			2
10.5	2	★	MDF1050L2D	31.5	47.3	50.3	160		2
10.6		★	MDF1060L2D	31.8	47.7	50.7			2
10.7		★	MDF1070L2D	32.1	48.2	51.2			2
10.8		★	MDF1080L2D	32.4	48.6	51.6			2
10.9		★	MDF1090L2D	32.7	49.1	52.1			2
11.0		★	MDF1100L2D	33.0	49.5	52.5		10.0	2
11.1		★	MDF1110L2D	33.3	50.0	53.0			2
11.2		★	MDF1120L2D	33.6	50.4	53.4			2
11.3		★	MDF1130L2D	33.9	50.9	53.9			2
11.4		★	MDF1140L2D	34.2	51.3	54.3			2
11.5	2	★	MDF1150L2D	34.5	51.8	54.8	170		2
11.6		★	MDF1160L2D	34.8	52.2	55.2			2
11.7		★	MDF1170L2D	35.1	52.7	55.7			2
11.8		★	MDF1180L2D	35.4	53.1	56.1			2
11.9		★	MDF1190L2D	35.7	53.6	56.6			2
12.0		★	MDF1200L2D-S10	36.0	54.0	57.0			2
12.0	2	★	MDF1200L2D	36.0	54.0	120.0	170		1
12.5	2	★	MDF1250L2D	37.5	56.3	59.3	180		2
13.0		★	MDF1300L2D	39.0	58.5	61.5		12.0	2
13.5	2	★	MDF1350L2D	40.5	60.8	63.8	190		2
14.0		★	MDF1400L2D-S12	42.0	63.0	66.0			2
14.0	2	★	MDF1400L2D	42.0	63.0	140.0	190		2
14.5	2	★	MDF1450L2D	43.5	65.3	68.3	200		2
15.0		★	MDF1500L2D	45.0	67.5	70.5		14.0	2
15.5	2	★	MDF1550L2D	46.5	69.8	72.8	210		2
16.0		★	MDF1600L2D-S14	48.0	72.0	75.0			2
16.0	2	★	MDF1600L2D	48.0	72.0	160.0	210		1
16.5	2	★	MDF1650L2D	49.5	74.3	77.3	220		2
17.0		★	MDF1700L2D	51.0	76.5	79.5		16.0	2
17.5	2	★	MDF1750L2D	52.5	78.8	81.8	230		2
18.0		★	MDF1800L2D-S16	54.0	81.0	84.0			2
18.0	2	★	MDF1800L2D	54.0	81.0	180.0	230		1
18.5	2	★	MDF1850L2D	55.5	83.3	86.3	240		2
19.0		★	MDF1900L2D	57.0	85.5	88.5		18.0	2
19.5	2	★	MDF1950L2D	58.5	87.8	90.8	250		2
20.0		★	MDF2000L2D-S18	60.0	90.0	93.0			2
20.0	2	★	MDF2000L2D	60.0	90.0	200.0	250	20.0	1

Grade: ACF75

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with this tool.

★: Worldwide Warehouse Item

MDF-L Type Long Type (External Coolant Supply)

Recommended Cutting Conditions

1. A prepared hole with the same diameter is needed for drilling with this tool.
2. A prepared hole with the same diameter is recommended for the cutting conditions.
3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the hole when drilling in inclined surfaces.
4. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 50HRC)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4.0	v_c	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 40	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6.0	v_c	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65- **75** - 85	90 - **120** - 150
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8.0	v_c	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65- **75** - 85	90 - **120** - 150
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10.0	v_c	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.15- **0.20** - 0.25	0.12 - **0.15** - 0.18	0.15 - **0.20** - 0.25
ø12.0	v_c	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.20 - **0.25** - 0.30
ø16.0	v_c	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.14 - **0.17** - 0.20	0.10 - **0.15** - 0.20	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.25 - **0.30** - 0.35
ø20.0	v_c	60 - **80** - 100	50 - **70** - 90	20 - **30** - 40	20 - **30** - 50	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35	0.16 - **0.19** - 0.22	0.15 - **0.20** - 0.25	0.30 - **0.35** - 0.40	0.25 - **0.30** - 0.35	0.35 - **0.40** - 0.45

Min. - **Optimum** - Max.

MDF-H Type (Internal Coolant Supply)

PVD Coat | 3D | 5D

*Refer to N74 for the tolerance of h6 and h8

Fig. 1 (3D single margin)

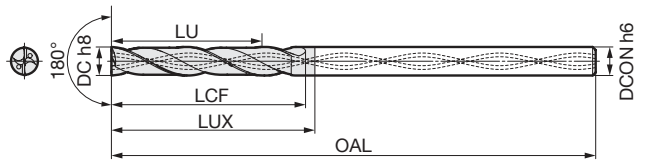
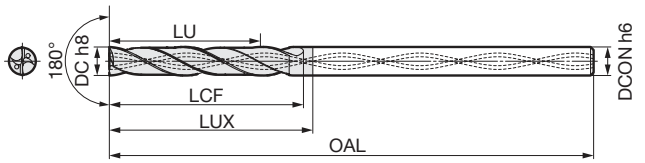


Fig. 2 (5D double margin)



Diameter ø3.0 to 5.7mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
3.0	3	★	MDF0300H3D	12.0	13.5	16.5	68	3	1
	5	★	MDF0300H5D	18.0	20.1	23.1	78		2
3.1	3	★	MDF0310H3D	12.4	14.0	17.0	72	4	1
	5	★	MDF0310H5D	18.6	20.8	23.8	86		2
3.2	3	★	MDF0320H3D	12.8	14.4	17.4	72	4	1
	5	★	MDF0320H5D	19.2	21.4	24.4	86		2
3.3	3	★	MDF0330H3D	13.2	14.9	17.9	72	4	1
	5	★	MDF0330H5D	19.8	22.1	25.1	86		2
3.4	3	★	MDF0340H3D	13.6	15.3	18.3	72	4	1
	5	★	MDF0340H5D	20.4	22.8	25.8	86		2
3.5	3	★	MDF0350H3D	14.0	15.8	18.8	72	4	1
	5	★	MDF0350H5D	21.0	23.5	26.5	86		2
3.6	3	★	MDF0360H3D	14.4	16.2	19.2	72	4	1
	5	★	MDF0360H5D	21.6	24.1	27.1	86		2
3.7	3	★	MDF0370H3D	14.8	16.7	19.7	72	4	1
	5	★	MDF0370H5D	22.2	24.8	27.8	86		2
3.8	3	★	MDF0380H3D	15.2	17.1	20.1	72	4	1
	5	★	MDF0380H5D	22.8	25.5	28.5	86		2
3.9	3	★	MDF0390H3D	15.6	17.6	20.6	72	4	1
	5	★	MDF0390H5D	23.4	26.1	29.1	86		2
4.0	3	★	MDF0400H3D	16.0	18.0	21.0	72	4	1
	5	★	MDF0400H5D	24.0	26.8	29.8	86		2
4.1	3	★	MDF0410H3D	16.4	18.5	21.5	80	5	1
	5	★	MDF0410H5D	24.6	27.5	30.5	98		2
4.2	3	★	MDF0420H3D	16.8	18.9	21.9	80	5	1
	5	★	MDF0420H5D	25.2	28.1	31.1	98		2
4.3	3	★	MDF0430H3D	17.2	19.4	22.4	80	5	1
	5	★	MDF0430H5D	25.8	28.8	31.8	98		2
4.4	3	★	MDF0440H3D	17.6	19.8	22.8	80	5	1
	5	★	MDF0440H5D	26.4	29.5	32.5	98		2
4.5	3	★	MDF0450H3D	18.0	20.3	23.3	80	5	1
	5	★	MDF0450H5D	27.0	30.2	33.2	98		2
4.6	3	★	MDF0460H3D	18.4	20.7	23.7	80	5	1
	5	★	MDF0460H5D	27.6	30.8	33.8	98		2
4.7	3	★	MDF0470H3D	18.8	21.2	24.2	80	5	1
	5	★	MDF0470H5D	28.2	31.5	34.5	98		2
4.8	3	★	MDF0480H3D	19.2	21.6	24.6	80	5	1
	5	★	MDF0480H5D	28.8	32.2	35.2	98		2
4.9	3	★	MDF0490H3D	19.6	22.1	25.1	80	5	1
	5	★	MDF0490H5D	29.4	32.8	35.8	98		2
5.0	3	★	MDF0500H3D	20.0	22.5	25.5	80	5	1
	5	★	MDF0500H5D	30.0	33.5	36.5	98		2
5.1	3	★	MDF0510H3D	20.4	23.0	26.0	82	6	1
	5	★	MDF0510H5D	30.6	34.2	37.2	100		2
5.2	3	★	MDF0520H3D	20.8	23.4	26.4	82	6	1
	5	★	MDF0520H5D	31.2	34.8	37.8	100		2
5.3	3	★	MDF0530H3D	21.2	23.9	26.9	82	6	1
	5	★	MDF0530H5D	31.8	35.5	38.5	100		2
5.4	3	★	MDF0540H3D	21.6	24.3	27.3	82	6	1
	5	★	MDF0540H5D	32.4	36.2	39.2	100		2
5.5	3	★	MDF0550H3D	22.0	24.8	27.8	82	6	1
	5	★	MDF0550H5D	33.0	36.9	39.9	100		2
5.6	3	★	MDF0560H3D	22.4	25.2	28.2	82	6	1
	5	★	MDF0560H5D	33.6	37.5	40.5	100		2
5.7	3	★	MDF0570H3D	22.8	25.7	28.7	82	6	1
	5	★	MDF0570H5D	34.2	38.2	41.2	100		2

Grade: ACF75

Diameter ø5.8 to 8.5mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
5.8	3	★	MDF0580H3D	23.2	26.1	29.1	82	6	1
	5	★	MDF0580H5D	34.8	38.9	41.9	100		2
5.9	3	★	MDF0590H3D	23.6	26.6	29.6	82	6	1
	5	★	MDF0590H5D	35.4	39.5	42.5	100		2
6.0	3	★	MDF0600H3D	24.0	27.0	30.0	82	6	1
	5	★	MDF0600H5D	36.0	40.2	43.2	100		2
6.1	3	★	MDF0610H3D	24.4	27.5	30.5	88	7	1
	5	★	MDF0610H5D	36.6	40.9	43.9	109		2
6.2	3	★	MDF0620H3D	24.8	27.9	30.9	88	7	1
	5	★	MDF0620H5D	37.2	41.5	44.5	109		2
6.3	3	★	MDF0630H3D	25.2	28.4	31.4	88	7	1
	5	★	MDF0630H5D	37.8	42.2	45.2	109		2
6.4	3	★	MDF0640H3D	25.6	28.8	31.8	88	7	1
	5	★	MDF0640H5D	38.4	42.9	45.9	109		2
6.5	3	★	MDF0650H3D	26.0	29.3	32.3	88	7	1
	5	★	MDF0650H5D	39.0	43.6	46.6	109		2
6.6	3	★	MDF0660H3D	26.4	29.7	32.7	88	7	1
	5	★	MDF0660H5D	39.6	44.2	47.2	109		2
6.7	3	★	MDF0670H3D	26.8	30.2	33.2	88	7	1
	5	★	MDF0670H5D	40.2	44.9	47.9	109		2
6.8	3	★	MDF0680H3D	27.2	30.6	33.6	88	7	1
	5	★	MDF0680H5D	40.8	45.6	48.6	109		2
6.9	3	★	MDF0690H3D	27.6	31.1	34.1	88	7	1
	5	★	MDF0690H5D	41.4	46.2	49.2	109		2
7.0	3	★	MDF0700H3D	28.0	31.5	34.5	88	7	1
	5	★	MDF0700H5D	42.0	46.9	49.9	109		2
7.1	3	★	MDF0710H3D	28.4	32.0	35.0	94	8	1
	5	★	MDF0710H5D	42.6	47.6	50.6	118		2
7.2	3	★	MDF0720H3D	28.8	32.4	35.4	94	8	1
	5	★	MDF0720H5D	43.2	48.2	51.2	118		2
7.3	3	★	MDF0730H3D	29.2	32.9	35.9	94	8	1
	5	★	MDF0730H5D	43.8	48.9	51.9	118		2
7.4	3	★	MDF0740H3D	29.6	33.3	36.3	94	8	1
	5	★	MDF0740H5D	44.4	49.6	52.6	118		2
7.5	3	★	MDF0750H3D	30.0	33.8	36.8	94	8	1
	5	★	MDF0750H5D	45.0	50.3	53.3	118		2
7.6	3	★	MDF0760H3D	30.4	34.2	37.2	94	8	1
	5	★	MDF0760H5D	45.6	50.9	53.9	118		2
7.7	3	★	MDF0770H3D	30.8	34.7	37.7	94	8	1
	5	★	MDF0770H5D	46.2	51.6	54.6	118		2
7.8	3	★	MDF0780H3D	31.2	35.1	38.1	94	8	1
	5	★	MDF0780H5D	46.8	52.3	55.3	118		2
7.9	3	★	MDF0790H3D	31.6	35.6	38.6	94	8	1
	5	★	MDF0790H5D	47.4	52.9	55.9	118		2
8.0	3	★	MDF0800H3D	32.0	36.0	39.0	94	8	1
	5	★	MDF0800H5D	48.0	53.6	56.6	118		2
8.1	3	★	MDF0810H3D	32.4	36.5	39.5	100	9	1
	5	★	MDF0810H5D	48.6	54.3	57.3	127		2
8.2	3	★	MDF0820H3D	32.8	36.9	39.9	100	9	1
	5	★	MDF0820H5D	49.2	54.9	57.9	127		2
8.3	3	★	MDF0830H3D	33.2	37.4	40.4	100	9	1
	5	★	MDF0830H5D	49.8	55.6	58.6	127		2
8.4	3	★	MDF0840H3D	33.6	37.8	40.8	100	9	1
	5	★	MDF0840H5D	50.4	56.3	59.3	127		2
8.5	3	★	MDF0850H3D	34.0	38.3	41.3	100	9	1
	5	★	MDF0850H5D	51.0	57.0	60.0	127		2

Grade: ACF75

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the 5D tool.

★: Worldwide Warehouse Item

MDF-H Type (Internal Coolant Supply)

PVD Coat | 3D | 5D

*Refer to N74 for the tolerance of h6 and h8

Fig. 1 (3D single margin)

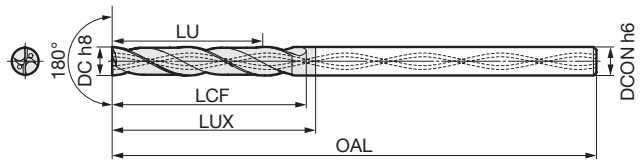
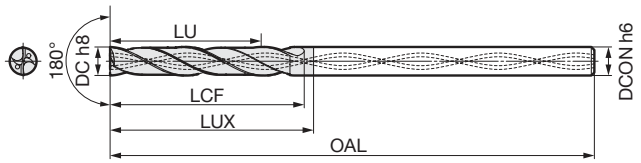


Fig. 2 (5D double margin)



Diameter ø8.6 to 11.3mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
8.6	3	★	**MDF0860H3D**	34.4	38.7	41.7	100	9	1
	5	★	**MDF0860H5D**	51.6	57.6	60.6	127		2
8.7	3	★	**MDF0870H3D**	34.8	39.2	42.2	100	9	1
	5	★	**MDF0870H5D**	52.2	58.3	61.3	127		2
8.8	3	★	**MDF0880H3D**	35.2	39.6	42.6	100	9	1
	5	★	**MDF0880H5D**	52.8	59.0	62.0	127		2
8.9	3	★	**MDF0890H3D**	35.6	40.1	43.1	100	9	1
	5	★	**MDF0890H5D**	53.4	59.6	62.6	127		2
9.0	3	★	**MDF0900H3D**	36.0	40.5	43.5	100	9	1
	5	★	**MDF0900H5D**	54.0	60.3	63.3	127		2
9.1	3	★	**MDF0910H3D**	36.4	41.0	44.0	106	10	1
	5	★	**MDF0910H5D**	54.6	61.0	64.0	136		2
9.2	3	★	**MDF0920H3D**	36.8	41.4	44.4	106	10	1
	5	★	**MDF0920H5D**	55.2	61.6	64.6	136		2
9.3	3	★	**MDF0930H3D**	37.2	41.9	44.9	106	10	1
	5	★	**MDF0930H5D**	55.8	62.3	65.3	136		2
9.4	3	★	**MDF0940H3D**	37.6	42.3	45.3	106	10	1
	5	★	**MDF0940H5D**	56.4	63.0	66.0	136		2
9.5	3	★	**MDF0950H3D**	38.0	42.8	45.8	106	10	1
	5	★	**MDF0950H5D**	57.0	63.7	66.7	136		2
9.6	3	★	**MDF0960H3D**	38.4	43.2	46.2	106	10	1
	5	★	**MDF0960H5D**	57.6	64.3	67.3	136		2
9.7	3	★	**MDF0970H3D**	38.8	43.7	46.7	106	10	1
	5	★	**MDF0970H5D**	58.2	65.0	68.0	136		2
9.8	3	★	**MDF0980H3D**	39.2	44.1	47.1	106	10	1
	5	★	**MDF0980H5D**	58.8	65.7	68.7	136		2
9.9	3	★	**MDF0990H3D**	39.6	44.6	47.6	106	10	1
	5	★	**MDF0990H5D**	59.4	66.3	69.3	136		2
10.0	3	★	**MDF1000H3D**	40.0	45.0	48.0	106	10	1
	5	★	**MDF1000H5D**	60.0	67.0	70.0	136		2
10.1	3	★	**MDF1010H3D**	40.4	45.5	48.5	116	11	1
	5	★	**MDF1010H5D**	60.6	67.7	70.7	149		2
10.2	3	★	**MDF1020H3D**	40.8	45.9	48.9	116	11	1
	5	★	**MDF1020H5D**	61.2	68.3	71.3	149		2
10.3	3	★	**MDF1030H3D**	41.2	46.4	49.4	116	11	1
	5	★	**MDF1030H5D**	61.8	69.0	72.0	149		2
10.4	3	★	**MDF1040H3D**	41.6	46.8	49.8	116	11	1
	5	★	**MDF1040H5D**	62.4	69.7	72.7	149		2
10.5	3	★	**MDF1050H3D**	42.0	47.3	50.3	116	11	1
	5	★	**MDF1050H5D**	63.0	70.4	73.4	149		2
10.6	3	★	**MDF1060H3D**	42.4	47.7	50.7	116	11	1
	5	★	**MDF1060H5D**	63.6	71.0	74.0	149		2
10.7	3	★	**MDF1070H3D**	42.8	48.2	51.2	116	11	1
	5	★	**MDF1070H5D**	64.2	71.7	74.7	149		2
10.8	3	★	**MDF1080H3D**	43.2	48.6	51.6	116	11	1
	5	★	**MDF1080H5D**	64.8	72.4	75.4	149		2
10.9	3	★	**MDF1090H3D**	43.6	49.1	52.1	116	11	1
	5	★	**MDF1090H5D**	65.4	73.0	76.0	149		2
11.0	3	★	**MDF1100H3D**	44.0	49.5	52.5	116	11	1
	5	★	**MDF1100H5D**	66.0	73.7	76.7	149		2
11.1	3	★	**MDF1110H3D**	44.4	50.0	53.0	122	12	1
	5	★	**MDF1110H5D**	66.6	74.4	77.4	158		2
11.2	3	★	**MDF1120H3D**	44.8	50.4	53.4	122	12	1
	5	★	**MDF1120H5D**	67.2	75.0	78.0	158		2
11.3	3	★	**MDF1130H3D**	45.2	50.9	53.9	122	12	1
	5	★	**MDF1130H5D**	67.8	75.7	78.7	158		2

Grade: ACF75

Diameter ø11.4 to 16.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Neck Length LUX	Overall Length OAL	Shank Dia. DCON	Fig
11.4	3	★	**MDF1140H3D**	45.6	51.3	54.3	122	12	1
	5	★	**MDF1140H5D**	68.4	76.4	79.4	158		2
11.5	3	★	**MDF1150H3D**	46.0	51.8	54.8	122	12	1
	5	★	**MDF1150H5D**	69.0	77.1	80.1	158		2
11.6	3	★	**MDF1160H3D**	46.4	52.2	55.2	122	12	1
	5	★	**MDF1160H5D**	69.6	77.7	80.7	158		2
11.7	3	★	**MDF1170H3D**	46.8	52.7	55.7	122	12	1
	5	★	**MDF1170H5D**	70.2	78.4	81.4	158		2
11.8	3	★	**MDF1180H3D**	47.2	53.1	56.1	122	12	1
	5	★	**MDF1180H5D**	70.8	79.1	82.1	158		2
11.9	3	★	**MDF1190H3D**	47.6	53.6	56.6	122	12	1
	5	★	**MDF1190H5D**	71.4	79.7	82.7	158		2
12.0	3	★	**MDF1200H3D**	48.0	54.0	57.0	122	12	1
	5	★	**MDF1200H5D**	72.0	80.4	83.4	158		2
12.5	3	★	**MDF1250H3D**	50.0	56.3	59.3	128	13	1
	5	★	**MDF1250H5D**	75.0	83.8	86.8	167		2
13.0	3	★	**MDF1300H3D**	52.0	58.5	61.5	128	13	1
	5	★	**MDF1300H5D**	78.0	87.1	90.1	167		2
13.5	3	★	**MDF1350H3D**	54.0	60.8	63.8	134	14	1
	5	★	**MDF1350H5D**	81.0	90.5	93.5	176		2
14.0	3	★	**MDF1400H3D**	56.0	63.0	66.0	134	14	1
	5	★	**MDF1400H5D**	84.0	93.8	96.8	176		2
14.5	3	★	**MDF1450H3D**	58.0	65.3	68.3	140	15	1
	5	★	**MDF1450H5D**	87.0	97.2	100.2	185		2
15.0	3	★	**MDF1500H3D**	60.0	67.5	70.5	140	15	1
	5	★	**MDF1500H5D**	90.0	100.5	103.5	185		2
15.5	3	★	**MDF1550H3D**	62.0	69.8	72.8	146	16	1
	5	★	**MDF1550H5D**	93.0	103.9	106.9	194		2
16.0	3	★	**MDF1600H3D**	64.0	72.0	75.0	146	16	1
	5	★	**MDF1600H5D**	96.0	107.2	110.2	194		2

Grade: ACF75

*A prepared hole with the same diameter or centring hole with a larger diameter than the tool is needed for drilling with the 5D tool.

★: Worldwide Warehouse Item

Recommended Cutting Conditions for 3D

1. The recommended hole depth is 3 x DC. The depth is measured from the highest point of the hole when drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling in flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30° or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traverse cutting or helical milling.
7. A prepared hole with the same diameter is recommended for machining of stainless steel.

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to HRC50)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.12 - **0.17** - 0.22	0.12 - **0.17** - 0.22	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.12 - **0.17** - 0.22	0.12 - **0.15** - 0.18	0.15 - **0.20** - 0.25
ø12	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.15 - **0.20** - 0.25	0.15 - **0.18** - 0.20	0.20 - **0.25** - 0.30
ø16	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	70 - **80** - 90	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.10 - **0.15** - 0.20	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.25 - **0.30** - 0.40

Min. - **Optimum** - Max.

Recommended Cutting Conditions for 5D

1. A prepared hole with the same diameter is needed for machining with this tool.
2. A prepared hole with the same diameter is recommended for the cutting conditions.
3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the hole when drilling in inclined surfaces.
4. This product is a drilling tool. Do not use it for traverse cutting or helical milling.

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to HRC50)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450	Aluminum Alloy
ø4	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.06 - **0.08** - 0.10	0.05 - **0.08** - 0.10	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.06 - **0.08** - 0.10
ø6	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.05 - **0.10** - 0.15	0.05 - **0.10** - 0.15	0.04 - **0.06** - 0.08	0.03 - **0.04** - 0.05	0.05 - **0.10** - 0.15	0.06 - **0.09** - 0.12	0.05 - **0.10** - 0.15
ø8	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.10 - **0.15** - 0.20	0.10 - **0.15** - 0.20	0.06 - **0.08** - 0.10	0.04 - **0.06** - 0.08	0.10 - **0.15** - 0.20	0.10 - **0.12** - 0.15	0.10 - **0.15** - 0.20
ø10	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.15 - **0.20** - 0.25	0.15 - **0.20** - 0.25	0.08 - **0.10** - 0.12	0.06 - **0.08** - 0.10	0.15 - **0.20** - 0.25	0.12 - **0.15** - 0.18	0.15 - **0.20** - 0.25
ø12	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.12 - **0.15** - 0.18	0.08 - **0.10** - 0.12	0.17 - **0.22** - 0.27	0.15 - **0.20** - 0.25	0.20 - **0.25** - 0.30
ø16	v_c	70 - **85** - 100	60 - **75** - 90	30 - **40** - 50	25 - **35** - 45	70 - **85** - 100	65 - **75** - 85	90 - **120** - 150
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.14 - **0.17** - 0.20	0.10 - **0.15** - 0.20	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.30	0.25 - **0.30** - 0.35

Min. - **Optimum** - Max.

MEMO

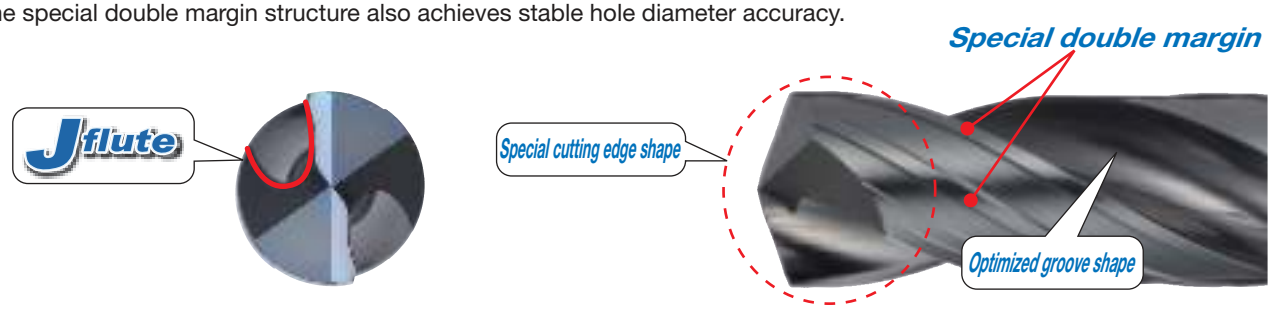


■ General Features

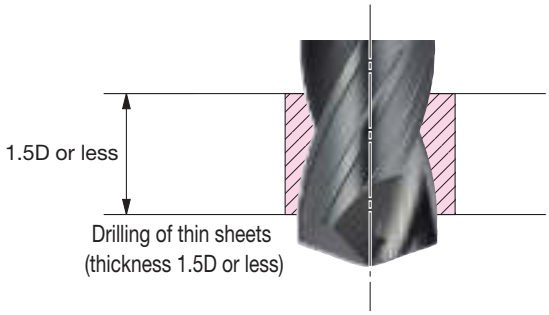
The J flutes of the Super MultiDrill WGS have been tuned for improved chip breaking capabilities during drilling of thin sheets.
Excellent sharpness prevents work hardening from drilling.
The special double margin structure also achieves stable hole diameter accuracy.

■ Features and Applications

J flutes (groove shape) have been tuned to create a specialized shape for drilling of thin sheets.
The special double margin structure also achieves stable hole diameter accuracy.



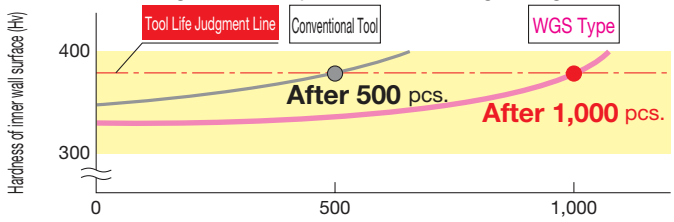
■ Target Workpieces



[Common automotive components]
·Bearing hub (inner and outer rings)
·Knuckle
·Differential ring
·Components such as bolt holes in automobile flange parts

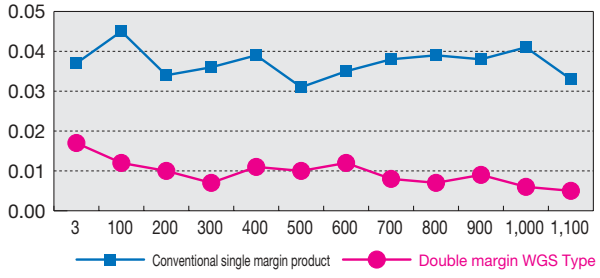
■ Cutting Performance

● Reduces hardening of the workpiece surface during drilling



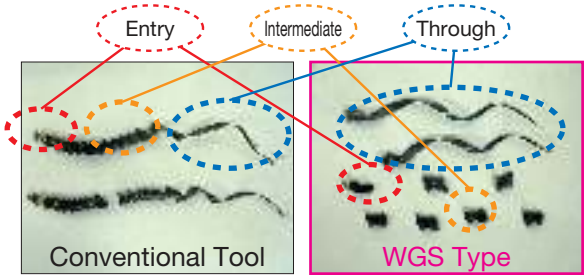
Work Material: S53C
Cutting Conditions: v_c=230 SFM, f =0.008 IPR
H=0.512”

● Stable hole expansion tolerance



Work Material: S50C
Cutting Conditions: v_c=262 SFM, f =0.01 IPR
H=0.630”

● Better chip breaking capabilities

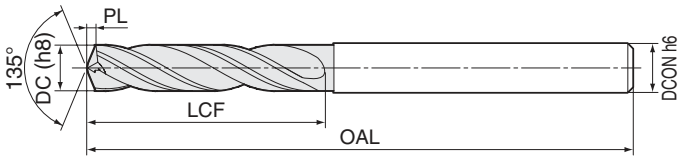


Work Material: SUJ2
Cutting Conditions: v_c=262 SFM, f =0.01 IPR
H=.512”

DEX Coating 2D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



This product is a made-to-order item. Please specify the hole diameter (including tolerance) when ordering.

Body

Dimensions (*mm*)

Dia. DC	Cat. No.	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.8 to 7.0	**MDW 0680** *to* **0700WGS2**	*34*	*74*	*1.4*	*7.0*	1
7.1 to 7.5	**MDW 0710** *to* **0750WGS2**	*35*	*80*	*1.5*	*8.0*	1
7.6 to 8.0	**MDW 0760** *to* **0800WGS2**	*38*		*1.6*		1
8.1 to 8.5	**MDW 0810** *to* **0850WGS2**	*38*	*84*	*1.7*	*9.0*	1
8.6 to 9.0	**MDW 0860** *to* **0900WGS2**	*40*		*1.8*		1
9.1 to 9.5	**MDW 0910** *to* **0950WGS2**	*40*	*89*	*1.9*	*10.0*	1
9.6 to 10.0	**MDW 0960** *to* **1000WGS2**	*43*		*2.0*		1
10.1 to 10.5	**MDW 1010** *to* **1050WGS2**	*43*	*95*	*2.1*	*11.0*	1
10.6 to 11.0	**MDW 1060** *to* **1100WGS2**	*47*		*2.2*		1
11.1 to 11.5	**MDW 1110** *to* **1150WGS2**	*47*	*102*	*2.3*	*12.0*	1
11.6 to 12.0	**MDW 1160** *to* **1200WGS2**	*49*		*2.4*		1
12.1 to 12.5	**MDW 1210** *to* **1250WGS2**	*50*	*103*	*2.6*	*13.0*	1
12.6 to 13.0	**MDW 1260** *to* **1300WGS2**	*52*		*2.7*		1
13.1 to 13.5	**MDW 1310** *to* **1350WGS2**	*53*	*108*	*2.8*	*14.0*	1
13.6 to 14.0	**MDW 1360** *to* **1400WGS2**	*55*		*2.9*		1
14.1 to 14.5	**MDW 1410** *to* **1450WGS2**	*55*	*111*	*3.0*	*15.0*	1
14.6 to 15.0	**MDW 1460** *to* **1500WGS2**	*56*		*3.1*		1
15.1 to 15.5	**MDW 1510** *to* **1550WGS2**	*56*	*115*	*3.2*	*16.0*	1
15.6 to 16.0	**MDW 1560** *to* **1600WGS2**	*58*		*3.3*		1

Grade: ACX70

Recommended Cutting Conditions

(v_c: Cutting Speed (m/min), *f*: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 300HB)	Stainless Steel (up to 200HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450
ø10.0	v_c	50 - **80** - 130	15 - **40** - 60	50 - **60** - 80	50 - **60** - 70
	f	0.20 - **0.25** - 0.35	0.10 - **0.15** - 0.20	0.20 - **0.30** - 0.35	0.20 - **0.25** - 0.35
ø16.0	v_c	60 - **100** - 140	20 - **40** - 60	60 - **80** - 100	50 - **60** - 80
	f	0.25 - **0.30** - 0.35	0.10 - **0.15** - 0.20	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35

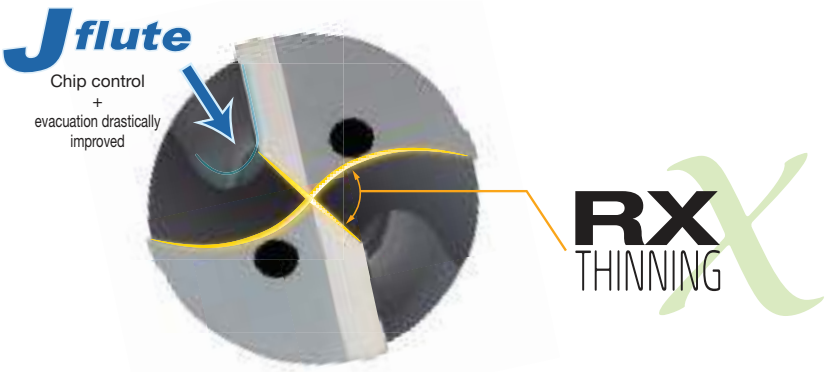
Min. - **Optimum** - Max.

* The recommended cutting conditions are also affected by factors such as machine rigidity and the workpiece clamping. Please adjust the cutting conditions according to your work environment.
* If work hardening occurs during drilling, it is recommended to use a lower speed than the recommended cutting conditions.



■ General Features

Strong MultiDrill HX Type is a special drill for cast iron that combines reduced cutting resistance and improved drill strength to achieve stable and high efficiency drilling of cast iron.



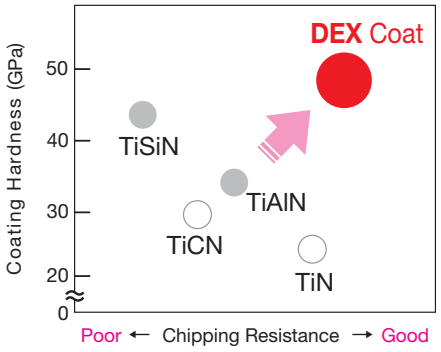
■ Features and Applications

- High-Efficiency Drilling of Cast Iron

  Thick web and special double margin design ensure stable behavior even in high-efficiency drilling.
  Furthermore, RX THINNING drastically reduces cutting force and ensures more stable and efficient drilling.
  Enables high-efficiency drilling at speeds of over v_f=39.4 IPM. (for ø10mm sizes)

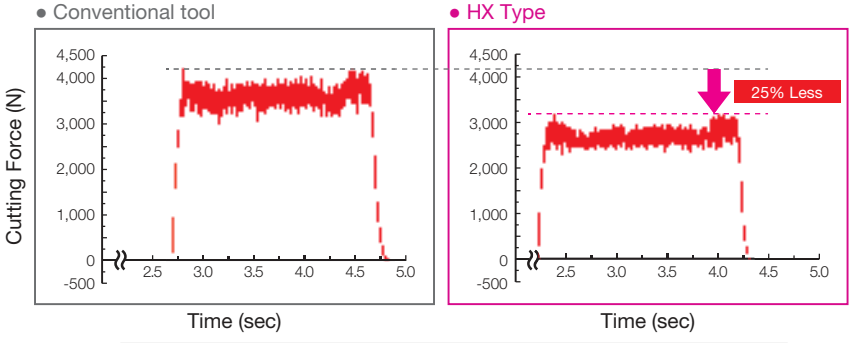
- Long Tool Life

  DEX Coat for drills utilizes nano-coating technology that provides more than double the tool life of conventional coatings. The drill guide function is enhanced through optimization of the margin position to prevent breakage due to hole bending.



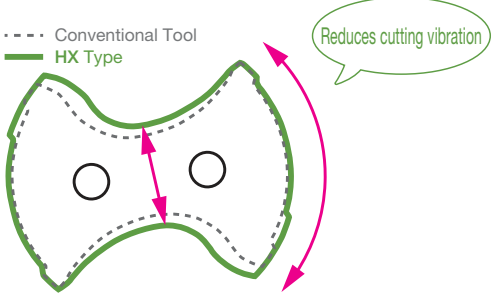
Low Resistance Wide chip pocket reduces thrust resistance.

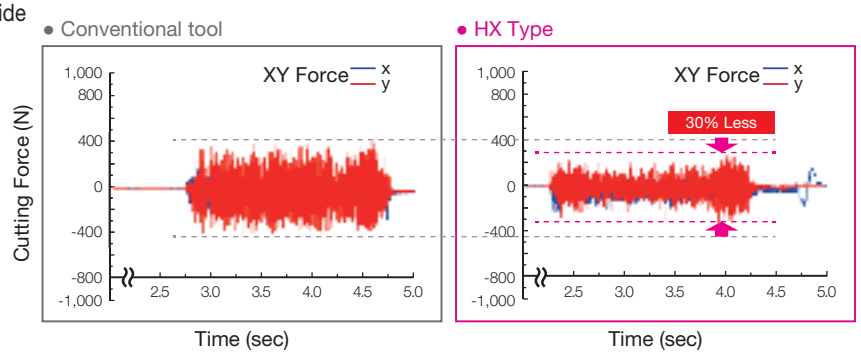




Part Material : Grey Cast Iron, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions : v_c=328 SFM, f=0.024 IPR, H=1.979", internal coolant supply (water soluble)

High Rigidity Combination of large web thickness and wide land reduces vibration.



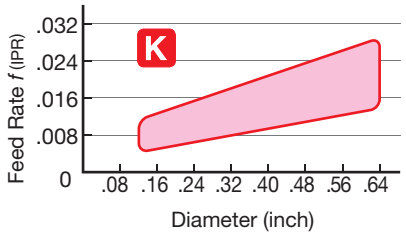


Part Material : Grey Cast Iron, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions : v_c=328 SFM, f=0.024 IPR, H=1.979", internal coolant supply (water soluble)

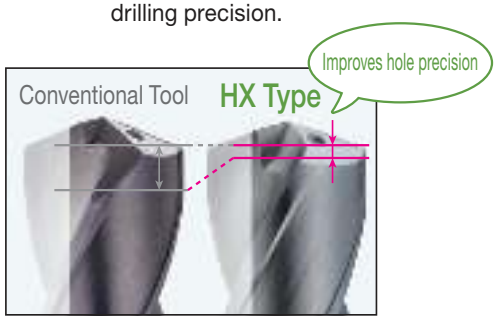
■ Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Internal	MDW□□□□HX3	ø3.0 to ø20.0	up to 3	108 items in stock
	MDW□□□□HX5	ø3.0 to ø20.0	up to 5	108 items in stock
	MDW□□□□HX8	ø3.0 to ø18.0	up to 8	32 items in stock

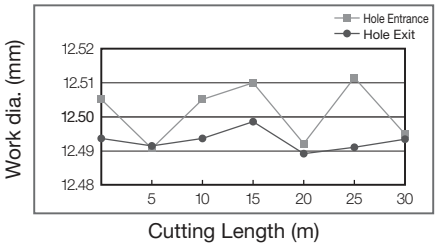
● Drilling of gray cast iron



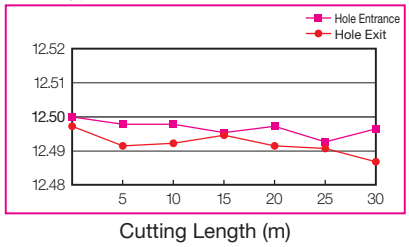
High Precision Improved margin point provides improved drilling precision.



● Conventional tool



● HX Type



Part Material : Grey Cast Iron, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions : v_c=328 SFM, f=0.024 IPR, H=1.979", internal coolant supply (water soluble)

Longer Tool Life High-feed cutting reduces margin wear and extends tool life.
→ Maintains replacement frequency (cutting time) and enables high efficiency drilling.

● Conventional tool



Cutting Conditions: f =0.012 IPR, cutting length: 98 ft. (cutting time 39 minutes)

● HX Type



Cutting Conditions: f =0.012 IPR, cutting length: 98 ft. (cutting time 39 minutes)



Cutting Conditions: f =0.024 IPR, cutting length: 197 ft. (cutting time 39 minutes)

Part Material: Grey Cast Iron, Tool: Conventional tool, MDW 1250HX5 (ø12.5mm 5D)
Cutting Conditions : v_c=328 SFM, f=0.024 IPR, H=1.979", internal coolant supply (water soluble)

Double the feed

■ Application Examples

Machine Component Grey Cast Iron

·Tool: MDW 1850HX5 (ø18.5mm 5D)
·Drilling Distance: 164 ft.
·Cutting Conditions: v_c=230 SFM, f =0.035 IPR,
H=88.6 ft. (stop), internal coolant supply (water soluble)

Reduced cutting edge wear in ultra-high-speed drilling.

Cutting Edge Rake Face Condition after Preset Tool Life

Competitor's High-Efficiency Drill



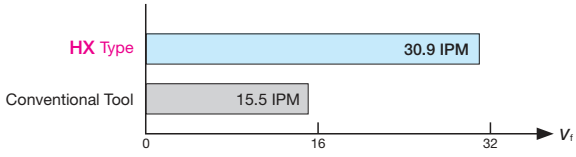
HX Type



Facility Component Ductile Cast Iron

·Tool: MDW 0850HX5 (ø8.5mm 5D)
·Drilling Distance: 164 ft.
·Cutting Conditions: v_c=230 SFM, f=0.012 IPR v_f=30.9 IPM,
H=88.6 ft. (stop), internal coolant supply (water soluble)

Double the drilling efficiency of conventional tools.



Engine Component Ductile Cast Iron

·Tool: MDW 1200HX3 (ø12.0mm 3D)
·Drilling Distance: 164 ft.
·Cutting Conditions: Conventional Tool: v_c=179 SFM, f =0.0087 IPR, v_f=11.48 IPM
HX Type: v_c=164 SFM, f =0.0157 IPR, v_f =20.88 IPM
H=91.9 ft. (stop), internal coolant supply (water soluble)

Stable cutting performance with 1.8 times the drilling efficiency of conventional tools.

Cutting Edge Wear Comparison after Fixed Tool Life

Conventional tool (f =0.0087 IPR)



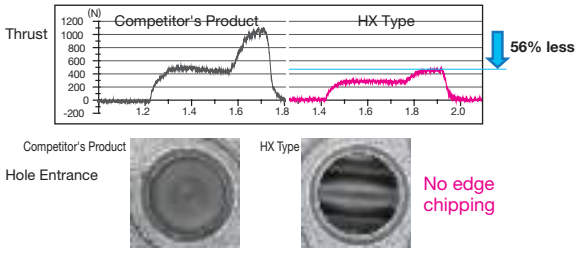
HX Type (f =0.0157 IPR)



Machine Components (Sintered Material)

·Tool: MDW 0570HX3
·Cutting Conditions: v_c=230 SFM, f=0.035 IPR H=88.6 ft. (stop),
internal coolant supply (water soluble)

Less resistance and edge chipping than competitor's products!



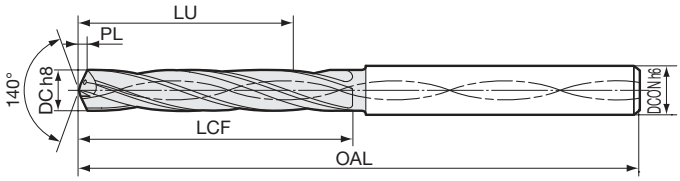
HX Type (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coating | Coolant Hole | 3D | 5D | 8D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø3.0 to 4.7mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	★	MDW0300HX3	13.5	18.0	68.5	0.5	3.0	1
	5	★	MDW0300HX5	24.0	28.5	78.5			1
	8	★	MDW0300HX8	29.0	33.5	81.5			1
3.1	3	★	MDW0310HX3	16.0	20.6	72.6	0.6	4.0	1
	5	★	MDW0310HX5	28.0	32.6	86.6			1
	8		MDW0310HX8	34.5	39.1	92.6			1
3.2	3	★	MDW0320HX3	15.8	20.6	72.6	0.6	4.0	1
	5	★	MDW0320HX5	27.8	32.6	86.6			1
	8		MDW0320HX8	34.3	39.1	92.6			1
3.3	3	★	MDW0330HX3	15.7	20.6	72.6	0.6	4.0	1
	5	★	MDW0330HX5	27.7	32.6	86.6			1
	8		MDW0330HX8	34.2	39.1	92.6			1
3.4	3	★	MDW0340HX3	15.5	20.6	72.6	0.6	4.0	1
	5	★	MDW0340HX5	27.5	32.6	86.6			1
	8		MDW0340HX8	34.0	39.1	92.6			1
3.5	3	★	MDW0350HX3	15.4	20.6	72.6	0.6	4.0	1
	5	★	MDW0350HX5	27.4	32.6	86.6			1
	8	★	MDW0350HX8	33.9	39.1	92.6			1
3.6	3	★	MDW0360HX3	17.8	23.2	72.7	0.7	4.0	1
	5	★	MDW0360HX5	31.3	36.7	86.7			1
	8		MDW0360HX8	39.3	44.7	92.7			1
3.7	3	★	MDW0370HX3	17.7	23.2	72.7	0.7	4.0	1
	5	★	MDW0370HX5	31.2	36.7	86.7			1
	8		MDW0370HX8	39.2	44.7	92.7			1
3.8	3	★	MDW0380HX3	17.5	23.2	72.7	0.7	4.0	1
	5	★	MDW0380HX5	31.0	36.7	86.7			1
	8		MDW0380HX8	39.0	44.7	92.7			1
3.9	3	★	MDW0390HX3	17.4	23.2	72.7	0.7	4.0	1
	5	★	MDW0390HX5	30.9	36.7	86.7			1
	8		MDW0390HX8	38.9	44.7	92.7			1
4.0	3	★	MDW0400HX3	17.2	23.2	72.7	0.7	4.0	1
	5	★	MDW0400HX5	30.7	36.7	86.7			1
	8	★	MDW0400HX8	38.7	44.7	92.7			1
4.1	3	★	MDW0410HX3	19.6	25.7	80.7	0.7	5.0	1
	5	★	MDW0410HX5	34.6	40.7	98.7			1
	8		MDW0410HX8	44.1	50.2	105.7			1
4.2	3	★	MDW0420HX3	19.5	25.8	80.8	0.8	5.0	1
	5	★	MDW0420HX5	34.5	40.8	98.8			1
	8		MDW0420HX8	44.0	50.3	105.8			1
4.3	3	★	MDW0430HX3	19.4	25.8	80.8	0.8	5.0	1
	5	★	MDW0430HX5	34.4	40.8	98.8			1
	8		MDW0430HX8	43.9	50.3	105.8			1
4.4	3	★	MDW0440HX3	19.2	25.8	80.8	0.8	5.0	1
	5	★	MDW0440HX5	34.2	40.8	98.8			1
	8		MDW0440HX8	43.7	50.3	105.8			1
4.5	3	★	MDW0450HX3	19.1	25.8	80.8	0.8	5.0	1
	5	★	MDW0450HX5	34.1	40.8	98.8			1
	8	★	MDW0450HX8	43.6	50.3	105.8			1
4.6	3	★	MDW0460HX3	21.4	28.3	80.8	0.8	5.0	1
	5	★	MDW0460HX5	37.9	44.8	98.8			1
	8		MDW0460HX8	48.9	55.8	105.8			1
4.7	3	★	MDW0470HX3	21.4	28.4	80.9	0.9	5.0	1
	5	★	MDW0470HX5	37.9	44.9	98.9			1
	8		MDW0470HX8	48.9	55.9	105.9			1

Grade: ACX70

Diameter ø4.8 to 6.5mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4.8	3	★	MDW0480HX3	21.2	28.4	80.9	0.9	5.0	1
	5	★	MDW0480HX5	37.7	44.9	98.9			1
	8		MDW0480HX8	48.7	55.9	105.9			1
4.9	3	★	MDW0490HX3	21.1	28.4	80.9	0.9	5.0	1
	5	★	MDW0490HX5	37.6	44.9	98.9			1
	8		MDW0490HX8	48.6	55.9	105.9			1
5.0	3	★	MDW0500HX3	20.9	28.4	80.9	0.9	5.0	1
	5	★	MDW0500HX5	37.4	44.9	98.9			1
	8	★	MDW0500HX8	48.4	55.9	105.9			1
5.1	3	★	MDW0510HX3	20.8	28.4	82.9	0.9	6.0	1
	5	★	MDW0510HX5	37.3	44.9	100.9			1
	8	★	MDW0510HX8	53.8	61.4	118.9			1
5.2	3	★	MDW0520HX3	20.6	28.4	82.9	0.9	6.0	1
	5	★	MDW0520HX5	37.1	44.9	100.9			1
	8		MDW0520HX8	53.6	61.4	118.9			1
5.3	3	★	MDW0530HX3	20.6	28.5	83.0	1.0	6.0	1
	5	★	MDW0530HX5	37.1	45.0	101.0			1
	8		MDW0530HX8	53.6	61.5	119.0			1
5.4	3	★	MDW0540HX3	20.4	28.5	83.0	1.0	6.0	1
	5	★	MDW0540HX5	36.9	45.0	101.0			1
	8		MDW0540HX8	53.4	61.5	119.0			1
5.5	3	★	MDW0550HX3	20.3	28.5	83.0	1.0	6.0	1
	5	★	MDW0550HX5	36.8	45.0	101.0			1
	8	★	MDW0550HX8	53.3	61.5	119.0			1
5.6	3	★	MDW0560HX3	22.6	31.0	83.0	1.0	6.0	1
	5	★	MDW0560HX5	40.6	49.0	101.0			1
	8		MDW0560HX8	58.6	67.0	119.0			1
5.7	3	★	MDW0570HX3	22.5	31.0	83.0	1.0	6.0	1
	5	★	MDW0570HX5	40.5	49.0	101.0			1
	8		MDW0570HX8	58.5	67.0	119.0			1
5.8	3	★	MDW0580HX3	22.4	31.1	83.1	1.1	6.0	1
	5	★	MDW0580HX5	40.4	49.1	101.1			1
	8	★	MDW0580HX8	58.4	67.1	119.1			1
5.9	3	★	MDW0590HX3	22.3	31.1	83.1	1.1	6.0	1
	5	★	MDW0590HX5	40.3	49.1	101.1			1
	8	★	MDW0590HX8	58.3	67.1	119.1			1
6.0	3	★	MDW0600HX3	22.1	31.1	83.1	1.1	6.0	1
	5	★	MDW0600HX5	40.1	49.1	101.1			1
	8	★	MDW0600HX8	58.1	67.1	119.1			1
6.1	3	★	MDW0610HX3	24.5	33.6	89.1	1.1	7.0	1
	5	★	MDW0610HX5	44.0	53.1	110.1			1
	8		MDW0610HX8	63.5	72.6	131.1			1
6.2	3	★	MDW0620HX3	24.3	33.6	89.1	1.1	7.0	1
	5	★	MDW0620HX5	43.8	53.1	110.1			1
	8		MDW0620HX8	63.3	72.6	131.1			1
6.3	3	★	MDW0630HX3	24.2	33.6	89.1	1.1	7.0	1
	5	★	MDW0630HX5	43.7	53.1	110.1			1
	8		MDW0630HX8	63.2	72.6	131.1			1
6.4	3	★	MDW0640HX3	24.1	33.7	89.2	1.2	7.0	1
	5	★	MDW0640HX5	43.6	53.2	110.2			1
	8		MDW0640HX8	63.1	72.7	131.2			1
6.5	3	★	MDW0650HX3	24.0	33.7	89.2	1.2	7.0	1
	5	★	MDW0650HX5	43.5	53.2	110.2			1
	8	★	MDW0650HX8	63.0	72.7	131.2			1

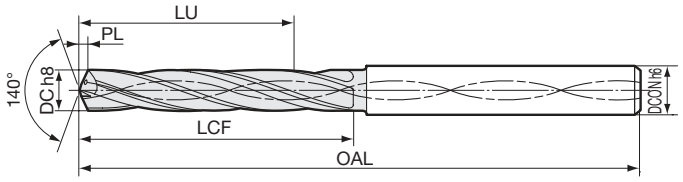
Grade: ACX70

★: Worldwide Warehouse Item

DEX Coating | Coolant Hole | 3D | 5D | 8D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø6.6 to 8.3mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.6	3	★	**MDW0660HX3**	26.3	36.2	89.2	1.2	7.0	1
	5	★	**MDW0660HX5**	47.3	57.2	110.2			1
	8		**MDW0660HX8**	68.3	78.2	131.2			1
6.7	3	★	**MDW0670HX3**	26.2	36.2	89.2	1.2	7.0	1
	5	★	**MDW0670HX5**	47.2	57.2	110.2			1
	8	★	**MDW0670HX8**	68.2	78.2	131.2			1
6.8	3	★	**MDW0680HX3**	26.0	36.2	89.2	1.2	7.0	1
	5	★	**MDW0680HX5**	47.0	57.2	110.2			1
	8	★	**MDW0680HX8**	68.0	78.2	131.2			1
6.9	3	★	**MDW0690HX3**	26.0	36.3	89.3	1.3	7.0	1
	5	★	**MDW0690HX5**	47.0	57.3	110.3			1
	8	★	**MDW0690HX8**	68.0	78.3	131.3			1
7.0	3	★	**MDW0700HX3**	25.8	36.3	89.3	1.3	7.0	1
	5	★	**MDW0700HX5**	46.8	57.3	110.3			1
	8	★	**MDW0700HX8**	67.8	78.3	131.3			1
7.1	3	★	**MDW0710HX3**	28.2	38.8	95.3	1.3	8.0	1
	5	★	**MDW0710HX5**	50.7	61.3	119.3			1
	8		**MDW0710HX8**	73.2	83.8	143.3			1
7.2	3	★	**MDW0720HX3**	28.0	38.8	95.3	1.3	8.0	1
	5	★	**MDW0720HX5**	50.5	61.3	119.3			1
	8		**MDW0720HX8**	73.0	83.8	143.3			1
7.3	3	★	**MDW0730HX3**	27.9	38.8	95.3	1.3	8.0	1
	5	★	**MDW0730HX5**	50.4	61.3	119.3			1
	8		**MDW0730HX8**	72.9	83.8	143.3			1
7.4	3	★	**MDW0740HX3**	27.7	38.8	95.3	1.3	8.0	1
	5	★	**MDW0740HX5**	50.2	61.3	119.3			1
	8		**MDW0740HX8**	72.7	83.8	143.3			1
7.5	3	★	**MDW0750HX3**	27.7	38.9	95.4	1.4	8.0	1
	5	★	**MDW0750HX5**	50.2	61.4	119.4			1
	8	★	**MDW0750HX8**	72.7	83.9	143.4			1
7.6	3	★	**MDW0760HX3**	30.0	41.4	95.4	1.4	8.0	1
	5	★	**MDW0760HX5**	54.0	65.4	119.4			1
	8		**MDW0760HX8**	78.0	89.4	143.4			1
7.7	3	★	**MDW0770HX3**	29.9	41.4	95.4	1.4	8.0	1
	5	★	**MDW0770HX5**	53.9	65.4	119.4			1
	8		**MDW0770HX8**	77.9	89.4	143.4			1
7.8	3	★	**MDW0780HX3**	29.7	41.4	95.4	1.4	8.0	1
	5	★	**MDW0780HX5**	53.7	65.4	119.4			1
	8		**MDW0780HX8**	77.7	89.4	143.4			1
7.9	3	★	**MDW0790HX3**	29.6	41.4	95.4	1.4	8.0	1
	5	★	**MDW0790HX5**	53.6	65.4	119.4			1
	8		**MDW0790HX8**	77.6	89.4	143.4			1
8.0	3	★	**MDW0800HX3**	29.5	41.5	95.5	1.5	8.0	1
	5	★	**MDW0800HX5**	53.5	65.5	119.5			1
	8	★	**MDW0800HX8**	77.5	89.5	143.5			1
8.1	3	★	**MDW0810HX3**	31.9	44.0	101.5	1.5	9.0	1
	5	★	**MDW0810HX5**	57.4	69.5	128.5			1
	8		**MDW0810HX8**	82.9	95.0	155.5			1
8.2	3	★	**MDW0820HX3**	31.7	44.0	101.5	1.5	9.0	1
	5	★	**MDW0820HX5**	57.2	69.5	128.5			1
	8		**MDW0820HX8**	82.7	95.0	155.5			1
8.3	3	★	**MDW0830HX3**	31.6	44.0	101.5	1.5	9.0	1
	5	★	**MDW0830HX5**	57.1	69.5	128.5			1
	8		**MDW0830HX8**	82.6	95.0	155.5			1

Grade: ACX70

Diameter ø8.4 to 10.1mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.4	3	★	**MDW0840HX3**	31.4	44.0	101.5	1.5	9.0	1
	5	★	**MDW0840HX5**	56.9	69.5	128.5			1
	8		**MDW0840HX8**	82.4	95.0	155.5			1
8.5	3	★	**MDW0850HX3**	31.3	44.0	101.5	1.5	9.0	1
	5	★	**MDW0850HX5**	56.8	69.5	128.5			1
	8	★	**MDW0850HX8**	82.3	95.0	155.5			1
8.6	3	★	**MDW0860HX3**	33.7	46.6	101.6	1.6	9.0	1
	5	★	**MDW0860HX5**	60.7	73.6	128.6			1
	8		**MDW0860HX8**	87.7	100.6	155.6			1
8.7	3	★	**MDW0870HX3**	33.6	46.6	101.6	1.6	9.0	1
	5	★	**MDW0870HX5**	60.6	73.6	128.6			1
	8		**MDW0870HX8**	87.6	100.6	155.6			1
8.8	3	★	**MDW0880HX3**	33.4	46.6	101.6	1.6	9.0	1
	5	★	**MDW0880HX5**	60.4	73.6	128.6			1
	8	★	**MDW0880HX8**	87.4	100.6	155.6			1
8.9	3	★	**MDW0890HX3**	33.3	46.6	101.6	1.6	9.0	1
	5	★	**MDW0890HX5**	60.3	73.6	128.6			1
	8		**MDW0890HX8**	87.3	100.6	155.6			1
9.0	3	★	**MDW0900HX3**	33.1	46.6	101.6	1.6	9.0	1
	5	★	**MDW0900HX5**	60.1	73.6	128.6			1
	8	★	**MDW0900HX8**	87.1	100.6	155.6			1
9.1	3	★	**MDW0910HX3**	35.6	49.2	107.7	1.7	10.0	1
	5	★	**MDW0910HX5**	64.1	77.7	137.7			1
	8		**MDW0910HX8**	92.6	106.2	167.7			1
9.2	3	★	**MDW0920HX3**	35.4	49.2	107.7	1.7	10.0	1
	5	★	**MDW0920HX5**	63.9	77.7	137.7			1
	8		**MDW0920HX8**	92.4	106.2	167.7			1
9.3	3	★	**MDW0930HX3**	35.3	49.2	107.7	1.7	10.0	1
	5	★	**MDW0930HX5**	63.8	77.7	137.7			1
	8		**MDW0930HX8**	92.3	106.2	167.7			1
9.4	3	★	**MDW0940HX3**	35.1	49.2	107.7	1.7	10.0	1
	5	★	**MDW0940HX5**	63.6	77.7	137.7			1
	8		**MDW0940HX8**	92.1	106.2	167.7			1
9.5	3	★	**MDW0950HX3**	35.0	49.2	107.7	1.7	10.0	1
	5	★	**MDW0950HX5**	63.5	77.7	137.7			1
	8	★	**MDW0950HX8**	92.0	106.2	167.7			1
9.6	3	★	**MDW0960HX3**	37.3	51.7	107.7	1.7	10.0	1
	5	★	**MDW0960HX5**	67.3	81.7	137.7			1
	8		**MDW0960HX8**	97.3	111.7	167.7			1
9.7	3	★	**MDW0970HX3**	37.3	51.8	107.8	1.8	10.0	1
	5	★	**MDW0970HX5**	67.3	81.8	137.8			1
	8		**MDW0970HX8**	97.3	111.8	167.8			1
9.8	3	★	**MDW0980HX3**	37.1	51.8	107.8	1.8	10.0	1
	5	★	**MDW0980HX5**	67.1	81.8	137.8			1
	8		**MDW0980HX8**	97.1	111.8	167.8			1
9.9	3	★	**MDW0990HX3**	37.0	51.8	107.8	1.8	10.0	1
	5	★	**MDW0990HX5**	67.0	81.8	137.8			1
	8		**MDW0990HX8**	97.0	111.8	167.8			1
10.0	3	★	**MDW1000HX3**	36.8	51.8	107.8	1.8	10.0	1
	5	★	**MDW1000HX5**	66.8	81.8	137.8			1
	8	★	**MDW1000HX8**	96.8	111.8	167.8			1
10.1	3	★	**MDW1010HX3**	39.2	54.3	117.8	1.8	11.0	1
	5	★	**MDW1010HX5**	70.7	85.8	150.8			1
	8		**MDW1010HX8**	102.2	117.3	183.8			1

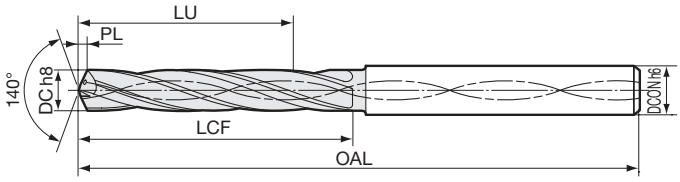
Grade: ACX70

HX Type (Internal Coolant Supply)

DEX Coating | Coolant Hole | 3D | 5D | 8D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø10.2 to 11.9mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.2	3	★	MDW1020HX3	39.1	54.4	117.9	1.9	11.0	1
	5	★	MDW1020HX5	70.6	85.9	150.9			1
	8		MDW1020HX8	102.1	117.4	183.9			1
10.3	3	★	MDW1030HX3	39.0	54.4	117.9	1.9	11.0	1
	5	★	MDW1030HX5	70.5	85.9	150.9			1
	8	★	MDW1030HX8	102.0	117.4	183.9			1
10.4	3	★	MDW1040HX3	38.8	54.4	117.9	1.9	11.0	1
	5	★	MDW1040HX5	70.3	85.9	150.9			1
	8		MDW1040HX8	101.8	117.4	183.9			1
10.5	3	★	MDW1050HX3	38.7	54.4	117.9	1.9	11.0	1
	5	★	MDW1050HX5	70.2	85.9	150.9			1
	8	★	MDW1050HX8	101.7	117.4	183.9			1
10.6	3	★	MDW1060HX3	41.0	56.9	117.9	1.9	11.0	1
	5	★	MDW1060HX5	74.0	89.9	150.9			1
	8		MDW1060HX8	107.0	122.9	183.9			1
10.7	3	★	MDW1070HX3	40.9	56.9	117.9	1.9	11.0	1
	5	★	MDW1070HX5	73.9	89.9	150.9			1
	8		MDW1070HX8	106.9	122.9	183.9			1
10.8	3	★	MDW1080HX3	40.8	57.0	118.0	2.0	11.0	1
	5	★	MDW1080HX5	73.8	90.0	151.0			1
	8		MDW1080HX8	106.8	123.0	184.0			1
10.9	3	★	MDW1090HX3	40.7	57.0	118.0	2.0	11.0	1
	5	★	MDW1090HX5	73.7	90.0	151.0			1
	8		MDW1090HX8	106.7	123.0	184.0			1
11.0	3	★	MDW1100HX3	40.5	57.0	118.0	2.0	11.0	1
	5	★	MDW1100HX5	73.5	90.0	151.0			1
	8	★	MDW1100HX8	106.5	123.0	184.0			1
11.1	3	★	MDW1110HX3	42.9	59.5	124.0	2.0	12.0	1
	5	★	MDW1110HX5	77.4	94.0	160.0			1
	8		MDW1110HX8	111.9	128.5	196.0			1
11.2	3	★	MDW1120HX3	42.7	59.5	124.0	2.0	12.0	1
	5	★	MDW1120HX5	77.2	94.0	160.0			1
	8		MDW1120HX8	111.7	128.5	196.0			1
11.3	3	★	MDW1130HX3	42.7	59.6	124.1	2.1	12.0	1
	5	★	MDW1130HX5	77.2	94.1	160.1			1
	8		MDW1130HX8	111.7	128.6	196.1			1
11.4	3	★	MDW1140HX3	42.5	59.6	124.1	2.1	12.0	1
	5	★	MDW1140HX5	77.0	94.1	160.1			1
	8		MDW1140HX8	111.5	128.6	196.1			1
11.5	3	★	MDW1150HX3	42.4	59.6	124.1	2.1	12.0	1
	5	★	MDW1150HX5	76.9	94.1	160.1			1
	8	★	MDW1150HX8	111.4	128.6	196.1			1
11.6	3	★	MDW1160HX3	44.7	62.1	124.1	2.1	12.0	1
	5	★	MDW1160HX5	80.7	98.1	160.1			1
	8		MDW1160HX8	116.7	134.1	196.1			1
11.7	3	★	MDW1170HX3	44.6	62.1	124.1	2.1	12.0	1
	5	★	MDW1170HX5	80.6	98.1	160.1			1
	8		MDW1170HX8	116.6	134.1	196.1			1
11.8	3	★	MDW1180HX3	44.4	62.1	124.1	2.1	12.0	1
	5	★	MDW1180HX5	80.4	98.1	160.1			1
	8		MDW1180HX8	116.4	134.1	196.1			1
11.9	3	★	MDW1190HX3	44.4	62.2	124.2	2.2	12.0	1
	5	★	MDW1190HX5	80.4	98.2	160.2			1
	8		MDW1190HX8	116.4	134.2	196.2			1

Grade: ACX70

Diameter ø12.0 to 13.7mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.0	3	★	MDW1200HX3	44.2	62.2	124.2	2.2	12.0	1
	5	★	MDW1200HX5	80.2	98.2	160.2			1
	8	★	MDW1200HX8	116.2	134.2	196.2			1
12.1	3		MDW1210HX3	46.6	64.7	130.2	2.2	13.0	1
	5		MDW1210HX5	84.1	102.2	169.2			1
	8		MDW1210HX8	121.6	139.7	208.2			1
12.2	3		MDW1220HX3	46.4	64.7	130.2	2.2	13.0	1
	5		MDW1220HX5	83.9	102.2	169.2			1
	8		MDW1220HX8	121.4	139.7	208.2			1
12.3	3		MDW1230HX3	46.3	64.7	130.2	2.2	13.0	1
	5		MDW1230HX5	83.8	102.2	169.2			1
	8		MDW1230HX8	121.3	139.7	208.2			1
12.4	3		MDW1240HX3	46.2	64.8	130.3	2.3	13.0	1
	5		MDW1240HX5	83.7	102.3	169.3			1
	8		MDW1240HX8	121.2	139.8	208.3			1
12.5	3	★	MDW1250HX3	46.1	64.8	130.3	2.3	13.0	1
	5	★	MDW1250HX5	83.6	102.3	169.3			1
	8	★	MDW1250HX8	121.1	139.8	208.3			1
12.6	3		MDW1260HX3	48.4	67.3	130.3	2.3	13.0	1
	5		MDW1260HX5	87.4	106.3	169.3			1
	8		MDW1260HX8	126.4	145.3	208.3			1
12.7	3		MDW1270HX3	48.3	67.3	130.3	2.3	13.0	1
	5		MDW1270HX5	87.3	106.3	169.3			1
	8		MDW1270HX8	126.3	145.3	208.3			1
12.8	3		MDW1280HX3	48.1	67.3	130.3	2.3	13.0	1
	5		MDW1280HX5	87.1	106.3	169.3			1
	8		MDW1280HX8	126.1	145.3	208.3			1
12.9	3		MDW1290HX3	48.0	67.3	130.3	2.3	13.0	1
	5		MDW1290HX5	87.0	106.3	169.3			1
	8		MDW1290HX8	126.0	145.3	208.3			1
13.0	3	★	MDW1300HX3	47.9	67.4	130.4	2.4	13.0	1
	5	★	MDW1300HX5	86.9	106.4	169.4			1
	8	★	MDW1300HX8	125.9	145.4	208.4			1
13.1	3		MDW1310HX3	50.3	69.9	136.4	2.4	14.0	1
	5		MDW1310HX5	90.8	110.4	178.4			1
	8		MDW1310HX8	131.3	150.9	220.4			1
13.2	3		MDW1320HX3	50.1	69.9	136.4	2.4	14.0	1
	5		MDW1320HX5	90.6	110.4	178.4			1
	8		MDW1320HX8	131.1	150.9	220.4			1
13.3	3		MDW1330HX3	50.0	69.9	136.4	2.4	14.0	1
	5		MDW1330HX5	90.5	110.4	178.4			1
	8		MDW1330HX8	131.0	150.9	220.4			1
13.4	3		MDW1340HX3	49.8	69.9	136.4	2.4	14.0	1
	5		MDW1340HX5	90.3	110.4	178.4			1
	8		MDW1340HX8	130.8	150.9	220.4			1
13.5	3	★	MDW1350HX3	49.8	70.0	136.5	2.5	14.0	1
	5	★	MDW1350HX5	90.3	110.5	178.5			1
	8	★	MDW1350HX8	130.8	151.0	220.5			1
13.6	3		MDW1360HX3	52.1	72.5	136.5	2.5	14.0	1
	5		MDW1360HX5	94.1	114.5	178.5			1
	8		MDW1360HX8	136.1	156.5	220.5			1
13.7	3		MDW1370HX3	52.0	72.5	136.5	2.5	14.0	1
	5		MDW1370HX5	94.0	114.5	178.5			1
	8		MDW1370HX8	136.0	156.5	220.5			1

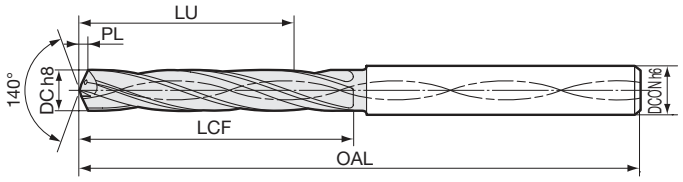
Grade: ACX70

★: Worldwide Warehouse Item

DEX Coating | Coolant Hole | 3D | 5D | 8D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø13.8 to 15.5mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		**MDW1380HX3**	51.8	72.5	136.5			1
13.8	5		**MDW1380HX5**	93.8	114.5	178.5	2.5	14.0	1
	8		**MDW1380HX8**	135.8	156.5	220.5			1
	3		**MDW1390HX3**	51.7	72.5	136.5			1
13.9	5		**MDW1390HX5**	93.7	114.5	178.5	2.5	14.0	1
	8		**MDW1390HX8**	135.7	156.5	220.5			1
	3	★	**MDW1400HX3**	51.5	72.5	136.5			1
14.0	5	★	**MDW1400HX5**	93.5	114.5	178.5	2.5	14.0	1
	8		**MDW1400HX8**	135.5	156.5	220.5			1
	3		**MDW1410HX3**	54.0	75.1	142.6			1
14.1	5		**MDW1410HX5**	97.5	118.6	187.6	2.6	15.0	1
	8		**MDW1410HX8**	141.0	162.1	232.6			1
	3		**MDW1420HX3**	53.8	75.1	142.6			1
14.2	5		**MDW1420HX5**	97.3	118.6	187.6	2.6	15.0	1
	8		**MDW1420HX8**	140.8	162.1	232.6			1
	3		**MDW1430HX3**	53.7	75.1	142.6			1
14.3	5		**MDW1430HX5**	97.2	118.6	187.6	2.6	15.0	1
	8		**MDW1430HX8**	140.7	162.1	232.6			1
	3		**MDW1440HX3**	53.5	75.1	142.6			1
14.4	5		**MDW1440HX5**	97.0	118.6	187.6	2.6	15.0	1
	8		**MDW1440HX8**	140.5	162.1	232.6			1
	3	★	**MDW1450HX3**	53.4	75.1	142.6			1
14.5	5	★	**MDW1450HX5**	96.9	118.6	187.6	2.6	15.0	1
	8		**MDW1450HX8**	140.4	162.1	232.6			1
	3		**MDW1460HX3**	55.8	77.7	142.7			1
14.6	5		**MDW1460HX5**	100.8	122.7	187.7	2.7	15.0	1
	8		**MDW1460HX8**	145.8	167.7	232.7			1
	3		**MDW1470HX3**	55.7	77.7	142.7			1
14.7	5		**MDW1470HX5**	100.7	122.7	187.7	2.7	15.0	1
	8		**MDW1470HX8**	145.7	167.7	232.7			1
	3		**MDW1480HX3**	55.5	77.7	142.7			1
14.8	5		**MDW1480HX5**	100.5	122.7	187.7	2.7	15.0	1
	8		**MDW1480HX8**	145.5	167.7	232.7			1
	3		**MDW1490HX3**	55.4	77.7	142.7			1
14.9	5		**MDW1490HX5**	100.4	122.7	187.7	2.7	15.0	1
	8		**MDW1490HX8**	145.4	167.7	232.7			1
	3	★	**MDW1500HX3**	55.2	77.7	142.7			1
15.0	5	★	**MDW1500HX5**	100.2	122.7	187.7	2.7	15.0	1
	8	★	**MDW1500HX8**	145.2	167.7	232.7			1
	3		**MDW1510HX3**	57.6	80.2	148.7			1
15.1	5		**MDW1510HX5**	104.1	126.7	196.7	2.7	16.0	1
	8		**MDW1510HX8**	150.6	173.2	244.7			1
	3		**MDW1520HX3**	57.5	80.3	148.8			1
15.2	5		**MDW1520HX5**	104.0	126.8	196.8	2.8	16.0	1
	8		**MDW1520HX8**	150.5	173.3	244.8			1
	3		**MDW1530HX3**	57.4	80.3	148.8			1
15.3	5		**MDW1530HX5**	103.9	126.8	196.8	2.8	16.0	1
	8		**MDW1530HX8**	150.4	173.3	244.8			1
	3		**MDW1540HX3**	57.2	80.3	148.8			1
15.4	5		**MDW1540HX5**	103.7	126.8	196.8	2.8	16.0	1
	8		**MDW1540HX8**	150.2	173.3	244.8			1
	3	★	**MDW1550HX3**	57.1	80.3	148.8			1
15.5	5	★	**MDW1550HX5**	103.6	126.8	196.8	2.8	16.0	1
	8		**MDW1550HX8**	150.1	173.3	244.8			1

Grade: ACX70

Diameter ø15.6 to 17.3mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		**MDW1560HX3**	59.4	82.8	148.8			1
15.6	5		**MDW1560HX5**	107.4	130.8	196.8	2.8	16.0	1
	8		**MDW1560HX8**	155.4	178.8	244.8			1
	3		**MDW1570HX3**	59.4	82.9	148.9			1
15.7	5		**MDW1570HX5**	107.4	130.9	196.9	2.9	16.0	1
	8		**MDW1570HX8**	155.4	178.9	244.9			1
	3		**MDW1580HX3**	59.2	82.9	148.9			1
15.8	5		**MDW1580HX5**	107.2	130.9	196.9	2.9	16.0	1
	8		**MDW1580HX8**	155.2	178.9	244.9			1
	3		**MDW1590HX3**	59.1	82.9	148.9			1
15.9	5		**MDW1590HX5**	107.1	130.9	196.9	2.9	16.0	1
	8		**MDW1590HX8**	155.1	178.9	244.9			1
	3	★	**MDW1600HX3**	58.9	82.9	148.9			1
16.0	5	★	**MDW1600HX5**	106.9	130.9	196.9	2.9	16.0	1
	8		**MDW1600HX8**	154.9	178.9	244.9			1
	3		**MDW1610HX3**	61.3	85.4	154.9			1
16.1	5		**MDW1610HX5**	110.8	134.9	205.9	2.9	17.0	1
	8		**MDW1610HX8**	160.3	184.4	256.9			1
	3		**MDW1620HX3**	61.1	85.4	154.9			1
16.2	5		**MDW1620HX5**	110.6	134.9	205.9	2.9	17.0	1
	8		**MDW1620HX8**	160.1	184.4	256.9			1
	3		**MDW1630HX3**	61.1	85.5	155.0			1
16.3	5		**MDW1630HX5**	110.6	135.0	206.0	3.0	17.0	1
	8		**MDW1630HX8**	160.1	184.5	257.0			1
	3		**MDW1640HX3**	60.9	85.5	155.0			1
16.4	5		**MDW1640HX5**	110.4	135.0	206.0	3.0	17.0	1
	8		**MDW1640HX8**	159.9	184.5	257.0			1
	3	★	**MDW1650HX3**	60.8	85.5	155.0			1
16.5	5	★	**MDW1650HX5**	110.3	135.0	206.0	3.0	17.0	1
	8		**MDW1650HX8**	159.8	184.5	257.0			1
	3		**MDW1660HX3**	63.1	88.0	155.0			1
16.6	5		**MDW1660HX5**	114.1	139.0	206.0	3.0	17.0	1
	8		**MDW1660HX8**	165.1	190.0	257.0			1
	3		**MDW1670HX3**	63.0	88.0	155.0			1
16.7	5		**MDW1670HX5**	114.0	139.0	206.0	3.0	17.0	1
	8		**MDW1670HX8**	165.0	190.0	257.0			1
	3		**MDW1680HX3**	62.9	88.1	155.1			1
16.8	5		**MDW1680HX5**	113.9	139.1	206.1	3.1	17.0	1
	8		**MDW1680HX8**	164.9	190.1	257.1			1
	3		**MDW1690HX3**	62.8	88.1	155.1			1
16.9	5		**MDW1690HX5**	113.8	139.1	206.1	3.1	17.0	1
	8		**MDW1690HX8**	164.8	190.1	257.1			1
	3	★	**MDW1700HX3**	62.6	88.1	155.1			1
17.0	5	★	**MDW1700HX5**	113.6	139.1	206.1	3.1	17.0	1
	8		**MDW1700HX8**	164.6	190.1	257.1			1
	3	★	**MDW1710HX3**	65.0	90.6	161.1			1
17.1	5	★	**MDW1710HX5**	117.5	143.1	217.1	3.1	18.0	1
	8	★	**MDW1710HX8**	170.0	195.6	269.1			1
	3		**MDW1720HX3**	64.8	90.6	161.1			1
17.2	5		**MDW1720HX5**	117.3	143.1	217.1	3.1	18.0	1
	8		**MDW1720HX8**	169.8	195.6	269.1			1
	3		**MDW1730HX3**	64.7	90.6	161.1			1
17.3	5		**MDW1730HX5**	117.2	143.1	217.1	3.1	18.0	1
	8		**MDW1730HX8**	169.7	195.6	269.1			1

Grade: ACX70

★: Worldwide Warehouse Item

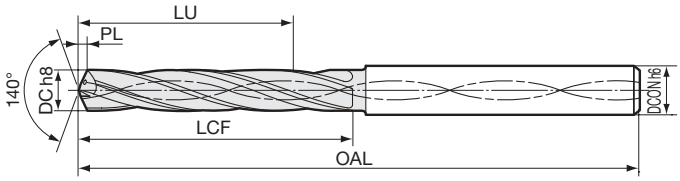
HX Type (Internal Coolant Supply)

Cast Iron | Ductile Cast Iron

DEX Coating | Coolant Hole | 3D | 5D | 8D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø17.4 to 18.3mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
17.4	3		**MDW1740HX3**	64.6	90.7	161.2	3.2	18.0	1
	5		**MDW1740HX5**	117.1	143.2	217.2			1
	8		**MDW1740HX8**	169.6	195.7	269.2			1
17.5	3	★	**MDW1750HX3**	64.5	90.7	161.2	3.2	18.0	1
	5	★	**MDW1750HX5**	117.0	143.2	217.2			1
	8		**MDW1750HX8**	169.5	195.7	269.2			1
17.6	3		**MDW1760HX3**	66.8	93.2	161.2	3.2	18.0	1
	5		**MDW1760HX5**	120.8	147.2	217.2			1
	8		**MDW1760HX8**	174.8	201.2	269.2			1
17.7	3		**MDW1770HX3**	66.7	93.2	161.2	3.2	18.0	1
	5		**MDW1770HX5**	120.7	147.2	217.2			1
	8		**MDW1770HX8**	174.7	201.2	269.2			1
17.8	3		**MDW1780HX3**	66.5	93.2	161.2	3.2	18.0	1
	5		**MDW1780HX5**	120.5	147.2	217.2			1
	8		**MDW1780HX8**	174.5	201.2	269.2			1
17.9	3		**MDW1790HX3**	66.5	93.3	161.3	3.3	18.0	1
	5		**MDW1790HX5**	120.5	147.3	217.3			1
	8		**MDW1790HX8**	174.5	201.3	269.3			1
18.0	3	★	**MDW1800HX3**	66.3	93.3	161.3	3.3	18.0	1
	5	★	**MDW1800HX5**	120.3	147.3	217.3			1
	8		**MDW1800HX8**	174.3	201.3	269.3			1
18.1	3		**MDW1810HX3**	68.7	95.8	167.3	3.3	19.0	1
	5		**MDW1810HX5**	124.2	151.3	224.3			1
18.2	3		**MDW1820HX3**	68.5	95.8	167.3	3.3	19.0	1
	5		**MDW1820HX5**	124.0	151.3	224.3			1
18.3	3		**MDW1830HX3**	68.4	95.8	167.3	3.3	19.0	1
	5		**MDW1830HX5**	123.9	151.3	224.3			1

Grade: ACX70

Diameter ø18.4 to 20.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
18.4	3		**MDW1840HX3**	68.2	95.8	167.3	3.3	19.0	1
	5		**MDW1840HX5**	123.7	151.3	224.3			1
18.5	3	★	**MDW1850HX3**	68.2	95.9	167.4	3.4	19.0	1
	5	★	**MDW1850HX5**	123.7	151.4	224.4			1
18.6	3		**MDW1860HX3**	70.5	98.4	167.4	3.4	19.0	1
	5		**MDW1860HX5**	127.5	155.4	224.4			1
18.7	3		**MDW1870HX3**	70.4	98.4	167.4	3.4	19.0	1
	5		**MDW1870HX5**	127.4	155.4	224.4			1
18.8	3		**MDW1880HX3**	70.2	98.4	167.4	3.4	19.0	1
	5		**MDW1880HX5**	127.2	155.4	224.4			1
18.9	3		**MDW1890HX3**	70.1	98.4	167.4	3.4	19.0	1
	5		**MDW1890HX5**	127.1	155.4	224.4			1
19.0	3	★	**MDW1900HX3**	70.0	98.5	167.5	3.5	19.0	1
	5	★	**MDW1900HX5**	127.0	155.5	224.5			1
19.1	3		**MDW1910HX3**	72.4	101.0	173.5	3.5	20.0	1
	5		**MDW1910HX5**	130.9	159.5	233.5			1
19.2	3		**MDW1920HX3**	72.2	101.0	173.5	3.5	20.0	1
	5		**MDW1920HX5**	130.7	159.5	233.5			1
19.3	3		**MDW1930HX3**	72.1	101.0	173.5	3.5	20.0	1
	5		**MDW1930HX5**	130.6	159.5	233.5			1
19.4	3		**MDW1940HX3**	71.9	101.0	173.5	3.5	20.0	1
	5		**MDW1940HX5**	130.4	159.5	233.5			1
19.5	3	★	**MDW1950HX3**	71.8	101.0	173.5	3.5	20.0	1
	5	★	**MDW1950HX5**	130.3	159.5	233.5			1
19.6	3		**MDW1960HX3**	74.2	103.6	173.6	3.6	20.0	1
	5		**MDW1960HX5**	134.2	163.6	233.6			1
19.7	3		**MDW1970HX3**	74.1	103.6	173.6	3.6	20.0	1
	5		**MDW1970HX5**	134.1	163.6	233.6			1
19.8	3		**MDW1980HX3**	73.9	103.6	173.6	3.6	20.0	1
	5		**MDW1980HX5**	133.9	163.6	233.6			1
19.9	3		**MDW1990HX3**	73.8	103.6	173.6	3.6	20.0	1
	5		**MDW1990HX5**	133.8	163.6	233.6			1
20.0	3	★	**MDW2000HX3**	73.6	103.6	173.6	3.6	20.0	1
	5	★	**MDW2000HX5**	133.6	163.6	233.6			1

Grade: ACX70

Recommended Cutting Conditions

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Gray Cast Iron FC250	Ductile Cast Iron FCD450
ø3.0	v_c	50 - **70** - 90	40 - **50** - 80
	f	0.10 - **0.20** - 0.30	0.12 - **0.18** - 0.24
ø5.0	v_c	50 - **70** - 90	40 - **50** - 80
	f	0.15 - **0.25** - 0.35	0.15 - **0.22** - 0.30
ø10.0	v_c	60 - **80** - 100	50 - **60** - 90
	f	0.20 - **0.35** - 0.50	0.20 - **0.30** - 0.40
ø20.0	v_c	70 - **100** - 120	60 - **80** - 100
	f	0.25 - **0.50** - 0.70	0.25 - **0.45** - 0.60

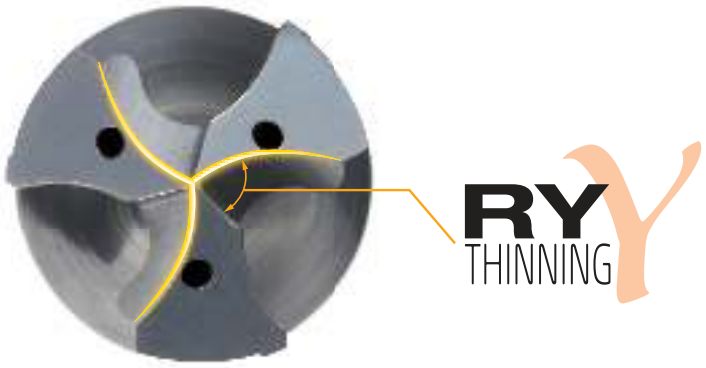
Min. - **Optimum** - Max.

★: Worldwide Warehouse Item



■ General Features

Strong MultiDrill HY Type is a 3-flute drill that achieves stability and high efficiency in machining of steel and cast iron, reducing the load on each flute and extending the tool life.



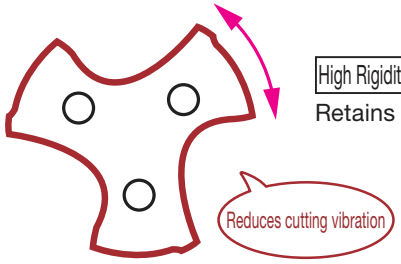
■ Features and Applications

● High-Efficiency Drilling of Steel and Cast Iron

Thick web and 3-point margin design ensure stable hole diameter accuracy in high-efficiency drilling.
RY THINNING also reduces cutting force in high-efficiency drilling.
Applicable to cutting conditions exceeding v_f=31.5 IPM in steel drilling and v_f=39.4 IPM in cast iron drilling. (for ø10mm sizes)

● Long Tool Life

DEX Coat for drills utilizes nano-coating technology to provide more than double the tool life of conventional coatings.
3-point margin design gives excellent guide performance for vibration control and long, stable tool life.



High Rigidity
Retains high rigidity with wide land.

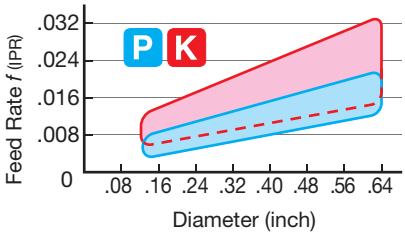
Evacuation
Drastically improved chip control and evacuation



■ Product Range

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Internal	MDW□□□□HY3	ø5.0 to ø16.0	up to 3	23 items in stock
	MDW□□□□HY5		up to 5	23 items in stock
	MDW□□□□HY8		up to 8	6 items in stock

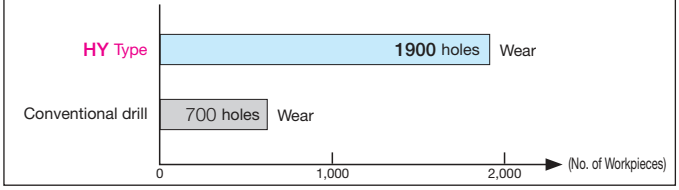
● Drilling of general steel and gray cast iron



■ Application Examples

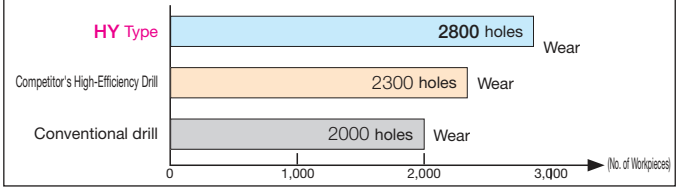
Machine components Alloy Steel
·Tool: MDW 1250HY3 (ø12.5mm 3D)
·Cutting Conditions: Conventional Tool : v_c=295 SFM, f =0.01 IPR, v_f=22.6 IPM
HY Type : v_c=230 SFM, f =0.0157 IPR, v_f=28 IPM
H=12mm (through), internal coolant supply (water soluble)

1.25 times the efficiency and 2.7 times the tool life of conventional drills



Machine components Ductile Cast Iron
·Tool: MDW 1020HY3 (ø10.2mm 3D)
·Cutting Conditions: Conventional Tool : v_c=230 SFM, f =0.011 IPR, v_f=24 IPM
HY Type : v_c=262 SFM, f =0.024 IPR, v_f=59 IPM
H=28mm (stop), internal coolant supply (water soluble)

2.5 times the efficiency and +1.4 times the tool life of conventional drills (1.2 times the tool life of competitors' high-efficiency drills)

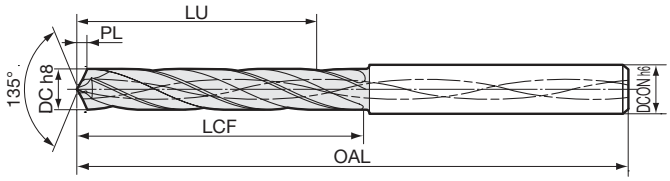


HY Type (Internal Coolant Supply)

DEX Coating | Coolant Hole | 3D | 5D | 8D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø5.0 to 9.5mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
5.0	3	★	**MDW0500HY3**	21.0	28.5	81.0	1.0	5.0	1
	5	★	**MDW0500HY5**	37.5	45.0	99.0			1
	8	★	**MDW0500HY8**	48.5	56.0	106.0			1
5.1	3	★	**MDW0510HY3**	21.0	28.6	83.1	1.1	6.0	1
	5	★	**MDW0510HY5**	37.5	45.1	101.1			1
	8		**MDW0510HY8**	54.0	61.6	119.1			1
6.0	3	★	**MDW0600HY3**	22.2	31.2	83.2	1.2	6.0	1
	5	★	**MDW0600HY5**	40.2	49.2	101.2			1
	8	★	**MDW0600HY8**	58.2	67.2	119.2			1
6.5	3	★	**MDW0650HY3**	24.1	33.8	89.3	1.3	7.0	1
	5	★	**MDW0650HY5**	43.6	53.3	110.3			1
	8		**MDW0650HY8**	63.1	72.8	131.3			1
6.8	3	★	**MDW0680HY3**	26.2	36.4	89.4	1.4	7.0	1
	5	★	**MDW0680HY5**	47.2	57.4	110.4			1
	8	★	**MDW0680HY8**	68.2	78.4	131.4			1
7.0	3	★	**MDW0700HY3**	25.9	36.4	89.4	1.4	7.0	1
	5	★	**MDW0700HY5**	46.9	57.4	110.4			1
	8		**MDW0700HY8**	67.9	78.4	131.4			1
8.0	3	★	**MDW0800HY3**	29.7	41.7	95.7	1.7	8.0	1
	5	★	**MDW0800HY5**	53.7	65.7	119.7			1
	8		**MDW0800HY8**	77.7	89.7	143.7			1
8.5	3	★	**MDW0850HY3**	31.6	44.3	101.8	1.8	9.0	1
	5	★	**MDW0850HY5**	57.1	69.8	128.8			1
	8	★	**MDW0850HY8**	82.6	95.3	155.8			1
8.6	3	★	**MDW0860HY3**	33.9	46.8	101.8	1.8	9.0	1
	5	★	**MDW0860HY5**	60.9	73.8	128.8			1
	8		**MDW0860HY8**	87.9	100.8	155.8			1
8.8	3	★	**MDW0880HY3**	33.6	46.8	101.8	1.8	9.0	1
	5	★	**MDW0880HY5**	60.6	73.8	128.8			1
	8		**MDW0880HY8**	87.6	100.8	155.8			1
9.0	3	★	**MDW0900HY3**	33.4	46.9	101.9	1.9	9.0	1
	5	★	**MDW0900HY5**	60.4	73.9	128.9			1
	8		**MDW0900HY8**	87.4	100.9	155.9			1
9.5	3	★	**MDW0950HY3**	35.3	49.5	108.0	2.0	10.0	1
	5	★	**MDW0950HY5**	63.8	78.0	138.0			1
	8		**MDW0950HY8**	92.3	106.5	168.0			1

Grade: ACX70

Diameter ø10.0 to 16.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
10.0	3	★	**MDW1000HY3**	37.1	52.1	108.1	2.1	10.0	1
	5	★	**MDW1000HY5**	67.1	82.1	138.1			1
	8		**MDW1000HY8**	97.1	112.1	168.1			1
10.2	3	★	**MDW1020HY3**	39.3	54.6	118.1	2.1	11.0	1
	5	★	**MDW1020HY5**	70.8	86.1	151.1			1
	8		**MDW1020HY8**	102.3	117.6	184.1			1
10.3	3	★	**MDW1030HY3**	39.2	54.6	118.1	2.1	11.0	1
	5	★	**MDW1030HY5**	70.7	86.1	151.1			1
	8	★	**MDW1030HY8**	102.2	117.6	184.1			1
11.0	3	★	**MDW1100HY3**	40.8	57.3	118.3	2.3	11.0	1
	5	★	**MDW1100HY5**	73.8	90.3	151.3			1
	8		**MDW1100HY8**	106.8	123.3	184.3			1
11.4	3	★	**MDW1140HY3**	42.8	59.9	124.4	2.4	12.0	1
	5	★	**MDW1140HY5**	77.3	94.4	160.4			1
	8		**MDW1140HY8**	111.8	128.9	196.4			1
11.5	3	★	**MDW1150HY3**	42.7	59.9	124.4	2.4	12.0	1
	5	★	**MDW1150HY5**	77.2	94.4	160.4			1
	8		**MDW1150HY8**	111.7	128.9	196.4			1
12.0	3	★	**MDW1200HY3**	44.5	62.5	124.5	2.5	12.0	1
	5	★	**MDW1200HY5**	80.5	98.5	160.5			1
	8		**MDW1200HY8**	116.5	134.5	196.5			1
12.5	3	★	**MDW1250HY3**	46.4	65.1	130.6	2.6	13.0	1
	5	★	**MDW1250HY5**	83.9	102.6	169.6			1
	8	★	**MDW1250HY8**	121.4	140.1	208.6			1
13.0	3	★	**MDW1300HY3**	48.2	67.7	130.7	2.7	13.0	1
	5	★	**MDW1300HY5**	87.2	106.7	169.7			1
	8		**MDW1300HY8**	126.2	145.7	208.7			1
14.0	3	★	**MDW1400HY3**	51.9	72.9	136.9	2.9	14.0	1
	5	★	**MDW1400HY5**	93.9	114.9	178.9			1
	8		**MDW1400HY8**	135.9	156.9	220.9			1
16.0	3	★	**MDW1600HY3**	59.3	83.3	149.3	3.3	16.0	1
	5	★	**MDW1600HY5**	107.3	131.3	197.3			1
	8		**MDW1600HY8**	155.3	179.3	245.3			1

Grade: ACX70

Recommended Cutting Conditions

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel/General Steel (up to 300HB)	Gray Cast Iron FC250	Ductile Cast Iron FCD450
ø5.0	v_c	50 - **80** - 120	50 - **70** - 90	40 - **50** - 80
	f	0.15 - **0.20** - 0.25	0.20 - **0.30** - 0.45	0.18 - **0.24** - 0.30
ø10.0	v_c	70 - **100** - 150	60 - **80** - 100	50 - **60** - 90
	f	0.20 - **0.30** - 0.40	0.30 - **0.45** - 0.60	0.30 - **0.40** - 0.50
ø16.0	v_c	80 - **120** - 160	70 - **100** - 120	60 - **80** - 100
	f	0.35 - **0.45** - 0.55	0.40 - **0.60** - 0.80	0.40 - **0.55** - 0.70

Min. - **Optimum** - Max.

★: Worldwide Warehouse Item

SGS Type



■ General Features

SGS type drills for heat-resistant alloys employ a sharp cutting edge to reduce heat during drilling (reduce cutting force) and provide a long, stable tool life.

■ Features and Applications

Long tool life

- Combination of optimised cutting edge design and dedicated grade significantly reduces wear.
- Minute honing (edge treatment) amount and special thinning shape reduce cutting force. This reduces cutting edge breakage.
- Perfect for drilling Ni-based heat-resistant alloys (Inconel/Waspaloy/Hastelloy).

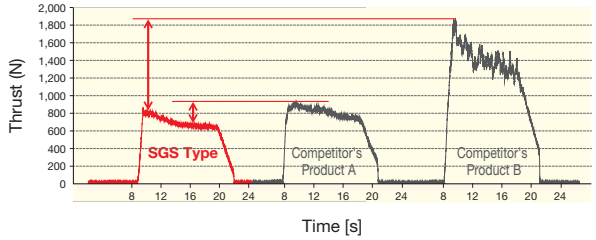
■ Product Range

Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
MDW□□□□SGS3	ø3.0 to 12.0	up to 3

■ Performance

Comparison of Cutting Force (Thrust)

Low Resistance (Reduced Load on Cutting Edge)



Tool Diameter : ø6.0
Part Material : Inconel 718
Cutting Conditions : v_c=33 SFM, f =0.003 IPR, H=0.315" (through), external coolant supply

Tool Life Comparison

Long Tool Life (No Fracturing or Breakage)

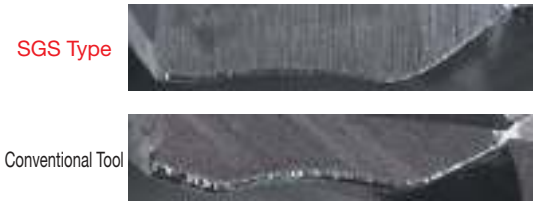
Tool	SGS Type	Competitor's Product A	Competitor's Product B
No. of Workpieces	Able to Continue after 50 Holes	Breakage after 30 Holes	Breakage after 5 Holes
Photo			

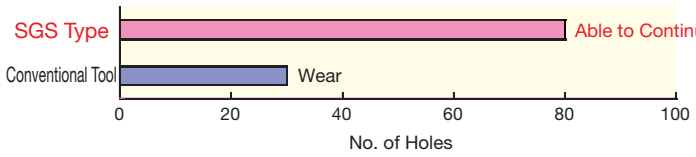
Tool Diameter : ø6.0
Part Material : Inconel 718
Cutting Conditions : v_c=33 SFM, f =0.003 IPR, H =0.630" (stop hole), external coolant supply

■ Application Examples

Comparison of Cutting Edge Wear after 30 Holes

Significantly Reduced Flank Wear



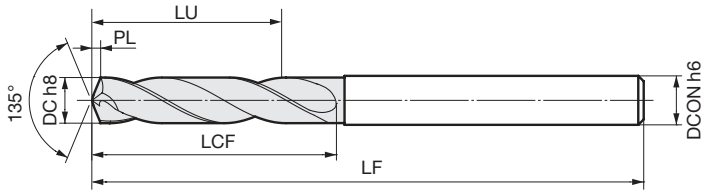


Tool : MDW 0600SGS3
Part Material : Inconel 718 (aeronautic components)
Cutting Conditions : v_c=33 SFM, f =0.0023 IPR, H=0.118" (through), external coolant supply

PVD Coat | 3D

*Refer to N74 for the tolerance of h6 and h8

Fig 1



Diameter ø3.0 to 12.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.0	3	★	**MDW0300SGS3**	*13.6*	*18.1*	*49.6*	*0.6*	*3.0*	1
3.5	3	★	**MDW0350SGS3**	*15.5*	*20.7*	*60.7*	*0.7*	*4.0*	1
4.0		★	**MDW0400SGS3**	*17.3*	*23.3*	*60.8*	*0.8*		1
4.5	3	★	**MDW0450SGS3**	*19.2*	*25.9*	*76.9*	*0.9*	*5.0*	1
5.0		★	**MDW0500SGS3**	*21.0*	*28.5*	*77.0*	*1.0*		1
5.5	3	★	**MDW0550SGS3**	*20.4*	*28.6*	*82.1*	*1.1*	*6.0*	1
6.0		★	**MDW0600SGS3**	*22.2*	*31.2*	*82.2*	*1.2*		1
6.5	3	★	**MDW0650SGS3**	*24.1*	*33.8*	*84.3*	*1.3*	*7.0*	1
7.0		★	**MDW0700SGS3**	*25.9*	*36.4*	*84.4*	*1.4*		1
7.5	3	★	**MDW0750SGS3**	*27.9*	*39.1*	*91.6*	*1.6*	*8.0*	1
8.0		★	**MDW0800SGS3**	*29.7*	*41.7*	*91.7*	*1.7*		1
8.5	3	★	**MDW0850SGS3**	*31.6*	*44.3*	*99.8*	*1.8*	*9.0*	1
9.0		★	**MDW0900SGS3**	*33.4*	*46.9*	*99.9*	*1.9*		1
9.5	3	★	**MDW0950SGS3**	*35.3*	*49.5*	*107.0*	*2.0*	*10.0*	1
10.0		★	**MDW1000SGS3**	*37.1*	*52.1*	*107.1*	*2.1*		1
10.5	3	★	**MDW1050SGS3**	*39.0*	*54.7*	*116.2*	*2.2*	*11.0*	1
11.0		★	**MDW1100SGS3**	*40.8*	*57.3*	*116.3*	*2.3*		1
11.5	3	★	**MDW1150SGS3**	*42.7*	*59.9*	*123.4*	*2.4*	*12.0*	1
12.0		★	**MDW1200SGS3**	*44.5*	*62.5*	*123.5*	*2.5*		1

Grade: ACW528

Recommended Cutting Conditions

(v_c: Cutting Speed (m/min), *f*: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Titanium Alloy Ti	Heat-Resistant Alloy Inconel
ø6.0	v_c	10 - **20** - 30	10 - **10** - 30
	f	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10
ø10.0	v_c	10 - **20** - 30	10 - **15** - 30
	f	0.07 - **0.10** - 0.12	0.07 - **0.10** - 0.12
ø12.0	v_c	10 - **20** - 30	15 - **20** - 30
	f	0.07 - **0.10** - 0.12	0.07 - **0.10** - 0.12

Min. - **Optimum** - Max.

★: Worldwide Warehouse Item

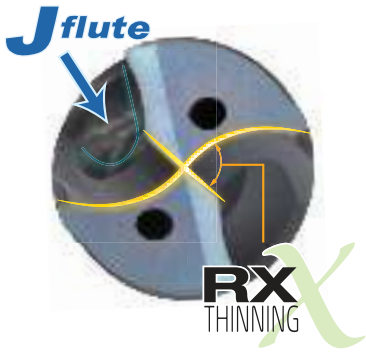


■ General Features

Super MultiDrill XHGS type, a next-generation drill specialized for deep hole drilling, features high drill strength and stable chip control to further enhance efficiency of deep hole drilling.

■ Features

- Deep hole drilling
  - New groove shape (J flute) achieves improved chip control during deep hole drilling
  - High-efficiency drilling at over v_f=39.37 IPM at depths 20 times the drill diameter (diameter ø5, equivalent to S48C)
  - Special web thinning shape (RX thinning) reduces cutting force during high-efficiency machining
- Long tool life
  - Special DEX Coat provides long tool life on a wide variety of work materials
  - Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring long, stable tool life
- Eco-Friendly
  - Compatible with the MQL (Minimum Quantity Lubrication) system
  - Compatible with dual-fluid mist (simultaneous spray of oil and water)



■ Product Range

Applications	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Deep Hole Drilling	MDW□□□□XHGS10	ø2.1 to 16.0	up to 10	76 items in stock
	MDW□□□□XHGS12	ø2.5 to 16.0	up to 12	28 items in stock
	MDW□□□□XHGS15	ø2.1 to 16.0	up to 15	76 items in stock
	MDW□□□□XHGS20	ø2.1 to 14.0	up to 20	72 items in stock
	MDW□□□□XHGS25	ø2.1 to 12.0	up to 25	68 items in stock
	MDW□□□□XHGS30	ø2.1 to 10.0	up to 30	64 items in stock
For Guide Holes	MDW□□□□PHT	ø2.1 to 16.0	up to 2	76 items in stock

■ Application Examples

● Automotive components (Medium Carbon Steel)

Tool : ø5.0x115mm (PHT Type), ø5.0x170mm (XHGS Type)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.5MPa, volume approx. 4cc/h)
Cutting Conditions : v_c=262 SFM, f =0.011 IPR, H =3.346" per hole (3 holes per unit)
Tool life : 500 units (371 ft.)

● Automotive components (Structural Carbon Steel)

Tool : ø6.0x170mm (PHT Type), ø6.0x230mm (XHGS Type)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.5MPa, volume approx. 40cc/h)
Cutting Conditions : v_c=262 SFM, f =0.007 IPR, H =4.33" per hole (4 holes per unit)
Tool life : 150 units (371 ft.)

● Automotive components (Ductile Cast Iron)

Tool : ø5.0x105mm (PHT Type), ø5.0x155mm (XHGS Type)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.4MPa, volume approx. 4cc/h)
Cutting Conditions : v_c=165 SFM, f =0.007 IPR H =2.362" per hole (5 holes per unit)
Tool life : 400 units (394 ft.)

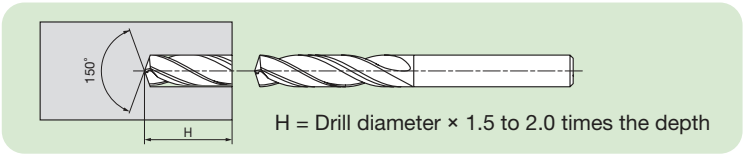
● Machine components (1045 Steel)

Tool : ø6.0x90mm (PHT Type), ø6.0x145mm (XHGS Type)
Machine : Horizontal single-spindle NC machine
Coolant : MQL (air pressure 0.5MPa, volume approx. 60cc/h)
Cutting Conditions : v_c=262 SFM, f =0.0078, H =2.44" per hole (3 holes per unit)
Tool life : 550 units (341 ft.)

■ Recommended Drilling Method

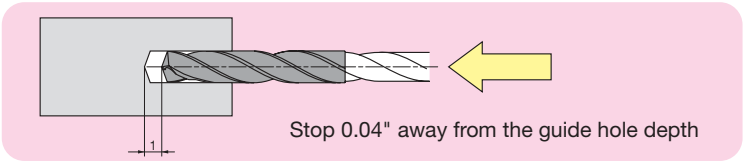
(1) Make a guide hole using the PHT type

- Select the same nominal diameter for the PHT type dedicated guide hole drill as the XHGS type deep hole drill. (The guide drill diameter is designed to be 0.02 mm to 0.05 mm larger than the long drill diameter.)



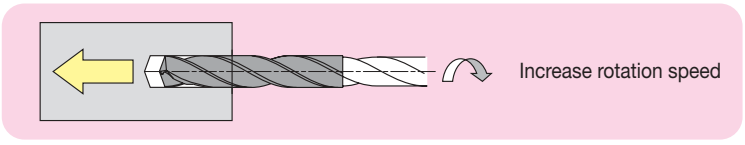
(2) Feed the XHGS type deep hole drill through the guide hole at low rotation speed

- Spindle Speed: 500 RPM
- Feed Rate: 39 to 78 IPM



* If the drill is inserted into the guide hole at the set cutting speed, peripheral run-out may cause damage to the drill's peripheral edges.

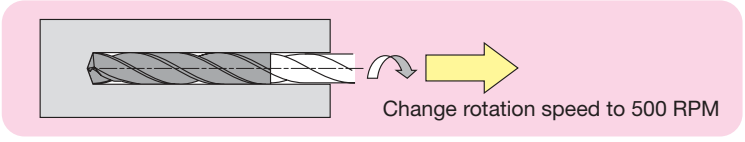
(3) Increase rotation speed until the set cutting speed is reached, then start normal drilling operation



* On some NC machines, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.

(4) After drilling, rotation speed is reduced and the drill is retracted from the work material

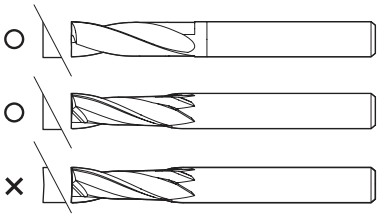
- Spindle speed: 500 RPM Feed rate: 39 to 78 IPM



* Retracting a drill from the work material at a high rotation speed is dangerous as doing so may result in breakage due to runout.

(5) Other notes

- A flat base should be prepared first if the entry side is a non-flat surface (slanted surface, cylindrical surface, etc.).



Spot facing using an endmill or flat MultiDrill MDF type (see page J44)

Concave ended endmills cannot be used.

- If the exit side is a non-flat surface, reduce the feed rate to f=0.002 IPR immediately before the breakthrough point to prevent the drill from breaking or burrs from forming.

■ Coolant

(1) Internal coolant supply

- Use coolant equivalent to JIS A1-1 (emulsion).
- Pump pressure Steel: 1. 5 to 2. 0MPa (higher pressure results in a stronger cooling effect, which affects chips and wear)
  Cast iron and aluminum alloy: 4. 0 to 6. 0MPa (prioritize cooling performance)

(2) Internal MQL

- Air pressure : 0.5MPa or greater
- Evacuation volume : It is recommended to set the maximum evacuation volume for your equipment.
  *Consult the manufacturer if you intend to machine aluminum alloy.

(3) Internal dual-fluid mist

- Air pressure : 0.5MPa or greater
- Evacuation volume : It is recommended to use the optimal setting for your equipment.

XHGS Type / PHT Type (Internal Coolant Supply)

DEX Coating | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N74 for the tolerance of h6, h8 and e8

Fig. 1 (PHT Type)

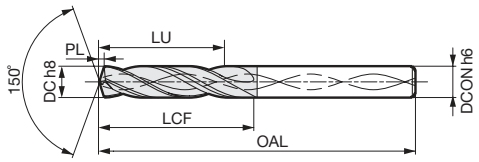
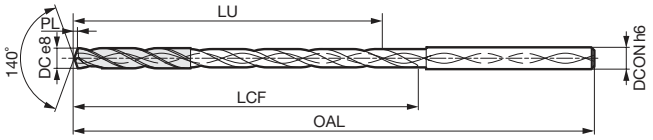


Fig. 2 (XHGS Type)



Diameter ø2.1 to 2.8mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.1	3	★	MDW0210PHT	12.2	15.3	68.3	0.3	3.0	1
	10	★	MDW0210XHGS10	35.3	38.4	88.4	0.4		2
	15	★	MDW0210XHGS15	45.3	48.4	98.4			2
	20	★	MDW0210XHGS20	58.3	61.4	111.4			2
	25	★	MDW0210XHGS25	70.3	73.4	123.4			2
	30	★	MDW0210XHGS30	83.3	86.4	136.4			2
2.2	3	★	MDW0220PHT	12.0	15.3	68.3	0.3	3.0	1
	10	★	MDW0220XHGS10	35.1	38.4	88.4	0.4		2
	15	★	MDW0220XHGS15	45.1	48.4	98.4			2
	20	★	MDW0220XHGS20	58.1	61.4	111.4			2
	25	★	MDW0220XHGS25	70.1	73.4	123.4			2
	30	★	MDW0220XHGS30	83.1	86.4	136.4			2
2.3	3	★	MDW0230PHT	11.9	15.3	68.3	0.3	3.0	1
	10	★	MDW0230XHGS10	35.0	38.4	88.4	0.4		2
	15	★	MDW0230XHGS15	45.0	48.4	98.4			2
	20	★	MDW0230XHGS20	58.0	61.4	111.4			2
	25	★	MDW0230XHGS25	70.0	73.4	123.4			2
	30	★	MDW0230XHGS30	83.0	86.4	136.4			2
2.4	3	★	MDW0240PHT	11.7	15.3	68.3	0.3	3.0	1
	10	★	MDW0240XHGS10	34.8	38.4	88.4	0.4		2
	15	★	MDW0240XHGS15	44.8	48.4	98.4			2
	20	★	MDW0240XHGS20	57.8	61.4	111.4			2
	25	★	MDW0240XHGS25	69.8	73.4	123.4			2
	30	★	MDW0240XHGS30	82.8	86.4	136.4			2
2.5	3	★	MDW0250PHT	11.6	15.3	68.3	0.3	3.0	1
	10	★	MDW0250XHGS10	34.8	38.5	88.5	0.5		2
	12	★	MDW0250XHGS12	37.8	41.5	91.5			2
	15	★	MDW0250XHGS15	44.8	48.5	98.5			2
	20	★	MDW0250XHGS20	57.8	61.5	111.5			2
	25	★	MDW0250XHGS25	69.8	73.5	123.5			2
	30	★	MDW0250XHGS30	82.8	86.5	136.5			2
2.6	3	★	MDW0260PHT	13.9	17.8	68.3	0.3	3.0	1
	10	★	MDW0260XHGS10	41.6	45.5	93.5	0.5		2
	12		MDW0260XHGS12	47.6	51.5	99.5			2
	15	★	MDW0260XHGS15	56.6	60.5	108.5			2
	20	★	MDW0260XHGS20	71.6	75.5	123.5			2
	25	★	MDW0260XHGS25	86.6	90.5	138.5			2
	30	★	MDW0260XHGS30	101.6	105.5	153.5			2
2.7	3	★	MDW0270PHT	13.9	17.9	68.4	0.4	3.0	1
	10	★	MDW0270XHGS10	41.5	45.5	93.5	0.5		2
	12		MDW0270XHGS12	47.5	51.5	99.5			2
	15	★	MDW0270XHGS15	56.5	60.5	108.5			2
	20	★	MDW0270XHGS20	71.5	75.5	123.5			2
	25	★	MDW0270XHGS25	86.5	90.5	138.5			2
	30	★	MDW0270XHGS30	101.5	105.5	153.5			2
2.8	3	★	MDW0280PHT	13.7	17.9	68.4	0.4	3.0	1
	10	★	MDW0280XHGS10	41.3	45.5	93.5	0.5		2
	12		MDW0280XHGS12	47.3	51.5	99.5			2
	15	★	MDW0280XHGS15	56.3	60.5	108.5			2
	20	★	MDW0280XHGS20	71.3	75.5	123.5			2
	25	★	MDW0280XHGS25	86.3	90.5	138.5			2
	30	★	MDW0280XHGS30	101.3	105.5	153.5			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø2.9 to 3.6mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.9	3	★	MDW0290PHT	13.6	17.9	68.4	0.4	3.0	1
	10	★	MDW0290XHGS10	41.2	45.5	93.5	0.5		2
	12		MDW0290XHGS12	47.2	51.5	99.5			2
	15	★	MDW0290XHGS15	56.2	60.5	108.5			2
	20	★	MDW0290XHGS20	71.2	75.5	123.5			2
	25	★	MDW0290XHGS25	86.2	90.5	138.5			2
	30	★	MDW0290XHGS30	101.2	105.5	153.5			2
3.0	3	★	MDW0300PHT	13.4	17.9	68.4	0.4	3.0	1
	10	★	MDW0300XHGS10	41.0	45.5	93.5	0.5		2
	12	★	MDW0300XHGS12	47.0	51.5	99.5			2
	15	★	MDW0300XHGS15	56.0	60.5	108.5			2
	20	★	MDW0300XHGS20	71.0	75.5	123.5			2
	25	★	MDW0300XHGS25	86.0	90.5	138.5			2
	30	★	MDW0300XHGS30	101.0	105.5	153.5			2
3.1	3	★	MDW0310PHT	15.8	20.4	72.4	0.4	4.0	1
	10	★	MDW0310XHGS10	49.0	53.6	103.6	0.6		2
	12		MDW0310XHGS12	54.0	58.6	108.6			2
	15	★	MDW0310XHGS15	64.0	68.6	118.6			2
	20	★	MDW0310XHGS20	82.0	86.6	136.6			2
	25	★	MDW0310XHGS25	99.0	103.6	153.6			2
	30	★	MDW0310XHGS30	117.0	121.6	171.6			2
3.2	3	★	MDW0320PHT	15.6	20.4	72.4	0.4	4.0	1
	10	★	MDW0320XHGS10	48.8	53.6	103.6	0.6		2
	12		MDW0320XHGS12	53.8	58.6	108.6			2
	15	★	MDW0320XHGS15	63.8	68.6	118.6			2
	20	★	MDW0320XHGS20	81.8	86.6	136.6			2
	25	★	MDW0320XHGS25	98.8	103.6	153.6			2
	30	★	MDW0320XHGS30	116.8	121.6	171.6			2
3.3	3	★	MDW0330PHT	15.5	20.4	72.4	0.4	4.0	1
	10	★	MDW0330XHGS10	48.7	53.6	103.6	0.6		2
	12		MDW0330XHGS12	53.7	58.6	108.6			2
	15	★	MDW0330XHGS15	63.7	68.6	118.6			2
	20	★	MDW0330XHGS20	81.7	86.6	136.6			2
	25	★	MDW0330XHGS25	98.7	103.6	153.6			2
	30	★	MDW0330XHGS30	116.7	121.6	171.6			2
3.4	3	★	MDW0340PHT	15.4	20.5	72.5	0.5	4.0	1
	10	★	MDW0340XHGS10	48.5	53.6	103.6	0.6		2
	12		MDW0340XHGS12	53.5	58.6	108.6			2
	15	★	MDW0340XHGS15	63.5	68.6	118.6			2
	20	★	MDW0340XHGS20	81.5	86.6	136.6			2
	25	★	MDW0340XHGS25	98.5	103.6	153.6			2
	30	★	MDW0340XHGS30	116.5	121.6	171.6			2
3.5	3	★	MDW0350PHT	15.3	20.5	72.5	0.5	4.0	1
	10	★	MDW0350XHGS10	48.4	53.6	103.6	0.6		2
	12	★	MDW0350XHGS12	53.4	58.6	108.6			2
	15	★	MDW0350XHGS15	63.4	68.6	118.6			2
	20	★	MDW0350XHGS20	81.4	86.6	136.6			2
	25	★	MDW0350XHGS25	98.4	103.6	153.6			2
	30	★	MDW0350XHGS30	116.4	121.6	171.6			2
3.6	3	★	MDW0360PHT	17.6	23.0	72.5	0.5	4.0	1
	10	★	MDW0360XHGS10	55.3	60.7	108.7	0.7		2
	12		MDW0360XHGS12	63.3	68.7	116.7			2
	15	★	MDW0360XHGS15	75.3	80.7	128.7			2
	20	★	MDW0360XHGS20	95.3	100.7	148.7			2
	25	★	MDW0360XHGS25	115.3	120.7	168.7			2
	30	★	MDW0360XHGS30	135.3	140.7	188.7			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

★: Worldwide Warehouse Item

XHGS Type / PHT Type (Internal Coolant Supply)

DEX Coating | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N74 for the tolerance of h6, h8 and e8

Fig. 1 (PHT Type)

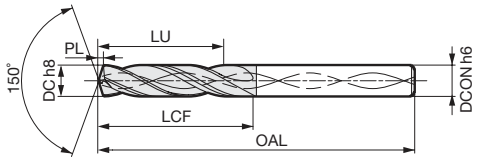
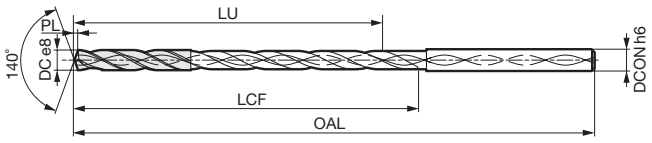


Fig. 2 (XHGS Type)



Diameter ø3.7 to 4.4mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
3.7	3	★	MDW0370PHT	17.5	23.0	72.5	0.5	4.0	1
	10	★	MDW0370XHGS10	55.2	60.7	108.7	0.7		2
	12		MDW0370XHGS12	63.2	68.7	116.7			2
	15	★	MDW0370XHGS15	75.2	80.7	128.7			2
	20	★	MDW0370XHGS20	95.2	100.7	148.7			2
	25	★	MDW0370XHGS25	115.2	120.7	168.7			2
	30	★	MDW0370XHGS30	135.2	140.7	188.7			2
3.8	3	★	MDW0380PHT	17.3	23.0	72.5	0.5	4.0	1
	10	★	MDW0380XHGS10	55.0	60.7	108.7	0.7		2
	12		MDW0380XHGS12	63.0	68.7	116.7			2
	15	★	MDW0380XHGS15	75.0	80.7	128.7			2
	20	★	MDW0380XHGS20	95.0	100.7	148.7			2
	25	★	MDW0380XHGS25	115.0	120.7	168.7			2
	30	★	MDW0380XHGS30	135.0	140.7	188.7			2
3.9	3	★	MDW0390PHT	17.2	23.0	72.5	0.5	4.0	1
	10	★	MDW0390XHGS10	54.9	60.7	108.7	0.7		2
	12		MDW0390XHGS12	62.9	68.7	116.7			2
	15	★	MDW0390XHGS15	74.9	80.7	128.7			2
	20	★	MDW0390XHGS20	94.9	100.7	148.7			2
	25	★	MDW0390XHGS25	114.9	120.7	168.7			2
	30	★	MDW0390XHGS30	134.9	140.7	188.7			2
4.0	3	★	MDW0400PHT	17.0	23.0	72.5	0.5	4.0	1
	10	★	MDW0400XHGS10	54.7	60.7	108.7	0.7		2
	12	★	MDW0400XHGS12	62.7	68.7	116.7			2
	15	★	MDW0400XHGS15	74.7	80.7	128.7			2
	20	★	MDW0400XHGS20	94.7	100.7	148.7			2
	25	★	MDW0400XHGS25	114.7	120.7	168.7			2
	30	★	MDW0400XHGS30	134.7	140.7	188.7			2
4.1	3	★	MDW0410PHT	19.4	25.5	80.5	0.5	5.0	1
	10	★	MDW0410XHGS10	62.6	68.7	120.7	0.7		2
	12		MDW0410XHGS12	69.6	75.7	127.7			2
	15	★	MDW0410XHGS15	82.6	88.7	140.7			2
	20	★	MDW0410XHGS20	105.6	111.7	163.7			2
	25	★	MDW0410XHGS25	127.6	133.7	185.7			2
	30	★	MDW0410XHGS30	150.6	156.7	208.7			2
4.2	3	★	MDW0420PHT	19.3	25.6	80.6	0.6	5.0	1
	10	★	MDW0420XHGS10	62.5	68.8	120.8	0.8		2
	12		MDW0420XHGS12	69.5	75.8	127.8			2
	15	★	MDW0420XHGS15	82.5	88.8	140.8			2
	20	★	MDW0420XHGS20	105.5	111.8	163.8			2
	25	★	MDW0420XHGS25	127.5	133.8	185.8			2
	30	★	MDW0420XHGS30	150.5	156.8	208.8			2
4.3	3	★	MDW0430PHT	19.2	25.6	80.6	0.6	5.0	1
	10	★	MDW0430XHGS10	62.4	68.8	120.8	0.8		2
	12		MDW0430XHGS12	69.4	75.8	127.8			2
	15	★	MDW0430XHGS15	82.4	88.8	140.8			2
	20	★	MDW0430XHGS20	105.4	111.8	163.8			2
	25	★	MDW0430XHGS25	127.4	133.8	185.8			2
	30	★	MDW0430XHGS30	150.4	156.8	208.8			2
4.4	3	★	MDW0440PHT	19.0	25.6	80.6	0.6	5.0	1
	10	★	MDW0440XHGS10	62.2	68.8	120.8	0.8		2
	12		MDW0440XHGS12	69.2	75.8	127.8			2
	15	★	MDW0440XHGS15	82.2	88.8	140.8			2
	20	★	MDW0440XHGS20	105.2	111.8	163.8			2
	25	★	MDW0440XHGS25	127.2	133.8	185.8			2
	30	★	MDW0440XHGS30	150.2	156.8	208.8			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø4.5 to 5.2mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
4.5	3	★	MDW0450PHT	18.9	25.6	80.6	0.6	5.0	1
	10	★	MDW0450XHGS10	62.1	68.8	120.8	0.8		2
	12	★	MDW0450XHGS12	69.1	75.8	127.8			2
	15	★	MDW0450XHGS15	82.1	88.8	140.8			2
	20	★	MDW0450XHGS20	105.1	111.8	163.8			2
	25	★	MDW0450XHGS25	127.1	133.8	185.8			2
	30	★	MDW0450XHGS30	150.1	156.8	208.8			2
4.6	3	★	MDW0460PHT	21.2	28.1	80.6	0.6	5.0	1
	10	★	MDW0460XHGS10	68.9	75.8	125.8	0.8		2
	12		MDW0460XHGS12	78.9	85.8	135.8			2
	15	★	MDW0460XHGS15	93.9	100.8	150.8			2
	20	★	MDW0460XHGS20	118.9	125.8	175.8			2
	25	★	MDW0460XHGS25	143.9	150.8	200.8			2
	30	★	MDW0460XHGS30	168.9	175.8	225.8			2
4.7	3	★	MDW0470PHT	21.1	28.1	80.6	0.6	5.0	1
	10	★	MDW0470XHGS10	68.9	75.9	125.9	0.9		2
	12		MDW0470XHGS12	78.9	85.9	135.9			2
	15	★	MDW0470XHGS15	93.9	100.9	150.9			2
	20	★	MDW0470XHGS20	118.9	125.9	175.9			2
	25	★	MDW0470XHGS25	143.9	150.9	200.9			2
	30	★	MDW0470XHGS30	168.9	175.9	225.9			2
4.8	3	★	MDW0480PHT	20.9	28.1	80.6	0.6	5.0	1
	10	★	MDW0480XHGS10	68.7	75.9	125.9	0.9		2
	12		MDW0480XHGS12	78.7	85.9	135.9			2
	15	★	MDW0480XHGS15	93.7	100.9	150.9			2
	20	★	MDW0480XHGS20	118.7	125.9	175.9			2
	25	★	MDW0480XHGS25	143.7	150.9	200.9			2
	30	★	MDW0480XHGS30	168.7	175.9	225.9			2
4.9	3	★	MDW0490PHT	20.9	28.2	80.7	0.7	5.0	1
	10	★	MDW0490XHGS10	68.6	75.9	125.9	0.9		2
	12		MDW0490XHGS12	78.6	85.9	135.9			2
	15	★	MDW0490XHGS15	93.6	100.9	150.9			2
	20	★	MDW0490XHGS20	118.6	125.9	175.9			2
	25	★	MDW0490XHGS25	143.6	150.9	200.9			2
	30	★	MDW0490XHGS30	168.6	175.9	225.9			2
5.0	3	★	MDW0500PHT	20.7	28.2	80.7	0.7	5.0	1
	10	★	MDW0500XHGS10	68.4	75.9	125.9	0.9		2
	12	★	MDW0500XHGS12	78.4	85.9	135.9			2
	15	★	MDW0500XHGS15	93.4	100.9	150.9			2
	20	★	MDW0500XHGS20	118.4	125.9	175.9			2
	25	★	MDW0500XHGS25	143.4	150.9	200.9			2
	30	★	MDW0500XHGS30	168.4	175.9	225.9			2
5.1	3	★	MDW0510PHT	20.6	28.2	82.7	0.7	6.0	1
	10	★	MDW0510XHGS10	76.3	83.9	137.9	0.9		2
	12		MDW0510XHGS12	85.3	92.9	146.9			2
	15	★	MDW0510XHGS15	101.3	108.9	162.9			2
	20	★	MDW0510XHGS20	131.3	138.9	192.9			2
	25	★	MDW0510XHGS25	156.3	163.9	217.9			2
	30	★	MDW0510XHGS30	184.3	191.9	245.9			2
5.2	3	★	MDW0520PHT	20.4	28.2	82.7	0.7	6.0	1
	10	★	MDW0520XHGS10	76.1	83.9	137.9	0.9		2
	12		MDW0520XHGS12	85.1	92.9	146.9			2
	15	★	MDW0520XHGS15	101.1	108.9	162.9			2
	20	★	MDW0520XHGS20	131.1	138.9	192.9			2
	25	★	MDW0520XHGS25	156.1	163.9	217.9			2
	30	★	MDW0520XHGS30	184.1	191.9	245.9			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

★: Worldwide Warehouse Item

XHGS Type / PHT Type (Internal Coolant Supply)

DEX Coating | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N74 for the tolerance of h6, h8 and e8

Fig. 1 (PHT Type)

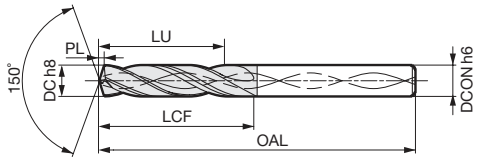
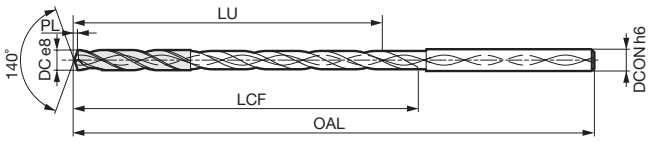


Fig. 2 (XHGS Type)



Diameter ø5.3 to 5.9mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	★	**MDW0530PHT**	20.3	28.2	82.7	0.7		1
	10	★	**MDW0530XHGS10**	76.1	84.0	138.0			2
	12		**MDW0530XHGS12**	85.1	93.0	147.0			2
5.3	15	★	**MDW0530XHGS15**	101.1	109.0	163.0	1.0	6.0	2
	20	★	**MDW0530XHGS20**	131.1	139.0	193.0			2
	25	★	**MDW0530XHGS25**	156.1	164.0	218.0			2
	30	★	**MDW0530XHGS30**	184.1	192.0	246.0			2
	3	★	**MDW0540PHT**	20.1	28.2	82.7	0.7		1
	10	★	**MDW0540XHGS10**	75.9	84.0	138.0			2
	12		**MDW0540XHGS12**	84.9	93.0	147.0			2
5.4	15	★	**MDW0540XHGS15**	100.9	109.0	163.0	1.0	6.0	2
	20	★	**MDW0540XHGS20**	130.9	139.0	193.0			2
	25	★	**MDW0540XHGS25**	155.9	164.0	218.0			2
	30	★	**MDW0540XHGS30**	183.9	192.0	246.0			2
	3	★	**MDW0550PHT**	20.0	28.2	82.7	0.7		1
	10	★	**MDW0550XHGS10**	75.8	84.0	138.0			2
	12	★	**MDW0550XHGS12**	84.8	93.0	147.0			2
5.5	15	★	**MDW0550XHGS15**	100.8	109.0	163.0	1.0	6.0	2
	20	★	**MDW0550XHGS20**	130.8	139.0	193.0			2
	25	★	**MDW0550XHGS25**	155.8	164.0	218.0			2
	30	★	**MDW0550XHGS30**	183.8	192.0	246.0			2
	3	★	**MDW0560PHT**	22.4	30.8	82.8	0.8		1
	10	★	**MDW0560XHGS10**	82.6	91.0	143.0			2
	12		**MDW0560XHGS12**	94.6	103.0	155.0			2
5.6	15	★	**MDW0560XHGS15**	112.6	121.0	173.0	1.0	6.0	2
	20	★	**MDW0560XHGS20**	142.6	151.0	203.0			2
	25	★	**MDW0560XHGS25**	172.6	181.0	233.0			2
	30	★	**MDW0560XHGS30**	202.6	211.0	263.0			2
	3	★	**MDW0570PHT**	22.3	30.8	82.8	0.8		1
	10	★	**MDW0570XHGS10**	82.5	91.0	143.0			2
	12		**MDW0570XHGS12**	94.5	103.0	155.0			2
5.7	15	★	**MDW0570XHGS15**	112.5	121.0	173.0	1.0	6.0	2
	20	★	**MDW0570XHGS20**	142.5	151.0	203.0			2
	25	★	**MDW0570XHGS25**	172.5	181.0	233.0			2
	30	★	**MDW0570XHGS30**	202.5	211.0	263.0			2
	3	★	**MDW0580PHT**	22.1	30.8	82.8	0.8		1
	10	★	**MDW0580XHGS10**	82.4	91.1	143.1			2
	12		**MDW0580XHGS12**	94.4	103.1	155.1			2
5.8	15	★	**MDW0580XHGS15**	112.4	121.1	173.1	1.1	6.0	2
	20	★	**MDW0580XHGS20**	142.4	151.1	203.1			2
	25	★	**MDW0580XHGS25**	172.4	181.1	233.1			2
	30	★	**MDW0580XHGS30**	202.4	211.1	263.1			2
	3	★	**MDW0590PHT**	22.0	30.8	82.8	0.8		1
	10	★	**MDW0590XHGS10**	82.3	91.1	143.1			2
	12		**MDW0590XHGS12**	94.3	103.1	155.1			2
5.9	15	★	**MDW0590XHGS15**	112.3	121.1	173.1	1.1	6.0	2
	20	★	**MDW0590XHGS20**	142.3	151.1	203.1			2
	25	★	**MDW0590XHGS25**	172.3	181.1	233.1			2
	30	★	**MDW0590XHGS30**	202.3	211.1	263.1			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø6.0 to 6.6mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	★	**MDW0600PHT**	21.8	30.8	82.8	0.8		1
	10	★	**MDW0600XHGS10**	82.1	91.1	143.1			2
	12	★	**MDW0600XHGS12**	94.1	103.1	155.1			2
6.0	15	★	**MDW0600XHGS15**	112.1	121.1	173.1	1.1	6.0	2
	20	★	**MDW0600XHGS20**	142.1	151.1	203.1			2
	25	★	**MDW0600XHGS25**	172.1	181.1	233.1			2
	30	★	**MDW0600XHGS30**	202.1	211.1	263.1			2
	3	★	**MDW0610PHT**	24.2	33.3	88.8	0.8		1
	10	★	**MDW0610XHGS10**	90.0	99.1	154.1			2
	12		**MDW0610XHGS12**	101.0	110.1	165.1			2
6.1	15	★	**MDW0610XHGS15**	120.0	129.1	184.1	1.1	7.0	2
	20	★	**MDW0610XHGS20**	153.0	162.1	217.1			2
	25	★	**MDW0610XHGS25**	185.0	194.1	249.1			2
	30	★	**MDW0610XHGS30**	218.0	227.1	282.1			2
	3	★	**MDW0620PHT**	24.0	33.3	88.8	0.8		1
	10	★	**MDW0620XHGS10**	89.8	99.1	154.1			2
	12		**MDW0620XHGS12**	100.8	110.1	165.1			2
6.2	15	★	**MDW0620XHGS15**	119.8	129.1	184.1	1.1	7.0	2
	20	★	**MDW0620XHGS20**	152.8	162.1	217.1			2
	25	★	**MDW0620XHGS25**	184.8	194.1	249.1			2
	30	★	**MDW0620XHGS30**	217.8	227.1	282.1			2
	3	★	**MDW0630PHT**	23.9	33.3	88.8	0.8		1
	10	★	**MDW0630XHGS10**	89.7	99.1	154.1			2
	12		**MDW0630XHGS12**	100.7	110.1	165.1			2
6.3	15	★	**MDW0630XHGS15**	119.7	129.1	184.1	1.1	7.0	2
	20	★	**MDW0630XHGS20**	152.7	162.1	217.1			2
	25	★	**MDW0630XHGS25**	184.7	194.1	249.1			2
	30	★	**MDW0630XHGS30**	217.7	227.1	282.1			2
	3	★	**MDW0640PHT**	23.8	33.4	88.9	0.9		1
	10	★	**MDW0640XHGS10**	89.6	99.2	154.2			2
	12		**MDW0640XHGS12**	100.6	110.2	165.2			2
6.4	15	★	**MDW0640XHGS15**	119.6	129.2	184.2	1.2	7.0	2
	20	★	**MDW0640XHGS20**	152.6	162.2	217.2			2
	25	★	**MDW0640XHGS25**	184.6	194.2	249.2			2
	30	★	**MDW0640XHGS30**	217.6	227.2	282.2			2
	3	★	**MDW0650PHT**	23.7	33.4	88.9	0.9		1
	10	★	**MDW0650XHGS10**	89.5	99.2	154.2			2
	12	★	**MDW0650XHGS12**	100.5	110.2	165.2			2
6.5	15	★	**MDW0650XHGS15**	119.5	129.2	184.2	1.2	7.0	2
	20	★	**MDW0650XHGS20**	152.5	162.2	217.2			2
	25	★	**MDW0650XHGS25**	184.5	194.2	249.2			2
	30	★	**MDW0650XHGS30**	217.5	227.2	282.2			2
	3	★	**MDW0660PHT**	26.0	35.9	88.9	0.9		1
	10	★	**MDW0660XHGS10**	96.3	106.2	159.2			2
	12		**MDW0660XHGS12**	110.3	120.2	173.2			2
6.6	15	★	**MDW0660XHGS15**	131.3	141.2	194.2	1.2	7.0	2
	20	★	**MDW0660XHGS20**	166.3	176.2	229.2			2
	25	★	**MDW0660XHGS25**	201.3	211.2	264.2			2
	30	★	**MDW0660XHGS30**	236.3	246.2	299.2			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

★: Worldwide Warehouse Item

XHGS Type / PHT Type (Internal Coolant Supply)

DEX Coating | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N74 for the tolerance of h6, h8 and e8

Fig. 1 (PHT Type)

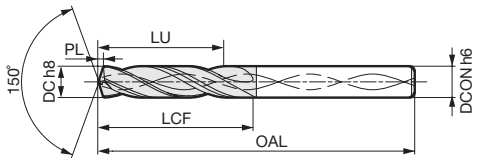
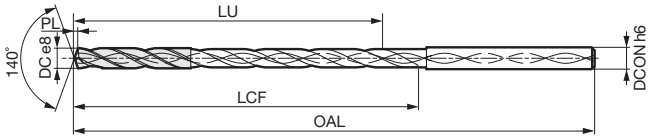


Fig. 2 (XHGS Type)



Diameter ø6.7 to 7.3mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
6.7	3	★	**MDW0670PHT**	25.9	35.9	88.9	0.9	7.0	1
	10	★	**MDW0670XHGS10**	96.2	106.2	159.2	1.2		2
	12		**MDW0670XHGS12**	110.2	120.2	173.2			2
	15	★	**MDW0670XHGS15**	131.2	141.2	194.2			2
	20	★	**MDW0670XHGS20**	166.2	176.2	229.2			2
	25	★	**MDW0670XHGS25**	201.2	211.2	264.2			2
	30	★	**MDW0670XHGS30**	236.2	246.2	299.2			2
6.8	3	★	**MDW0680PHT**	25.7	35.9	88.9	0.9	7.0	1
	10	★	**MDW0680XHGS10**	96.0	106.2	159.2	1.2		2
	12		**MDW0680XHGS12**	110.0	120.2	173.2			2
	15	★	**MDW0680XHGS15**	131.0	141.2	194.2			2
	20	★	**MDW0680XHGS20**	166.0	176.2	229.2			2
	25	★	**MDW0680XHGS25**	201.0	211.2	264.2			2
	30	★	**MDW0680XHGS30**	236.0	246.2	299.2			2
6.9	3	★	**MDW0690PHT**	25.6	35.9	88.9	0.9	7.0	1
	10	★	**MDW0690XHGS10**	96.0	106.3	159.3	1.3		2
	12		**MDW0690XHGS12**	110.0	120.3	173.3			2
	15	★	**MDW0690XHGS15**	131.0	141.3	194.3			2
	20	★	**MDW0690XHGS20**	166.0	176.3	229.3			2
	25	★	**MDW0690XHGS25**	201.0	211.3	264.3			2
	30	★	**MDW0690XHGS30**	236.0	246.3	299.3			2
7.0	3	★	**MDW0700PHT**	25.4	35.9	88.9	0.9	7.0	1
	10	★	**MDW0700XHGS10**	95.8	106.3	159.3	1.3		2
	12	★	**MDW0700XHGS12**	109.8	120.3	173.3			2
	15	★	**MDW0700XHGS15**	130.8	141.3	194.3			2
	20	★	**MDW0700XHGS20**	165.8	176.3	229.3			2
	25	★	**MDW0700XHGS25**	200.8	211.3	264.3			2
	30	★	**MDW0700XHGS30**	235.8	246.3	299.3			2
7.1	3	★	**MDW0710PHT**	27.9	38.5	95.0	1.0	8.0	1
	10	★	**MDW0710XHGS10**	103.7	114.3	170.3	1.3		2
	12		**MDW0710XHGS12**	116.7	127.3	183.3			2
	15	★	**MDW0710XHGS15**	138.7	149.3	205.3			2
	20	★	**MDW0710XHGS20**	176.7	187.3	243.3			2
	25	★	**MDW0710XHGS25**	213.7	224.3	280.3			2
	30	★	**MDW0710XHGS30**	251.7	262.3	318.3			2
7.2	3	★	**MDW0720PHT**	27.7	38.5	95.0	1.0	8.0	1
	10	★	**MDW0720XHGS10**	103.5	114.3	170.3	1.3		2
	12		**MDW0720XHGS12**	116.5	127.3	183.3			2
	15	★	**MDW0720XHGS15**	138.5	149.3	205.3			2
	20	★	**MDW0720XHGS20**	176.5	187.3	243.3			2
	25	★	**MDW0720XHGS25**	213.5	224.3	280.3			2
	30	★	**MDW0720XHGS30**	251.5	262.3	318.3			2
7.3	3	★	**MDW0730PHT**	27.6	38.5	95.0	1.0	8.0	1
	10	★	**MDW0730XHGS10**	103.4	114.3	170.3	1.3		2
	12		**MDW0730XHGS12**	116.4	127.3	183.3			2
	15	★	**MDW0730XHGS15**	138.4	149.3	205.3			2
	20	★	**MDW0730XHGS20**	176.4	187.3	243.3			2
	25	★	**MDW0730XHGS25**	213.4	224.3	280.3			2
	30	★	**MDW0730XHGS30**	251.4	262.3	318.3			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø7.4 to 8.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
7.4	3	★	**MDW0740PHT**	27.4	38.5	95.0	1.0	8.0	1
	10	★	**MDW0740XHGS10**	103.2	114.3	170.3	1.3		2
	12		**MDW0740XHGS12**	116.2	127.3	183.3			2
	15	★	**MDW0740XHGS15**	138.2	149.3	205.3			2
	20	★	**MDW0740XHGS20**	176.2	187.3	243.3			2
	25	★	**MDW0740XHGS25**	213.2	224.3	280.3			2
	30	★	**MDW0740XHGS30**	251.2	262.3	318.3			2
7.5	3	★	**MDW0750PHT**	27.3	38.5	95.0	1.0	8.0	1
	10	★	**MDW0750XHGS10**	103.2	114.4	170.4	1.4		2
	12	★	**MDW0750XHGS12**	116.2	127.4	183.4			2
	15	★	**MDW0750XHGS15**	138.2	149.4	205.4			2
	20	★	**MDW0750XHGS20**	176.2	187.4	243.4			2
	25	★	**MDW0750XHGS25**	213.2	224.4	280.4			2
	30	★	**MDW0750XHGS30**	251.2	262.4	318.4			2
7.6	3	★	**MDW0760PHT**	29.6	41.0	95.0	1.0	8.0	1
	10	★	**MDW0760XHGS10**	110.0	121.4	175.4	1.4		2
	12		**MDW0760XHGS12**	126.0	137.4	191.4			2
	15	★	**MDW0760XHGS15**	150.0	161.4	215.4			2
	20	★	**MDW0760XHGS20**	190.0	201.4	255.4			2
	25	★	**MDW0760XHGS25**	230.0	241.4	295.4			2
	30	★	**MDW0760XHGS30**	270.0	281.4	335.4			2
7.7	3	★	**MDW0770PHT**	29.5	41.0	95.0	1.0	8.0	1
	10	★	**MDW0770XHGS10**	109.9	121.4	175.4	1.4		2
	12		**MDW0770XHGS12**	125.9	137.4	191.4			2
	15	★	**MDW0770XHGS15**	149.9	161.4	215.4			2
	20	★	**MDW0770XHGS20**	189.9	201.4	255.4			2
	25	★	**MDW0770XHGS25**	229.9	241.4	295.4			2
	30	★	**MDW0770XHGS30**	269.9	281.4	335.4			2
7.8	3	★	**MDW0780PHT**	29.3	41.0	95.0	1.0	8.0	1
	10	★	**MDW0780XHGS10**	109.7	121.4	175.4	1.4		2
	12		**MDW0780XHGS12**	125.7	137.4	191.4			2
	15	★	**MDW0780XHGS15**	149.7	161.4	215.4			2
	20	★	**MDW0780XHGS20**	189.7	201.4	255.4			2
	25	★	**MDW0780XHGS25**	229.7	241.4	295.4			2
	30	★	**MDW0780XHGS30**	269.7	281.4	335.4			2
7.9	3	★	**MDW0790PHT**	29.3	41.1	95.1	1.1	8.0	1
	10	★	**MDW0790XHGS10**	109.6	121.4	175.4	1.4		2
	12		**MDW0790XHGS12**	125.6	137.4	191.4			2
	15	★	**MDW0790XHGS15**	149.6	161.4	215.4			2
	20	★	**MDW0790XHGS20**	189.6	201.4	255.4			2
	25	★	**MDW0790XHGS25**	229.6	241.4	295.4			2
	30	★	**MDW0790XHGS30**	269.6	281.4	335.4			2
8.0	3	★	**MDW0800PHT**	29.1	41.1	95.1	1.1	8.0	1
	10	★	**MDW0800XHGS10**	109.5	121.5	175.5	1.5		2
	12	★	**MDW0800XHGS12**	125.5	137.5	191.5			2
	15	★	**MDW0800XHGS15**	149.5	161.5	215.5			2
	20	★	**MDW0800XHGS20**	189.5	201.5	255.5			2
	25	★	**MDW0800XHGS25**	229.5	241.5	295.5			2
	30	★	**MDW0800XHGS30**	269.5	281.5	335.5			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

★: Worldwide Warehouse Item

XHGS Type / PHT Type (Internal Coolant Supply)

DEX Coating | Coolant Hole | 10D | 12D | 15D | 20D | 25D | 30D | Pilot 3D

*Refer to N74 for the tolerance of h6, h8 and e8

Fig. 1 (PHT Type)

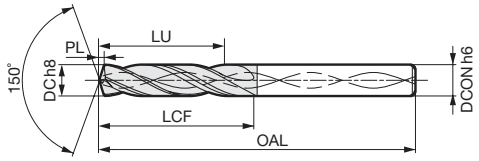
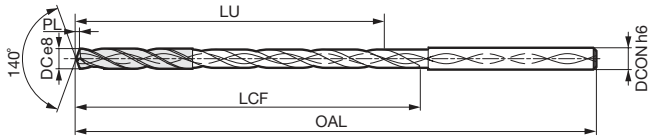


Fig. 2 (XHGS Type)



Diameter ø8.5 to 11.5mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
8.5	3	★	**MDW0850PHT**	30.9	43.6	101.1	1.1	9.0	1
	10	★	**MDW0850XHGS10**	116.8	129.5	186.5	1.5		2
	12	★	**MDW0850XHGS12**	131.8	144.5	201.5			2
	15	★	**MDW0850XHGS15**	156.8	169.5	226.5			2
	20	★	**MDW0850XHGS20**	199.8	212.5	269.5			2
	25	★	**MDW0850XHGS25**	241.8	254.5	311.5			2
	30	★	**MDW0850XHGS30**	284.8	297.5	354.5			2
9.0	3	★	**MDW0900PHT**	32.7	46.2	101.2	1.2	9.0	1
	10	★	**MDW0900XHGS10**	123.1	136.6	191.6	1.6		2
	12	★	**MDW0900XHGS12**	141.1	154.6	209.6			2
	15	★	**MDW0900XHGS15**	168.1	181.6	236.6			2
	20	★	**MDW0900XHGS20**	213.1	226.6	281.6			2
	25	★	**MDW0900XHGS25**	258.1	271.6	326.6			2
	30	★	**MDW0900XHGS30**	303.1	316.6	371.6			2
9.5	3	★	**MDW0950PHT**	34.6	48.8	107.3	1.3	10.0	1
	10	★	**MDW0950XHGS10**	130.5	144.7	202.7	1.7		2
	12	★	**MDW0950XHGS12**	147.5	161.7	219.7			2
	15	★	**MDW0950XHGS15**	175.5	189.7	247.7			2
	20	★	**MDW0950XHGS20**	223.5	237.7	295.7			2
	25	★	**MDW0950XHGS25**	270.5	284.7	342.7			2
	30	★	**MDW0950XHGS30**	318.5	332.7	390.7			2
10.0	3	★	**MDW1000PHT**	36.3	51.3	107.3	1.3	10.0	1
	10	★	**MDW1000XHGS10**	136.8	151.8	207.8	1.8		2
	12	★	**MDW1000XHGS12**	156.8	171.8	227.8			2
	15	★	**MDW1000XHGS15**	186.8	201.8	257.8			2
	20	★	**MDW1000XHGS20**	236.8	251.8	307.8			2
	25	★	**MDW1000XHGS25**	286.8	301.8	357.8			2
	30	★	**MDW1000XHGS30**	336.8	351.8	407.8			2
10.5	3	★	**MDW1050PHT**	38.2	53.9	117.4	1.4	11.0	1
	10	★	**MDW1050XHGS10**	144.2	159.9	222.9	1.9		2
	12	★	**MDW1050XHGS12**	163.2	178.9	241.9			2
	15	★	**MDW1050XHGS15**	194.2	209.9	272.9			2
	20	★	**MDW1050XHGS20**	247.2	262.9	325.9			2
	25	★	**MDW1050XHGS25**	299.2	314.9	377.9			2
11.0	3	★	**MDW1100PHT**	40.0	56.5	117.5	1.5	11.0	1
	10	★	**MDW1100XHGS10**	150.5	167.0	228.0	2.0		2
	12	★	**MDW1100XHGS12**	172.5	189.0	250.0			2
	15	★	**MDW1100XHGS15**	205.5	222.0	283.0			2
	20	★	**MDW1100XHGS20**	260.5	277.0	338.0			2
	25	★	**MDW1100XHGS25**	315.5	332.0	393.0			2
11.5	3	★	**MDW1150PHT**	41.8	59.0	123.5	1.5	12.0	1
	10	★	**MDW1150XHGS10**	157.9	175.1	239.1	2.1		2
	12	★	**MDW1150XHGS12**	178.9	196.1	260.1			2
	15	★	**MDW1150XHGS15**	212.9	230.1	294.1			2
	20	★	**MDW1150XHGS20**	270.9	288.1	352.1			2
	25	★	**MDW1150XHGS25**	327.9	345.1	409.1			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

Diameter ø12.0 to 16.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
12.0	3	★	**MDW1200PHT**	43.6	61.6	123.6	1.6	12.0	1
	10	★	**MDW1200XHGS10**	164.2	182.2	244.2	2.2		2
	12	★	**MDW1200XHGS12**	188.2	206.2	268.2			2
	15	★	**MDW1200XHGS15**	224.2	242.2	304.2			2
	20	★	**MDW1200XHGS20**	284.2	302.2	364.2			2
	25	★	**MDW1200XHGS25**	344.2	362.2	424.2			2
12.5	3	★	**MDW1250PHT**	45.5	64.2	129.7	1.7	13.0	1
	10	★	**MDW1250XHGS10**	171.6	190.3	255.3	2.3		2
	12	★	**MDW1250XHGS12**	194.6	213.3	278.3			2
	15	★	**MDW1250XHGS15**	231.6	250.3	315.3			2
	20	★	**MDW1250XHGS20**	294.6	313.3	378.3			2
13.0	3	★	**MDW1300PHT**	47.2	66.7	129.7	1.7	13.0	1
	10	★	**MDW1300XHGS10**	177.9	197.4	260.4	2.4		2
	12	★	**MDW1300XHGS12**	203.9	223.4	286.4			2
	15	★	**MDW1300XHGS15**	242.9	262.4	325.4			2
	20	★	**MDW1300XHGS20**	307.9	327.4	390.4			2
13.5	3	★	**MDW1350PHT**	49.1	69.3	135.8	1.8	14.0	1
	10	★	**MDW1350XHGS10**	185.3	205.5	271.5	2.5		2
	12	★	**MDW1350XHGS12**	210.3	230.5	296.5			2
	15	★	**MDW1350XHGS15**	250.3	270.5	336.5			2
	20	★	**MDW1350XHGS20**	318.3	338.5	404.5			2
14.0	3	★	**MDW1400PHT**	50.9	71.9	135.9	1.9	14.0	1
	10	★	**MDW1400XHGS10**	191.5	212.5	276.5	2.5		2
	12	★	**MDW1400XHGS12**	219.5	240.5	304.5			2
	15	★	**MDW1400XHGS15**	261.5	282.5	346.5			2
	20	★	**MDW1400XHGS20**	331.5	352.5	416.5			2
14.5	3	★	**MDW1450PHT**	52.7	74.4	141.9	1.9	15.0	1
	10	★	**MDW1450XHGS10**	198.9	220.6	287.6	2.6		2
	12	★	**MDW1450XHGS12**	225.9	247.6	314.6			2
	15	★	**MDW1450XHGS15**	268.9	290.6	357.6			2
15.0	3	★	**MDW1500PHT**	54.5	77.0	142.0	2.0	15.0	1
	10	★	**MDW1500XHGS10**	205.2	227.7	292.7	2.7		2
	12	★	**MDW1500XHGS12**	235.2	257.7	322.7			2
	15	★	**MDW1500XHGS15**	280.2	302.7	367.7			2
15.5	3	★	**MDW1550PHT**	56.4	79.6	148.1	2.1	16.0	1
	10	★	**MDW1550XHGS10**	212.6	235.8	303.8	2.8		2
	12	★	**MDW1550XHGS12**	241.6	264.8	332.8			2
	15	★	**MDW1550XHGS15**	287.6	310.8	378.8			2
16.0	3	★	**MDW1600PHT**	58.1	82.1	148.1	2.1	16.0	1
	10	★	**MDW1600XHGS10**	218.9	242.9	308.9	2.9		2
	12	★	**MDW1600XHGS12**	248.9	272.9	340.9			2
	15	★	**MDW1600XHGS15**	298.9	322.9	388.9			2

Part Number Suffix PHT: For Guide Hole
Grade: ACX70 (XHGS Type) / ACX20 (PHT Type)

★: Worldwide Warehouse Item

Recommended Cutting Conditions

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel (up to 200HB)	General Steel (up to 250HB)	Alloy Steel (up to 300HB)	Hardened Steel (up to 40HRC)	Gray Cast Iron Ductile Cast Iron
ø3.0	v_c	50 - **60** - 80	60 - **80** - 100	40 - **55** - 70	30 - **40** - 50	40 - **55** - 70
	f	0.12 - **0.15** - 0.20	0.12 - **0.15** - 0.20	0.10 - **0.13** - 0.16	0.06 - **0.08** - 0.12	0.15 - **0.18** - 0.23
ø5.0	v_c	50 - **60** - 80	60 - **80** - 100	50 - **60** - 70	30 - **45** - 55	50 - **60** - 70
	f	0.15 - **0.20** - 0.25	0.15 - **0.23** - 0.30	0.12 - **0.15** - 0.20	0.08 - **0.10** - 0.14	0.17 - **0.25** - 0.35
ø10.0	v_c	50 - **70** - 90	60 - **80** - 110	50 - **65** - 80	30 - **50** - 60	50 - **65** - 80
	f	0.20 - **0.25** - 0.30	0.20 - **0.25** - 0.32	0.15 - **0.20** - 0.25	0.10 - **0.15** - 0.20	0.25 - **0.28** - 0.35
ø16.0	v_c	60 - **80** - 100	60 - **90** - 120	50 - **65** - 80	40 - **55** - 70	50 - **65** - 80
	f	0.25 - **0.30** - 0.35	0.25 - **0.30** - 0.35	0.15 - **0.23** - 0.27	0.12 - **0.15** - 0.23	0.25 - **0.30** - 0.35

Note: Use lower speed when using MQL coolant, and higher speed when using internal coolant supply or dual-liquid mist. Min. - **Optimum** - Max.

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

DEX Coating | Coolant Hole | 12D | 20D | Pilot 3D

Fig. 1 (PHV Type)

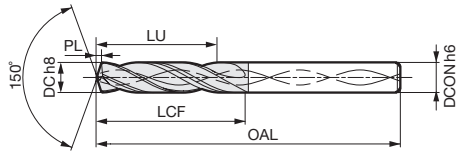
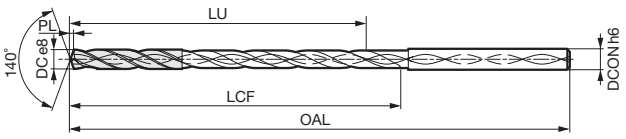


Fig. 2 (XHV Type)



Diameter ø0.125" to 0.332"

Dimensions (inch)

Dia. DC	Fraction	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Shank Dia. DCON	Fig
0.125	1/8	3	•	MDW01250PHV	0.516	0.703	2.672		1
		12	•	MDW1250XHV12	1.772	1.890	3.780	0.157	2
		20	•	MDW1250XHV20	2.834	2.952	4.842		2
0.141	9/64	3	•	MDW01406PHV	0.680	0.891	2.828		1
		12	•	MDW1406XHV12	2.126	2.244	4.134	0.157	2
		20	•	MDW1406XHV20	3.464	3.582	5.472		2
0.156	5/32	3	•	MDW01563PHV	0.657	0.891	2.828		1
		12	•	MDW1563XHV12	2.362	2.480	4.370	0.157	2
		20	•	MDW1563XHV20	3.464	3.582	5.472		2
0.172	11/64	3	•	MDW01719PHV	0.726	1.078	3.156		1
		12	•	MDW1719XHV12	2.520	2.638	4.607	0.236	2
		20	•	MDW1719XHV20	4.331	4.449	6.418		2
0.188	3/16	3	•	MDW01875PHV	0.796	1.078	3.156		1
		12	•	MDW1875XHV12	3.071	3.189	5.158	0.236	2
		20	•	MDW1875XHV20	4.527	4.645	6.614		2
0.203	13/64	3	•	MDW02031PHV	0.774	1.078	3.234		1
		12	•	MDW2031XHV12	3.071	3.189	5.158	0.236	2
		20	•	MDW2031XHV20	4.527	4.645	6.614		2
0.213	#3	3	•	MDW02131PHV	0.759	1.078	3.234		1
		12	•	MDW2131XHV12	3.071	3.189	5.158	0.236	2
		20	•	MDW2131XHV20	5.433	5.551	7.520		2
0.219	7/32	3	•	MDW02187PHV	0.750	1.078	3.234		1
		12	•	MDW2187XHV12	3.346	3.465	5.433	0.236	2
		20	•	MDW2187XHV20	5.433	5.551	7.520		2
0.250	1/4	3	•	MDW02500PHV	0.906	1.281	3.469		1
		12	•	MDW2500XHV12	3.937	4.055	6.102	0.315	2
		20	•	MDW2500XHV20	5.748	5.866	7.913		2
0.257	#F	3	•	MDW02570PHV	0.990	1.375	3.469		1
		12	•	MDW2570XHV12	3.937	4.055	6.102	0.315	2
		20	•	MDW2570XHV20	5.748	5.866	7.913		2
0.266	17/64	3	•	MDW02656PHV	0.976	1.375	3.469		1
		12	•	MDW2656XHV12	3.937	4.055	6.102	0.315	2
		20	•	MDW2656XHV20	5.748	5.866	7.913		2
0.281	9/32	3	•	MDW02813PHV	1.063	1.484	3.703		1
		12	•	MDW2813XHV12	4.331	4.449	6.496	0.315	2
		20	•	MDW2813XHV20	6.929	7.047	9.094		2
0.297	19/64	3	•	MDW02969PHV	1.029	1.484	3.703		1
		12	•	MDW2969XHV12	4.331	4.449	6.496	0.315	2
		20	•	MDW2969XHV20	6.929	7.047	9.094		2
0.313	5/16	3	•	MDW03125PHV	1.109	1.578	3.703		1
		12	•	MDW3125XHV12	4.331	4.449	6.496	0.315	2
		20	•	MDW3125XHV20	6.929	7.047	9.094		2
0.328	21/64	3	•	MDW03281PHV	1.180	1.672	3.938	0.394	1
0.332	#Q	3	•	MDW03320PHV	1.174	1.672	3.938		1
		12	•	MDW3320XHV12	5.433	5.551	7.677	0.394	2
		20	•	MDW3320XHV20	8.661	8.779	10.905		2

Part Number Suffix PHV: For Guide Hole

Diameter ø0.344" to 0.750"

Dimensions (inch)

Dia. DC	Fraction	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Shank Dia. DCON	Fig
0.344	11/32"	3	•	MDW03438PHV	1.250	1.766	3.938		1
		12	•	MDW3438XHV12	5.433	5.551	7.677	0.394	2
		20	•	MDW3438XHV20	8.661	8.779	10.905		2
0.359	23/64"	3	•	MDW03594PHV	1.228	1.766	3.938		1
		12	•	MDW3594XHV12	5.433	5.551	7.677	0.394	2
		20	•	MDW3594XHV20	8.661	8.779	10.905		2
0.375	3/8"	3	•	MDW03750PHV	1.313	1.875	4.172		1
		12	•	MDW3750XHV12	5.433	5.551	7.677	0.394	2
		20	•	MDW3750XHV20	8.661	8.779	10.905		2
0.391	25/64"	3	•	MDW03906PHV	1.383	1.969	4.172		1
		12	•	MDW3906XHV12	5.433	5.551	7.677	0.394	2
		20	•	MDW3906XHV20	8.661	8.779	10.905		2
0.406	13/32	3	•	MDW04063PHV	*1.438*	2.047	4.563		1
		12	•	MDW4063XHV12	6.220	6.339	8.543	0.472	2
		20	•	MDW4063XHV20	10.394	10.508	12.713		2
0.422	27/64	3	•	MDW04219PHV	1.539	2.172	4.563		1
		12	•	MDW4219XHV12	6.220	6.339	8.543	0.472	2
		20	•	MDW4219XHV20	10.394	10.508	12.713		2
0.437	7/16	3	•	MDW04375PHV	1.517	2.172	4.563		1
		12	•	MDW4375XHV12	6.220	6.339	8.543	0.472	2
		20	•	MDW4375XHV20	10.394	10.508	12.713		2
0.453	29/64	3	•	MDW04531PHV	1.602	2.281	4.813		1
		12	•	MDW4531XHV12	6.220	6.339	8.543	0.472	2
		20	•	MDW4531XHV20	10.394	10.508	12.713		2
0.469	15/32	3	•	MDW04688PHV	1.656	2.359	4.813		1
		12	•	MDW4688XHV12	6.220	6.339	8.543	0.472	2
		20	•	MDW4688XHV20	10.394	10.508	12.713		2
0.484	31/64	3	•	MDW04844PHV	1.743	2.469	5.032		1
		12	•	MDW4844XHV12	7.165	7.283	9.566	0.551	2
		20	•	MDW4844XHV20	12.126	12.238	14.521		2
0.500	1/2	3	•	MDW05000PHV	1.812	2.562	5.032		1
		12	•	MDW5000XHV12	7.165	7.283	9.566	0.551	2
		20	•	MDW5000XHV20	12.126	12.238	14.521		2
0.531	17/32	3	•	MDW05312PHV	1.860	2.656	5.281		1
		12	•	MDW5312XHV12	7.165	7.283	9.566	0.551	2
		20	•	MDW5312XHV20	12.126	12.238	14.521		2
0.562	9/16	3	•	MDW05625PHV	2.016	2.859	5.516	0.630	1
		12	•	MDW5625XHV12	8.189	8.307	10.669		2
0.625	5/8	3	•	MDW06250PHV	2.219	3.156	5.750	0.630	1
		12	•	MDW6250XHV12	8.189	8.307	10.669		2
0.750	3/4	3	•	MDW07500PHV	2.625	3.750	6.453	0.787	1
		12	•	MDW7500XHV12	10.157	10.268	12.709		2

●: USA Stocked Item

Tolerance of Diameters	
øD	Tolerance
.1181 < øD ≤ .2362	-.00080 -.00145
.2362 < øD ≤ .3937	-.00080 -.00165
.3937 < øD < .7087	-.00080 -.00185

Recommended Cutting Conditions

Vc= sfm / *m/min*
f= ipr / *mm/rev*

		General Steel (>300HB)	Hardened Steel (>45HrC)	Stainless Steel (>200HB)	Gray Cast Iron	Ductile Iron
~ø.125 in	Vc	165~330 / 50~100	65~130 / 20~40	100~165 / 30~50	165~295 / 50~90	130~260 / 40~80
	f	0.003~0.006 / 0.08~0.15	0.002~0.003 / 0.06~0.05	0.002~0.005 / 0.06~0.12	0.006~0.010 / 0.15~0.25	0.005~0.008 / 0.12~0.20
ø.125 ~ ø.203"	Vc	260~395 / 80~120	65~130 / 20~40	100~195 / 30~60	165~295 / 50~90	130~260 / 40~80
	f	0.006~0.010 / 0.15~0.25	0.003~0.004 / 0.08~0.10	0.003~0.006 / 0.08~0.15	0.006~0.012 / 0.15~0.30	0.006~0.010 / 0.15~0.25
ø.203 ~ ø.406"	Vc	260~395 / 80~120	65~130 / 20~40	130~260/ 40~80	195~330 / 60~100	165~295 / 50~90
	f	0.008~0.014 / 0.20~0.35	0.004~0.006 / 0.10~0.15	0.004~0.008 / 0.10~0.20	0.008~0.014 / 0.20~0.35	0.008~0.014 / 0.20~0.35
ø.406 ~ ø0.625"	Vc	260~425/ 80~130	65~130 / 20~40	165~260/ 50~80	230~395/ 70~120	195~330 / 60~100
	f	0.010~0.014 / 0.25~0.35	0.004~0.006 / 0.10~0.15	0.004~0.008 / 0.10~0.20	0.010~0.014 / 0.25~0.35	0.010~0.014 / 0.25~0.35



■ Features

- High-efficiency drilling

  DLC Coating (AURORA Coat) and low resistance WL (Wide L) thinning drastically reduce cutting force.

- Stable drilling performance

  Special cutting edge design and WW (Wide W) margin improve hole quality.

- Long tool life

  DLC Coating (AURORA Coat) coupled with the cutting edge shape acheives a long and stable tool life.

- Deep hole drilling

  Drills for deep hole drilling can be made to oder.
  (Production range: Drill diameters: ø3.0 to ø16.0mm
  Overall length: Available on inquiry)

■ Product Range (Stocked Sizes)

Coolant Supply	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)
Internal	**MDW□□□□NHGS3**	ø3.0 to 16.0	up to 3
	MDW□□□□NHGS5		up to 5
	MDW□□□□NHGS10	ø3.0 to 13.0	up to 10

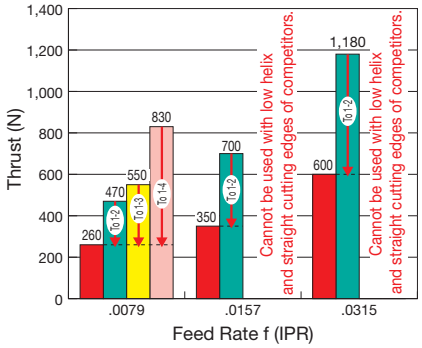
■ Performance

Cutting force

- Low cutting force, achieving 2 to 4 times the feed rate

  The cutting force of the NHGS Type is
  1/2 that of competitors' 30° helix drills > double the feed rate!
  1/3 that of competitors' light helix drills > 3x the feed rate!
  1/4 that of straight-blade drills > 4x the feed rate!

Thrust



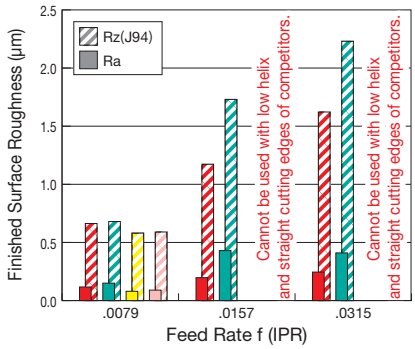
Tool: MDW 0800NHGS5 (DL1300)	Part Material: Aluminum Alloy Die Casting
Cutting Speed: v_c=656 SFM	Machine: Vertical machining centre (BT30)
Coolant: Internal supply (1.5MPa)	Coolant: Emulsion (dilute to around 25x)

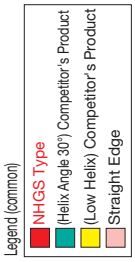
Machined surface quality

- Achieves good surface roughness over a wide range of feed rates

  Good surface roughness from low to high feed rates:
  Ra=0.11 to 0.25
  Rz (J94)=0.66 to 1.62

Finished Surface Roughness





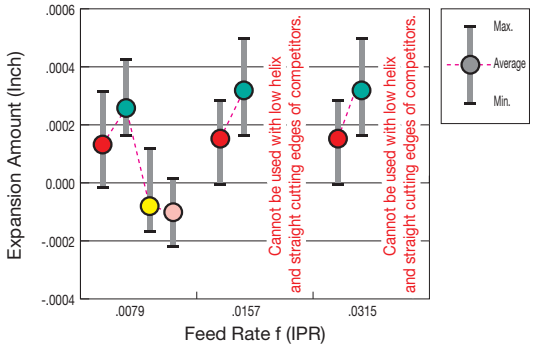
Tool: MDW 0800NHGS5 (DL1300)	Part Material: Aluminum Alloy Die Casting
Cutting Speed: v_c=656 SFM	Machine: Vertical machining centre (BT30)
Coolant: Internal supply (1.5MPa)	Coolant: Emulsion (dilute to around 25x)

Machined hole accuracy (hole expansion)

- Stable hole accuracy with hole expansion within 0.01mm

  Achieves minimal expansion and stable machining from low to high feed rates

Hole diameter expansion



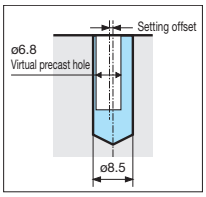
Tool: MDW 0800NHGS5 (DL1300)	Part Material: Aluminum Alloy Die Casting
Cutting Speed: v_c=656 SFM	Machine: Vertical machining centre (BT30)
Coolant: Internal supply (1.5MPa)	Coolant: Emulsion (dilute to around 25x)

Machined hole accuracy (hole position accuracy)

- Pre-cast hole accuracy within ±1/10 to ±1/5 of axial offset

Pre-cast hole accuracy (hole position accuracy)

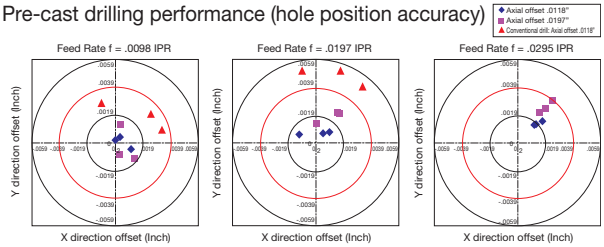
Offset \ Feed Rate	0.25mm/rev	0.50mm/rev	0.75mm/rev
0.3mm	±0.03mm	±0.04mm	±0.06mm
0.5mm	±0.05mm	±0.07mm	±0.10mm
Conventional drill: 0.3mm	±0.09mm	±0.19mm	



- Test method

An axial offset of 0.3mm to 0.5mm is set for a virtual pre-cast hole (ø6.8) and a hole is drilled with an ø8.5 drill before measuring the deviation from the target position.

Pre-cast drilling performance (hole position accuracy)



Tool: MDW 0850NHGS5 (DL1300)	Part Material: Alluminum Alloy
Cutting Speed: v_c=656 SFM (n=7, 489 RPM)	Machine: Vertical machining centre (BT30)
Coolant: Internal supply	

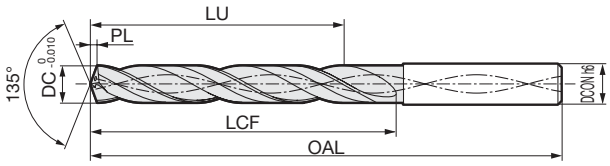
NHGS Type - INCH (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coating | Coolant Hole | 3D | 5D

*Refer to N74 for the tolerance of h6

Fig. 1 (NHGS3/5 Type, ø3.0 to 16.0mm)



Diameter ø.0625" to .6250"

Dimensions (inch / *mm*)

Diameter DC		Hole Depth	Stock	Cat. No.	Effective Length LU		Flute Length LCF		Overall Length OAL		Tip PL		Shank Diameter DCON		Fig
Inch	*Metric*	(L/D)			Inch	*Metric*	Inch	*Metric*	Inch	*Metric*	Inch	*Metric*	Inch	*Metric*	
0.0625	*1.59*	5	●	**MDW00625NHGS5S**	*0.6672*	*16.95*	0.7610	*19.33*	2.7688	*70.33*	0.0129	*0.33*	0.1181	*3.0*	1
0.1010	*2.57*	5	●	**MDW01010NHGS5S**	*0.9718*	*24.68*	1.1233	*28.53*	3.0918	*78.53*	0.0209	*0.53*			1
0.1200	*3.05*	5	●	**MDW01200NHGS5S**	*1.1047*	*28.06*	1.2847	*32.63*	3.4107	*86.63*	0.0249	*0.63*	0.1575	*4.0*	1
0.1250	*3.18*	3	●	**MDW01250NHGS3S**	*0.6258*	*15.90*	0.8133	*20.66*	2.8605	*72.66*	0.0259	*0.66*			1
		5	●	**MDW01250NHGS5S**	*1.0982*	*27.90*	1.2857	*32.66*	3.4117	*86.66*					1
0.1495	*3.80*	5	●	**MDW01495NHGS5S**	*1.2240*	*31.09*	1.4483	*36.79*	3.4168	*86.79*	0.0310	*0.79*			1
0.1562	*3.97*	3	●	**MDW01562NHGS3S**	*0.6839*	*17.37*	0.9182	*23.32*	2.8670	*72.82*	0.0324	*0.82*			1
		5	●	**MDW01562NHGS5S**	*1.2154*	*30.87*	1.4497	*36.82*	3.4182	*86.82*					1
0.1875	*4.76*	3	●	**MDW01875NHGS3S**	*0.8403*	*21.34*	1.1215	*28.49*	3.1884	*80.99*	0.0388	*0.99*	0.2362	*6.0*	1
		5	●	**MDW01875NHGS5S**	*1.4899*	*37.84*	1.7711	*44.99*	3.8971	*98.99*					1
0.2010	*5.11*	5	●	**MDW02010NHGS5S**	*1.4724*	*37.40*	1.7739	*45.06*	3.9786	*101.06*	0.0416	*1.06*			1
0.2188	*5.56*	3	●	**MDW02188NHGS3S**	*0.8982*	*22.81*	1.2264	*31.15*	3.2737	*83.15*	0.0453	*1.15*			1
		5	●	**MDW02188NHGS5S**	*1.6069*	*40.81*	1.9351	*49.15*	3.9823	*101.15*					1
0.2500	*6.35*	3	●	**MDW02500NHGS3S**	*0.9563*	*24.29*	1.3313	*33.82*	3.5163	*89.32*	0.0518	*1.32*	0.3150	*8.0*	1
		5	●	**MDW02500NHGS5S**	*1.7240*	*43.79*	2.0990	*53.32*	4.3431	*110.32*					1
0.2812	*7.14*	3	●	**MDW02812NHGS3S**	*1.1128*	*28.27*	1.5346	*38.98*	3.7590	*95.48*	0.0582	*1.48*			1
		5	●	**MDW02812NHGS5S**	*1.9986*	*50.77*	2.4204	*61.48*	4.7039	*119.48*					1
0.3125	*7.94*	3	●	**MDW03125NHGS3S**	*1.1708*	*29.74*	1.6395	*41.64*	3.7655	*95.64*	0.0647	*1.64*			1
		5	●	**MDW03125NHGS5S**	*2.1157*	*53.74*	2.5844	*65.64*	4.7104	*119.64*					1
0.3281	*8.33*	3	●	**MDW03281NHGS3S**	*1.2490*	*31.73*	1.7412	*44.23*	4.0050	*101.73*	0.0680	*1.73*	0.3937	*10.0*	1
		5	●	**MDW03281NHGS5S**	*2.2530*	*57.23*	2.7451	*69.73*	5.0680	*128.73*					1
0.3594	*9.13*	3	●	**MDW03594NHGS3S**	*1.4054*	*35.70*	1.9445	*49.39*	4.2477	*107.89*	0.0744	*1.89*			1
		5	●	**MDW03594NHGS5S**	*2.5275*	*64.20*	3.0666	*77.89*	5.4288	*137.89*					1
0.3750	*9.53*	3	●	**MDW03750NHGS3S**	*1.4837*	*37.69*	2.0462	*51.97*	4.2509	*107.97*	0.0777	*1.97*			1
		5	●	**MDW03750NHGS5S**	*2.6648*	*67.69*	3.2273	*81.97*	5.4320	*137.97*					1
0.4062	*10.32*	3	●	**MDW04062NHGS3S**	*1.5418*	*39.16*	2.1511	*54.64*	4.6511	*118.14*	0.0841	*2.14*	0.4724	*12.0*	1
		5	●	**MDW04062NHGS5S**	*2.7819*	*70.66*	3.3912	*86.14*	5.9503	*151.14*					1
0.4375	*11.11*	3	●	**MDW04375NHGS3S**	*1.6981*	*43.13*	2.3544	*59.80*	4.8938	*124.30*	0.0906	*2.30*			1
		5	●	**MDW04375NHGS5S**	*3.0564*	*77.63*	3.7127	*94.30*	6.3111	*160.30*					1
0.4531	*11.51*	3	●	**MDW04531NHGS3S**	*1.7764*	*45.12*	2.4560	*62.38*	4.8970	*124.38*	0.0938	*2.38*			1
		5	●	**MDW04531NHGS5S**	*3.1937*	*81.12*	3.8734	*98.38*	6.3143	*160.38*					1
0.4688	*11.91*	3	●	**MDW04688NHGS3S**	*1.7561*	*44.60*	2.4593	*62.47*	4.9002	*124.47*	0.0971	*2.47*			1
		5	●	**MDW04688NHGS5S**	*3.1734*	*80.60*	3.8766	*98.47*	6.3176	*160.47*					1
0.5000	*12.70*	3	●	**MDW05000NHGS3S**	*1.9126*	*48.58*	2.6626	*67.63*	5.1429	*130.63*	0.1036	*2.63*	0.5512	*14.0*	1
		5	●	**MDW05000NHGS5S**	*3.4480*	*87.58*	4.1980	*106.63*	6.6784	*169.63*					1
0.5625	*14.29*	3	●	**MDW05625NHGS3S**	*2.1271*	*54.03*	2.9708	*75.46*	5.6283	*142.96*	0.1165	*2.96*	0.6299	*16.0*	1
		5	●	**MDW05625NHGS5S**	*3.8397*	*97.53*	4.6834	*118.96*	7.4000	*187.96*					1
0.6250	*15.88*	3	●	**MDW06250NHGS3S**	*2.3415*	*59.48*	3.2790	*83.29*	5.8775	*149.29*	0.1294	*3.29*			1
		5	●	**MDW06250NHGS5S**	*4.2313*	*107.48*	5.1688	*131.29*	7.7672	*197.29*					1

Grade: DL1300

● : USA Stock Item

NHGS Type - Metric (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coating | Coolant Hole | 3D | 5D | 10D

*Refer to N74 for the tolerance of h6

Fig. 1 (NHGS3/5 Type, ø3.0 to 16.0mm)

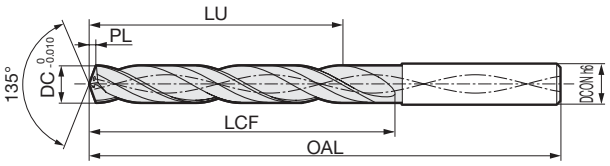
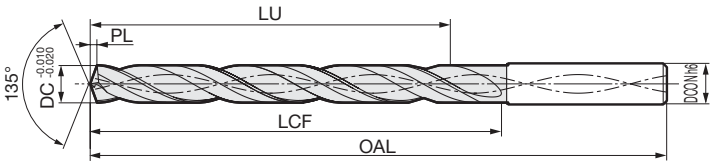


Fig. 2 (NHGS10 Type, ø3.0 to 16.0mm)



Diameter ø3.0 to 4.5mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW0300NHGS3	13.6	18.1	68.6			1
3.0	5	●	MDW0300NHGS5	24.1	28.6	78.6	0.6	3.0	1
	10	●	MDW0300NHGS10	38.1	42.6	92.6			2
	3		MDW0310NHGS3	16.0	20.6	72.6			1
3.1	5	●	MDW0310NHGS5	28.0	32.6	86.6	0.6	4.0	1
	10		MDW0310NHGS10	45.0	49.6	106.6			2
	3	●	MDW0320NHGS3	15.9	20.7	72.7			1
3.2	5	●	MDW0320NHGS5	27.9	32.7	86.7	0.7	4.0	1
	10	●	MDW0320NHGS10	44.9	49.7	106.7			2
	3	●	MDW0330NHGS3	15.8	20.7	72.7			1
3.3	5	●	MDW0330NHGS5	27.8	32.7	86.7	0.7	4.0	1
	10		MDW0330NHGS10	44.8	49.7	106.7			2
	3		MDW0340NHGS3	15.6	20.7	72.7			1
3.4	5	●	MDW0340NHGS5	27.6	32.7	86.7	0.7	4.0	1
	10	●	MDW0340NHGS10	44.6	49.7	106.7			2
	3	●	MDW0350NHGS3	15.5	20.7	72.7			1
3.5	5	●	MDW0350NHGS5	27.5	32.7	86.7	0.7	4.0	1
	10	●	MDW0350NHGS10	44.5	49.7	106.7			2
	3		MDW0360NHGS3	17.8	23.2	72.7			1
3.6	5	●	MDW0360NHGS5	31.3	36.7	86.7	0.7	4.0	1
	10	●	MDW0360NHGS10	51.3	56.7	106.7			2
	3	●	MDW0365NHGS3	17.8	23.3	72.8			1
3.65	5	●	MDW0365NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		MDW0365NHGS10	51.3	56.8	106.8			2
	3		MDW0366NHGS3	17.8	23.3	72.8			1
3.66	5	●	MDW0366NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		MDW0366NHGS10	51.3	56.8	106.8			2
	3		MDW0370NHGS3	17.8	23.3	72.8			1
3.7	5	●	MDW0370NHGS5	31.3	36.8	86.8	0.8	4.0	1
	10		MDW0370NHGS10	51.3	56.8	106.8			2
	3		MDW0380NHGS3	17.6	23.3	72.8			1
3.8	5	●	MDW0380NHGS5	31.1	36.8	86.8	0.8	4.0	1
	10		MDW0380NHGS10	51.1	56.8	106.8			2
	3		MDW0390NHGS3	17.5	23.3	72.8			1
3.9	5	●	MDW0390NHGS5	31.0	36.8	86.8	0.8	4.0	1
	10	●	MDW0390NHGS10	51.0	56.8	106.8			2
	3	●	MDW0400NHGS3	17.3	23.3	72.8			1
4.0	5	●	MDW0400NHGS5	30.8	36.8	86.8	0.8	4.0	1
	10	●	MDW0400NHGS10	50.8	56.8	106.8			2
	3	●	MDW0410NHGS3	19.7	25.8	80.8			1
4.1	5	●	MDW0410NHGS5	34.7	40.8	98.8	0.8	5.0	1
	10		MDW0410NHGS10	57.7	63.8	121.8			2
	3	●	MDW0420NHGS3	19.6	25.9	80.9			1
4.2	5	●	MDW0420NHGS5	34.6	40.9	98.9	0.9	5.0	1
	10		MDW0420NHGS10	57.6	63.9	121.9			2
	3		MDW0430NHGS3	19.5	25.9	80.9			1
4.3	5	●	MDW0430NHGS5	34.5	40.9	98.9	0.9	5.0	1
	10		MDW0430NHGS10	57.5	63.9	121.9			2
	3		MDW0440NHGS3	19.3	25.9	80.9			1
4.4	5	●	MDW0440NHGS5	34.3	40.9	98.9	0.9	5.0	1
	10		MDW0440NHGS10	57.3	63.9	121.9			2
	3	●	MDW0450NHGS3	19.2	25.9	80.9			1
4.5	5	●	MDW0450NHGS5	34.2	40.9	98.9	0.9	5.0	1
	10	●	MDW0450NHGS10	57.2	63.9	121.9			2

Grade: DL1300

Diameter ø4.6 to 6.3mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	MDW0460NHGS3	21.6	28.5	81.0			1
4.6	5	●	MDW0460NHGS5	38.1	45.0	99.0	1.0	5.0	1
	10		MDW0460NHGS10	64.1	71.0	122.0			2
	3		MDW0470NHGS3	21.5	28.5	81.0			1
4.7	5	●	MDW0470NHGS5	38.0	45.0	99.0	1.0	5.0	1
	10		MDW0470NHGS10	64.0	71.0	122.0			2
	3		MDW0480NHGS3	21.3	28.5	81.0			1
4.8	5	●	MDW0480NHGS5	37.8	45.0	99.0	1.0	5.0	1
	10		MDW0480NHGS10	63.8	71.0	122.0			2
	3		MDW0490NHGS3	21.2	28.5	81.0			1
4.9	5	●	MDW0490NHGS5	37.7	45.0	99.0	1.0	5.0	1
	10	●	MDW0490NHGS10	63.7	71.0	122.0			2
	3	●	MDW0500NHGS3	21.0	28.5	81.0			1
5.0	5	●	MDW0500NHGS5	37.5	45.0	99.0	1.0	5.0	1
	10	●	MDW0500NHGS10	63.5	71.0	122.0			2
	3		MDW0510NHGS3	21.0	28.6	83.1			1
5.1	5	●	MDW0510NHGS5	37.5	45.1	101.1	1.1	6.0	1
	10	●	MDW0510NHGS10	70.5	78.1	137.1			2
	3	●	MDW0520NHGS3	20.8	28.6	83.1			1
5.2	5	●	MDW0520NHGS5	37.3	45.1	101.1	1.1	6.0	1
	10		MDW0520NHGS10	70.3	78.1	137.1			2
	3	●	MDW0530NHGS3	20.7	28.6	83.1			1
5.3	5	●	MDW0530NHGS5	37.2	45.1	101.1	1.1	6.0	1
	10		MDW0530NHGS10	70.2	78.1	137.1			2
	3		MDW0540NHGS3	20.5	28.6	83.1			1
5.4	5	●	MDW0540NHGS5	37.0	45.1	101.1	1.1	6.0	1
	10		MDW0540NHGS10	70.0	78.1	137.1			2
	3	●	MDW0550NHGS3	20.4	28.6	83.1			1
5.5	5	●	MDW0550NHGS5	36.9	45.1	101.1	1.1	6.0	1
	10	●	MDW0550NHGS10	69.9	78.1	137.1			2
	3		MDW0560NHGS3	22.8	31.2	83.2			1
5.6	5	●	MDW0560NHGS5	40.8	49.2	101.2	1.2	6.0	1
	10		MDW0560NHGS10	76.8	85.2	137.2			2
	3		MDW0570NHGS3	22.7	31.2	83.2			1
5.7	5	●	MDW0570NHGS5	40.7	49.2	101.2	1.2	6.0	1
	10		MDW0570NHGS10	76.7	85.2	137.2			2
	3		MDW0580NHGS3	22.5	31.2	83.2			1
5.8	5	●	MDW0580NHGS5	40.5	49.2	101.2	1.2	6.0	1
	10		MDW0580NHGS10	76.5	85.2	137.2			2
	3	●	MDW0590NHGS3	22.4	31.2	83.2			1
5.9	5	●	MDW0590NHGS5	40.4	49.2	101.2	1.2	6.0	1
	10		MDW0590NHGS10	76.4	85.2	137.2			2
	3	●	MDW0600NHGS3	22.2	31.2	83.2			1
6.0	5	●	MDW0600NHGS5	40.2	49.2	101.2	1.2	6.0	1
	10	●	MDW0600NHGS10	76.2	85.2	137.2			2
	3		MDW0610NHGS3	24.7	33.8	89.3			1
6.1	5	●	MDW0610NHGS5	44.2	53.3	110.3	1.3	7.0	1
	10	●	MDW0610NHGS10	83.2	92.3	152.3			2
	3		MDW0620NHGS3	24.5	33.8	89.3			1
6.2	5	●	MDW0620NHGS5	44.0	53.3	110.3	1.3	7.0	1
	10		MDW0620NHGS10	83.0	92.3	152.3			2
	3		MDW0630NHGS3	24.4	33.8	89.3			1
6.3	5	●	MDW0630NHGS5	43.9	53.3	110.3	1.3	7.0	1
	10		MDW0630NHGS10	82.9	92.3	152.3			2

Grade: DL1300

● : USA Stock Item

★: Worldwide Warehouse Item

NHGS Type - Metric (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coating | Coolant Hole | 3D | 5D | 10D

*Refer to N74 for the tolerance of h6

Fig. 1 (NHGS3/5 Type, ø3.0 to 16.0mm)

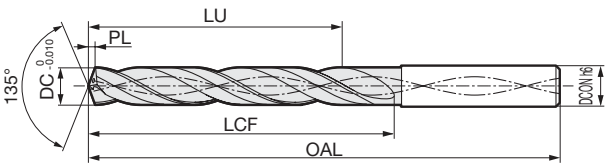
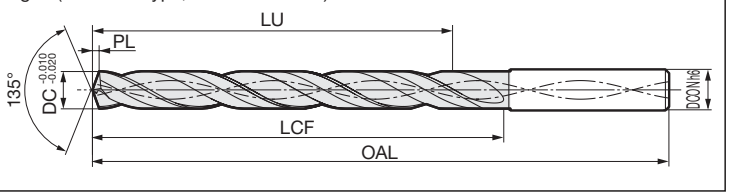


Fig. 2 (NHGS10 Type, ø3.0 to 16.0mm)



Diameter ø6.4 to 8.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		MDW0640NHGS3	24.2	33.8	89.3			1
6.4	5	●	MDW0640NHGS5	43.7	53.3	110.3	1.3	7.0	1
	10		MDW0640NHGS10	82.7	92.3	152.3			2
	3	●	MDW0650NHGS3	24.1	33.8	89.3			1
6.5	5	●	MDW0650NHGS5	43.6	53.3	110.3	1.3	7.0	1
	10	●	MDW0650NHGS10	82.6	92.3	152.3			2
	3		MDW0660NHGS3	26.5	36.4	89.4			1
6.6	5	●	MDW0660NHGS5	47.5	57.4	110.4	1.4	7.0	1
	10		MDW0660NHGS10	89.5	99.4	152.4			2
	3	●	MDW0670NHGS3	26.4	36.4	89.4			1
6.7	5	●	MDW0670NHGS5	47.4	57.4	110.4	1.4	7.0	1
	10	●	MDW0670NHGS10	89.4	99.4	152.4			2
	3	●	MDW0680NHGS3	26.2	36.4	89.4			1
6.8	5	●	MDW0680NHGS5	47.2	57.4	110.4	1.4	7.0	1
	10	●	MDW0680NHGS10	89.2	99.4	152.4			2
	3		MDW0690NHGS3	26.1	36.4	89.4			1
6.9	5	●	MDW0690NHGS5	47.1	57.4	110.4	1.4	7.0	1
	10		MDW0690NHGS10	89.1	99.4	152.4			2
	3	●	MDW0700NHGS3	25.9	36.4	89.4			1
7.0	5	●	MDW0700NHGS5	46.9	57.4	110.4	1.4	7.0	1
	10	●	MDW0700NHGS10	88.9	99.4	152.4			2
	3		MDW0710NHGS3	28.4	39.0	95.5			1
7.1	5	●	MDW0710NHGS5	50.9	61.5	119.5	1.5	8.0	1
	10		MDW0710NHGS10	95.9	106.5	167.5			2
	3		MDW0720NHGS3	28.2	39.0	95.5			1
7.2	5	●	MDW0720NHGS5	50.7	61.5	119.5	1.5	8.0	1
	10	●	MDW0720NHGS10	95.7	106.5	167.5			2
	3		MDW0730NHGS3	28.1	39.0	95.5			1
7.3	5	●	MDW0730NHGS5	50.6	61.5	119.5	1.5	8.0	1
	10		MDW0730NHGS10	95.6	106.5	167.5			2
	3	●	MDW0735NHGS3	28.0	39.0	95.5			1
7.35	5	●	MDW0735NHGS5	50.5	61.5	119.5	1.5	8.0	1
	10		MDW0735NHGS10	95.5	106.5	167.5			2
	3	●	MDW0740NHGS3	27.9	39.0	95.5			1
7.4	5	●	MDW0740NHGS5	50.4	61.5	119.5	1.5	8.0	1
	10		MDW0740NHGS10	95.4	106.5	167.5			2
	3	●	MDW0750NHGS3	27.9	39.1	95.6			1
7.5	5	●	MDW0750NHGS5	50.4	61.6	119.6	1.6	8.0	1
	10	●	MDW0750NHGS10	95.4	106.6	167.6			2
	3		MDW0760NHGS3	30.2	41.6	95.6			1
7.6	5	●	MDW0760NHGS5	54.2	65.6	119.6	1.6	8.0	1
	10		MDW0760NHGS10	102.2	113.6	167.6			2
	3		MDW0770NHGS3	30.1	41.6	95.6			1
7.7	5	●	MDW0770NHGS5	54.1	65.6	119.6	1.6	8.0	1
	10		MDW0770NHGS10	102.1	113.6	167.6			2
	3	●	MDW0780NHGS3	29.9	41.6	95.6			1
7.8	5	●	MDW0780NHGS5	53.9	65.6	119.6	1.6	8.0	1
	10	●	MDW0780NHGS10	101.9	113.6	167.6			2
	3		MDW0790NHGS3	29.8	41.6	95.6			1
7.9	5	●	MDW0790NHGS5	53.8	65.6	119.6	1.6	8.0	1
	10		MDW0790NHGS10	101.8	113.6	167.6			2
	3	●	MDW0800NHGS3	29.7	41.7	95.7			1
8.0	5	●	MDW0800NHGS5	53.7	65.7	119.7	1.7	8.0	1
	10	●	MDW0800NHGS10	101.7	113.7	167.7			2

Grade: DL1300

Diameter ø8.1 to 9.7mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		MDW0810NHGS3	32.1	44.2	101.7			1
8.1	5	●	MDW0810NHGS5	57.6	69.7	128.7	1.7	9.0	1
	10		MDW0810NHGS10	108.6	120.7	182.7			2
	3		MDW0820NHGS3	31.9	44.2	101.7			1
8.2	5	●	MDW0820NHGS5	57.4	69.7	128.7	1.7	9.0	1
	10		MDW0820NHGS10	108.4	120.7	182.7			2
	3		MDW0830NHGS3	31.8	44.2	101.7			1
8.3	5	●	MDW0830NHGS5	57.3	69.7	128.7	1.7	9.0	1
	10		MDW0830NHGS10	108.3	120.7	182.7			2
	3		MDW0840NHGS3	31.6	44.2	101.7			1
8.4	5	●	MDW0840NHGS5	57.1	69.7	128.7	1.7	9.0	1
	10		MDW0840NHGS10	108.1	120.7	182.7			2
	3	●	MDW0850NHGS3	31.6	44.3	101.8			1
8.5	5	●	MDW0850NHGS5	57.1	69.8	128.8	1.8	9.0	1
	10	●	MDW0850NHGS10	108.1	120.8	182.8			2
	3	●	MDW0860NHGS3	33.9	46.8	101.8			1
8.6	5	●	MDW0860NHGS5	60.9	73.8	128.8	1.8	9.0	1
	10		MDW0860NHGS10	114.9	127.8	182.8			2
	3		MDW0870NHGS3	33.8	46.8	101.8			1
8.7	5	●	MDW0870NHGS5	60.8	73.8	128.8	1.8	9.0	1
	10		MDW0870NHGS10	114.8	127.8	182.8			2
	3	●	MDW0880NHGS3	33.6	46.8	101.8			1
8.8	5	●	MDW0880NHGS5	60.6	73.8	128.8	1.8	9.0	1
	10		MDW0880NHGS10	114.6	127.8	182.8			2
	3		MDW0890NHGS3	33.5	46.8	101.8			1
8.9	5	●	MDW0890NHGS5	60.5	73.8	128.8	1.8	9.0	1
	10		MDW0890NHGS10	114.5	127.8	182.8			2
	3	●	MDW0900NHGS3	33.4	46.9	101.9			1
9.0	5	●	MDW0900NHGS5	60.4	73.9	128.9	1.9	9.0	1
	10	●	MDW0900NHGS10	114.4	127.9	182.9			2
	3		MDW0910NHGS3	35.8	49.4	107.9			1
9.1	5	●	MDW0910NHGS5	64.3	77.9	137.9	1.9	10.0	1
	10		MDW0910NHGS10	121.3	134.9	197.9			2
	3		MDW0920NHGS3	35.6	49.4	107.9			1
9.2	5	●	MDW0920NHGS5	64.1	77.9	137.9	1.9	10.0	1
	10		MDW0920NHGS10	121.1	134.9	197.9			2
	3	●	MDW0921NHGS3	35.6	49.4	107.9			1
9.21	5	●	MDW0921NHGS5	64.1	77.9	137.9	1.9	10.0	1
	10		MDW0921NHGS10	121.1	134.9	197.9			2
	3		MDW0930NHGS3	35.5	49.4	107.9			1
9.3	5	●	MDW0930NHGS5	64.0	77.9	137.9	1.9	10.0	1
	10		MDW0930NHGS10	121.0	134.9	197.9			2
	3	●	MDW0940NHGS3	35.3	49.4	107.9			1
9.4	5	●	MDW0940NHGS5	63.8	77.9	137.9	1.9	10.0	1
	10		MDW0940NHGS10	120.8	134.9	197.9			2
	3	●	MDW0950NHGS3	35.3	49.5	108.0			1
9.5	5	●	MDW0950NHGS5	63.8	78.0	138.0	2.0	10.0	1
	10	●	MDW0950NHGS10	120.8	135.0	198.0			2
	3		MDW0960NHGS3	37.6	52.0	108.0			1
9.6	5	●	MDW0960NHGS5	67.6	82.0	138.0	2.0	10.0	1
	10		MDW0960NHGS10	127.6	142.0	198.0			2
	3		MDW0970NHGS3	37.5	52.0	108.0			1
9.7	5	●	MDW0970NHGS5	67.5	82.0	138.0	2.0	10.0	1
	10		MDW0970NHGS10	127.5	142.0	198.0			2

Grade: DL1300

★: Worldwide Warehouse Item

● : USA Stock Item

NHGS Type - Metric (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coating | Coolant Hole | 3D | 5D | 10D

*Refer to N74 for the tolerance of h6

Fig. 1 (NHGS3/5 Type, ø3.0 to 16.0mm)

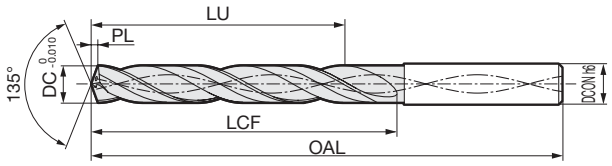
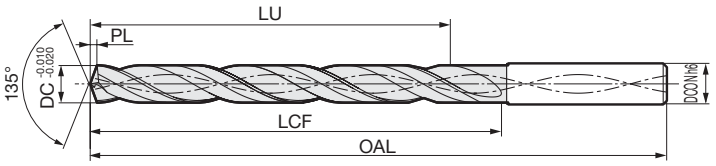


Fig. 2 (NHGS10 Type, ø3.0 to 16.0mm)



Diameter ø9.8 to 11.4mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		**MDW0980NHGS3**	37.3	52.0	108.0			1
9.8	5	●	**MDW0980NHGS5**	67.3	82.0	138.0	2.0	10.0	1
	10	●	**MDW0980NHGS10**	127.3	142.0	198.0			2
	3		**MDW0990NHGS3**	37.2	52.0	108.0			1
9.9	5	●	**MDW0990NHGS5**	67.2	82.0	138.0	2.0	10.0	1
	10		**MDW0990NHGS10**	127.2	142.0	198.0			2
	3	●	**MDW1000NHGS3**	37.1	52.1	108.1			1
10.0	5	●	**MDW1000NHGS5**	67.1	82.1	138.1	2.1	10.0	1
	10	●	**MDW1000NHGS10**	127.1	142.1	198.1			2
	3	●	**MDW1010NHGS3**	39.5	54.6	118.1			1
10.1	5		**MDW1010NHGS5**	71.0	86.1	151.1	2.1	11.0	1
	10		**MDW1010NHGS10**	134.0	149.1	217.1			2
	3		**MDW1020NHGS3**	39.3	54.6	118.1			1
10.2	5		**MDW1020NHGS5**	70.8	86.1	151.1	2.1	11.0	1
	10		**MDW1020NHGS10**	133.8	149.1	217.1			2
	3	●	**MDW1030NHGS3**	39.2	54.6	118.1			1
10.3	5	●	**MDW1030NHGS5**	70.7	86.1	151.1	2.1	11.0	1
	10		**MDW1030NHGS10**	133.7	149.1	217.1			2
	3		**MDW1040NHGS3**	39.1	54.7	118.2			1
10.4	5	●	**MDW1040NHGS5**	70.6	86.2	151.2	2.2	11.0	1
	10		**MDW1040NHGS10**	133.6	149.2	217.2			2
	3	●	**MDW1050NHGS3**	39.0	54.7	118.2			1
10.5	5	●	**MDW1050NHGS5**	70.5	86.2	151.2	2.2	11.0	1
	10	●	**MDW1050NHGS10**	133.5	149.2	217.2			2
	3	●	**MDW1060NHGS3**	41.3	57.2	118.2			1
10.6	5	●	**MDW1060NHGS5**	74.3	90.2	151.2	2.2	11.0	1
	10		**MDW1060NHGS10**	140.3	156.2	217.2			2
	3		**MDW1070NHGS3**	41.2	57.2	118.2			1
10.7	5		**MDW1070NHGS5**	74.2	90.2	151.2	2.2	11.0	1
	10		**MDW1070NHGS10**	140.2	156.2	217.2			2
	3		**MDW1080NHGS3**	41.0	57.2	118.2			1
10.8	5		**MDW1080NHGS5**	74.0	90.2	151.2	2.2	11.0	1
	10		**MDW1080NHGS10**	140.0	156.2	217.2			2
	3		**MDW1090NHGS3**	41.0	57.3	118.3			1
10.9	5		**MDW1090NHGS5**	74.0	90.3	151.3	2.3	11.0	1
	10		**MDW1090NHGS10**	140.0	156.3	217.3			2
	3	●	**MDW1100NHGS3**	40.8	57.3	118.3			1
11.0	5	●	**MDW1100NHGS5**	73.8	90.3	151.3	2.3	11.0	1
	10	●	**MDW1100NHGS10**	139.8	156.3	217.3			2
	3	●	**MDW1108NHGS3**	43.2	59.8	124.3			1
11.08	5	●	**MDW1108NHGS5**	77.7	94.3	160.3	2.3	12.0	1
	10		**MDW1108NHGS10**	146.7	163.3	232.3			2
	3	●	**MDW1110NHGS3**	43.2	59.8	124.3			1
11.1	5	●	**MDW1110NHGS5**	77.7	94.3	160.3	2.3	12.0	1
	10		**MDW1110NHGS10**	146.7	163.3	232.3			2
	3	●	**MDW1120NHGS3**	43.0	59.8	124.3			1
11.2	5	●	**MDW1120NHGS5**	77.5	94.3	160.3	2.3	12.0	1
	10		**MDW1120NHGS10**	146.5	163.3	232.3			2
	3		**MDW1130NHGS3**	42.9	59.8	124.3			1
11.3	5		**MDW1130NHGS5**	77.4	94.3	160.3	2.3	12.0	1
	10		**MDW1130NHGS10**	146.4	163.3	232.3			2
	3	●	**MDW1140NHGS3**	42.8	59.9	124.4			1
11.4	5	●	**MDW1140NHGS5**	77.3	94.4	160.4	2.4	12.0	1
	10		**MDW1140NHGS10**	146.3	163.4	232.4			2

Grade: DL1300

Diameter ø11.5 to 13.1mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	**MDW1150NHGS3**	42.7	59.9	124.4			1
11.5	5	●	**MDW1150NHGS5**	77.2	94.4	160.4	2.4	12.0	1
	10	●	**MDW1150NHGS10**	146.2	163.4	232.4			2
	3		**MDW1160NHGS3**	45.0	62.4	124.4			1
11.6	5		**MDW1160NHGS5**	81.0	98.4	160.4	2.4	12.0	1
	10		**MDW1160NHGS10**	153.0	170.4	232.4			2
	3		**MDW1170NHGS3**	44.9	62.4	124.4			1
11.7	5		**MDW1170NHGS5**	80.9	98.4	160.4	2.4	12.0	1
	10		**MDW1170NHGS10**	152.9	170.4	232.4			2
	3		**MDW1180NHGS3**	44.7	62.4	124.4			1
11.8	5		**MDW1180NHGS5**	80.7	98.4	160.4	2.4	12.0	1
	10		**MDW1180NHGS10**	152.7	170.4	232.4			2
	3		**MDW1190NHGS3**	44.7	62.5	124.5			1
11.9	5		**MDW1190NHGS5**	80.7	98.5	160.5	2.5	12.0	1
	10		**MDW1190NHGS10**	152.7	170.5	232.5			2
	3	●	**MDW1200NHGS3**	44.5	62.5	124.5			1
12.0	5	●	**MDW1200NHGS5**	80.5	98.5	160.5	2.5	12.0	1
	10	●	**MDW1200NHGS10**	152.5	170.5	232.5			2
	3	●	**MDW1210NHGS3**	46.9	65.0	130.5			1
12.1	5	●	**MDW1210NHGS5**	84.4	102.5	169.5	2.5	13.0	1
	10		**MDW1210NHGS10**	159.4	177.5	247.5			2
	3		**MDW1220NHGS3**	46.7	65.0	130.5			1
12.2	5		**MDW1220NHGS5**	84.2	102.5	169.5	2.5	13.0	1
	10		**MDW1220NHGS10**	159.2	177.5	247.5			2
	3	●	**MDW1230NHGS3**	46.6	65.0	130.5			1
12.3	5	●	**MDW1230NHGS5**	84.1	102.5	169.5	2.5	13.0	1
	10		**MDW1230NHGS10**	159.1	177.5	247.5			2
	3		**MDW1240NHGS3**	46.5	65.1	130.6			1
12.4	5		**MDW1240NHGS5**	84.0	102.6	169.6	2.6	13.0	1
	10		**MDW1240NHGS10**	159.0	177.6	247.6			2
	3	●	**MDW1250NHGS3**	46.4	65.1	130.6			1
12.5	5	●	**MDW1250NHGS5**	83.9	102.6	169.6	2.6	13.0	1
	10	●	**MDW1250NHGS10**	158.9	177.6	247.6			2
	3		**MDW1260NHGS3**	48.7	67.6	130.6			1
12.6	5		**MDW1260NHGS5**	87.7	106.6	169.6	2.6	13.0	1
	10		**MDW1260NHGS10**	165.7	184.6	247.6			2
	3		**MDW1270NHGS3**	48.6	67.6	130.6			1
12.7	5		**MDW1270NHGS5**	87.6	106.6	169.6	2.6	13.0	1
	10		**MDW1270NHGS10**	165.6	184.6	247.6			2
	3		**MDW1280NHGS3**	48.4	67.6	130.6			1
12.8	5		**MDW1280NHGS5**	87.4	106.6	169.6	2.6	13.0	1
	10		**MDW1280NHGS10**	165.4	184.6	247.6			2
	3		**MDW1290NHGS3**	48.4	67.7	130.7			1
12.9	5		**MDW1290NHGS5**	87.4	106.7	169.7	2.7	13.0	1
	10		**MDW1290NHGS10**	165.4	184.7	247.7			2
	3	●	**MDW1296NHGS3**	48.3	67.7	130.7			1
12.96	5	●	**MDW1296NHGS5**	87.3	106.7	169.7	2.7	13.0	1
	10		**MDW1296NHGS10**	165.3	184.7	247.7			2
	3	●	**MDW1300NHGS3**	48.2	67.7	130.7			1
13.0	5	●	**MDW1300NHGS5**	87.2	106.7	169.7	2.7	13.0	1
	10	●	**MDW1300NHGS10**	165.2	184.7	247.7			2
	3		**MDW1310NHGS3**	50.6	70.2	136.7			1
13.1	5		**MDW1310NHGS5**	91.1	110.7	178.7	2.7	14.0	1
	10		**MDW1310NHGS10**	172.1	191.7	262.7			2

Grade: DL1300

● : USA Stock Item

★: Worldwide Warehouse Item

NHGS Type - Metric (Internal Coolant Supply)

Aluminum Alloy | Copper Alloy

Aurora DLC Coating | Coolant Hole | 3D | 5D | 10D

*Refer to N74 for the tolerance of h6

Fig. 1 (NHGS3/5 Type, ø3.0 to 16.0mm)

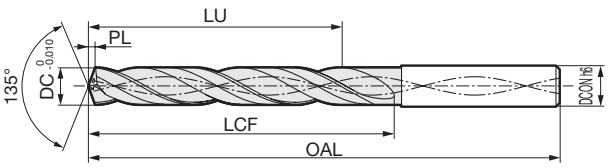
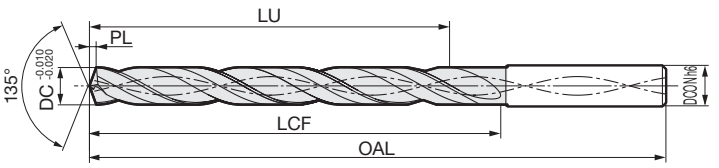


Fig. 2 (NHGS10 Type, ø3.0 to 16.0mm)



Diameter ø13.2 to 14.9mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3		**MDW1320NHGS3**	50.4	70.2	136.7			1
13.2	5		**MDW1320NHGS5**	90.9	110.7	178.7	2.7	14.0	1
	10		**MDW1320NHGS10**	171.9	191.7	262.7			2
	3		**MDW1330NHGS3**	50.4	70.3	136.8			1
13.3	5		**MDW1330NHGS5**	90.9	110.8	178.8	2.8	14.0	1
	10		**MDW1330NHGS10**	171.9	191.8	262.8			2
	3		**MDW1340NHGS3**	50.2	70.3	136.8			1
13.4	5		**MDW1340NHGS5**	90.7	110.8	178.8	2.8	14.0	1
	10		**MDW1340NHGS10**	171.7	191.8	262.8			2
	3	●	**MDW1350NHGS3**	50.1	70.3	136.8			1
13.5	5	●	**MDW1350NHGS5**	90.6	110.8	178.8	2.8	14.0	1
	10		**MDW1350NHGS10**	171.6	191.8	262.8			2
	3		**MDW1360NHGS3**	52.4	72.8	136.8			1
13.6	5		**MDW1360NHGS5**	94.4	114.8	178.8	2.8	14.0	1
	10		**MDW1360NHGS10**	178.4	198.8	262.8			2
	3		**MDW1370NHGS3**	52.3	72.8	136.8			1
13.7	5		**MDW1370NHGS5**	94.3	114.8	178.8	2.8	14.0	1
	10		**MDW1370NHGS10**	178.3	198.8	262.8			2
	3		**MDW1380NHGS3**	52.2	72.9	136.9			1
13.8	5		**MDW1380NHGS5**	94.2	114.9	178.9	2.9	14.0	1
	10		**MDW1380NHGS10**	178.2	198.9	262.9			2
	3		**MDW1390NHGS3**	52.1	72.9	136.9			1
13.9	5		**MDW1390NHGS5**	94.1	114.9	178.9	2.9	14.0	1
	10		**MDW1390NHGS10**	178.1	198.9	262.9			2
	3	●	**MDW1400NHGS3**	51.9	72.9	136.9			1
14.0	5	●	**MDW1400NHGS5**	93.9	114.9	178.9	2.9	14.0	1
	10		**MDW1400NHGS10**	177.9	198.9	262.9			2
	3	●	**MDW1410NHGS3**	54.3	75.4	142.9			1
14.1	5	●	**MDW1410NHGS5**	97.8	118.9	187.9	2.9	15.0	1
	10		**MDW1410NHGS10**	184.8	205.9	277.9			2
	3		**MDW1420NHGS3**	54.1	75.4	142.9			1
14.2	5		**MDW1420NHGS5**	97.6	118.9	187.9	2.9	15.0	1
	10		**MDW1420NHGS10**	184.6	205.9	277.9			2
	3		**MDW1430NHGS3**	54.1	75.5	143.0			1
14.3	5		**MDW1430NHGS5**	97.6	119.0	188.0	3.0	15.0	1
	10		**MDW1430NHGS10**	184.6	206.0	278.0			2
	3		**MDW1440NHGS3**	53.9	75.5	143.0			1
14.4	5		**MDW1440NHGS5**	97.4	119.0	188.0	3.0	15.0	1
	10		**MDW1440NHGS10**	184.4	206.0	278.0			2
	3	●	**MDW1450NHGS3**	53.8	75.5	143.0			1
14.5	5	●	**MDW1450NHGS5**	97.3	119.0	188.0	3.0	15.0	1
	10		**MDW1450NHGS10**	184.3	206.0	278.0			2
	3		**MDW1460NHGS3**	56.1	78.0	143.0			1
14.6	5		**MDW1460NHGS5**	101.1	123.0	188.0	3.0	15.0	1
	10		**MDW1460NHGS10**	191.1	213.0	278.0			2
	3		**MDW1470NHGS3**	56.0	78.0	143.0			1
14.7	5		**MDW1470NHGS5**	101.0	123.0	188.0	3.0	15.0	1
	10		**MDW1470NHGS10**	191.0	213.0	278.0			2
	3		**MDW1480NHGS3**	55.9	78.1	143.1			1
14.8	5		**MDW1480NHGS5**	100.9	123.1	188.1	3.1	15.0	1
	10		**MDW1480NHGS10**	190.9	213.1	278.1			2
	3	●	**MDW1490NHGS3**	55.8	78.1	143.1			1
14.9	5	●	**MDW1490NHGS5**	100.8	123.1	188.1	3.1	15.0	1
	10		**MDW1490NHGS10**	190.8	213.1	278.1			2

Grade: DL1300

Diameter ø14.96 to 16.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	3	●	**MDW1496NHGS3**	55.7	78.1	143.1			1
14.96	5	●	**MDW1496NHGS5**	100.7	123.1	188.1	3.1	15.0	1
	10		**MDW1496NHGS10**	190.7	213.1	278.1			2
	3	●	**MDW1500NHGS3**	55.6	78.1	143.1			1
15.0	5	●	**MDW1500NHGS5**	100.6	123.1	188.1	3.1	15.0	1
	10		**MDW1500NHGS10**	190.6	213.1	278.1			2
	3		**MDW1510NHGS3**	58.0	80.6	149.1			1
15.1	5		**MDW1510NHGS5**	104.5	127.1	197.1	3.1	16.0	1
	10		**MDW1510NHGS10**	197.5	220.1	293.1			2
	3		**MDW1520NHGS3**	57.8	80.6	149.1			1
15.2	5		**MDW1520NHGS5**	104.3	127.1	197.1	3.1	16.0	1
	10		**MDW1520NHGS10**	197.3	220.1	293.1			2
	3		**MDW1530NHGS3**	57.8	80.7	149.2			1
15.3	5		**MDW1530NHGS5**	104.3	127.2	197.2	3.2	16.0	1
	10		**MDW1530NHGS10**	197.3	220.2	293.2			2
	3		**MDW1540NHGS3**	57.6	80.7	149.2			1
15.4	5		**MDW1540NHGS5**	104.1	127.2	197.2	3.2	16.0	1
	10		**MDW1540NHGS10**	197.1	220.2	293.2			2
	3	●	**MDW1550NHGS3**	57.5	80.7	149.2			1
15.5	5	●	**MDW1550NHGS5**	104.0	127.2	197.2	3.2	16.0	1
	10		**MDW1550NHGS10**	197.0	220.2	293.2			2
	3		**MDW1560NHGS3**	59.8	83.2	149.2			1
15.6	5		**MDW1560NHGS5**	107.8	131.2	197.2	3.2	16.0	1
	10		**MDW1560NHGS10**	203.8	227.2	293.2			2
	3		**MDW1570NHGS3**	59.7	83.2	149.2			1
15.7	5		**MDW1570NHGS5**	107.7	131.2	197.2	3.2	16.0	1
	10		**MDW1570NHGS10**	203.7	227.2	293.2			2
	3		**MDW1580NHGS3**	59.6	83.3	149.3			1
15.8	5		**MDW1580NHGS5**	107.6	131.3	197.3	3.3	16.0	1
	10		**MDW1580NHGS10**	203.6	227.3	293.3			2
	3		**MDW1590NHGS3**	59.5	83.3	149.3			1
15.9	5		**MDW1590NHGS5**	107.5	131.3	197.3	3.3	16.0	1
	10		**MDW1590NHGS10**	203.5	227.3	293.3			2
	3	●	**MDW1600NHGS3**	59.3	83.3	149.3			1
16.0	5	●	**MDW1600NHGS5**	107.3	131.3	197.3	3.3	16.0	1
	10		**MDW1600NHGS10**	203.3	227.3	293.3			2

Grade: DL1300

Recommended Cutting Conditions

(v_c: Cutting Speed (SFM), f: Feed Rate (IPR))

Dia. DC (*mm*)	Cutting Conditions	Aluminum alloy castings/ aluminum alloy die castings	Wrought Aluminum Alloy
ø6.0	v_c	260 - **460** - 650	260 - **400** - 650
	f	0.008 - **0.016** - 0.024	0.008 - **0.012** - 0.016
ø10.0	v_c	330 - **600** - 820	330 - **500** - 820
	f	0.016 - **0.024** - 0.032	0.008 - **0.015** - 0.020
ø16.0	v_c	400 - **650** - 820	400 - **590** - 820
	f	0.016 - **0.028** - .040	0.012 - **0.018** - 0.024

Min. - **Optimum** - Max.

Typical recommendation starting parameters for NHGS Drills: 800 SFM and 0.010 - 0.016" feed.
Contact Sumitomo Engineering Deptartment for further questions.

★: Worldwide Warehouse Item

● : USA Stock Item

SDC Type (External Coolant Supply)



■ General Features

Diamond Coating SDC type (SUMIDIA) drills for carbon fiber reinforced polymers (CFRP) employ Sumitomo's proprietary multi-step point angle. Combined with a diamond coating, this technology improves machined surface quality and extends tool life.

■ Features and Applications

- Excellent Drilled-Hole Quality
  - Sharp cutting edge shape reduces delamination of fiber layers and minimizes burrs.
  - Continuously changing point angle, disperses the load placed on the cutting edge and preventing breakage.
- Long Tool Life
  - Utilizing a high-strength diamond coating with excellent adhesion, delivering high quality and long tool life.

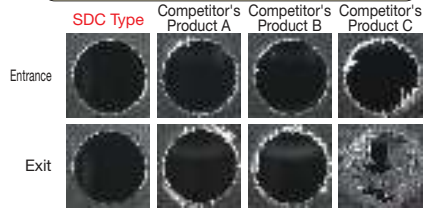
■ Product Range

Cat. No.	Diameter Range (mm)	Point Angle	Hole Depth (L/D)
MDS□□□□□SDC3	ø2.0 to ø4.0	90°	up to 3
	ø4.851 to ø10.0	130°	

■ Performance

Comparison of Machined Surface Quality

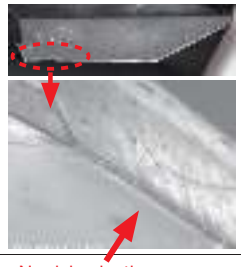
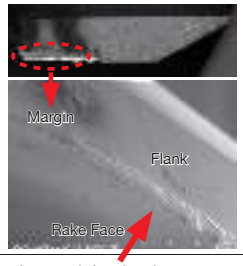
Excellent machined surface quality
Prevents delamination and burrs



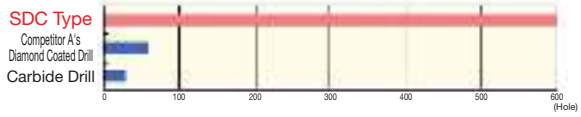
Tool: SUMIDIA COAT Drill SDC Type ø6.35
Part Material: CFRP
Cutting Conditions: *n* =6,000 SFM, *f* =0.004 IPR *H* =91.86" (through), dry

Tool Life Comparison

Effects of Diamond Coating

SDC Type (After Drilling 600 Holes)	Competitor's Product (After Drilling 50 Holes)
	
No delamination Minimal flank wear	Large delamination from cutting edge to flank

Stable diamond layer adhesion prevents delamination.
Excellent wear resistance enables high-quality drilling with long tool life.



Tool: SUMIDIA COAT Drill ø6.35
Part Material: CFRP
Cutting Conditions: *n* =6,000 SFM, *f* =0.003 IPR, *H* =49.2" (through), dry

SUMIDIA Coat **3D**

*Refer to N74 for the tolerance of h6 and h8

Fig. 1 (Diameter ø2.0 to 4.0mm)

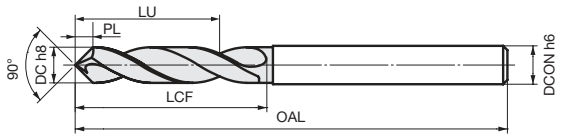
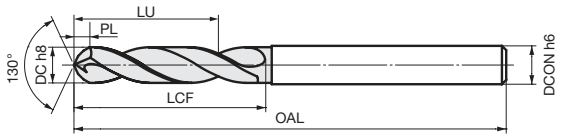


Fig. 2 (Diameter ø4.851 to 10.0mm)



Diameter ø2.0 to 10.0mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
2.0	3	★	**MDS02000SDC3**	10.50	13.5	50.0	1.0	2.0	1
2.489	3	★	**MDS02489SDC3**	12.47	16.2	50.2	1.2	2.489	1
3.0	3	★	**MDS03000SDC3**	14.5	19.0	50.5	1.5	3.0	1
3.300	3	★	**MDS03300SDC3**	16.8	21.7	61.7	1.7	3.300	1
4.0	3	★	**MDS04000SDC3**	18.5	24.5	62.0	2.0	4.0	1
4.851	3	★	**MDS04851SDC3**	21.3	28.6	77.1	1.1	4.851	2
5.0	3	★	**MDS05000SDC3**	21.2	28.7	77.2	1.2	5.0	2
5.6	3	★	**MDS05600SDC3**	22.9	31.3	82.3	1.3	5.6	2
6.0	3	★	**MDS06000SDC3**	22.4	31.4	82.4	1.4	6.0	2
6.375	3	★	**MDS06375SDC3**	24.4	34.0	84.5	1.5	6.375	2
7.0	3	★	**MDS07000SDC3**	26.1	36.6	84.6	1.6	7.0	2
7.938	3	★	**MDS07938SDC3**	30.0	41.9	91.9	1.9	7.938	2
8.0	3	★	**MDS08000SDC3**	29.9	41.9	91.9	1.9	8.0	2
9.0	3	★	**MDS09000SDC3**	33.6	47.1	100.1	2.1	9.0	2
9.550	3	★	**MDS09550SDC3**	37.9	52.2	107.2	2.2	9.550	2
10.0	3	★	**MDS10000SDC3**	37.3	52.3	107.3	2.3	10.0	2

Grade: DCX20

Recommended Cutting Conditions

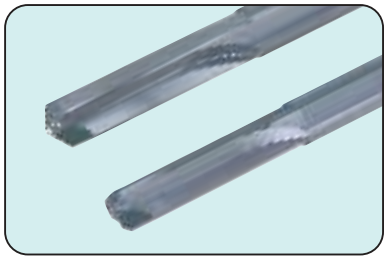
(v_c: Cutting Speed (m/min), *f*: Feed Rate (mm/rev))

Dia. DC (*mm*)	Conditions	CFRP Only (Dry Machining)	Stacked Sheets of CFRP and Aluminum Alloys (Dry Machining)
ø6.0	v_c	80 - 120 - 150	40 - 60 - 80
	f	0.05 - 0.08 - 0.10	0.03 - 0.05 - 0.10
ø12.0	v_c	80 - 100 - 120	40 - 60 - 80
	f	0.05 - 0.08 - 0.10	0.03 - 0.05 - 0.10

Min. - Optimum - Max.

★: Worldwide Warehouse Item

PCD 3D



From General to High Precision Drilling of Aluminum Alloys

- High precision DAL type is able to produce holes of IT Class of 7 to 8.
- General DDL type is able to produce holes of IT class 11 to 12, mainly for pre-tap hole drilling.

This product is a made-to-order item.

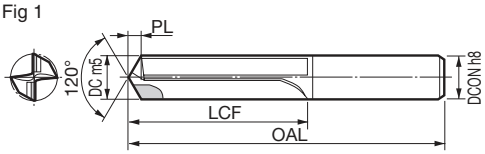
DAL Type

*Refer to N74 for the tolerance of m5, h8 Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed/Light	N
	General-purpose	
	Roughing	

Cat. No.	DA2200	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Fig
DAL 0500H to 0600H		*ø5 ≤ DC ≤ ø6*	*31.6*	*81.6*	*1.6*	1
DAL 0601H to 0700H		*ø6 < DC ≤ ø7*	*36.9*	*91.9*	*1.9*	1
DAL 0701H to 0800H		*ø7 < DC ≤ ø8*	*37.2*	*92.2*	*2.2*	1
DAL 0801H to 0900H		*ø8 < DC ≤ ø9*	*42.5*	*102.5*	*2.5*	1
DAL 0901H to 1000H		*ø9 < DC ≤ ø10*	*42.8*	*102.8*	*2.8*	1
DAL 1001H to 1100H		*ø10 < DC ≤ ø11*	*53.1*	*113.1*	*3.1*	1
DAL 1101H to 1200H		*ø11 < DC ≤ ø12*	*53.4*	*113.4*	*3.4*	1

Fig 1



Ordering numbers should be handled according to this example: ø6.05mm drill → DAL0605H.

This product is a made-to-order item.

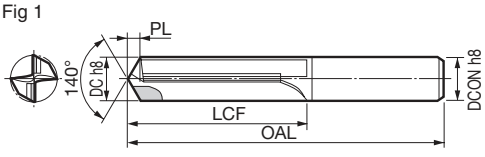
DDL Type

*Refer to N74 for the tolerance of h8 Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed/Light	N
	General-purpose	
	Roughing	

Cat. No.	DA2200	Dia. (Shank Dia.) DC(DCON)	Flute Length LCF	Overall Length OAL	Tip PL	Fig
DDL 050V to 060V		*ø5 ≤ DC ≤ ø6*	*31.5*	*81.0*	*1.0*	1
DDL 061V to 070V		*ø6 < DC ≤ ø7*	*36.2*	*91.2*	*1.2*	1
DDL 071V to 080V		*ø7 < DC ≤ ø8*	*36.4*	*91.4*	*1.4*	1
DDL 081V to 090V		*ø8 < DC ≤ ø9*	*41.6*	*101.6*	*1.6*	1
DDL 091V to 100V		*ø9 < DC ≤ ø10*	*41.7*	*101.7*	*1.7*	1
DDL 101V to 110V		*ø10 < DC ≤ ø11*	*51.9*	*111.9*	*1.9*	1
DDL 111V to 120V		*ø11 < DC ≤ ø12*	*52.1*	*112.1*	*2.1*	1

Fig 1



Ordering numbers should be handled according to this example: ø10.5mm drill → DDL105V.

Recommended Cutting Conditions

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Conditions	DAL Type	DDL Type	Depth of Cut	Oil
ø8.0	v_c	80 - **100** - 150	150 - **200** - 250	L/D=Below 3	Emulsion Type
	f	0.05 - **0.1** - 0.15	0.1 - **0.15** - 0.25		
ø12.0	v_c	80 - **100** - 150	150 - **200** - 250		
	f	0.08 - **0.13** - 0.2	0.15 - **0.2** - 0.3		

Min. - **Optimum** - Max.

Important Notes

- When using DAL type for high precision machining, select a high rigidity machine and high precision holder.
- Supply coolant generously at the entrance of the hole.

MLDH-L / MLDH-P Type



■ General Features

Micro Long Drills are oil-hole drills for high efficiency drilling that were developed for drilling deep, small-diameter holes. These next-generation drills for small diameter deep holes feature improved strength - addresses a frequent problem with small diameter drills.

■ Features and Applications

- Deep hole drilling
  New groove shape ensures good drill rigidity and chip evacuation.
  High-efficiency drilling to depths of over 20 times the drill diameter at over v_f=500mm/min (drill diameter ø1.3, Stainless Steel). Optimal thinning and edge balance for stable chip control.
- Long tool life
  Special coating provides long tool life with a wide variety of work materials.
  Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring long, stable tool life.

■ Product Range

Applications	Cat. No.	Diameter Range (mm)	Hole Depth (L/D)	Number of items
Deep Hole Drilling	MLDH□□□□L5	ø0.8 to 2.0	up to 5	41 items available Worldwide Warehouse
	MLDH□□□□L12	ø0.8 to 2.0	up to 12	41 items available Worldwide Warehouse
	MLDH□□□□L20	ø0.8 to 2.0	up to 20	41 items available Worldwide Warehouse
	MLDH□□□□L30	ø0.8 to 2.0	up to 30	41 items available Worldwide Warehouse
For Guide Holes	MLDH□□□□P	ø0.8 to 2.0	up to 2	41 items available Worldwide Warehouse

■ Recommended Cutting Conditions - METRIC

MLDH-P Type/MLDH-L5 Type

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev))

Dia. DC (mm)	Cutting Conditions	Mild Steel up to 200HB	General Steel up to 250HB	Alloy Steel up to 300HB	Stainless Steel up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Steel
ø1.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.02 - **0.03** - 0.04	0.03 - **0.04** - 0.06	0.005 - **0.01** - 0.02
ø1.5	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.04 - **0.08** - 0.12	0.04 - **0.08** - 0.12	0.04 - **0.08** - 0.12	0.02 - **0.05** - 0.10	0.04 - **0.08** - 0.12	0.05 - **0.10** - 0.15	0.01 - **0.03** - 0.05
ø2.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.06 - **0.08** - 0.12	0.06 - **0.08** - 0.12	0.06 - **0.08** - 0.12	0.04 - **0.06** - 0.10	0.06 - **0.08** - 0.12	0.08 - **0.12** - 0.15	0.01 - **0.03** - 0.05

Min. - **Optimum** - Max.

MLDH-L12 Type/MLDH-L20 Type/MLDH-L30 Type

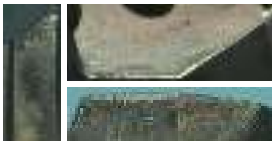
Dia. DC (mm)	Cutting Conditions	Mild Steel up to 200HB	General Steel up to 250HB	Alloy Steel up to 300HB	Stainless Steel up to 200HB	Cast Iron FC/FCD	Aluminum Alloy	Heat-resistant Steel
ø1.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.01 - **0.02** - 0.03	0.02 - **0.03** - 0.04	0.03 - **0.04** - 0.06	0.005 - **0.01** - 0.02
ø1.5	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.03 - **0.05** - 0.07	0.03 - **0.05** - 0.07	0.03 - **0.05** - 0.07	0.02 - **0.04** - 0.07	0.04 - **0.07** - 0.10	0.05 - **0.08** - 0.12	0.01 - **0.02** - 0.03
ø2.0	v_c	40 - **50** - 60	40 - **50** - 60	40 - **50** - 60	20 - **30** - 40	40 - **50** - 60	50 - **60** - 70	5 - **10** - 15
	f	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.06** - 0.08	0.04 - **0.07** - 0.10	0.05 - **0.08** - 0.12	0.01 - **0.02** - 0.03

Min. - **Optimum** - Max.

■ Application Examples

● Automotive component molds - Stainless Steel

Tool : MLDH 1400L20 (guide: MLDH1400P)
Machine : Vertical machining centre (HSKA63)
Coolant : Internal coolant supply (emulsion type, pump source pressure: 4MPa)
Cutting Conditions : v_c=197 SFM, f =0.001 IPR, H =0.827"
Tool Life : 600 holes (37.4 ft.)



● Tooling components - Tool Steel

Tool : MLDH 1900L20 (guide: MLDH1900P)
Machine : Vertical machining centre (HSKA63)
Coolant : Internal coolant supply (emulsion type, pump source pressure: 4MPa)
Cutting Conditions : v_c=195 SFM, f =0.004 IPR, H =1.063"
Tool life : 600 units



MLDH-L / MLDH-P (Internal Coolant Supply)

PVD Coat | Coolant Hole | 5D | 12D | 20D | 30D | Pilot 2D

Fig. 1 (MLDH-P Type)

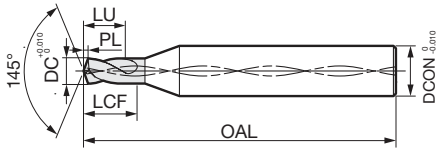
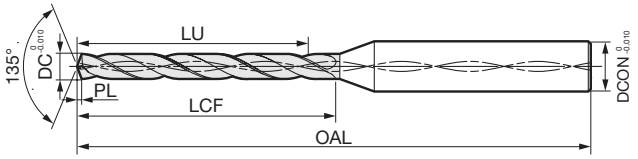


Fig. 2 (MLDH-L Type)



Diameter ø0.80 to 0.90mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
0.80	2	★	MLDH0800P	2.0	3.2	45	0.1	3.0	1
	5	★	MLDH0800L5	6.8	8	50.0	0.2		2
	12	★	MLDH0800L12	12.8	14	55			2
	20	★	MLDH0800L20	17.8	19	60			2
	30	★	MLDH0800L30	26.8	28	70			2
0.81	2	★	MLDH0810P	2.0	3.2	45	0.1	3.0	1
	5	★	MLDH0810L5	7.8	9	50.0	0.2		2
	12	★	MLDH0810L12	12.8	14	55			2
	20	★	MLDH0810L20	17.8	19	60			2
	30	★	MLDH0810L30	26.8	28	70			2
0.82	2	★	MLDH0820P	2.1	3.3	45	0.1	3.0	1
	5	★	MLDH0820L5	7.8	9	50.0	0.2		2
	12	★	MLDH0820L12	12.8	14	55			2
	20	★	MLDH0820L20	18.8	20	60			2
	30	★	MLDH0820L30	26.8	28	70			2
0.83	2	★	MLDH0830P	2.1	3.3	45	0.1	3.0	1
	5	★	MLDH0830L5	7.8	9	50.0	0.2		2
	12	★	MLDH0830L12	12.8	14	55			2
	20	★	MLDH0830L20	18.8	20	60			2
	30	★	MLDH0830L30	26.8	28	70			2
0.84	2	★	MLDH0840P	2.1	3.4	45	0.1	3.0	1
	5	★	MLDH0840L5	7.7	9	50.0	0.2		2
	12	★	MLDH0840L12	12.7	14	55			2
	20	★	MLDH0840L20	18.7	20	60			2
	30	★	MLDH0840L30	27.7	29	70			2
0.85	2	★	MLDH0850P	2.1	3.4	45	0.1	3.0	1
	5	★	MLDH0850L5	7.7	9	50.0	0.2		2
	12	★	MLDH0850L12	12.7	14	55			2
	20	★	MLDH0850L20	18.7	20	60			2
	30	★	MLDH0850L30	27.7	29	70			2
0.86	2	★	MLDH0860P	2.1	3.4	45	0.1	3.0	1
	5	★	MLDH0860L5	7.7	9	50.0	0.2		2
	12	★	MLDH0860L12	13.7	15	55			2
	20	★	MLDH0860L20	19.7	21	65			2
	30	★	MLDH0860L30	27.7	29	70			2
0.87	2	★	MLDH0870P	2.2	3.5	45	0.1	3.0	1
	5	★	MLDH0870L5	7.7	9	50.0	0.2		2
	12	★	MLDH0870L12	13.7	15	55			2
	20	★	MLDH0870L20	19.7	21	65			2
	30	★	MLDH0870L30	28.7	30	70			2
0.88	2	★	MLDH0880P	2.2	3.5	45	0.1	3.0	1
	5	★	MLDH0880L5	7.7	9	50.0	0.2		2
	12	★	MLDH0880L12	13.7	15	55			2
	20	★	MLDH0880L20	19.7	21	65			2
	30	★	MLDH0880L30	28.7	30	70			2
0.89	2	★	MLDH0890P	2.3	3.6	45	0.1	3.0	1
	5	★	MLDH0890L5	7.7	9	50.0	0.2		2
	12	★	MLDH0890L12	13.7	15	55			2
	20	★	MLDH0890L20	19.7	21	65			2
	30	★	MLDH0890L30	28.7	30	70			2
0.90	2	★	MLDH0900P	2.3	3.6	45	0.1	3.0	1
	5	★	MLDH0900L5	7.7	10	50.0	0.2		2
	12	★	MLDH0900L12	13.7	15	55			2
	20	★	MLDH0900L20	20.7	22	65			2
	30	★	MLDH0900L30	29.7	31	75			2

Part Number Suffix P: For Guide Hole
Grade: ACV70

Diameter ø0.91 to 1.05mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
0.91	2	★	MLDH0910P	2.2	3.6	45	0.1	3.0	1
	5	★	MLDH0910L5	8.6	10	50.0	0.2		2
	12	★	MLDH0910L12	13.6	15	55			2
	20	★	MLDH0910L20	20.6	22	65			2
	30	★	MLDH0910L30	29.6	31	75			2
0.92	2	★	MLDH0920P	2.3	3.7	45	0.1	3.0	1
	5	★	MLDH0920L5	8.6	10	50.0	0.2		2
	12	★	MLDH0920L12	14.6	16	60			2
	20	★	MLDH0920L20	20.6	22	65			2
	30	★	MLDH0920L30	29.6	31	75			2
0.93	2	★	MLDH0930P	2.3	3.7	45	0.1	3.0	1
	5	★	MLDH0930L5	8.6	10	50.0	0.2		2
	12	★	MLDH0930L12	14.6	16	60			2
	20	★	MLDH0930L20	20.6	22	65			2
	30	★	MLDH0930L30	30.6	32	75			2
0.94	2	★	MLDH0940P	2.4	3.8	45	0.1	3.0	1
	5	★	MLDH0940L5	8.6	10	50.0	0.2		2
	12	★	MLDH0940L12	14.6	16	60			2
	20	★	MLDH0940L20	21.6	23	65			2
	30	★	MLDH0940L30	30.6	32	75			2
0.95	2	★	MLDH0950P	2.4	3.8	45	0.2	3.0	1
	5	★	MLDH0950L5	8.6	10	50.0			2
	12	★	MLDH0950L12	14.6	16	60			2
	20	★	MLDH0950L20	21.6	23	65			2
	30	★	MLDH0950L30	30.6	32	75			2
0.96	2	★	MLDH0960P	2.4	3.8	45	0.2	3.0	1
	5	★	MLDH0960L5	8.6	10	50.0			2
	12	★	MLDH0960L12	14.6	16	60			2
	20	★	MLDH0960L20	21.6	23	65			2
	30	★	MLDH0960L30	31.6	33	75			2
0.97	2	★	MLDH0970P	2.4	3.9	45	0.2	3.0	1
	5	★	MLDH0970L5	8.5	10	50.0			2
	12	★	MLDH0970L12	14.5	16	60			2
	20	★	MLDH0970L20	21.5	23	65			2
	30	★	MLDH0970L30	31.5	33	75			2
0.98	2	★	MLDH0980P	2.4	3.9	45	0.2	3.0	1
	5	★	MLDH0980L5	8.5	10	50.0			2
	12	★	MLDH0980L12	15.5	17	60			2
	20	★	MLDH0980L20	22.5	24	65			2
	30	★	MLDH0980L30	31.5	33	75			2
0.99	2	★	MLDH0990P	2.5	4	45	0.2	3.0	1
	5	★	MLDH0990L5	8.5	10	50.0			2
	12	★	MLDH0990L12	15.5	17	60			2
	20	★	MLDH0990L20	22.5	24	65			2
	30	★	MLDH0990L30	32.5	34	75			2
1.00	2	★	MLDH1000P	2.5	4	45	0.2	3.0	1
	5	★	MLDH1000L5	8.5	10	50.0			2
	12	★	MLDH1000L12	15.5	17	60			2
	20	★	MLDH1000L20	22.5	24	65			2
	30	★	MLDH1000L30	32.5	34	75			2
1.05	2	★	MLDH1050P	2.6	4.2	45	0.2	3.0	1
	5	★	MLDH1050L5	10.4	12	55.0			2
	12	★	MLDH1050L12	16.4	18	60			2
	20	★	MLDH1050L20	23.4	25	65			2
	30	★	MLDH1050L30	34.4	36	80			2

Part Number Suffix P: For Guide Hole
Grade: ACV70

Made-to-order items: Inquire about production of drills in tool diameters and lengths that are not listed in the dimensions above or not in stock.

★: Worldwide Warehouse Item

MLDH-L / MLDH-P (Internal Coolant Supply)

PVD Coat | Coolant Hole | 5D | 12D | 20D | 30D | Pilot 2D

Fig. 1 (MLDH-P Type)

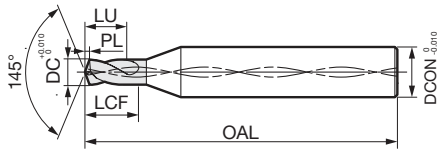
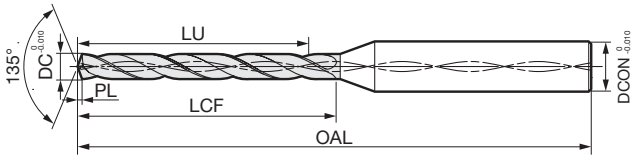


Fig. 2 (MLDH-L Type)



Diameter ø1.10 to 1.60mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	2	★	**MLDH1100P**	2.8	4.4	45			1
	5	★	**MLDH1100L5**	10.4	12	55.0			2
1.10	12	★	**MLDH1100L12**	17.4	19	60	0.2	3.0	2
	20	★	**MLDH1100L20**	24.4	26	70			2
	30	★	**MLDH1100L30**	35.4	37	80			2
	2	★	**MLDH1150P**	2.9	4.5	45			1
	5	★	**MLDH1150L5**	10.3	12	55.0			2
1.15	12	★	**MLDH1150L12**	18.3	20	60	0.2	3.0	2
	20	★	**MLDH1150L20**	26.3	28	70			2
	30	★	**MLDH1150L30**	37.3	39	80			2
	2	★	**MLDH1200P**	3.0	4.8	45			1
	5	★	**MLDH1200L5**	10.2	12	55.0			2
1.20	12	★	**MLDH1200L12**	18.2	20	60	0.2	3.0	2
	20	★	**MLDH1200L20**	27.2	29	70			2
	30	★	**MLDH1200L30**	39.2	41	85			2
	2	★	**MLDH1250P**	3.1	8	45	0.2		1
	5	★	**MLDH1250L5**	12.1	14	55.0			2
1.25	12	★	**MLDH1250L12**	19.1	21	65	0.3	3.0	2
	20	★	**MLDH1250L20**	28.1	30	70			2
	30	★	**MLDH1250L30**	41.1	43	85			2
	2	★	**MLDH1300P**	3.3	5.2	45	0.2		1
	5	★	**MLDH1300L5**	12.1	14	55.0			2
1.30	12	★	**MLDH1300L12**	20.1	22	65	0.3	3.0	2
	20	★	**MLDH1300L20**	29.1	31	75			2
	30	★	**MLDH1300L30**	42.1	44	85			2
	2	★	**MLDH1350P**	3.4	5.4	45	0.2		1
	5	★	**MLDH1350L5**	12.0	14	55.0			2
1.35	12	★	**MLDH1350L12**	21.0	23	65	0.3	3.0	2
	20	★	**MLDH1350L20**	30.0	32	75			2
	30	★	**MLDH1350L30**	44.0	46	90			2
	2	★	**MLDH1400P**	3.5	5.6	45	0.2		1
	5	★	**MLDH1400L5**	11.9	14	55.0			2
1.40	12	★	**MLDH1400L12**	21.9	24	65	0.3	3.0	2
	20	★	**MLDH1400L20**	31.9	34	75			2
	30	★	**MLDH1400L30**	45.9	48	90			2
	2	★	**MLDH1450P**	3.6	5.8	45	0.2		1
	5	★	**MLDH1450L5**	13.8	16	55.0			2
1.45	12	★	**MLDH1450L12**	22.8	25	65	0.3	3.0	2
	20	★	**MLDH1450L20**	32.8	35	75			2
	30	★	**MLDH1450L30**	46.8	49	90			2
	2	★	**MLDH1500P**	3.8	6	45	0.2		1
	5	★	**MLDH1500L5**	13.8	16	55.0			2
1.50	12	★	**MLDH1500L12**	23.8	26	65	0.3	3.0	2
	20	★	**MLDH1500L20**	33.8	36	75			2
	30	★	**MLDH1500L30**	48.8	51	90			2
	2	★	**MLDH1550P**	3.9	6.2	45	0.2		1
	5	★	**MLDH1550L5**	13.7	16	55.0			2
1.55	12	★	**MLDH1550L12**	23.7	26	65	0.3	3.0	2
	20	★	**MLDH1550L20**	34.7	37	80			2
	30	★	**MLDH1550L30**	50.7	53	95			2
	2	★	**MLDH1600P**	4.0	6.4	45			1
	5	★	**MLDH1600L5**	13.6	16	55.0			2
1.60	12	★	**MLDH1600L12**	24.6	27	70	0.3	3.0	2
	20	★	**MLDH1600L20**	35.6	38	80			2
	30	★	**MLDH1600L30**	51.6	54	95			2

Part Number Suffix P: For Guide Hole
Grade: ACV70

Diameter ø1.65 to 2.00mm

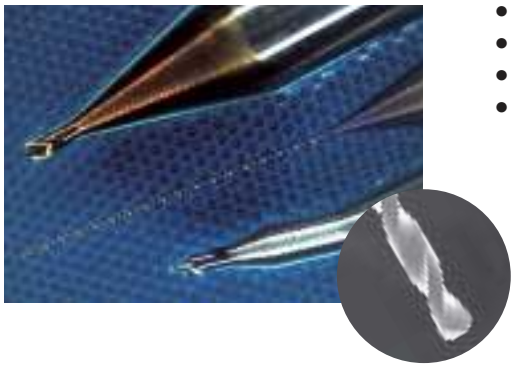
Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
	2	★	**MLDH1650P**	4.1	6.6	50			1
	5	★	**MLDH1650L5**	15.5	18	60.0			2
1.65	12	★	**MLDH1650L12**	25.5	28	70	0.3	3.0	2
	20	★	**MLDH1650L20**	37.5	40	80			2
	30	★	**MLDH1650L30**	53.5	56	95			2
	2	★	**MLDH1700P**	4.3	6.8	50	0.3		1
	5	★	**MLDH1700L5**	15.5	18	60.0			2
1.70	12	★	**MLDH1700L12**	26.5	29	70	0.4	3.0	2
	20	★	**MLDH1700L20**	38.5	41	80			2
	30	★	**MLDH1700L30**	55.5	58	100			2
	2	★	**MLDH1750P**	4.4	7	50	0.3		1
	5	★	**MLDH1750L5**	15.4	18	60.0			2
1.75	12	★	**MLDH1750L12**	27.4	30	70	0.4	3.0	2
	20	★	**MLDH1750L20**	39.4	42	85			2
	30	★	**MLDH1750L30**	57.4	60	100			2
	2	★	**MLDH1800P**	4.5	7.2	50	0.3		1
	5	★	**MLDH1800L5**	15.3	18	60.0			2
1.80	12	★	**MLDH1800L12**	28.3	31	70	0.4	3.0	2
	20	★	**MLDH1800L20**	40.3	43	85			2
	30	★	**MLDH1800L30**	58.3	61	100			2
	2	★	**MLDH1850P**	4.6	7.4	50	0.3		1
	5	★	**MLDH1850L5**	17.2	20	60.0			2
1.85	12	★	**MLDH1850L12**	28.2	31	70	0.4	3.0	2
	20	★	**MLDH1850L20**	41.2	44	85			2
	30	★	**MLDH1850L30**	59.2	62	103			2
	2	★	**MLDH1900P**	4.8	7.6	50	0.3		1
	5	★	**MLDH1900L5**	17.2	20	60.0			2
1.90	12	★	**MLDH1900L12**	29.2	32	75	0.4	3.0	2
	20	★	**MLDH1900L20**	43.2	46	85			2
	30	★	**MLDH1900L30**	60.2	63	103			2
	2	★	**MLDH1950P**	4.9	7.8	50	0.3		1
	5	★	**MLDH1950L5**	17.1	20	60.0			2
1.95	12	★	**MLDH1950L12**	30.1	33	75	0.4	3.0	2
	20	★	**MLDH1950L20**	44.1	47	85			2
	30	★	**MLDH1950L30**	61.1	64	103			2
	2	★	**MLDH2000P**	5.0	8	50	0.3		1
	5	★	**MLDH2000L5**	17.0	20	60.0			2
2.00	12	★	**MLDH2000L12**	31.0	34	75	0.4	3.0	2
	20	★	**MLDH2000L20**	45.0	48	90			2
	30	★	**MLDH2000L30**	63.0	66	103			2

Part Number Suffix P: For Guide Hole
Grade: ACV70

★: Worldwide Warehouse Item

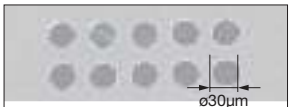
For Steel, Stainless Steel and Other Metals



■ Micro Drill: MDUS ø0.03 to ø0.19mm

- High-precision shank (Shank tolerance h3, circularity 0.3µm or less, cylindricity 0.5µm or less)
- New ultra-thin TiAlN coating gives improved wear resistance
- Perfect for drilling steel, stainless steel, or copper
- Available from ø0.03 mm to ø0.19 mm in 0.005 mm increments

■ Application Examples



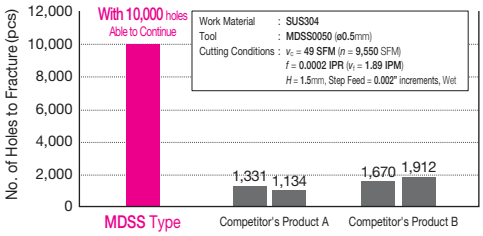
Part Material : 304 Stainless Steel
Tool : MDUS 0030-30C (ø0.03mm)
Cutting Conditions : n = 15,000 RPM, v_f = 0.118" IPM
Step Feed = 0.0001"



Part Material : 316 Stainless Steel
Tool : MDUS 0100-30C (ø0.04")
Cutting Conditions : n = 20,000 RPM, v_f = 0.787 IPM
Step Feed = 0.0004"

■ Solid Carbide MINI Drill: MDSS ø0.20 to ø1.00mm

- The combination of a hard, tough carbide substrate and a high-rigidity design (web thickness, flute width ratio, helix angle) greatly improves fracture resistance
- PVD coating dedicated for small drills significantly extends tool life
- Can be used for a wide range of work materials including carbon steel, alloy steel, die steel, and stainless steel
- Shanks standardised to ø3mm diameter and overall length of 38mm for greater ease of use



MDSS Recommended Cutting Conditions (Wet) <Inquire about cutting conditions for the MDUS type>

Work Material / Cutting Conditions	Alloy Steel, Pre-hardened Steel SCM,NAK			Die Steel, Tempered Steel (30 to 40HRC)			Stainless Steel SUS		
Dia. DC (mm)	Spindle Speed min^{-1}	Feed Rate mm/min	Step Feed (mm)	Spindle Speed min^{-1}	Feed Rate mm/min	Step Feed (mm)	Spindle Speed min^{-1}	Feed Rate mm/min	Step Feed (mm)
ø0.2	26,500	50	0.1D	21,200	40	0.1D	10,600	20	0.1D
ø0.3	26,500	80		21,200	60		10,600	30	
ø0.4	25,900	100		19,900	80		9,500	40	
ø0.5	25,500	150		19,100	110		9,500	50	
ø1.0	15,900	240	0.2D to 0.5D*	12,700	190	0.2D to 0.5D*	5,600	80	

1. The conditions at left are recommended under wet conditions, using water-soluble coolant.
2. If cutting noise and vibration are present, please adjust the cutting conditions accordingly.
3. If the machine cannot achieve the standard spindle speed, please use the maximum spindle speed available. In this case, lower the feed rate by the same ratio.

* Step feed is recommended for drilling of holes deeper than 3xD (D=drill diameter).

■ Micro Pointing Drill MDUP ø0.03 to ø0.18mm

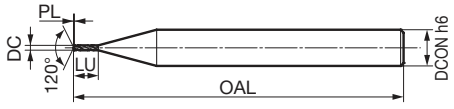
- For drilling guide holes for MDUS drills



PVD Coat

*Refer to N74 for the tolerance of h6

Fig. 1 (Helix Angle: 30°)



DC	Tolerance
Less than 0.1	From -0.005 to -0.010
0.1 or more	From -0.010 to -0.015

Micro Multi Pointing Drill MDUP Diameter ø0.03 to 0.18 mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Effective Length LU	Overall Length OAL	Tip PL	Shank Dia. DCON	Fig
0.03	★	**MDUP0030-30C**	*0.02*	*38.2*	*0.01*	*3.0*	1
0.04	★	**MDUP0040-30C**	*0.04*	*38.2*	*0.01*	*3.0*	1
0.05	★	**MDUP0050-30C**	*0.05*	*38.2*	*0.01*	*3.0*	1
0.08	★	**MDUP0080-30C**	*0.06*	*38.2*	*0.02*	*3.0*	1
0.10	★	**MDUP0100-30C**	*0.10*	*38.2*	*0.03*	*3.0*	1
0.12	★	**MDUP0120-30C**	*0.08*	*38.2*	*0.03*	*3.0*	1
0.15	★	**MDUP0150-30C**	*0.08*	*38.2*	*0.04*	*3.0*	1
0.18	★	**MDUP0180-30C**	*0.17*	*38.2*	*0.05*	*3.0*	1

Grade: KP011

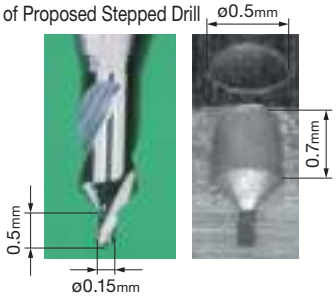
For Ceramics and Non-metals



■ Made-to-order Fine Drills ø0.02mm up

- Dedicated cutting edge designs are available for various work materials including non-metals, ceramics, and resins
- Customized designs are also available for improved efficiency, such as integration of processes by using a stepped drill
- Various drill diameters (from ø0.02) and LxDs are available to order (Contact us for possible profiles)

Example of Proposed Stepped Drill



★: Worldwide Warehouse Item

MDUS Type / MDSS (External Coolant Supply/Small Diameter)

PVD Coat | FB Coat | 10D

*Refer to N74 for the tolerance of h6

Fig. 1 (ø0.030 to 0.190mm)

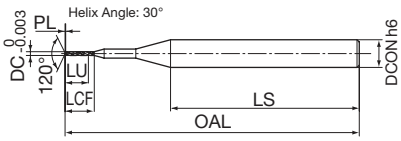


Fig. 2 (ø0.20 to 0.34mm)

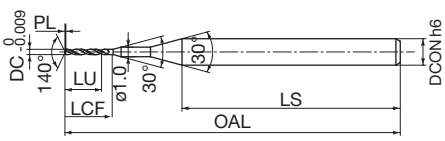
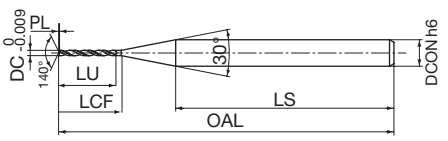


Fig. 3 (ø0.35 to 1.00mm)



Diameter ø0.030 to 0.49mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
0.030		★	MDUS0030-30C	0.26	0.30					1
0.035			MDUS0035-30C	0.35	0.40					1
0.040	10	★	MDUS0040-30C	0.34	0.39	38.0	0.01	28	3.0	1
0.045			MDUS0045-30C	0.46	0.52					1
0.050		★	MDUS0050-30C	0.45	0.51					1
0.055			MDUS0055-30C	0.55	0.63					1
0.060			MDUS0060-30C	0.54	0.61					1
0.065			MDUS0065-30C	0.64	0.73					1
0.070	10		MDUS0070-30C	0.63	0.72	38.0	0.02	28	3.0	1
0.075			MDUS0075-30C	0.73	0.83					1
0.080		★	MDUS0080-30C	0.72	0.82					1
0.085			MDUS0085-30C	0.92	1.05					1
0.090			MDUS0090-30C	0.91	1.03					1
0.095			MDUS0095-30C	0.91	1.03					1
0.100	10	★	MDUS0100-30C	0.90	1.02	38.0	0.03	28	3.0	1
0.110			MDUS0110-30C	1.09	1.24					1
0.120		★	MDUS0120-30C	1.08	1.23					1
0.130			MDUS0130-30C	1.37	1.56					1
0.140	10		MDUS0140-30C	1.36	1.55	38.0	0.04	28	3.0	1
0.150		★	MDUS0150-30C	1.35	1.53					1
0.160			MDUS0160-30C	1.64	1.86					1
0.170	10		MDUS0170-30C	1.63	1.85	38.0	0.05	28	3.0	1
0.180		★	MDUS0180-30C	1.62	1.84					1
0.190			MDUS0190-30C	1.71	1.94					1
0.20		★	MDSS0020	2.25	2.5					2
0.21		★	MDSS0021	2.24	2.5					2
0.22	10	★	MDSS0022	2.23	2.5	38	0.04	28	3.0	2
0.23		★	MDSS0023	2.21	2.5					2
0.24		★	MDSS0024	2.20	2.5					2
0.25		★	MDSS0025	2.19	2.5					2
0.26		★	MDSS0026	2.18	2.5					2
0.27	10	★	MDSS0027	2.16	2.5	38	0.05	28	3.0	2
0.28		★	MDSS0028	2.15	2.5					2
0.29		★	MDSS0029	2.14	2.5					2
0.30		★	MDSS0030	2.6	3.0					2
0.31		★	MDSS0031	2.6	3.0					2
0.32		★	MDSS0032	2.6	3.0					2
0.33	10	★	MDSS0033	2.6	3.0	38	0.06	28	3.0	2
0.34		★	MDSS0034	2.6	3.0					2
0.35		★	MDSS0035	3.6	4.0					3
0.36		★	MDSS0036	3.6	4.0					3
0.37		★	MDSS0037	3.5	4.0					3
0.38	10	★	MDSS0038	3.5	4.0	38	0.07	28	3.0	3
0.39		★	MDSS0039	3.5	4.0					3
0.40		★	MDSS0040	4.5	5.0					3
0.41		★	MDSS0041	4.5	5.0					3
0.42		★	MDSS0042	4.5	5.0					3
0.43		★	MDSS0043	4.5	5.0					3
0.44	10	★	MDSS0044	4.5	5.0	38	0.08	28	3.0	3
0.45		★	MDSS0045	4.4	5.0					3
0.46		★	MDSS0046	4.4	5.0					3
0.47		★	MDSS0047	4.4	5.0					3
0.48	10	★	MDSS0048	4.4	5.0	38	0.09	28	3.0	3
0.49		★	MDSS0049	4.4	5.0					3

Grade: ACF40B (MDUS Type, KP011/MDSS Type)

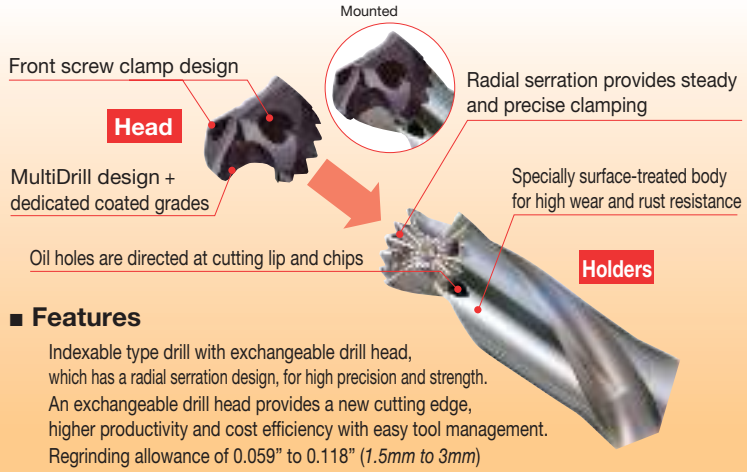
Diameter ø0.50 to 1.00mm

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Stock	Cat. No.	Effective Length LU	Flute Length LCF	Overall Length OAL	Tip PL	Shank LS	Shank Dia. DCON	Fig
0.50		★	MDSS0050	5.4	6.0					3
0.51	10	★	MDSS0051	5.4	6.0	38	0.09	27	3.0	3
0.52		★	MDSS0052	5.4	6.0					3
0.53		★	MDSS0053	5.3	6.0					3
0.54		★	MDSS0054	5.3	6.0					3
0.55	10	★	MDSS0055	5.3	6.0	38	0.10	27	3.0	3
0.56		★	MDSS0056	5.3	6.0					3
0.57		★	MDSS0057	5.3	6.0					3
0.58		★	MDSS0058	5.3	6.0			27		3
0.59		★	MDSS0059	5.3	6.0					3
0.60	10	★	MDSS0060	6.3	7.0	38	0.11		3.0	3
0.61		★	MDSS0061	6.2	7.0			26		3
0.62		★	MDSS0062	6.2	7.0					3
0.63		★	MDSS0063	6.2	7.0					3
0.64		★	MDSS0064	6.2	7.0					3
0.65		★	MDSS0065	6.2	7.0					3
0.66	10	★	MDSS0066	6.2	7.0	38	0.12	26	3.0	3
0.67		★	MDSS0067	6.2	7.0					3
0.68		★	MDSS0068	6.2	7.0					3
0.69		★	MDSS0069	6.1	7.0			26		3
0.70		★	MDSS0070	8.1	9.0					3
0.71	10	★	MDSS0071	8.1	9.0	38	0.13		3.0	3
0.72		★	MDSS0072	8.1	9.0			24		3
0.73		★	MDSS0073	8.1	9.0					3
0.74		★	MDSS0074	8.1	9.0					3
0.75		★	MDSS0075	8.1	9.0					3
0.76		★	MDSS0076	8.1	9.0					3
0.77	10	★	MDSS0077	8.0	9.0	38	0.14	24	3.0	3
0.78		★	MDSS0078	8.0	9.0					3
0.79		★	MDSS0079	8.0	9.0					3
0.80		★	MDSS0080	9.0	10.0					3
0.81		★	MDSS0081	9.0	10.0					3
0.82	10	★	MDSS0082	9.0	10.0	38	0.15	23	3.0	3
0.83		★	MDSS0083	9.0	10.0					3
0.84		★	MDSS0084	9.0	10.0					3
0.85		★	MDSS0085	8.9	10.0					3
0.86		★	MDSS0086	8.9	10.0					3
0.87		★	MDSS0087	8.9	10.0			23		3
0.88	10	★	MDSS0088	8.9	10.0	38	0.16		3.0	3
0.89		★	MDSS0089	8.9	10.0					3
0.90		★	MDSS0090	9.9	11.0			22		3
0.91		★	MDSS0091	9.9	11.0					3
0.92		★	MDSS0092	9.9	11.0					3
0.93	10	★	MDSS0093	9.8	11.0	38	0.17	22	3.0	3
0.94		★	MDSS0094	9.8	11.0					3
0.95		★	MDSS0095	9.8	11.0					3
0.96		★	MDSS0096	9.8	11.0					3
0.97		★	MDSS0097	9.8	11.0					3
0.98	10	★	MDSS0098	9.8	11.0	38	0.18	22	3.0	3
0.99		★	MDSS0099	9.8	11.0					3
1.00		★	MDSS0100	10.8	12.0			21		3

Grade: ACF40B (MDUS Type, KP011/MDSS Type)

★: Worldwide Warehouse Item



■ Features

Indexable type drill with exchangeable drill head,
which has a radial serration design, for high precision and strength.
An exchangeable drill head provides a new cutting edge,
higher productivity and cost efficiency with easy tool management.
Regrinding allowance of 0.059" to 0.118" (*1.5mm to 3mm*)
makes further tool cost reductions possible.* Regrinding is available only for MTL/MEL/MB Type

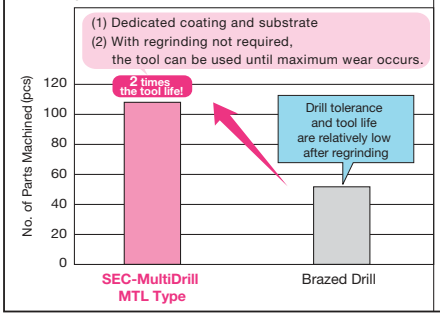
■ Product Range List

Tip	Holder (L/D)	Applications	$øD_c$ range
MTL	S (1.5D)	General Steel	ø0.4688" to ø1.2125" (ø12.0 to ø30.8mm)
	M (3D)		ø0.4688" to ø1.6732" (ø12.0 to ø42.5mm)
	L (5D)		ø0.4688" to ø1.6732" (ø12.0 to ø42.5mm)
	D (8D)		ø0.5315" to ø1.6732" (ø13.5 to ø42.5mm)
	12D (12D)		ø0.5315" to ø1.0157" (ø13.5 to ø25.8mm)
MEL	S (1.5D)	Stainless Steel, Super Alloy, Cast Iron	ø0.4688" to ø1.2125" (ø12.0 to ø30.8mm)
	M (3D)		ø0.4688" to ø1.2125" (ø12.0 to ø30.8mm)
	L (5D)		ø0.4688" to ø1.2125" (ø12.0 to ø30.8mm)
	D (8D)		ø0.5315" to ø1.2125" (ø13.5 to ø30.8mm)
	12D (12D)		ø0.5315" to ø1.0157" (ø13.5 to ø25.8mm)
MFS	S (1.5D)	Spot Facing	ø0.4688" to ø1.2125" (ø12.0 to ø30.8mm)

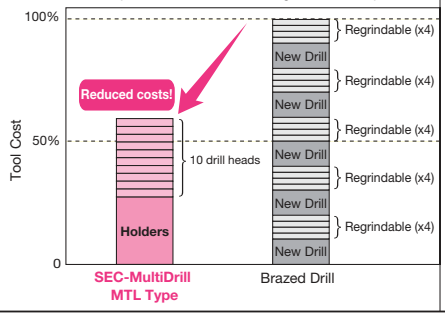
*MFS Type can also be used with M Type, L Type, D Type and 12D Type holders.

■ Tool Life and Cost

● Comparison of tool life



● Total tool comparison when machining 1,000 workpieces



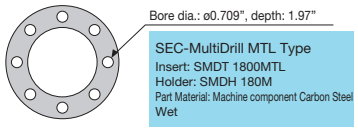
● Conclusion

For regrinding purposes, brazed drills are only used for **50-70%** of their actual tool life potential. **SEC-MultiDrill MTL Type reaches 100%!**

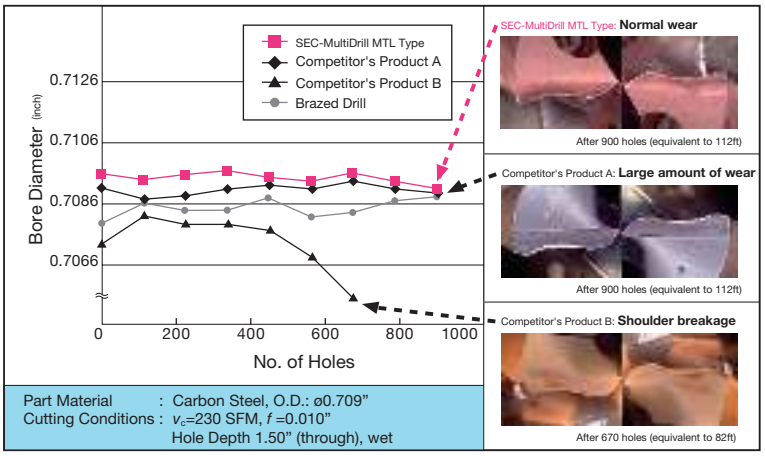
MTL Type has **double the tool life of brazed drills!**

Shorter tool change time!

● Workpiece Example



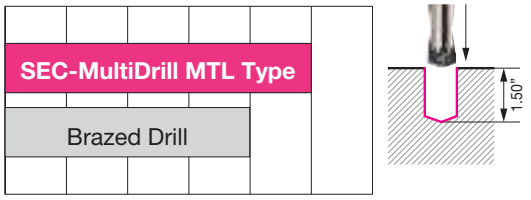
■ Drilling Precision



Part Material : Carbon Steel, O.D.: ø0.709"
Cutting Conditions : v_c=230 SFM, f =0.010"
Hole Depth 1.50" (through), wet

■ Tool Strength

● Durability Comparison

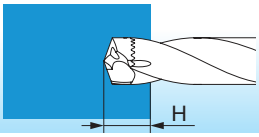


Part Material : Carbon Steel, O.D. : ø0.630"
Cutting Conditions : v_c=262 SFM
Hole Depth : 1.50"

■ Recommended drilling method for 12D Type: Use a collet, hydro chuck or milling chuck to hold the 12D drill body (tapered collet chuck cannot be used)

(1) Drill a guide hole with SMDHOOOM (3D holder) + MTL Type (head)

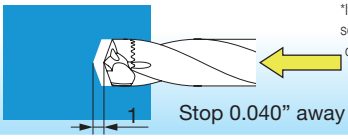
● Use a 3D drill body and a drill head with the same diameter as the 12D (same cat. no.) when drilling the guide hole.



H = Drill diameter x 1 to 1.5 times the depth

(2) Feed the SMDHOOO-12D (12D holder) + MTL Type (head) through the guide hole at a low spindle speed

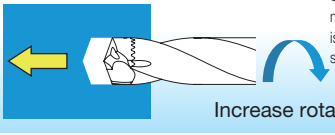
● Spindle speed: 500 RPM ●Feed rate: 39.37 IPM to 78.74 IPM



*If the drill is inserted into the guide hole at the set cutting speed, peripheral run-out may cause damage to the drill's peripheral edges.

Stop 0.040" away from the guide hole depth

(3) Increase spindle speed until the set spindle speed is reached, then start drilling

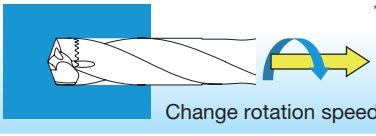


*On some NC machines, the feed command may be activated before the set spindle speed is reached, so it is recommended to enter a dwell sequence before the feed command.

Increase rotation speed

(4) After drilling, rotation speed is reduced and the drill is retracted from the work material

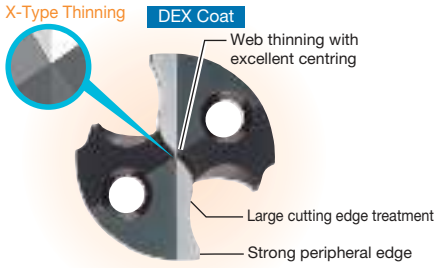
● Spindle speed: 500 RPM●Feed rate: 39.37 IPM to 78.74 IPM



*Retracting a drill from the work material at a high spindle speed, is dangerous as doing so may result in breakage due to runout.

Change rotation speed to 500 RPM

MTL Type Suitable for high-efficiency drilling of general steel

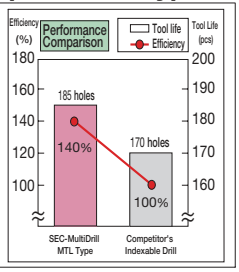


- **Excellent cutting edge strength**
  Large edge treatment is used to reduce breakage of the cutting edge.
- **Stable machined hole accuracy**
  X Type thinning achieves excellent centring on entry and stable drilling.

■ Application Examples: MTL Type

Improved tool life and efficiency

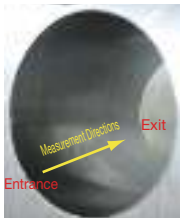
Part Material : Housing Mild Steel
Drill Size : For ø15x5D
Cutting Conditions : v_c=351 SFM
f=0.0118 IPR
Hole Depth : 1.26" × 12 holes

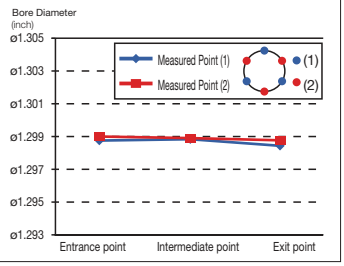


■ Drilling Precision

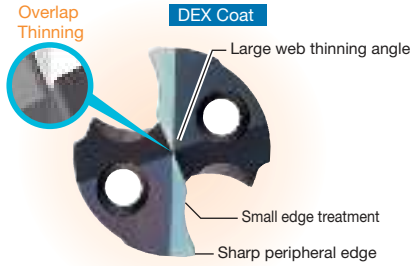
High drilling accuracy even with large diameters

Part Material : Structural Steel Plate
(base substrate for construction machinery)
Drill Size : For ø33x5D
Cutting Conditions : v_c=393 SFM
f=0.0098 IPR
Cutting Environment : Emulsion Type



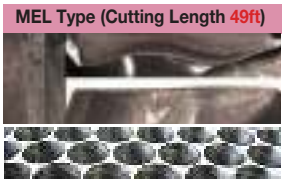


MTL-C Type Chamfered edges to eliminate break out in cast iron
MEL Type Suitable for exotic alloys such as stainless steel, mild steel, gray cast iron and low rigidity equipment



- **Excellent cutting edge design for SUS and mild steel (SS, etc.)**
  Large thinning angle solves the convex corner breakage issues specific to mild steel and reduces adhesion breakages with SUS.
- **Improved edge chipping resistance in cast iron**
  Edge sharpness improvements in peripheral areas prevent edge chipping around hole openings in cast iron.

■ Application Examples (MEL Type)



SEC-MultiDrill MEL type has excellent centring, produces no rifle marks and no cutting edge breakage after 49ft.

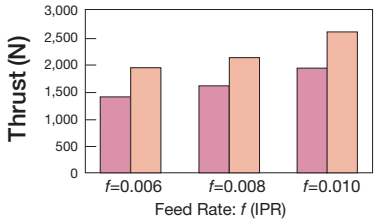


Competitor's indexable drill exhibited poor centring and produced rifle marks. The centre of the drill broke after 36ft of drilling.

Part Material: 304 Stainless Steel, Drill size: For ø14x5D
Cutting Conditions: v_c=197 SFM, f=0.006", coolant: Emulsion

■ 25% reduction in cutting force (thrust)

- The MEL type features 25% lower thrust than the MTL type!



Part Material: Carbon Steel
O.D.: ø0.551"
Cutting Conditions: v_c=262 SFM

Sharper blade type and thinning overlap significantly reduce thrust and improve chip control, allowing stable drilling in low-rigidity setups.

■ Recommended Cutting Conditions

Speed: v (SFM) / Feed: f (IPR)

		MTL	MTL	MTL	MTL	MTL-C / MEL		MEL	MEL	MEL
Material		Steels	Steels	Prehard Steels	Die Steels	Ductile cast irons	Gray cast irons	Titanium	Inconel	Stainless Steels*
Drill Dia. (inch)		<HB250	HB250-300	HRC45	–	–	–	–	–	–
~ .4688	v	260 ~ 400	260 ~ 360	160 ~ 260	130 ~ 230	230 ~ 330	260 ~ 430	65 ~ 130	35 ~ 100	125 ~ 230
	f	.006 ~ .012	.006 ~ .012	.004 ~ .008	.005 ~ .009	.006 ~ .012	.008 ~ .012	.004 ~ .008	.003 ~ .004	.004 ~ .008
~ .844	v	260 ~ 400	260 ~ 360	195 ~ 295	130 ~ 230	230 ~ 330	260 ~ 430	85 ~ 150	50 ~ 115	145 ~ 240
	f	.006 ~ .014	.006 ~ .014	.006 ~ .010	.006 ~ .010	.006 ~ .014	.008 ~ .014	.004 ~ .008	.003 ~ .005	.004 ~ .009
~ 1.250	v	260 ~ 430	260 ~ 400	195 ~ 295	130 ~ 230	260 ~ 360	300 ~ 460	85 ~ 150	50 ~ 115	160 ~ 250
	f	.008 ~ .016	.008 ~ .014	.006 ~ .010	.006 ~ .010	.008 ~ .015	.008 ~ .018	.004 ~ .008	.003 ~ .006	.006 ~ .010

* For difficult to machine stainless steels (316, 302, 304, 17-4ph, etc.) adjust speeds & feeds accordingly.

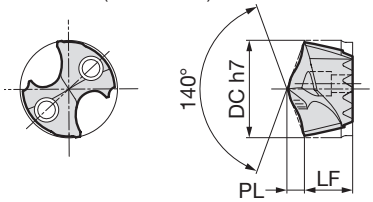
SMD (Internal Coolant Supply)

MTL MTL-C: Carbon Steel Alloy Steel up to 0.25% | Carbon Steel Alloy Steel from 0.25% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron
MEL: Carbon Steel Alloy Steel up to 0.25% | Carbon Steel Alloy Steel from 0.25% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

• Standard Tip **• Super Alloy Tip** **• Corner break Tip**

(DC < 31mm)



*Refer to N74 for the tolerance of h7

SMDT-MTL (Replaceable Head MTL)		SMDT-MEL (Replaceable Head MEL)		SMDT-MTL-C (Replaceable Head MTL-C)		øD		Tap Size	LF		PL		Body
Drill Tip	Stock	Drill Tip	Stock	Drill Tip	Stock	mm	in.		mm	in.	mm	in.	
SMDT04688MTL-ACX70	●	SMDT04688MEL-ACX80	●	SMDT04688MTL-C-ACX70	●	**15/32**	**0.4688**						
SMDT1200MTL-ACX70	●	*SMDT1200MEL-ACX80*	●	*SMDT1200MTL-C-ACX70*	●	***12.0***	**0.4724**	M14x2.0					
SMDT1210MTL-ACX70	★	*SMDT1210MEL-ACX80*	★	*SMDT1210MTL-C-ACX70*		***12.1***	**0.4764**				*2.2*	.087	**SMDH047□**
SMDT1220MTL-ACX70	★	*SMDT1220MEL-ACX80*	★	*SMDT1220MTL-C-ACX70*		***12.2***	**0.4803**		*6.9*	.272			*SMDH120□*
SMDT1230MTL-ACX70	★	*SMDT1230MEL-ACX80*	★	*SMDT1230MTL-C-ACX70*		***12.3***	**0.4843**	9/16-12					
SMDT04844MTL-ACX70	●	SMDT04844MEL-ACX80	●	SMDT04844MTL-C-ACX70	●	**31/64**	**0.4844**				*2.3*	.091	
SMDT1240MTL-ACX70	★	*SMDT1240MEL-ACX80*	★	*SMDT1240MTL-C-ACX70*		***12.4***	**0.4882**						
SMDT1250MTL-ACX70	●	*SMDT1250MEL-ACX80*	●	*SMDT1250MTL-C-ACX70*	●	***12.5***	**0.4921**	M14x1.5					
SMDT1260MTL-ACX70	★	*SMDT1260MEL-ACX80*	★	*SMDT1260MTL-C-ACX70*		***12.6***	**0.4960**						
SMDT05000MTL-ACX70	●	SMDT05000MEL-ACX80	●	SMDT05000MTL-C-ACX70		**1/2**	**0.5000**		*7.1*	.279	*2.3*	.091	**SMDH049□**
SMDT1270MTL-ACX70	★	*SMDT1270MEL-ACX80*	★	*SMDT1270MTL-C-ACX70*		***12.7***	**0.5000**						*SMDH125□*
SMDT1280MTL-ACX70	★	*SMDT1280MEL-ACX80*	★	*SMDT1280MTL-C-ACX70*		***12.8***	**0.5040**	M14x1.25					
SMDT1290MTL-ACX70	★	*SMDT1290MEL-ACX80*	★	*SMDT1290MTL-C-ACX70*		***12.9***	**0.5079**						
SMDT1300MTL-ACX70	●	*SMDT1300MEL-ACX80*	●	*SMDT1300MTL-C-ACX70*	●	***13.0***	**0.5118**						
SMDT05156MTL-ACX70	●	SMDT05156MEL-ACX80	●	SMDT05156MTL-C-ACX70	●	**33/64**	**0.5156**	9/16-18					
SMDT1310MTL-ACX70	★	*SMDT1310MEL-ACX80*	★	*SMDT1310MTL-C-ACX70*		***13.1***	**0.5157**						**SMDH051□**
SMDT1320MTL-ACX70	★	*SMDT1320MEL-ACX80*	★	*SMDT1320MTL-C-ACX70*		***13.2***	**0.5197**		*7.3*	.287	*2.4*	.095	*SMDH130□*
SMDT1330MTL-ACX70	★	*SMDT1330MEL-ACX80*	★	*SMDT1330MTL-C-ACX70*		***13.3***	**0.5236**						
SMDT1340MTL-ACX70	★	*SMDT1340MEL-ACX80*	★	*SMDT1340MTL-C-ACX70*		***13.4***	**0.5276**						
SMDT05312MTL-ACX70	●	SMDT05312MEL-ACX80	●	SMDT05312MTL-C-ACX70	●	**17/32**	**0.5312**	5/8-11					SMDH051□ / SMDH055□
SMDT1350MTL-ACX70	●	*SMDT1350MEL-ACX80*	●	*SMDT1350MTL-C-ACX70*	●	***13.5***	**0.5315**						
SMDT1360MTL-ACX70	★	*SMDT1360MEL-ACX80*	★	*SMDT1360MTL-C-ACX70*		***13.6***	**0.5354**						
SMDT1365MTL-ACX70		*SMDT1365MEL-ACX80*		*SMDT1365MTL-C-ACX70*	●	***13.65***	**0.5374**						
SMDT1370MTL-ACX70	★	*SMDT1370MEL-ACX80*	★	*SMDT1370MTL-C-ACX70*		***13.7***	**0.5394**				*2.5*	.099	
SMDT1380MTL-ACX70	★	*SMDT1380MEL-ACX80*	★	*SMDT1380MTL-C-ACX70*		***13.8***	**0.5433**						
SMDT05469MTL-ACX70	●	SMDT05469MEL-ACX80	●	SMDT05469MTL-C-ACX70	●	**35/64**	**0.5469**						
SMDT1390MTL-ACX70	★	*SMDT1390MEL-ACX80*	★	*SMDT1390MTL-C-ACX70*		***13.9***	**0.5472**		*7.8*	.307			**SMDH055□**
SMDT1400MTL-ACX70	●	*SMDT1400MEL-ACX80*	●	*SMDT1400MTL-C-ACX70*	●	***14.0***	**0.5512**	M16x2.0					*SMDH140□*
SMDT1410MTL-ACX70	★	*SMDT1410MEL-ACX80*	★	*SMDT1410MTL-C-ACX70*		***14.1***	**0.5551**						
SMDT1420MTL-ACX70	★	*SMDT1420MEL-ACX80*	★	*SMDT1420MTL-C-ACX70*		***14.2***	**0.5591**						
SMDT05625MTL-ACX70	●	SMDT05625MEL-ACX80	●	SMDT05625MTL-C-ACX70	●	**9/16**	**0.5625**				*2.6*	.102	
SMDT1430MTL-ACX70	★	*SMDT1430MEL-ACX80*	★	*SMDT1430MTL-C-ACX70*		***14.3***	**0.5630**						
SMDT1440MTL-ACX70	★	*SMDT1440MEL-ACX80*	★	*SMDT1440MTL-C-ACX70*		***14.4***	**0.5670**						
SMDT1450MTL-ACX70	●	*SMDT1450MEL-ACX80*	●	*SMDT1450MTL-C-ACX70*	●	***14.5***	**0.5709**	M16x1.5					
SMDT1460MTL-ACX70	★	*SMDT1460MEL-ACX80*	★	*SMDT1460MTL-C-ACX70*		***14.6***	**0.5748**						
SMDT05781MTL-ACX70	●	SMDT05781MEL-ACX80	●	SMDT05781MTL-C-ACX70	●	**37/64**	**0.5781**	5/8-18					
SMDT1470MTL-ACX70	★	*SMDT1470MEL-ACX80*	★	*SMDT1470MTL-C-ACX70*		***14.7***	**0.5787**						
SMDT1480MTL-ACX70	★	*SMDT1480MEL-ACX80*	★	*SMDT1480MTL-C-ACX70*		***14.8***	**0.5827**				*2.7*	.106	
SMDT1490MTL-ACX70	★	*SMDT1490MEL-ACX80*	★	*SMDT1490MTL-C-ACX70*		***14.9***	**0.5866**						
SMDT1500MTL-ACX70	●	*SMDT1500MEL-ACX80*	●	*SMDT1500MTL-C-ACX70*	●	***15.0***	**0.5906**	M16x1.0					**SMDH059□**
SMDT05937MTL-ACX70	●	SMDT05937MEL-ACX80	●	SMDT05937MTL-C-ACX70	●	**19/32**	**0.5938**		*8.3*	.327			*SMDH150□*
SMDT1510MTL-ACX70	★	*SMDT1510MEL-ACX80*	★	*SMDT1510MTL-C-ACX70*	●	***15.1***	**0.5945**						
SMDT1520MTL-ACX70	★	*SMDT1520MEL-ACX80*	★	*SMDT1520MTL-C-ACX70*	●	***15.2***	**0.5984**						
SMDT1530MTL-ACX70	★	*SMDT1530MEL-ACX80*	★	*SMDT1530MTL-C-ACX70*	●	***15.3***	**0.6024**						
SMDT1540MTL-ACX70	★	*SMDT1540MEL-ACX80*	★	*SMDT1540MTL-C-ACX70*		***15.4***	**0.6063**				*2.8*	.110	
SMDT06094MTL-ACX70	●	SMDT06094MEL-ACX80	●	SMDT06094MTL-C-ACX70	●	**39/64**	**0.6094**	11/16-12					
SMDT1550MTL-ACX70	●	*SMDT1550MEL-ACX80*	●	*SMDT1550MTL-C-ACX70*	●	***15.5***	**0.6102**	M18x2.5					
SMDT1560MTL-ACX70	★	*SMDT1560MEL-ACX80*	★	*SMDT1560MTL-C-ACX70*		***15.6***	**0.6142**				*2.8*	.110	
SMDT1570MTL-ACX70	★	*SMDT1570MEL-ACX80*	★	*SMDT1570MTL-C-ACX70*		***15.7***	**0.6181**						
SMDT1580MTL-ACX70	★	*SMDT1580MEL-ACX80*	★	*SMDT1580MTL-C-ACX70*		***15.8***	**0.6220**						
SMDT06250MTL-ACX70	●	SMDT06250MEL-ACX80	●	SMDT06250MTL-C-ACX70	●	**5/8**	**0.6250**	11/16-16					
SMDT1590MTL-ACX70	★	*SMDT1590MEL-ACX80*	★	*SMDT1590MTL-C-ACX70*		***15.9***	**0.6260**						
SMDT1600MTL-ACX70	●	*SMDT1600MEL-ACX80*	●	*SMDT1600MTL-C-ACX70*	●	***16.0***	**0.6300**		*8.7*	.345	*2.9*	.114	**SMDH063□**
SMDT1608MTL-ACX70		*SMDT1608MEL-ACX80*	●	*SMDT1608MTL-C-ACX70*		***16.08***	**0.6331**						*SMDH160□*
SMDT1610MTL-ACX70	★	*SMDT1610MEL-ACX80*	★	*SMDT1610MTL-C-ACX70*		***16.1***	**0.6339**						
SMDT1620MTL-ACX70	★	*SMDT1620MEL-ACX80*	★	*SMDT1620MTL-C-ACX70*		***16.2***	**0.6378**						
SMDT06406MTL-ACX70	●	SMDT06406MEL-ACX80	●	SMDT06406MTL-C-ACX70		**41/64**	**0.6406**						
SMDT1630MTL-ACX70	●	*SMDT1630MEL-ACX80*	★	*SMDT1630MTL-C-ACX70*		***16.3***	**0.6417**				*3.0*	.118	

● = USA Stock Item ★ = Worldwide Warehouse Item

Note: Special diameters available upon request

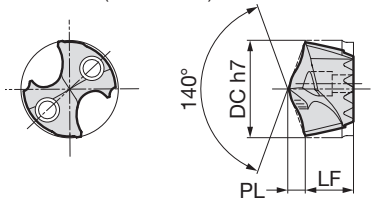
Recommended Cutting Conditions J91 | Applicable Holders J97

SMD (Internal Coolant Supply)

DEX Coating | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

MTL MTL-C | MEL

(DC < 31mm)



*Refer to N74 for the tolerance of h7

• Standard Tip • Super Alloy Tip • Corner break Tip

SMDT-MTL	SMDT-MEL	SMDT-MTL-C
Replaceable Head MTL	Replaceable Head MEL	Replaceable Head MTL-C

Drill Tip	Stock	Drill Tip	Stock	Drill Tip	Stock	øD mm	øD in.	Tap Size	LF mm	LF in.	PL mm	PL in.	Body
SMDT1640MTL-ACX70	★	*SMDT1640MEL-ACX80*	★	*SMDT1640MTL-C-ACX70*		***16.4***	**0.6457**						
SMDT1650MTL-ACX70	●	*SMDT1650MEL-ACX80*	●	*SMDT1650MTL-C-ACX70*	●	***16.5***	**0.6496**	M18x1.5	*8.7*	0.345	*3.0*	0.118	**SMDH063**□ *SMDH160*□
SMDT1660MTL-ACX70	★	*SMDT1660MEL-ACX80*	★	*SMDT1660MTL-C-ACX70*		***16.6***	**0.6535**						
SMDT06562MTL-ACX70	●	SMDT06562MEL-ACX80	●	SMDT06562MTL-C-ACX70	●	**21/32**	**0.6563**	3/4-10			*3.0*	0.118	
SMDT1670MTL-ACX70	★	*SMDT1670MEL-ACX80*	★	*SMDT1670MTL-C-ACX70*		***16.7***	**0.6575**						
SMDT1680MTL-ACX70	★	*SMDT1680MEL-ACX80*	★	*SMDT1680MTL-C-ACX70*		***16.8***	**0.6614**						
SMDT1690MTL-ACX70	★	*SMDT1690MEL-ACX80*	★	*SMDT1690MTL-C-ACX70*		***16.9***	**0.6653**						
SMDT1700MTL-ACX70	●	*SMDT1700MEL-ACX80*	●	*SMDT1700MTL-C-ACX70*	●	***17.0***	**0.6693**						
SMDT06719MTL-ACX70	●	SMDT06719MEL-ACX80	●	SMDT06719MTL-C-ACX70	●	**43/64**	**0.6719**		*9.2*	0.362	*3.1*	0.122	**SMDH067**□
SMDT1710MTL-ACX70	★	*SMDT1710MEL-ACX80*	★	*SMDT1710MTL-C-ACX70*		***17.1***	**0.6732**						*SMDH170*□
SMDT1720MTL-ACX70	★	*SMDT1720MEL-ACX80*	★	*SMDT1720MTL-C-ACX70*		***17.2***	**0.6772**						
SMDT1730MTL-ACX70	★	*SMDT1730MEL-ACX80*	★	*SMDT1730MTL-C-ACX70*		***17.3***	**0.6811**						
SMDT1740MTL-ACX70	★	*SMDT1740MEL-ACX80*	★	*SMDT1740MTL-C-ACX70*		***17.4***	**0.6850**						
SMDT06875MTL-ACX70	●	SMDT06875MEL-ACX80	●	SMDT06875MTL-C-ACX70	●	**11/16**	**0.6875**	3/4-16			*3.2*	0.126	
SMDT1750MTL-ACX70	●	*SMDT1750MEL-ACX80*	●	*SMDT1750MTL-C-ACX70*	●	***17.5***	**0.6890**	M20x2.5					
SMDT1760MTL-ACX70	●	*SMDT1760MEL-ACX80*	★	*SMDT1760MTL-C-ACX70*		***17.6***	**0.6929**						
SMDT1770MTL-ACX70	★	*SMDT1770MEL-ACX80*	★	*SMDT1770MTL-C-ACX70*		***17.7***	**0.6969**						
SMDT1780MTL-ACX70	★	*SMDT1780MEL-ACX80*	★	*SMDT1780MTL-C-ACX70*		***17.8***	**0.7008**				*3.2*	0.126	
SMDT07031MTL-ACX70	●	SMDT07031MEL-ACX80	●	SMDT07031MTL-C-ACX70	●	**45/64**	**0.7031**						
SMDT1790MTL-ACX70	★	*SMDT1790MEL-ACX80*	★	*SMDT1790MTL-C-ACX70*		***17.9***	**0.7047**						**SMDH071**□
SMDT1800MTL-ACX70	●	*SMDT1800MEL-ACX80*	●	*SMDT1800MTL-C-ACX70*	●	***18.0***	**0.7087**	M20x2.0	*9.6*	0.378			*SMDH180*□
SMDT1810MTL-ACX70	★	*SMDT1810MEL-ACX80*	★	*SMDT1810MTL-C-ACX70*		***18.1***	**0.7125**						
SMDT1820MTL-ACX70	★	*SMDT1820MEL-ACX80*	★	*SMDT1820MTL-C-ACX70*		***18.2***	**0.7165**				*3.3*	0.130	
SMDT07187MTL-ACX70	●	SMDT07187MEL-ACX80	●	SMDT07187MTL-C-ACX70	●	**23/32**	**0.7188**						
SMDT1830MTL-ACX70	★	*SMDT1830MEL-ACX80*	★	*SMDT1830MTL-C-ACX70*		***18.3***	**0.7204**						
SMDT1840MTL-ACX70	★	*SMDT1840MEL-ACX80*	★	*SMDT1840MTL-C-ACX70*		***18.4***	**0.7244**						
SMDT1850MTL-ACX70	●	*SMDT1850MEL-ACX80*	●	*SMDT1850MTL-C-ACX70*	●	***18.5***	**0.7283**	M20x1.5			*3.4*	0.134	
SMDT1860MTL-ACX70	★	*SMDT1860MEL-ACX80*	★	*SMDT1860MTL-C-ACX70*		**18.6**	**0.7323**						
SMDT07344MTL-ACX70	●	SMDT07344MEL-ACX80	●	SMDT07344MTL-C-ACX70	●	**47/64**	**0.7344**						
SMDT1870MTL-ACX70	★	*SMDT1870MEL-ACX80*	★	*SMDT1870MTL-C-ACX70*		***18.7***	**0.7362**				*3.4*	0.134	
SMDT1880MTL-ACX70	★	*SMDT1880MEL-ACX80*	★	*SMDT1880MTL-C-ACX70*		***18.8***	**0.7402**						
SMDT1890MTL-ACX70	★	*SMDT1890MEL-ACX80*	★	*SMDT1890MTL-C-ACX70*		***18.9***	**0.7441**						
SMDT1900MTL-ACX70	●	*SMDT1900MEL-ACX80*	●	*SMDT1900MTL-C-ACX70*		***19.0***	**0.7480**	M20x1.0					
SMDT07500MTL-ACX70	●	SMDT07500MEL-ACX80	●	SMDT07500MTL-C-ACX70		**3/4**	**0.7500**		*10.1*	0.397			**SMDH075**□
SMDT1910MTL-ACX70	★	*SMDT1910MEL-ACX80*	★	*SMDT1910MTL-C-ACX70*		***19.1***	**0.7520**						*SMDH190*□
SMDT1920MTL-ACX70	★	*SMDT1920MEL-ACX80*	★	*SMDT1920MTL-C-ACX70*		***19.2***	**0.7559**						
SMDT1925MTL-ACX70		*SMDT1925MEL-ACX80*	●	*SMDT1925MTL-C-ACX70*		***19.25***	**0.7579**				*3.5*	0.138	
SMDT1930MTL-ACX70	★	*SMDT1930MEL-ACX80*	★	*SMDT1930MTL-C-ACX70*		***19.3***	**0.7598**						
SMDT1940MTL-ACX70	★	*SMDT1940MEL-ACX80*	★	*SMDT1940MTL-C-ACX70*		***19.4***	**0.7638**						
SMDT07656MTL-ACX70	●	SMDT07656MEL-ACX80	●	SMDT07656MTL-C-ACX70	●	**49/64**	**0.7656**	7/8-9					
SMDT1950MTL-ACX70	●	*SMDT1950MEL-ACX80*	●	*SMDT1950MTL-C-ACX70*	●	***19.5***	**0.7677**	M22x2.5					
SMDT1960MTL-ACX70	★	*SMDT1960MEL-ACX70*	★	*SMDT1960MTL-C-ACX70*		***19.6***	**0.7717**						
SMDT1970MTL-ACX70	★	*SMDT1970MEL-ACX80*	★	*SMDT1970MTL-C-ACX70*		***19.7***	**0.7756**						
SMDT1980MTL-ACX70	★	*SMDT1980MEL-ACX80*	★	*SMDT1980MTL-C-ACX70*		***19.8***	**0.7795**				*3.6*	0.142	
SMDT07812MTL-ACX70	●	SMDT07812MEL-ACX80	●	SMDT07812MTL-C-ACX70	●	**25/32**	**0.7813**						
SMDT1990MTL-ACX70	★	*SMDT1990MEL-ACX80*	★	*SMDT1990MTL-C-ACX70*		***19.9***	**0.7835**						
SMDT2000MTL-ACX70	●	*SMDT2000MEL-ACX80*	●	*SMDT2000MTL-C-ACX70*	●	***20.0***	**0.7874**						**SMDH079**□
SMDT2010MTL-ACX70	★	*SMDT2010MEL-ACX80*	★	*SMDT2010MTL-C-ACX70*		***20.1***	**0.7913**		*10.5*	0.413			*SMDH200*□
SMDT2020MTL-ACX70	★	*SMDT2020MEL-ACX80*	★	*SMDT2020MTL-C-ACX70*		***20.2***	**0.7952**						
SMDT07969MTL-ACX70	●	SMDT07969MEL-ACX80	●	SMDT07969MTL-C-ACX70		**51/64**	**0.7969**				*3.7*	0.146	
SMDT2030MTL-ACX70	★	*SMDT2030MEL-ACX80*	★	*SMDT2030MTL-C0ACX70*		***20.3***	**0.7992**						
SMDT2040MTL-ACX70	★	*SMDT2040MEL-ACX80*	★	*SMDT2040MTL-C-ACX70*		***20.4***	**0.8031**						
SMDT2050MTL-ACX70	●	*SMDT2050MEL-ACX80*	●	*SMDT2050MTL-C-ACX70*	●	***20.5***	**0.8071**	M22x1.5					
SMDT2060MTL-ACX70	★	*SMDT2060MEL-ACX80*	★	*SMDT2060MTL-C-ACX70*		***20.6***	**0.8110**				*3.7*	0.146	
SMDT08125MTL-ACX70	●	SMDT08125MEL-ACX80	●	SMDT08125MTL-C-ACX70		**13/16**	**0.8125**	7/8-14					**SMDH083**□
SMDT2070MTL-ACX70	★	*SMDT2070MEL-ACX80*	★	*SMDT2070MTL-C-ACX70*		***20.7***	**0.8150**		*11.0*	0.433	*3.8*	0.150	*SMDH210*□
SMDT2080MTL-ACX70	★	*SMDT2080MEL-ACX80*	★	*SMDT2080MTL-C-ACX70*		***20.8***	**0.8189**						
SMDT2090MTL-ACX70	★	*SMDT2090MEL-ACX80*	★	*SMDT2090MTL-C-ACX70*		***20.9***	**0.8228**						

Recommended Cutting Conditions J91 | Applicable Holders J97

SMD (Internal Coolant Supply)

MTL MTL-C: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

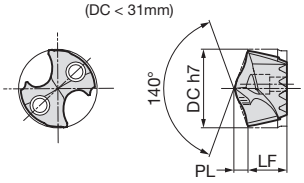
MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

• Standard Tip • Super Alloy Tip • Corner break Tip

SMDT-MTL (Replaceable Head MTL) | SMDT-MEL (Replaceable Head MEL) | SMDT-MTL-C (Indexable head MTL-C Type)

(DC < 31mm)



*Refer to N74 for the tolerance of h7

Drill Tip	Stock	Drill Tip	Stock	Drill Tip	Stock	øD mm	øD in.	Tap Size	LF mm	LF in.	PL mm	PL in.	Body
SMDT2100MTL-ACX70	●	*SMDT2100MEL-ACX80*	●	*SMDT2100MTL-C-ACX70*	●	***21.0***	**0.8268**	M24x3.0					
SMDT08281MTL-ACX70	●	SMDT08281MEL-ACX80	●	SMDT08281MTL-C-ACX70		**53/64**	**0.8281**				*3.8*	0.150	
SMDT2110MTL-ACX70	★	*SMDT2110MEL-ACX80*	★	*SMDT2110MTL-C-ACX70*		***21.1***	**0.8307**						
SMDT2120MTL-ACX70	★	*SMDT2120MEL-ACX80*	★	*SMDT2120MTL-C-ACX70*	●	***21.2***	**0.8346**						**SMDH083**□
SMDT2130MTL-ACX70	★	*SMDT2130MEL-ACX80*	★	*SMDT2130MTL-C-ACX70*		***21.3***	**0.8386**		*11*	0.433			*SMDH210*□
SMDT2140MTL-ACX70	★	*SMDT2140MEL-ACX80*	★	*SMDT2140MTL-C-ACX70*		***21.4***	**0.8425**				*3.9*	0.154	
SMDT08437MTL-ACX70	●	SMDT08437MEL-ACX80	●	SMDT08437MTL-C-ACX70	●	**27/32**	**0.8438**						
SMDT2150MTL-ACX70	●	*SMDT2150MEL-ACX80*	●	*SMDT2150MTL-C-ACX70*	●	***21.5***	**0.8465**						
SMDT2160MTL-ACX70	★	*SMDT2160MEL-ACX80*	★	*SMDT2160MTL-C-ACX70*		***21.6***	**0.8504**				*3.9*	0.154	
SMDT2170MTL-ACX70	★	*SMDT2170MEL-ACX80*	★	*SMDT2170MTL-C-ACX70*		***21.7***	**0.8543**						
SMDT2180MTL-ACX70	★	*SMDT2180MEL-ACX80*	★	*SMDT2180MTL-C-ACX70*		***21.8***	**0.8583**						
SMDT08594MTL-ACX70	●	SMDT08594MEL-ACX80	●	SMDT08594MTL-C-ACX70		**55/64**	**0.8594**						
SMDT2190MTL-ACX70	★	*SMDT2190MEL-ACX80*	★	*SMDT2190MTL-C-ACX70*		***21.9***	**0.8622**				*4.0*	0.158	
SMDT2200MTL-ACX70	●	*SMDT2200MEL-ACX80*	●	*SMDT2200MTL-C-ACX70*	●	***22.0***	**0.8661**	M24x2.0					
SMDT2210MTL-ACX70	★	*SMDT2210MEL-ACX80*	★	*SMDT2210MTL-C-ACX70*		***22.1***	**0.8701**						
SMDT2220MTL-ACX70	★	*SMDT2220MEL-ACX70*	★	*SMDT2220MTL-C-ACX70*		***22.2***	**0.8741**						**SMDH087**□
SMDT08750MTL-ACX70	●	SMDT08750MEL-ACX80	●	SMDT08750MTL-C-ACX70	●	**7/8**	**0.8750**	1-8	*11*	0.433			*SMDH220*□
SMDT2230MTL-ACX70	★	*SMDT2230MEL-ACX70*	★	*SMDT2230MTL-C-ACX70*		***22.3***	**0.8780**						
SMDT2240MTL-ACX70	★	*SMDT2240MEL-ACX80*	★	*SMDT2240MTL-C-ACX70*		***22.4***	**0.8819**						
SMDT2245MTL-ACX70		*SMDT2245MEL-ACX80*	●	*SMDT2245MTL-C-ACX70*		***22.45***	**0.8839**						
SMDT2250MTL-ACX70	●	*SMDT2250MEL-ACX80*	●	*SMDT2250MTL-C-ACX70*		***22.5***	**0.8858**	M24x1.5			*4.1*	0.162	
SMDT2260MTL-ACX70	★	*SMDT2260MEL-ACX80*	★	*SMDT2260MTL-C-ACX70*		***22.6***	**0.8898**						
SMDT08906MTL-ACX70	●	SMDT08906MEL-ACX80	●	SMDT08906MTL-C-ACX70	●	**57/64**	**0.8906**						
SMDT2270MTL-ACX70	★	*SMDT2270MEL-ACX80*	★	*SMDT2270MTL-C-ACX70*		***22.7***	**0.8937**						
SMDT2280MTL-ACX70	★	*SMDT2280MEL-ACX80*	★	*SMDT2280MTL-C-ACX70*		***22.8***	**0.8976**						
SMDT2290MTL-ACX70	★	*SMDT2290MEL-ACX80*	★	*SMDT2290MTL-C-ACX70*		***22.9***	**0.9016**						
SMDT2300MTL-ACX70	●	*SMDT2300MEL-ACX80*	●	*SMDT2300MTL-C-ACX70*	●	***23.0***	**0.9055**						
SMDT09062MTL-ACX70	●	SMDT09062MEL-ACX80	●	SMDT09062MTL-C-ACX70		**29/32**	**0.9062**	1-12			*4.2*	0.165	
SMDT2310MTL-ACX70	★	*SMDT2310MEL-ACX80*	★	*SMDT2310MTL-C-ACX70*		***23.1***	**0.9094**						
SMDT2320MTL-ACX70	★	*SMDT2320MEL-ACX80*	★	*SMDT2320MTL-C-ACX70*		***23.2***	**0.9134**						
SMDT2330MTL-ACX70	★	*SMDT2330MEL-ACX80*	★	*SMDT2330MTL-C-ACX70*		***23.3***	**0.9173**						**SMDH091**□
SMDT2340MTL-ACX70	★	*SMDT2340MEL-ACX80*	★	*SMDT2340MTL-C-ACX70*		***23.4***	**0.9213**		*11*	0.433			*SMDH230*□
SMDT09219MTL-ACX70	●	SMDT09219MEL-ACX80	●	SMDT09219MTL-C-ACX70	●	**59/64**	**0.9219**						
SMDT2350MTL-ACX70	●	*SMDT2350MEL-ACX80*	●	*SMDT2350MTL-C-ACX70*		***23.5***	**0.9252**	M25x1.5			*4.3*	0.169	
SMDT2360MTL-ACX70	★	*SMDT2360MEL-ACX80*	★	*SMDT2360MTL-C-ACX70*		***23.6***	**0.9291**						
SMDT2370MTL-ACX70	★	*SMDT2370MEL-ACX80*	★	*SMDT2370MTL-C-ACX70*		***23.7***	**0.9331**						
SMDT2380MTL-ACX70	★	*SMDT2380MEL-ACX80*	★	*SMDT2380MTL-C-ACX70*		***23.8***	**0.9370**						
SMDT09375MTL-ACX70	●	SMDT09375MEL-ACX80	●	SMDT09375MTL-C-ACX70	●	**15/16**	**0.9375**	1-14					
SMDT2390MTL-ACX70	★	*SMDT2390MEL-ACX80*	★	*SMDT2390MTL-C-ACX70*		***23.9***	**0.9409**						
SMDT2400MTL-ACX70	●	*SMDT2400MEL-ACX80*	●	*SMDT2400MTL-C-ACX70*	●	***24.0***	**0.9449**	M27x3.0					
SMDT2410MTL-ACX70	★	*SMDT2410MEL-ACX80*	★	*SMDT2410MTL-C-ACX70*		***24.1***	**0.9488**						
SMDT2420MTL-ACX70	★	*SMDT2420MEL-ACX80*	★	*SMDT2420MTL-C-ACX70*		***24.2***	**0.9528**				*4.4*	0.173	
SMDT09531MTL-ACX70	●	SMDT09531MEL-ACX80	●	SMDT09531MTL-C-ACX70		**61/64**	**0.9531**						**SMDH096**□
SMDT2430MTL-ACX70	★	*SMDT2430MEL-ACX80*	★	*SMDT2430MTL-C-ACX70*		***24.3***	**0.9567**		*11*	0.433			*SMDH240*□
SMDT2440MTL-ACX70	★	*SMDT2440MEL-ACX80*	★	*SMDT2440MTL-C-ACX70*		***24.4***	**0.9606**						
SMDT2450MTL-ACX70	★	*SMDT2450MEL-ACX80*	●	*SMDT2450MTL-C-ACX70*		***24.5***	**0.9646**						
SMDT2460MTL-ACX70	★	*SMDT2460MEL-ACX80*	★	*SMDT2460MTL-C-ACX70*		***24.6***	**0.9685**						
SMDT09687MTL-ACX70	●	SMDT09687MEL-ACX80	●	SMDT09687MTL-C-ACX70		**31/32**	**0.9687**				*4.5*	0.177	
SMDT2470MTL-ACX70	★	*SMDT2470MEL-ACX80*	★	*SMDT2470MTL-C-ACX70*		***24.7***	**0.9724**						
SMDT2480MTL-ACX70	★	*SMDT2480MEL-ACX80*	★	*SMDT2480MTL-C-ACX70*		***24.8***	**0.9764**						
SMDT2490MTL-ACX70	★	*SMDT2490MEL-ACX80*	★	*SMDT2490MTL-C-ACX70*		***24.9***	**0.9803**						
SMDT2500MTL-ACX70	●	*SMDT2500MEL-ACX80*	●	*SMDT2500MTL-C-ACX70*	●	***25.0***	**0.9843**	M27x2.0			*4.5*	0.177	
SMDT09844MTL-ACX70	●	SMDT09844MEL-ACX80	●	SMDT09844MTL-C-ACX70	●	**63/64**	**0.9844**	$1^{1}/_{8}$-7					
SMDT2510MTL-ACX70	★	*SMDT2510MEL-ACX80*	★	*SMDT2510MTL-C-ACX70*		***25.1***	**0.9882**						**SMDH100**□
SMDT2520MTL-ACX70	★	*SMDT2520MEL-ACX80*	★	*SMDT2520MTL-C-ACX70*	●	***25.2***	**0.9921**		*11.3*	0.445	*4.6*	0.181	*SMDH250*□
SMDT2530MTL-ACX70	★	*SMDT2530MEL-ACX80*	★	*SMDT2530MTL-C-ACX70*		***25.3***	**0.9961**						
SMDT2540MTL-ACX70	★	*SMDT2540MEL-ACX80*	★	*SMDT2540MTL-C-ACX70*		***25.4***	**1.0000**						
SMDT10000MTL-ACX70	●	SMDT10000MEL-ACX80	●	SMDT10000MTL-C-ACX70	●	**1**	**1.0000**						

Applicable Holders J97
Recommended Cutting Conditions J91

★ = Worldwide Warehouse Item
● = USA Stock Item
Note: Special diameters available upon request

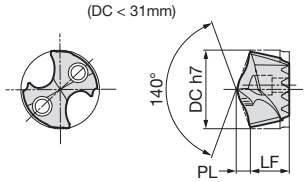
SMD (Internal Coolant Supply)

MTL MTL-C: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

• Standard Tip • Super Alloy Tip • Corner break Tip



*Refer to N74 for the tolerance of h7

SMDT-MTL (Replaceable Head MTL)		SMDT-MEL (Replaceable Head MEL)		SMDT-MTL-C (Indexable head MTL-C Type)		øD		Tap Size	LF		PL		Body
Drill Tip	Stock	Drill Tip	Stock	Drill Tip	Stock	mm	in.		mm	in.	mm	in.	
SMDT2550MTL-ACX70	★	*SMDT2550MEL-ACX80*	●	*SMDT2550MTL-C-ACX70*	●	***25.5***	**1.0039**				*4.6*	0.181	
SMDT2560MTL-ACX70	★	*SMDT2560MEL-ACX80*	★	*SMDT2560MTL-C-ACX70*		***25.6***	**1.0079**						
SMDT2565MTL-ACX70		*SMDT2565MEL-ACX80*	●	*SMDT2565MTL-C-ACX70*		***25.65***	**1.0098**		*11.3*	0.445			**SMDH100□**
SMDT2570MTL-ACX70	★	*SMDT2570MEL-ACX80*	★	*SMDT2570MTL-C-ACX70*		***25.7***	**1.0118**				*4.7*	0.185	*SMDH250□*
SMDT10156MTL-ACX70	●	SMDT10156MEL-ACX80	●	SMDT10156MTL-C-ACX70	●	**1-1/64**	**1.0156**						
SMDT2580MTL-ACX70	★	*SMDT2580MEL-ACX80*	★	*SMDT2580MTL-C-ACX70*		***25.8***	**1.0157**						
SMDT2590MTL-ACX70	★	*SMDT2590MEL-ACX80*	★	*SMDT2590MTL-C-ACX70*		***25.9***	**1.0197**						
SMDT2600MTL-ACX70	●	*SMDT2600MEL-ACX80*	●	*SMDT2600MTL-C-ACX70*	●	***26.0***	**1.0236**				*4.7*	0.185	
SMDT2610MTL-ACX70	★	*SMDT2610MEL-ACX80*	★	*SMDT2610MTL-C-ACX70*		***26.1***	**1.0276**						
SMDT10312MTL-ACX70	●	SMDT10312MEL-ACX80	●	SMDT10312MTL-C-ACX70	●	**1-1/32**	**1.0312**						
SMDT2620MTL-ACX70	★	*SMDT2620MEL-ACX80*	★	*SMDT2620MTL-C-ACX70*		***26.2***	**1.0315**						
SMDT2630MTL-ACX70	★	*SMDT2630MEL-ACX80*	★	*SMDT2630MTL-C-ACX70*		***26.3***	**1.0354**						**SMDH104□**
SMDT2640MTL-ACX70	★	*SMDT2640MEL-ACX80*	★	*SMDT2640MTL-C-ACX70*		***26.4***	**1.0393**		*11.7*	0.461	*4.8*	0.189	*SMDH260□*
SMDT2650MTL-ACX70	★	*SMDT2650MEL-ACX80*	●	*SMDT2650MTL-C-ACX70*	●	***26.5***	**1.0433**	M30x3.5					
SMDT10469MTL-ACX70	●	SMDT10469MEL-ACX80	●	SMDT10469MTL-C-ACX70		**1-3/64**	**1.0469**	$1^{1}/_{8}$-12					
SMDT2660MTL-ACX70	★	*SMDT2660MEL-ACX80*	★	*SMDT2660MTL-C-ACX70*		***26.6***	**1.0472**						
SMDT2670MTL-ACX70	★	*SMDT2670MEL-ACX80*	★	*SMDT2670MTL-C-ACX70*		***26.7***	**0.0512**				*4.9*	0.193	
SMDT2680MTL-ACX70	★	*SMDT2680MEL-ACX80*	★	*SMDT2680MTL-C-ACX70*		***26.8***	**1.0551**						
SMDT2690MTL-ACX70	★	*SMDT2690MEL-ACX80*	★	*SMDT2690MTL-C-ACX70*		***26.9***	**1.0591**						
SMDT10625MTL-ACX70	●	SMDT10625MEL-ACX80	●	SMDT10625MTL-C-ACX70	●	**1-1/16**	**1.0625**						
SMDT2700MTL-ACX70	●	*SMDT2700MEL-ACX80*	●	*SMDT2700MTL-C-ACX70*	●	***27.0***	**1.0630**				*4.9*	0.193	
SMDT2710MTL-ACX70	★	*SMDT2710MEL-ACX80*	★	*SMDT2710MTL-C-ACX70*		***27.1***	**1.0669**						
SMDT2720MTL-ACX70	★	*SMDT2720MEL-ACX80*	★	*SMDT2720MTL-C-ACX70*		***27.2***	**1.0719**						
SMDT2730MTL-ACX70	★	*SMDT2730MEL-ACX80*	★	*SMDT2730MTL-C-ACX70*		***27.3***	**1.0748**						**SMDH107□**
SMDT10781MTL-ACX70	●	SMDT10781MEL-ACX80	●	SMDT10781MTL-C-ACX70		**1-5/64**	**1.0781**		*12.2*	0.480			*SMDH270□*
SMDT2740MTL-ACX70	★	*SMDT2740MEL-ACX80*	★	*SMDT2740MTL-C-ACX70*		***27.4***	**1.0787**						
SMDT2750MTL-ACX70	★	*SMDT2750MEL-ACX80*	●	*SMDT2750MTL-C-ACX70*	●	***27.5***	**1.0827**				*5.0*	0.197	
SMDT2760MTL-ACX70	★	*SMDT2760MEL-ACX80*	★	*SMDT2760MTL-C-ACX70*		***27.6***	**1.0866**						
SMDT2770MTL-ACX70	★	*SMDT2770MEL-ACX80*	★	*SMDT2770MTL-C-ACX70*		***27.7***	**1.0906**						
SMDT10937MTL-ACX70	●	SMDT10937MEL-ACX80	●	SMDT10937MTL-C-ACX70		**1-3/32**	**1.0937**						
SMDT2780MTL-ACX70	★	*SMDT2780MEL-ACX80*	★	*SMDT2780MTL-C-ACX70*		***27.8***	**1.0945**				*5.1*	0.201	
SMDT2790MTL-ACX70	★	*SMDT2790MEL-ACX80*	★	*SMDT2790MTL-C-ACX70*		***27.9***	**1.0984**						
SMDT2800MTL-ACX70	●	*SMDT2800MEL-ACX80*	●	*SMDT2800MTL-C-ACX70*	●	***28.0***	**1.1024**	M30x2					
SMDT2810MTL-ACX70	★	*SMDT2810MEL-ACX80*	★	*SMDT2810MTL-C-ACX70*		***28.1***	**1.1063**				*5.1*	0.201	
SMDT11094MTL-ACX70	●	SMDT11094MEL-ACX80	●	SMDT11094MTL-C-ACX70		**1-7/64**	**1.1094**	$1^{1}/_{4}$-7					
SMDT2820MTL-ACX70	★	*SMDT2820MEL-ACX80*	★	*SMDT2820MTL-C-ACX70*		***28.2***	**1.1102**						
SMDT2830MTL-ACX70	★	*SMDT2830MEL-ACX80*	★	*SMDT2830MTL-C-ACX70*		***28.3***	**1.1141**						**SMDH112□**
SMDT2840MTL-ACX70	★	*SMDT2840MEL-ACX80*	★	*SMDT2840MTL-C-ACX70*		***28.4***	**1.1181**		*12.6*	0.496			*SMDH280□*
SMDT2850MTL-ACX70	●	*SMDT2850MEL-ACX80*	●	*SMDT2850MTL-C-ACX70*	●	***28.5***	**1.1220**						
SMDT11250MTL-ACX70	●	SMDT11250MEL-ACX80	●	SMDT11250MTL-C-ACX70	●	**1-1/8**	**1.1250**				*5.2*	0.205	
SMDT2860MTL-ACX70	★	*SMDT2860MEL-ACX80*	★	*SMDT2860MTL-C-ACX70*		***28.6***	**1.1260**						
SMDT2870MTL-ACX70	★	*SMDT2870MEL-ACX80*	★	*SMDT2870MTL-C-ACX70*		***28.7***	**1.1299**						
SMDT2880MTL-ACX70	★	*SMDT2880MEL-ACX80*	★	*SMDT2880MTL-C-ACX70*		***28.8***	**1.1339**						
SMDT2890MTL-ACX70	★	*SMDT2890MEL-ACX80*	★	*SMDT2890MTL-C-ACX70*		***28.9***	**1.1378**						
SMDT11406MTL-ACX70	●	SMDT11406MEL-ACX80	●	SMDT11406MTL-C-ACX70		**1-9/64**	**1.1406**						
SMDT2900MTL-ACX70	●	*SMDT2900MEL-ACX80*	●	*SMDT2900MTL-C-ACX70*		***29.0***	**1.1417**						
SMDT2910MTL-ACX70	★	*SMDT2910MEL-ACX80*	★	*SMDT2910MTL-C-ACX70*		***29.1***	**1.1457**				*5.3*	0.209	
SMDT2920MTL-ACX70	★	*SMDT2920MEL-ACX80*	★	*SMDT2920MTL-C-ACX70*		***29.2***	**1.1497**						
SMDT2930MTL-ACX70	★	*SMDT2930MEL-ACX80*	★	*SMDT2930MTL-C-ACX70*		***29.3***	**1.1536**						**SMDH115□**
SMDT11562MTL-ACX70	●	SMDT11562MEL-ACX80	●	SMDT11562MTL-C-ACX70		**1-5/32**	**1.1562**		*13.1*	0.516			*SMDH290□*
SMDT2940MTL-ACX70	★	*SMDT2940MEL-ACX80*	★	*SMDT2940MTL-C-ACX70*		***29.4***	**1.1574**						
SMDT2950MTL-ACX70	★	*SMDT2950MEL-ACX80*	●	*SMDT2950MTL-C-ACX70*	●	***29.5***	**1.1614**	M33x3.5					
SMDT2960MTL-ACX70	★	*SMDT2960MEL-ACX80*	★	*SMDT2960MTL-C-ACX70*		***29.6***	**1.1653**				*5.4*	0.213	
SMDT2970MTL-ACX70	★	*SMDT2970MEL-ACX80*	★	*SMDT2970MTL-C-ACX70*		***29.7***	**1.1692**						
SMDT11719MTL-ACX70	●	SMDT11719MEL-ACX80	●	SMDT11719MTL-C-ACX70		**1-11/64**	**1.1719**	$1^{1}/_{4}$-12					
SMDT2980MTL-ACX70	★	*SMDT2980MEL-ACX80*	★	*SMDT2980MTL-C-ACX70*		***29.8***	**1.1732**						
SMDT2990MTL-ACX70	★	*SMDT2990MEL-ACX80*	★	*SMDT2990MTL-C-ACX70*		***29.9***	**1.1772**						**SMDH118□**
SMDT3000MTL-ACX70	●	*SMDT3000MEL-ACX80*	●	*SMDT3000MTL-C-ACX70*		***30.0***	**1.1811**		*13.5*	0.532	*5.4*	0.213	*SMDH300□*

Applicable Holders J97

Recommended Cutting Conditions J91

★ = Worldwide Warehouse Item

● = USA Stock Item

Note: Special diameters available upon request

MTL MTL-C: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

• Standard Tip • Super Alloy Tip • Corner break Tip

SMDT-MTL — Indexable head MTL Type

SMDT-MEL — Indexable head MEL Type

SMDT-MTL-C — Indexable head MTL-C Type

*Refer to N74 for the tolerance of h7

Drill Tip	Stock	Drill Tip	Stock	Drill Tip	Stock	øD mm	øD in.	Tap Size	LF mm	LF in.	PL mm	PL in.	Body
SMDT3010MTL-ACX70	★	*SMDT3010MEL-ACX80*	★	*SMDT3010MTL-C-ACX70*		***30.1***	**1.1850**						
SMDT11875MTL-ACX70	●	SMDT11875MEL-ACX80	●	SMDT11875MTL-C-ACX70		**1-3/16**	**1.1875**						
SMDT3020MTL-ACX70	★	*SMDT3020MEL-ACX80*	★	*SMDT3020MTL-C-ACX70*		***30.2***	**1.1890**				*5.5*	0.217	
SMDT3030MTL-ACX70	★	*SMDT3030MEL-ACX80*	★	*SMDT3030MTL-C-ACX70*		***30.3***	**1.1929**						**SMDH118**□
SMDT3040MTL-ACX70	★	*SMDT3040MEL-ACX80*	★	*SMDT3040MTL-C-ACX70*		***30.4***	**1.1969**		*13.5*	0.532			*SMDH300*□
SMDT3050MTL-ACX70	●	*SMDT3050MEL-ACX80*	●	*SMDT3050MTL-C-ACX70*		***30.5***	**1.2008**	M32x1.5					
SMDT3060MTL-ACX70	★	*SMDT3060MEL-ACX80*	★	*SMDT3060MTL-C-ACX70*		***30.6***	**1.2047**				*5.6*	0.221	
SMDT3070MTL-ACX70	★	*SMDT3070MEL-ACX80*	★	*SMDT3070MTL-C-ACX70*		***30.7***	**1.2087**						
SMDT3080MTL-ACX70	★	*SMDT3080MEL-ACX80*	★	*SMDT3080MTL-C-ACX70*		***30.8***	**1.2126**						
SMDT3100MTL-ACX80	●	*SMDT3100MEL-ACX80*		*SMDT3100MTL-C-ACX80*		***31.0***	**1.2205**		*15.4*	0.606	*5.6*	0.221	**SMDH1250**□
SMDT12500MTL-ACX80	●	SMDT12500MEL-ACX80		SMDT12500MTL-C-ACX80		**1-1/4**	**1.2500**		*15.3*	0.602	*5.7*	0.224	*SMDH320*□
SMDT3200MTL-ACX80	●	*SMDT3200MEL-ACX80*		*SMDT3200MTL-C-ACX80*		***32.0***	**1.2598**	M36x4.0	*15.2*	0.599	*5.8*	0.228	
SMDT3300MTL-ACX80	●	*SMDT3300MEL-ACX80*		*SMDT3300MTL-C-ACX80*		***33.0***	**1.2992**		*15.0*	0.591	*6.0*	0.236	**SMDH1319**□
SMDT13125MTL-ACX80	●	SMDT13125MEL-ACX80		SMDT13125MTL-C-ACX80		**1-5/16**	**1.3125**				*6.1*	0.240	*SMDH335*□
SMDT3400MTL-ACX80	★	*SMDT3400MEL-ACX80*		*SMDT3400MTL-C-ACX80*		***34.0***	**1.3386**		*16.8*	0.662	*6.2*	0.244	**SMDH350**□
SMDT3500MTL-ACX80	★	*SMDT3500MEL-ACX80*		*SMDT3500MTL-C-ACX80*		***35.0***	**1.3780**	M39x4.0	*16.6*	0.654	*6.3*	0.248	
SMDT3600MTL-ACX80	★	*SMDT3600MEL-ACX80*		*SMDT3600MTL-C-ACX80*		***36.0***	**1.4173**		*16.4*	0.646	*6.6*	0.260	**SMDH365**□
SMDT3700MTL-ACX80	★	*SMDT3700MEL-ACX80*		*SMDT3700MTL-C-ACX80*		***37.0***	**1.4567**		*18.3*	0.721	*6.7*	0.264	
SMDT3750MTL-ACX80	★	*SMDT3750MEL-ACX80*		*SMDT3750MTL-C-ACX80*		***37.5***	**1.4764**	M42x4.5	*18.2*	0.717	*6.8*	0.268	**SMDH380**□
SMDT3800MTL-ACX80	●	*SMDT3800MEL-ACX80*		*SMDT3800MTL-C-ACX80*		***38.0***	**1.4961**		*18.1*	0.713	*6.9*	0.272	
SMDT3900MTL-ACX80	●	*SMDT3900MEL-ACX80*		*SMDT3900MTL-C-ACX80*		***39.0***	**1.5354**		*17.9*	0.705	*7.1*	0.280	**SMDH395**□
SMDT4000MTL-ACX80	★	*SMDT4000MEL-ACX80*		*SMDT4000MTL-C-ACX80*		***40.0***	**1.5748**		*19.7*	0.776	*7.3*	.0287	
SMDT4050MTL-ACX80	★	*SMDT4050MEL-ACX80*		*SMDT4050MTL-C-ACX80*		***40.5***	**1.5945**	M45x4.5	*19.6*	0.772	*7.4*	0.291	**SMDH410**□
SMDT4100MTL-ACX80	★	*SMDT4100MEL-ACX80*		*SMDT4100MTL-C-ACX80*		***41.0***	**1.6142**		*19.5*	0.768	*7.5*	0.295	
SMDT4200MTL-ACX80	★	*SMDT4200MEL-ACX80*		*SMDT4200MTL-C-ACX80*		***42.0***	**1.6535**		*19.4*	0.764	*7.6*	0.299	**SMDH425**□

Indexable Head

Fig. 1 (DC < 31mm)

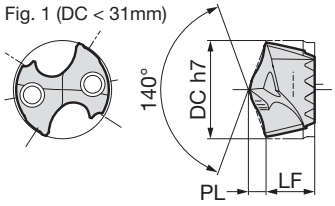
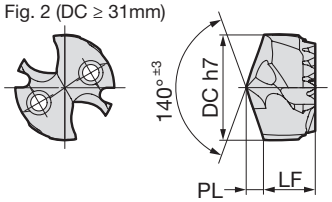


Fig. 2 (DC ≥ 31mm)



● = USA Stock Item ★ = Worldwide Warehouse Item

Note: Special diameters available upon request

Recommended Cutting Conditions J91 | Applicable Holders J97

SMDH - INCH Type

MTL MTL-C — Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

MEL — Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Indexable head MTL Type | Indexable head MEL Type | Indexable head MTL-C Type | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

The 12D shank has no side lock flat.

*Refer to N74 for the tolerance of h6 and h7

Mounted Figure

Fig 1

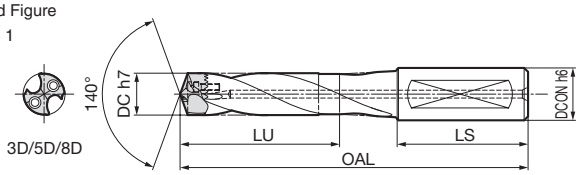
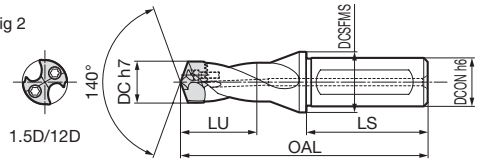


Fig 2



Holder ø0.4688" to 0.8976" Dimensions with MTL Type/MEL Type/MTL-C Type set

Parts

Dimensions (inch)

Dia. DC (inch)	Dia. DC (mm)	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
0.4688 - 0.4917	12.00 -12.49	1.5	SMDH047S	•	1.004	3.484	1.875	0.787	0.625	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
		3	SMDH047M	•	1.734	4.141		-		MEL	1			
		5	SMDH047L	•	2.672	5.109				MTL-C	1			
0.4921 - 0.5114	12.50 - 12.99	1.5	SMDH049S	•	1.016	3.496	1.875	0.787	0.625	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
		3	SMDH049M	•	1.859	4.334		-		MEL	1			
		5	SMDH049L	•	2.906	5.500				MTL-C	1			
0.5118 - 0.5312	13.00 - 13.49	1.5	SMDH051S	•	1.063	3.543	1.875	0.787	0.625	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
		3	SMDH051M	•	1.859	4.334		-		MEL	1			
		5	SMDH051L	•	2.906	5.500				MTL-C	1			
0.5315 - 0.5709	13.50 - 14.50	1.5	SMDH055S	•	1.193	3.697	2.000	0.984	0.750	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
		3	SMDH055M	•	2.008	4.527		-		MEL	1			
		5	SMDH055L	•	3.150	5.708				MTL-C	1			
		8	SMDH055D	•	4.961	7.480					1			
		12	SMDH055-12D	•	6.614	9.480		0.984			2			
0.5713 - 0.6102	14.51 - 15.50	1.5	SMDH059S	•	1.272	3.831	2.000	0.984	0.750	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
		3	SMDH059M	•	2.126	4.921		-		MEL	1			
		5	SMDH059L	•	3.346	6.102				MTL-C	1			
		8	SMDH059D	•	5.315	7.874					1			
		12	SMDH059-12D	•	7.087	9.965		0.984			2			
0.6106 - 0.6496	15.51 - 16.50	1.5	SMDH063S	•	1.374	3.933	2.000	0.984	0.750	MTL	2	BXD02509IP	0.93 to 1.24	TRDR10IP
		3	SMDH063M	•	2.283	5.118		-		MEL	1			
		5	SMDH063L	•	3.582	6.496				MTL-C	1			
		8	SMDH063D	•	5.630	8.307					1			
		12	SMDH063-12D	•	7.559	10.449		0.984			2			
0.6500 - 0.6890	16.51 - 17.50	1.5	SMDH067S	•	1.433	3.992	2.000	0.984	0.750	MTL	2	BXD02509IP	0.93 to 1.24	TRDR10IP
		3	SMDH067M	•	2.401	5.315		-		MEL	1			
		5	SMDH067L	•	3.780	6.693				MTL-C	1			
		8	SMDH067D	•	5.984	8.701					1			
		12	SMDH067-12D	•	8.031	10.937		0.984			2			
0.6894 - 0.7283	17.51 - 18.50	1.5	SMDH071S	•	1.535	4.095	2.000	0.984	0.750	MTL	2	BXD02509IP	0.93 to 1.24	TRDR10IP
		3	SMDH071M	•	2.559	5.512		-		MEL	1			
		5	SMDH071L	•	4.015	6.890				MTL-C	1			
		8	SMDH071D	•	6.299	8.898					1			
		12	SMDH071-12D	•	8.504	11.417		0.984			2			
0.7287 - 0.7677	18.51 - 19.50	1.5	SMDH075S	•	1.591	4.386	2.250	1.181	1.000	MTL	2	BXD03011IP	1.83 to 2.44	TRDR15IP
		3	SMDH075M	•	2.677	6.102		-		MEL	1			
		5	SMDH075L	•	4.212	7.480				MTL-C	1			
		8	SMDH075D	•	6.654	9.882					1			
		12	SMDH075-12D	•	8.976	12.154		1.181			2			
0.7681 - 0.8070	19.51 - 20.50	1.5	SMDH079S	•	1.693	4.488	2.250	1.181	1.000	MTL	2	BXD03011IP	1.83 to 2.44	TRDR15IP
		3	SMDH079M	•	2.834	6.102		-		MEL	1			
		5	SMDH079L	•	4.449	7.677				MTL-C	1			
		8	SMDH079D	•	6.969	10.276					1			
		12	SMDH079-12D	•	9.449	12.634		1.181			2			
0.8074 - 0.8465	20.51 - 21.50	1.5	SMDH083S	•	1.752	4.547	2.250	1.181	1.000	MTL	2	BXD03011IP	1.83 to 2.44	TRDR15IP
		3	SMDH083M	•	2.953	6.102		-		MEL	1			
		5	SMDH083L	•	4.645	7.677				MTL-C	1			
		8	SMDH083D	•	7.323	10.472					1			
		12	SMDH083-12D	•	9.921	13.118		1.181			2			
0.8469 - 0.8976	21.51 - 22.80	1.5	SMDH087S	•	1.815	4.610	2.250	1.181	1.000	MTL	2	BXD03512IP	2.79 to 3.72	TRDR15IP
		3	SMDH087M	•	3.110	6.299		-		MEL	1			
		5	SMDH087L	•	4.882	7.874				MTL-C	1			
		8	SMDH087D	•	7.638	10.669					1			
		12	SMDH087-12D	•	10.394	13.669		1.181			2			

LU for 12D holder is the value with typical diameter.

Recommended Cutting Conditions J91 | MTL Type Head J92 | MEL Type Head J92

● = USA Stock Item

N·m Recommended Tightening Torque (N·m)

SMDH - INCH Type

MTL MTL-C: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

MEL: Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Indexable head MTL Type | Indexable head MEL Type | Indexable head MTL-C Type | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

The 12D shank has no side lock flat.

*Refer to N74 for the tolerance of h6 and h7

Mounted Figure

Fig 1

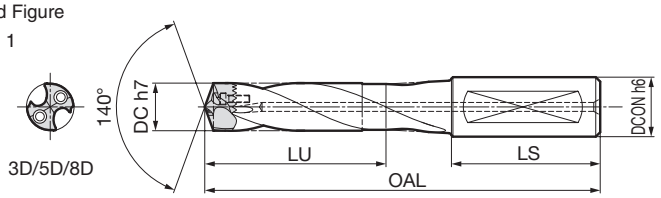
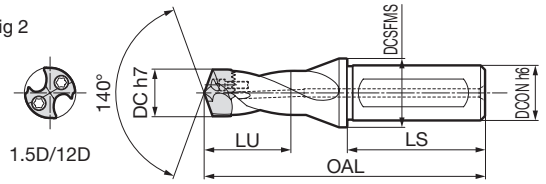


Fig 2



Holder ø0.8980" to 1.3189" Dimensions with MTL Type/MEL Type/MTL-C Type set

Parts

Dimensions (inch)

Dia. DC (inch)	Dia. DC (mm)	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
0.8980 - 0.9370	*22.81 -23.80*	1.5	**SMDH091S**	•	1.850	4.645	2.250	1.181	1.000	MTL MEL MTL-C	2	BXD03512IP	2.79 to 3.72	TRDR15IP
		3	**SMDH091M**	•	3.228	6.299		-			1			
		5	**SMDH091L**	•	5.078	8.268					1			
		8	**SMDH091D**	•	7.953	11.024					1			
		12	**SMDH091-12D**	•	10.866	14.165		1.181			2			
0.9374 - 0.9764	*23.81 - 24.80*	1.5	**SMDH096S**	•	1.941	4.894	2.250	1.457	1.000	MTL MEL MTL-C	2	BXD03512IP	2.79 to 3.72	TRDR15IP
		3	**SMDH096M**	•	3.385	6.693		-			1			
		5	**SMDH096L**	•	5.315	8.661					1			
		8	**SMDH096D**	•	8.268	11.614					1			
		12	**SMDH096-12D**	•	11.339	14.638		1.457			2			
0.9768 - 1.0157	*24.81 - 25.80*	1.5	**SMDH100S**	•	1.957	4.909	2.375	1.457	1.250	MTL MEL MTL-C	2	BXD04014IP	4.14 to 5.12	TRDR20IP
		3	**SMDH100M**	•	3.465	6.693		-			1			
		5	**SMDH100L**	•	5.512	8.858					1			
		8	**SMDH100D**	•	8.622	11.811					1			
		12	**SMDH100-12D**	•	11.811	15.232					2			
1.0161 - 1.0551	*25.81 - 26.80*	1.5	**SMDH104S**	•	2.059	5.012	2.375	1.457	1.250	MTL MEL MTL-C	2	BXD04014IP	4.14 to 5.12	TRDR20IP
		3	**SMDH104M**	•	3.622	6.890		-			1			
		5	**SMDH104L**	•	5.748	9.005					1			
		8	**SMDH104D**	•	8.937	12.205					1			
1.0555 - 1.0945	*26.81 - 27.80*	1.5	**SMDH107S**	•	2.079	5.032	2.375	1.457	1.250	MTL MEL MTL-C	2	BXD04014IP	4.14 to 5.12	TRDR20IP
		3	**SMDH107M**	•	3.701	6.890		-			1			
		5	**SMDH107L**	•	5.945	9.252					1			
		8	**SMDH107D**	•	9.291	12.508					1			
1.0949 - 1.1339	*27.81 - 28.80*	1.5	**SMDH112S**	•	2.142	5.095	2.375	1.457	1.250	MTL MEL MTL-C	2	BXD04515IP	4.98 to 6.64	TRDR25IP
		3	**SMDH112M**	•	3.819	7.086		-			1			
		5	**SMDH112L**	•	6.181	9.449					1			
		8	**SMDH112D**	•	9.606	12.795					1			
1.1343 - 1.1732	*28.81 - 29.80*	1.5	**SMDH115S**	•	2.197	5.150	2.375	1.457	1.250	MTL MEL MTL-C	2	BXD04515IP	4.98 to 6.64	TRDR25IP
		3	**SMDH115M**	•	3.937	7.283					1			
		5	**SMDH115L**	•	6.378	9.645					1			
		8	**SMDH115D**	•	9.961	13.189					1			
1.1736 - 1.2125	*29.80 - 30.80*	1.5	**SMDH118S**	•	2.299	5.252	2.375	1.457	1.250	MTL MEL MTL-C	2	BXD04515IP	4.98 to 6.64	TRDR25IP
		3	**SMDH118M**	•	4.094	7.283					1			
		5	**SMDH118L**	•	6.575	10.039					1			
		8	**SMDH118D**	•	10.276	13.503					1			
1.2130 - 1.2598	*30.81 - 32.00*	3	**SMDH1250M**	•	4.331	8.315	3.000	-	1.250	MTL MTL-C	1	BXD04515IP	4.98 to 6.64	TRDR25IP
		5	**SMDH1250L**	•	6.890	10.874					1			
1.2602 - 1.3189	*32.01 - 33.50*	3	**SMDH1319M**	•	4.528	8.512	3.000	-	1.500	MTL MTL-C	1	BXD04515IP	4.98 to 6.64	TRDR25IP
		5	**SMDH1319L**	•	7.284	11.268					1			

LU for 12D holder is the value with typical diameter.

Recommended Cutting Conditions J91 | MTL Type Head J92 | MEL Type Head J92 | MTL-C Type Head J92

● = USA Stock Item

N·m Recommended Tightening Torque (N·m)

SMDH - METRIC Type

MTL MTL-C — Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

MEL — Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Indexable head MTL Type | Indexable head MEL Type | Indexable head MTL-C Type | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

The 12D shank has no side lock flat.

*Refer to N74 for the tolerance of h6 and h7

Mounted Figure

Fig 1

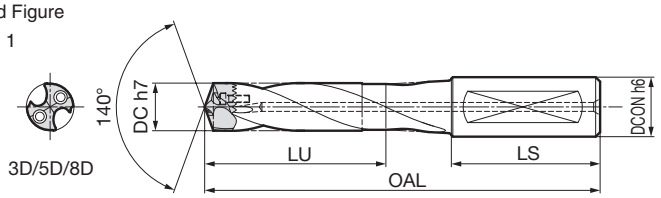
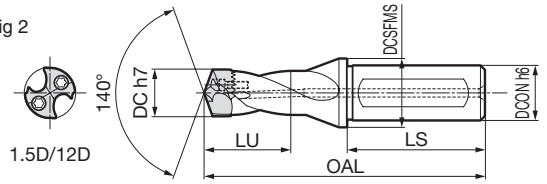


Fig 2



Holder ø12.0 to 21.5mm Dimensions with MTL Type/MEL Type/ MTL-C Type set Parts

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
12.0 ≤ D < 12.5	1.5	**SMDH120S**	★	28	91	48	20	16	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
	3	**SMDH120M**	★	46	107		-		MEL	1			
	5	**SMDH120L**	★	71	132				MTL-C	1			
12.5 ≤ D < 13.0	1.5	**SMDH125S**	★	28	91	48	20	16	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
	3	**SMDH125M**	★	46	107		-		MEL	1			
	5	**SMDH125L**	★	71	132				MTL-C	1			
13.0 ≤ D < 13.5	1.5	**SMDH130S**	★	30	92	48	20	16	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
	3	**SMDH130M**	★	49	112		-		MEL	1			
	5	**SMDH130L**	★	76	142				MTL-C	1			
13.5 ≤ D ≤ 14.5	1.5	**SMDH140S**	★	34	96	48	20	16	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
	3	**SMDH140M**	★	55	119		-		MEL	1			
	5	**SMDH140L**	★	84	149				MTL-C	1			
	8	**SMDH140D**	★	127	194					1			
	12	**SMDH140-12D**	★	171	239		20			2			
14.5 < D ≤ 15.5	1.5	**SMDH150S**	★	35	100	50	25	20	MTL	2	BXD02208IP	0.75 to 1.00	TRDR08IP
	3	**SMDH150M**	★	58	129		-		MEL	1			
	5	**SMDH150L**	★	89	159				MTL-C	1			
	8	**SMDH150D**	★	136	204					1			
	12	**SMDH150-12D**	★	183	253		25			2			
15.5 < D ≤ 16.5	1.5	**SMDH160S**	★	38	103	50	25	20	MTL	2	BXD02509IP	0.93 to 1.24	TRDR10IP
	3	**SMDH160M**	★	62	134		-		MEL	1			
	5	**SMDH160L**	★	95	169				MTL-C	1			
	8	**SMDH160D**	★	144	214					1			
	12	**SMDH160-12D**	★	195	266		25			2			
16.5 < D ≤ 17.5	1.5	**SMDH170S**	★	39	105	50	25	20	MTL	2	BXD02509IP	0.93 to 1.24	TRDR10IP
	3	**SMDH170M**	★	66	140		-		MEL	1			
	5	**SMDH170L**	★	101	175				MTL-C	1			
	8	**SMDH170D**	★	154	225					1			
	12	**SMDH170-12D**	★	207	278		25			2			
17.5 < D ≤ 18.5	1.5	**SMDH180S**	★	43	107	50	25	20	MTL	2	BXD02509IP	0.93 to 1.24	TRDR10IP
	3	**SMDH180M**	★	70	145		-		MEL	1			
	5	**SMDH180L**	★	107	180				MTL-C	1			
	8	**SMDH180D**	★	162	230					1			
	12	**SMDH180-12D**	★	219	291		25			2			
18.5 < D ≤ 19.5	1.5	**SMDH190S**	★	44	115	56	30	25	MTL	2	BXD03011IP	1.83 to 2.44	TRDR15IP
	3	**SMDH190M**	★	73	160		-		MEL	1			
	5	**SMDH190L**	★	112	195				MTL-C	1			
	8	**SMDH190D**	★	171	255					1			
	12	**SMDH190-12D**	★	232	309		30			2			
19.5 < D ≤ 20.5	1.5	**SMDH200S**	★	47	118	56	30	25	MTL	2	BXD03011IP	1.83 to 2.44	TRDR15IP
	3	**SMDH200M**	★	77	160		-		MEL	1			
	5	**SMDH200L**	★	118	200				MTL-C	1			
	8	**SMDH200D**	★	179	270					1			
	12	**SMDH200-12D**	★	244	321		30			2			
20.5 < D ≤ 21.5	1.5	**SMDH210S**	★	48	119	56	30	25	MTL	2	BXD03011IP	1.83 to 2.44	TRDR15IP
	3	**SMDH210M**	★	80	160		-		MEL	1			
	5	**SMDH210L**	★	123	200				MTL-C	1			
	8	**SMDH210D**	★	188	266					1			
	12	**SMDH210-12D**	★	256	334		30			2			

LU for 12D holder is the value with typical diameter.

Recommended Cutting Conditions J91 | MTL Type Head J92 | MEL Type Head J92 | MTL-C Type Head J92

★ = Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

SMDH - METRIC Type

MTL MTL-C — Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

MEL — Carbon Steel/Alloy Steel up to 0.28% | Carbon Steel/Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Indexable head MTL Type | Indexable head MEL Type | Indexable head MTL-C Type | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

The 12D shank has no side lock flat.

*Refer to N74 for the tolerance of h6 and h7

Mounted Figure

Fig 1

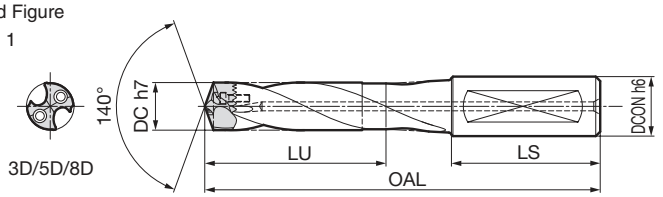
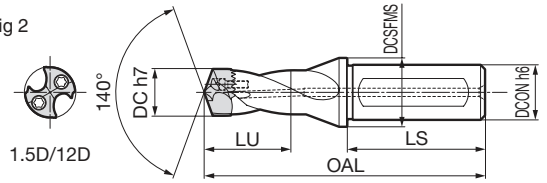


Fig 2



Holder ø21.5 to 35.0mm — Dimensions with MTL Type/MEL Type/ MTL-C Type set — Parts

Dimensions (*mm*)

Dia. DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
21.5 < D ≤ 22.8	1.5	***SMDH220S***	★	*51*	*121*		*30*			2			
	3	***SMDH220M***	★	*84*	*165*				MTL	1			
	5	***SMDH220L***	★	*129*	*205*	*56*	-	*25*	MEL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	8	***SMDH220D***	★	*196*	*275*				MTL-C	1			
	12	***SMDH220-12D***	★	*268*	*347*		*30*			2			
22.8 < D ≤ 23.8	1.5	***SMDH230S***	★	*51*	*122*		*30*			2			
	3	***SMDH230M***	★	*87*	*165*				MTL	1			
	5	***SMDH230L***	★	*134*	*215*	*56*	-	*25*	MEL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	8	***SMDH230D***	★	*205*	*285*				MTL-C	1			
	12	***SMDH230-12D***	★	*280*	*359*		*30*			2			
23.8 < D ≤ 24.8	1.5	***SMDH240S***	★	*54*	*129*		*37*			2			
	3	***SMDH240M***	★	*91*	*175*				MTL	1			
	5	***SMDH240L***	★	*140*	*225*	*60*	-	*32*	MEL	1	BXD03512IP	2.79 to 3.72	TRDR15IP
	8	***SMDH240D***	★	*213*	*300*				MTL-C	1			
	12	***SMDH240-12D***	★	*292*	*376*		*37*			2			
24.8 < D ≤ 25.8	1.5	***SMDH250S***	★	*54*	*129*		*37*			2			
	3	***SMDH250M***	★	*93*	*175*				MTL	1			
	5	***SMDH250L***	★	*145*	*230*	*60*	-	*32*	MEL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	8	***SMDH250D***	★	*222*	*305*				MTL-C	1			
	12	***SMDH250-12D***	★	*305*	*388*					2			
25.8 < D ≤ 26.8	1.5	***SMDH260S***	★	*57*	*132*		*37*			2			
	3	***SMDH260M***	★	*97*	*180*				MTL	1			
	5	***SMDH260L***	★	*151*	*235*	*60*	-	*32*	MEL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	8	***SMDH260D***	★	*230*	*315*				MTL-C	1			
26.8 < D ≤ 27.8	1.5	***SMDH270S***	★	*58*	*133*		*37*			2			
	3	***SMDH270M***	★	*99*	*180*				MTL	1			
	5	***SMDH270L***	★	*156*	*240*	*60*	-	*32*	MEL	1	BXD04014IP	4.14 to 5.52	TRDR20IP
	8	***SMDH270D***	★	*239*	*325*				MTL-C	1			
27.8 < D ≤ 28.8	1.5	***SMDH280S***	★	*60*	*135*		*37*			2			
	3	***SMDH280M***	★	*102*	*185*				MTL	1			
	5	***SMDH280L***	★	*162*	*245*	*60*	-	*32*	MEL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	8	***SMDH280D***	★	*247*	*330*				MTL-C	1			
28.8 < D ≤ 29.8	1.5	***SMDH290S***	★	*61*	*136*		*37*			2			
	3	***SMDH290M***	★	*105*	*190*				MTL	1			
	5	***SMDH290L***	★	*167*	*250*	*60*	-	*32*	MEL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	8	***SMDH290D***	★	*256*	*340*				MTL-C	1			
29.8 < D ≤ 30.8	1.5	***SMDH300S***	★	*64*	*139*		*37*			2			
	3	***SMDH300M***	★	*110*	*191*				MTL	1			
	5	***SMDH300L***	★	*173*	*261*	*60*	-	*32*	MEL	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	8	***SMDH300D***	★	*265*	*351*				MTL-C	1			
30.8 < D ≤ 32.0	3	***SMDH320M***	★	*116*	*201*				MTL	1			
	5	***SMDH320L***	★	*181*	*266*	*60*	-	*32*	MTL-C	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	8	***SMDH320D***	★	*276*	*361*					1			
32.0 < D ≤ 33.5	3	***SMDH335M***	★	*121*	*206*				MTL	1			
	5	***SMDH335L***	★	*191*	*276*	*60*	-	*32*	MTL-C	1	BXD04515IP	4.98 to 6.64	TRDR25IP
	8	***SMDH335D***	★	*291*	*376*					1			
33.5 < D ≤ 35.0	3	***SMDH350M***	★	*126*	*221*				MTL	1			
	5	***SMDH350L***	★	*201*	*296*	*70*	-	*40*	MTL-C	1	BX0515	7.2	HD040
	8	***SMDH350D***	★	*306*	*401*					1			

LU for 12D holder is the value with typical diameter.

Recommended Cutting Conditions ☞J91 | MTL Type Head ☞J92 | MEL Type Head ☞J92 | MTL-C Type Head ☞J92

★ = Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

SMDH - METRIC Type

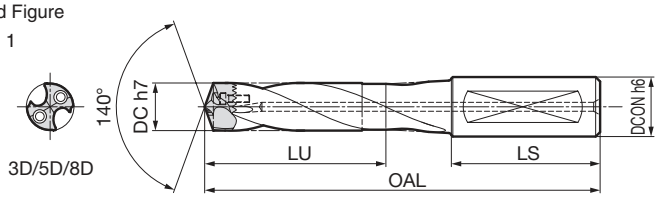
MTL MTL-C — Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Tempered Steel | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron

MEL — Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Ti Alloy | Heat-resistant Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Indexable head MTL Type | Indexable head MEL Type | Indexable head MTL-C Type | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

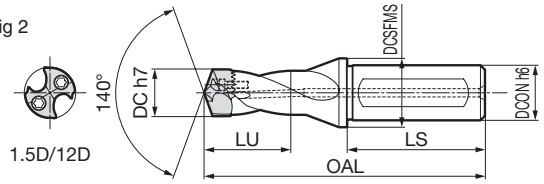
Mounted Figure

Fig 1



3D/5D/8D

Fig 2



1.5D/12D

Holder ø35.0 to 42.5mm — Dimensions with MTL Type/ MTL-C Type set — Parts

Dimensions (*mm*)

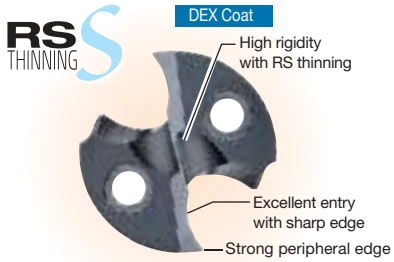
Dia. DC	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Indexable Head	Fig	Cap Screw	N·m	Wrench
35.0 < D ≤ 36.5	3	***SMDH365M***	★	*132*	*227*	*70*	-	*40*	MTL MTL-C	1	BX0515	7.2	HD040
	5	***SMDH365L***	★	*207*	*302*					1			
	8	***SMDH365D***	★	*317*	*412*					1			
36.5 < D ≤ 38.0	3	***SMDH380M***	★	*137*	*232*	*70*	-	*40*	MTL MTL-C	1	BX0515	7.2	HD040
	5	***SMDH380L***	★	*217*	*312*					1			
	8	***SMDH380D***	★	*332*	*427*					1			
38.0 < D ≤ 39.5	3	***SMDH395M***	★	*142*	*237*	*70*	-	*40*	MTL MTL-C	1	BX0515	7.2	HD040
	5	***SMDH395L***	★	*227*	*322*					1			
	8	***SMDH395D***	★	*342*	*437*					1			
39.5 < D ≤ 41.0	3	***SMDH410M***	★	*152*	*252*	*70*	-	*40*	MTL MTL-C	1	BX0515	7.2	HD040
	5	***SMDH410L***	★	*232*	*332*					1			
	8	***SMDH410D***	★	*357*	*457*					1			
41.0 < D ≤ 42.5	3	***SMDH425M***	★	*158*	*258*	*70*	-	*40*	MTL MTL-C	1	BX0515	7.2	HD040
	5	***SMDH425L***	★	*243*	*343*					1			
	8	***SMDH425D***	★	*368*	*468*					1			

LU for 12D holder is the value with typical diameter.

Recommended Cutting Conditions J91 | MTL Type Head J92 | MEL Type Head J92 | MTL-C Type Head J92

★ = Worldwide Warehouse Item

MFS Ideal for drilling and burr control on non-flat surfaces

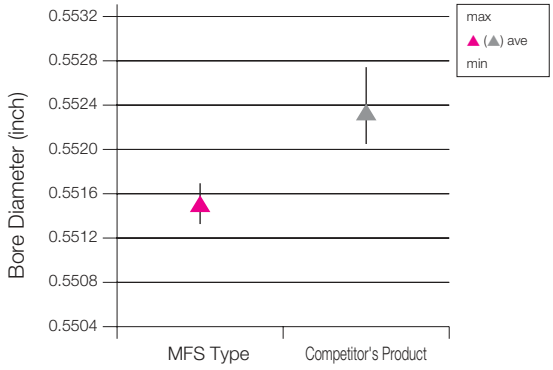


Suited to various types of drilling thanks to a point angle of 180°
Can be used for high-efficiency spot facing, drilling on non-horizontal surfaces such as inclined and cylindrical surfaces, and interrupted drilling. Also reduces burrs at the hole exit.

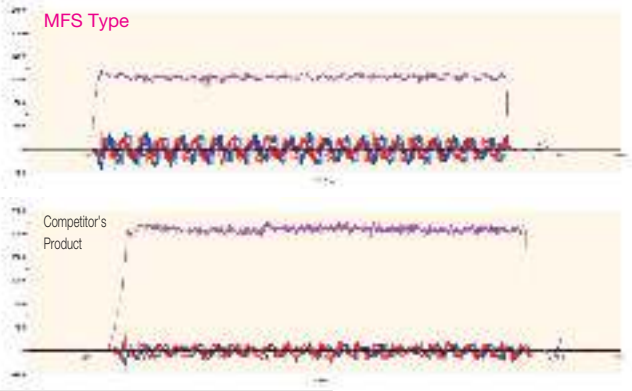
Improves machining stability
Achieves high rigidity by employing RS THINNING, which ensures thick web at the bottom.

■ Perfor...

Comparison of Hole Diameter Accuracy

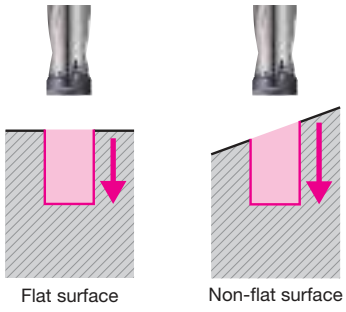
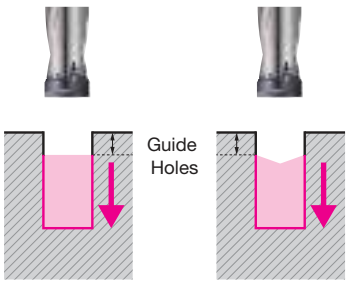
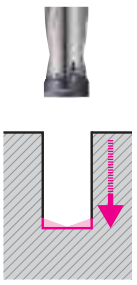


Comparison of Cutting Force



Tool : SMDH 140S + SMDT 1400MFS
Part Material : Carbon Steel
Cutting Conditions : v_c=328 SFM, f =0.006 IPM, Hole depth 0.827", Wet

■ Precautions when Using MFS Type Heads

Application	No guide hole (final hole only)	With guide hole	Flat finishing of hole bottom
	 Flat surface / Non-flat surface	 Guide Holes	
1.5D holder	o	o (guide hole not needed)	o
3D to 12D holders	×	×	o

■ Recommended Speeds & Feeds - 1.5XD

Speed: v (SFM) / Feed: f (IPR)

Drill Dia. ΦDc		Soft Steel Min - Optimum - Max	General Steel Min - Optimum - Max	Hardened Steel Min - Optimum - Max	Stainless Steel Min - Optimum - Max	Gray Cast Iron Min - Optimum - Max	Ductile Cast Iron Min - Optimum - Max	Aluminum Alloy Min - Optimum - Max
~0.6299	Vc	200 - 260 - 330	160 - 230 - 300	130 - 200 - 260	130 - 200 - 260	160 - 230 - 300	160 - 215 - 260	330 - 500 - 650
	f	.0039 - .0059 - .0079	.0039 - .0059 - .0079	.0019 - .0039 - .0059	.0019 - .0039 - .0059	.0039 - .0059 - .0079	.0039 - .0059 - .0079	.0098 - .012 - .014
~0.7874	Vc	200 - 260 - 330	160 - 230 - 300	130 - 200 - 260	160 - 230 - 300	160 - 230 - 300	160 - 215 - 260	330 - 500 - 650
	f	.0039 - .0059 - .0079	.0039 - .0059 - .0079	.0019 - .0039 - .0059	.0019 - .0039 - .0059	.0039 - .0059 - .0079	.0039 - .0059 - .0079	.012 - .014 - .016
~1.212	Vc	200 - 260 - 330	160 - 230 - 300	130 - 200 - 260	160 - 230 - 300	160 - 230 - 300	160 - 215 - 260	330 - 500 - 650
	f	.0059 - .0079 - .0098	.0059 - .0079 - .0098	.0039 - .0059 - .0079	.0019 - .0039 - .0059	.0059 - .0079 - .0098	.0059 - .0079 - .0098	.014 - .016 - .018

Note:
1. The recommended hole depth is 2 x drill diameter. The depth is measured from the highest point of the hole on drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling on flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling on an inclined surface.
4. Set the feed rate at 70% or lower when the inclination angle is 30° or less.
5. Set the feed rate at 50% or lower when the inclination angle is larger than 30°.
6. This product is a drilling tool. Do not use it for traversing or helical milling.

SMD-MFS (Internal Coolant Supply)

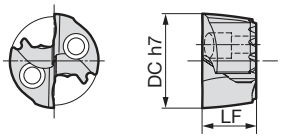
MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Indexable head MFS Type | Coolant Hole | Indexable | 1.5D | 3D | 5D | 8D | 12D

*Refer to N74 for the tolerance of h7

Indexable Head

Fig 1



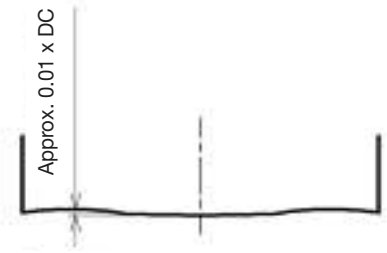
Cutting Edge Indexable Head MFS Type Diameter ø0.4688" to 0.9375" Dimensions (inch/ *mm*)

Drill Tip	Stock	øD mm	øD in.	LF mm	LF in.	Body
SMDT04688MFS-ACX70	●	15/32	0.4688	7.1	0.279	SMDH047□
SMDT1200MFS-ACX70	●	*12.0*	0.4724			*SMDH120□*
SMDT04844MFS-ACX70	●	31/64	0.4844			
SMDT1250MFS-ACX70	●	*12.5*	0.4921	7.2	0.287	SMDH049□
SMDT05000MFS-ACX70	●	1/2	0.5000			*SMDH125□*
SMDT1300MFS-ACX70	●	*13.0*	0.5118	7.5	0.295	SMDH051□
SMDT05156MFS-ACX70	●	33/64	0.5156			*SMDH130□*
SMDT05312MFS-ACX70	●	17/32	0.5312			
SMDT1350MFS-ACX70	●	*13.5*	0.5315	7.9	0.311	SMDH055□
SMDT05469MFS-ACX70	●	35/64	0.5469			*SMDH140□*
SMDT1400MFS-ACX70	●	*14.0*	0.5512			
SMDT05625MFS-ACX70	●	9/16	0.5625			
SMDT1450MFS-ACX70	●	*14.5*	0.5709			
SMDT05781MFS-ACX70	●	37/64	0.5781	8.3	0.327	SMDH059□
SMDT1500MFS-ACX70	●	*15.0*	0.5906			*SMDH150□*
SMDT05938MFS-ACX70	●	19/32	0.5938			
SMDT06094MFS-ACX70	●	39/64	0.6094			
SMDT1550MFS-ACX70	●	*15.5*	0.6102			
SMDT06250MFS-ACX70	●	5/8	0.6250	8.8	0.346	SMDH063□
SMDT1600MFS-ACX70	●	*16.0*	0.6300			*SMDH160□*
SMDT06406MFS-ACX70	●	41/64	0.6406			
SMDT1650MFS-ACX70	●	*16.5*	0.6496			
SMDT06563MFS-ACX70	●	21/32	0.6563	9.3	0.366	SMDH067□
SMDT1700MFS-ACX70	●	*17.0*	0.6693			*SMDH170□*
SMDT06719MFS-ACX70	●	43/64	0.6719			
SMDT06875MFS-ACX70	●	11/16	0.6875			
SMDT1750MFS-ACX70	●	*17.5*	0.6890			
SMDT07031MFS-ACX70	●	45/64	0.7031	9.8	0.386	SMDH071□
SMDT1800MFS-ACX70	●	*18.0*	0.7087			*SMDH180□*
SMDT07188MFS-ACX70	●	23/32	0.7188			
SMDT1850MFS-ACX70	●	*18.5*	0.7283			
SMDT07344MFS-ACX70	●	47/64	0.7344	10.2	0.402	SMDH075□
SMDT1900MFS-ACX70	●	*19.0*	0.7480			*SMDH190□*
SMDT07500MFS-ACX70	●	3/4	0.7500			
SMDT07656MFS-ACX70	●	49/64	0.7656			
SMDT1950MFS-ACX70	●	*19.5*	0.7677			
SMDT07813MFS-ACX70	●	25/32	0.7813	10.7	0.421	SMDH079□
SMDT2000MFS-ACX70	●	*20.0*	0.7874			*SMDH200□*
SMDT07969MFS-ACX70	●	51/64	0.7969			
SMDT2050MFS-ACX70	●	*20.5*	0.8071			
SMDT08125MFS-ACX70	●	13/16	0.8125	11.2	0.441	SMDH083□
SMDT2100MFS-ACX70	●	*21.0*	0.8268			*SMDH210□*
SMDT08281MFS-ACX70	●	53/64	0.8281			
SMDT08438MFS-ACX70	●	27/32	0.8438			
SMDT2150MFS-ACX70	●	*21.5*	0.8465			
SMDT08594MFS-ACX70	●	55/64	0.8594	11.2	0.441	SMDH087□
SMDT2200MFS-ACX70	●	*22.0*	0.8661			*SMDH220□*
SMDT08750MFS-ACX70	●	7/8	0.8750			
SMDT2250MFS-ACX70	●	*22.5*	0.8858			
SMDT08906MFS-ACX70	●	57/64	0.8906			
SMDT2300MFS-ACX70	●	*23.0*	0.9055	11.2	0.441	SMDH091□
SMDT09062MFS-ACX70	●	29/32	0.9062			*SMDH230□*
SMDT09219MFS-ACX70	●	59/64	0.9219			
SMDT2350MFS-ACX70	●	*23.5*	0.9252			
SMDT09375MFS-ACX70	●	15/16	0.9375	11.3	0.445	SMDH096□

Cutting Edge Indexable Head MFS Type Diameter ø0.9449" to 1.1875" Dimensions (inch/ *mm*)

Drill Tip	Stock	øD mm	øD in.	LF mm	LF in.	Body
SMDT2400MFS-ACX70	●	*24.0*	0.9449	11.3	0.445	SMDH096□
SMDT09531MFS-ACX70	●	61/64	0.9531			*SMDH240□*
SMDT2450MFS-ACX70	●	*24.5*	0.9646			
SMDT09687MFS-ACX70	●	31/32	0.9687			
SMDT2500MFS-ACX70	●	*25.0*	0.9843	11.7	0.461	SMDH100□
SMDT09844MFS-ACX70	●	63/64	0.9844			*SMDH250□*
SMDT10000MFS-ACX70	●	1	1.0000			
SMDT2550MFS-ACX70	●	*25.5*	1.0039			
SMDT10156MFS-ACX70	●	1 1/64	1.0156			
SMDT2600MFS-ACX70	●	*26.0*	1.0236	12.2	0.480	SMDH104□
SMDT10312MFS-ACX70	●	1 1/32	1.0312			*SMDH260□*
SMDT2650MFS-ACX70	●	*26.5*	1.0433			
SMDT10469MFS-ACX70	●	1 3/64	1.0469			
SMDT10625MFS-ACX70	●	1 1/16	1.0625	12.7	0.500	SMDH107□
SMDT2700MFS-ACX70	●	*27.0*	1.0630			*SMDH270□*
SMDT10781MFS-ACX70	●	1 5/64	1.0781			
SMDT2750MFS-ACX70	●	*27.5*	1.0827			
SMDT10937MFS-ACX70	●	1 3/32	1.0937			
SMDT2800MFS-ACX70	●	*28.0*	1.1024	13.2	0.520	SMDH112□
SMDT11094MFS-ACX70	●	1 7/64	1.1094			*SMDH280□*
SMDT2850MFS-ACX70	●	*28.5*	1.1220			
SMDT11250MFS-ACX70	●	1 1/8	1.1250			
SMDT11406MFS-ACX70	●	1 9/64	1.1406	13.6	0.535	SMDH115□
SMDT2900MFS-ACX70	●	*29.0*	1.1417			*SMDH290□*
SMDT11562MFS-ACX70	●	1 5/32	1.1562			
SMDT2950MFS-ACX70	●	*29.5*	1.1614			
SMDT11719MFS-ACX70	●	1 11/64	1.1719			
SMDT3000MFS-ACX70	●	*30.0*	1.1811	14.1	0.555	SMDH118□
SMDT11875MFS-ACX70	●	1 3/16	1.1875			*SMDH300□*

Shape of Hole Base with MFS Type



The machined hole bottom is not completely flat.
Contact Sumitomo Hardmetal for more details.

Recommended Cutting Conditions ☞ J102 | Applicable Holders ☞ J97, J104

● = USA Stock Item

SMDH for MFS Tips

MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Indexable head MFS Type | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

The dimensions listed on this page are with MFS Type head installed.
The 12D shank has no side lock flat.

*Refer to N74 for the tolerance of h6 and h7

Mounted Figure

Fig 1

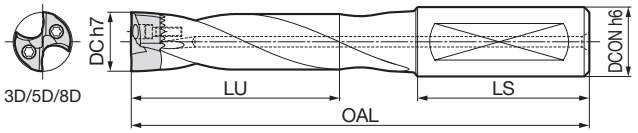
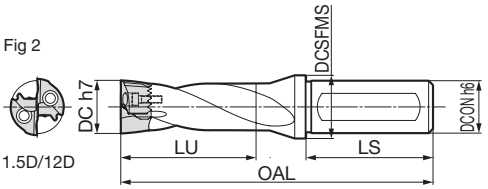


Fig 2



Holder ø0.4688" to 0.8976" — Dimensions with MFS Type set — Parts

Dimensions (*mm*)

Dia. DC (inch)	Dia. DC (*mm*)	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Fig	Cap Screw	Cap Screw Tightening Torque (N·m)	Wrench
0.4688 - 0.4917	*12.00 -12.49*	1.5	***SMDH120S***	★	*26*	*89*	*48*	*20*	*16*	2	BXD02208IP	**0.75 to 1.00**	TRDR08IP
		3	***SMDH120M***	★	*44*	*105*		—		1			
		5	***SMDH120L***	★	*69*	*130*				1			
0.4921 - 0.5114	*12.50 - 12.99*	1.5	***SMDH125S***	★	*26*	*89*	*48*	*20*	*16*	2	BXD02208IP	**0.75 to 1.00**	TRDR08IP
		3	***SMDH125M***	★	*44*	*105*		—		1			
		5	***SMDH125L***	★	*69*	*130*				1			
0.5118 - 0.5311	*13.00 - 13.49*	1.5	***SMDH130S***	★	*27*	*90*	*48*	*20*	*16*	2	BXD02208IP	**0.75 to 1.00**	TRDR08IP
		3	***SMDH130M***	★	*47*	*110*		—		1			
		5	***SMDH130L***	★	*74*	*140*				1			
0.5315 - 0.5709	*13.50 - 14.50*	1.5	***SMDH140S***	★	*31*	*94*	*48*	*20*	*16*	2	BXD02208IP	**0.75 to 1.00**	TRDR08IP
		3	***SMDH140M***	★	*53*	*117*		—		1			
		5	***SMDH140L***	★	*82*	*147*				1			
		8	***SMDH140D***	★	*125*	*192*				1			
		12	***SMDH140-12D***	★	*168*	*236*		*20*		2			
0.5713 - 0.6102	*14.51 - 15.50*	1.5	***SMDH150S***	★	*32*	*97*	*50*	*25*	*20*	2	BXD02208IP	**0.75 to 1.00**	TRDR08IP
		3	***SMDH150M***	★	*56*	*127*		—		1			
		5	***SMDH150L***	★	*87*	*157*				1			
		8	***SMDH150D***	★	*134*	*202*				1			
		12	***SMDH150-12D***	★	*180*	*250*		*25*		2			
0.6106 - 0.6496	*15.51 - 16.50*	1.5	***SMDH160S***	★	*35*	*100*	*50*	*25*	*20*	2	BXD02509IP	**0.93 to 1.24**	TRDR10IP
		3	***SMDH160M***	★	*60*	*132*		—		1			
		5	***SMDH160L***	★	*93*	*167*				1			
		8	***SMDH160D***	★	*142*	*212*				1			
		12	***SMDH160-12D***	★	*192*	*263*		*25*		2			
0.6500 - 0.6890	*16.51 - 17.50*	1.5	***SMDH170S***	★	*37*	*102*	*50*	*25*	*20*	2	BXD02509IP	**0.93 to 1.24**	TRDR10IP
		3	***SMDH170M***	★	*63*	*137*		—		1			
		5	***SMDH170L***	★	*98*	*172*				1			
		8	***SMDH170D***	★	*151*	*222*				1			
		12	***SMDH170-12D***	★	*204*	*275*		*25*		2			
0.6894 - 0.7283	*17.51 - 18.50*	1.5	***SMDH180S***	★	*39*	*104*	*50*	*25*	*20*	2	BXD02509IP	**0.93 to 1.24**	TRDR10IP
		3	***SMDH180M***	★	*67*	*142*		—		1			
		5	***SMDH180L***	★	*104*	*177*				1			
		8	***SMDH180D***	★	*159*	*227*				1			
		12	***SMDH180-12D***	★	*216*	*287*		*25*		2			
0.7287 - 0.7677	*18.51 - 19.50*	1.5	***SMDH190S***	★	*41*	*112*	*56*	*30*	*25*	2	BXD03011IP	**1.83 to 2.44**	TRDR15IP
		3	***SMDH190M***	★	*70*	*157*		—		1			
		5	***SMDH190L***	★	*109*	*192*				1			
		8	***SMDH190D***	★	*168*	*252*				1			
		12	***SMDH190-12D***	★	*228*	*306*		*30*		2			
0.7681 - 0.8070	*19.51 - 20.50*	1.5	***SMDH200S***	★	*43*	*114*	*56*	*30*	*25*	2	BXD03011IP	**1.83 to 2.44**	TRDR15IP
		3	***SMDH200M***	★	*74*	*157*		—		1			
		5	***SMDH200L***	★	*115*	*197*				1			
		8	***SMDH200D***	★	*176*	*267*				1			
		12	***SMDH200-12D***	★	*240*	*318*		*30*		2			
0.8074 - 0.8465	*20.51 - 21.50*	1.5	***SMDH210S***	★	*45*	*116*	*56*	*30*	*25*	2	BXD03011IP	**1.83 to 2.44**	TRDR15IP
		3	***SMDH210M***	★	*77*	*157*		—		1			
		5	***SMDH210L***	★	*120*	*197*				1			
		8	***SMDH210D***	★	*185*	*262*				1			
		12	***SMDH210-12D***	★	*252*	*330*		*30*		2			
0.8469 - 0.8976	*21.51 - 22.80*	1.5	***SMDH220S***	★	*46*	*117*	*56*	*30*	*25*	2	BXD03512IP	**2.79 to 3.72**	TRDR15IP
		3	***SMDH220M***	★	*80*	*161*		—		1			
		5	***SMDH220L***	★	*125*	*201*				1			
		8	***SMDH220D***	★	*192*	*271*				1			
		12	***SMDH220-12D***	★	*264*	*343*		*30*		2			

LU for 12D holder is the value with typical diameter.

Recommended Cutting Conditions J102 | MFS Type Head J103

★ = Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

SMDH for MFS Tips

MFS | Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

DEX Coating | Indexable head MFS Type | Coolant Hole | 1.5D | 3D | 5D | 8D | 12D | Indexable

The dimensions listed on this page are with MFS Type head installed.
The 12D shank has no side lock flat.

*Refer to N74 for the tolerance of h6 and h7

Mounted Figure

Fig 1

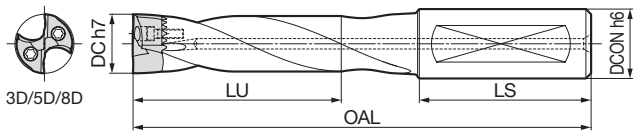
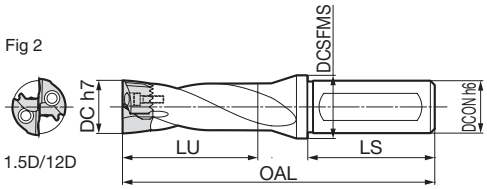


Fig 2



Holder ø22.8 to 30.8mm — Dimensions with MFS Type set — Parts

Dimensions (*mm*)

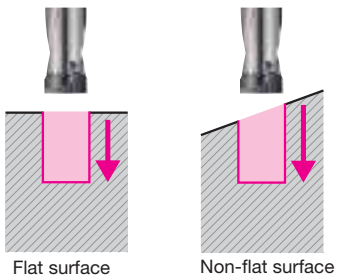
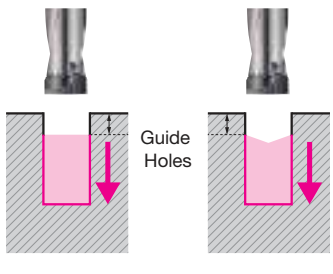
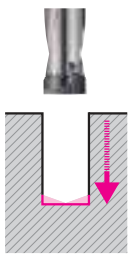
Dia. DC (inch)	Dia. DC (*mm*)	Hole Depth (L/D)	Cat. No.	Stock	Effective Length LU	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Fig	Cap Screw	Cap Screw N·m	Wrench
0.8980 - 0.9370	*22.81 -23.80*	1.5	***SMDH230S***	★	*47*	*118*	*56*	*30*	*25*	2	BXD03512IP	2.79 to 3.72	TRDR15IP
		3	***SMDH230M***	★	*83*	*161*		—		1			
		5	***SMDH230L***	★	*130*	*211*				1			
		8	***SMDH230D***	★	*201*	*281*				1			
		12	***SMDH230-12D***	★	*276*	*355*		*30*		2			
0.9374 - 0.9764	*23.81 - 24.80*	1.5	***SMDH240S***	★	*50*	*125*	*60*	*37*	*32*	2	BXD03512IP	2.79 to 3.72	TRDR15IP
		3	***SMDH240M***	★	*87*	*171*		—		1			
		5	***SMDH240L***	★	*136*	*221*				1			
		8	***SMDH240D***	★	*209*	*296*				1			
		12	***SMDH240-12D***	★	*288*	*372*		*37*		2			
0.9768 - 1.0157	*24.81 - 25.80*	1.5	***SMDH250S***	★	*50*	*125*	*60*	*37*	*32*	2	BXD04014IP	4.14 to 5.52	TRDR20IP
		3	***SMDH250M***	★	*88*	*170*		—		1			
		5	***SMDH250L***	★	*140*	*225*				1			
		8	***SMDH250D***	★	*217*	*300*				1			
		12	***SMDH250-12D***	★	*300*	*384*				2			
1.0161 - 0.0551	*25.81 - 26.80*	1.5	***SMDH260S***	★	*53*	*128*	*60*	*37*	*32*	2	BXD04014IP	4.14 to 5.52	TRDR20IP
		3	***SMDH260M***	★	*92*	*175*		—		1			
		5	***SMDH260L***	★	*146*	*230*				1			
		8	***SMDH260D***	★	*225*	*310*				1			
1.0555 - 1.0945	*26.81 - 27.80*	1.5	***SMDH270S***	★	*53*	*128*	*60*	*37*	*32*	2	BXD04014IP	4.14 to 5.52	TRDR20IP
		3	***SMDH270M***	★	*94*	*175*		—		1			
		5	***SMDH270L***	★	*151*	*235*				1			
		8	***SMDH270D***	★	*234*	*320*				1			
1.0949 - 1.1339	*27.81 - 28.80*	1.5	***SMDH280S***	★	*55*	*130*	*60*	*37*	*32*	2	BXD04515IP	4.98 to 6.64	TRDR25IP
		3	***SMDH280M***	★	*97*	*180*		—		1			
		5	***SMDH280L***	★	*157*	*240*				1			
		8	***SMDH280D***	★	*242*	*325*				1			
1.1343 - 1.1732	*28.81 - 29.80*	1.5	***SMDH290S***	★	*56*	*131*	*60*	*37*	*32*	2	BXD04515IP	4.98 to 6.64	TRDR25IP
		3	***SMDH290M***	★	*100*	*185*		—		1			
		5	***SMDH290L***	★	*162*	*245*				1			
		8	***SMDH290D***	★	*251*	*335*				1			
1.1736 - 1.2125	*29.81 - 30.80*	1.5	***SMDH300S***	★	*59*	*134*	*60*	*37*	*32*	2	BXD04515IP	4.98 to 6.64	TRDR25IP
		3	***SMDH300M***	★	*104*	*185*		—		1			
		5	***SMDH300L***	★	*167*	*255*				1			
		8	***SMDH300D***	★	*259*	*345*				1			

Recommended Cutting Conditions J102 | MFS Type Head J103

LU for 12D holder is the value with typical diameter.

★ = Worldwide Warehouse Item

Precautions when Using MFS Type Heads

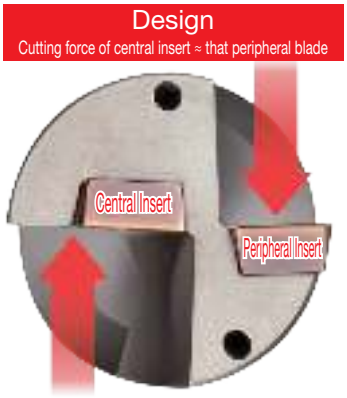
Application	No guide hole (final hole only)	With guide hole	Flat finishing of hole bottom
	 Flat surface / Non-flat surface	 Guide Holes	
1.5D holder	○	○ (guide hole not needed)	○
3D to 12D holders	×	×	○

N·m Recommended Tightening Torque (N·m)



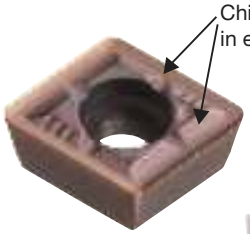
■ General Features

The SumiDrill WDX type has excellent cutting balance that provides stable hole drilling on a wide range of work materials from general steel to stainless steel and aluminum alloy. Available in three original chipbreaker styles, the inserts feature improved chip control and reduced cutting force for use in low-rigidity contexts.

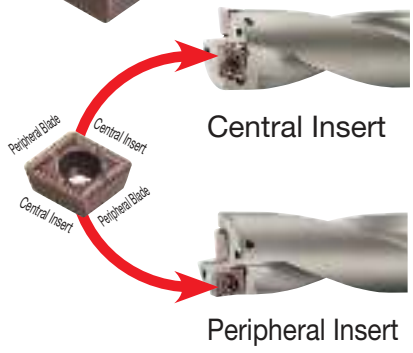


■ Features and Applications

- Balanced Design
  Cutting force during drilling is balanced between central insert and peripheral insert. The relative position of each insert is optimized to provide stable drilling.
- Excellent Chip Control
  The chip evacuation direction can be controlled with the chip control groove at the center of the breaker, enabling good chip control.
- Versatile Tool for a Variety of Machining Applications
  Select among three types of breakers for different applications, allowing optimal drilling for a variety of work materials and conditions. Suitable for a wide range of applications including hole expansion, spot facing, external turning and internal boring.
- Economical Four-Cornered Insert
  This product has an extremely economical design where a single insert type can be used for the central insert or peripheral insert, with two corners for each position - a total of four corners.



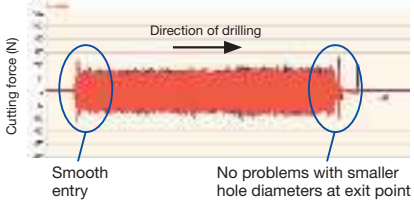
Type	L	G		H
Features	For low feed with chip control	General-purpose	For Non-ferrous Metal drilling	Strong Edge Type
Appearance				
Figure				



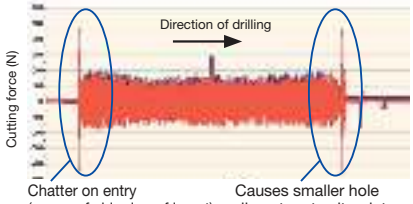
■ Performance

- Balanced Design (Comparison of Horizontal Component Values)
  Balance is maintained at the through hole entry and exit points, and drilling is stable.

SumiDrill WDX Type



Conventional and Competitor's Products



- Improved chip control

Drill: WDX 200D3S25 (ø20.0)
Part Mterial: 304 Stainless Steel
Cutting Conditions: v_c=427 SFM, f=0.0024 IPR
H=1.98", Wet

WDX

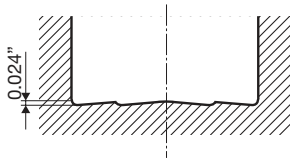


Conventional and Competitor's Products

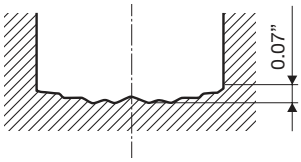


- Finishing is easy because the hole bottom is almost flat.

Bottom of hole after drilling with WDX200D3S25



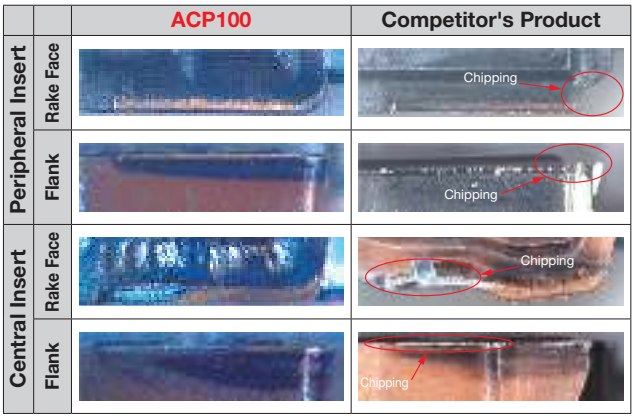
Bottom of hole after drilling with conventional tool (ø20)



For High-speed Drilling of Steel and Cast Iron
ACP100

■ Features

Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating film of the Super FF Coat achieved through our proprietary technology.

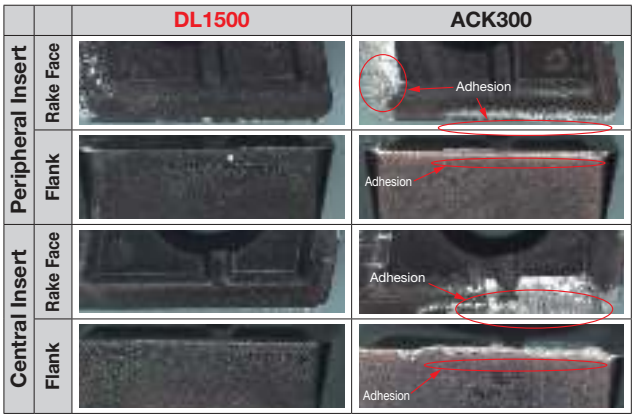


Holder: WDX 250D3S25
Insert: WDXT 063006-G (ACP100)
Part Material: Carbon Steel
Cutting Conditions: v_C=656 SFM, f=0.0047 IPR,
H=1.97" (through hole), Wet

For Drilling of Non-ferrous Metals
AURORA Coat DL1500

■ Features

New DL1500 insert grade for drilling non-ferrous metal offers greatly improved adhesion resistance compared to conventional tools.
Ideal for drilling holes in copper alloys as well as aluminum alloys.



Holder: WDX 250D3S25
Insert: WDXT 073506-G (DL1500)
Part Material: Aluminum Alloy Die Casting Parts For Engines
Cutting Conditions: v_C=492 SFM, f=0.0039 IPR,
H=1.97" (through hole), Wet

Drills for Deep Hole Drilling L/D = 5 (In stock from ø13.0 to ø55.0 mm)

■ Features

The SumiDrill WDX type for 5D drilling features a specially designed flute shape and enlarged coolant hole for excellent chip evacuation even during deep hole drilling.

Large coolant hole

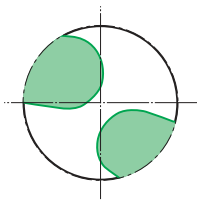
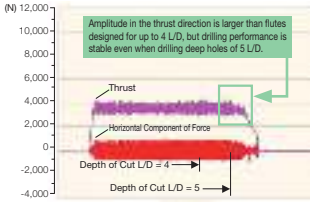
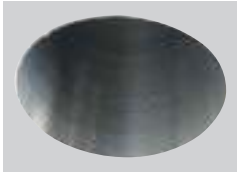
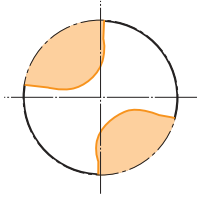
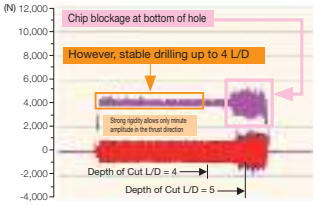
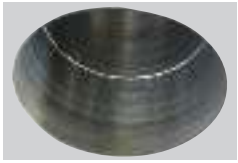


Coolant supply guide

Special Flute Shape for L/D=5



■ Performance

Tool Holder Features	Figure	Cutting Force	Machined Surface (Exit)
WDX 260D5S32 **Special Flute Shape for L/D=5** * Designed with emphasis on chip evacuation Expanded flute design improves chip evacuation for stable drilling performance even with holes up to 5 L/D.			Good machined surface down to end of hole 
Other Tool **Flute Shape for L/D=4** * Designed with emphasis on drill rigidity Flute design enables greater rigidity of the drill, achieving stable drilling of shallow holes up to 4 L/D.			Poor machined surface due to chip blockage at bottom of hole (near 5 L/D) 

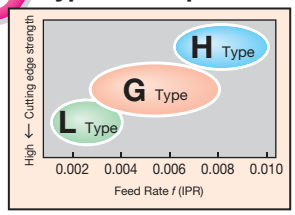
Part Material: 304 Stainless Steel, Insert: WDXT 073506-G
Cutting Conditions: v_C=492 SFM, f=0.002 IPR, H=5.118" (through hole), Wet

Insert Selection Guide —— The WDX insert series has a variety of options

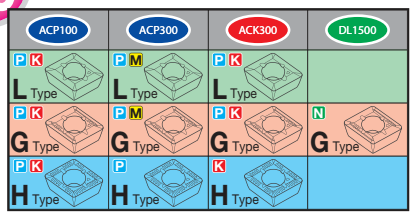
4 Grades

Work Material	ACP100	ACP300	ACK300	DL1500
P Steel (High-speed Milling)	○			
P Steel (General Milling)		○		
M Stainless Steel		○		
K Cast Iron (High-speed Milling)	○			
K Cast Iron (General Milling)			○	
N Non-ferrous Metal				○

3 Types of chipbreaker



10 Combinations!



2nd Recommendation (P)

P Steel — For low feed with chip control — L — ACP300

- For machining various types of Steel
- High speed and low feed is recommended if there are issues with chip control
- Decrease the feed rate if vibration occurs due to burnt chips

P Steel — General-purpose — G — ACP100

- For machining of general steel and alloy steel, when prone to significantly large flank wear

P Steel — For low feed with chip control — L — ACP100

- For low-feed conditions

P Steel — Strong Edge Type — H — ACP300

- For machining with interruptions (entry/through) due to diagonal entry, reduce the feed rate in the interrupted area (around f0.05)
- For insufficient cutting edge strength due to machining of hardened steel (heat treatment)

P Steel: Improved chip control (low carbon steel, etc.)

P Steel: Insufficient wear resistance

P Steel: Initial chipping measures (interruption, high hardness, etc.)

1st Recommendation (P M K N)

General-purpose — G

P Steel / M Stainless Steel: For general steel, alloy steel and stainless steel drilling — **ACP300**

K Cast Iron: For cast iron drilling — **ACK300**

N Non-Ferrous Metal: For non-ferrous metal drilling — **DL1500**

M Stainless Steel: Improved chip control

K Cast Iron: Insufficient wear resistance (high-speed machining)

K Cast Iron: Initial chipping measures (interruption, high feed, etc.)

2nd Recommendation (M K)

M Stainless Steel — For low feed with chip control — L — ACP300

- When it is not possible to increase the cutting speed or feed rate with the equipment being used and chip control is an issue

K Cast Iron — General-purpose — G — ACP100

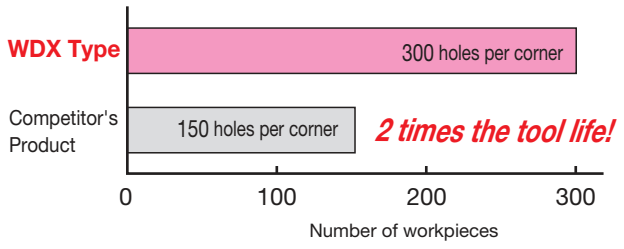
- When heavy flank wear occurs in cast iron drilling
- To limit wear in high-speed, low to medium feed conditions

K Cast Iron — Strong Edge Type — H — ACK300

- When interrupted cutting is performed due to diagonal entry, etc. as with steel drilling
- For insufficient cutting edge strength due to high-feed machining

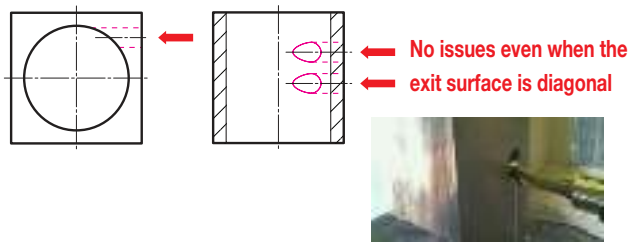
*ACP100 is the first recommendation for steel with a hardness of 200HB or greater, or for high-speed machining of steel.

■ Application Examples



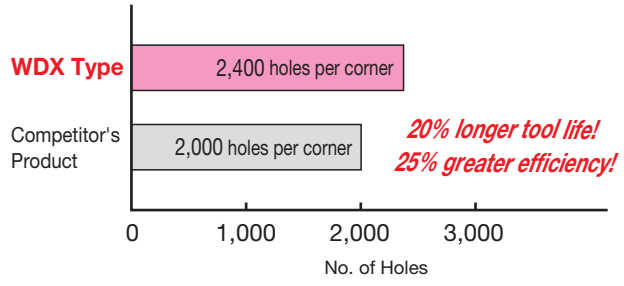
Part Material : Ductile Cast Iron Machine component
Tool : WDX 205D3S25
Insert : WDXT 063006-G (ACK300)
Cutting Conditions : v_c=400 SFM, f =0.006 IPR, H =1.3" , through, Wet

·Significant increase in tool life: twice that of conventional tools.
·Stable cutting with minimal cutting force.



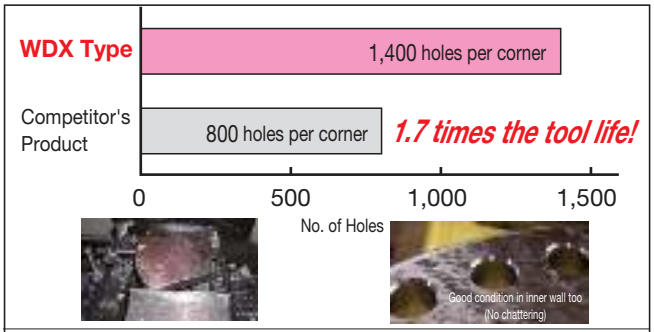
Part Material : Carbon Steel Plate
Tool : WDX 430D3S40, Insert : WDXT 125012-H (ACP300)
Cutting Conditions : v_c=446 SFM, f =0.0.006 IPR, H =2.36"+1.97" (semicircle area), through, Wet

·Enables stable drilling even in unstable cutting conditions (interrupted cutting at deepest point).
·Quieter cutting than conventional tools.



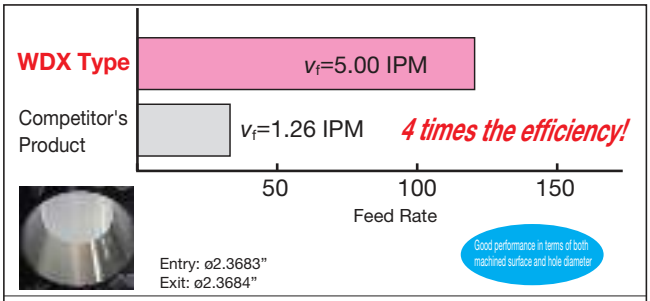
Part Material : 4140 Steel Machine component
Tool : WDX 200D3S25, Insert : WDXT 063006-G (ACP300)
Cutting Conditions : v_c=515 SFM, f =0.008" , H =0.748" , through, Wet
(competitor's product : v_c=515 SFM, f =0.006" , H =0.748" , through, Wet)

Good chip control even in high-efficiency conditions. Good stability with low vibration during cutting. 25% greater efficiency and 20% longer tool life.



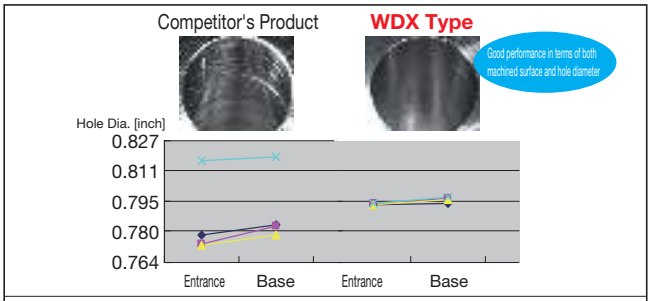
Part Material : Carbon Steel Plate
Tool : WDX 145D3S20, Insert : WDXT 042004-L (ACP300)
Cutting Conditions : v_c=673 SFM, f =0.0165" , H =0.591" , through, Wet

·Significant increase in tool life - 1.7 times longer.
·Good performance with no chatter on the machined surface, even with low-rigidity clamps.



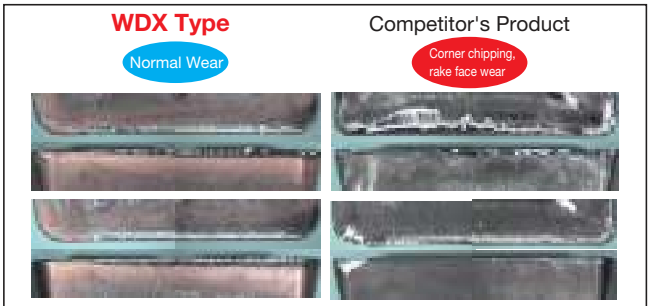
Part Material : Medium Carbo Steel Plate
Tool : WDX 600D3S40
Insert : WDXT 186012-G (ACP300)
Cutting Conditions : v_c=492 SFM, f =0.006 IPR, H =2.36" , through, Wet
(conventional tool :v_c=98 SFM, f =0.008 IPR, H =2.36" , through, Wet)

·Achieves steady machining even at large diameters!
·Achieves 4 times the efficiency of conventional tools!



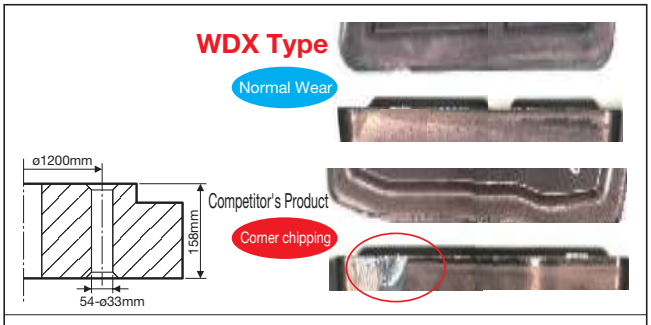
Part Material : Alloy Steel Machine component
Tool : WDX 200D5S25
Insert : WDXT 063006-G (ACP300)
Cutting Conditions : v_c=607 SFM, f =0.005 IPR, H =3.425" , through, Wet

·Good machined surface!
·Consistent bore diameter



Part Material : Carbon Steel Tractor links
Tool : WDX 205D5S25
Insert : WDXT 063006-G (ACP300)
Cutting Conditions : v_c=328 SFM, f =0.0043 IPR, H =2.36" , through, Wet

·Achieves steady machining even at L/D=5
·Reduces insert chipping and wear for stable tool life



Part Material : Alloy Steel Bearing for wind power generator
Tool : WDX330D5S40
Insert : WDXT094008-L (ACP300)
Cutting Conditions : v_c=479 SFM, f =0.004 IPR, H =0.622" , through, Wet

·Eliminates defects in workpieces caused by insert chipping!

WDX Type Inch 2D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 2D | Indexable

Fig 1

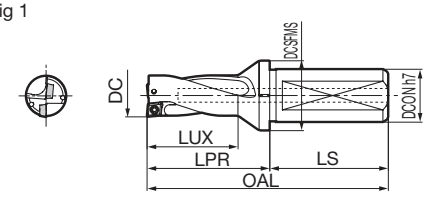


Fig 2

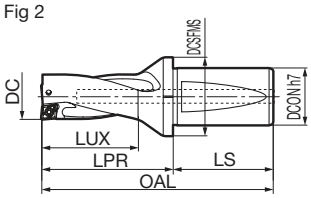
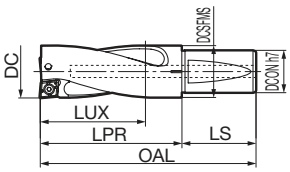


Fig 3



Holder Diameter ø0.5625" to 2.6250"

Dimensions (inch)

Dia. DC	Stock	Cat.No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Applicable Insert	Coolant Connection	Fig
0.5625	•	WDX0562D2S075	1.2420	1.8330	3.8330	2.0000	1.1020	0.7500	WDXT042004	1/8 NPT	1
0.5937	•	WDX0594D2S075	1.3060	1.8960	3.8960						1
0.6250	•	WDX0625D2S100	1.3680	1.9590	4.4590	2.5000	1.2600	1.0000	WDXT052504	1/4 NPT	1
0.6562	•	WDX0656D2S100	1.4300	2.0210	4.5210						1
0.6875	•	WDX0687D2S100	1.4920	2.0830	4.5830						1
0.7500	•	WDX0750D2S100	1.6180	2.2090	4.7090	2.5000	1.2990	1.0000	WDXT063006		1
0.7870	•	WDX0787D2S100	1.6920	2.2830	4.7830						1
0.8125	•	WDX0812D2S100	1.7430	2.3340	4.8340						1
0.8750	•	WDX0875D2S100	1.8680	2.4590	4.9590						1
0.9375	•	WDX0937D2S125	1.9930	2.7020	5.2020	2.5000	1.6140	1.2500	WDXT073506		2
1.0000	•	WDX1000D2S125	2.1180	2.8270	5.3270						2
1.0625	•	WDX1062D2S125	2.2430	2.9520	5.9520	3.0000	1.6140	1.2500			2
1.1250	•	WDX1125D2S125	2.3680	3.0770	6.0770						2
1.1875	•	WDX1187D2S125	2.5320	3.3590	6.3590	3.0000	1.9680	1.2500	WDXT094008		2
1.2500	•	WDX1250D2S125	2.6570	3.4840	6.4840						2
1.3125	•	WDX1312D2S150	2.7820	3.7270	6.7270	3.0000	2.1260	1.5000			2
1.3750	•	WDX1375D2S150	2.9070	3.8520	6.8520						2
1.4375	•	WDX1437D2S150	3.0320	3.9770	6.9770						2
1.5000	•	WDX1500D2S150	3.1570	4.1020	7.1020	3.0000	1.9490	1.5000	WDXT125012		2
1.5625	•	WDX1562D2S150	3.2810	4.2260	7.2260						2
1.6250	•	WDX1625D2S150	3.4070	4.3520	7.3520	3.0000	1.9490	1.5000			2
1.6875	•	WDX1687D2S150	3.5330	4.4780	7.4780						3
1.7500	•	WDX1750D2S150	3.6570	4.6020	7.6020						3
1.8125	•	WDX1812D2S150	3.7830	4.7280	7.7280	3.0000	1.9490	1.5000	WDXT156012		3
1.8750	•	WDX1875D2S150	3.9070	4.8520	7.8520						3
1.9375	•	WDX1937D2S150	4.0330	4.9780	7.9780						3
2.0000	•	WDX2000D2S150	4.1570	5.1020	8.1020						3
2.1250	•	WDX2125D2S150	4.4070	5.3520	8.3520						3
2.2500	•	WDX2250D2S150	4.8150	6.0750	9.0750	3.0000	2.1730	1.5000	WDXT186012		3
2.3750	•	WDX2375D2S150	5.0670	6.3270	9.3270		2.2950				3
2.5000	•	WDX2500D2S150	5.3150	6.5750	9.5750		2.4210				3
2.6250	•	WDX2625D2S150	5.5670	6.8270	9.8270		2.5470				3

Identification Code - Inch

WDX 05625 D2 S075

- WDX
- 05625: Dia. DC (ø0.5625")
- D2: Flute Length L/D (2D)
- S075: Shank Dia. DCON (ø0.750")

Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
WDX0562D2S075 to WDX0594D2S075	BFTX01604N	0.3	TRX06	-
WDX0625D2S100 to WDX0687D2S100	BFTX0204N	0.5	TRX06	-
WDX0750D2S100 to WDX0875D2S100	BFTY02206	1.0	-	TRD07
WDX0937D2S125 to WDX1125D2S125	BFTX02506N	1.5	-	TRD08
WDX1187D2S125 to WDX1437D2S150	BFTX03584	3.5	-	TRD15
WDX1500D2S150 to WDX1750D2S150	BFTX0511N	5.0	-	TRD20
WDX1812D2S150 to WDX2625D2S150	BFTX0615N	5.0	-	TRD25

Radial Offset Amount J122

●: USA Stocked Item

N·m Recommended Tightening Torque (N·m)

WDX Type Metric 2D (Internal Coolant Supply)

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 2D | Indexable

Fig 1

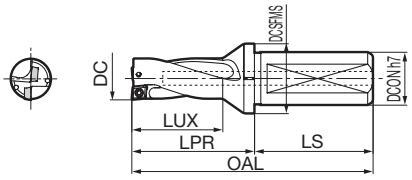


Fig 2

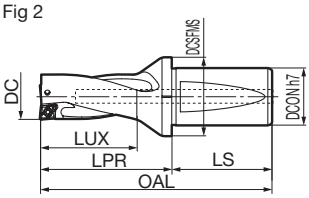
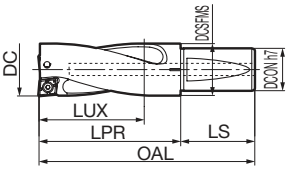


Fig 3



Holder Diameter ø13.0 to 45.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert	Fig
13.0	★	**WDX130D2S20**	29	44	88				0.35		1
13.5	★	**WDX135D2S20**	30	45	89				0.30	WDXT 042004	1
14.0	★	**WDX140D2S20**	31	46	90	44	28.0	20	0.25		1
14.5	★	**WDX145D2S20**	32	47	91				0.20		1
15.0	★	**WDX150D2S20**	33	48	92				0.15		1
15.5	★	**WDX155D2S20**	34	49	93				0.40		1
16.0	★	**WDX160D2S20**	35	50	94	44	30.0	20			1
16.5	★	**WDX165D2S20**	36	51	95				0.35	WDXT 052504	1
17.0	★	**WDX170D2S20**	37	52	96				0.30		1
17.5	★	**WDX175D2S25**	38	53	109	56	32.0	25	0.25		1
18.0	★	**WDX180D2S25**	39	54	110				0.20		1
18.5	★	**WDX185D2S25**	40	55	111				0.50		1
19.0	★	**WDX190D2S25**	41	56	112				0.45		1
19.5	★	**WDX195D2S25**	42	57	113				0.40		1
20.0	★	**WDX200D2S25**	43	58	114				0.30	WDXT 063006	1
20.5	★	**WDX205D2S25**	44	59	115	56	33.0	25			1
21.0	★	**WDX210D2S25**	45	60	116				0.20		1
21.5	★	**WDX215D2S25**	46	61	117				0.15		1
22.0	★	**WDX220D2S25**	47	62	118				0.10		1
22.5	★	**WDX225D2S25**	48	63	119				0.05		1
23.0	★	**WDX230D2S25**	49	67	123				0.70		1
23.5	★	**WDX235D2S25**	50	68	124						1
24.0	★	**WDX240D2S25**	51	69	125	56	37.0	25	0.60		1
24.5	★	**WDX245D2S25**	52	70	126						1
25.0	★	**WDX250D2S25**	53	71	127				0.50		1
25.5	★	**WDX255D2S32**	54	74	134				0.45	WDXT 073506	2
26.0	★	**WDX260D2S32**	55	75	135				0.40		2
26.5	★	**WDX265D2S32**	56	76	136				0.35		2
27.0	★	**WDX270D2S32**	57	77	137	60	41.0	32	0.25		2
27.5	★	**WDX275D2S32**	58	78	138				0.20		2
28.0	★	**WDX280D2S32**	59	79	139				0.15		2
28.5	★	**WDX285D2S32**	60	80	140				0.10		2
29.0	★	**WDX290D2S32**	62	83	143		50.0		1.00		2
29.5	★	**WDX295D2S32**	63	84	144				0.95		2
30.0*	★	**WDX300D2S32**	64	88	148	60		32	0.90		2
31.0*	★	**WDX310D2S32**	66	90	150		54.0		0.80		2
32.0*	★	**WDX320D2S32**	68	92	152				0.70		2
30.0*	★	**WDX300D2S40**	64	88	158				0.90	WDXT 094008	2
31.0*	★	**WDX310D2S40**	66	90	160				0.80		2
32.0*	★	**WDX320D2S40**	68	92	162				0.70		2
33.0	★	**WDX330D2S40**	70	94	164	70	54.0	40	0.55		2
34.0	★	**WDX340D2S40**	72	96	166				0.45		2
35.0	★	**WDX350D2S40**	74	98	168				0.35		2
36.0	★	**WDX360D2S40**	76	100	170				0.20		2
37.0	★	**WDX370D2S40**	79	109	179				1.00		2
38.0	★	**WDX380D2S40**	81	111	181						2
39.0	★	**WDX390D2S40**	83	113	183				0.90		2
40.0	★	**WDX400D2S40**	85	115	185				0.80		2
41.0	★	**WDX410D2S40**	87	117	187	70	49.5	40	0.70	WDXT 125012	2
42.0	★	**WDX420D2S40**	89	119	189				0.60		2
43.0	★	**WDX430D2S40**	91	121	191				0.50		2
44.0	★	**WDX440D2S40**	93	123	193						2
45.0	★	**WDX450D2S40**	95	125	195				0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount J122

Holder Diameter ø46.0 to 68.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert	Fig
46.0	★	**WDX460D2S40**	97	127	197				1.50		2
47.0	★	**WDX470D2S40**	99	129	199				1.40		2
48.0	★	**WDX480D2S40**	101	131	201		49.5		1.30		2
49.0	★	**WDX490D2S40**	103	133	203				1.20		2
50.0	★	**WDX500D2S40**	105	135	205	70		40	1.10	WDXT 156012	2
51.0	★	**WDX510D2S40**	107	137	207				1.00		3
52.0	★	**WDX520D2S40**	109	139	209		50.5		0.90		3
53.0	★	**WDX530D2S40**	111	141	211		51.5		0.80		3
54.0	★	**WDX540D2S40**	113	143	213		52.5		0.60		3
55.0	★	**WDX550D2S40**	115	145	215		53.5		0.50		3
56.0	★	**WDX560D2S40**	120	152	222		54.0		2.00		3
57.0	★	**WDX570D2S40**	122	154	224		55.0		1.80		3
58.0	★	**WDX580D2S40**	124	156	226		56.0		1.70		3
59.0	★	**WDX590D2S40**	126	158	228		57.0		1.60		3
60.0	★	**WDX600D2S40**	128	160	230		58.0		1.50		3
61.0	★	**WDX610D2S40**	130	162	232		59.0		1.40	WDXT 186012	3
62.0	★	**WDX620D2S40**	132	164	234	70	60.0	40	1.30		3
63.0	★	**WDX630D2S40**	134	166	236		61.0		1.20		3
64.0	★	**WDX640D2S40**	136	168	238		62.0		1.00		3
65.0	★	**WDX650D2S40**	138	170	240		63.0		0.90		3
66.0	★	**WDX660D2S40**	140	172	242		64.0		0.70		3
67.0	★	**WDX670D2S40**	142	174	244		65.0		0.60		3
68.0	★	**WDX680D2S40**	144	176	246		66.0		0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
WDX130D2S20 to WDX150D2S20	BFTX01604N	0.3	TRX06	-
WDX155D2S20 to WDX180D2S25	BFTX0204N	0.5	TRX06	-
WDX185D2S25 to WDX225D2S25	BFTY02206	1.0	-	TRD07
WDX230D2S25 to WDX285D2S32	BFTX02506N	1.5	-	TRD08
WDX290D2S32 to WDX360D2S40	BFTX03584	3.5	-	TRD15
WDX370D2S40 to WDX450D2S40	BFTX0511N	5.0	-	TRD20
WDX460D2S40 to WDX680D2S40	BFTX0615N	5.0	-	TRD25

Identification Code - Metric

WDX 200 D2 S25

- WDX: Dia. DC (ø20.0)
- 200: Flute Length L/D (2D)
- D2: Shank Dia. DCON (ø25.0)
- S25

★: Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

WDX Type Inserts 2D (Internal Coolant Supply)

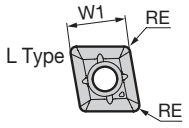
Insert

Dimensions (inch/ *mm*)

Grade		Coated Carbide			
Process	High-speed/Light	PK			N
	General-purpose		PM		
	Roughing		PM	K	

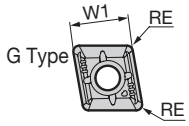
Cat. No.	ACP100	ACP300	ACK300	DL1500	Width W1	Thickness S	Nose Radius RE	Applicable Holder (Inch / *Metric*)	Fig
WDXT042004-L	●	●	●		*0.1654 (4.2)*	*0.0788 (2.0)*	*0.0157 (0.4)*	WDX0562D2S075 to WDX0594D2S075 *WDX130D2S20 to WDX150D2S20*	1
WDXT042004-G	●	●	●	●					2
WDXT042004-H	●	●	●						3
WDXT052504-L	●	●	●		*0.1969 (5.0)*	*0.0984 (2.5)*	*0.0157 (0.4)*	WDX0625D2S100 to WDX0687D2S100 *WDX155D2S20 to WDX180D2S25*	1
WDXT052504-G	●	●	●	●					2
WDXT052504-H	●	●	●						3
WDXT063006-L	●	●	●		*0.2362 (6.0)*	*0.1181 (3.0)*	*0.0236 (0.6)*	WDX0750D2S100 to WDX0875D2S100 *WDX185D2S25 to WDX225D2S25*	1
WDXT063006-G	●	●	●	●					2
WDXT063006-H	●	●	●						3
WDXT073506-L	●	●	●		*0.2953 (7.5)*	*0.1378 (3.5)*	*0.0236 (0.6)*	WDX0937D2S125 to WDX1125D2S125 *WDX230D2S25 to WDX285D2S32*	1
WDXT073506-G	●	●	●	●					2
WDXT073506-H	●	●	●						3
WDXT094008-L	●	●	●		*0.3780 (9.6)*	*0.1575 (4.0)*	*0.0315 (0.8)*	WDX1187D2S125 to WDX1437D2S150 *WDX290D2S32 to WDX360D2S40*	1
WDXT094008-G	●	●	●	●					2
WDXT094008-H	●	●	●						3
WDXT125012-L	●	●	●		*0.4882 (12.4)*	*0.1969 (5.0)*	*0.0472 (1.2)*	WDX1500D2S150 to WDX1750D2S150 *WDX370D2S40 to WDX450D2S40*	1
WDXT125012-G	●	●	●	●					2
WDXT125012-H	●	●	●						3
WDXT156012-L	●	●	●		*0.5984 (15.2)*	*0.2362 (6.0)*	*0.0472 (1.2)*	WDX1812D2S150 to WDX2125D2S150 *WDX460D2S40 to WDX550D2S40*	1
WDXT156012-G	●	●	●	●					2
WDXT156012-H	●	●	●						3
WDXT186012-L	●	●	●		*0.7087 (18.0)*	*0.2362 (6.0)*	*0.0472 (1.2)*	WDX2250D2S150 to WDX2625D2S150 *WDX560D2S40 to WDX680D2S40*	1
WDXT186012-G	●	●	●						2
WDXT186012-H	●	●	●						3

Fig 1



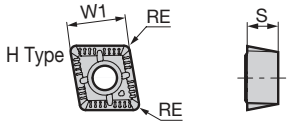
L Type: For low feed with chip control

Fig 2



G Type: General-purpose

Fig 3



H Type: Strong edge

●: USA Stocked Item

Identification Code

WDXT 06 30 06 -G

- WDXT
- 06: Width across Flats (6.0)
- 30: Thickness x 10 (3.0)
- 06: Nose Radius x 10 (0.6)
- -G: Breaker Type

Recommended Cutting Conditions (for 2D)

		Work Material	Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (SFM)	*f* (feed rate) (IPR) (Min. - **Optimum** - Max.) ø0.562 - ø1.00	ø1.062 - ø1.50	ø1.56 - ø2.125	ø2.25 - ø2.625
2D	P	Steel, Carbon Steel SS400	<190	G	ACP300	450 - 780	.002 - .006	.003 - .008	.005 - .010	.006 - .012
		S15C		L	ACP300	450 - 750	.002 - .004	.002 - .005	.003 - .006	N/A
		S45C	190 ~ 250	G	ACP300	400 - 700	.003 - .009	.004 - .010	.005 - .010	.006 - .012
		S45C Hardened		G	ACP100	400 - 700	.002 - .004	.002 - .005	.003 - .006	N/A
		S75C	250 ~ 350	G	ACP100	350 - 550	.003 - .007	.003 - .008	.004 - .009	.004 - .010
		S75C Hardened		G	ACP100	350 - 525	.002 - .004	.002 - .004	.003 - .005	N/A
		Low-alloy Steel SCM,SNCM	180 ~ 275	L	ACP300	350 - 700	.002 - .007	.003 - .008	.005 - .010	.006 - .010
		SCM, SNCM Hardened		G	ACP100	350 - 650	.002 - .004	.002 - .005	.003 - .006	N/A
		SCM, SNCM Hardened	275 ~ 350	G	ACP100	300 - 500	.002 - .006	.003 - .007	.004 - .008	.006 - .009
		SCM, SNCM Hardened		G	ACP100	300 - 500	.002 - .003	.002 - .004	.003 - .005	N/A
		High-alloy Steel SKD,SKT,SKH	200 ~ 325	G	ACP100	350 - 650	.003 - .006	.003 - .008	.006 - .010	.006 - .012
		SKD, SKT, SKH (Sintered)		G	ACP100	300 - 450	.002 - .004	.003 - .005	.003- .006	N/A
	M	Stainless Steel SUS304, SUS316 (Austenitic)	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.005 - .010	.006 - .012
		SUS304, SUS316 (Austenitic)	280		ACP300	325 - 500	.002 - .006	.003 - .006	.004 - .008	.006 - .010
		SUS403/Others (Martensitic/Ferritic	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.004 - .010	.006 - .012
		SUS403/Others (Martensitic (hardened))	240	G	ACP300	325 - 600	.002 - .006	.003 - .006	.004 - .008	.006 - .010
	K	Cast Iron		H	ACK300	400 - 650	.004 - .008	.004 - .012	.006 - .014	.006 - .017
		Ductile Cast Iron		H	ACK300	300 - 500	.004 - .008	.004 - .012	.006 - .014	.006 - .017
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	200 ~ 375	G	ACP300	80 - 250	.002 - .005	.003 - .007	.003 - .008	.003 - .010
	N	Aluminum Alloy		G	DL1500	650 - 1200	.003 - .006	.003 - .007	.004 - .008	.005 - .010
		Copper Alloy		G	DL1500	600 - 900	.003 - .006	.003 - .007	.004 - .008	.005 - .010

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In this case, it is recommended to set the cutting speed (V_c) to 130% and the feed rate (*f*) to 75% of the figures in the table above.

WDX Type Inch 3D (Internal Coolant Supply)

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 3D | Indexable

Fig 1

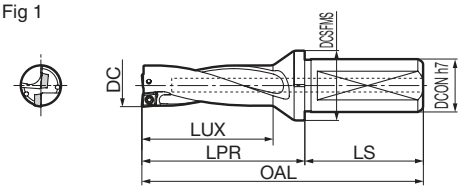


Fig 2

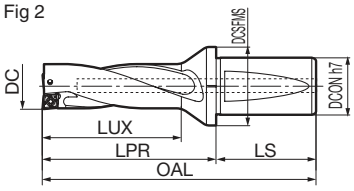
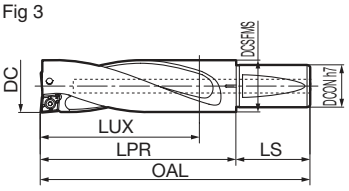


Fig 3



Holder Diameter ø0.5625" to 2.6250"

Dimensions (inch)

Dia. DC	Stock	Cat.No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Applicable Insert	Coolant Connection	Fig
0.5625	•	WDX0562D3S075	1.8040	2.3950	4.3950	2.0000	1.1020	0.7500	WDXT042004	1/8 NPT	1
0.5937	•	WDX0594D3S075	1.9000	2.4910	4.4910						1
0.6250	•	WDX0625D3S100	1.9930	2.5840	5.0840	2.5000	1.2600	1.0000	WDXT052504	1/4 NPT	1
0.6562	•	WDX0656D3S100	2.0860	2.6770	5.1770						1
0.6875	•	WDX0687D3S100	2.1790	2.7700	5.2700						1
0.7500	•	WDX0750D3S100	2.3680	2.9590	5.4590	2.5000	1.2990	1.0000	WDXT063006		1
0.7870	•	WDX0787D3S100	2.4790	3.0700	5.5700						1
0.8125	•	WDX0812D3S100	2.5560	3.1460	5.6460						1
0.8750	•	WDX0875D3S100	2.7430	3.3340	5.8340						2
0.9375	•	WDX0937D3S125	2.9310	3.6390	6.1390	2.5000	1.6140	1.2500	WDXT073506		2
1.0000	•	WDX1000D3S125	3.1180	3.8270	6.3270						2
1.0625	•	WDX1062D3S125	3.3060	4.0140	7.0140	3.0000	1.6140	1.2500			2
1.1250	•	WDX1125D3S125	3.4930	4.2020	7.2020						2
1.1875	•	WDX1187D3S125	3.7200	4.5470	7.5470	3.0000	1.9680	1.2500	WDXT094008		2
1.2500	•	WDX1250D3S125	3.9070	4.7340	7.7340						2
1.3125	•	WDX1312D3S150	4.0950	5.0400	8.0400	3.0000	2.1260	1.5000			2
1.3750	•	WDX1375D3S150	4.2820	5.2270	8.2270						2
1.4375	•	WDX1437D3S150	4.4700	5.4150	8.4150						2
1.5000	•	WDX1500D3S150	4.6970	5.8780	8.8780	3.0000	1.9490	1.5000	WDXT125012		2
1.5625	•	WDX1562D3S150	4.8830	6.0640	9.0640						2
1.6250	•	WDX1625D3S150	5.0720	6.2530	9.2530	3.0000	1.9490	1.5000			3
1.6875	•	WDX1687D3S150	5.2610	6.4420	9.4420						3
1.7500	•	WDX1750D3S150	5.4470	6.6280	9.6280						3
1.8125	•	WDX1812D3S150	5.6360	6.8170	9.8170	3.0000	1.9490	1.5000	WDXT156012		3
1.8750	•	WDX1875D3S150	5.8820	7.0030	10.0030						3
1.9375	•	WDX1937D3S150	6.0110	7.1920	10.1920						3
2.0000	•	WDX2000D3S150	6.1970	7.3780	10.3780						3
2.1250	•	WDX2125D3S150	6.5720	7.7530	10.7530						3
2.2500	•	WDX2250D3S150	7.0670	8.3270	11.3270	3.0000	2.1730	1.5000	WDXT186012		3
2.3750	•	WDX2375D3S150	7.4410	8.7010	11.7010		2.2950				3
2.5000	•	WDX2500D3S150	7.8150	9.0750	12.0750		2.4210				3
2.6250	•	WDX2625D3S150	8.1890	9.4490	12.4490		2.5470				3

Identification Code - Inch

WDX 05625 D3 S075

- WDX
- 05625: Dia. DC (ø0.5625")
- D3: Flute Length L/D (3D)
- S075: Shank Dia. DCON (ø0.750")

Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
WDX0562D3S075 to WDX0594D3S075	BFTX01604N	0.3	TRX06	-
WDX0625D3S100 to WDX0687D3S100	BFTX0204N	0.5	TRX06	-
WDX0750D3S100 to WDX0875D3S100	BFTY02206	1.0	-	TRD07
WDX0937D3S125 to WDX1125D3S125	BFTX02506N	1.5	-	TRD08
WDX1187D3S125 to WDX1437D3S150	BFTX03584	3.5	-	TRD15
WDX1500D3S150 to WDX1750D3S150	BFTX0511N	5.0	-	TRD20
WDX1812D3S150 to WDX2625D3S150	BFTX0615N	5.0	-	TRD25

Radial Offset Amount J122

●: USA Stocked Item

N·m Recommended Tightening Torque (N·m)

WDX Type Metric 3D (Internal Coolant Supply)

Fig 1

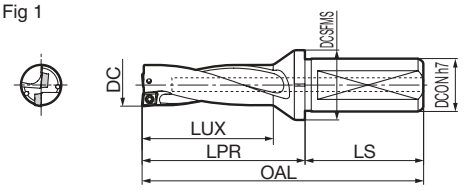


Fig 2

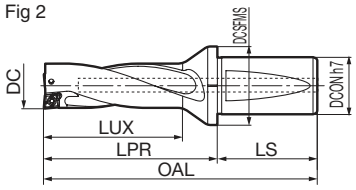
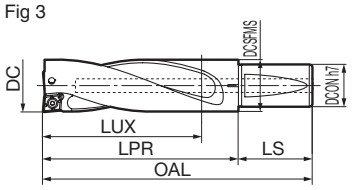


Fig 3



Holder Diameter ø13.0 to 45.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat.No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert	Fig
13.0	★	**WDX130D3S20**	42.0	57.0	101.0				0.35		1
13.5	★	**WDX135D3S20**	43.5	58.5	102.5				0.30		1
14.0	★	**WDX140D3S20**	45.0	60.0	104.0	44	28.0	20	0.25	WDXT 042004	1
14.5	★	**WDX145D3S20**	46.5	61.5	105.5				0.20		1
15.0	★	**WDX150D3S20**	48.0	63.0	107.0				0.15		1
15.5	★	**WDX155D3S20**	49.5	64.5	108.5				0.40		1
16.0	★	**WDX160D3S20**	51.0	66.0	110.0	44	30.0	20			1
16.5	★	**WDX165D3S20**	52.5	67.5	111.5				0.35	WDXT 052504	1
17.0	★	**WDX170D3S20**	54.0	69.0	113.0				0.30		1
17.5	★	**WDX175D3S25**	55.5	70.5	126.5	56	32.0	25	0.25		1
18.0	★	**WDX180D3S25**	57.0	72.0	128.0				0.20		1
18.5	★	**WDX185D3S25**	58.5	73.5	129.5				0.50		1
19.0	★	**WDX190D3S25**	60.0	75.0	131.0				0.45		1
19.5	★	**WDX195D3S25**	61.5	76.5	132.5				0.40		1
20.0	★	**WDX200D3S25**	63.0	78.0	134.0				0.30	WDXT 063006	1
20.5	★	**WDX205D3S25**	64.5	79.5	135.5	56	33.0	25			1
21.0	★	**WDX210D3S25**	66.0	81.0	137.0				0.20		1
21.5	★	**WDX215D3S25**	67.5	82.5	138.5				0.15		1
22.0	★	**WDX220D3S25**	69.0	84.0	140.0				0.10		1
22.5	★	**WDX225D3S25**	70.5	85.5	141.5				0.05		1
23.0	★	**WDX230D3S25**	72.0	90.0	146.0				0.70		1
23.5	★	**WDX235D3S25**	73.5	91.5	147.5						1
24.0	★	**WDX240D3S25**	75.0	93.0	149.0	56	37.0	25	0.60		1
24.5	★	**WDX245D3S25**	76.5	94.5	150.5				0.50		1
25.0	★	**WDX250D3S25**	78.0	96.0	152.0						1
25.5	★	**WDX255D3S32**	79.5	99.5	159.5				0.45	WDXT 073506	2
26.0	★	**WDX260D3S32**	81.0	101.0	161.0				0.40		2
26.5	★	**WDX265D3S32**	82.5	102.5	162.5				0.35		2
27.0	★	**WDX270D3S32**	84.0	104.0	164.0	60	41.0	32	0.25		2
27.5	★	**WDX275D3S32**	85.5	105.5	165.5				0.20		2
28.0	★	**WDX280D3S32**	87.0	107.0	167.0				0.15		2
28.5	★	**WDX285D3S32**	88.5	108.5	168.5				0.10		2
29.0	★	**WDX290D3S32**	91.0	112.0	172.0		50.0		1.00		2
29.5	★	**WDX295D3S32**	92.5	113.5	173.5				0.95		2
30.0*	★	**WDX300D3S32**	94.0	118.0	178.0	60		32	0.90		2
31.0*	★	**WDX310D3S32**	97.0	121.0	181.0		54.0		0.80		2
32.0*	★	**WDX320D3S32**	100.0	124.0	184.0				0.70		2
30.0*	★	**WDX300D3S40**	94.0	118.0	188.0				0.90	WDXT 094008	2
31.0*	★	**WDX310D3S40**	97.0	121.0	191.0				0.80		2
32.0*	★	**WDX320D3S40**	100.0	124.0	194.0				0.70		2
33.0	★	**WDX330D3S40**	103.0	127.0	197.0	70	54.0	40	0.55		2
34.0	★	**WDX340D3S40**	106.0	130.0	200.0				0.45		2
35.0	★	**WDX350D3S40**	109.0	133.0	203.0				0.35		2
36.0	★	**WDX360D3S40**	112.0	136.0	206.0				0.20		2
37.0	★	**WDX370D3S40**	116.0	146.0	216.0				1.00		2
38.0	★	**WDX380D3S40**	119.0	149.0	219.0						2
39.0	★	**WDX390D3S40**	122.0	152.0	222.0				0.90		2
40.0	★	**WDX400D3S40**	125.0	155.0	225.0				0.80		2
41.0	★	**WDX410D3S40**	128.0	158.0	228.0	70	49.5	40	0.70	WDXT 125012	2
42.0	★	**WDX420D3S40**	131.0	161.0	231.0				0.60		2
43.0	★	**WDX430D3S40**	134.0	164.0	234.0				0.50		2
44.0	★	**WDX440D3S40**	137.0	167.0	237.0						2
45.0	★	**WDX450D3S40**	140.0	170.0	240.0				0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount ☞ J122

Holder Diameter ø46.0 to 68.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert	Fig
46.0	★	**WDX460D3S40**	143.0	173.0	243.0				1.50		2
47.0	★	**WDX470D3S40**	146.0	176.0	246.0				1.40		2
48.0	★	**WDX480D3S40**	149.0	179.0	249.0				1.30		2
49.0	★	**WDX490D3S40**	152.0	182.0	252.0		49.5		1.20		2
50.0	★	**WDX500D3S40**	155.0	185.0	255.0				1.10	WDXT 156012	2
51.0	★	**WDX510D3S40**	158.0	188.0	258.0	70		40	1.00		3
52.0	★	**WDX520D3S40**	161.0	191.0	261.0		50.5		0.90		3
53.0	★	**WDX530D3S40**	164.0	194.0	264.0				0.80		3
54.0	★	**WDX540D3S40**	167.0	197.0	267.0		52.5		0.60		3
55.0	★	**WDX550D3S40**	170.0	200.0	270.0		53.5		0.50		3
56.0	★	**WDX560D3S40**	176.0	208.0	278.0		54.0		2.00		3
57.0	★	**WDX570D3S40**	179.0	211.0	281.0		55.0		1.80		3
58.0	★	**WDX580D3S40**	182.0	214.0	284.0		56.0		1.70		3
59.0	★	**WDX590D3S40**	185.0	217.0	287.0		57.0		1.60		3
60.0	★	**WDX600D3S40**	188.0	220.0	290.0		58.0		1.50		3
61.0	★	**WDX610D3S40**	191.0	223.0	293.0		59.0		1.40	WDXT 186012	3
62.0	★	**WDX620D3S40**	194.0	226.0	296.0	70	60.0	40	1.30		3
63.0	★	**WDX630D3S40**	197.0	229.0	299.0		61.0		1.20		3
64.0	★	**WDX640D3S40**	200.0	232.0	302.0		62.0		1.00		3
65.0	★	**WDX650D3S40**	203.0	235.0	305.0		63.0		0.90		3
66.0	★	**WDX660D3S40**	206.0	238.0	308.0		64.0		0.70		3
67.0	★	**WDX670D3S40**	209.0	241.0	311.0		65.0		0.60		3
68.0	★	**WDX680D3S40**	212.0	244.0	314.0		66.0		0.50		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
WDX130D3S20 to WDX150D3S20	BFTX01604N	0.3	TRX06	-
WDX155D3S20 to WDX180D3S25	BFTX0204N	0.5	TRX06	-
WDX185D3S25 to WDX225D3S25	BFTY02206	1.0	-	TRD07
WDX230D3S25 to WDX285D3S32	BFTX02506N	1.5	-	TRD08
WDX290D3S32 to WDX360D3S40	BFTX03584	3.5	-	TRD15
WDX370D3S40 to WDX450D3S40	BFTX0511N	5.0	-	TRD20
WDX460D3S40 to WDX680D3S40	BFTX0615N	5.0	-	TRD25

Identification Code - Metric

WDX 200 D3 S25

- WDX: Dia. DC (ø20.0)
- D3: Flute Length L/D (3D)
- S25: Shank Dia. DCON (ø25.0)

★: Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

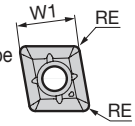
Insert

Dimensions (inch/ *mm*)

Grade		Coated Carbide			
Process	High-speed/Light	PK			N
	General-purpose		PM		
	Roughing		PM	K	

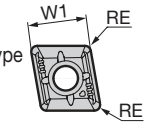
Cat. No.	ACP100	ACP300	ACK300	DL1500	Width W1	Thickness S	Nose Radius RE	Applicable Holder (Inch / *Metric*)	Fig
WDXT042004-L	●	●	●		*0.1654 (4.2)*	*0.0788 (2.0)*	*0.0157 (0.4)*	WDX0562D3S075 to WDX0594D3S075 *WDX130D3S20 to WDX150D3S20*	1
WDXT042004-G	●	●	●	●					2
WDXT042004-H	●	●	●						3
WDXT052504-L	●	●	●		*0.1969 (5.0)*	*0.0984 (2.5)*	*0.0157 (0.4)*	WDX0625D3S100 to WDX0687D3S100 *WDX155D3S20 to WDX180D3S25*	1
WDXT052504-G	●	●	●	●					2
WDXT052504-H	●	●	●						3
WDXT063006-L	●	●	●		*0.2362 (6.0)*	*0.1181 (3.0)*	*0.0236 (0.6)*	WDX0750D3S100 to WDX0875D3S100 *WDX185D3S25 to WDX225D3S25*	1
WDXT063006-G	●	●	●	●					2
WDXT063006-H	●	●	●						3
WDXT073506-L	●	●	●		*0.2953 (7.5)*	*0.1378 (3.5)*	*0.0236 (0.6)*	WDX0937D3S125 to WDX1125D3S125 *WDX230D3S25 to WDX285D3S32*	1
WDXT073506-G	●	●	●	●					2
WDXT073506-H	●	●	●						3
WDXT094008-L	●	●	●		*0.3780 (9.6)*	*0.1575 (4.0)*	*0.0315 (0.8)*	WDX1187D3S125 to WDX1437D3S150 *WDX290D3S32 to WDX360D3S40*	1
WDXT094008-G	●	●	●	●					2
WDXT094008-H	●	●	●						3
WDXT125012-L	●	●	●		*0.4882 (12.4)*	*0.1969 (5.0)*	*0.0472 (1.2)*	WDX1500D3S150 to WDX1750D3S150 *WDX370D3S40 to WDX450D3S40*	1
WDXT125012-G	●	●	●	●					2
WDXT125012-H	●	●	●						3
WDXT156012-L	●	●	●		*0.5984 (15.2)*	*0.2362 (6.0)*	*0.0472 (1.2)*	WDX1812D3S150 to WDX2125D3S150 *WDX460D3S40 to WDX550D3S40*	1
WDXT156012-G	●	●	●	●					2
WDXT156012-H	●	●	●						3
WDXT186012-L	●	●	●		*0.7087 (18.0)*	*0.2362 (6.0)*	*0.0472 (1.2)*	WDX2250D3S150 to WDX2625D3S150 *WDX560D3S40 to WDX680D3S40*	1
WDXT186012-G	●	●	●						2
WDXT186012-H	●	●	●						3

Fig 1



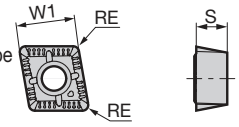
L Type: For low feed with chip control

Fig 2



G Type: General-purpose

Fig 3



H Type: Strong edge

●: USA Stocked Item

Identification Code

WDXT 06 30 06 -G

- WDXT: Width across Flats (6.0)
- 06: Thickness x 10 (3.0)
- 30: Nose Radius x 10 (0.6)
- 06: Breaker Type
- -G

Recommended Cutting Conditions (for 3D)

		Work Material	Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (SFM)	*f* (feed rate) (IPR) (Min. - **Optimum** - Max.) ø0.562 - ø1.00	ø1.062 - ø1.50	ø1.56 - ø2.125	ø2.25 - ø2.625
3D	P	Steel, Carbon Steel SS400	<190	G	ACP300	450 - 780	.002 - .006	.003 - .008	.005 - .010	.006 - .012
		S15C		L	ACP300	450 - 750	.002 - .004	.002 - .005	.003 - .006	N/A
		S45C	190 ~ 250	G	ACP300	400 - 700	.003 - .009	.004 - .010	.005 - .010	.006 - .012
		S45C Hardened		G	ACP100	400 - 700	.002 - .004	.002 - .005	.003 - .006	N/A
		S75C	250 ~ 350	G	ACP100	350 - 550	.003 - .007	.003 - .008	.004 - .009	.004 - .010
		S75C Hardened		G	ACP100	350 - 525	.002 - .004	.002 - .004	.003 - .005	N/A
		Low-alloy Steel SCM,SNCM	180 ~ 275	L	ACP300	350 - 700	.002 - .007	.003 - .008	.005 - .010	.006 - .010
		SCM, SNCM Hardened		G	ACP100	350 - 650	.002 - .004	.002 - .005	.003 - .006	N/A
		SCM, SNCM Hardened	275 ~ 350	G	ACP100	300 - 500	.002 - .006	.003 - .007	.004 - .008	.006 - .009
		SCM, SNCM Hardened		G	ACP100	300 - 500	.002 - .003	.002 - .004	.003 - .005	N/A
		High-alloy Steel SKD,SKT,SKH	200 ~ 325	G	ACP100	350 - 650	.003 - .006	.003 - .008	.006 - .010	.006 - .012
		SKD, SKT, SKH (Sintered)		G	ACP100	300 - 450	.002 - .004	.003 - .005	.003- .006	N/A
	M	Stainless Steel SUS304, SUS316 (Austenitic)	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.005 - .010	.006 - .012
		SUS304, SUS316 (Austenitic)	280		ACP300	325 - 500	.002 - .006	.003 - .006	.004 - .008	.006 - .010
		SUS403/Others (Martensitic/Ferritic	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.004 - .010	.006 - .012
		SUS403/Others (Martensitic (hardened))	240	G	ACP300	325 - 600	.002 - .006	.003 - .006	.004 - .008	.006 - .010
	K	Cast Iron		H	ACK300	400 - 650	.004 - .008	.004 - .012	.006 - .014	.006 - .017
		Ductile Cast Iron		H	ACK300	300 - 500	.004 - .008	.004 - .012	.006 - .014	.006 - .017
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	200 ~ 375	G	ACP300	80 - 250	.002 - .005	.003 - .007	.003 - .008	.003 - .010
	N	Aluminum Alloy		G	DL1500	650 - 1200	.003 - .006	.003 - .007	.004 - .008	.005 - .010
		Copper Alloy		G	DL1500	600 - 900	.003 - .006	.003 - .007	.004 - .008	.005 - .010

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In this case, it is recommended to set the cutting speed (V_c) to 130% and the feed rate (*f*) to 75% of the figures in the table above.

WDX Type Inch 4D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 4D | Indexable

Fig 1

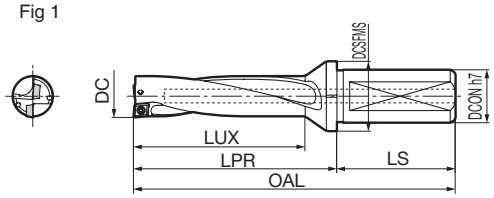


Fig 2

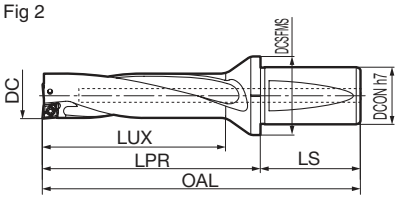
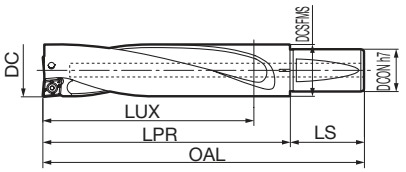


Fig 3



Holder Diameter ø0.5625" to 2.5000"

Dimensions (inch)

Dia. DC	Stock	Cat.No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Applicable Insert	Coolant Connection	Fig
0.5625	•	WDX0562D4S075	2.3660	2.9570	4.9570	2.0000	1.1020	0.7500	WDXT042004	1/8 NPT	1
0.5937	•	WDX0594D4S075	2.4940	3.0850	5.0850						1
0.6250	•	WDX0625D4S100	2.6180	3.2090	5.7090	2.5000	1.2600	1.0000	WDXT052504	1/4 NPT	1
0.6562	•	WDX0656D4S100	2.7420	3.3330	5.8330						1
0.6875	•	WDX0687D4S100	2.8660	3.4570	5.9570						1
0.7500	•	WDX0750D4S100	3.1180	3.7090	6.2090	2.5000	1.2990	1.0000	WDXT063006		1
0.7870	•	WDX0787D4S100	3.2660	3.8570	6.3570						1
0.8125	•	WDX0812D4S100	3.3680	3.9590	6.4590						1
0.8750	•	WDX0875D4S100	3.6180	4.2090	6.7090						2
0.9375	•	WDX0937D4S125	3.8680	4.5770	7.0770	2.5000	1.6140	1.2500	WDXT073506		2
1.0000	•	WDX1000D4S125	4.1180	4.8270	7.3270						2
1.0625	•	WDX1062D4S125	4.3680	5.0770	8.0770	3.0000	1.6140	1.2500			2
1.1250	•	WDX1125D4S125	4.6180	5.3270	8.3270						2
1.1875	•	WDX1187D4S125	4.9070	5.7340	8.7340	3.0000	1.9680	1.2500	WDXT094008		2
1.2500	•	WDX1250D4S125	5.1570	5.9840	8.9840						2
1.3125	•	WDX1312D4S150	5.4070	6.3520	9.3520	3.0000	2.1260	1.5000			2
1.3750	•	WDX1375D4S150	5.6570	6.6020	9.6020						2
1.4375	•	WDX1437D4S150	5.9070	6.8520	9.8520						2
1.5000	•	WDX1500D4S150	6.1970	7.3780	10.3780	3.0000	1.9490	1.5000	WDXT125012		2
1.5625	•	WDX1562D4S150	6.4450	7.6260	10.6260						2
1.6250	•	WDX1625D4S150	6.6970	7.8780	10.8780	3.0000	1.9490	1.5000			3
1.6875	•	WDX1687D4S150	6.9490	8.1300	11.1300						3
1.7500	•	WDX1750D4S150	7.1970	8.3780	11.3780						3
1.8125	•	WDX1812D4S150	7.4490	8.6300	11.6300	3.0000	1.9490	1.5000	WDXT156012		3
1.8750	•	WDX1875D4S150	7.6970	8.8780	11.8780						3
1.9375	•	WDX1937D4S150	7.9490	9.1300	12.1300						3
2.0000	•	WDX2000D4S150	8.1970	9.3780	12.3780						3
2.1250	•	WDX2125D4S150	8.6970	9.8780	12.8780						3
2.2500	•	WDX2250D4S150	9.3150	10.5750	13.5750	3.0000	2.1730	1.5000	WDXT186012		3
2.3750	•	WDX2375D4S150	9.8150	11.0750	14.0750		2.2950				3
2.5000	•	WDX2500D4S150	10.3150	11.5750	14.5750		2.4210				3

Identification Code - Inch

WDX 05625 D4 S075

- WDX
- 05625 — Dia. DC (ø0.5625")
- D4 — Flute Length L/D (4D)
- S075 — Shank Dia. DCON (ø0.750")

Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
WDX0562D4S075 to WDX0594D4S075	BFTX01604N	0.3	TRX06	-
WDX0625D4S100 to WDX0687D4S100	BFTX0204N	0.5	TRX06	-
WDX0750D4S100 to WDX0875D4S100	BFTY02206	1.0	-	TRD07
WDX0937D4S125 to WDX1125D4S125	BFTX02506N	1.5	-	TRD08
WDX1187D4S125 to WDX1437D4S150	BFTX03584	3.5	-	TRD15
WDX1500D4S150 to WDX1750D4S150	BFTX0511N	5.0	-	TRD20
WDX1812D4S150 to WDX2625D4S150	BFTX0615N	5.0	-	TRD25

Radial Offset Amount J122

●: USA Stocked Item

N·m Recommended Tightening Torque (N·m)

WDX Type Metric 4D (Internal Coolant Supply)

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 4D | Indexable

Fig 1

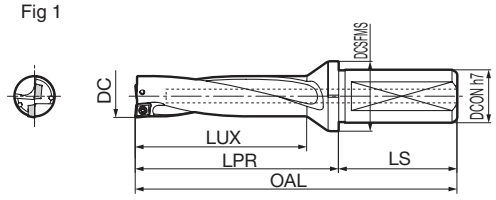


Fig 2

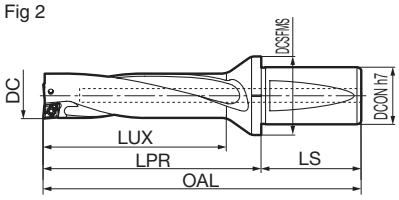
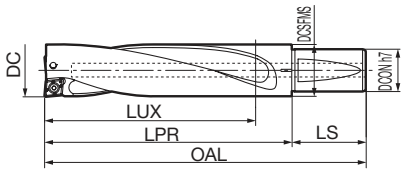


Fig 3



Holder Diameter ø13.0 to 45.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert	Fig
13.0	★	**WDX130D4S20**	55	70	114				0.35		1
13.5	★	**WDX135D4S20**	57	72	116				0.30	WDXT 042004	1
14.0	★	**WDX140D4S20**	59	74	118	44	28.0	20	0.25		1
14.5	★	**WDX145D4S20**	61	76	120				0.20		1
15.0	★	**WDX150D4S20**	63	78	122				0.15		1
15.5	★	**WDX155D4S20**	65	80	124				0.40		1
16.0	★	**WDX160D4S20**	67	82	126	44	30.0	20			1
16.5	★	**WDX165D4S20**	69	84	128				0.35	WDXT 052504	1
17.0	★	**WDX170D4S20**	71	86	130				0.30		1
17.5	★	**WDX175D4S25**	73	88	144	56	32.0	25	0.25		1
18.0	★	**WDX180D4S25**	75	90	146				0.20		1
18.5	★	**WDX185D4S25**	77	92	148				0.50		1
19.0	★	**WDX190D4S25**	79	94	150				0.45		1
19.5	★	**WDX195D4S25**	81	96	152				0.40		1
20.0	★	**WDX200D4S25**	83	98	154						1
20.5	★	**WDX205D4S25**	85	100	156	56	33.0	25	0.30	WDXT 063006	1
21.0	★	**WDX210D4S25**	87	102	158				0.20		1
21.5	★	**WDX215D4S25**	89	104	160				0.15		1
22.0	★	**WDX220D4S25**	91	106	162				0.10		1
22.5	★	**WDX225D4S25**	93	108	164				0.05		1
23.0	★	**WDX230D4S25**	95	113	169				0.70		1
23.5	★	**WDX235D4S25**	97	115	171						1
24.0	★	**WDX240D4S25**	99	117	173	56	37.0	25	0.60		1
24.5	★	**WDX245D4S25**	101	119	175						1
25.0	★	**WDX250D4S25**	103	121	177				0.50		1
25.5	★	**WDX255D4S32**	105	125	185				0.45	WDXT 073506	2
26.0	★	**WDX260D4S32**	107	127	187				0.40		2
26.5	★	**WDX265D4S32**	109	129	189				0.35		2
27.0	★	**WDX270D4S32**	111	131	191	60	41.0	32	0.25		2
27.5	★	**WDX275D4S32**	113	133	193				0.20		2
28.0	★	**WDX280D4S32**	115	135	195				0.15		2
28.5	★	**WDX285D4S32**	117	137	197				0.10		2
29.0	★	**WDX290D4S32**	120	141	201				1.00		2
29.5	★	**WDX295D4S32**	122	143	203		50.0		0.95		2
30.0*	★	**WDX300D4S32**	124	148	208	60		32	0.90		2
31.0*	★	**WDX310D4S32**	128	152	212		54.0		0.80		2
32.0*	★	**WDX320D4S32**	132	156	216				0.70		2
30.0*	★	**WDX300D4S40**	124	148	218				0.90	WDXT 094008	2
31.0*	★	**WDX310D4S40**	128	152	222				0.80		2
32.0*	★	**WDX320D4S40**	132	156	226				0.70		2
33.0	★	**WDX330D4S40**	136	160	230	70	54.0	40	0.55		2
34.0	★	**WDX340D4S40**	140	164	234				0.45		2
35.0	★	**WDX350D4S40**	144	168	238				0.35		2
36.0	★	**WDX360D4S40**	148	172	242				0.20		2
37.0	★	**WDX370D4S40**	153	183	253				1.00		2
38.0	★	**WDX380D4S40**	157	187	257						2
39.0	★	**WDX390D4S40**	161	191	261				0.90		2
40.0	★	**WDX400D4S40**	165	195	265				0.80		2
41.0	★	**WDX410D4S40**	169	199	269	70	49.5	40	0.70	WDXT 125012	2
42.0	★	**WDX420D4S40**	173	203	273				0.60		2
43.0	★	**WDX430D4S40**	177	207	277				0.50		2
44.0	★	**WDX440D4S40**	181	211	281						2
45.0	★	**WDX450D4S40**	185	215	285				0.40		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount ☞ J122

Holder Diameter ø46.0 to 63.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert	Fig
46.0	★	**WDX460D4S40**	189	219	289				1.50		2
47.0	★	**WDX470D4S40**	193	223	293				1.40		2
48.0	★	**WDX480D4S40**	197	227	297		49.5		1.30		2
49.0	★	**WDX490D4S40**	201	231	301				1.20		2
50.0	★	**WDX500D4S40**	205	235	305	70		40	1.10	WDXT 156012	2
51.0	★	**WDX510D4S40**	209	239	309				1.00		3
52.0	★	**WDX520D4S40**	213	243	313		50.5		0.90		3
53.0	★	**WDX530D4S40**	217	247	317		51.5		0.80		3
54.0	★	**WDX540D4S40**	221	251	321		52.5		0.60		3
55.0	★	**WDX550D4S40**	225	255	325		53.5		0.50		3
56.0	★	**WDX560D4S40**	232	264	334		54.0		2.00		3
57.0	★	**WDX570D4S40**	236	268	338		55.0		1.80		3
58.0	★	**WDX580D4S40**	240	272	342		56.0		1.70		3
59.0	★	**WDX590D4S40**	244	276	346	70	57.0	40	1.60	WDXT 186012	3
60.0	★	**WDX600D4S40**	248	280	350		58.0		1.50		3
61.0	★	**WDX610D4S40**	252	284	354		59.0		1.40		3
62.0	★	**WDX620D4S40**	256	288	358		60.0		1.30		3
63.0	★	**WDX630D4S40**	260	292	362		61.0		1.20		3

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
WDX130D4S20 to WDX150D4S20	BFTX01604N	0.3	TRX06	-
WDX155D4S20 to WDX180D4S25	BFTX0204N	0.5	TRX06	-
WDX185D4S25 to WDX225D4S25	BFTY02206	1.0	-	TRD07
WDX230D4S25 to WDX285D4S32	BFTX02506N	1.5	-	TRD08
WDX290D4S32 to WDX360D4S40	BFTX03584	3.5	-	TRD15
WDX370D4S40 to WDX450D4S40	BFTX0511N	5.0	-	TRD20
WDX460D4S40 to WDX680D4S40	BFTX0615N	5.0	-	TRD25

Identification Code - Metric

WDX 200 D4 S25

- WDX: Dia. DC (ø20.0)
- D4: Flute Length L/D (4D)
- S25: Shank Dia. DCON (ø25.0)

★: Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

WDX Type Inserts 4D (Internal Coolant Supply)

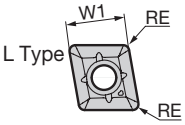
Insert

Dimensions (inch/ *mm*)

Grade		Coated Carbide			
Process	High-speed/Light	PK			N
	General-purpose		PM		
	Roughing		PM	K	

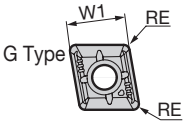
Cat. No.	ACP100	ACP300	ACK300	DL1500	Width W1	Thickness S	Nose Radius RE	Applicable Holder (Inch / *Metric*)	Fig
WDXT042004-L	●	●	●		*0.1654 (4.2)*	*0.0788 (2.0)*	*0.0157 (0.4)*	WDX0562D4S075 to WDX0594D4S075 *WDX130D4S20 to WDX150D4S20*	1
WDXT042004-G	●	●	●	●					2
WDXT042004-H	●	●	●						3
WDXT052504-L	●	●	●		*0.1969 (5.0)*	*0.0984 (2.5)*	*0.0157 (0.4)*	WDX0625D4S100 to WDX0687D4S100 *WDX155D4S20 to WDX180D4S25*	1
WDXT052504-G	●	●	●	●					2
WDXT052504-H	●	●	●						3
WDXT063006-L	●	●	●		*0.2362 (6.0)*	*0.1181 (3.0)*	*0.0236 (0.6)*	WDX0750D4S100 to WDX0875D4S100 *WDX185D4S25 to WDX225D4S25*	1
WDXT063006-G	●	●	●	●					2
WDXT063006-H	●	●	●						3
WDXT073506-L	●	●	●		*0.2953 (7.5)*	*0.1378 (3.5)*	*0.0236 (0.6)*	WDX0937D4S125 to WDX1125D4S125 *WDX230D4S25 to WDX285D4S32*	1
WDXT073506-G	●	●	●	●					2
WDXT073506-H	●	●	●						3
WDXT094008-L	●	●	●		*0.3780 (9.6)*	*0.1575 (4.0)*	*0.0315 (0.8)*	WDX1187D4S125 to WDX1437D4S150 *WDX290D4S32 to WDX360D4S40*	1
WDXT094008-G	●	●	●	●					2
WDXT094008-H	●	●	●						3
WDXT125012-L	●	●	●		*0.4882 (12.4)*	*0.1969 (5.0)*	*0.0472 (1.2)*	WDX1500D4S150 to WDX1750D4S150 *WDX370D4S40 to WDX450D4S40*	1
WDXT125012-G	●	●	●	●					2
WDXT125012-H	●	●	●						3
WDXT156012-L	●	●	●		*0.5984 (15.2)*	*0.2362 (6.0)*	*0.0472 (1.2)*	WDX1812D4S150 to WDX2125D4S150 *WDX460D4S40 to WDX550D4S40*	1
WDXT156012-G	●	●	●	●					2
WDXT156012-H	●	●	●						3
WDXT186012-L	●	●	●		*0.7087 (18.0)*	*0.2362 (6.0)*	*0.0472 (1.2)*	WDX2250D4S150 to WDX2625D4S150 *WDX560D4S40 to WDX630D4S40*	1
WDXT186012-G	●	●	●						2
WDXT186012-H	●	●	●						3

Fig 1



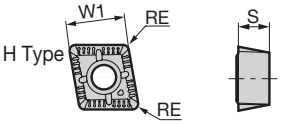
L Type: For low feed with chip control

Fig 2



G Type: General-purpose

Fig 3



H Type: Strong edge

●: USA Stocked Item

Identification Code

WDXT 06 30 06 -G

- 06: Width across Flats (6.0)
- 30: Thickness x 10 (3.0)
- 06: Nose Radius x 10 (0.6)
- -G: Breaker Type

Recommended Cutting Conditions (for 4D)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (SFM)	*f* (feed rate) (IPR) (Min. - **Optimum** - Max.) ø0.562 - ø1.00	ø1.062 - ø1.50	ø1.56 - ø2.125	ø2.25 - ø2.625
4D	P	Steel, Carbon Steel	SS400	<190	G	ACP300	450 - 780	.002 - .006	.003 - .008	.005 - .010	.006 - .012
			S15C		L	ACP300	450 - 750	.002 - .004	.002 - .005	.003 - .006	N/A
			S45C	190 ~ 250	G	ACP300	400 - 700	.003 - .009	.004 - .010	.005 - .010	.006 - .012
			S45C Hardened		G	ACP100	400 - 700	.002 - .004	.002 - .005	.003 - .006	N/A
			S75C	250 ~ 350	G	ACP100	350 - 550	.003 - .007	.003 - .008	.004 - .009	.004 - .010
			S75C Hardened		G	ACP100	350 - 525	.002 - .004	.002 - .004	.003 - .005	N/A
		Low-alloy Steel	SCM,SNCM	180 ~ 275	L	ACP300	350 - 700	.002 - .007	.003 - .008	.005 - .010	.006 - .010
			SCM, SNCM Hardened		G	ACP100	350 - 650	.002 - .004	.002 - .005	.003 - .006	N/A
			SCM, SNCM Hardened	275 ~ 350	G	ACP100	300 - 500	.002 - .006	.003 - .007	.004 - .008	.006 - .009
			SCM, SNCM Hardened		G	ACP100	300 - 500	.002 - .003	.002 - .004	.003 - .005	N/A
		High-alloy Steel	SKD,SKT,SKH	200 ~ 325	G	ACP100	350 - 650	.003 - .006	.003 - .008	.006 - .010	.006 - .012
			SKD, SKT, SKH (Sintered)		G	ACP100	300 - 450	.002 - .004	.003 - .005	.003- .006	N/A
	M	Stainless Steel	SUS304, SUS316 (Austenitic)	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.005 - .010	.006 - .012
			SUS304, SUS316 (Austenitic)	280		ACP300	325 - 500	.002 - .006	.003 - .006	.004 - .008	.006 - .010
			SUS403/Others (Martensitic/Ferritic	160	G	ACP300	400 - 650	.003 - .007	.003 - .008	.004 - .010	.006 - .012
			SUS403/Others (Martensitic (hardened))	240	G	ACP300	325 - 600	.002 - .006	.003 - .006	.004 - .008	.006 - .010
	K	Cast Iron			H	ACK300	400 - 650	.004 - .008	.004 - .012	.006 - .014	.006 - .017
		Ductile Cast Iron			H	ACK300	300 - 500	.004 - .008	.004 - .012	.006 - .014	.006 - .017
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200 ~ 375	G	ACP300	80 - 250	.002 - .005	.003 - .007	.003 - .008	.003 - .010
	N	Aluminum Alloy			G	DL1500	650 - 1200	.003 - .006	.003 - .007	.004 - .008	.005 - .010
		Copper Alloy			G	DL1500	600 - 900	.003 - .006	.003 - .007	.004 - .008	.005 - .010

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In this case, it is recommended to set the cutting speed (V_c) to 130% and the feed rate (*f*) to 75% of the figures in the table above.

WDX Type Inch 5D (Internal Coolant Supply)

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 5D | Indexable

Fig 1

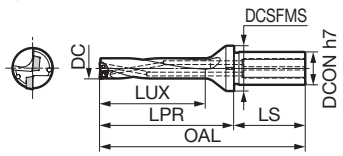


Fig 2

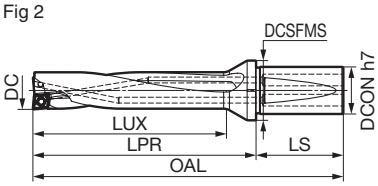
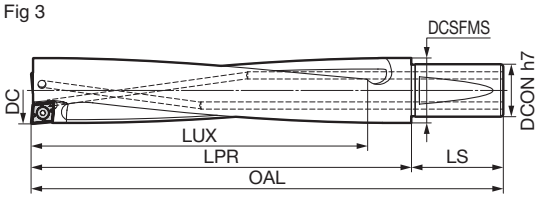


Fig 3



Holder Diameter ø0.5625" to 2.1250"

Dimensions (*inch*)

Dia. DC	Stock	Cat.No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Applicable Insert	Fig
0.5625	•	WDX0562D5S075	2.9280	3.5190	5.5190	2.0000	1.1020	.7500	WDXT042004	1
0.5937	•	WDX0594D5S075	3.0880	3.6790	5.6790					1
0.6250	•	WDX0625D5S100	3.2430	3.8340	6.3340	2.5000	1.2600	1.0000	WDXT052504	1
0.6562	•	WDX0656D5S100	3.3980	3.9890	6.4890					1
0.6875	•	WDX0687D5S100	3.5530	4.1440	6.6440					1
0.7500	•	WDX0750D5S100	3.8680	4.4590	6.9590	2.5000	1.2990	1.0000	WDXT063006	1
0.7870	•	WDX0787D5S100	4.0530	4.6440	7.1440					1
0.8125	•	WDX0812D5S100	4.1780	4.7690	7.2690					1
0.8750	•	WDX0875D5S100	4.4930	5.0840	7.5840					2
0.9375	•	WDX0937D5S125	4.8030	5.5120	8.0120	2.5000	1.6140	1.2500	WDXT073506	2
1.0000	•	WDX1000D5S125	5.1180	5.8270	8.3270					2
1.0625	•	WDX1062D5S125	5.4280	6.1370	9.1370	3.0000	1.6140	1.2500		2
1.1250	•	WDX1125D5S125	5.7430	6.4520	9.4520					2
1.1875	•	WDX1187D5S125	6.0930	6.9200	9.9200	3.0000	1.9680	1.2500	WDXT094008	2
1.2500	•	WDX1250D5S125	6.4080	7.2350	10.2350					2
1.3125	•	WDX1312D5S150	6.7180	7.6630	10.6630	3.0000	2.1260	1.5000		2
1.3750	•	WDX1375D5S150	7.0330	7.9780	10.9780					2
1.4375	•	WDX1437D5S150	7.3430	8.2880	11.2880					2
1.5000	•	WDX1500D5S150	7.6970	8.8780	11.8780	3.0000	1.9490	1.5000		2
1.5625	•	WDX1562D5S150	8.0070	9.1880	12.1880					2
1.6250	•	WDX1625D5S150	8.3220	9.5030	12.5030	3.0000	1.9490	1.5000	WDXT125012	3
1.6875	•	WDX1687D5S150	8.6320	9.8130	12.8130					3
1.7500	•	WDX1750D5S150	8.9470	10.1280	13.1280					3
1.8125		WDX1812D5S150	9.2570	10.4380	13.4380	3.0000	1.9490	1.5000	WDXT156012	3
1.8750	•	WDX1875D5S150	9.5720	10.7530	13.7530					3
1.9375		WDX1937D5S150	9.8820	11.0630	14.0630					3
2.0000	•	WDX2000D5S150	10.1970	11.3780	14.3780					3
2.1250	•	WDX2125D5S150	10.8220	12.0030	15.0030					3

●: USA Stocked Item *5XD WDX Drills have 2 coolant holes in the back of the drill and no single thread port

Identification Code - Inch

WDX 05625 D5 S075

- WDX
- 05625: Dia. DC (ø0.5625")
- D5: Flute Length L/D (5D)
- S075: Shank Dia. DCON (ø0.750")

Parts

Applicable Holder	Flat Screw		Wrench	Wrench
		N·m		
WDX0562D5S075 to WDX0594D5S075	BFTX01604N	0.3	TRX06	-
WDX0625D5S100 to WDX0687D5S100	BFTX0204N	0.5	TRX06	-
WDX0750D5S100 to WDX0875D5S100	BFTY02206	1.0	-	TRD07
WDX0937D5S125 to WDX1125D5S125	BFTX02506N	1.5	-	TRD08
WDX1187D5S125 to WDX1437D5S150	BFTX03584	3.5	-	TRD15
WDX1500D5S150 to WDX1750D5S150	BFTX0511N	5.0	-	TRD20
WDX1812D5S150 to WDX2625D5S150	BFTX0615N	5.0	-	TRD25

Radial Offset Amount ☞ J122

WDX Type Metric 5D (Internal Coolant Supply)

Carbon Steel/ Alloy Steel up to 0.28% | Carbon Steel/ Alloy Steel from 0.29% | Hardened Steel up to 45HRC | Stainless Steel | Cast Iron | Ductile Cast Iron | Aluminum Alloy

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 5D | Indexable

Fig 1

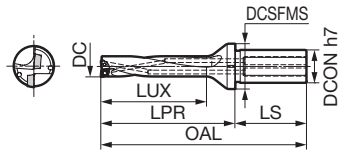


Fig 2

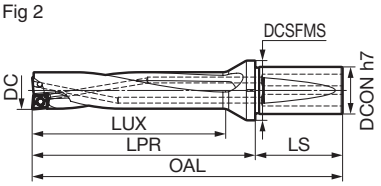
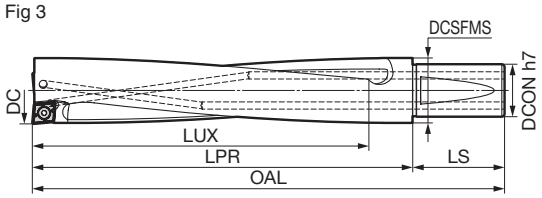


Fig 3



Holder Diameter ø13.0 to 45.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert	Fig
13.0	★	**WDX130D5S20**	68.0	83.0	127.0				0.35		1
13.5	★	**WDX135D5S20**	70.5	85.5	129.5				0.30		1
14.0	★	**WDX140D5S20**	73.0	88.0	132.0	44	28.0	20.0	0.25	WDXT 042004	1
14.5	★	**WDX145D5S20**	75.5	90.5	134.5				0.20		1
15.0	★	**WDX150D5S20**	78.0	93.0	137.0				0.15		1
15.5	★	**WDX155D5S20**	80.5	95.5	139.5				0.40		1
16.0	★	**WDX160D5S20**	83.0	98.0	142.0	44	30.0	20.0			1
16.5	★	**WDX165D5S20**	85.5	100.5	144.5				0.35	WDXT 052504	1
17.0	★	**WDX170D5S20**	88.0	103.0	147.0				0.30		1
17.5	★	**WDX175D5S25**	90.5	105.5	161.5	56	32.0	25.0	0.25		1
18.0	★	**WDX180D5S25**	93.0	108.0	164.0				0.20		1
18.5	★	**WDX185D5S25**	95.5	110.5	166.5				0.50		1
19.0	★	**WDX190D5S25**	98.0	113.0	169.0				0.45		1
19.5	★	**WDX195D5S25**	100.5	115.5	171.5				0.40		1
20.0	★	**WDX200D5S25**	103.0	118.0	174.0				0.30		1
20.5	★	**WDX205D5S25**	105.5	120.5	176.5	56	33.0	25.0		WDXT 063006	1
21.0	★	**WDX210D5S25**	108.0	123.0	179.0				0.20		1
21.5	★	**WDX215D5S25**	110.5	125.5	181.5				0.15		1
22.0	★	**WDX220D5S25**	113.0	128.0	184.0				0.10		1
22.5	★	**WDX225D5S25**	115.5	130.5	186.5				0.05		1
23.0	★	**WDX230D5S25**	118.0	136.0	192.0				0.70		1
23.5	★	**WDX235D5S25**	120.5	138.5	194.5						1
24.0	★	**WDX240D5S25**	123.0	141.0	197.0	56	37.0	25.0	0.60		1
24.5	★	**WDX245D5S25**	125.5	143.5	199.5				0.50	WDXT 073506	1
25.0	★	**WDX250D5S25**	128.0	146.0	202.0						1
26.0	★	**WDX260D5S32**	133.0	153.0	213.0				0.40		2
27.0	★	**WDX270D5S32**	138.0	158.0	218.0	60	41.0	32.0	0.25		2
28.0	★	**WDX280D5S32**	143.0	163.0	223.0				0.15		2
29.0	★	**WDX290D5S32**	149.0	170.0	230.0		50.0		1.00		2
30.0	★	**WDX300D5S32**	154.0	178.0	238.0	60		32.0	0.90		2
31.0	★	**WDX310D5S32**	159.0	183.0	243.0		54.0		0.80		2
32.0	★	**WDX320D5S32**	164.0	188.0	248.0				0.70	WDXT 094008	2
30.0	★	**WDX300D5S40**	154.0	178.0	248.0				0.90		2
31.0	★	**WDX310D5S40**	159.0	183.0	253.0				0.80		2
32.0	★	**WDX320D5S40**	164.0	188.0	258.0	70	54.0	40.0	0.70		2
33.0	★	**WDX330D5S40**	169.0	193.0	263.0				0.55		2
34.0	★	**WDX340D5S40**	174.0	198.0	268.0				0.45		2

*Diameters ø30, ø31, ø32 are in stock with shank diameters of ø32 and ø40.

Radial Offset Amount J122

★: Worldwide Warehouse Item

Holder Diameter ø46.0 to 55.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange DCSFMS	Shank Dia. DCON	Radial Offset (Max)	Applicable Insert	Fig
35.0	★	**WDX350D5S40**	179.0	203.0	273.0	70	54.0	40.0	0.35	WDXT 094008	2
36.0	★	**WDX360D5S40**	184.0	208.0	278.0				0.20		2
37.0	★	**WDX370D5S40**	190.0	220.0	290.0				1.00		2
38.0	★	**WDX380D5S40**	195.0	225.0	295.0						2
39.0	★	**WDX390D5S40**	200.0	230.0	300.0				0.90		2
40.0	★	**WDX400D5S40**	205.0	235.0	305.0				0.80		2
41.0	★	**WDX410D5S40**	210.0	240.0	310.0				0.70	WDXT 125012	2
42.0	★	**WDX420D5S40**	215.0	245.0	315.0				0.60		2
43.0	★	**WDX430D5S40**	220.0	250.0	320.0						2
44.0	★	**WDX440D5S40**	225.0	255.0	325.0		49.5		0.50		2
45.0	★	**WDX450D5S40**	230.0	260.0	330.0				0.40		2
46.0	★	**WDX460D5S40**	235.0	265.0	335.0	70		40.0	1.50		2
47.0	★	**WDX470D5S40**	240.0	270.0	340.0				1.40		2
48.0	★	**WDX480D5S40**	245.0	275.0	345.0				1.30		2
49.0	★	**WDX490D5S40**	250.0	280.0	350.0				1.20		2
50.0	★	**WDX500D5S40**	255.0	285.0	355.0				1.10	WDXT 156012	2
51.0	★	**WDX510D5S40**	260.0	290.0	360.0				1.00		3
52.0	★	**WDX520D5S40**	265.0	295.0	365.0		50.5		0.90		3
53.0	★	**WDX530D5S40**	270.0	300.0	370.0		51.5		0.80		3
54.0	★	**WDX540D5S40**	275.0	305.0	375.0		52.5		0.60		3
55.0	★	**WDX550D5S40**	280.0	310.0	380.0		53.5		0.50		3

*5XD WDX Drills have 2 coolant holes in the back of the drill and no single thread port

Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
WDX130D5S20 to WDX150D5S20	BFTX01604N	0.3	TRX06	-
WDX155D5S20 to WDX180D5S25	BFTX0204N	0.5	TRX06	-
WDX185D5S25 to WDX225D5S25	BFTY02206	1.0	-	TRD07
WDX230D5S25 to WDX285D5S32	BFTX02506N	1.5	-	TRD08
WDX290D5S32 to WDX360D5S40	BFTX03584	3.5	-	TRD15
WDX370D5S40 to WDX450D5S40	BFTX0511N	5.0	-	TRD20
WDX460D5S40 to WDX680D5S40	BFTX0615N	5.0	-	TRD25

Identification Code - Metric

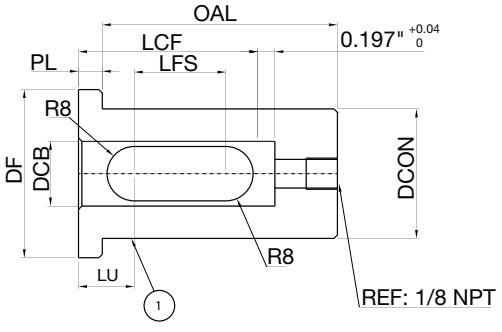
WDX 200 D5 S25

- WDX: Dia. DC (ø20.0)
- D5: Flute Length L/D (5D)
- S25: Shank Dia. DCON (ø25.0)

Coolant Adapter Sleeve Diameter ø13.0 to 45.0mm

Dimensions (inch)

Cat. No.	Stock	Sleeve ID DCB	Sleeve Dia. DF	Sleeve Dia. DCON	Sleeve ID L LCF	Overall Length OAL	Flange L PL	L to Slot LU	Slot L LFS
SLV075	●	0.750"	1.949"	1.500"	2.000"	3.000"	0.280"	0.650"	1.060"
SLV1000	●	1.000"	1.949"	1.500"	2.500"	3.000"	0.280"	0.650"	1.060"
SLV1250	●	1.250"	1.949"	1.500"	2.500"	3.000"	0.280"	0.650"	1.060"
SLV1250L	●	1.250"	1.949"	1.500"	3.000"	3.000"	0.780"	1.150"	1.800"
SLV1500	●	1.500"	2.500"	2.000"	3.000"	3.000"	0.780"	1.150"	1.800"
SLV20M	●	*20mm*	1.949"	1.500"	2.000"	3.000"	0.280"	0.650"	1.060"
SLV25M	●	*25mm*	1.949"	1.500"	2.500"	3.000"	0.280"	0.650"	1.060"
SLV32M	●	*32mm*	1.949"	1.500"	2.500"	3.000"	0.280"	0.650"	1.060"
SLV40M	●	*40mm*	2.500"	2.000"	3.000"	3.000"	0.780"	1.150"	1.800"



N·m Recommended Tightening Torque (N·m)

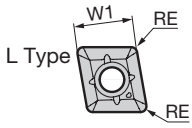
Insert

Dimensions (*mm*)

Grade		Coated Carbide			
Process	High-speed/Light	PK			N
	General-purpose		PM		
	Roughing		PM	K	

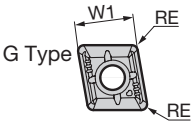
Cat. No.	ACP100	ACP300	ACK300	DL1500	Width W1	Thickness S	Nose Radius RE	Applicable Holder (Inch / *Metric*)	Fig
WDXT042004-L	●	●	●		*0.1654 (4.2)*	*0.0788 (2.0)*	*0.0157 (0.4)*	WDX0562D5S075 to WDX0594D5S075 *WDX130D5S20 to WDX150D5S20*	1
WDXT042004-G	●	●	●	●					2
WDXT042004-H	●	●	●						3
WDXT052504-L	●	●	●		*0.1969 (5.0)*	*0.0984 (2.5)*	*0.0157 (0.4)*	WDX0625D5S100 to WDX0687D5S100 *WDX155D5S20 to WDX180D5S25*	1
WDXT052504-G	●	●	●	●					2
WDXT052504-H	●	●	●						3
WDXT063006-L	●	●	●		*0.2362 (6.0)*	*0.1181 (3.0)*	*0.0236 (0.6)*	WDX0750D5S100 to WDX0875D5S100 *WDX185D5S25 to WDX225D5S25*	1
WDXT063006-G	●	●	●	●					2
WDXT063006-H	●	●	●						3
WDXT073506-L	●	●	●		*0.2953 (7.5)*	*0.1378 (3.5)*	*0.0236 (0.6)*	WDX0937D5S125 to WDX1125D5S125 *WDX230D5S25 to WDX285D5S32*	1
WDXT073506-G	●	●	●	●					2
WDXT073506-H	●	●	●						3
WDXT094008-L	●	●	●		*0.3780 (9.6)*	*0.1575 (4.0)*	*0.0315 (0.8)*	WDX1187D5S125 to WDX1437D5S150 *WDX290D5S32 to WDX360D5S40*	1
WDXT094008-G	●	●	●	●					2
WDXT094008-H	●	●	●						3
WDXT125012-L	●	●	●		*0.4882 (12.4)*	*0.1969 (5.0)*	*0.0472 (1.2)*	WDX1500D5S150 to WDX1750D5S150 *WDX370D5S40 to WDX450D5S40*	1
WDXT125012-G	●	●	●	●					2
WDXT125012-H	●	●	●						3
WDXT156012-L	●	●	●		*0.5984 (15.2)*	*0.2362 (6.0)*	*0.0472 (1.2)*	WDX1812D5S150 to WDX2125D5S150 *WDX460D5S40 to WDX550D5S40*	1
WDXT156012-G	●	●	●	●					2
WDXT156012-H	●	●	●						3

Fig 1



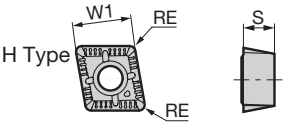
L Type: For low feed with chip control

Fig 2



G Type: General-purpose

Fig 3



H Type: Strong edge

●: USA Stocked Item

Identification Code

WDXT 06 30 06 -G

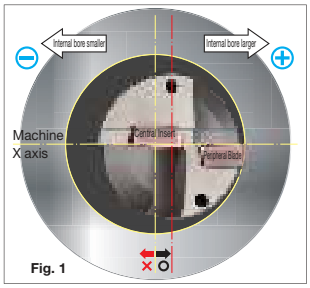
- WDXT: Width across Flats (6.0)
- 06: Thickness x 10 (3.0)
- 30: Nose Radius x 10 (0.6)
- -G: Breaker Type

Recommended Cutting Conditions (for 5D)

		Work Material	Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (SFM)	*f* (feed rate) (IPR) (Min. - **Optimum** - Max.) ø0.562 - ø1.00	ø1.062 - ø1.50	ø1.56 - ø2.125	ø2.25 - ø2.625
5D	P	Steel, Carbon Steel SS400	<190	G	ACP300	450 - 780	.002 - .004	.003 - .006	.004 - .007	
		S15C		L	ACP300	450 - 750	.002 - .004	.002 - .005	.002 - .005	
		S45C	190 ~ 250	G	ACP300	400 - 700	.003 - .006	.003 - .007	.005 - .008	
		S45C Hardened		G	ACP100	400 - 700	.002 - .004	.002 - .005	.002 - .005	
		S75C	250 ~ 350	G	ACP100	350 - 550	.003 - .006	.003 - .007	.003 - .007	
		S75C Hardened		G	ACP100	350 - 525	.002 - .004	.002 - .004	.002 - .005	
		Low-alloy Steel SCM,SNCM	180 ~ 275	L	ACP300	350 - 700	.003 - .006	.003 - .008	.004 - .008	
		SCM, SNCM Hardened		G	ACP100	350 - 650	.002 - .004	.002 - .005	.002 - .005	
		SCM, SNCM Hardened	275 ~ 350	G	ACP100	300 - 500	.003 - .005	.003 - .007	.004 - .008	
		SCM, SNCM Hardened		G	ACP100	300 - 500	.002 - .003	.002 - .004	.002 - .005	
		High-alloy Steel SKD,SKT,SKH	200 ~ 325	G	ACP100	350 - 650	.003 - .006	.003 - .008	.004 - .008	
		SKD, SKT, SKH (Sintered)		G	ACP100	300 - 450	.002 - .004	.003 - .005	.003- .006	
	M	Stainless Steel SUS304, SUS316 (Austenitic)	160	G	ACP300	400 - 650	.002 - .004	.003 - .006	.003 - .007	
		SUS304, SUS316 (Austenitic)	280		ACP300	325 - 500	.001 - .003	.003 - .005	.003 - .006	
		SUS403/Others (Martensitic/Ferritic	160	G	ACP300	400 - 650	.002 - .004	.003 - .006	.003 - .007	
		SUS403/Others (Martensitic (hardened))	240	G	ACP300	325 - 600	.001 - .003	.003 - .005	.003 - .006	
	K	Cast Iron		H	ACK300	400 - 650	.004 - .008	.004 - .010	.005 - .011	
		Ductile Cast Iron		H	ACK300	300 - 500	.004 - .008	.004 - .010	.005 - .011	
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	200 ~ 375	G	ACP300	80 - 250	.002 - .004	.003 - .006	.003 - .007	
	N	Aluminum Alloy		G	DL1500	650 - 1200	.003 - .006	.003 - .007	.004 - .008	
		Copper Alloy		G	DL1500	600 - 900	.003 - .006	.003 - .007	.004 - .008	

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In this case, it is recommended to set the cutting speed (V_c) to 130% and the feed rate (*f*) to 75% of the figures in the table above.

■ Lathe Machining Guidelines





■ Drill Mounting

- Set the drill so that the peripheral insert is parallel to the X axis of the machine. (Fig.1)
- Press the end of the flange of the drill tightly against the face of the holder when tightening the bolt.

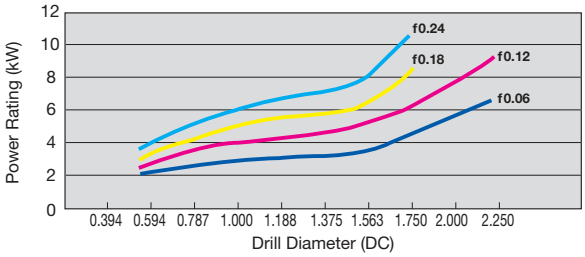
■ Adjusting work diameter (offset)

- The work diameter is adjustable by moving the machine X axis.
- Make the adjustment by moving in the positive direction of the X axis (enlarging the bore diameter). Moving the X axis in the negative direction (to reduce the bore diameter) is not recommended as the holder may interfere with the hole. (See Fig. 1)
- The maximum allowable adjustment (offset) differs depending on the drill diameter. Refer to Radial Offset (Max) in the Holder dimension tables on pages J111, J114, J117, J120.

■ Other notes

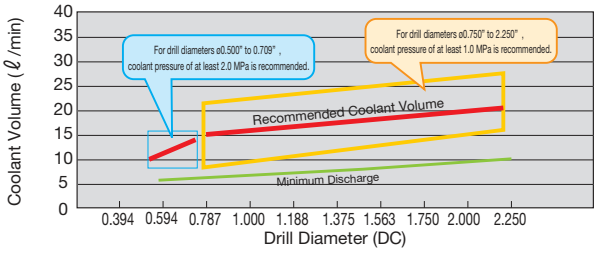
- When the drill is mounted on a lathe, the centre of the central insert is designed to be 0.15 to 0.2 mm below the centre of the spindle.
- If the spindle deviates so far off centre that the centre of the central insert lies above the spindle centre, the central insert will break.
- Set the depth of cut for turning or internal boring work to 1/5 or less of the drill diameter (max. 5 mm or less). (Example: Set depth of cut to 4 mm or less for a drill diameter of ø20 mm)
- Install a cover to prevent injury from possible chip fly-out (see disc-shaped chip in Figure 2) when through boring on a lathe. If your equipment has no cover, attach a cover or similar part for your safety.

■ Typical Power Ratings



<CAUTIONS>
- Power ratings are subject to change based on conditions such as work material and cutting speed, and should only be used for reference.
- Cutting Conditions (Reference)
  Work Material: S50C (230HB)
  Cutting Speed: v_c=492 SFM

■ Typical Coolant Volume



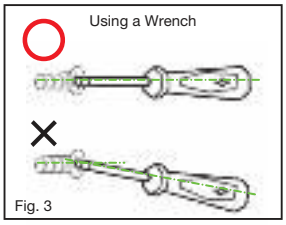


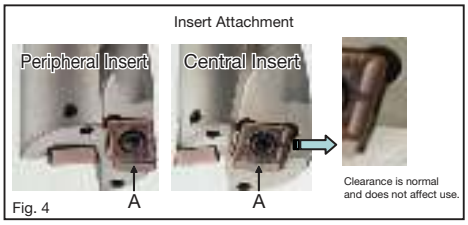
<CAUTIONS>
- Coolant volume is a factor that affects drilling performance, particularly with respect to chip evacuation and lubricity. This is particularly important for chip evacuation and lubricity.
- Coolant pressure should be set higher for small drills. (ø18.0 mm or smaller)
- Coolant volume is usually adjusted by changing the coolant pressure provided on most CNC machines.
- This table provides guideline values only. More coolant may be required depending on the machine, coolant and work material.

■ Precautions for Attaching and Removing Inserts

- Before mounting the insert, remove all traces of foreign matter on the insert seat using air or other means.
- When using the wrench, align it to the axis of the screw and press while turning. (See Fig. 3) If the wrench is not aligned with the screw, the insert will be insufficiently clamped and the tip of the wrench and/or the Torx hole of the screw may become deformed.
- Do not allow clearance between the insert seat and drill when mounting the insert (Fig. 4, Part A). Figure 4 shows a properly mounted insert.

* It is normal for the outer sides of the central insert to have clearance because it is clamped at its centre and pushed to the rear.





■ Troubleshooting

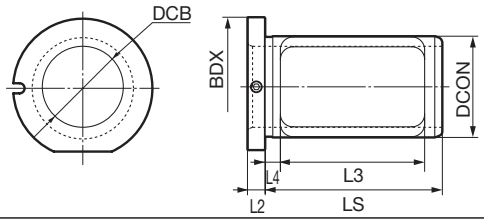
Problem	Symptom	Cause	Countermeasures
Too much variation in hole diameter	Drilled hole diameter is larger than desired	· Deflection of the holder due to high thrust force	· Decrease the feed rate to decrease the thrust force. · Make an adjustment on the X axis.
	Drilled hole diameter is smaller than desired	· The cutting edge backs off and does not enter the workpiece	· Increase the feed rate. · Make an adjustment on the X axis.
	Pronounced difference in hole diameter at entrance and bottom	· Packing of chips	· Increase the feed rate to improve chip evacuation. · Use an L type breaker for chip control.
Poor quality machined hole surface	Poor machined surface from entrance to bottom of hole	· High cutting force · Low rigidity of workpiece	· Decrease the feed rate. · Review tooling to improve rigidity.
	Poor machined surface at bottom of hole	· Machined surfaces damaged by chips	· Increase the feed rate to improve chip evacuation. · Use an L type breaker for chip control.
Insert is broken	Breakage on central insert (centre)	· Improper adjustment of centre height · Insert is not strong enough	· Check the centre height again. · If the drill is being used on a lathe, try flipping the drill 180°. · Use a strong edge chipbreaker (H type).
	Breakage on peripheral insert	· High cutting load in cutting edge	· Decrease the feed rate to decrease cutting load. · Use a strong edge chipbreaker (H type).

Eccentric Sleeve for WDX Type

Indexable

Fig 1





Body (WAS Type)

Parts

Dimensions (*mm*)

Cat. No.	Stock	Shank Dia. DCB	Shank Dia. DCON	Diameter BDX	Shank LS	Length L2	Length L3	Length L4	Diameter Adjustment Range	Fig	Screw	Wrench
WAS2025-48	★	*20*	*25*	*33*	*43*	*5*	*32*	*5*	+0.3 to -0.2	1	BT0306	LH015
WAS2532-60	★	*25*	*32*	*42*	*60*	*7*	*46*	*6*	+0.3 to -0.3	1	BT0406	LH020
WAS3240-70	★	*32*	*40*	*55*	*70*	*7*	*57*	*6*	+0.3 to -0.3	1	BT0408	LH020
WAS4050-85	★	*40*	*50*	*60*	*70*	*7*	*54*	*6*	+0.3 to -0.3	1	BT0408	LH020

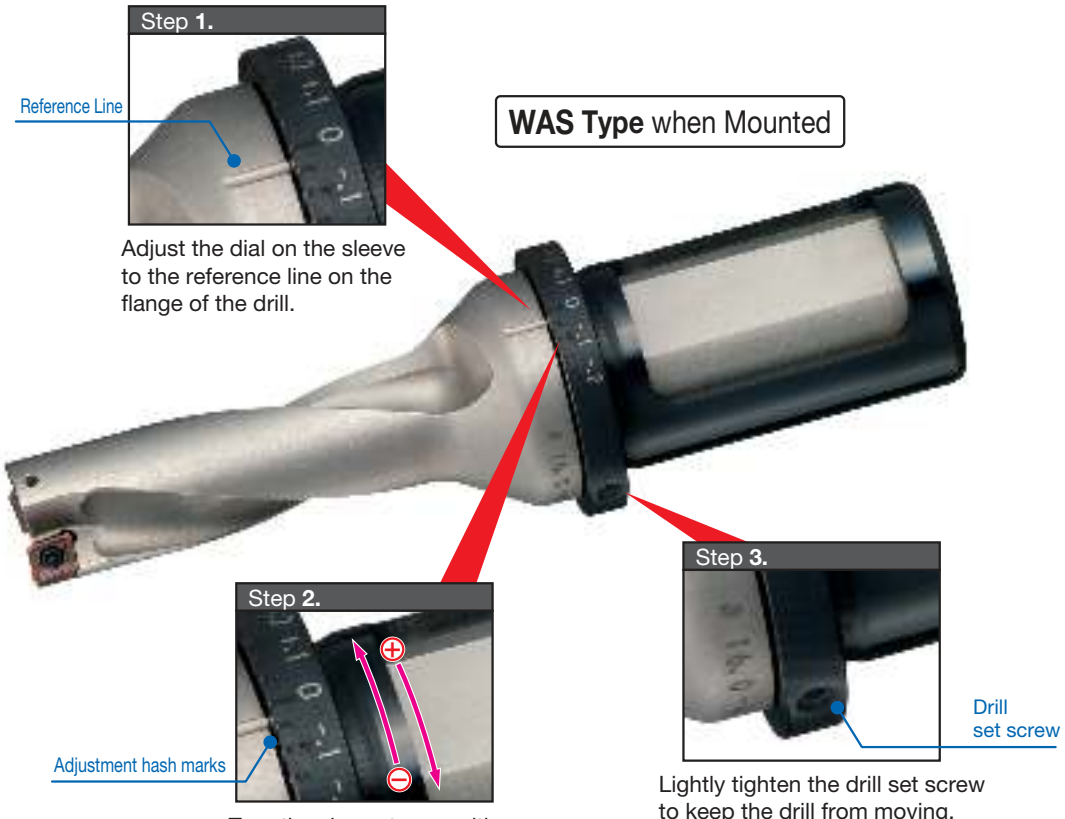
Diameter Adjustment Range indicates the range in which the diameter can be adjusted.
The dedicated Eccentric Sleeve WAS Type for the SumiDrill WDX Type provides ±0.3 mm of adjustment when drilling holes.

★: Worldwide Warehouse Item

Cautions for Use

1. The dial is for reference purposes. Always measure the actual work diameter and adjust accordingly.
2. Not usable with collet chuck type holders.
   Use a side-locking type holder.
3. Use this product under high rigidity conditions.
   This product is not recommended for deep hole drilling such as 5D and low rigidity conditions.

Directions (Adjusting the Work Diameter)



Adjust the dial on the sleeve to the reference line on the flange of the drill.

Turn the sleeve to a positive number to expand the work diameter, and to a negative number to decrease it.

Lightly tighten the drill set screw to keep the drill from moving.

WDX Type Inch 4D Side Port (Internal Coolant Supply)



■ General Features

Sumitomo Electric Carbide, Inc. is now offering WDX-L Indexable Drill with side port coolant. Due to not all spindles being coolant-thru, the WDX-L allows for customers to use coolant through the side port.

■ Features and Applications

- Diameters available in 0.5625" to 2.5000"
- WDX-L uses WDXT inserts (same as WDX style)
- Available in 4XD style





Fig. 1

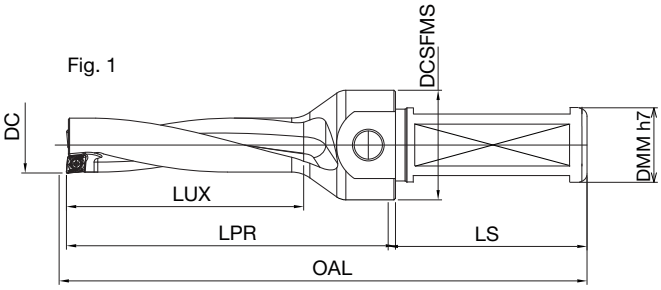
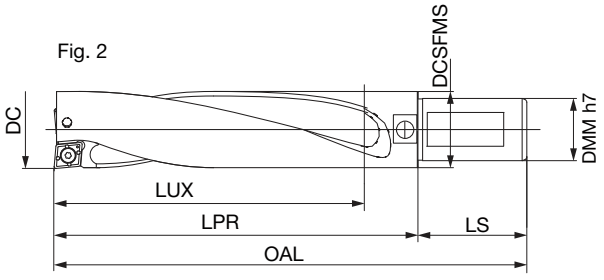


Fig. 2



Catalog Number	Stock	DC	OAL	LPR	LUX	DCSFMS	LS	Screw	Wrench	Applicable Insert	Pipe Plug	Coolant Connection	Fig.
WDX0562D4S100-L	•	0.5625	5.350	3.350	2.366	1.000	2.000	BFTX01604N	TRX06	WDXT042004	XP02	1/8 NPT	1
WDX0594D4S100-L	•	0.5937	5.478	3.478	2.494	1.000	2.000	BFTX01604N	TRX06	WDXT042004			
WDX0625D4S100-L	•	0.6250	6.181	3.681	2.618	1.000	2.500	BFTX0204N	TRX06	WDXT052504	XP04	1/4 NPT	
WDX0656D4S100-L	•	0.6562	6.305	3.805	2.742	1.000	2.500	BFTX0204N	TRX06	WDXT052504			
WDX0687D4S100-L	•	0.6875	6.429	3.929	2.866	1.000	2.500	BFTX0204N	TRX06	WDXT052504			
WDX0750D4S100-L	•	0.7500	6.681	4.181	3.118	1.000	2.500	BFTY02206	TRD07	WDXT063006			
WDX0787D4S100-L	•	0.7870	6.829	4.329	3.266	1.000	2.500	BFTY02206	TRD07	WDXT063006			
WDX0812D4S100-L	•	0.8125	6.931	4.431	3.368	1.000	2.500	BFTY02206	TRD07	WDXT063006			
WDX0875D4S100-L	•	0.8750	7.181	4.681	3.618	1.000	2.500	BFTY02206	TRD07	WDXT063006			
WDX0937D4S125-L	•	0.9375	7.549	5.049	3.868	1.250	2.500	BFTX02506N	TRD08	WDXT073506			
WDX1000D4S125-L	•	1.0000	7.799	5.299	4.118	1.250	2.500	BFTX02506N	TRD08	WDXT073506			
WDX1062D4S125-L	•	1.0625	8.549	5.549	4.368	1.250	3.000	BFTX02506N	TRD08	WDXT073506			
WDX1125D4S125-L	•	1.1250	8.799	5.799	4.618	1.250	3.000	BFTX02506N	TRD08	WDXT073506			
WDX1187D4S125-L	•	1.1875	9.206	6.206	4.907	1.250	3.000	BFTX03584	TRX15	WDXT094008			
WDX1250D4S125-L	•	1.2500	9.456	6.456	5.157	1.250	3.000	BFTX03584	TRX15	WDXT094008			
WDX1312D4S150-L	•	1.3125	9.824	6.824	5.407	1.500	3.000	BFTX03584	TRX15	WDXT094008			
WDX1375D4S150-L	•	1.3750	10.074	7.074	5.657	1.500	3.000	BFTX03584	TRX15	WDXT094008			
WDX1437D4S150-L	•	1.4375	10.324	7.324	5.907	1.500	3.000	BFTX03584	TRX15	WDXT094008			
WDX1500D4S150-L	•	1.500	10.850	7.850	6.197	1.500	3.000	BFTX0511N	TRD20	WDXT125012			
WDX1562D4S150-L	•	1.5625	11.098	8.098	6.445	1.500	3.000	BFTX0511N	TRD20	WDXT125012			
WDX1625D4S150-L	•	1.6250	11.350	8.350	6.697	1.500	3.000	BFTX0511N	TRD20	WDXT125012			
WDX1687D4S150-L	•	1.6875	11.602	8.602	6.949	1.500	3.000	BFTX0511N	TRD20	WDXT125012			2
WDX1750D4S150-L	•	1.7500	11.850	8.850	7.197	1.500	3.000	BFTX0511N	TRD20	WDXT125012			
WDX1812D4S150-L	•	1.8125	12.102	9.102	7.449	1.500	3.000	BFTX0615N	TRD25	WDXT156012			
WDX1875D4S150-L	•	1.8750	12.350	9.350	7.697	1.500	3.000	BFTX0615N	TRD25	WDXT156012			
WDX1937D4S150-L	•	1.9375	12.602	9.602	7.949	1.500	3.000	BFTX0615N	TRD25	WDXT156012			
WDX2000D4S150-L	•	2.0000	12.850	9.850	8.197	1.500	3.000	BFTX0615N	TRD25	WDXT156012			
WDX2125D4S150-L	•	2.1250	13.350	10.350	8.697	1.500	3.000	BFTX0615N	TRD25	WDXT156012			
WDX2250D4S150-L	•	2.2500	14.047	11.047	9.315	1.500	3.000	BFTX0615N	TRD25	WDXT186012			
WDX2375D4S150-L	•	2.3750	14.547	11.547	9.815	1.500	3.000	BFTX0615N	TRD25	WDXT186012			
WDX2500D4S150-L	•	2.5000	15.047	12.047	10.315	1.500	3.000	BFTX0615N	TRD25	WDXT186012			

•: USA Stocked Item

Identification Code - Inch

WDX 0562 D4 S100 - L

- 0562: Dia. DC (ø0.562)
- D4: Flute Length L/D (4D)
- S100: Shank Dia. DCON (ø100.0)
- L: Side Port Coolant

PDL Type / PCT Type



■ General Features

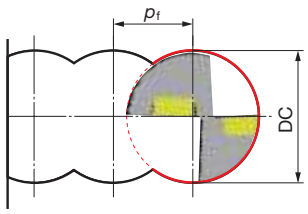
Cutting feed in the Z axis direction, where tool rigidity is high, allow high-efficiency, stable roughing for aeronautic components and dies with long tool overhang, where machining efficiency is hard to increase in long neck machining and pocketing.

■ Features

- The flat cutting edge design produces near-flat bottom profiles to reduce depth of cut variation during finishing.
- All sizes come with oil holes for supplying coolant internally to improve chip evacuation performance.
- Durable body with special surface treatment offers improved tool life and reliability.
- Utilizing SumiDrill WDX type inserts for handling a wide range of work materials, from steel to non-ferrous metals and exotic alloys.

- The PDL type has a central insert, enabling radial depth of cut beyond the tool's radius, pick feed cutting and drilling. (Pocketing, etc.)

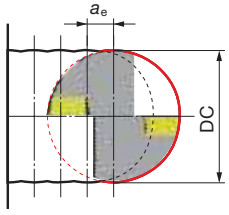


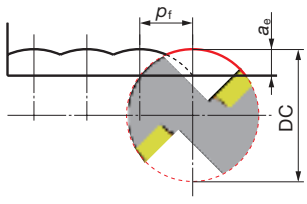


Keep the value of p_f for PDL type tools to less than 70% of the tool diameter (DC).

- Although the PCT type has limited radial depth of cut, the tool has a high effective number of teeth enabling it to perform high feed cutting. (Medium finishing of corners, hole expansion, deep groove processing, etc.)



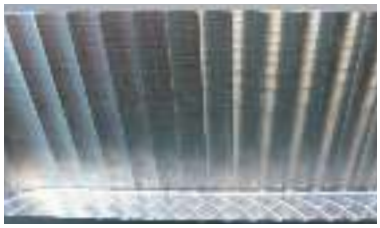




Keep the value of p_f for PCT type tools to less than 50% of the tool diameter (DC). For a_e, refer to the dimension under "a_e max" in the stock/dimensions table titled "Holders Max. Depth of Cut: 3D/5D".

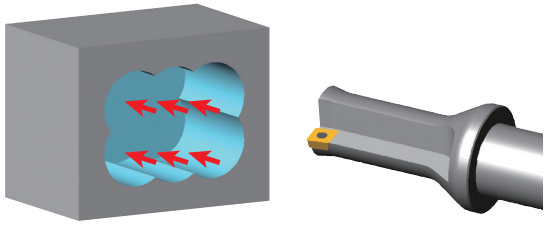






■ Application Examples

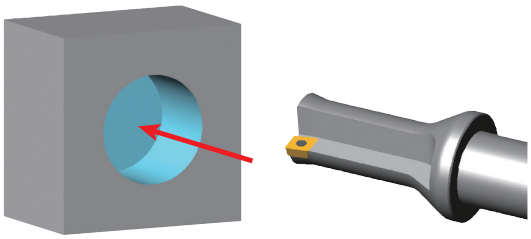
Pocketing PDL Type — Part Material: Titanium alloy



Tool : PDL400D2S40 (ø40)
Insert : WDXT125012-G
Grade : ACK300

Cutting Speed : v_c=131 SFM
Feed Rate : f=0.0027 IPR
(v_f=0.878 IPM)
Depth of Cut : a_e (p_i)=0.984"

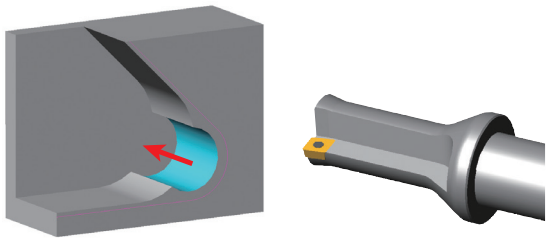
Drilling PDL Type — Part Material: 316 Stainless



Tool : PDL200D3S25 (ø20)
Insert : WDXT063006-G
Grade : ACP300

Cutting Speed : v_c=591 SFM
Feed Rate : f=0.0039 IPR
(v_f=11.26 IPM)
Depth of Cut : a_e (p_i)=0.787"

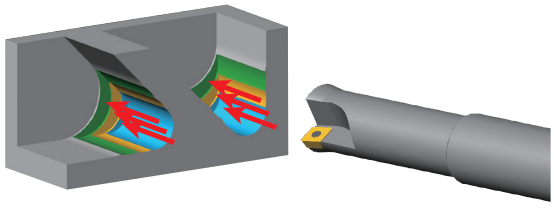
Corner Fillet Removal PDL Type — Part Material: 316 Stainless



Tool : PDL250D2S25 (ø25)
Insert : WDXT073506-G
Grade : ACP300

Cutting Speed : v_c=459
Feed Rate : f=0.0039 IPR
(v_f=7.008 IPM)
Depth of Cut : a_e(p_i)=0.590"

Corner Finishing PCT Type — Part Material: Titanium alloy

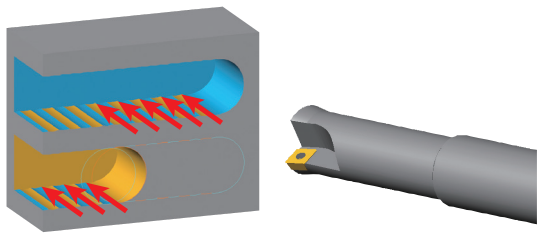


Tool :
PCT320D3S32 (ø32)
PCT250D3S25 (ø25)
PCT200D3S20 (ø20)
Grade : ACK300

Insert :
WDXT094008-G
WDXT073506-G
WDXT063006-G

Cutting Speed : v_c=164 SFM
Feed Rate : f_z=0.0016 ipt
(v_f=3.15 to 14.99 IPM)
Depth of Cut : a_e (p_i)=0.125 to 0.256"

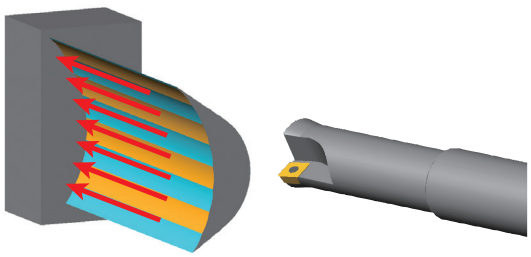
Groove Processing PCT Type — Part Material: Titanium alloy



Tool : PCT320D5S32 (ø32)
Insert : WDXT094008-G
Grade : ACK300

Cutting Speed : v_c=131 SFM
Feed Rate : f_z=0.0014 ipt
(v_f=2.205 IPM)
Depth of Cut : a_e (p_i)=0.197"

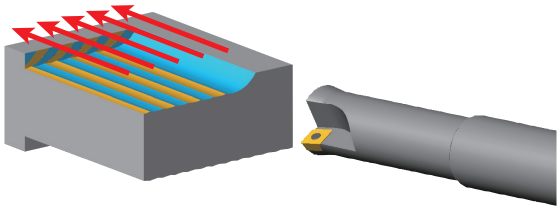
Contouring PCT Type — Part Material: Stainless Steel



Tool : PCT250D5S25 (ø25)
Insert : WDXT073506-G
Grade : ACP300

Cutting Speed : v_c 492 SFM
Feed Rate : f_z=0.002 ipt
(v_f=15.039 IPM)
Depth of Cut : a_e=0.118"

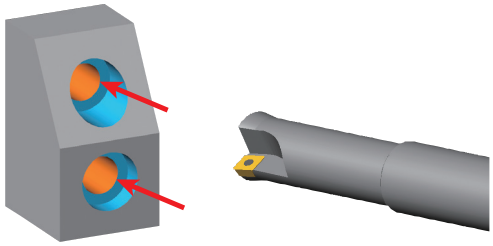
Shoulder Plunging PCT Type — Part Material: 304 Stainless



Tool : PCT320D3S32 (ø32)
Insert : WDXT094008-G
Grade : ACP300

Cutting Speed : v_c=591 SFM
Feed Rate : f_z=0.003 ipt
(v_f=21.14 IPM)
Depth of Cut : a_e=0.276
p_i=0.197

Counterboring PCT Type — Part Material: Cr-Mo Steel



Tool : PCT200D5S20 (ø20)
Insert : WDXT063006-G
Grade : ACP300

Cutting Speed : v_c=492 SFM
Feed Rate : f_z=0.003 ipt
(v_f=28.19 IPM)
Depth of Cut : a_e=0.138"

PDL Type 2D / 3D (Internal Coolant Supply)

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 2D | 3D | Indexable

Fig 1

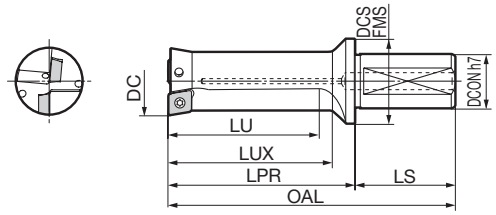
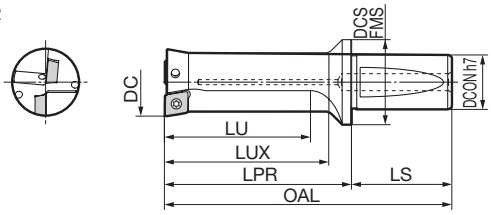


Fig 2



Holder Depth of Cut For 2D Diameter ø16.0 to 40.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Applicable Insert	Fig
16.0	★	**PDL160D2S20**	*32*	*35*	*50*	*94*	*44*	*28*	*20*	WDXT052504	1
20.0	★	**PDL200D2S25**	*40*	*43*	*58*	*114*	*56*	*33*	*25*	WDXT063006	1
25.0	★	**PDL250D2S25**	*50*	*53*	*71*	*127*	*56*	*37*	*25*	WDXT073506	1
32.0	★	**PDL320D2S40**	*64*	*68*	*92*	*162*	*70*	*54*	*40*	WDXT094008	2
40.0	★	**PDL400D2S40**	*80*	*85*	*115*	*185*	*70*	*54*	*40*	WDXT125012	2

Holder Depth of Cut For 3D Diameter ø16.0 to 40.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	Effective Length LU	Neck Length LUX	Overhang Length LPR	Overall Length OAL	Shank LS	Flange Dia. DCSFMS	Shank Dia. DCON	Applicable Insert	Fig
16.0	★	**PDL160D3S20**	*48*	*51*	*66*	*110*	*44*	*28*	*20*	WDXT052504	1
20.0	★	**PDL200D3S25**	*60*	*63*	*78*	*134*	*56*	*33*	*25*	WDXT063006	1
25.0	★	**PDL250D3S25**	*75*	*78*	*96*	*152*	*56*	*37*	*25*	WDXT073506	1
32.0	★	**PDL320D3S40**	*96*	*100*	*124*	*194*	*70*	*54*	*40*	WDXT094008	2
40.0	★	**PDL400D3S40**	*120*	*125*	*155*	*225*	*70*	*54*	*40*	WDXT125012	2

Insert

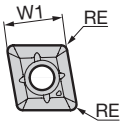
Dimensions (*mm*)

Grade		Coated Carbide								
Process	High-speed/Light	PK			N					
	General-purpose		PM							
	Roughing		PM	K						
Cat. No.		ACP100	ACP300	ACK300	DL1500	Width W1	Thickness S	Nose Radius RE	Applicable Holder	Fig
WDXT052504-L		●	●	●		*5.0*	*2.5*	*0.4*	PDL160D2S20/PDL160D3S20	1
WDXT052504-G		●	●	●	●					2
WDXT052504-H		●	●	●						3
WDXT063006-L		●	●	●		*6.0*	*3.0*	*0.6*	PDL200D2S25/PDL200D3S25	1
WDXT063006-G		●	●	●	●					2
WDXT063006-H		●	●	●						3
WDXT073506-L		●	●	●		*7.5*	*3.5*	*0.6*	PDL250D2S25/PDL250D3S25	1
WDXT073506-G		●	●	●	●					2
WDXT073506-H		●	●	●						3
WDXT094008-L		●	●	●		*9.6*	*4.0*	*0.8*	PDL320D2S40/PDL320D3S40	1
WDXT094008-G		●	●	●	●					2
WDXT094008-H		●	●	●						3
WDXT125012-L		●	●	●		*12.4*	*5.0*	*1.2*	PDL400D2S40/PDL400D3S40	1
WDXT125012-G		●	●	●	●					2
WDXT125012-H		●	●	●						3

(Insert is the same as the WDX Type)

Fig 1

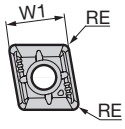
L Type



L Type: For low feed with chip control

Fig 2

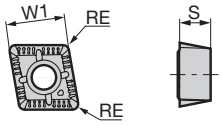
G Type



G Type: General-purpose

Fig 3

H Type



H Type: Strong edge

Identification Code

PDL 250 D2 S25

- PDL: Dia. DC (ø25.0)
- 250: Flute Length (L/D) (2D)
- D2: Shank Dia. DCON (ø25.0)

WDXT 07 35 06 -G

- WDXT: Width across Flats (7.5)
- 07: Thickness x 10 (3.5)
- 35: Nose Radius x 10 (0.6)
- 06: Breaker Type
- -G

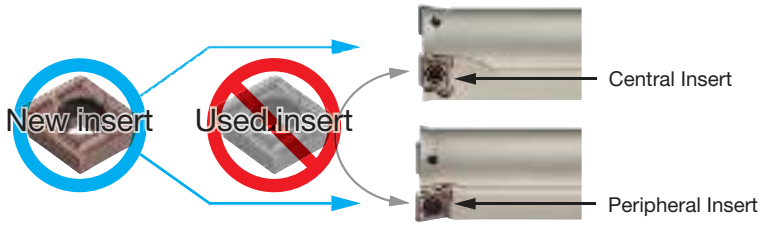
Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
PDL160D2S20 / PDL160D3S20	BFTX0204N	0.5	TRX06	-
PDL200D2S25 / PDL200D3S25	BFTY02206	1.0	-	TRD07
PDL250D2S25 / PDL250D3S25	BFTX02506N	1.5	-	TRD08
PDL320D2S40 / PDL320D3S40	BFTX03584	3.5	-	TRD15
PDL400D2S40 / PDL400D3S40	BFTX0511N	5.0	-	TRD20

●: USA Stocked Item
★: Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

● Precautions for Mounting Inserts



PDL Type: Inserts can be used on either the central or peripheral position and both corners are used.
Used peripheral inserts cannot be used as central insert and similarly,
used central inserts cannot be used as peripheral insert.

Recommended Cutting Conditions (for 2D) (PDL Type)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	*f* (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
2D	P	Steel, Carbon Steel	SS400	125	G	ACP300	120-**180**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.12
			S15C	125	L	ACP300	130-**170**-220	0.04-**0.08**-0.12	0.04-**0.08**-0.12	0.04-**0.08**-0.13	0.05-**0.10**-0.15
			S45C	190	G	ACP300	100-**150**-200	0.08-**0.13**-0.24	0.08-**0.13**-0.24	0.08-**0.14**-0.26	0.09-**0.16**-0.29
			S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.17
			S75C	270	G	ACP100	120-**180**-240	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.06-**0.10**-0.17	0.07-**0.12**-0.19
			S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.09**-0.14	0.05-**0.10**-0.15
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100-**140**-180	0.05-**0.08**-0.14	0.05-**0.08**-0.14	0.05-**0.08**-0.16	0.06-**0.09**-0.17
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.16
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.08-**0.12**-0.17	0.08-**0.12**-0.17	0.08-**0.12**-0.18	0.09-**0.12**-0.21
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.15	0.07-**0.11**-0.16
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	G	ACP300	100-**140**-180	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22
			SUS403/Others (Martensitic (hardened))	240	G	ACP300	90-**120**-150	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22
			SUS304, SUS316 (Austenitic)	180	G	ACP300	100-**140**-180	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22
	K	Cast Iron			H	ACK300	120-**160**-200	0.09-**0.20**-0.32	0.10-**0.22**-0.36	0.11-**0.24**-0.39	0.12-**0.26**-0.44
		Ductile Cast Iron			H	ACK300	90-**120**-150	0.09-**0.20**-0.32	0.10-**0.22**-0.36	0.11-**0.24**-0.39	0.12-**0.26**-0.44
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACP300	25- **50**- 70	0.06-**0.11**-0.18	0.06-**0.11**-0.18	0.06-**0.12**-0.19	0.07-**0.13**-0.22
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20
		Copper Alloy			G	DL1500	180-**230**-280	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In this case, it is recommended to set the cutting speed (V_c) to 130% and the feed rate (*f*) to 75% of the figures in the table above.

Recommended Cutting Conditions (for 3D) (PDL Type)

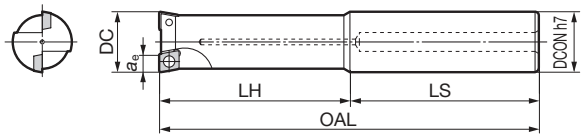
		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	*f* (feed rate) (mm/rev)□□(Min. - **Optimum** - Max.) ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
3D	P	Steel, Carbon Steel	SS400	125	G	ACP300	120-**180**-240	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.12
			S15C	125	L	ACP300	130-**170**-220	0.04-**0.07**-0.10	0.04-**0.07**-0.10	0.04-**0.08**-0.11	0.05-**0.09**-0.12
			S45C	190	G	ACP300	100-**150**-200	0.08-**0.12**-0.20	0.08-**0.12**-0.20	0.08-**0.13**-0.22	0.09-**0.14**-0.24
			S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.12	0.05-**0.09**-0.14
			S75C	270	G	ACP100	120-**180**-240	0.06-**0.09**-0.14	0.06-**0.09**-0.14	0.06-**0.10**-0.14	0.07-**0.11**-0.17
			S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.05-**0.09**-0.14
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.12	0.05-**0.07**-0.12	0.05-**0.08**-0.13	0.06-**0.08**-0.15
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.10**-0.12
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.08-**0.11**-0.14	0.08-**0.12**-0.15	0.08-**0.12**-0.16	0.09-**0.14**-0.18
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.06-**0.09**-0.11	0.07-**0.10**-0.12
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	G	ACP300	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18
			SUS403/Others (Martensitic (hardened))	240	G	ACP300	90-**120**-150	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18
			SUS304, SUS316 (Austenitic)	180	G	ACP300	100-**140**-180	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18
	K	Cast Iron			H	ACK300	120-**160**-200	0.09-**0.18**-0.27	0.10-**0.20**-0.30	0.11-**0.22**-0.32	0.12-**0.24**-0.36
		Ductile Cast Iron			H	ACK300	90-**120**-150	0.09-**0.18**-0.27	0.10-**0.20**-0.30	0.11-**0.22**-0.32	0.12-**0.24**-0.36
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACP300	25- **50**- 70	0.06-**0.10**-0.15	0.06-**0.10**-0.15	0.06-**0.11**-0.16	0.07-**0.12**-0.18
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20
		Copper Alloy			G	DL1500	180-**230**-280	0.06-**0.11**-0.17	0.06-**0.11**-0.17	0.06-**0.12**-0.18	0.07-**0.13**-0.20

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In this case, it is recommended to set the cutting speed (V_c) to 130% and the feed rate (*f*) to 75% of the figures in the table above.

PCT Type 3D / 5D (Internal Coolant Supply)

CVD Coat | PVD Coat | Aurora DLC Coat | Coolant Hole | 3D | 5D | Indexable

Fig 1



Holder Depth of Cut For 3D Diameter ø16.0 to 40.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	a_e max	Flute Length LH	Overall Length OAL	Shank LS	Shank Dia. DCON	Number of Teeth	Applicable Insert	Fig
16.0	★	**PCT160D3S16**	*4.0*	*53*	*123*	*70*	*16*	2	WDXT052504	1
20.0	★	**PCT200D3S20**	*5.0*	*65*	*145*	*80*	*20*	2	WDXT063006	1
25.0	★	**PCT250D3S25**	*6.5*	*80*	*160*	*80*	*25*	2	WDXT073506	1
32.0	★	**PCT320D3S32**	*8.5*	*101*	*191*	*90*	*32*	2	WDXT094008	1
40.0	★	**PCT400D3S42**	*11.0*	*125*	*225*	*100*	*42*	3	WDXT125012	1

Holder Depth of Cut For 5D Diameter ø16.0 to 40.0mm

Dimensions (*mm*)

Dia. DC	Stock	Cat. No.	a_e max	Flute Length LH	Overall Length OAL	Shank LS	Shank Dia. DCON	Number of Teeth	Applicable Insert	Fig
16.0	★	**PCT160D5S16**	*4.0*	*85*	*155*	*70*	*16*	2	WDXT052504	1
20.0	★	**PCT200D5S20**	*5.0*	*105*	*185*	*80*	*20*	2	WDXT063006	1
25.0	★	**PCT250D5S25**	*6.5*	*130*	*210*	*80*	*25*	2	WDXT073506	1
32.0	★	**PCT320D5S32**	*8.5*	*165*	*255*	*90*	*32*	2	WDXT094008	1
40.0	★	**PCT400D5S42**	*11.0*	*205*	*305*	*100*	*42*	3	WDXT125012	1

Insert

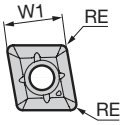
Dimensions (*mm*)

Grade		Coated Carbide			
Process	High-speed/Light	PK			N
	General-purpose		PM		
	Roughing		PM	K	

Cat. No.	ACP100	ACP300	ACK300	DL1500	Width W1	Thickness S	Nose Radius RE	Applicable Holder	Fig
WDXT052504-L	●	●	●		*5.0*	*2.5*	*0.4*	PCT160D3S16/PCT160D5S16	1
WDXT052504-G	●	●	●	●					2
WDXT052504-H	●	●	●						3
WDXT063006-L	●	●	●		*6.0*	*3.0*	*0.6*	PCT200D3S20/PCT200D5S20	1
WDXT063006-G	●	●	●	●					2
WDXT063006-H	●	●	●						3
WDXT073506-L	●	●	●		*7.5*	*3.5*	*0.6*	PCT250D3S25/PCT250D5S25	1
WDXT073506-G	●	●	●	●					2
WDXT073506-H	●	●	●						3
WDXT094008-L	●	●	●		*9.6*	*4.0*	*0.8*	PCT320D3S32/PCT320D5S32	1
WDXT094008-G	●	●	●	●					2
WDXT094008-H	●	●	●						3
WDXT125012-L	●	●	●		*12.4*	*5.0*	*1.2*	PCT400D3S42/PCT400D5S42	1
WDXT125012-G	●	●	●	●					2
WDXT125012-H	●	●	●						3

Fig 1

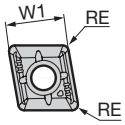
L Type



L Type: For low feed with chip control

Fig 2

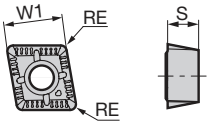
G Type



G Type: General-purpose

Fig 3

H Type



H Type: Strong edge

PCT Type: 2 corners can be used for the peripheral edge only.
(Insert is the same as the WDX Type)

Identification Code

PCT 250 D3 S25

- PCT
- 250 — Dia. DC (ø25.0)
- D3 — Flute Length (L/D) (3D)
- S25 — Shank Dia. DCON (ø25.0)

WDXT 07 35 06 -G

- WDXT
- 07 — Width across Flats (7.5)
- 35 — Thickness x 10 (3.5)
- 06 — Nose Radius x 10 (0.6)
- -G — Breaker Type

Parts

Applicable Holder	Flat Screw	N·m	Wrench	Wrench
PCT160D3S16 / PCT160D5S16	BFTX0204N	0.5	TRX06	-
PCT200D3S20 / PCT200D5S20	BFTY02206	1.0	-	TRD07
PCT250D3S25 / PCT250D5S25	BFTX02506N	1.5	-	TRD08
PCT320D3S32 / PCT320D5S32	BFTX03584	3.5	-	TRD15
PCT400D3S42 / PCT400D5S42	BFTX0511N	5.0	-	TRD20

●: USA Stocked Item
★: Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions (for 3D) (PCT Type)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	f_z (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
3D	P	Steel, Carbon Steel	SS400	125	G	ACP300	120-**180**-240	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.08**-0.10
			S15C	125	L	ACP300	130-**170**-220	0.04-**0.07**-0.09	0.04-**0.07**-0.09	0.04-**0.07**-0.09	0.05-**0.08**-0.10
			S45C	190	G	ACP300	100-**150**-200	0.08-**0.11**-0.17	0.08-**0.11**-0.17	0.08-**0.12**-0.18	0.09-**0.14**-0.21
			S45C Hardened	250	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11	0.05-**0.08**-0.11
			S75C	270	G	ACP100	120-**180**-240	0.06-**0.08**-0.11	0.06-**0.08**-0.11	0.06-**0.09**-0.13	0.07-**0.11**-0.14
			S75C Hardened	300	G	ACP100	85-**150**-210	0.05-**0.07**-0.09	0.05-**0.07**-0.09	0.05-**0.08**-0.10	0.05-**0.08**-0.11
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100-**140**-180	0.05-**0.07**-0.10	0.05-**0.07**-0.10	0.05-**0.07**-0.11	0.06-**0.08**-0.12
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.06-**0.10**-0.13	0.07-**0.11**-0.14	0.07-**0.11**-0.15	0.08-**0.12**-0.16
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.10	0.05-**0.08**-0.11
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	G	ACP300	100-**140**-180	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
			SUS403/Others (Martensitic (hardened))	240	G	ACP300	90-**120**-150	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
			SUS304, SUS316 (Austenitic)	180	G	ACP300	100-**140**-180	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
	K	Cast Iron			H	ACK300	120-**160**-200	0.09-**0.17**-0.23	0.10-**0.19**-0.26	0.11-**0.21**-0.28	0.12-**0.23**-0.31
		Ductile Cast Iron			H	ACK300	90-**120**-150	0.09-**0.17**-0.23	0.10-**0.19**-0.26	0.11-**0.21**-0.28	0.12-**0.23**-0.31
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACP300	25- **50**- 70	0.06-**0.10**-0.13	0.06-**0.10**-0.13	0.06-**0.10**-0.14	0.07-**0.11**-0.15
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18
		Copper Alloy			G	DL1500	180-**230**-280	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In this case, it is recommended to set the cutting speed (V_c) to 130% and the feed rate (f_z) to 75% of the figures in the table above.

Recommended Cutting Conditions (for 5D) (PCT Type)

		Work Material		Workpiece Hardness HB	Recommended Chipbreaker	Recommended Insert Grade	v_c (cutting speed) (m/min)	f_z (feed rate) (mm/rev) (Min. - **Optimum** - Max.) ø16.0	ø20.0, ø25.0	ø32.0	ø40.0
5D	P	Steel, Carbon Steel	SS400	125	G	ACP300	120-**180**-240	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.07**-0.09
			S15C	125	L	ACP300	130-**170**-220	0.04-**0.06**-0.08	0.04-**0.06**-0.08	0.04-**0.06**-0.08	0.05-**0.07**-0.09
			S45C	190	G	ACP300	100-**150**-200	0.07-**0.10**-0.15	0.07-**0.10**-0.15	0.08-**0.11**-0.17	0.09-**0.12**-0.19
			S45C Hardened	250	G	ACP100	100-**170**-240	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.11
			S75C	270	G	ACP100	120-**180**-240	0.05-**0.08**-0.11	0.05-**0.08**-0.11	0.06-**0.08**-0.11	0.07-**0.09**-0.13
			S75C Hardened	300	G	ACP100	85-**150**-210	0.04-**0.07**-0.08	0.04-**0.07**-0.08	0.05-**0.07**-0.09	0.05-**0.08**-0.10
		Low-alloy Steel	SCM,SNCM	180	L	ACP300	100-**140**-180	0.05-**0.06**-0.09	0.05-**0.06**-0.09	0.05-**0.06**-0.10	0.05-**0.07**-0.11
			SCM, SNCM Hardened	275	G	ACP100	100-**170**-240	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	300	G	ACP100	90-**150**-210	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
			SCM, SNCM Hardened	350	G	ACP100	75-**120**-165	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.05-**0.07**-0.10
		High-alloy Steel	SKD,SKT,SKH	200	G	ACP100	120-**180**-240	0.05-**0.08**-0.12	0.06-**0.09**-0.12	0.06-**0.09**-0.13	0.07-**0.10**-0.14
			SKD, SKT, SKH (Sintered)	325	G	ACP100	100-**140**-180	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09	0.04-**0.06**-0.09
	M	Stainless Steel	SUS403/Others (Martensitic/Ferritic)	200	G	ACP300	100-**140**-180	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
			SUS403/Others (Martensitic (hardened))	240	G	ACP300	90-**120**-150	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
			SUS304, SUS316 (Austenitic)	180	G	ACP300	100-**140**-180	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
	K	Cast Iron			H	ACK300	120-**160**-200	0.08-**0.15**-0.21	0.09-**0.17**-0.23	0.09-**0.18**-0.25	0.11-**0.20**-0.28
		Ductile Cast Iron			H	ACK300	90-**120**-150	0.08-**0.15**-0.21	0.09-**0.17**-0.23	0.09-**0.18**-0.25	0.11-**0.20**-0.28
	S	Exotic Alloy (Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		200	G	ACP300	25- **50**- 70	0.05-**0.09**-0.11	0.05-**0.09**-0.11	0.06-**0.09**-0.12	0.06-**0.10**-0.14
	N	Aluminum Alloy			G	DL1500	200-**260**-320	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18
		Copper Alloy			G	DL1500	180-**230**-280	0.05-**0.10**-0.15	0.05-**0.10**-0.15	0.06-**0.11**-0.16	0.06-**0.12**-0.18

For the P and K grades for which ACP300 and ACK300 inserts are the first recommendation, ACP100 inserts are the second recommendation.
In this case, it is recommended to set the cutting speed (V_c) to 130% and the feed rate (f_z) to 75% of the figures in the table above.

MEMO



■ Features

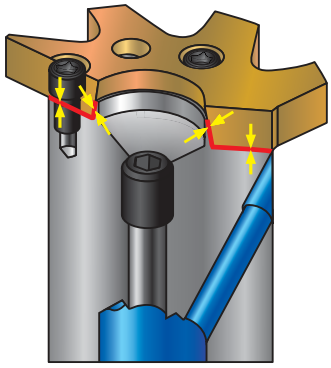
●Achieving high efficiency through high speed and high feed capabilities!
(v_c=164 to 1,640 SFM, f=0.016" to 0.047" IPR)

- Compatible with a wide range of cutting conditions, allowing management of cutting conditions and coolant supply
- Designed with minimal cutting edge length, eliminating galling and blemishes for improved quality and reliability
- Adoption of indexable cutting edge design improves reliability of quality and tool life, eliminating variability in tool life among reground inserts
- Cutting edge diameters from ø7.6 to ø140.6 mm available

●Easy insert replacement

●Flexible tool overhang lengths possible by combining the modular extension/arbor and shank with insert runout adjustment mechanism





A taper supports the insert on two faces (based on the HSK standard) for repeatability within 4 µm using random inserts

■ Application Examples

Workpiece	 Cylinder barrel	 Connection rod	 Sliding yoke	 Front axle	 Special holder with guide pads Control valve
Part Material	Cast Iron	Forged Carbon Steel	Structural Steel	Forged 1020 Steel	Forged Carbon Steel
Holder Cat. No. Insert Cat. No.	**SRD19-12-115** SRG17.0H7-A01-T1212R1	**SRD36-25-170** SRG29.0H7-A01-F0512R1	**SRD19-12-115** SRG16.02Q+3-3-C01-F0512R1	**SRD29-20-240** SRL28.0H7-B01-F0512R1	Special holder with guide pads SRL14.0H7-B01-F0512R1
Max. Work Dia. (mm)	ø17.0	ø29.0	ø16.02	ø28.0	ø14.0
Hole Dia. Tolerance	H7	H7	H7	H7	H7
Surface Roughness (µm)	Rz10.0	Ra0.8	Ra3.2	Ra3.2	Ra1.6
Circularity (µm)	5	2	–	5	5
Cylindricity (µm)	5	4	–	5	5
Number of Teeth	6	8	6	8	6
v_c (m/min)	148	120	150	60	100
n (min^{-1})	2,772	1,318	2,982	682	2,230
f_z (mm/t)	0.20	0.15	0.10	0.075	0.10
v_f (m/min)	3,326	1,582	1,789	409	1,368
a_p (mm)	0.10	0.15	0.15	0.15	0.15
Wet / Dry	Wet	Wet	Wet	Wet	Wet
Tool life, etc.	57.9m	30.52m	–	15.8m	–

SR Small & Medium

ø7.600 - 13.100mm
ø35.601 - 140.600mm

Compensating Collet Chuck
J135, J141



Floating Chuck for Lathes
J136, J142



Collets
J137



Seal Disk for Collet Nut
J137



SR Small Holders
J134



SR Small Insert
J134



SR Small

ø7.600 - 13.100mm

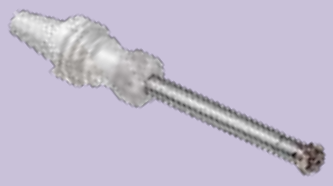
Schunk "Tendo Zero" Compensation Hydro Chuck
J136, J142



Reducers for Hydro-Compensation Chuck "Schunk"
J137



SR Small Holders
J140



SR Medium Insert
J138 & J139



ø7.600 - 13.100mm

Compensating Hydro Chuck
J135



Reducers for Hydro-Compensation Chuck
J137



SR Medium Insert
J138 & J139



SR Medium

ø35.601 - 140.600mm

System Holders Beta-Module
J145



(Optional)
Extensions Beta-Module
J144



(Optional)
Reducers Beta-Module
J144



Shanks
(with Integrated Compensation Device)
J144

Insert Holders
J143



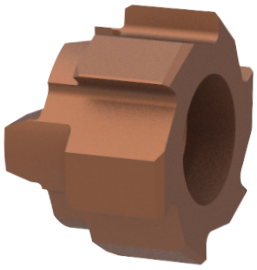
ø35.601 - 140.600mm

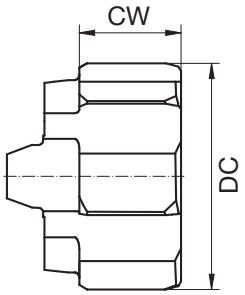
Adapter
(with Integrated Compensation Device)
J143



Insert for SumiReamer Small SR Type

- SRSG Type General-purpose Straight Flutes: Stop and Through Holes
- SRSL Type Left Hand Helical Flutes: Through Holes





Small Insert SRSG / SRSL Type

*Made to Order

Dia. DC Range (mm)	Holder Cat. No.				CW	No. of Teeth
	Stock	Straight Fluted Inserts	Stock	Left Hand Helical Fluted Inserts		
ø7.600 to ø8.100	★	SRSG08...	★	SRSL08...	4.5	4
ø8.101 to ø9.600	★	SRSG10...	★	SRSL10...	4.5	6
ø9.601to ø11.100	★	SRSG11...	★	SRSL11...	4.5	6
ø11.101 to ø13.100	★	SRSG13...	★	SRSL13...	4.5	6

*See below for DC tolerance.

Small SumiReamer SR Type Insert Identification

Specifying Inserts Using Workpiece Hole Diameter Tolerance

The actual desired reamer diameter will be on the upper limit side of the median work tolerance, and will differ depending on diameter/tolerance range/grade. Contact Sumitomo Engineering Dept. for more details.

SR (1) S (2) G (3) 18.2 (4) + 20 - 10 (5) - A01 (6) - F05 (7) 12R 1 (8)

(1) SR Type	(5) Tolerance (µm) +/- or standard (e.g. H7)
(2) Small	(6) Approach Angle Code
(3) G = Straight, L = Lefthand helix	(7) Grade Symbol
(4) Workpiece Bore Diameter (mm)	(8) Coating Code

Specifying Inserts Using Desired Reamer Diameter

By adding a "Q" after the diameter, it is possible to specify exact desired reamer dimensions. Uncoated types are available within ±2µ, thin-coated layer types are available within ±3µ and thick-coated layer types are available within ±4µ.

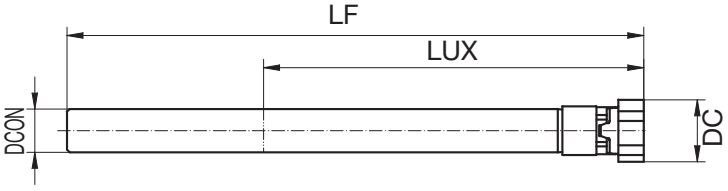
SR (1) S (2) L (3) 18.2 (4) Q + 3 - 3 (5) - A01 (6) - F05 (7) 12R 1 (8)

(1) SR Type	(5) Tolerance (µm) +/-(6) Approach Angle Code
(2) Small	(7) Grade Symbol
(3) G = Straight, L = Lefthand helix	(8) Coating Code
(4) Median Desired Cutting Edge Diameter (mm)	

Small Holder

· Single insert screw improves insert replacement efficiency
· Capable of high-torque (high-load) machining





Steel Shank Insert Holder SRSD / SRSB Type

Dimensions (*mm*)

Dia. DC Range	Holder Cat. No.				Shank Dia. DCON	Overall Length LF	Usable Length LUX	Insert Screws		N·m
	SRSD Type (Through Hole)		SRSB Type (Stop Hole)					SRSD	SRSB	
	Stock	Cat. No.	Stock	Cat. No.						
ø7.600 to ø8.100	★	SRSD08-06-086	★	SRSB08-06-086	6	86	50	C00-90-51	C00-90-51	0.6
ø8.101 to ø9.600	★	SRSD10-06-096	★	SRSB10-06-096	6	96	60	C00-90-52	C00-90-52	0.9
ø9.601to ø11.100	★	SRSD11-08-106	★	SRSB11-08-106	8	106	70	C00-90-53	C00-90-53B	1.4
ø11.101 to ø13.100	★	SRSD13-08-120	★	SRSB13-08-120	8	120	84	C00-90-54	C00-90-54B	2.0

Carbide Shank Insert Holder SRSD/ SRSB Type

Dimensions (*mm*)

Dia. DC Range	Holder Cat. No.				Shank Dia. DCON	Overall Length LF	Usable Length LUX	Insert Screws		N·m
	SRSD Type (Through Hole)		SRSB Type (Stop Hole)					SRSD	SRSB	
	Stock	Cat. No.	Stock	Cat. No.						
ø7.600 to ø8.100	★	SRSD08-06-102HM	★	SRSB08-06-102HM	6	102	66	C00-90-51	C00-90-51	0.6
ø8.101 to ø9.600	★	SRSD10-06-116HM	★	SRSB10-06-116HM	6	116	80	C00-90-52	C00-90-52	0.9
ø9.601to ø11.100	★	SRSD11-08-126HM	★	SRSB11-08-126HM	8	126	90	C00-90-53	C00-90-53B	1.4
ø11.101 to ø13.100	★	SRSD13-08-150HM	★	SRSB13-08-150HM	8	150	114	C00-90-54	C00-90-54B	2.0

★: Worldwide Warehouse Item

Compensation Collet Chuck (ø7.600 to ø13.100)



Fig 1

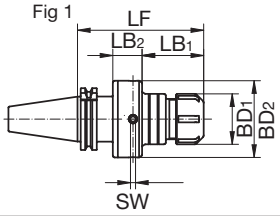


Fig 2

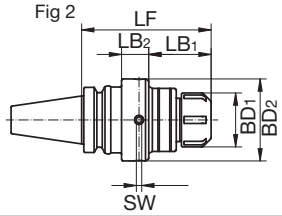
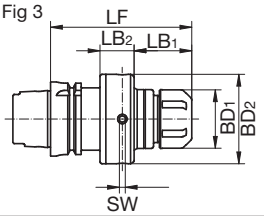


Fig 3



DIN 69871-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	Type	Dia. Range	BD2	BD1	Gage Length LF	LB1	LB2	Adjustment screw SW	Weight (kg)	Fig
AND60-40A-32-120	★	**SK40**	ER32	*3.0 to 20.0*	*76*	*50*	*120*	*56*	*29*	*5*	2.2	1
AND60-50A-32-120	★	**SK50**	ER32	*3.0 to 20.0*	*76*	*50*	*120*	*61*	*24*	*5*	4.1	1

MAS-BT JIS 6339-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	Type	Dia. Range	BD2	BD1	Gage Length LF	LB1	LB2	Adjustment screw SW	Weight (kg)	Fig
ANT60-40A-32-120	★	**BT40**	ER32	*3.0 to 20.0*	*76*	*50*	*120*	*54*	*29*	*5*	2.2	2
ANT60-50A-32-120	★	**BT50**	ER32	*3.0 to 20.0*	*76*	*50*	*120*	*58*	*24*	*5*	4.5	2

DIN 69893-HSK-A

Dimensions (*mm*)

Cat. No.	Stock	Size	Type	Dia. Range	BD2	BD1	Gage Length LF	LB1	LB2	Adjustment screw SW	Weight (kg)	Fig
ANH60-63A-32-120	★	**HSK63**	ER32	*3.0 to 20.0*	*76*	*50*	*120*	*49*	*29*	*5*	2	3
ANH60-100A-32-120	★	**HSK100**	ER32	*3.0 to 20.0*	*76*	*50*	*120*	*67*	*24*	*5*	3.4	3

*Adjustment Screw "SW" C00 03 44 (4x) for all compensation collet chucks

Compensation Hydraulic Chuck (ø7.600 to ø13.100)

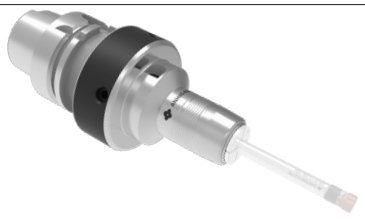


Fig 1

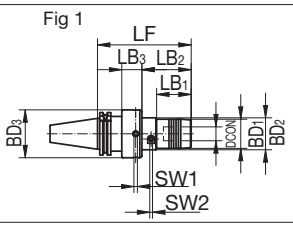


Fig 2

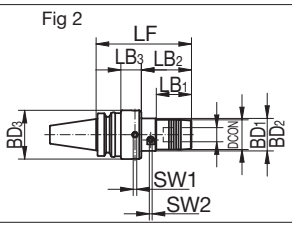
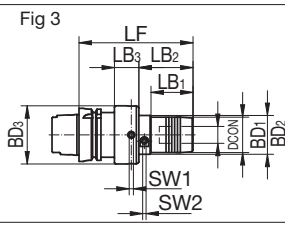


Fig 3



DIN 69871-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD1	BD2	BD3	LF	LB1	LB2	LB3	SW1	SW2	Weight (kg)	Fig
AND65-40A-12-135	★	SK40	*12*	*32*	*52*	*76*	*135*	*46*	*71*	*29*	*5*	*4*	2.5	1
AND65-50A-12-160	★	SK50	*12*	*32*	*52*	*76*	*160*	*66*	*92*	*34*	*5*	*4*	4.8	1

MAS-BT JIS 6339-AD

Dimensions (*mm*)

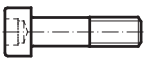
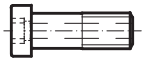
Cat. No.	Stock	Size	DCON	BD1	BD2	BD3	LF	LB1	LB2	LB3	SW1	SW2	Weight (kg)	Fig
ANT65-40A-12-135	★	BT40	*12*	*32*	*52*	*76*	*135*	*46*	*71*	*29*	*5*	*4*	2.6	2
ANT65-50A-12-135	★	BT50	*12*	*32*	*52*	*76*	*135*	*46*	*73*	*24*	*5*	*4*	4.8	2

DIN 69893-HSK-A

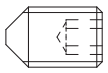
Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD1	BD2	BD3	LF	LB1	LB2	LB3	SW1	SW2	Weight (kg)	Fig
ANH65-63A-12-135	★	HSK63	*12*	*32*	*52*	*76*	*135*	*46*	*64*	*29*	*5*	*4*	2.3	3
ANH65-100A-12-135	★	HSK100	*12*	*32*	*52*	*76*	*135*	*46*	*82*	*24*	*5*	*4*	3.5	3

Spare Parts for Small Holders

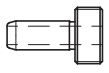
Dia. DC Range	Insert Screws	
	SRSD Type	**SRSB Type**
		
ø7.600 to ø8.100	C00-9051	C00-90-51
ø8.101 to ø9.600	C00-90-52	C00-90-52
ø9.601to ø11.100	C00-90-53	C00-90-53B
ø11.101 to ø13.100	C00-90-54	C00-90-54B

Spare Parts

Diameter DCON	
12	C00-03-44
20	C00-03-44
32	C00-03-45

Adjustment Screw (SW1) for Compensation Hydraulic Chucks

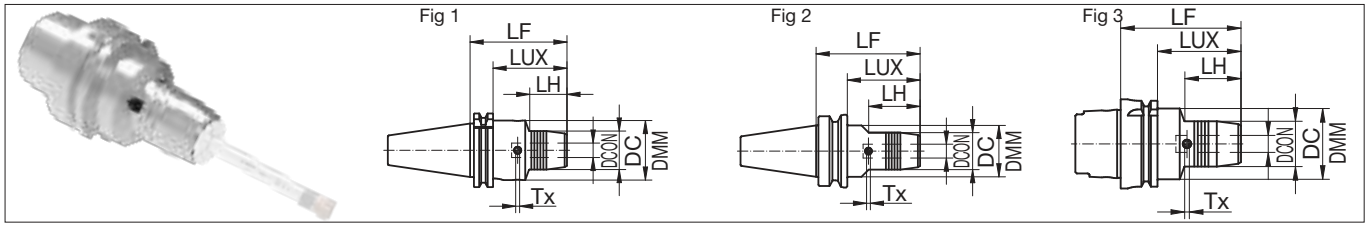
Coolant Tubes

Taper Size	
HSK40	H00-40-01
HSK63	H00-63-01
HSK100	H00-100-01

For the HSK arbor.

★: Worldwide Warehouse Item

Schunk "TENDOzero" Compensating Hydraulic Chuck (ø7.600 to ø13.100)



DIN 69871-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	DC	DCON	DMM	LF	LH	LUX	Tx	Weight (kg)	Fig
204266Z	★	CAT40	*42*	*20*	*50*	*81*	*34*	*62*	15IP	1.4	1
204246Z	★	CAT50	*42*	*20*	*50*	*81*	*34*	*62*	15IP	3.3	1

MAS-BT JIS 6339-AD/B

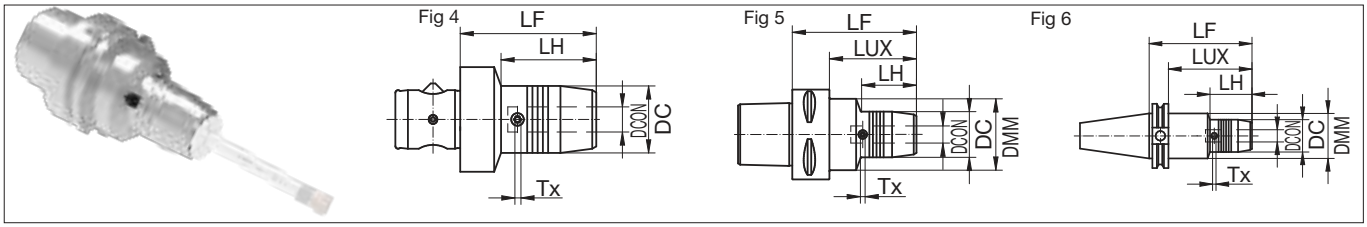
Dimensions (*mm*)

Cat. No.	Stock	Size	DC	DCON	DMM	LF	LH	LUX	Tx	Weight (kg)	Fig
205636Z	★	BT30	*42*	*20*	*45*	*90*	*48*	*63*	15IP	1.5	2
204443Z	★	BT40	*32*	*12*	*45*	*90*	*45*	*63*	15IP	1.4	2
204455Z	★	BT50	*32*	*12*	*45*	*90*	*34*	*52*	15IP	4	2

DIN 69893-HSK-A

Dimensions (*mm*)

Cat. No.	Stock	Size	DC	DCON	DMM	LF	LH	LUX	Tx	Weight (kg)	Fig
204054Z	★	HSK63	*42*	*12*	*50*	*90*	*48*	*64*	15IP	1.3	3
204064Z	★	HSK100	*42*	*12*	*50*	*105*	*59*	*76*	15IP	2.8	3



ABS-H Type

Dimensions (*mm*)

Cat. No.	Stock	Size	DC	DCON	DMM	LF	LH	LUX	Tx	Weight (kg)	Fig
204576Z	★	ABS50	*42*	*20*	-	*75*	*58*	-	15IP	0.9	4

DIN 26623-1-PSC (Polygon Shank)

Dimensions (*mm*)

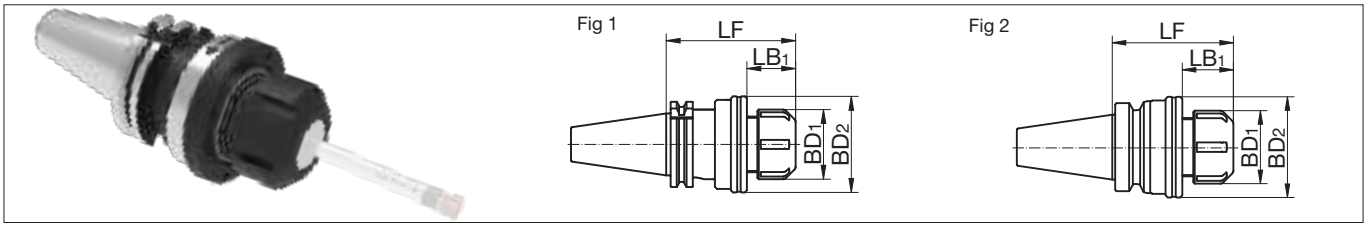
Cat. No.	Stock	Size	DC	DCON	DMM	LF	LH	LUX	Tx	Weight (kg)	Fig
201846Z	★	PSC50	*42*	*20*	*50*	*90*	*52*	-	15IP	1.05	5
201856Z	★	PSC63	*42*	*20*	*63*	*97*	*55*	-	15IP	1.6	5

ASME B5.50-CAT-AD/B

Dimensions (*mm*)

Cat. No.	Stock	Size	DC	DCON	DMM	LF	LH	LUX	Tx	Weight (kg)	Fig
203664Z	★	CAT40	*32*	*12*	*45*	*102*	*42*	*83*	15IP	2.0	6
204664Z	★	CAT50	*32*	*12*	*70*	*102*	*42*	*83*	15IP	2.7	6

Floating Chuck (ø7.600 to ø13.100)



DIN 69871-AD

Dimensions (*mm*)

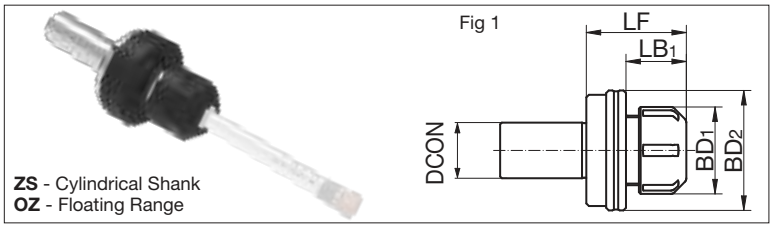
Cat. No.	Stock	Collet	Size	Diameter Range	BD_2	BD_1	LF	Fig
PD60-40A-25-088	★	ER25	SK40	*3.0 to 16.0*	***57***	*42*	*88*	1
PD60-50A-25-088	★		SK50	*3.0 to 16.0*	***57***	*42*	*88*	1

MAS-BT JIS 6339-AD

Dimensions (*mm*)

Cat. No.	Stock	Collet	Size	Diameter Range	BD_2	BD_1	LF	Fig
PT60-30A-20-070	★	ER20	BT30	*3.0 to 13.0*	-	*35*	*70*	2
PT60-40A-25-078	★	ER25	BT40	*3.0 to 16.0*	***57***	*42*	*78*	2
PT60-50A-25-088	★		BT50	*3.0 to 16.0*	***57***	*42*	*88*	2

Floating Chuck for Lathes (ø7.600 to ø13.100)



ZS - Cylindrical Shank
OZ - Floating Range

Cylindrical Shaft DIN 1835-A

Dimensions (*mm*)

Cat. No.	Stock	Collet	DCON	Diameter Range	BD_2	BD_1	LF	OZ	Weight (kg)	Fig
PZ60-16-16-044	★	ER16	ZS 16	*3.0 to 10.0*	*42*	***28***	*44*	±1	0.3	1
PZ60-16-20-044	★		ZS 20	*3.0 to 10.0*	*42*	***28***	*44*	±1	0.3	1

★: Worldwide Warehouse Item

Recommended Tightening Torque (N·m)

Fig 1

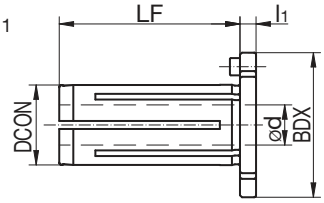
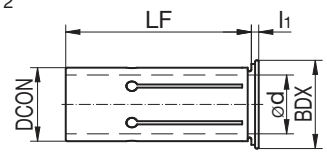


Fig 2

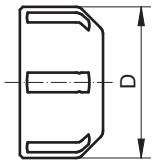


Reducers for Hydro Compensation Chuck Dimensions (mm)

Cat. No.	Stock	Diameter BDX	Cap Dia. ød	DCON	Shoulder Length LF	l1	Fig
67 12 06	★	*22*	*6*	*12*	*49*	*4*	1
67 12 06	★	*22*	*8*	*12*	*49*	*4*	1

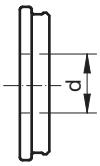
Reducers for Hydro Compensation Chuck "Schunk" Dimensions (mm)

Cat. No.	Stock	Diameter BDX	Cap Dia. ød	DCON	Shoulder Length LF	l1	Fig
0207913	★	*16.5*	*6*	*12*	*45*	*2*	2
0207915	★	*16.5*	*8*	*12*	*45*	*2*	2
0207923	★	*24.0*	*6*	*20*	*50.5*	*2*	2
0207925	★	*24.0*	*8*	*20*	*50.5*	*2*	2



Collet Nut for Seal Disk Dimensions (mm)

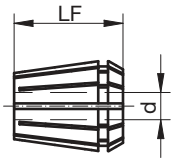
Cat. No.	Size	øD	Thread
20.107.210	ER16	*28*	M22 x 1.5
20.107.310	ER20	*34*	M25 x 1.5
20.107.410	ER25	*42*	M32 x 1.5
20.107.510	ER32	*50*	M40 x 1.5



Seal Disc for Collet Nut Dimensions (mm)

Cat. No.	Size	Diameter Range
20.107.21-□□□	ER16	*3.0 to 10.0*
20.107.31-□□□	ER20	*3.0 to 13.0*
20.107.41-□□□	ER25	*3.0 to 16.0*
20.107.51-□□□	ER32	*3.0 to 20.0*

□□□ = ød
Example 1: ER25, d=12 ⇨ 20.107.41-120;
Use ø12 to ø16mm for 20.107.41-□□□,
ø12 to ø20mm for 20.107.51-□□□
and ø12 to ø26mm for 20.107.61-□□□.
Stocked in increments of 1mm.



Collet Dimensions (mm)

Cat. No.	Type	Diameter Range	LF
62-16-□□	ER16	*3.0 to 10.0*	*27.5*
62-20-□□	ER20	*3.0 to 13.0*	*31.5*
62-25-□□	ER25	*3.0 to 16.0*	*35*
62-32-□□	ER32	*3.0 to 20.0*	*40*

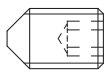
□□ = ød
Example 1: ER25, d=12 ⇨ 62-25-12
Use ø12 to ø16mm for 62-25-□□
ø12 to ø20mm for 62-32-□□
and ø12 to ø26mm for 62-40-□□.
Stocked in increments of 1mm.

Collet Nut Wrench

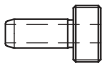
Cat. No.	Size
00-05-13	ER16
00-05-12	ER20
00-05-05	ER25
00-05-02	ER32



Spare Parts

Adjustment screw for "TENDOzero" hydraulic chuck	
	9954676

Coolant Tubes

Taper Size	
HSK63	H00-63-01
HSK100	H00-100-01

For the HSK arbor.

Run-Out Indicating Insert

Cat No.	System Size	Stock
SRSC08-06-02	SRS_08	★
SRSC10-06-02	SRS_10	★
SRSC11-06-03	SRS_11	★
SRSC13-06-03	SRS_13	★





Torque Wrench

Wrench Cat. No.	Torx Size	(N·m)	System Size	Stock
G00-40-15	T6	**0.6**	SRS_08	★
G00-40-14	T7	**0.9**	SRS_10	★
G00-40-16	T9	**1.4**	SRS_11	★
G00-40-17	T10	**2.0**	SRS_13	★

★: Worldwide Warehouse Item

(N·m) Recommended Tightening Torque (N·m)

Insert for SumiReamer SR Type

● SRG Type General-purpose Straight Flute: Stop and Through Holes



Fig 1

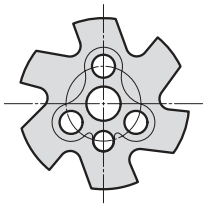
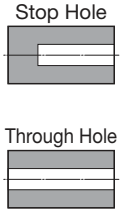
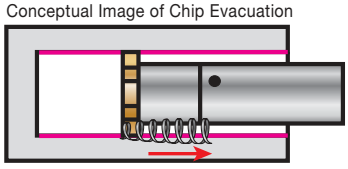


Fig 2



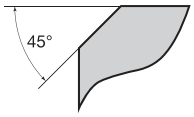


Conceptual Image of Chip Evacuation



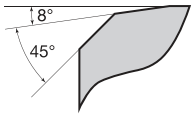
Chips Evacuated Toward Front

A01 Type



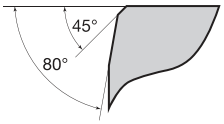
Standard Type

C01 Type



Good Surface Roughness

S02 Type



Good Straightness

Insert (SRG Type) Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No. (A01 Type)	Workpiece Dia. Tolerance	CW	Number of Teeth	Fig
12.0	+0.017 +0.011	★	SRG12.0H7-A01-F0512R1	H7 +0.018 0	4.3	6	1
13.0		★	SRG13.0H7-A01-F0512R1				
14.0		★	SRG14.0H7-A01-F0512R1				
15.0		★	SRG15.0H7-A01-F0512R1				
16.0		★	SRG16.0H7-A01-F0512R1				
17.0		★	SRG17.0H7-A01-F0512R1				
18.0		★	SRG18.0H7-A01-F0512R1				
19.0	+0.019 +0.013	★	SRG19.0H7-A01-F0512R1	H7 +0.021 0	4.3	8	2
20.0		★	SRG20.0H7-A01-F0512R1				
21.0		★	SRG21.0H7-A01-F0512R1				
22.0		★	SRG22.0H7-A01-F0512R1				
23.0		★	SRG23.0H7-A01-F0512R1				
24.0		★	SRG24.0H7-A01-F0512R1				
25.0		★	SRG25.0H7-A01-F0512R1				
26.0		★	SRG26.0H7-A01-F0512R1				
27.0		★	SRG27.0H7-A01-F0512R1				
28.0		★	SRG28.0H7-A01-F0512R1				
29.0		★	SRG29.0H7-A01-F0512R1				
30.0		★	SRG30.0H7-A01-F0512R1				

Ordering Method : For the catalog number, please indicate F05 (PVD grade) or T12 (Coated Cermet) in the □□□ when ordering. (e.g. SRG12.0H7-A01-F0512R1).
(It is also possible to order uncoated cermet/DLC grades.)

*Actual reamer diameter is near the upper limit of H7 tolerance.

SumiReamer SR Type Insert Identification

Specifying Inserts Using Workpiece Hole Diameter Tolerance

The actual desired reamer diameter will be on the upper limit side of the median work tolerance, and will differ depending on diameter/tolerance range/grade. Contact Sumitomo Engineering Department for more details.

SR (1) G (2) 18.2 (3) + 20 - 10 (4) - A01 (5) - F05 (6) 12R 1 (7)

(1) SR Type	(5) Approach Angle Code
(2) G = Straight, L = Lefthand helix	(6) Grade Symbol
(3) Workpiece Bore Diameter (mm)	(7) Coating Code
(4) Tolerance (μm) +/- or standard (e.g. H7)	

Specifying Inserts Using Desired Reamer Diameter

By adding a "Q" after the diameter, it is possible to specify exact desired reamer dimensions. Uncoated types are available within ±2μ, thin-coated layer types are available within ±3μ and thick-coated layer types are available within ±4μ.

SR (1) L (2) 18.2 (3) Q + 3 - 3 (4) - A01 (5) - F05 (6) 12R 1 (7)

(1) SR Type	(5) Approach Angle Code
(2) G = Straight, L = Lefthand helix	(6) Grade Symbol
(3) Median Desired Cutting Edge Diameter (mm)	(7) Coating Code
(4) Tolerance (μm) +/-	



★: Worldwide Warehouse Item

Insert for SumiReamer SR Type

● SRL Type [Chip Evacuation Emphasised] Left-hand Flute: For Through Holes



Fig 1

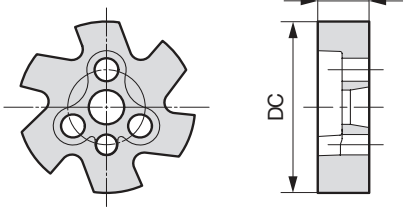
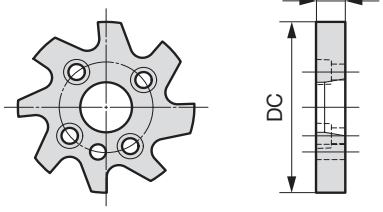
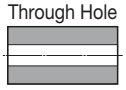


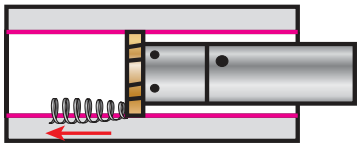
Fig 2



Through Hole

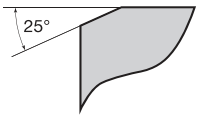


Conceptual Image of Chip Evacuation



Chips Evacuated Toward Back

B01 Type



For Steel Through Holes

Insert (SRL Type)

Dimensions (mm)

Dia. DC	Dia. Tolerance	Stock	Cat. No. (B01 Type)	Workpiece Dia. Tolerance	CW	Number of Teeth	Fig
12.0	+0.017 +0.011	★	SRL12.0H7-B01-F0512R1	H7 +0.018 0	4.3	6	1
13.0		★	SRL13.0H7-B01-F0512R1				
14.0		★	SRL14.0H7-B01-F0512R1				
15.0		★	SRL15.0H7-B01-F0512R1				
16.0		★	SRL16.0H7-B01-F0512R1				
17.0		★	SRL17.0H7-B01-F0512R1				
18.0		★	SRL18.0H7-B01-F0512R1				
19.0	+0.019 +0.013	★	SRL19.0H7-B01-F0512R1	H7 +0.021 0	4.3	8	2
20.0		★	SRL20.0H7-B01-F0512R1				
21.0		★	SRL21.0H7-B01-F0512R1				
22.0		★	SRL22.0H7-B01-F0512R1				
23.0		★	SRL23.0H7-B01-F0512R1				
24.0		★	SRL24.0H7-B01-F0512R1				
25.0		★	SRL25.0H7-B01-F0512R1				
26.0		★	SRL26.0H7-B01-F0512R1				
27.0		★	SRL27.0H7-B01-F0512R1				
28.0		★	SRL28.0H7-B01-F0512R1				
29.0		★	SRL29.0H7-B01-F0512R1				
30.0		★	SRL30.0H7-B01-F0512R1				

Ordering Method : For the catalog number, please indicate F05 (PVD grade) or T12 (Coated Cermet) in the □□□ when ordering. (e.g. SRG12.0H7-A01-F0512R1).
(It is also possible to order uncoated cermet/DLC grades.)

*Actual reamer diameter is near the upper limit of H7 tolerance.

Made-to-order items

Dimensions (mm)

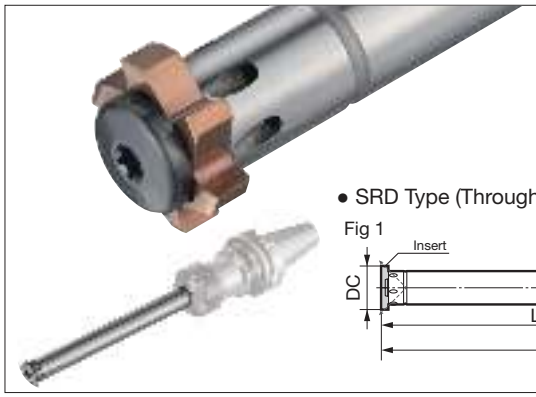
Cutting Diameter DC	CW	Number of Teeth
ø11.900 to ø15.600	4.3	6
ø15.601 to ø18.600		
ø18.601 to ø23.600		
ø23.601 to ø28.600	4.3	8
ø28.601 to ø35.600		
ø35.601 to ø43.600		
ø43.601 to ø51.600	4.3	10
ø51.601 to ø60.600		
ø60.601 to ø80.600	4.3	12
ø80.601 to ø100.600		
ø100.601 to ø120.600	5.3	
ø120.601 to ø140.600		

SRG type (Special) and SRL type (Special) are made-to-order items. When ordering, refer to "SR Type Insert Identification Details" on page J138.
* Cermet grades (T1200A and T1212R1) are only available up to ø100.600mm.

Recommended Cutting Conditions

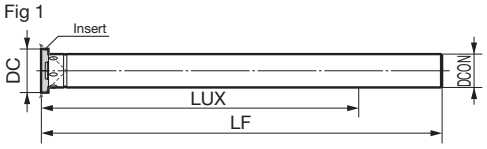
ISO	Work Material	Insert	Grade	Grade	Depth of Cut (a_p) (mm/radius) Below ø20	ø20 to ø35	ø35 and above	Cutting Speed v_c (m/min)	Feed Rate f_z (mm/t)
P	Carbon Steel	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	80 to 220	0.10 to 0.25
		SRL Type			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	100 to 220	0.15 to 0.35
		SRG Type	T1200A	Cermet	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	120 to 250	0.10 to 0.25
		SRL Type			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	120 to 250	0.15 to 0.35
	Alloy Steel	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	60 to 180	0.06 to 0.20
		SRL Type			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	60 to 180	0.10 to 0.22
		SRG Type	T1200A	Cermet	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	70 to 200	0.08 to 0.20
		SRL Type			0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	70 to 200	0.12 to 0.25
	Die Steel	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.10 to 0.20	15 to 60	0.06 to 0.20
	Tool Steels	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.10 to 0.20	15 to 30	0.04 to 0.15
M	Stainless Steel	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.10	0.08 to 0.15	0.08 to 0.20	15 to 60	0.06 to 0.20
K	Cast Iron	SRG Type	F0512R1	Micro-grained Carbide + PVD	0.05 to 0.18	0.08 to 0.20	0.10 to 0.25	80 to 250	0.10 to 0.30
	Ductile Cast Iron	SRG Type	T1212R1	Coated Cermet	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	80 to 250	0.10 to 0.30
N	Non-ferrous Alloys	SRG Type	F0510C	Micro-grained Carbide + DLC	0.05 to 0.12	0.08 to 0.15	0.10 to 0.25	250 to 500	0.10 to 0.30

★: Worldwide Warehouse Item



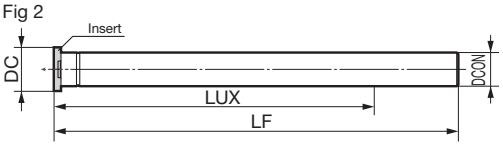
● SRD Type (Through Hole)

Fig 1



● SRB Type (Stop Hole)

Fig 2

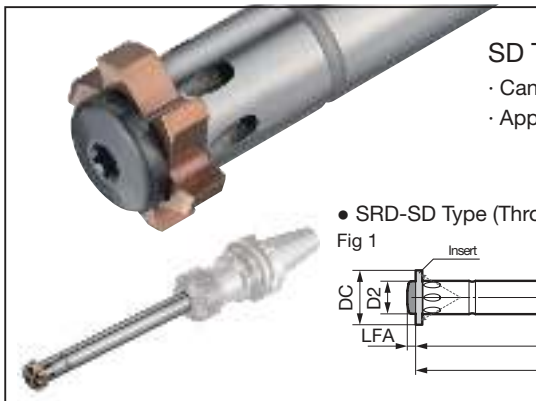


Holder (ø11.900 to 35.600mm)

Dimensions (*mm*)

	Dia. DC Range	Holder Cat. No.										Shank Dia. DCON	Overall Length LF	Usable Length LUX	Cap Screws and Wrench Group No.	N·m
		SRD			SRB			Carbide Shank SRD			Carbide Shank SRB							
		Stock	Cat. No.	Fig	Stock	Cat. No.	Fig	Stock	Cat. No.	Fig	Stock	Cat. No.	Fig					
Short	ø11.900 to ø15.600	★	**SRD16-10-100**	1	★	**SRB16-10-100**	2		—	1		—	2	10	100	60	(1)	0.9
	ø15.601 to ø18.600	★	**SRD19-12-115**	1	★	**SRB19-12-115**	2		—	1		—	2	12	115	70	(1)	0.9
	ø18.601 to ø23.600	★	**SRD24-16-128**	1	★	**SRB24-16-128**	2		—	1		—	2	16	128	80	(2)	1.5
	ø23.601 to ø28.600	★	**SRD29-20-145**	1	★	**SRB29-20-145**	2		—	1		—	2	20	145	95	(2)	1.5
	ø28.601 to ø35.600	★	**SRD36-25-170**	1	★	**SRB36-25-170**	2		—	1		—	2	25	170	110	(2)	1.5
Long	ø11.900 to ø15.600	★	**SRD16-10-160**	1	★	**SRB16-10-160**	2	★	**SRD16-10-160HM**	1	★	**SRB16-10-160HM**	2	10	160	120	(1)	0.9
	ø15.601 to ø18.600	★	**SRD19-12-185**	1	★	**SRB19-12-185**	2	★	**SRB19-12-185HM**	1	★	**SRB19-12-185HM**	2	12	185	140	(1)	0.9
	ø18.601 to ø23.600	★	**SRD24-16-208**	1	★	**SRB24-16-208**	2	★	**SRB24-16-208HM**	1	★	**SRB24-16-208HM**	2	16	208	160	(2)	1.5
	ø23.601 to ø28.600	★	**SRD29-20-240**	1	★	**SRB29-20-240**	2	★	**SRB29-20-240HM**	1	★	**SRB29-20-240HM**	2	20	240	190	(2)	1.5
	ø28.601 to ø35.600	★	**SRD36-25-274**	1	★	**SRB36-25-274**	2	★	**SRB36-25-274HM**	1	★	**SRB36-25-274HM**	2	25	274	214	(2)	1.5

*Refer to the table at the bottom of J141 for the catalog numbers of cap screws applicable for each product, listed by "Group No.".

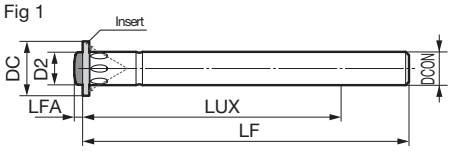


SD Type (Center Bolt Clamp Type)

· Can be clamped using one center bolt to improve work efficiency
· Applicable to high-torque (high-load) machining

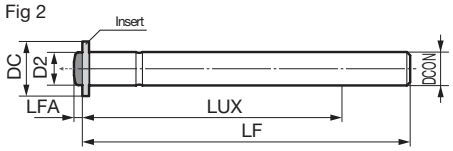
● SRD-SD Type (Through Hole)

Fig 1



● SRB-SD Type (Stop Hole)

Fig 2



Steel Shank Holder SRD-SD/SRB-SD Type (Center Bolt Clamp Type)

Dimensions (*mm*)

	Dia. DC Range	Holder Cat. No.						Shank Dia. DCON	Overall Length LF	Usable Length LUX	Bolt D2	Bolt LFA	Group No.		N·m
		SRD Type (Through Hole)			**SRB Type** (Stop Hole)										
		Stock	Cat. No.	Fig	Stock	Cat. No.	Fig						SRD	SRB	
Short	**ø11.900 to ø15.600**	★	**SRD16-10-100SD**	1	★	**SRB16-10-100SD**	2	10	100	60	9.8	2.5	(3)	(3)	4.0
	ø15.601 to ø18.600	★	**SRD19-12-115SD**	1	★	**SRB19-12-115SD**	2	12	115	70	11.8	3.0	(4)	(7)	6.0
	ø18.601 to ø23.600	★	**SRD24-16-128SD**	1	★	**SRB24-16-128SD**	2	16	128	80	15.8	4.0	(5)	(8)	16.0
	ø23.601 to ø28.600	★	**SRD29-20-145SD**	1	★	**SRB29-20-145SD**	2	20	145	95	15.8	4.0	(5)	(8)	16.0
	ø28.601 to ø35.600	★	**SRD36-25-170SD**	1	★	**SRB36-25-170SD**	2	25	170	110	24.5	4.0	(6)	(9)	18.0
Long	**ø11.900 to ø15.600**	★	**SRD16-10-160SD**	1	★	**SRB16-10-160SD**	2	10	160	120	9.8	2.5	(3)	(3)	4.0
	ø15.601 to ø18.600	★	**SRD19-12-185SD**	1	★	**SRB19-12-185SD**	2	12	185	140	11.8	3.0	(4)	(7)	6.0
	ø18.601 to ø23.600	★	**SRD24-16-208SD**	1	★	**SRB24-16-208SD**	2	16	208	160	15.8	4.0	(5)	(8)	16.0
	ø23.601 to ø28.600	★	**SRD29-20-240SD**	1	★	**SRB29-20-240SD**	2	20	240	190	15.8	4.0	(5)	(8)	16.0
	ø28.601 to ø35.600	★	**SRD36-25-274SD**	1	★	**SRB36-25-274SD**	2	25	274	214	24.5	4.0	(6)	(9)	18.0

*Refer to the table at the bottom of J141 for the catalog numbers of cap screws and wrenches applicable for each product, listed by "Group No."

Carbide Shank Holder SRD-SD/SRB-SD Type (Center Bolt Clamp Type)

Dimensions (*mm*)

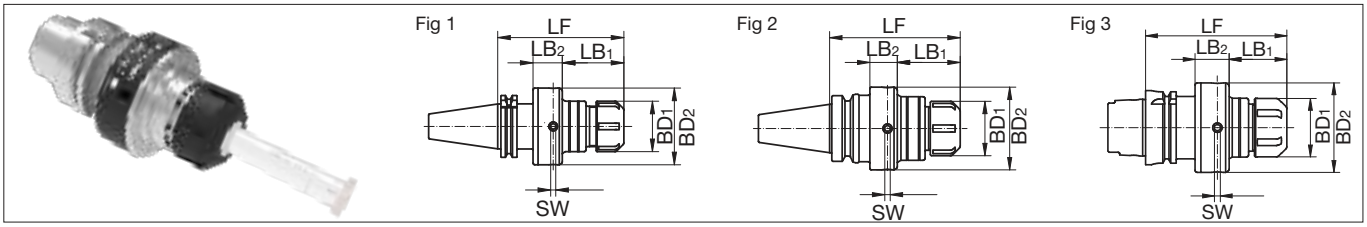
	Dia. DC Range	Holder Cat. No.						Shank Dia. DCON	Overall Length LF	Usable Length LUX	Bolt D2	Bolt LFA	Group No.		N·m
		SRD Type (Through Hole)			**SRB Type** (Stop Hole)										
		Stock	Cat. No.	Fig	Stock	Cat. No.	Fig						SRD	SRB	
Long	**ø11.900 to ø15.600**	★	**SRD16-10-160HMSD**	1	★	**SRB16-10-160HMSD**	2	10	160	120	9.8	2.5	(3)	(3)	4.0
	ø15.601 to ø18.600	★	**SRD19-12-185HMSD**	1	★	**SRB19-12-185HMSD**	2	12	185	140	11.8	3.0	(4)	(7)	6.0
	ø18.601 to ø23.600	★	**SRD24-16-208HMSD**	1	★	**SRB24-16-208HMSD**	2	16	208	160	15.8	4.0	(5)	(8)	16.0
	ø23.601 to ø28.600	★	**SRD29-20-240HMSD**	1	★	**SRB29-20-240HMSD**	2	20	240	190	15.8	4.0	(5)	(8)	16.0
	ø28.601 to ø35.600	★	**SRD36-25-274HMSD**	1	★	**SRB36-25-274HMSD**	2	25	274	214	24.5	4.0	(6)	(9)	18.0

*Refer to the table at the bottom of J141 for the catalog numbers of cap screws and wrenches applicable for each product, listed by "Group No."

★: Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

Compensation Collet Chuck



DIN 69871-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	Type	Diameter Range	BD_1	BD_2	LF	LB_1	LB_2	SW	Weight (kg)	Fig
AND60-40A-32-120	★	SK 40	ER32	*3.0 to 20.0*	*50*	*76*	*120*	*56*	*29*	*5*	2.2	1
AND60-40A-40-135	★	SK 40	ER40	*3.0 to 30.0*	*63*	*76*	*135*	*68*	*32*	*5*	2.2	1
AND60-50A-32-120	★	SK 50	ER32	*3.0 to 20.0*	*50*	*76*	*120*	*61*	*24*	*5*	4.1	1
AND60-50A-40-135	★	SK 50	ER40	*3.0 to 30.0*	*63*	*76*	*135*	*76*	*24*	*5*	4.2	1

MAS-BT JIS 6339-AD

Dimensions (*mm*)

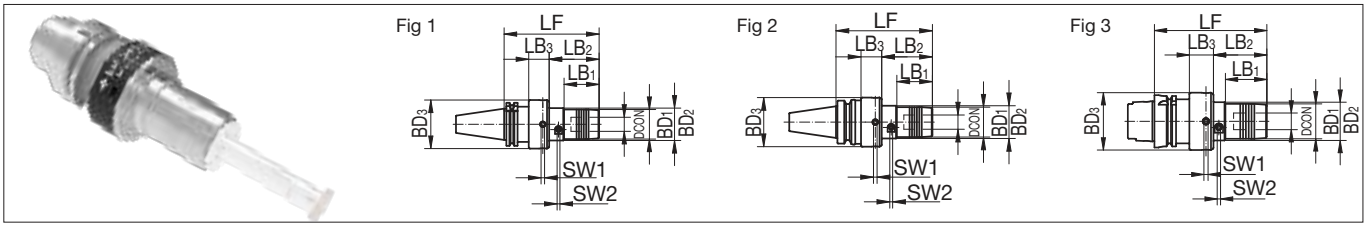
Cat. No.	Stock	Size	Type	Diameter Range	BD_1	BD_2	LF	LB_1	LB_2	SW	Weight (kg)	Fig
ANT60-40A-32-120	★	BT 40	ER32	*3.0 to 20.0*	*50*	*76*	*120*	*54*	*29*	*5*	2.2	2
ANT60-40A-40-135	★	BT 40	ER40	*3.0 to 30.0*	*63*	*75*	*135*	*66*	*32*	*5*	2.3	2
ANT60-50A-40-120	★	BT 50	ER32	*3.0 to 30.0*	*50*	*76*	*120*	*58*	*24*	*5*	4.5	2
ANT60-50A-40-135	★	BT 50	ER40	*3.0 to 30.0*	*63*	*76*	*135*	*73*	*24*	*5*	4.5	2

DIN 69893-HSK-A

Dimensions (*mm*)

Cat. No.	Stock	Size	Type	Diameter Range	BD_1	BD_2	LF	LB_1	LB_2	SW	Weight (kg)	Fig
ANH60-63A-32-120	★	HSK 63	ER32	*3.0 to 20.0*	*50*	*76*	*120*	*49*	*29*	*5*	2	3
ANH60-63A-40-135	★	HSK 63	ER40	*3.0 to 30.0*	*63*	*76*	*135*	*64*	*29*	*5*	1.9	3
ANH60-100A-32-120	★	HSK 100	ER32	*3.0 to 20.0*	*50*	*76*	*120*	*67*	*24*	*5*	3.4	3
ANH60-100A-40-135	★	HSK 100	ER40	*3.0 to 30.0*	*63*	*76*	*135*	*82*	*24*	*5*	3.3	3

Compensation Hydro Chuck



DIN 69871-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD_1	BD_2	BD_3	LF	LB_1	LB_2	LB_3	SW1	SW2	Weight (kg)	Fig
AND65-40A-20-135	★	SK 40	*20*	*42*	*46*	*69*	*135*	*50*	*71*	*29*	*5*	*4*	2.5	1
AND65-40A-32-180	★	SK 40	*32*	*62*	-	*88*	*180*	*111*	-	*34*	*6*	*6*	3.8	1
AND65-50A-20-160	★	SK 50	*20*	*42*	*46*	*69*	*160*	*70*	*92*	*34*	*5*	*4*	5	1
AND65-50A-32-180	★	SK 50	*32*	*62*	-	*88*	*180*	*111*	-	*34*	*6*	*6*	6.4	1

MAS-BT JIS 6339-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD_1	BD_2	BD_3	LF	LB_1	LB_2	LB_3	SW1	SW2	Weight (kg)	Fig
ANT65-40A-20-135	★	BT 40	*20*	*42*	*46*	*69*	*135*	*50*	*71*	*29*	*5*	*4*	2.5	2
ANT65-40A-32-180	★	BT 40	*32*	*62*	-	*88*	*180*	*111*	-	*34*	*6*	*6*	3.9	2
ANT65-50A-20-135	★	BT 50	*20*	*42*	*46*	*69*	*135*	*50*	*73*	*24*	*5*	*4*	4.8	2
ANT65-50A-32-180	★	BT 50	*32*	*62*	-	*88*	*180*	*116*	-	*26*	*6*	*6*	6.5	2

DIN 69893-HSK-A

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD_1	BD_2	BD_3	LF	LB_1	LB_2	LB_3	SW1	SW2	Weight (kg)	Fig
ANH65-63A-20-135	★	HSK 63	*20*	*42*	*46*	*69*	*135*	*50*	*64*	*29*	*5*	*4*	2.2	3
ANH65-63A-32-180	★	HSK 63	*32*	*62*	-	*88*	*180*	*104*	-	*34*	*6*	*6*	4.2	3
ANH65-100A-20-135	★	HSK 100	*20*	*42*	*46*	*69*	*135*	*50*	*82*	*24*	*5*	*4*	3.4	3
ANH65-100A-32-180	★	HSK 100	*32*	*62*	-	*88*	*165*	*110*	-	*26*	*6*	*6*	4.9	3

Adjustment Screws

Dia. DCON	
12	C00-03-44
20	C00-03-44
32	C00-03-45

Coolant Tubes

Taper Size	
HSK40	H00-40-01
HSK63	H00-63-01
HSK100	H00-100-01

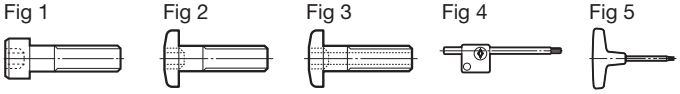
For the HSK arbor.

Torque Wrench

All in stock.

Wrench Cat. No.	Applicable Holder Cat. No.	Torx Size	(N·m)
G00-40-11	SR□ 16 / SR□ 19	T6	**0.9**
G00-40-12	SR□ 24 - SR□ 61	T8	**1.5**
G00-40-13	SR□ 81 / SR□ 141	T15	**3.5**

D,B,KG,A



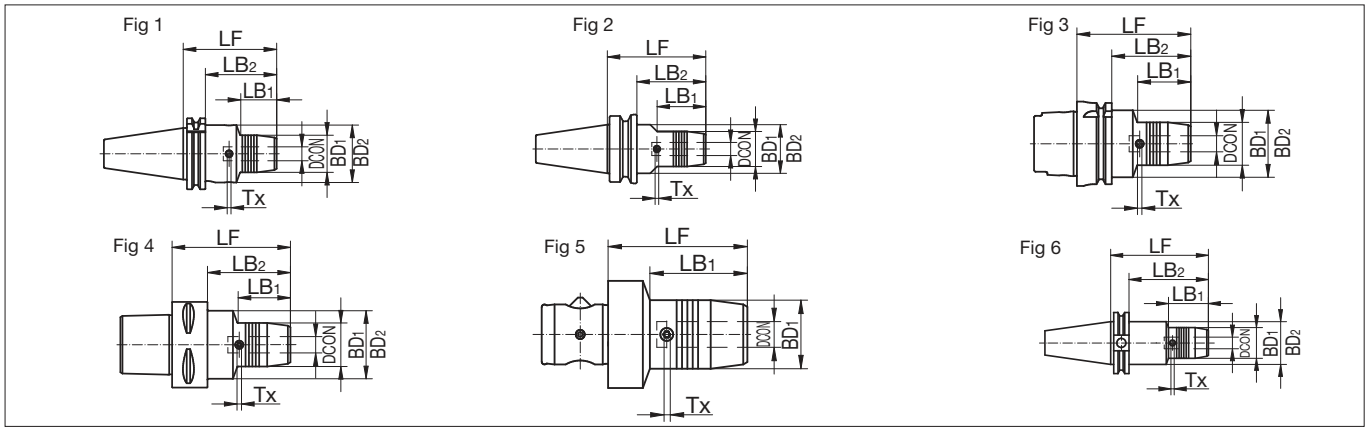
Cap Screws and Wrenches

Group No.	Cat. No. Cap Screw	Fig	Cat. No. Wrench	Fig	Torx Size	(N·m)
(1)	**C00-90-00**	1	**G00-20-01**	4	T 6	**0.9**
(2)	**C00-90-01**		**G00-20-02**		T 8	**1.5**
(3)	**C00-90-22**	2	**G00-20-27**	5	T15	**4.0**
(4)	**C00-90-23**		**G00-20-28**		T20	**6.0**
(5)	**C00-90-24**		**G00-20-29**		T30	**16.0**
(6)	**C00-90-25**		**G00-20-29**		T30	**18.0**
(7)	**C00-90-23B**	3	**G00-20-28**		T20	**6.0**
(8)	**C00-90-24B**		**G00-20-29**		T30	**16.0**
(9)	**C00-90-25B**		**G00-20-29**		T30	**18.0**

★: Worldwide Warehouse Item

(N·m) Recommended Tightening Torque (N·m)

Schunk "TENDOzero" Compensating Hydraulic Chuck (ø11.900 to ø35.600)



DIN 69871-AD/B

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Tx	Weight (kg)	Fig
204266Z	★	SK40	*20*	*42*	*50*	*81*	*34*	*62*	15IP	1.4	1
204267Z	★	SK40	*32*	*63*	*80*	*81*	*26*	*62*	15IP	2	1
204246Z		SK50	*20*	*42*	*50*	*81*	*34*	*62*	15IP	3.3	1
204247Z		SK50	*32*	*64*	*70*	*104*	*63*	*84*	15IP	4.4	1

DIN 26623-1-PSC

Dimensions (*mm*)

Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Tx	Weight (kg)	Fig
201846Z	★	PSC50	*20*	*42*	*50*	*90*	*52*	-	15IP	1.05	4
201856Z	★	PSC63	*20*	*42*	*63*	*97*	*55*	-	15IP	1.6	4
201858Z	★	PSC63	*32*	*63*	*63*	*110*	*62*	-	15IP	2.8	4

MAS-BT JIS 6339-AD/B

Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Tx	Weight (kg)	Fig
205636Z	★	BT30	*20*	*42*	*45*	*90*	*48*	*63*	15IP	1.5	2
204445Z	★	BT40	*32*	*42*	*45*	*90*	*48*	*63*	15IP	1.5	2
204457Z	★	BT50	*20*	*42*	*45*	*90*	*34*	*52*	15IP	4	2
204458Z	★	BT50	*32*	*64*	*70*	*120*	*63*	*82*	15IP	5.3	2

ABS-H Type

Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Tx	Weight (kg)	Fig
204576Z	★	ABS50	*20*	*42*	-	*75*	*58*	-	15IP	0.9	5

DIN 69893-HSK-A

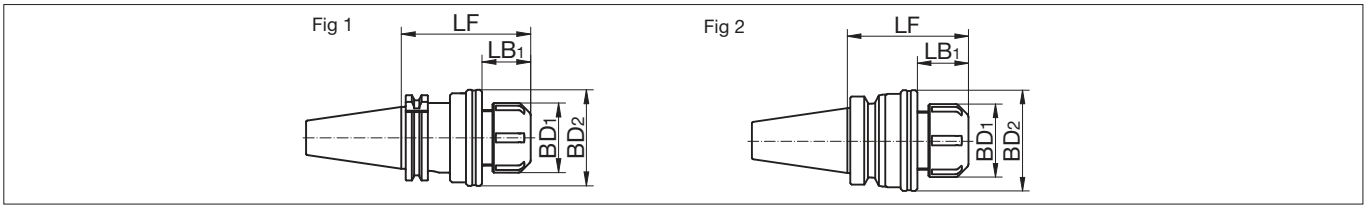
Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Tx	Weight (kg)	Fig
204056Z	★	HSK63	*20*	*42*	*50*	*90*	*48*	*64*	15IP	1.3	3
204057Z	★	HSK63	*25*	*57*	*63*	*120*	*59*	*94*	15IP	2.2	3
204058Z	★	HSK63	*32*	*64*	*75*	*125*	*63*	*99*	15IP	2.7	3
204066Z	★	HSK100	*20*	*20*	*50*	*105*	*59*	*76*	15IP	2.8	3
204067Z	★	HSK100	*25*	*25*	*63*	*110*	*62*	*81*	15IP	2.8	3
204068Z	★	HSK100	*32*	*32*	*75*	*110*	*62*	*81*	15IP	3.8	3

*Coolant tube not included

ASME B5.50-CAT-AD/B

Cat. No.	Stock	Size	DCON	BD1	BD2	LF	LB1	LB2	Tx	Weight (kg)	Fig
203666Z	★	CAT40	*20*	*38*	*45*	*102*	*50*	*83*	15IP	2	6
204666Z	★	CAT50	*20*	*42*	*70*	*102*	*50*	*83*	15IP	2.8	6
204668Z	★	CAT50	*32*	*64*	*70*	*102*	*65*	*83*	15IP	4.1	6

Floating Chuck (ø11.900 to ø35.600)



DIN 69871-AD

Dimensions (*mm*)

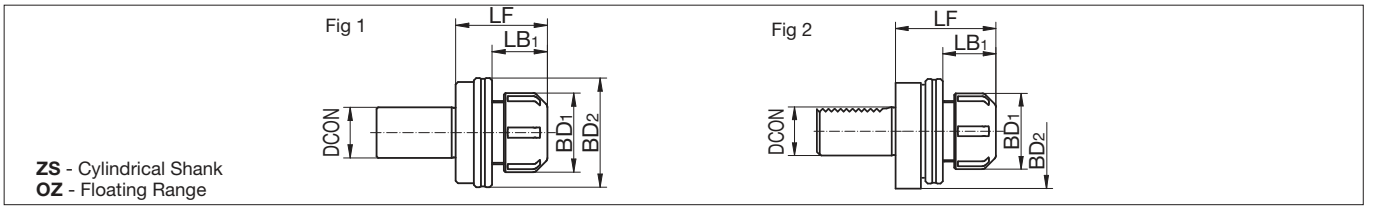
Cat. No.	Stock	Size	Type	Diameter Range	BD1	BD2	LF	LB1	OZ	Fig
PD60-40A-25-088	★	SK40	ER25	*3.0 to 16.0*	*42*	*57*	*88*	*26*	± 1	1
PD60-40A-32-093	★	SK40	ER32	*3.0 to 20.0*	*50*	*69*	*93*	*27*	± 1	1
PD60-40A-40-099	★	SK40	ER40	*3.0 to 26.0*	*63*	*79*	*99*	*33*	± 1	1
PD60-50A-25-088	★	SK50	ER25	*3.0 to 16.0*	*42*	*57*	*88*	*26*	± 1	1
PD60-50A-32-093	★	SK50	ER32	*3.0 to 20.0*	*50*	*69*	*93*	*27*	± 1	1
PD60-50A-40-099	★	SK50	ER40	*3.0 to 26.0*	*63*	*79*	*99*	*33*	± 1	1

MAS-BT JIS 6339-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	Type	Diameter Range	BD1	BD2	LF	LB1	OZ	Fig
PT60-30A-20-070	★	BT30	ER20	*3.0 to 13.0*	*35*	-	*70*	-	± 1	2
PT60-40A-25-078	★	BT40	ER25	*3.0 to 16.0*	*42*	*57*	*78*	*26*	± 1	2
PT60-40A-32-083	★	BT40	ER32	*3.0 to 20.0*	*50*	*69*	*83*	*27*	± 1	2
PT60-40A-40-089	★	BT40	ER40	*3.0 to 26.0*	*63*	*79*	*89*	*33*	± 1	2
PT60-50A-25-088	★	BT50	ER25	*3.0 to 16.0*	*42*	*57*	*88*	*26*	± 1	2
PT60-50A-32-093	★	BT50	ER32	*3.0 to 20.0*	*50*	*69*	*93*	*27*	± 1	2
PT60-50A-40-099	★	BT50	ER40	*3.0 to 26.0*	*63*	*79*	*99*	*33*	± 1	2

Floating Chuck for Lathes (ø11.900 to ø35.600)



ZS - Cylindrical Shank
OZ - Floating Range

Cylindrical Shaft DIN 1835-A

Dimensions (*mm*)

Cat. No.	Stock	Shank	Type	Diameter Range	BD1	BD2	DCON	LF	LB1	OZ	Fig
PZ60-25-20-053	★	ZS 20	ER25	*3.0 to 16.0*	*42*	*57*	*20*	*53*	*26*	±1	1
PZ60-32-25-058	★	ZS 25	ER32	*3.0 to 20.0*	*50*	*69*	*25*	*58*	*27*	±1.5	1
PZ60-40-25-064	★	ZS 25	ER40	*3.0 to 26.0*	*63*	*79*	*25*	*64*	*33*	±1.5	1
PZ60-32-32-058	★	ZS 32	ER32	*3.0 to 20.0*	*50*	*69*	*32*	*58*	*27*	±1.5	1
PZ60-40-32-064	★	ZS 32	ER40	*3.0 to 26.0*	*63*	*79*	*32*	*64*	*33*	±1.5	1

DIN 69880-VDI

Dimensions (*mm*)

Cat. No.	Stock	Shank	Type	Diameter Range	BD1	BD2	DCON	LF	LB1	OZ	Fig
PV60-25-20-057	★	VDI 20	ER25	*3.0 to 16.0*	*42*	*57*	*20*	*57*	*26*	±1	2
PV60-25-30-064	★	VDI 30	ER25	*3.0 to 16.0*	*42*	*68*	*30*	*64*	*26*	±1	2
PV60-25-30-072	★	VDI 30	ER32	*3.0 to 20.0*	*50*	*68*	*30*	*72*	*27*	±1.5	2
PV60-32-40-074	★	VDI 40	ER32	*3.0 to 20.0*	*50*	*83*	*40*	*74*	*27*	±1.5	2
PV60-40-40-074	★	VDI 40	ER40	*3.0 to 26.0*	*63*	*83*	*40*	*74*	*33*	±1.5	2

★: Worldwide Warehouse Item

Compensation Sleeve

Dimensions (*mm*)

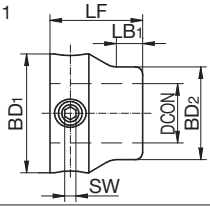
Cat. No.	Stock	Size	DCON	BD_1	BD_2	LF	LB_1	SW	Fig
MHS16-10-26-020	★	SRX 16	***10***	*26*	*20*	*20*	*5*	*3*	1
MHS19-12-28-020	★	SRX 19	***12***	*28*	*22*	*20*	*5*	*3*	1
MHS24-16-32-025	★	SRX 24	***16***	*32*	*25*	*25*	*7*	*3*	1
MHS29-20-40-032	★	SRX 29	***20***	*40*	*32*	*32*	*10*	*4*	1
MHS36-25-45-035	★	SRX 36	***25***	*45*	*38*	*35*	*13*	*4*	1

note: not applicable for carbide shank insert holders

Compensation Sleeve



Fig 1

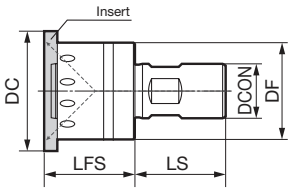


Insert Holders



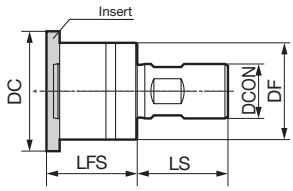
● SRKG Type (Through Hole)

Fig 1



● SRKB Type (Stop Hole)

Fig 2



Head (ø35.601 to 140.6mm)

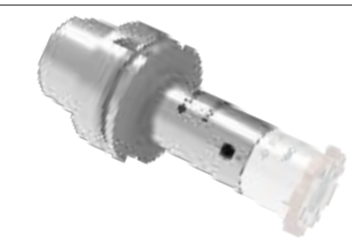
Cap Screws and Wrench

Dimensions (*mm*)

Dia. DC Range	Holder Cat. No.						Diameter	Shank Dia.	Length	Shank	Insert Screws	N·m	Center Assembly Bolt		
	Stock	SRKG Type	Fig	Stock	SRKB Type	Fig	DF	DCON	LFS	LS			Cap Screw		Tightening Torque
													SRKG Type	SRKB Type	
ø35.601 to ø43.600	★	**SRKG44-32-18-030**	1	★	**SRKB44-32-18-030**	2	*32*	*18*	*30*	*30*	C00-90-02 (4x)	**1.5**	C00-26-23	C00-26-23B	Refer to page J146 for assembly instructions, and recommended torque specifications.
ø43.601 to ø51.600	★	**SRKG52-39-20-035**	1	★	**SRKB52-39-20-035**	2	*39*	*20*	*35*	*30*	C00-90-02 (5x)	**1.5**	C00-26-38	C00-26-38B	
ø51.601 to ø60.600	★	**SRKG61-46-25-040**	1	★	**SRKB61-46-25-040**	2	*46*	*25*	*40*	*35*	C00-90-02 (5x)	**1.5**	C00-24-26	C00-24-26B	
ø60.601 to ø80.600	★	**SRKG81-56-32-050**	1	★	**SRKB81-56-32-050**	2	*56*	*32*	*50*	*40*	C00-90-04 (4x)	**3.5**	C00-26-37	C00-26-37B	
ø80.601 to ø100.600	★	**SRKG101-76-40-060**	1	★	**SRKB101-76-40-060**	2	*76*	*40*	*60*	*50*	C00-90-04 (4x)	**3.5**	C00-24-31	C00-24-31B	
ø100.601 to ø120.600	★	**SRKG121-76-40-060**	1	★	**SRKB121-76-40-060**	2	*76*	*40*	*60*	*50*	C00-90-04 (8x)	**3.5**	C00-24-31	C00-24-31B	
ø120.601 to ø140.600	★	**SRKG141-76-40-060**	1	★	**SRKB141-76-40-060**	2	*76*	*40*	*60*	*50*	C00-90-04 (8x)	**3.5**	C00-24-31	C00-24-31B	

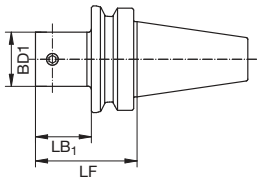
*Refer to the table at the bottom of J141 for the catalog numbers of cap screws and wrenches applicable for each product. *: For SRKG Type **: For SRKB Type

Adaptors (with Integrated Compensation Device)



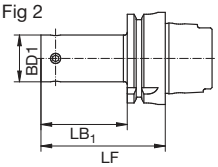
● BT/A Type

Fig 1



● HSK Type

Fig 2



DIN 69871-AD

Dimensions (*mm*)

Cat. No.	Stock	Size	BD_1	LF	LB_1	Weight (kg)	Fig
SRAD10-40A-44-065	★	SK40	*32*	*65*	*46*	1.1	1
SRAD10-40A-52-065	★	SK40	*39*	*65*	*46*	1.2	1
SRAD10-40A-61-075	★	SK40	*46*	*75*	*56*	1.4	1
SRAD10-40A-81-080	★	SK40	*56*	*80*	*61*	1.6	1
SRAD10-40A-101-095	★	SK40	*76*	*95*	*76*	2.2	1
SRAD10-50A-44-065	★	SK50	*32*	*65*	*46*	2.9	1
SRAD10-50A-52-065	★	SK50	*39*	*65*	*46*	3.0	1
SRAD10-50A-61-075	★	SK50	*46*	*75*	*56*	3.2	1
SRAD10-50A-81-085	★	SK50	*56*	*85*	*66*	3.6	1
SRAD10-50A-101-095	★	SK50	*76*	*95*	*76*	4.6	1

DIN 69871-B

Dimensions (*mm*)

Cat. No.	Stock	Size	BD_1	LF	LB_1	Weight (kg)	Fig
SRAD10-40B-44-065	★	SK40	*33*	*65*	*33*	1.1	1
SRAD10-40B-52-065	★	SK40	*38*	*65*	*38*	1.3	1
SRAD10-40B-61-075	★	SK40	*43*	*75*	*43*	1.4	1
SRAD10-40B-81-080	★	SK40	*53*	*80*	*56*	1.7	1
SRAD10-40B-101-095	★	SK40	-	*95*	*76*	2.5	1
SRAD10-50B-44-065	★	SK50	*27*	*65*	*32*	3.7	1
SRAD10-50B-52-065	★	SK50	*27*	*65*	*39*	3.8	1
SRAD10-50B-61-075	★	SK50	*37*	*75*	*46*	4.0	1
SRAD10-50B-81-085	★	SK50	*47*	*85*	*56*	4.3	1
SRAD10-50B-101-095	★	SK50	*57*	*95*	*76*	5.1	1

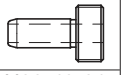
MAS-BT JIS 6339-AD

Cat. No.	Stock	Size	BD_1	LF	LB_1	Weight (kg)	Fig
SRAT10-40A-44-060	★	BT40	*32*	*60*	*33*	1.1	1
SRAT10-40A-52-065	★	BT40	*39*	*65*	*38*	1.3	1
SRAT10-40A-61-070	★	BT40	*46*	*70*	*43*	1.4	1
SRAT10-40A-81-080	★	BT40	*56*	*80*	*53*	1.7	1
SRAT10-40A-101-095	★	BT40	*76*	*95*	—	2.5	1
SRAT10-50A-44-065	★	BT50	*32*	*65*	*27*	3.7	1
SRAT10-50A-52-065	★	BT50	*39*	*65*	*27*	3.8	1
SRAT10-50A-61-075	★	BT50	*46*	*75*	*37*	4.0	1
SRAT10-50A-81-085	★	BT50	*56*	*85*	*47*	4.3	1
SRAT10-50A-101-095	★	BT50	*76*	*95*	*57*	5.1	1

DIN 69893-HSK-A

Cat. No.	Stock	Size	BD_1	LF	LB_1	Weight (kg)	Fig
SRAH10-63A-44-085	★	HSK63	*32*	*85*	*59*	1.0	2
SRAH10-63A-52-090	★	HSK63	*39*	*90*	*64*	1.2	2
SRAH10-63A-61-100	★	HSK63	*46*	*100*	*74*	1.5	2
SRAH10-63A-81-105	★	HSK63	*56*	*105*	*79*	1.8	2
SRAH10-63A-101-120	★	HSK63	*76*	*120*	*94*	2.4	2
SRAH10-100A-44-090	★	HSK100	*32*	*90*	*61*	2.3	2
SRAH10-100A-52-095	★	HSK100	*39*	*95*	*66*	2.6	2
SRAH10-100A-61-100	★	HSK100	*46*	*100*	*71*	2.8	2
SRAH10-100A-81-120	★	HSK100	*56*	*120*	*91*	3.5	2
SRAH10-100A-101-130	★	HSK100	*76*	*130*	*101*	5.0	2

Coolant Tubes

Taper Size	
HSK40	H00-40-01
HSK63	H00-63-01
HSK100	H00-100-01

*Coolant tube is not included

★: Worldwide Warehouse Item

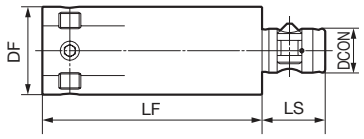
Shanks (with Integrated Compensation Device)



● SRA Type

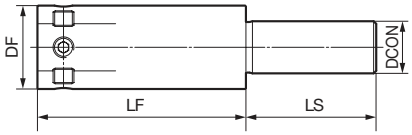
BM (Beta Module Shank) Type

Fig 1



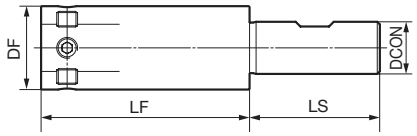
ZS (Cylindrical Shank) Type

Fig 2



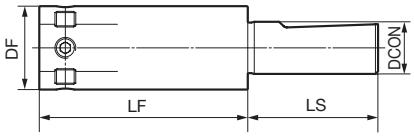
WD (Weldon Shank) Type

Fig 3



WN (Whistle Notch Shank) Type

Fig 4



Dimensions (*mm*)

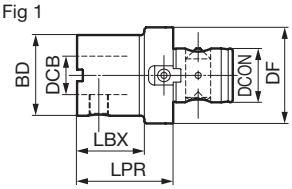
Shank type	Dia. DC Range	Holder Cat. No. Stock	Holder Cat. No. SRA Type	Diameter DF	Shank Dia. DCON	Length LF	Shank LS	Fig	Adjustment Screw	Wrench	Clamp Pin	Position Pin
BM	ø43.601 to ø51.600	★	SRA52-39-BM40-060	39	BM-40	60	26.0	1	C00-90-10	G00-02-06	Z00-40-21	Z00-40-23
		★	SRA52-39-BM40-100	39	BM-40	100	26.0	1				
	ø51.601 to ø60.600	★	SRA61-46-BM50-070	46	BM-50	70	31.0	1	C00-90-10	G00-02-06	Z00-40-21	Z00-40-23
		★	SRA61-46-BM50-120	46	BM-50	120	31.0	1				
	ø60.601 to ø80.600	★	SRA81-56-BM50-080	56	BM-50	80	31.0	1	C00-90-12	G00-02-07	Z00-50-21	Z00-50-23
		★	SRA81-56-BM50-140	56	BM-50	140	31.0	1				
	ø80.601 to ø140.600	★	SRA101-76-BM63-100	76	BM-63	100	38.0	1	C00-90-16	G00-02-08	Z00-63-21	Z00-63-23
		★	SRA101-76-BM63-160	76	BM-63	160	38.0	1				
ZS	ø35.601 to ø43.600	★	SRA44-32-ZS20-080	32	ZS-20	80	50.0	2	C00-90-08	G00-02-05	—	—
	ø43.601 to ø51.600	★	SRA52-39-ZS25-100	39	ZS-25	100	56.0	2	C00-90-10	G00-02-06	—	—
	ø51.601 to ø60.600	★	SRA61-46-ZS32-120	46	ZS-32	120	60.0	2			—	—
	ø60.601 to ø80.600	★	SRA81-56-ZS40-080	56	ZS-40	80	70.0	2	C00-90-12	G00-02-07	—	—
		★	SRA81-56-ZS40-140	56	ZS-40	140	70.0	2				
	ø80.601 to ø140.600	★	SRA101-76-ZS40-100	76	ZS-40	100	70.0	2	C00-90-16	G00-02-08	—	—
		★	SRA101-76-ZS40-160	76	ZS-40	160	70.0	2				
WD	ø35.601 to ø43.600	★	SRA44-32-WD20-080	32	WD-20	80	50.0	3	C00-90-08	G00-02-05	—	—
	ø43.601 to ø51.600	★	SRA52-39-WD25-100	39	WD-25	100	56.0	3	C00-90-10	G00-02-06	—	—
	ø51.601 to ø60.600	★	SRA61-46-WD32-120	46	WD-32	120	60.0	3	C00-90-10	G00-02-06	—	—
	ø60.601 to ø80.600	★	SRA81-56-WD40-080	56	WD-40	80	70.0	3	C00-90-12	SG00-02-07	—	—
		★	SRA81-56-WD40-140	56	WD-40	140	70.0	3				
	ø80.601 to ø140.600	★	SRA101-76-WD40-100	76	WD-40	100	70.0	3	C00-90-16	G00-02-08	—	—
		★	SRA101-76-WD40-160	76	WD-40	160	70.0	3				
WN	ø35.601 to ø43.600	★	SRA44-32-WN20-080	32	WN-20	80	50.0	4	C00-90-08	G00-02-05	—	—
	ø43.601 to ø51.600	★	SRA52-39-WN25-100	39	WN-25	100	56.0	4	C00-90-10	G00-02-06	—	—
	ø51.601 to ø60.600	★	SRA61-46-WN32-120	46	WN-32	120	60.0	4	C00-90-10	G00-02-06	—	—
	ø60.601 to ø80.600	★	SRA81-56-WN40-080	56	WN-40	80	70.0	4	C00-90-12	G00-02-07	—	—
		★	SRA81-56-WN40-140	56	WN-40	140	70.0	4				
	ø80.601 to ø140.600	★	SRA101-76-WN40-100	76	WN-40	100	70.0	4	C00-90-16	G00-02-08	—	—
		★	SRA101-76-WN40-160	76	WN-40	160	70.0	4				

Beta-Module Reducers and Extensions



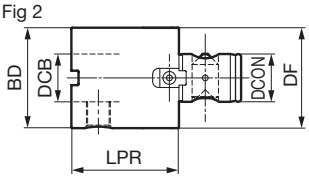
● B12 Type

Fig 1



● B13 Type

Fig 2



Reducers Beta-Module

Dimensions (*mm*)

Cat. No.	Stock	Diameter BD	Bore Dia. DCB	Diameter DF	Shank Dia. DCON	Overhang Length LPR	Body LBX	Weight (kg)	Fig
B12-40-32-045	★	32	BM-32	42	BM-40	45	30	0.3	1
B12-50-40-050	★	42	BM-40	50	BM-50	50	35	0.5	1
B12-63-32-050	★	32	BM-32	63	BM-63	50	30	0.9	1
B12-63-40-055	★	42	BM-40	63	BM-63	55	35	1.1	1
B12-80-40-060	★	42	BM-40	80	BM-80	60	35	2.2	1
B12-80-63-060	★	63	BM-63	80	BM-80	60	35	2.4	1
B12-100-40-060	★	42	BM-40	100	BM-100	60	35	3.1	1
B12-100-63-060	★	63	BM-63	100	BM-100	60	35	3.3	1
B12-100-80-075	★	80	BM-80	100	BM-100	75	50	3.5	1

Extensions Beta-Module

Dimensions (*mm*)

Cat. No.	Stock	Diameter BD	Bore Dia. DCB	Diameter DF	Shank Dia. DCON	Overhang Length LPR	Body LBX	Weight (kg)	Fig
B13-32-32-035	★	32	BM-32	32	BM-32	35	—	0.2	2
B13-32-32-070	★	32	BM-32	32	BM-32	70	—	0.4	2
B13-40-40-045	★	42	BM-40	42	BM-40	45	—	0.4	2
B13-40-40-070	★	42	BM-40	42	BM-40	70	—	0.7	2
B13-50-50-065	★	50	BM-50	50	BM-50	65	—	1.0	2
B13-50-50-100	★	50	BM-50	50	BM-50	100	—	1.5	2
B13-63-63-060	★	63	BM-63	63	BM-63	60	—	1.3	2
B13-63-63-125	★	63	BM-63	63	BM-63	100	—	2.9	2
B13-80-80-080	★	80	BM-80	80	BM-80	80	—	2.9	2
B13-80-80-160	★	80	BM-80	80	BM-80	160	—	6.0	2
B13-100-100-080	★	100	BM-100	100	BM-100	80	—	4.9	2
B13-100-100-180	★	100	BM-100	100	BM-100	180	—	10.9	2

★: Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

System Holders Beta-Module

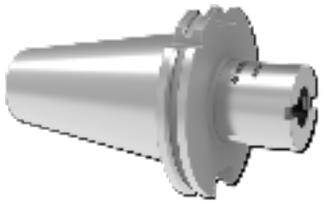


Fig 1

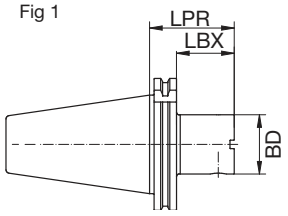
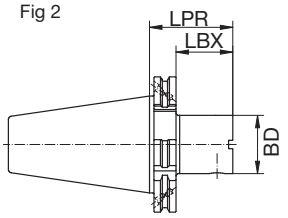


Fig 2



DIN 69871-AD

Dimensions (*mm*)

Cat. No.	Stock	Taper Size	Diameter BD	Bore Diameter	Gage Length LPR	Body LBX	Weight (kg)	Fig
BD10-40A-32-050	★	SK40	***32***	**BM-32**	*50*	*31*	0.9	1
BD10-40A-40-035	★	SK40	***42***	**BM-40**	*35*	*16*	0.9	1
BD10-40A-40-050	★	SK40	***42***	**BM-40**	*50*	*31*	1.1	1
BD10-40A-50-050	★	SK40	***50***	**BM-50**	*50*	*31*	1.2	1
BD10-40A-63-065	★	SK40	***63***	**BM-63**	*65*	*46*	1.5	1
BD10-50A-32-060	★	SK50	***32***	**BM-32**	*60*	*41*	2.9	1
BD10-50A-40-060	★	SK50	***42***	**BM-40**	*60*	*41*	3.0	1
BD10-50A-50-060	★	SK50	***50***	**BM-50**	*60*	*41*	3.2	1
BD10-50A-63-060	★	SK50	***63***	**BM-63**	*60*	*41*	3.3	1
BD10-50A-80-070	★	SK50	***80***	**BM-80**	*70*	*51*	4.0	1
BD10-50A-100-115	★	SK50	***100***	**BM-100**	*115*	*96*	6.9	1

DIN 69871-B

Dimensions (*mm*)

Cat. No.	Stock	Taper Size	Diameter BD	Bore Diameter	Gage Length LPR	Body LBX	Weight (kg)	Fig
BD10-40B-40-035	★	SK40	***42***	**BM-40**	*60*	*16*	0.9	2
BD10-40B-63-065	★	SK40	***63***	**BM-63**	*65*	*46*	1.5	2
BD10-50B-32-060	★	SK50	***32***	**BM-32**	*60*	*41*	2.9	2
BD10-50B-40-060	★	SK50	***42***	**BM-40**	*60*	*41*	3.0	2
BD10-50B-50-060	★	SK50	***50***	**BM-50**	*60*	*41*	3.2	2
BD10-50B-63-060	★	SK50	***63***	**BM-63**	*60*	*41*	3.3	2
BD10-50B-100-115	★	SK50	***100***	**BM-100**	*115*	*96*	6.9	2

System Holders Beta-Module



Fig 1

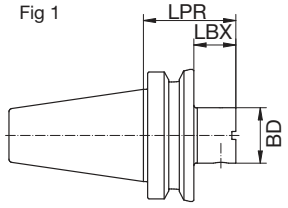
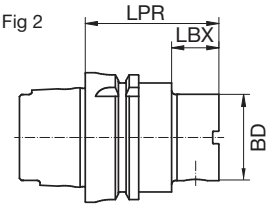


Fig 2



BT/A Type

Dimensions (*mm*)

Cat. No.	Stock	Taper Size	Diameter BD	Bore Diameter	Gage Length LPR	Body LBX	Weight (kg)	Fig
BT10-40A-32-060	★	BT40	*32*	**BM-32**	*60*	*33*	0.9	1
BT10-40A-40-028	★	BT40	*42*	**BM-40**	*28*	*1*	0.9	1
BT10-40A-40-060	★	BT40	*42*	**BM-40**	*60*	*33*	1.2	1
BT10-40A-50-060	★	BT40	*50*	**BM-50**	*60*	*33*	1.3	1
BT10-40A-63-055	★	BT40	*63*	**BM-63**	*55*	*28*	1.4	1
BT10-40A-63-070	★	BT40	*63*	**BM-63**	*70*	*43*	1.7	1
BT10-50A-32-070	★	BT50	*32*	**BM-32**	*70*	*32*	3.7	1
BT10-50A-40-070	★	BT50	*42*	**BM-40**	*70*	*32*	3.9	1
BT10-50A-50-070	★	BT50	*50*	**BM-50**	*70*	*32*	4.1	1
BT10-50A-63-080	★	BT50	*63*	**BM-63**	*80*	*42*	4.3	1
BT10-50A-80-100	★	BT50	*80*	**BM-80**	*100*	*62*	5.5	1
BT10-50A-100-110	★	BT50	*100*	**BM-100**	*110*	*72*	7.0	1

DIN 69893-HSK-A (Coolant tube sold separately)

Dimensions (*mm*)

Cat. No.	Stock	Taper Size	Diameter BD	Bore Diameter	Gage Length LPR	Body LBX	Weight (kg)	Fig
BH10-50A-32-060	★	HSK50	*32*	**BM-32**	*60*	*34*	0.6	2
BH10-50A-40-065	★	HSK50	*42*	**BM-40**	*65*	*39*	0.9	2
BH10-63A-32-060	★	HSK63	*32*	**BM-32**	*60*	*34*	0.9	2
BH10-63A-40-065	★	HSK63	*42*	**BM-40**	*65*	*23*	1.2	2
BH10-63A-50-070	★	HSK63	*50*	**BM-50**	*70*	*44*	1.3	2
BH10-63A-63-080	★	HSK63	*63*	**BM-63**	*80*	*38*	1.4	2
BH10-100A-40-080	★	HSK100	*42*	**BM-40**	*80*	*35*	3.9	2
BH10-100A-50-080	★	HSK100	*50*	**BM-50**	*80*	*35*	4.1	2
BH10-100A-63-080	★	HSK100	*63*	**BM-63**	*80*	*35*	4.3	2
BH10-100A-80-090	★	HSK100	*80*	**BM-80**	*90*	*45*	5.5	2
BH10-100A-100-100	★	HSK100	*100*	**BM-100**	*100*	*55*	7.0	2

Parts

Beta	Cat. No. Clamp Screw	Clamp Pin	Position Pin	Drive Key	Cap Screw
25	**Z00-25-24**	**Z00-25-21**	**Z00-25-23**		
32	**Z00-32-24**	**Z00-32-21**	**Z00-32-23**		
40	**Z00-40-24**	**Z00-40-21**	**Z00-40-23**	**Z00-40-25**	**C00-22-58**
50	**Z00-50-24**	**Z00-50-21**	**Z00-50-23**	**Z00-50-25**	**C00-22-60**
63	**Z00-63-24**	**Z00-63-21**	**Z00-63-23**	**Z00-63-25**	**C00-22-05**
80	**Z00-80-24**	**Z00-80-21**	**Z00-80-23**	**Z00-80-25**	**C00-22-07**
100	**Z00-100-24**	**Z00-100-21**	**Z00-100-23**	**Z00-100-25**	**C00-22-71**

For B12 and B13 Extensions

Coolant Tubes

Taper Size	
HSK40	H00-40-01
HSK63	H00-63-01
HSK100	H00-100-01

★: Worldwide Warehouse Item

N·m Recommended Tightening Torque (N·m)

■ SR Type Usage Instructions (Adjusting Runout)

The runout at the cutting edge of a reamer should be zero to obtain optimum boring precision. To correct runout in the holder or the machine's spindle, use of holders with a runout adjustment mechanism, hydro chucks and shrink-fitting is recommended. Various methods can be used to measure runout on a SumiReamer SR type reamer. With good runout repeatability, it is recommended that inserts be replaced without removing the shank holder from the spindle.

● Runout Adjustment

Procedure:

1. Secure central clamping screw according to value "A" in the table (if no value is listed use value "B").
2. Load the tool into the machine spindle.
3. Set the indicator (with 1 µm / .0001 inch resolution) on the marked run out ① area on the shank.
4. Measure run-out of the two adjustment screw ② axes. Compensate half the value of the total run-out error by using the adjustment screws. Check run out on all four axis points and repeat the adjustment if necessary. Tighten all adjusting screws, and verify run-out of .005 mm / .0002"" T.I.R. or less.
5. Tighten the central clamping screw according to the value in table "B".
6. Check the run out again and readjust if necessary.



*A has the greatest runout accuracy, followed by B and then C.



For Reaming Diameters larger than 36.601 mm

Procedure

1. Secure central clamping screw according to value "A" in the table (if no value is listed use value "B").
2. Load the tool into the machine spindle.
3. Set the indicator (with 1 µm / .0001 inch resolution) on the marked run out area ① on the shank.
4. Measure run-out of the two adjustment screw ② axes.
   Compensate half the value of the total run-out error by using the adjustment screws. Check run out on all four axis points and repeat the adjustment if necessary. Tighten all adjusting screws, and verify run-out of .005 mm / .0002"" T.I.R. or less.
5. Tighten the central clamping screw according to the value in table "B".
6. Check the run out again and readjust if necessary.

SR Parameter	A [Nm]	B [Nm]
SR 044		35
SR 061	-	55
SR 081	-	55
SR 081	60	85
SR 101	70	120
SR 121	70	120
SR 141	70	120

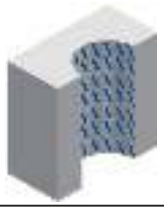


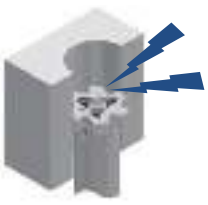
Recommended Tightening Torque for Center Locking Screw (N·m)

Holder Size	Cap Screw	Size	A	B
SRK□44	C00-26-23G/B	M8×60	25	32
SRK□52	C00-26-38G/B	M8×70	25	32
SRK□61	C00-24-26G/B	M10×80	40	55
SRK□81	C00-26-37G/B	M12×100	65	85
SRK□101	C00-24-31G/B	M16×100	95	120

G, B

■ Troubleshooting

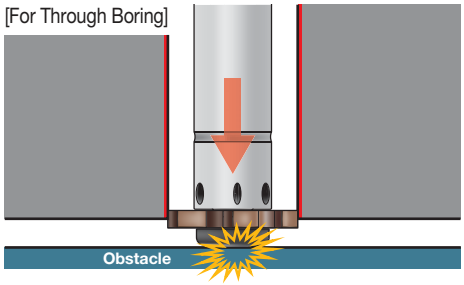
Failure	Countermeasures
Enlarged Diameter 	· Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Decrease the cutting speed. · Increase the feed rate. · Increase the coolant concentration. · Reduce the stock removal. · Check the cutting edge for damage (whether there are built-up edges). · Change the reamer diameter.
Tapered Hole 	· Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Decrease the cutting speed. · Decrease the feed rate. · Adjust the coolant concentration. · Review the pre-machining process. · Review the clamping method of the workpiece. · Compare the hole diameters when the workpiece is clamped and when it is unclamped. · Check and correct the direction of chip evacuation.
Chatter marks on machined surface 	· Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Change the approach angle of the insert cutting edge. · Review the clamping method of the workpiece. · Decrease the cutting speed. · Increase the feed rate.
Poor Surface Roughness 	· Check the cutting edge for damage. · Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Check whether the cutting conditions are within the recommended range. · Change to internal coolant supply. · Increase the coolant concentration.

Failure	Countermeasures
Return Mark 	· Reduce the runout as much as possible (use a holder with a diameter correction mechanism). · Check the cutting edge for damage (whether there are built-up edges). · Reduce the stock removal. · Change to an insert with a sharper cutting edge shape. · Decrease the return (lifting) feed.
Irregular Cutting Noise 	· Decrease the coolant concentration. · Increase the stock removal. · Check the cutting edge for damage. · Change the approach angle of the insert cutting edge.
Small Work Diameter 	· Replace the insert. · Decrease the coolant concentration. · Increase the stock removal. · Increase the cutting speed. · Decrease the feed rate.

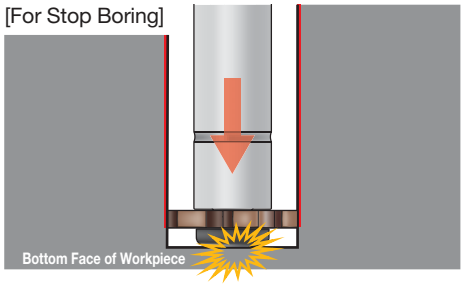
● Precautions for SD Type (Center Bolt Clamp Type)

This product can be used for both through-hole and stop-hole boring. However, the head of the center bolt protrudes from the end of the body, so ensure clearance by referring to the protrusion of the center bolt (LFA) shown in the dimension table.

[For Through Boring]



[For Stop Boring]



MEMO

Carbide Materials
Brazed Tools
K1 to K12

K



Carbide Material Features and Applications K2
Plate Blanks K4
Rod Blanks K5
Special Rod Blanks K6
JIS Type Inserts for Carbide Tool Holders K8
JIS Type Carbide Tool Holders K9
Jig Boring Tools IJB Type K12

Stock Markings and Symbols

mark: Standard stocked item
mark: To be replaced with the new item featured on the same page
mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

* mark: Semi-standard stock (please confirm stock availability)
mark: Stock or planned stock (please confirm stock availability)
Blank: Made-to-order item
- mark: Not available

Our Mission is to manufacture the highest quality tungsten carbide rod, by using the most modern production techniques available in the industry.





■ Features & Benefits

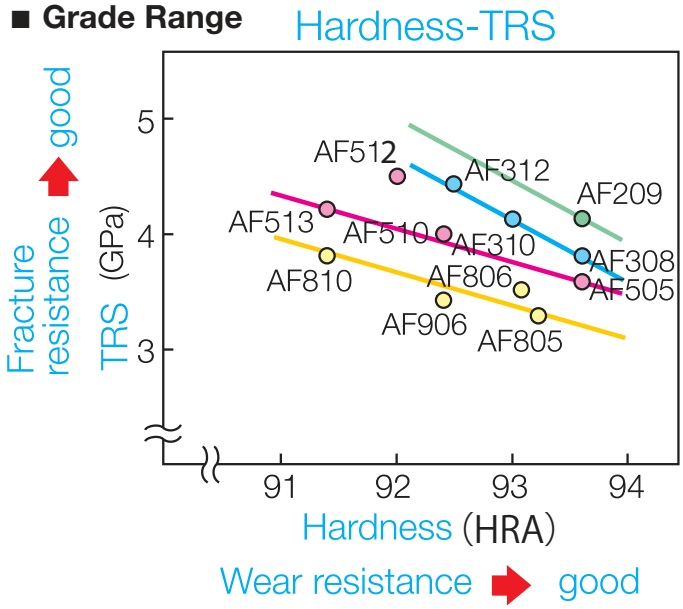
- All products manufactured in Japan
- Axismateria Ltd., subsidiary of Sumitomo Electric Hardmetal features two manufacturing facilities and a research & development location for carbide rod blanks.
- Only materials of highest quality are applied for production
- Incorporating the most advanced production facility available and unique manufacturing techniques, provides short delivery times and consistently high quality products
- We utilize the latest quality control and assurance systems
- We prioritize the advancement of high level research and development

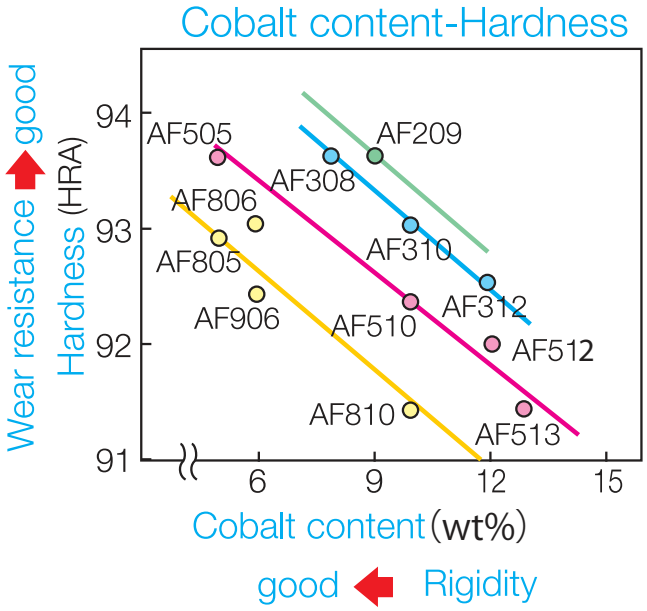
■ Carbide Rod Grade Description

Class	Properties					Features	Products
	Grade	Grain Size (µm)	Cobalt Content (wt%)	TRS (GPa)	Hardness (HRA)		
Ultra- micro Grain	AF209	0.2	9.0	4.0	93.5	The finest micro-grain carbide	Ultra small size PCB Drills, drills, & endmills
	AF312	0.3	12.0	4.4	92.5	Very high toughness characteristics	Small size PCB drills
	AF310	0.3	10.0	4.1	93.0	High wear resistance with toughness	Small size PCB drills & routers
	AF308	0.3	8.0	3.8	93.6	High wear resistance ultra-micro grained	PCB drills & endmills for hardened steel
Micro Grain	AF513	0.5	13.0	4.2	91.4	Tough micro-grain carbide	Endmills, drills for fracture resistance & taps
	AF512	0.5	12.0	4.4	92.0	High wear resistance with added toughness	Endmills
	AF510	0.5	10.0	4.0	92.4	High wear resistance with added toughness	Endmills & drills for general purpose
	AF505	0.5	5.0	3.6	93.6	High wear resistance, micro-grain carbide	PCB drills & routers
Fine Grain	AF810	0.8	10.0	3.8	91.4	High wear resistance with added toughness	Endmills & drills
	AF806	0.8	6.0	3.5	93.0	High wear resistance at high speed machining	PCB drills
	AF805	0.8	5.0	3.3	93.2	High wear resistance, fine grain carbide	Endmills, drills for aluminum & reamers
	AF906	0.9	6.0	3.4	92.4	High toughness with average hardness	Endmills & drills for cast iron

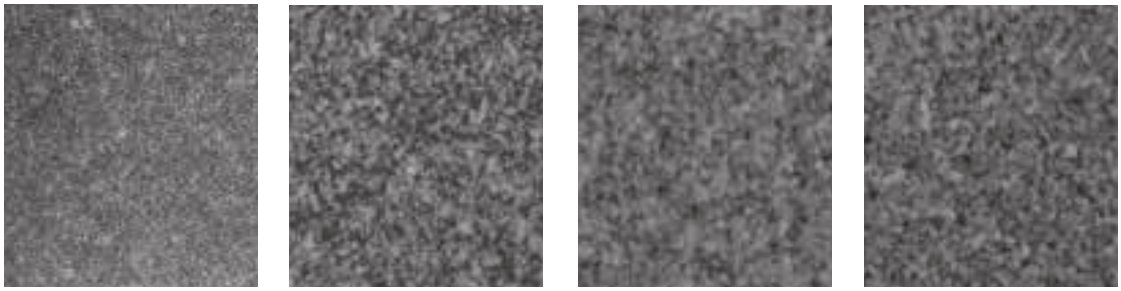
Carbide Rod for Endmills, Drills & Reamers

■ Grade Range





■ Micro Structure



AF209 Grain Size: 0.2 μm

AF312 Grain Size: 0.3 μm

AF513 Grain Size: 0.5 μm

AF810 Grain Size: 0.8 μm

■ Application Recommendation

Class	Application				Work Materials								
					P		H	M	S		K	N	
	Endmills	Drills	Reamers	PCB Drills, Routers	Soft Steel	General Steel	Hardened Material	Stainless Steel	Titanuim Alloy	Inconel	Cast Iron	Aluminum Alloy	Copper Alloy
AF209	●	●			②	②	②	①	②	②		②	②
AF312	●	●			①							②	②
AF310				●									
AF308	●				②	②	①	②	②	②		②	②
AF513	●	●			①	①	②	①	②	②	②	②	②
			●		①	①	②	①	②	②	②		②
AF512	●				②	②		①	①	①			
AF510	●				①	①	②	②	②	②	②	②	②
		●			①	①	①	①	②	②	②	②	②
AF505				●									
AF810	●				①	①	②	②	②	②	②	②	②
		●			①	①	①	①	②	②	②		②
AF806				●									
AF805	●	●		●					②	②	①	①	①
			●		②	②	②	②	②	②	①	①	①
AF906	●	●					②	②	①	①	①	①	①
			●		②	②	②	②	①	①	①	①	①

①: 1st choice ②: 2nd choice

Plate Blanks

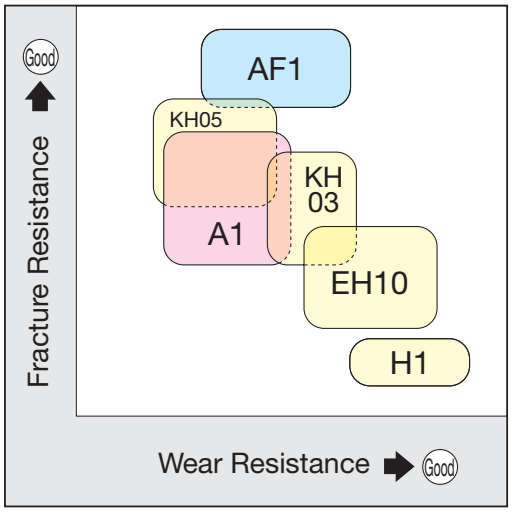
A comprehensive stocked range of grades in carbide plate blanks for mold and die materials, as well as carbide rods for drill or reamer materials.

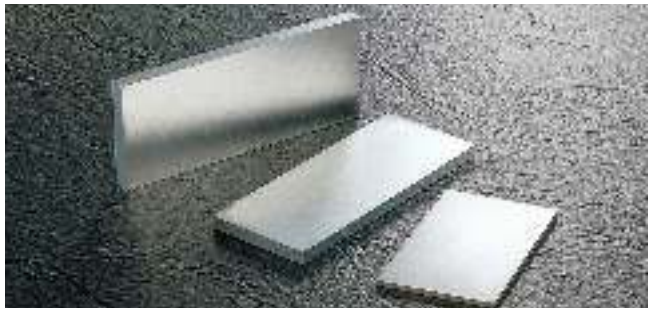
■ Grades

- AF1 Ultra-fine grained Carbide
  With grains finer than that of conventional grades, an excellent balance of high toughness and high hardness as well as superior edge sharpness is achieved.
- A1 Micro-fine Grained Carbide
  Micro-fine grained carbide A1 is a best-selling general purpose grade with high wear resistance and toughness.
- Micro-grained Carbide H1
  Reliable grade for machining non-ferrous metals.
- Basic Carbide EH10
  Highly evaluated grade for general machining of cast iron and exotic alloys. Perfect for drills and reamers.
- KH Series
  · KH03: Has strength (transverse rupture strength) and hardness similar to A1, with greatly improved chipping resistance that is comparable to ultra-fine grained grades.
  · KH05: With a higher cemented carbide binder content than KH03, this grade has even greater strength (transverse rupture strength) and chipping resistance.

■ Properties and Applications

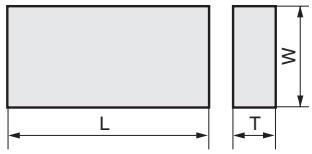
Grade	Hardness		Transverse Rupture Strength	Applications	
	HRA	HV(GPa)	TRS(GPa)		
A1	91.4	15.6	3.2	Endmills	IT Mold Punches
AF1	92.5	17.3	4.4	Small Drills	
KH03	91.4	15.2	3.3	Molds / Dies	
KH05	90.4	13.6	3.5		
EH10	92.4	17.3	3.4	Drills, Reamers	
H1	92.9	17.7	2.1		





Ultra-fine grained carbide (AF1) is specially developed for the manufacturing of carbide mold parts (punches) with a variety of sizes in stock.

Fig 1



■ Stock

Dimensions (mm)

Cat. No.	T		L		W		Grade				Fig
	Nominal Dimensions	Tolerance	Nominal Dimensions	Tolerance	Nominal Dimensions	Tolerance	A1	AF1	KH03	KH05	
0B10060012	1.2	+0.5 +0.2	100	+1.5 0	60	+1.0 0	★	★	★	★	1
0B10060015	1.5						★	★	★	★	1
0B10060020	2.0						★	★	★	★	1
0B10060025	2.5						★	★	★	★	1
0B10060030	3.0						★	★	★	★	1
0B10060040	4.0						★	★	★	★	1
0B15060020	2.0	+0.5 +0.2	150	+1.5 0	60	+1.0 0	★	★	★	★	1
0B15060025	2.5						★	★	★	★	1
0B15060030	3.0						★	★	★	★	1
0B15060035	3.5						★	★	★	★	1
0B15060040	4.0						★	★	★	★	1
0B15060045	4.5						★	★	★	★	1
0B15060050	5.0						★	★	★	★	1
0B15060055	5.5						★	★	★	★	1
0B15060060	6.0						★	★	★	★	1
0B15060070	7.0						★	★	★	★	1
0B15060080	8.0						★	★	★	★	1
0B15060090	9.0						★	★	★	★	1
0B15060100	10.0						★	★	★	★	1

Plates with top and bottom faces ground can be made to order.

★: Worldwide Warehouse Item

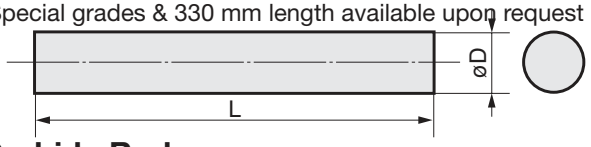
Rod Blanks



Rod Blanks grades ideal for applications such as endmills, drills and reamers where edge strength, toughness and wear resistance are essential.

- All Sintered surface
- Available Grades: AF312, AF513, AF805, AF906, AF308, AF510
- Special grades & 330 mm length available upon request

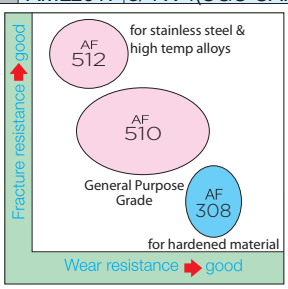
Fig 1



■ Carbide Rods - (CGC) Cut, Ground, Chamfer

Grade	Order #	h6 tolerance Product Description	Stock	øD Diameter (in.)	L Length (in.)	Chamfer (in.)
AF308	AML200K	1/8 X 1.5(CGC CARBIDE ROD)-AF308	●	1/8	1.5	
	AML200P	1/8 X 2(CGC CARBIDE ROD)-AF308	●	1/8	2.0	
	AML200S	1/8 X 2.5(CGC CARBIDE ROD)-AF308	●	1/8	2.5	
	AML200V	1/8 X 3(CGC CARBIDE ROD)-AF308	●	1/8	3	
	AML200Y	3/16 X 2(CGC CARBIDE ROD)-AF308	●	3/16	2	
	AML2012	3/16 X 3(CGC CARBIDE ROD)-AF308	●	3/16	3	
	AML2007	1/4 X 2(CGC CARBIDE ROD)-AF308	●	1/4	2	
	AML200A	1/4 X 2.5(CGC CARBIDE ROD)-AF308	●	1/4	2.5	0.015
	AML200D	1/4 X 3(CGC CARBIDE ROD)-AF308	●	1/4	3	
	AML200G	1/4 X 4(CGC CARBIDE ROD)-AF308	●	1/4	4	
	AML201H	5/16 X 2.5(CGC CARBIDE ROD)-AF308	●	5/16	2.5	
	AML201M	5/16 X 3(CGC CARBIDE ROD)-AF308	●	5/16	3	
	AML2018	3/8 X 2.5(CGC CARBIDE ROD)-AF308	●	3/8	2.5	
	AML201B	3/8 X 3(CGC CARBIDE ROD)-AF308	●	3/8	3	
	AML201E	3/8 X 4(CGC CARBIDE ROD)-AF308	●	3/8	4	
	AML2001	1/2 X 3(CGC CARBIDE ROD)-AF308	●	1/2	3	
	AML2004	1/2 X 4(CGC CARBIDE ROD)-AF308	●	1/2	4	0.031
	AML2015	3/4 X 4(CGC CARBIDE ROD)-AF308	●	3/4	4	
AF510	AML200M	1/8 X 1.5(CGC CARBIDE ROD)-AF510	●	1/8	1.5	
	AML200Q	1/8 X 2(CGC CARBIDE ROD)-AF510	●	1/8	2.0	
	AML200T	1/8 X 2.5(CGC CARBIDE ROD)-AF510	●	1/8	2.5	
	AML200W	1/8 X 3(CGC CARBIDE ROD)-AF510	●	1/8	3	
	AML200Z	3/16 X 2(CGC CARBIDE ROD)-AF510	●	3/16	2	
	AML2013	3/16 X 3(CGC CARBIDE ROD)-AF510	●	3/16	3	
	AML2008	1/4 X 2(CGC CARBIDE ROD)-AF510	●	1/4	2	
	AML200B	1/4 X 2.5(CGC CARBIDE ROD)-AF510	●	1/4	2.5	0.015
	AML200E	1/4 X 3(CGC CARBIDE ROD)-AF510	●	1/4	3	
	AML200H	1/4 X 4(CGC CARBIDE ROD)-AF510	●	1/4	4	
	AML201J	5/16 X 2.5(CGC CARBIDE ROD)-AF510	●	5/16	2.5	
	AML201N	5/16 X 3(CGC CARBIDE ROD)-AF510	●	5/16	3	
	AML2019	3/8 X 2.5(CGC CARBIDE ROD)-AF510	●	3/8	2.5	
	AML201C	3/8 X 3(CGC CARBIDE ROD)-AF510	●	3/8	3	
	AML201F	3/8 X 4(CGC CARBIDE ROD)-AF510	●	3/8	4	
	AML2002	1/2 X 3(CGC CARBIDE ROD)-AF510	●	1/2	3	
	AML2005	1/2 X 4(CGC CARBIDE ROD)-AF510	●	1/2	4	0.031
	AML2016	3/4 X 4(CGC CARBIDE ROD)-AF510	●	3/4	4	
AF512	AML200N	1/8 X 1.5(CGC CARBIDE ROD)-AF512	●	1/8	1.5	
	AML200R	1/8 X 2(CGC CARBIDE ROD)-AF512	●	1/8	2.0	
	AML200U	1/8 X 2.5(CGC CARBIDE ROD)-AF512	●	1/8	2.5	
	AML200X	1/8 X 3(CGC CARBIDE ROD)-AF512	●	1/8	3	
	AML2011	3/16 X 2(CGC CARBIDE ROD)-AF512	●	3/16	2	
	AML2014	3/16 X 3(CGC CARBIDE ROD)-AF512	●	3/16	3	
	AML2009	1/4 X 2(CGC CARBIDE ROD)-AF512	●	1/4	2	
	AML200C	1/4 X 2.5(CGC CARBIDE ROD)-AF512	●	1/4	2.5	0.015
	AML200F	1/4 X 3(CGC CARBIDE ROD)-AF512	●	1/4	3	
	AML200J	1/4 X 4(CGC CARBIDE ROD)-AF512	●	1/4	4	
	AML201K	5/16 X 2.5(CGC CARBIDE ROD)-AF512	●	5/16	2.5	
	AML201P	5/16 X 3(CGC CARBIDE ROD)-AF512	●	5/16	3	
	AML201A	3/8 X 2.5(CGC CARBIDE ROD)-AF512	●	3/8	2.5	
	AML201D	3/8 X 3(CGC CARBIDE ROD)-AF512	●	3/8	3	
	AML201G	3/8 X 4(CGC CARBIDE ROD)-AF512	●	3/8	4	
	AML2003	1/2 X 3(CGC CARBIDE ROD)-AF512	●	1/2	3	
	AML2006	1/2 X 4(CGC CARBIDE ROD)-AF512	●	1/2	4	0.031
	AML2017	3/4 X 4(CGC CARBIDE ROD)-AF512	●	3/4	4	

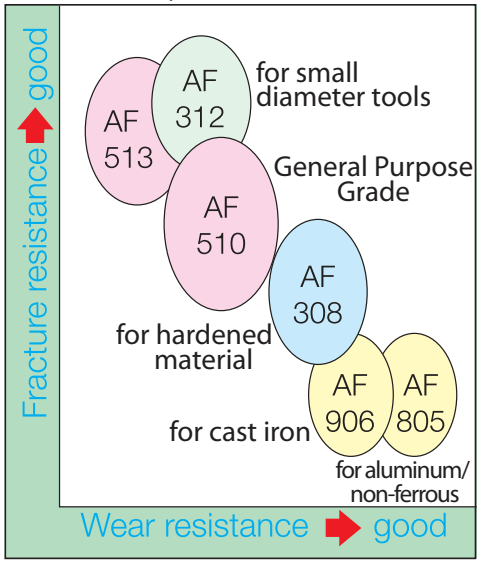
●: USA Stocked Item



■ Carbide Rods

Grade	øD Diameter (mm)	øD Tolerance	L Over Length	L Tolerance	Available Grades AF312	AF513	AF805	AF906	AF308	AF510
AR010310	1.0	+0.3 +0.2	310 (mm)	+0.6 0	★	★	★	★		
AR015310	1.5				★	★	★	★		
AR020310	2.0				★	★	★	★		
AR025310	2.5	+0.4 +0.2			★	★	★	★		
AR030310	3.0				★	★	★	★	★	★
AR035310	3.5				★	★	★	★		
AR040310	4.0				★	★	★	★	★	★
AR045310	4.5				★	★	★	★		
AR050310	5.0	+0.5 +0.2			★	★	★	★		
AR055310	5.5				★	★	★	★		
AR060310	6.0				★	★	★	★	★	★
AR065310	6.5				★	★	★	★		
AR070310	7.0				★	★	★	★		
AR075310	7.5				★	★	★	★		
AR080310	8.0				★	★	★	★	★	★
AR090310	9.0	+0.6 +0.2			★	★	★	★		
AR100310	10.0				★	★	★	★	★	★
AR110310	11.0				★	★	★	★		
AR120310	12.0				★	★	★	★	★	★
AR130310	13.0				★	★	★	★		
AR140310	14.0				★	★	★	★		
AR150310	15.0				★	★	★	★		
AR160310	16.0	+0.8 +0.2			★	★	★	★	★	★
AR170310	17.0				★	★	★	★		
AR180310	18.0				★	★	★	★		
AR190310	19.0				★	★	★	★		
AR200310	20.0				★	★	★	★		

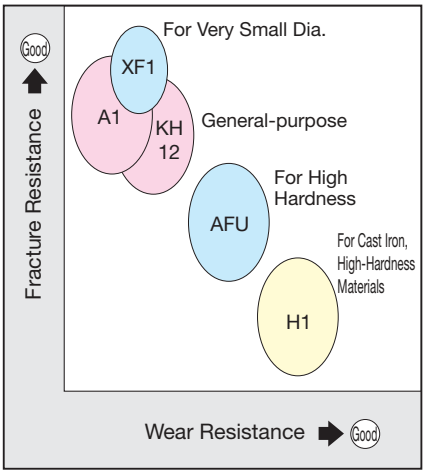
★: Stocked in Japan. Items are 2-4 weeks delivery



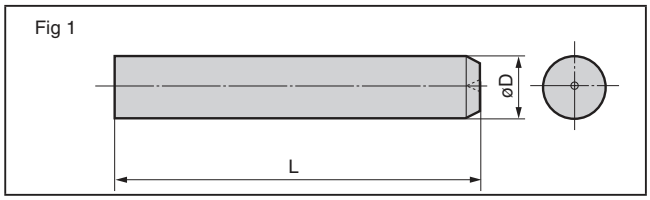
Please inquire about stock availability when ordering.
· For length requirements other than L=310mm, refer to "Special Rod Blanks" on page K6 for the available made-to-order specifications.

Special Rod Blanks

Endmill Blanks



Shape (Example)



O.D.

Dimensions (mm)

øD	Tolerance	Fig
1.0 ≤ D ≤ 2.0	+ 0.3 + 0.2	1
2.0 < D ≤ 8.0	+ 0.5 + 0.2	1
8.0 < D ≤ 15.0	+ 0.6 + 0.2	1
15.0 < D ≤ 20.0	+ 0.6 + 0.3	1
20.0 < D ≤ 25.0	+ 0.6 + 0.3	1

Rods with steps can be made to order.

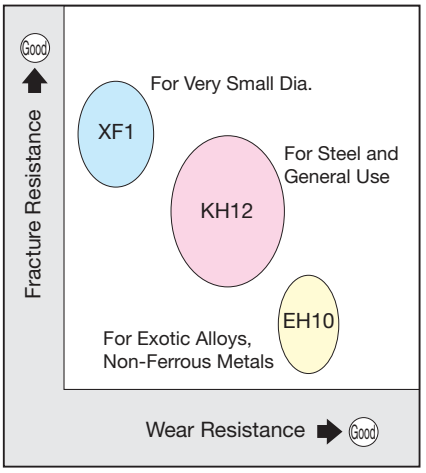
Overall Length

Dimensions (mm)

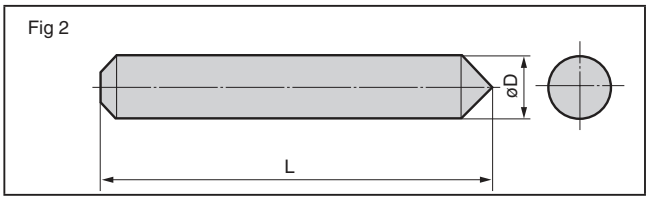
L	Tolerance	Warpage	Fig
40 ≤ L ≤ 100	Overall Length ± 0.5%	0.15	1
100 < L ≤ 200		0.15	1
200 < L ≤ 310		0.20	1

Ground rods can be made to order.

Drill Blanks



Shape (Example)



O.D.

Dimensions (mm)

øD	Tolerance	Fig
1.0 ≤ D ≤ 2.0	+ 0.3 + 0.2	2
2.0 < D ≤ 15.0	+ 0.5 + 0.3	2
15.0 < D ≤ 20.0	+ 0.6 + 0.3	2
20.0 < D ≤ 25.0	+ 0.6 + 0.3	2

Rods with steps can be made to order.

Overall Length

Dimensions (mm)

L	Tolerance	Warpage	Fig
40 ≤ L ≤ 100	Overall Length ± 0.5%	0.15	2
100 < L ≤ 200		0.15	2
200 < L ≤ 310		0.20	2

Ground rods can be made to order.



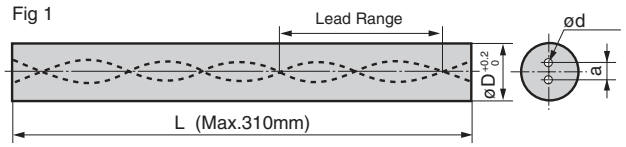
Special Rod Blanks

Drill Blanks with Oil Holes



Shape (Example)

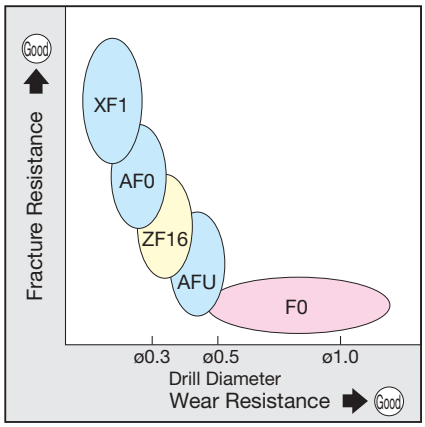
Fig 1



Right-hand Helix 30°, 2 Holes

	Order #	Product Description	Stock	øD Diameter (mm)	øD1 Lead Bottom	ød Hole Diameter	a Hole Pitch	Lead (mm)
For Straight Drills	AML300T	3.6X330/30 OH STRAIGHT UNGROUND-AF810	●	3.6	3.3	0.47 ±0.05	$1.5^{0}_{-0.1}$	15.7 ~ 17.0
	AML300U	4.6X330/30 OH STRAIGHT UNGROUND-AF810	●	4.6	4.3	0.59 ±0.1	$1.7^{0}_{-0.2}$	20.9 ~ 22.6
	AML300V	5.6X330/30 OH STRAIGHT UNGROUND-AF810	●	5.6	5.3	0.71 ±0.1	$2.4^{0}_{-0.3}$	26.1 ~ 28.3
	AML300W	6.6X330/30 OH STRAIGHT UNGROUND-AF810	●	6.6	6.3	0.83 ±0.1	2.8 ±0.2	31.3 ~ 34.0
	AML300X	7.6X330/30 OH STRAIGHT UNGROUND-AF810	●	7.6	7.3	0.95 ±0.1	3.2 ±0.2	36.6 ~ 39.6
	AML300Y	8.6X330/30 OH STRAIGHT UNGROUND-AF810	●	8.6	8.3	1.06 ±0.1	3.6 ±0.2	41.8 ~ 45.3
	AML300Z	9.6X330/30 OH STRAIGHT UNGROUND-AF810	●	9.6	9.3	1.18 ±0.2	4.0 ±0.2	47.0 ~ 51.0
	AML300F	10.6X330/30 OH STRAIGHT UNGROUND-AF810	●	10.6	10.3	1.30 ±0.2	4.4 ±0.2	52.3 ~ 56.7
	AML300G	11.6X330/30 OH STRAIGHT UNGROUND-AF810	●	11.6	11.3	1.30 ±0.2	4.4 ±0.2	57.5 ~ 62.3
	AML300H	12.6X330/30 OH STRAIGHT UNGROUND-AF810	●	12.6	12.3	1.42 ±0.2	4.8 ±0.2	62.7 ~ 68.0
	AML300J	13.6X330/30 OH STRAIGHT UNGROUND-AF810	●	13.6	13.3	1.54 ±0.2	5.2 ±0.2	67.9 ~ 73.7
	AML300K	14.6X330/30 OH STRAIGHT UNGROUND-AF810	●	14.6	14.3	1.66 ±0.2	5.6 ±0.2	73.2 ~ 79.3
	AML300M	15.6X330/30 OH STRAIGHT UNGROUND-AF810	●	15.6	15.3	1.77 ±0.2	6.0 ±0.2	78.4 ~ 85.0
	AML300N	16.6X330/30 OH STRAIGHT UNGROUND-AF810	●	16.6	16.3	1.89 ±0.2	6.4 ±0.2	83.7 ~ 90.7
	AML300P	17.6X330/30 OH STRAIGHT UNGROUND-AF810	●	17.6	17.3	2.01 ±0.2	6.8 ±0.2	88.9 ~ 96.3
	AML300Q	18.6X330/30 OH STRAIGHT UNGROUND-AF810	●	18.6	18.3	2.13 ±0.2	7.2 ±0.2	94.1 ~ 102.0
	AML300R	19.6X330/30 OH STRAIGHT UNGROUND-AF810	●	19.6	19.3	2.28 ±0.2	7.6 ±0.2	99.3 ~ 107.7
	AML300S	20.6X330/30 OH STRAIGHT UNGROUND-AF810	●	20.6	20.3	2.36 ±0.2	2.8 ±0.2	104.6 ~ 113.4
For Step Drills	AML3008	3.6X330/30 OH STEP UNGROUND-AF810	●	3.6	3.3	0.23 ±0.05	$0.8^{-0.1}_{-0.2}$	15.7 ~ 17.0
	AML3009	4.6X330/30 OH STEP UNGROUND-AF810	●	4.6	4.3	0.35 ±0.05	$1.1^{0}_{-0.1}$	20.9 ~ 22.6
	AML300A	5.6X330/30 OH STEP UNGROUND-AF810	●	5.6	5.3	0.47 ±0.05	$1.5^{0}_{-0.3}$	26.1 ~ 28.3
	AML300B	6.6X330/30 OH STEP UNGROUND-AF810	●	6.6	6.3	0.47 ±0.1	2.0 ±0.2	31.3 ~ 34.0
	AML300C	7.6X330/30 OH STEP UNGROUND-AF810	●	7.6	7.3	0.59 ±0.1	2.0 ±0.2	36.6 ~ 39.6
	AML300D	8.6X330/30 OH STEP UNGROUND-AF810	●	8.6	8.3	0.71 ±0.1	2.4 ±0.2	41.8 ~ 45.3
	AML300E	9.6X330/30 OH STEP UNGROUND-AF810	●	9.6	9.3	0.83 ±0.1	2.8 ±0.2	47.0 ~ 51.0
	AML3001	10.6X330/30 OH STEP UNGROUND-AF810	●	10.6	10.3	0.95 ±0.1	3.2 ±0.2	52.3 ~ 56.7
	AML3002	11.6X330/30 OH STEP UNGROUND-AF810	●	11.6	11.3	0.95 ±0.2	3.2 ±0.2	57.5 ~ 62.3
	AML3003	12.6X330/30 OH STEP UNGROUND-AF810	●	12.6	12.3	1.06 ±0.2	3.6 ±0.2	62.7 ~ 68.0
	AML3004	13.6X330/30 OH STEP UNGROUND-AF810	●	13.6	13.3	1.06 ±0.2	3.6 ±0.2	67.9 ~ 73.7
	AML3005	14.6X330/30 OH STEP UNGROUND-AF810	●	14.6	14.3	1.18 ±0.2	4.0 ±0.2	73.2 ~ 79.3
	AML3006	15.6X330/30 OH STEP UNGROUND-AF810	●	15.6	15.3	1.30 ±0.2	4.4 ±0.2	78.4 ~ 85.0
	AML3007	16.6X330/30 OH STEP UNGROUND-AF810	●	16.6	16.3	1.42 ±0.2	4.8 ±0.2	83.7 ~ 90.7

PCB Drill Blanks



Shape (Example)

Fig 2



Solid Type

Dimensions (mm)

øD	L	Fig
2.15 ±0.02	$32.0^{+0.9}_{+0.4}$	2
3.25 ±0.02	$38.1^{+1.0}_{+0.4}$	2

Other sizes can be made to order.

Composite Type (Rough Ground)

øD	L	Fig
1.2 to 1.8 ±0.05	12 to 330 ± overall length 0.5%	2

Consult us about dimensions.
Centreless grinding can be performed.

Recommended Grades by Application (⊙: Best, ❍: Good)

·By Tool Diameter

Dimensions (mm)

Grade	Very Small Diameter (up to ø0.15)	Small Diameters (ø0.15 to ø0.40)	General Diameters (ø0.40 up)
XF1	⊙	❍	
AF1	❍	❍	
AF0	❍	⊙	❍
AFU		⊙	❍
ZF16		❍	❍
F0		❍	⊙

·By Application

Grade	Hardened Steel	High-speed Machining	Stacked Plates	For Routers
XF1		❍		
AF1			❍	
AF0		❍	⊙	❍
AFU	❍	❍		
ZF16	❍	⊙		
F0	⊙	❍		⊙

JIS Type Inserts for Carbide Tool Holders

Dimensions (mm)

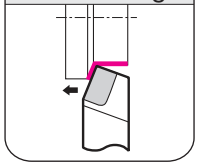
Shape	Cat. No.	Carbide														A	B	C	RE	Typical Applicable Holders	Fig
		P (Steel)						M (Stainless Steel)			K (Cast Iron)										
		P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20						
		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2						
01 Type Fig 1	01-0	★	★	★				★	★			★	★	★	★	10	6	3	4	31 Type 32 Type 45 Type 46 Type	1
	01-1	★	★	★				★	★		★	★	★	★	★	13	9	3	5		1
	01-2	★	★	★				★	★		★	★	★	★	★	16	11	4	5		1
	01-3	★	★	★				★	★		★	★	★	★	★	19	13	5	5		1
	01-4	★	★	★				★	★		★		★	★	★	22	15	6	8		1
	01-5															25	17	7	8		1
	01-6															30	20	8	8		1
02 Type Fig 2	02-0	★	★	★				★	★		★	★	★	★	★	10	6	3	–	41 Type 42 Type	2
	02-1	★	★	★				★	★		★	★	★	★	★	13	9	3	–		2
	02-2	★	★	★	★			★	★		★	★	★	★	★	16	11	4	–		2
	02-3	★	★	★	★			★	★		★	★	★	★	★	19	13	5	–		2
	02-4	★	★	★				★	★		★	★	★	★	★	22	15	6	–		2
	02-5															25	17	7	–		2
	02-6															30	20	8	–		2
03 Type Fig 3	03-0	★	★											★		10	–	3	–	37 Type 38 Type 47 Type 48 Type	3
	03-1	★	★					★	★		★	★	★	★	★	12	–	3	–		3
	03-2	★	★	★				★	★		★	★	★	★	★	15	–	4	–		3
	03-3	★	★	★				★	★		★	★	★	★		18	–	5	–		3
	03-4		★	★				★	★				★	★		24	–	6	–		3
	03-5															24	–	7	–		3
	03-6															28	–	8	–		3
04 Type Fig 4	04-0	★	★	★				★	★		★	★	★	★	★	10	6	3	4	33 Type 34 Type	4
	04-1	★	★	★				★	★		★	★	★	★	★	13	9	3	5		4
	04-2	★	★	★				★	★		★	★	★	★	★	16	11	4	5		4
	04-3	★	★	★				★	★		★	★	★	★	★	19	13	5	5		4
	04-4	★	★	★				★	★		★		★	★	★	22	15	6	8		4
	04-5															25	17	7	8		4
	04-6															30	20	8	8		4
05 Type Fig 5	05-1	★	★	★				★	★		★	★	★	★	★	5	8	3	–	49 Type 50 Type 51 Type 52 Type	5
	05-2	★	★	★				★	★		★	★		★	★	6	10	4	–		5
	05-3	★	★	★				★	★			★	★	★	★	7	12	5	–		5
	05-4	★	★	★					★			★		★	★	9	16	6	–		5
	05-5															10	18	7	–		5
	05-6															11	20	8	–		5
06 Type Fig 6	06-0	★	★	★				★	★		★	★	★	★	★	10	10	3	2	36 Type 39 Type 40 Type	6
	06-1	★	★	★				★	★		★	★	★	★	★	13	13	3	2.5		6
	06-2	★	★	★				★	★		★	★	★	★	★	16	16	4	3		6
	06-3	★	★	★				★	★		★	★	★	★	★	19	19	5	4		6
	06-4	★	★	★				★	★		★	★	★	★	★	22	22	6	4		6
	06-5															25	25	7	5		6
	06-6															30	30	8	6		6
07 Type Fig 7	07-0	★	★					★	★		★	★	★	★	★	10	10	3	–	35 Type	7
	07-1	★	★	★				★	★			★	★	★		13	13	3	–		7
	07-2	★	★	★				★	★		★	★	★	★	★	16	16	4	–		7
	07-3	★	★					★	★		★	★	★	★	★	19	19	5	–		7
	07-4	★	★									★	★		★	25	20	6	–		7
	07-5															25	22	7	–		7
	07-6															30	25	8	–		7
08 Type Fig 8	08-1	★	★	★				★	★		★	★	★	★	★	3	8	3	–	43 Type	8
	08-3	★	★	★				★	★		★	★	★	★	★	4	13	4	–		8
	08-4	★	★	★	★			★	★		★	★	★	★	★	5	15	5	–		8
	08-5												★			6	17	6	–		8
	08-6												★			8	20	8	–		8

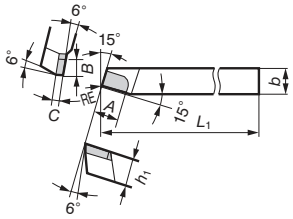
★: Stocked in Japan. Items are 2-4 weeks delivery

JIS Type Inserts for Carbide Tool Holders

Dimensions (*mm*)

31 Type (Right-Hand)
32 Type (Left-Hand)
For Turning

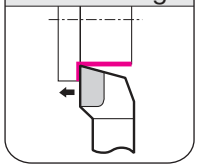


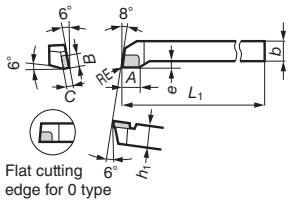


Figures show right-hand tools.

Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
31-1			★	★	★					★					★		13	13	100	–	–	13	9	3	0.5	01-1
31-2				★	★				★	★				★	★		16	16	120	–	–	16	11	4	0.5	01-2
31-3			★	★	★				★	★			★	★	★		19	19	140	–	–	19	13	5	0.5	01-3
31-4	*		★	★	★	★			★	★			★		★	★	25	25	160	–	–	22	15	6	1	01-4
31-5	–																25	30	180	–	–	25	17	7	1	01-5
31-6	–																30	35	200	–	–	30	20	8	1	01-6
32-1				★	★					★					★		13	13	100	–	–	13	9	3	0.5	01-1
32-2				★	★					★							16	16	120	–	–	16	11	4	0.5	01-2
32-3				★	★				★	★			★		★		19	19	140	–	–	19	13	5	0.5	01-3
32-4	*			★	★					★			★		★	★	25	25	160	–	–	22	15	6	1	01-4
32-5	–																25	30	180	–	–	25	17	7	1	01-5
32-6	–																30	35	200	–	–	30	20	8	1	01-6

33 Type (Right-Hand)
34 Type (Left-Hand)
For Turning



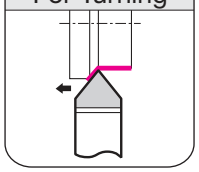


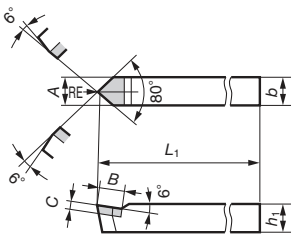
Flat cutting edge for 0 type

Figures show right-hand tools.

Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
33-0			★	★	★				★	★			★	★	★	★	10	10	80	0	–	10	6	3	0.3	04-0
33-1			★	★	★				★	★		★	★	★	★	★	13	13	100	4	–	13	9	3	0.5	04-1
33-2	★		★	★	★				★	★		★	★	★	★	★	16	16	120	4	–	16	11	4	0.5	04-2
33-3	★		★	★	★	★			★	★		★	★	★	★	★	19	19	140	5	–	19	13	5	0.5	04-3
33-4	*		★	★	★	★			★	★		★	★	★	★	★	25	25	160	5	–	22	15	6	1	04-4
33-5	–																25	30	180	6	–	25	17	7	1	04-5
33-6	–																30	35	200	6	–	30	20	8	1	04-6
34-0				★	★				★				★	★	★	★	10	10	80	0	–	10	6	3	0.3	04-0
34-1			★	★	★				★	★			★	★	★	★	13	13	100	4	–	13	9	3	0.5	04-1
34-2	★		★	★	★				★	★			★	★	★	★	16	16	120	4	–	16	11	4	0.5	04-2
34-3	★		★	★	★	★			★	★			★	★	★	★	19	19	140	5	–	19	13	5	0.5	04-3
34-4	*		★	★	★	★			★	★			★	★	★	★	25	25	160	5	–	22	15	6	1	04-4
34-5	–																25	30	180	6	–	25	17	7	1	04-5
34-6	–																30	35	200	6	–	30	20	8	1	04-6

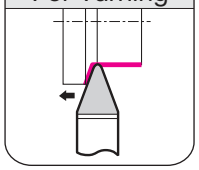
35 Type
For Turning

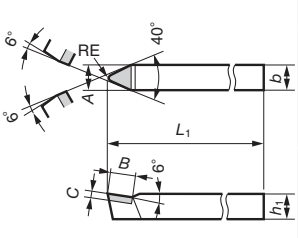




Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
35-0			★	★						★			★	★	★	★	10	10	80	–	–	10	10	3	0.3	07-0
35-1			★	★	★				★	★			★	★	★	★	13	13	100	–	–	13	13	3	0.5	07-1
35-2			★	★	★				★	★			★	★	★	★	16	16	120	–	–	16	16	4	0.5	07-2
35-3			★	★	★				★	★			★	★	★	★	19	19	140	–	–	19	19	5	0.5	07-3
35-4	*			★	★				★	★			★		★	★	25	25	160	–	–	22	20	6	1	07-4
35-5	–																25	30	180	–	–	25	22	7	1	07-5
35-6	–																30	35	200	–	–	30	25	8	1	07-6

36 Type
For Turning





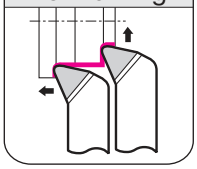
Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
36-0			★	★	★					★			★	★	★		10	10	80	–	–	10	10	3	2	06-0
36-1			★	★	★				★	★		★	★	★	★	★	13	13	100	–	–	13	13	3	2	06-1
36-2	★		★	★	★				★	★		★	★	★	★	★	16	16	120	–	–	16	16	4	3	06-2
36-3	★		★	★	★	★			★	★		★	★	★	★	★	19	19	140	–	–	19	19	5	4	06-3
36-4	*		★	★	★				★	★			★	★	★	★	25	25	160	–	–	22	22	6	4	06-4
36-5	–																25	30	180	–	–	25	25	7	5	06-5
36-6	–																30	35	200	–	–	30	30	8	5	06-6

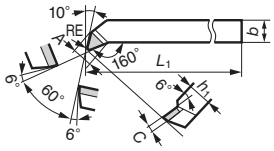
Items marked * follow the insert dimensions of the ○○**-3** type (one size smaller) in their category. <Made to order>
★: Stocked in Japan. Items are 2-4 weeks delivery

JIS Type Carbide Tool Holders

Dimensions (*mm*)

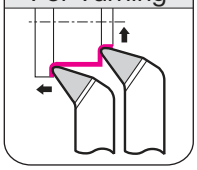
37 Type (Right-Hand)
38 Type (Left-Hand)
For Turning

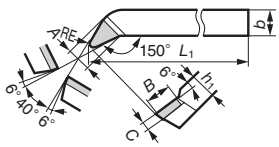




Figures show right-hand tools.

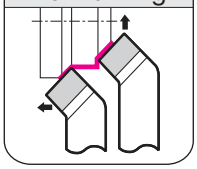
39 Type (Right-Hand)
40 Type (Left-Hand)
For Turning

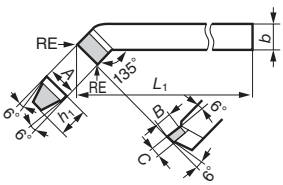




Figures show right-hand tools.

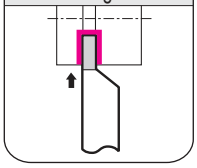
41 Type (Right-Hand)
42 Type (Left-Hand)
For Turning

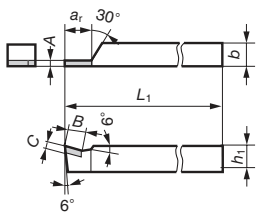




Figures show right-hand tools.

43 Type
For Grooving & Cut-off





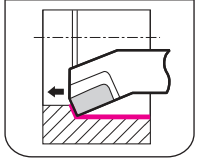
Shape	Cat. No.	Cermet		Carbide														Shank					Insert Part				Applicable Insert
				P (Steel)					M (Stainless Steel)		K (Cast Iron)																
				P10	P20	P30	P40		M20	M40	K01	K01	K10	K20	K20												
		T1200A		ST10P	ST20E	ST30E	ST40E		U2	A40	H3	H2	H1	G10E	G2			b	h_1	L_1	e	a_r	A	B	C	RE	
37 Type (Right-Hand) 38 Type (Left-Hand) For Turning	37-1				★	★							★	★				13	13	100	–	–	12	–	3	0.5	03-1
	37-2			★	★	★			★	★		★	★	★	★			16	16	120	–	–	15	–	4	0.5	03-2
	37-3			★	★	★			★	★		★	★	★	★			19	19	140	–	–	18	–	5	0.5	03-3
	37-4	*		★	★	★			★			★		★				25	25	160	–	–	24	–	6	1	03-4
	37-5	–																25	30	180	–	–	24	–	7	1	03-5
	37-6	–																30	35	200	–	–	28	–	8	1	03-6
	38-1			★	★									★				13	13	100	–	–	12	–	3	0.5	03-1
	38-2				★	★							★	★				16	16	120	–	–	15	–	4	0.5	03-2
	38-3			★	★	★			★				★	★	★			19	19	140	–	–	18	–	5	0.5	03-3
	38-4	*			★	★							★	★				25	25	160	–	–	24	–	6	1	03-4
	38-5	–																25	30	180	–	–	24	–	7	1	03-5
	38-6	–																30	35	200	–	–	28	–	8	1	03-6
39 Type (Right-Hand) 40 Type (Left-Hand) For Turning	39-0			★	★				★	★			★	★				10	10	80	–	–	10	10	3	2	06-0
	39-1			★	★	★			★	★	★	★	★	★	★			13	13	100	–	–	13	13	3	2	06-1
	39-2	★		★	★	★			★	★	★	★	★	★	★			16	16	120	–	–	16	16	4	3	06-2
	39-3	★		★	★	★	★		★	★	★	★	★	★	★			19	19	140	–	–	19	19	5	4	06-3
	39-4	*		★	★	★	★		★	★		★	★	★	★			25	25	160	–	–	22	22	6	4	06-4
	39-5	–																25	30	180	–	–	25	25	7	5	06-5
	39-6	–																30	35	200	–	–	30	30	8	5	06-6
	40-0				★								★	★				10	10	80	–	–	10	10	3	2	06-0
	40-1			★	★	★				★			★	★	★			13	13	100	–	–	13	13	3	2	06-1
	40-2			★	★	★			★	★			★	★	★			16	16	120	–	–	16	16	4	3	06-2
	40-3			★	★	★			★	★			★	★	★			19	19	140	–	–	19	19	5	4	06-3
	40-4	*		★	★	★			★	★			★	★	★			25	25	160	–	–	22	22	6	4	06-4
	40-5	–																25	30	180	–	–	25	25	7	5	06-5
	40-6	–																30	35	200	–	–	30	30	8	5	06-6
41 Type (Right-Hand) 42 Type (Left-Hand) For Turning	41-1			★	★	★				★			★	★	★			13	13	100	–	–	13	9	3	0.5	02-1
	41-2			★	★	★			★	★		★		★				16	16	120	–	–	16	11	4	0.5	02-2
	41-3			★	★	★			★	★		★	★	★	★			19	19	140	–	–	19	13	5	0.5	02-3
	41-4	*		★	★	★				★			★	★	★			25	25	160	–	–	22	15	6	1	02-4
	41-5	–																25	30	180	–	–	25	17	7	1	02-5
	41-6	–																30	35	200	–	–	30	20	8	1	02-6
	42-1				★	★								★				13	13	100	–	–	13	9	3	0.5	02-1
	42-2				★	★				★				★				16	16	120	–	–	16	11	4	0.5	02-2
	42-3			★	★	★			★	★				★	★			19	19	140	–	–	19	13	5	0.5	02-3
	42-4	*			★	★				★			★	★	★			25	25	160	–	–	22	15	6	1	02-4
	42-5	–																25	30	180	–	–	25	17	7	1	02-5
	42-6	–																30	35	200	–	–	30	20	8	1	02-6
43 Type For Grooving & Cut-off	43-1			★	★	★			★	★		★	★	★	★			10	16	100	–	13	3	8	3	–	08-1
	43-2			★	★	★			★	★		★	★	★				13	19	120	–	16	3	8	3	–	08-1
	43-3	★		★	★	★			★	★		★	★	★	★			16	22	140	–	19	4	13	4	–	08-3
	43-4	*		★	★	★			★	★		★	★	★	★			19	25	160	–	25	5	15	5	–	08-4
	43-5	–																22	32	180	–	30	6	17	6	–	08-5
	43-6	–																25	38	200	–	40	8	20	8	–	08-6

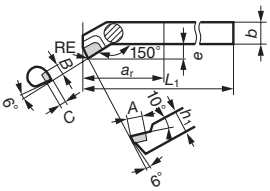
Items marked * follow the insert dimensions of the ○○**-3** type (one size smaller) in their category. <Made to order>
★: Stocked in Japan. Items are 2-4 weeks delivery

JIS Type Carbide Tool Holders

Dimensions (*mm*)

45 Type (Right-Hand)
46 Type (Left-Hand)
For Internal Diameter Machining

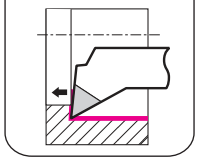


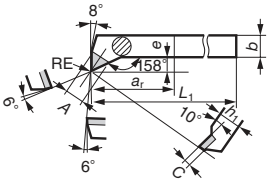


Figures show right-hand tools.

Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
45-1																	13	13	140	7	50	10	6	3	0.5	01-0
45-2				★													16	16	160	9	60	13	9	3	0.5	01-1
45-3				★													19	19	190	11	80	16	11	4	0.5	01-2
45-4				★													25	25	230	13	100	19	13	5	1	01-3
46-1																	13	13	140	7	50	10	6	3	0.5	01-0
46-2																	16	16	160	9	60	13	9	3	0.5	01-1
46-3																	19	19	190	11	80	16	11	4	0.5	01-2
46-4																	25	25	230	13	100	19	13	5	1	01-3

47 Type (Right-Hand)
48 Type (Left-Hand)
For Boring

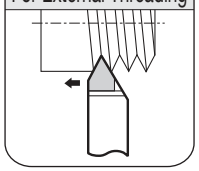


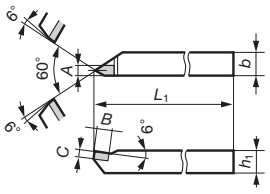


Figures show right-hand tools.

Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
47-1			★	★											★		13	13	140	7	50	10	–	3	0.5	03-0
47-2			★	★											★		16	16	160	8	60	12	–	3	0.5	03-1
47-3			★	★											★		19	19	190	9	80	15	–	4	0.5	03-2
47-4			★	★											★		25	25	230	10	100	18	–	5	1	03-3
48-1																	13	13	140	7	50	10	–	3	0.5	03-0
48-2																	16	16	160	8	60	12	–	3	0.5	03-1
48-3																	19	19	190	9	80	15	–	4	0.5	03-2
48-4																	25	25	230	10	100	18	–	5	1	03-3

49 Type (Right-Hand)
50 Type (Left-Hand)
For External Threading

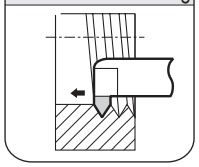


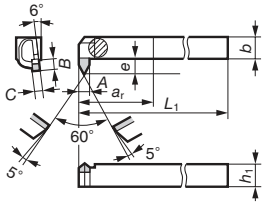


Figures show right-hand tools.

Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
49-1				★													13	13	100	–	–	5	8	3	–	05-1
49-2			★	★											★		16	16	120	–	–	6	10	4	–	05-2
49-3			★	★	★				★						★		19	19	140	–	–	7	12	5	–	05-3
49-4			★	★	★				★						★		25	25	160	–	–	9	16	6	–	05-4
50-1																	13	13	100	–	–	5	8	3	–	05-1
50-2																	16	16	120	–	–	6	10	4	–	05-2
50-3																	19	19	140	–	–	7	12	5	–	05-3
50-4																	25	25	160	–	–	9	16	6	–	05-4

51 Type (Right-Hand)
52 Type (Left-Hand)
For Internal Threading

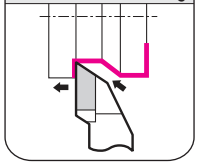


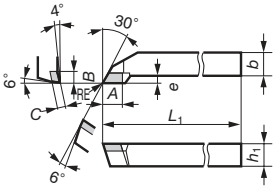


Figures show right-hand tools.

Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
51-1			★	★											★		13	13	140	8	50	5	8	3	–	05-1
51-2				★													16	16	160	10	60	6	10	4	–	05-2
51-3				★					★						★		19	19	190	12	80	7	12	5	–	05-3
51-4				★													25	25	230	16	100	9	16	6	–	05-4
52-1																	13	13	140	8	50	5	8	3	–	05-1
52-2																	16	16	160	10	60	6	10	4	–	05-2
52-3																	19	19	190	12	80	7	12	5	–	05-3
52-4																	25	25	230	16	100	9	16	6	–	05-4

95 Type
For External Profiling





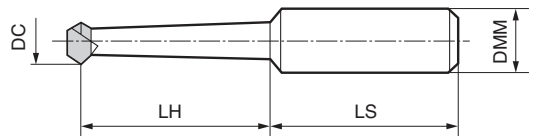
Cat. No.	Cermet		Carbide P (Steel)						Carbide M (Stainless Steel)			Carbide K (Cast Iron)					Shank					Insert Part				Applicable Insert
			P10	P20	P30	P40			M20	M40		K01	K01	K10	K20	K20										
	T1200A		ST10P	ST20E	ST30E	ST40E			U2	A40		H3	H2	H1	G10E	G2	*b*	h_1	L_1	*e*	a_r	*A*	*B*	*C*	RE	
95-1			★														25	25	160	5	–	20	10	7	1.7	09-E

★: Stocked in Japan. Items are 2-4 weeks delivery

IJB Type

Through-Boring Type

Fig 1



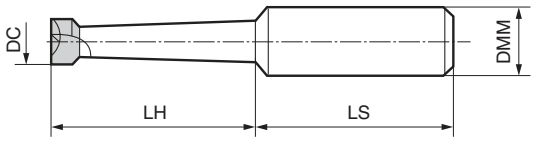
Dimensions (*mm*)

Cat. No.	Grade	Diameter	Head	Shank Dia.	Shank Length	Fig
	H1	DC	LH	DMM	LS	
IJB 4017	★	*1.7*	*6.5*			1
IJB 4019		*1.9*	*4.5*			1
IJB 4022	★	*2.2*	*9.0*			1
IJB 4026	★	*2.6*	*13.0*	*4*	*20*	1
IJB 4030	★	*3.0*	*13.5*			1
IJB 4035		*3.5*	*14.0*			1
IJB 4040	★	*4.0*	*18.0*			1
IJB 4050		*5.0*	*22.0*			1
IJB 8019	★	*1.9*	*7.5*			1
IJB 8030	★	*3.0*	*13.5*			1
IJB 8035		*3.5*	*14.0*			1
IJB 8040	★	*4.0*	*18.0*			1
IJB 8050	★	*5.0*	*22.0*			1
IJB 8060	★	*6.0*	*25.0*	*8*	*25*	1
IJB 8070	★	*7.0*	*27.0*			1
IJB 8080	★	*8.0*	*30.0*			1
IJB 8090	★	*9.0*	*33.0*			1
IJB 8100	★	*10.0*	*38.0*			1
IJB 8110		*11.0*	*43.0*			1
IJB 8120	★	*12.0*	*48.0*			1
IJB 1005	★	*5.0*	*22.0*			1
IJB 1006	★	*6.0*	*25.0*			1
IJB 1007	★	*7.0*	*27.0*			1
IJB 1008	★	*8.0*	*30.0*			1
IJB 1009		*9.0*	*33.0*	*10*	*30*	1
IJB 1010	★	*10.0*	*38.0*			1
IJB 1011		*11.0*	*43.0*			1
IJB 1012	★	*12.0*	*48.0*			1
IJB 1015	★	*15.0*	*65.0*			1

★: Stocked in Japan. Items are 2-4 weeks delivery

Stop-Boring Type

Fig 2



Dimensions (*mm*)

Cat. No.	Grade	Diameter	Head	Shank Dia.	Shank Length	Fig
	H1	DC	LH	DMM	LS	
IJB 4017C		*1.7*	*7.0*			2
IJB 4019C		*1.9*	*8.0*			2
IJB 4022C	★	*2.2*	*9.5*			2
IJB 4026C	★	*2.6*	*13.5*	*4*	*20*	2
IJB 4030C	★	*3.0*	*14.0*			2
IJB 4035C	★	*3.5*	*14.5*			2
IJB 4040C	★	*4.0*	*19.0*			2
IJB 4050C	★	*5.0*	*23.0*			2
IJB 8019C	★	*1.9*	*8.0*			2
IJB 8030C	★	*3.0*	*14.0*			2
IJB 8035C	★	*3.5*	*14.5*			2
IJB 8040C	★	*4.0*	*19.0*			2
IJB 8050C	★	*5.0*	*23.0*			2
IJB 8060C	★	*6.0*	*26.0*	*8*	*25*	2
IJB 8070C	★	*7.0*	*28.5*			2
IJB 8080C	★	*8.0*	*31.5*			2
IJB 8090C		*9.0*	*35.0*			2
IJB 8100C	★	*10.0*	*40.0*			2
IJB 8110C		*11.0*	*45.0*			2
IJB 8120C		*12.0*	*50.0*			2
IJB 1005C	★	*5.0*	*23.0*			2
IJB 1006C		*6.0*	*26.0*			2
IJB 1007C	★	*7.0*	*28.5*			2
IJB 1008C	★	*8.0*	*31.5*			2
IJB 1009C	★	*9.0*	*35.0*	*10*	*30*	2
IJB 1010C	★	*10.0*	*40.0*			2
IJB 1011C		*11.0*	*45.0*			2
IJB 1012C	★	*12.0*	*50.5*			2
IJB 1015C	★	*15.0*	*68.0*			2

CBN
SUMIBORON
L1 to L132

L



Guidance for CBN - SUMIBORON Grades	SUMIBORON Series	L2
	Coated CBN - SUMIBORON Series	L3
	Grade Guidance - Cutting Hardened Steel	L4
	Grade Guidance - Cutting Cast Iron	L7
	Grade Guidance - Cutting Sintered Components	L9
	Grade Guidance - Cutting Rolls/Hard Facing Alloys / Heat-Resistant Alloys	L10
	Grade Guidance - Cutting Titanium Alloy	L11
	Coated CBN - SUMIBORON BNC2010 / BNC2020	L12
	Coated CBN - SUMIBORON BNC300 / CBN - SUMIBORON BN350	L14
	CBN - SUMIBORON BN1000 / BN2000	L16
	CBN - SUMIBORON BN7000	L18
	CBN - SUMIBORON BN7500	L19
	CBN - SUMIBORON BNS800	L20
	Coated CBN - SUMIBORON BNC500	L21
	Binderless CBN - NCB100	L22
Inserts	CBN - SUMIBORON Insert Identification	L24
	Selection Guide for CBN - SUMIBORON Inserts	L25
	CBN - SUMIBORON Break Master FV / LV / SV	L26
	CBN - SUMIBORON One-Use Wiper Inserts WG / WH	L27
	CBN - SUMIBORON Insert Edge Specifications	L28
	Stock Table for CBN - SUMIBORON Indexable Inserts	L30
Specialized Tool Holders / Boring Bars	Tool Holders for Solid CBN - SUMIBORON	L108
	Inserts & Special Holders for High Efficiency Machining	L110
	CBN Small Hole Boring Bars BSME	L114
	CBN Small Hole Boring Bars SEXC	L115
	CBN Small Hole Boring Bars BNBX	L116
	CBN Small Hole Boring Bars BNZ	L117
	CBN Small Hole Boring Bars BNB	L118
	CBN Small Diameter Round Insert Holders TRGT	L119
	CBN Round Insert Holders PR	L120
	CBN JIG Boring Tools SJB	L120
	CBN Roll Turning Tool Holder BNRN	L121
	CBN Grooving Tool Holder GWB	L122
	CBN Grooving Tool BNGG Type	L123
Rotating Tools / Endmills	CBN BN Finish Mill EASY FMU / FMU-E	L124
	CBN RM Mill	L126
	CBN Ballnose Endmill BES	L127
	CBN Helical Master BNES	L128
	Mold Finish Master BNBR / BNBP / BNBC	L129
	CBN Ballnose Endmill BNBS	L132

Stock Markings and Symbols

●: Standard stocked item
★: Worldwide Warehouse Item
▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available



■ General Features

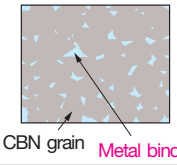
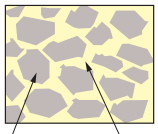
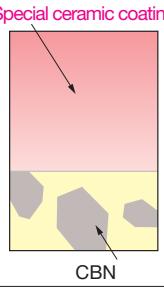
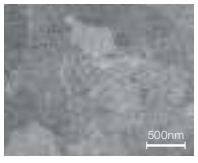
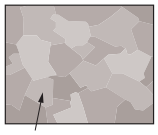
Sintered CBN - SUMIBORON®, which has CBN (cubic boron nitride) is a hard material second only to diamond - as its main component. CBN is sintered with a special ceramic binder under ultra-high pressure and temperature.
CBN - SUMIBORON® has high hardness, excellent thermal resistance and excellent properties including being unreactive to ferrous metals, enabling exotic alloys, hardened steel or hard cast iron to be machined. Excellent efficiency and longer tool life can also be achieved from high-speed finishing of cast iron.
Sumitomo's CBN - SUMIBORON® was first successfully developed in Japan by our company in 1977. Coated CBN - SUMIBORON® with a special ceramic coating, and binderless CBN made by directly bonding CBN particles without a binder are new additions to our product lineup.

■ Features

Sintered CBN - SUMIBORON® is mainly used for the machining of ferrous metals due to its low chemical reactivity with iron. There are 4 different classifications of CBN -SUMIBORON® as follows:

- Table (A) below shows the group with a high CBN content, where each grain is fused together. This group can be used for the machining of abrasive materials like cast iron, heat-resistant alloys and powdered metals.
- Table (B) shows the group where CBN grains are held together by a special ceramic binder with a strong binding force. These provide excellent wear resistance and toughness in the machining of hardened steel and cast iron.
- Table (C) below shows CBN - SUMIBORON® with a special ceramic coating. The CBN and coating layer exhibit the hardness, toughness, thermal resistance and oxidation resistance requird for optimal cutting performance.
- Table (D) shows a product containing no binder; its structure of directly bonded nano or to sub-micron CBN particles provides excellent hardness and thermal conductivity, making it highly efficient with a long tool life when machining exotic alloys such as titanium alloys and cobalt-chrome alloys.

■ Classifications / Applications

	Classifications	Structure	Diagram	Grade	Part Material
(A)	Mainly CBN grains fused together			BN700 BN7000 BN7500 BNS800	K Cast Iron (FC) Sintered Alloy Powdered Metal S Exotic Alloy Sintered Alloy Powdered Metal K Cast Iron (FC) S Exotic Alloy
(B)	Mainly CBN grains fused together with a binder			BN1000 BN2000 BN350 BNX10 BNX20 BNX25 BN500	H Hardened Steel K Cast Iron (FC/FCD)
(C)	Sintered CBN body with special ceramic coating			BNC2010 BNC2020 BNC300 BNC100 BNC160 BNC200 BNC500	H Hardened Steel K Cast Iron (FCD)
(D)	CBN particles only are bonded strongly			New NCB100	K Cast Iron (FC) S Exotic Alloy Carbide Carbides Hard Brittle Material Hard Brittle Materials



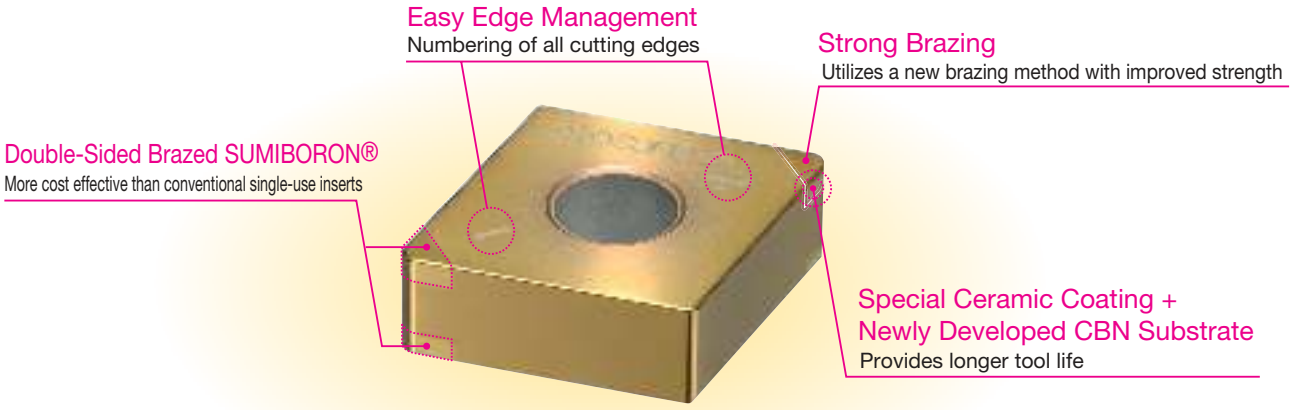
Coated CBN - SUMIBORON® Series

Achieves higher speed, higher efficiency and higher precision

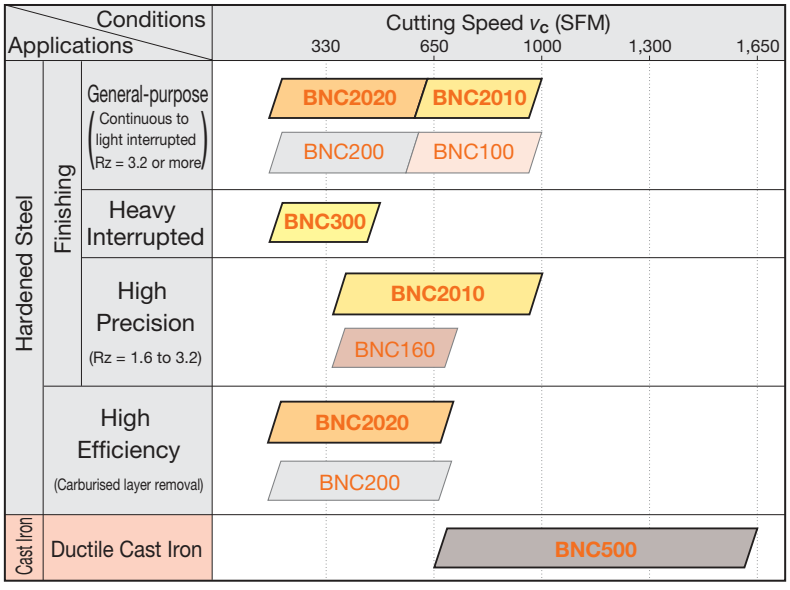
■ General Features

With a highly thermal-resistant and tough CBN substrate coupled with a special ceramic coating, this series caters to a wide variety of applications, with improved precision and longer tool life compared to conventional CBN.
Our extensive range, including more cost-effective, double-sided, multi-cornered one-use inserts, offers a selection of economical and easy-to-use tools.
The Coated CBN - SUMIBORON® edge specifications have been further enhanced to exhibit higher accuracy machining and burr control performance.

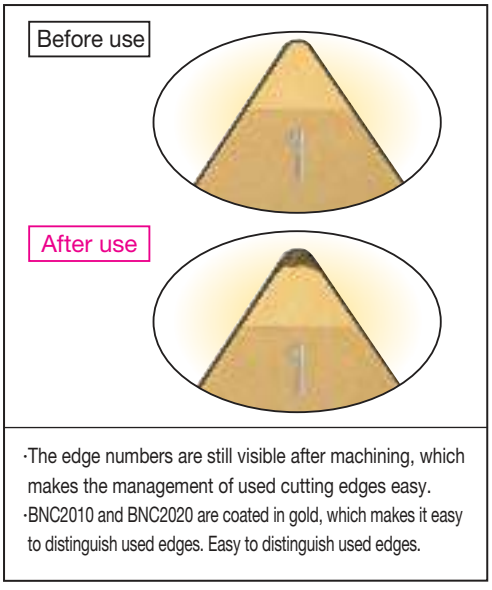
■ Features



■ Application Range



■ Cutting Edge Management

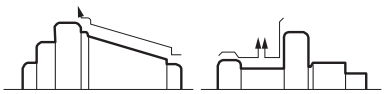
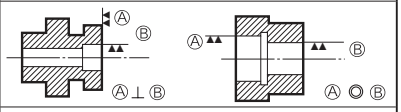


·The edge numbers are still visible after machining, which makes the management of used cutting edges easy.
·BNC2010 and BNC2020 are coated in gold, which makes it easy to distinguish used edges. Easy to distinguish used edges.

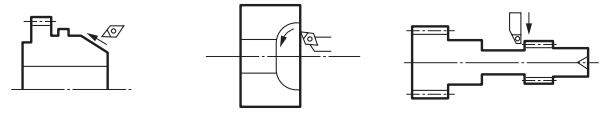
HARDENED STEEL MACHINING

● Advantages of CBN - SUMIBORON for hardened steel cutting

Below is an analysis of the use of CBN compared to grinding. In terms of cost, not only is the investment involved for introducing new machinery reduced, it is possible to shorten the processing cycle time by finishing complicated shapes in one run. In terms of quality, machining with a single chuck is possible, improving machining accuracy and squareness. Furthermore, dry machining is possible, with various advantages such as better global environmental conservation and resource recycling. The workpieces shown in the table to the lower right have shapes more likely to benefit from being cut, especially compared to grinding.

	Advantages	Remarks
Cost	Facility investment is low	· Cheaper machines · Reduced processes · Improved machining efficiency with less machining required
	Complex finishing in a single set-up	
Quality	Improved precision	
Environment	Environmentally-friendly	Sludge management → Chip control (Recyclable)

Machining Versatility with CBN



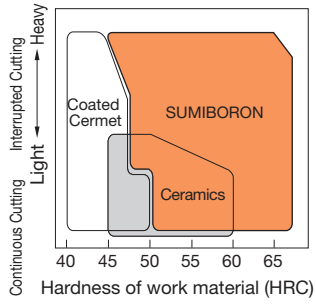
Recommended Grade

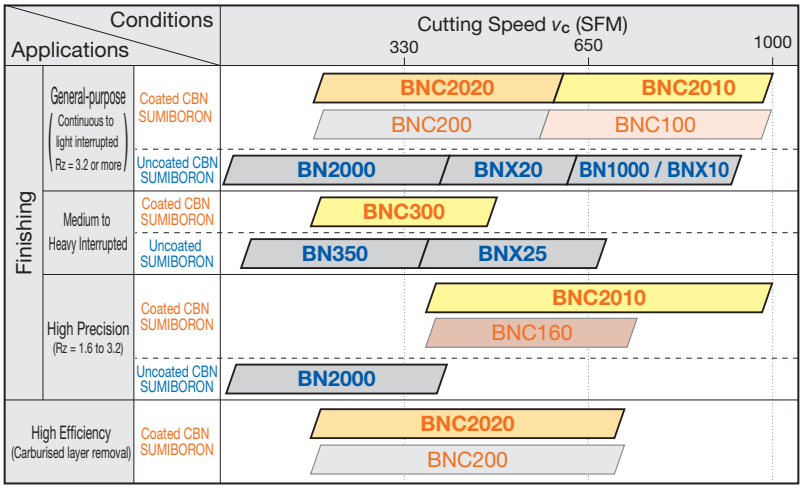
	Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	Transverse Rupture Strength (GPa)	Main Coating Components	Coating Thickness (μm)	Features
Coated	BNC2010	TiCN	50 to 55	2	30 to 32	1.1 to 1.2	TiCN Multiple Layers	1.5	Improves the wear resistance of coating and substrate and stably achieves excellent surface roughness.
	BNC2020	TiN	70 to 75	5	34 to 36	1.4 to 1.5	TiAlN Multiple Layers	1.5	Combination of a tough substrate with a wear-resistant and adhesive coating layer to achieve general purpose to high-efficiency machining with long tool life
	BNC300	TiN	60 to 65	1	33 to 35	1.5 to 1.6	TiAlN	1	Suitable for finishing work materials combining continuous and interrupted cutting.
	BNC100	TiN	40 to 45	1	29 to 32	1.0 to 1.1	TiAlN / TiCN	2	Suitable for high-speed finishing thanks to highly wear-resistant coating.
	BNC160	TiN	60 to 65	3	31 to 33	1.2 to 1.3	TiAlN / TiCN	2	Achieves stable, high-precision finishing of hardened steel.
	BNC200	TiN	65 to 70	4	33 to 35	1.4 to 1.5	TiAlN	2	Provides long tool life thanks to a tough substrate and highly wear-resistant coating.
Uncoated	BN1000	TiCN	40 to 45	1	27 to 31	0.9 to 1.0	—	—	Achieves ultimate wear and fracture resistance. Suitable for high-speed cutting.
	BN2000	TiN	50 to 55	2	31 to 34	1.1 to 1.2	—	—	General-purpose grade for hardened steel machining with a high degree of fracture and wear resistance.
	BNX20	TiN	55 to 60	3	31 to 33	1.0 to 1.1	—	—	Achieves excellent crater wear resistance. Suitable for high-efficiency cutting under high-temperature conditions.
	BN350	TiN	60 to 65	1	33 to 35	1.5 to 1.6	—	—	Achieves ultimate cutting edge strength. Suitable for heavy interrupted cutting.
	BNX10	TiCN	40 to 45	3	27 to 31	0.9 to 1.0	—	—	Excellent wear resistance. Suited to continuous high-speed cutting.
	BNX25	TiN	65 to 70	4	29 to 31	1.0 to 1.1	—	—	Exhibits superior fracture resistance in high-speed cutting. Suitable for high-speed interrupted cutting of hardened steel.

Transverse rupture strength measured with test piece equivalent to insert CBN layer.

Application Range

● Hardened Steel Machining

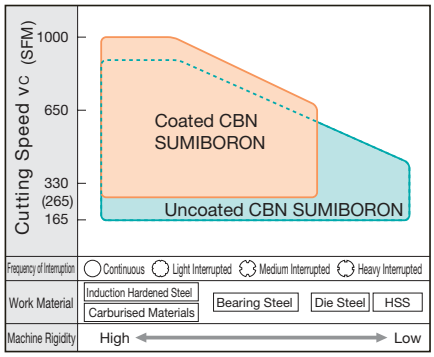




Applications

Coated CBN - SUMIBORON: 1st recommendation for hardened steel machining, excellent performance in high-speed, high-efficiency machining.
Uncoated CBN - SUMIBORON: Optimal for machining small items with a limited cutting speed & hardened steel.

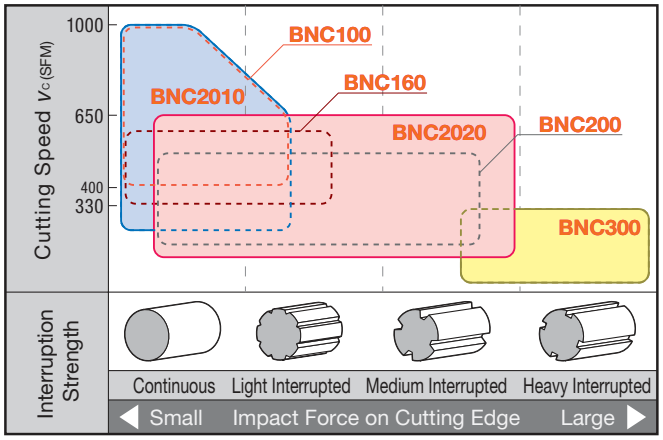
Series	Applications
Coated CBN SUMIBORON	· First recommendation for hardened steel machining · Machining requiring high speed and high accuracy · Machining requiring high efficiency, such as carburised layer removal
Uncoated CBN SUMIBORON	· Machining where cutting speed cannot be increased, such as small product machining · Machining of workpieces containing hard particles such as mold components · Machining with low tool rigidity



Application Range

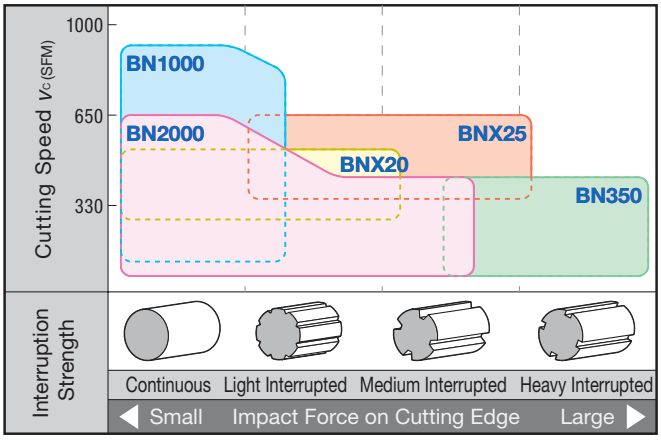
● Induction Hardened Steel (S45C/S55C, etc.), Carburized Steel

Coated CBN - SUMIBORON



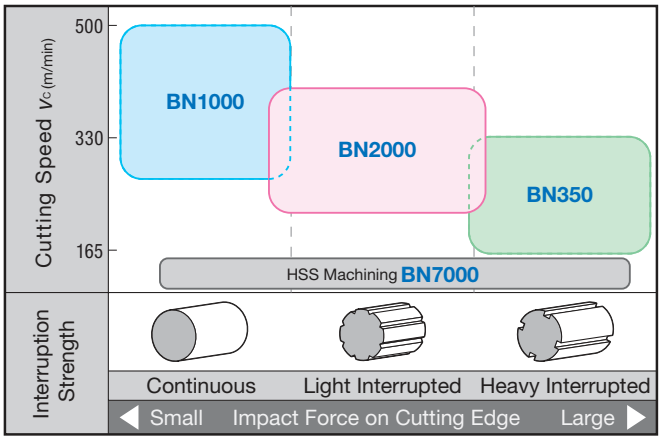
● Induction Hardened Steel (S45C/S55C, etc.), Carburized Steel

Uncoated CBN - SUMIBORON



● Die Steel (D2 Tool Steel, etc.), High Speed Steel

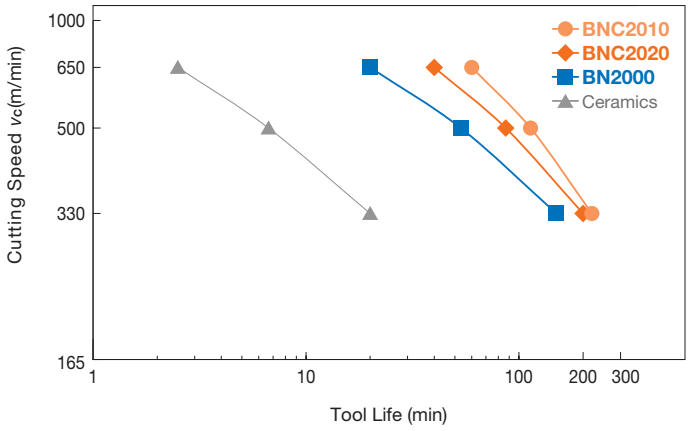
Uncoated CBN - SUMIBORON



Recommended Cutting Conditions

	Grade	Cutting Speed v_c (SFM) 165 330(400) 500(560) 650(725) 825 1000	Feed Rate f (IPR)	Depth of Cut a_p (Inch)
Coated	BNC2010		.0012 - .0098	.0012 - .0138
	BNC2020		.0012 - .0157	.0012 - .0197
	BNC300		.0012 - .0079	.0012 - .0118
	BNC100		.0012 - .0079	.0012 - .0118
	BNC160		.0012 - .0079	.0012 - .0138
	BNC200		.0020 - .0138	.0020 - .0197
Uncoated	BN1000		.0012 - .0059	.0012 - .0079
	BN2000		.0012 - .0079	.0012 - .0118
	BN350		.0012 - .0079	.0012 - .0118
	BNX10		.0012 - .0059	.0012 - .0079
	BNX20		.0012 - .0118	.0012 - .0197
	BNX25		.0012 - .0118	.0012 - .0197

Application Examples (Continuous Cutting)

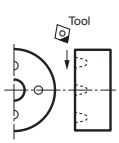


Tool Life Criterion: V_B max = .0039"

Part Material: Alloy Structural Steel Round Bar (58 to 62HRC)
Tool Cat. No.: DNGA432
Cutting Conditions: f = .0039 IPR, a_p = .0079" Wet

Application Examples (Interrupted Cutting)

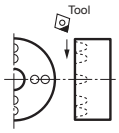
[Light Int. - Face with 4 Chamfered Holes (Interrupted Cutting 25%)]



Tool Grade	Tool Life Ratio 50 100
BN2000	
BNC300	
BN350	
BNX25	

Part Material: Chromium Steel (58 to 62 HRC)
Tool Cat. No.: CNMA432
Cutting Conditions: v_c = 330 SFM, f = .0039 IPR, a_p = .0079" Dry

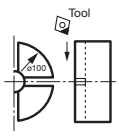
[Medium Int. - Face with 8 Chamfered Holes (Interrupted Cutting 50%)]



Tool Grade	Tool Life Ratio 50 100
BN2000	
BNC300	
BN350	
BNX25	

Part Material: Chromium Steel (58 to 62 HRC)
Tool Cat. No.: CNMA432
Cutting Conditions: v_c = 330 SFM, f = .0039 IPR, a_p = .0079" Dry

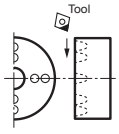
[Heavy Int. - U Groove Face (Interrupted Cutting 100%)]



Tool Grade	Tool Life Ratio 50 100
BN2000	
BNC300	
BN350	
BNX25	

Part Material: Chromium Steel (58 to 62 HRC)
Tool Cat. No.: CNMA432
Cutting Conditions: v_c = 330 SFM, f = .0039 IPR, a_p = .0079" Dry

[High Speed Int. - Face with 8 Chamfered Holes (Interrupted Cutting 50%)]



Tool Grade	Tool Life Ratio 50 100
BN2000	
BNC300	
BN350	
BNX25	

Part Material: Chromium Steel (58 to 62 HRC)
Tool Cat. No.: CNMA432
Cutting Conditions: v_c = 650 SFM, f = .0039 IPR, a_p = .0079" Dry

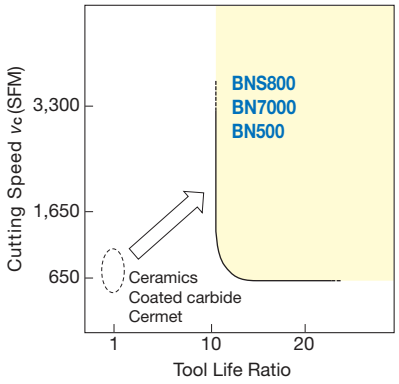
CAST IRON MACHINING

- Advantages of machining cast iron with CBN - SUMIBORON

Compared with conventional tools, a longer tool life for high speed machining is acheived. In addition, machining efficiency is improved along with consistently better wear resistance, a sharper edge, excellent surface roughness and dimensional tolerance. CBN - SUMIBORON is ideal for finishing of gray cast iron and ductile cast iron and heat-treated high-grade cast iron such as ADI.

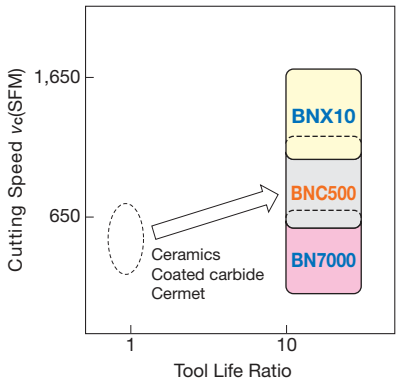
High-speed Machining

- Gray Cast Iron

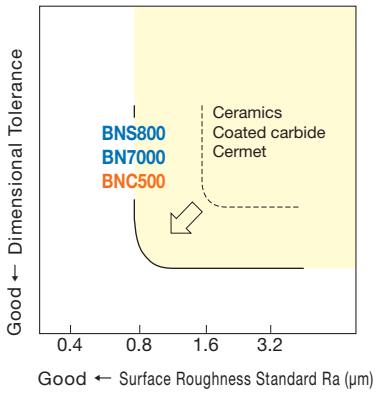


High-speed Machining

- Ductile Cast Iron



High-precision Machining



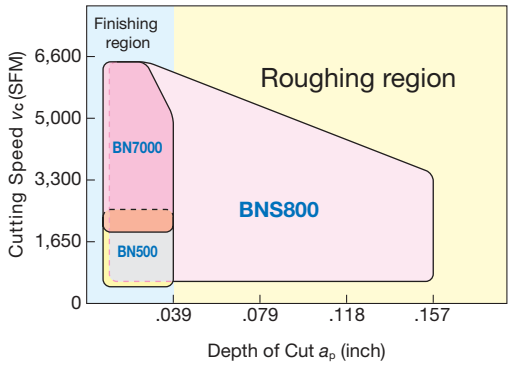
Recommended Grade

	Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	Transverse Rupture Strength (GPa)	Main Coating Components	Coating Thickness (μm)	Features
Uncoated	BNS800	Al Alloy	85 to 90	8	39 to 42	0.9 to 1.1	—	—	100% solid CBN structure and excellent thermal shock resistance.
Uncoated	BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Exhibits wear and fracture resistance in cutting of cast iron and exotic alloys.
Uncoated	BN500	TiC	65 to 70	6	32 to 34	1.0 to 1.1	—	—	Grade optimised for cast iron cutting. Provides superior wear and fracture resistance.
Coated	BNC500 (For Ductile Cast Iron)	TiC	60 to 65	4	32 to 34	1.1 to 1.2	TiAlN	2	Suitable for machining of hard-to-cut cast iron thanks to the highly wear-resistant substrate and coating.

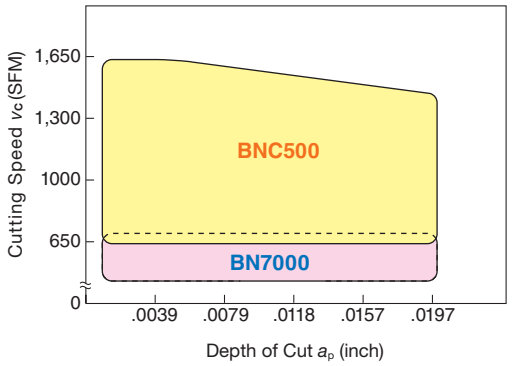
Transverse rupture strength measured with test piece equivalent to insert CBN layer.
Refer to pages L9 and L10 for machining of sintered components, rolls, hard facing alloys and heat-resistant alloys.

Application Range

- Gray Cast Iron



- Ductile Cast Iron



- Special Cast Iron

Part Material	Hardness (HB)	Part Material Structure	Examples	Cutting Speed v_c (SFM) 330 650 1000 1,150 1,300 1,650
Ni-resistant Cast Iron	150 to 200	Austenite	Piston ring	BNC500
High-Cr Cast Iron	250 to 350	Austenite	Pump part	BNS800
FCV (CGI)	400 to 580	Pearlite	Engine blocks Cylinder heads Brake discs	BNC500

CBN Grade Guidance

K Cast Iron

Recommended Cutting Conditions

• Turning

Part Material		Recommended Grade	Recommended Cutting Conditions		
Material	Standard (Hardness)		Cutting Speed v_c (SFM) 330 – 3,300 – 6,600	Feed Rate f (IPR)	Depth of Cut a_p (Inch)
Gray Cast Iron	FC200 to FC300 (HB ≤ 230)	BN7000	1,650 – 6,600	.0039 - .0197	≤ .039
		BNS800	650 – 6,600	.0039 - .0394	≤ .157
		BN500	650 – 2,310	.0039 - .0197	≤ .039
Alloy Cast Iron	(HB ≥ 200)	BN7000	650 – 2,650	.0039 - .0157	≤ .0197
		BNS800	650 – 3,300	.0039 - .0314	≤ .0787
Ductile Cast Iron	FCD450 Up to FCD550	BN7000	260 – 650	.0039 - .0157	≤ .0236
		BNC500	500 – 1,650	.0039 - .0157	≤ .0197
	FCD600 Up to FCD700	BNC500	650 – 400	.0039 - .0157	≤ .0197
Vermicular Cast Iron FCV(CGI)	—	BNC500	650 – 1,650	.0039 - .0157	≤ .0157

Cutting Oil: Use wet. (BNS800 can also be used dry)

• Milling

Part Material		Recommended Grade	Recommended Cutting Conditions		
Material	Standard (Hardness)		Cutting Speed v_c (SFM) 330 – 3,300 – 6,600	Feed Rate f (IPR)	Depth of Cut a_p (inch)
Gray Cast Iron	FC200 to FC300 (HB ≤ 200)	BN7000	2,650 – 6,600	.0039 - .0197	≤ .0197
		BNS800	2,650 – 6,600	.0039 - .0394	≤ .1575

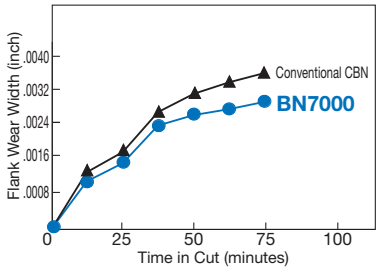
Cutting Oil: Use dry.

Performance

Recommended Grade

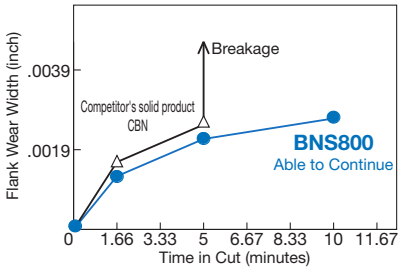
Gray Cast Iron Cutting BN7000 / BNS800 / BN500

• High Speed Continuous Cutting



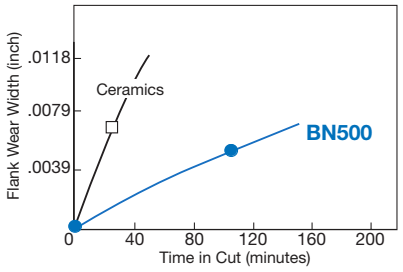
Part Material: Cast Iron (Pearlite)
Tool Cat. No.: 2NU-CNGA432
Cutting Conditions: v_c=2,650 SFM, f = .0059 IPR
a_p = .0079" Wet

• Interrupted Cutting



Part Material: Cast Iron (Pearlite)
Tool Cat. No.: SNG322
Cutting Conditions: v_c=2,000 SFM, f = .0118 IPR
a_p = .0197" Dry

• Continuous Cutting

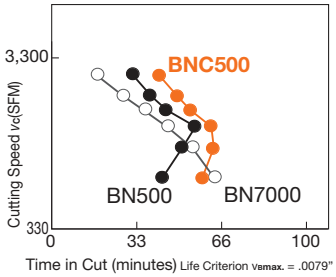


Part Material: FC300 (Pearlite)
Tool Cat. No.: SNG433
Cutting Conditions: v_c=1,650 SFM, f =.0117 IPR
a_p = .0059" Wet

Recommended Grade

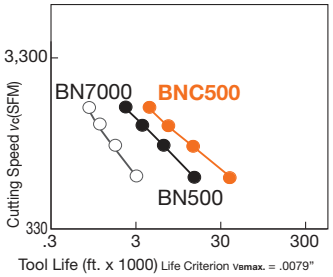
Turning Ductile Cast Iron BNC500

• FCD450



Part Material: FCD450 (Continuous Cutting)
Cutting Conditions: f = .0079 IPR, a_p = .0079 IPR" Wet

•FCD700

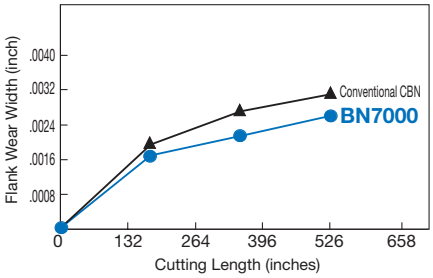


Part Material: FCD700 (Continuous Cutting)
Cutting Conditions: f = .0079 IPR, a_p = .0079 IPR" Wet

Recommended Grade

Milling Gray Cast Iron BNS800 / BN7000

• Cast Iron Milling



Part Material: FC250 (Pearlite)
Tool Cat. No.: FMU4100R SNEW1203ADTR
Cutting Conditions: v_c = 5,000 SFM, f = .0079 IPR, a_p = .0118" Dry

SINTERED COMPONENT MACHINING

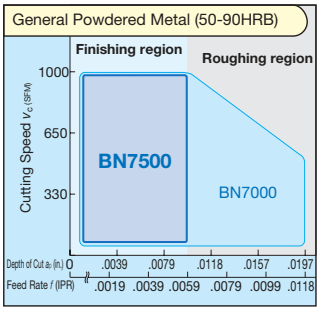
● Advantages of cutting sintered components with CBN - SUMIBORON

CBN - SUMIBORON has much smaller edge wear than carbide or cermet, and also has better wear resistance and can form a sharp edge easily. CBN - SUMIBORON is able to prevent burrs and chipping on the edges of the workpiece, achieving good machining precision and surface roughness.

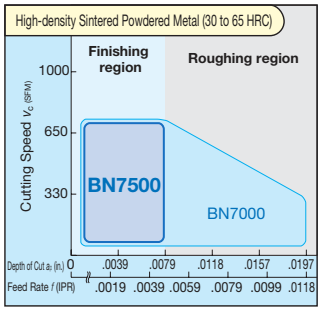
Sintered Components

Recommended Grade

● General Powdered Metal



● High-Density/Sintered Powdered Metal

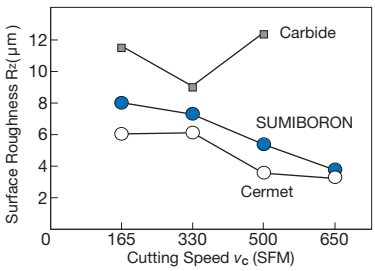


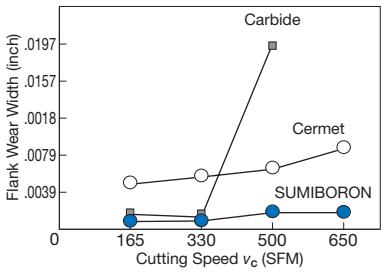
Grade	Binder	CBN Content (%)	Grain Size (µm)	Hardness HV (GPa)	Transverse Rupture Strength (GPa)	Main Coating Components	Coating Thickness (µm)	Features
BN7500	Co Compound	90 to 95	1	41 to 44	2.0 to 2.1	—	—	Maintains ultimate cutting edge sharpness. Suitable for finishing of powdered metal.
BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade exhibiting improved wear and fracture resistance in roughing of sintered materials.

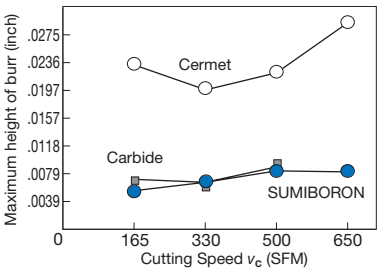
Transverse rupture strength measured with test piece equivalent to insert CBN layer

Performance

● Grade Performance Comparison







Work Material: SMF4040 equivalent
Machining Details: ø80-ø100 heavy interrupted facing with grooves and drilled holes (after 40 passes)
Tool Cat. No.: TNGA331
Cutting Conditions: f = .0039 IPR, a_p = .0039" Wet

For general powdered metal, carbide and cermet grades can perform up to v_c = 330 SFM. However, around v_c =400 SFM, wear becomes rapid and surface roughness deteriorates with increased burrs. On the other hand, CBN (SUMIBORON) exhibits stability and superior wear resistance, burr prevention and surface roughness, especially at high speeds.

Valve Seat Ring (VSR)

*VSR has both (Intake: IN) and (Exhaust: EX) with the exhaust generally being hardened.

Recommended Grade

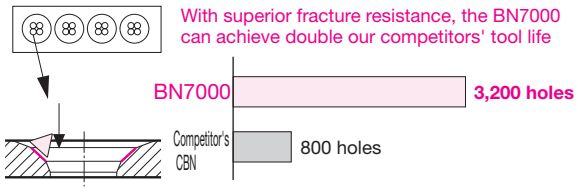
● Recommended Grade by Machining Details

	Gasoline VSR material	Diesel VSR material
Plunge cut	BN7000 BN7500 / BN350	BN7000 BN7500 / BN350
Traverse cut	BN7000 BN7500 / BN500	BN7000 BN7500 / BN500
Workpiece Hardness (HV)	Low ◄ 300HV ► High	Low ◄ 300HV ► High

Recommended Cutting Conditions

Cutting Speed v_c(SFM)	Feed Rate f (IPR)	Depth of Cut a_p(inch)
165 to 415	.0012 to .0079	.0020 to .0197

Application Examples



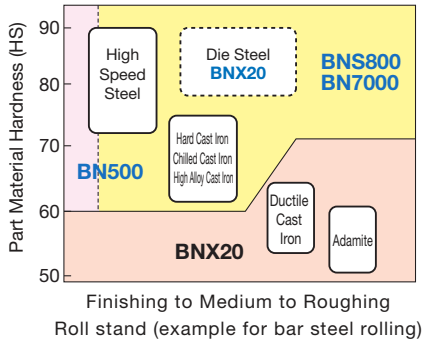
Part Material: Powdered Metal (150 to 250 HV)
Machining Details: VSR(IN) 45° Surface Finishing
Tool Cat. No.: TBGN521B
Cutting Conditions: v_c=330 SFM, f = .0031 IPR Wet

ROLL MACHINING

● Advantages of roll machining with CBN - SUMIBORON

CBN - SUMIBORON enables the machining of high-hardness rolls that were previously difficult to machine with conventional tools, drastically improving machining efficiency.

Recommended Grade



Finishing to Medium to Roughing
Roll stand (example for bar steel rolling)

Recommended Cutting Conditions

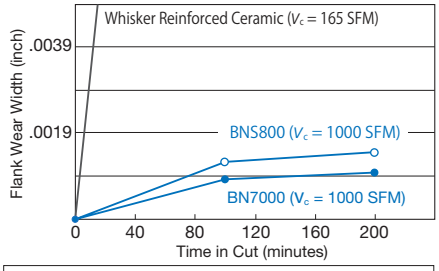
Part Material		Recommended Cutting Conditions		
Category	Hardness (HS)	Cutting Speed v_c (SFM) 65 130 200 265 330 400 465	Feed Rate f (IPR)	Depth of Cut a_p (Inch)
Adamite	≥ 40		.0039 - .0197	.0079 - .1181
Chilled cast iron	≥ 60		.0039 - .0197	.0079 - .1181
High-alloy cast iron	≥ 60		.0039 - .0197	.0079 - .1181
HSS	≥ 70		.0039 - .0157	.0039 - .1181

HARD FACING ALLOY MACHINING

● Advantages of hard facing alloy machining with CBN - SUMIBORON

CBN - SUMIBORON enables the machining of high-hardness facing alloys that were previously difficult to machine with conventional tools, drastically improving machining efficiency. The first recommended grade is BN7000, followed by BNS800.

Performance



Work Material: Colmonoy No.6 (NiCr-Based Self-Fluxing Alloy)
Tool Cat. No.: SNG322
Cutting Conditions: f = 0.0039 IPR, a_p = .0079" Dry

● BN7000 has a long tool life and minimal wear with high speed cutting

Recommended Cutting Conditions

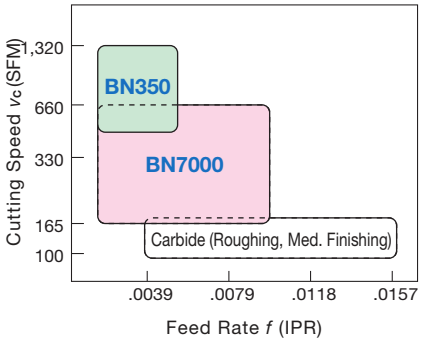
Part Material		Recommended Cutting Conditions		
Category	Material	Cutting Speed v_c (SFM) 165 330 660 1000	Feed Rate f (IPR)	Depth of Cut a_p (inch)
Ni-Based Self-Fluxing Alloy	Colmonoy No.6		.0019 - .0079	.0039 - .1181
Co-Based Self-Fluxing Alloy	Stellite		.0019 - .0079	.0039 - .0394

HEAT-RESISTANT ALLOY MACHINING

● Advantages of heat-resistant alloy machining with CBN - SUMIBORON

CBN - SUMIBORON provides long tool life in the finishing of heat-resistant alloys.

Recommended Grade



Recommended Cutting Conditions

Part Material		Recommended Cutting Conditions		
Category	Material	Cutting Speed v_c (SFM) 165 330 500 660	Feed Rate f (IPR)	Depth of Cut a_p (Inch)
Ni-Based Heat-Resistant Alloy	Inconel 718		.0019 - .0079	.0039 - .0394
Co-Based Heat-Resistant Alloy	Stellite		.0019 - .0079	.0039 - .0394

● CBN - SUMIBORON is ideal for finishing heat-resistant alloys.

TITANIUM ALLOY CUTTING

- Advantages of titanium alloy machining with SUMIBORON

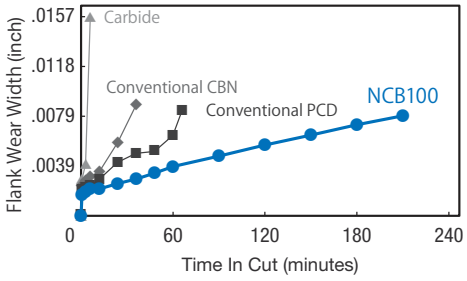
CBN (SUMIBORON) enables high speed machining of titanium alloys that were previously difficult to machine with conventional tools, drastically improving machining efficiency.

Recommended Grade

Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	Transverse Rupture Strength (GPa)	Main Coating Components	Coating Thickness (μm)	Features
NCB100	—	100	0.2 to 0.5	51 to 54	1.8 to 1.9	—	—	Ideal for high-efficiency finishing of titanium alloy.

Transverse rupture strength measured with test piece equivalent to insert CBN layer

Performance

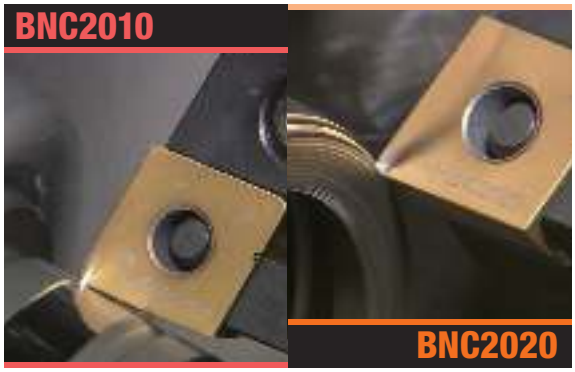


Work Material: Titanium Alloy (Ti-6Al-4V)
Tool Cat. No.: CNGA432
Cutting Conditions: V_C = 500 SFM, f = 0.0059 IPR, a_p = .0197"
Wet (High Pressure Coolant)

Recommended Cutting Conditions

Part Material		Grade	Recommended Cutting Conditions Min. - Max.		
Composition	Hardness (HRC)		Cutting Speed v_c (SFM) 165 330 500 660 825 1000	Feed Rate f (IPR)	Depth of Cut a_p (inch)
Ti-6Al-4V	30 - 35	NCB100		.0039 - .0197	.0039 - .0197
Ti-5Al-5V-5Mo-3Cr	32 - 38	NCB100		.0039 - .0197	.0039 - .0197
Ti-10V-2Fe-3Al	32 - 38	NCB100		.0039 - .0197	.0039 - .0197

BNC2010 / BNC2020



Longer Tool Life and Cost Reduction

■ General Features

Provides improved machining accuracy and longer tool life compared to conventional Coated CBN - SUMIBORON by combining newly developed CBN substrate and ceramic coating.
Exhibits excellent performance in high-precision and general cutting of hardened steel and enables reductions in machining costs.

■ Features

● BNC2010

· Grade for high-precision finishing requiring good surface roughness and dimensional tolerance.
Ideal for high-precision machining thanks to excellent wear resistance.

· Further maintains excellent surface roughness.
Maintains excellent surface roughness thanks to coating with high notch wear resistance and CBN substrate.

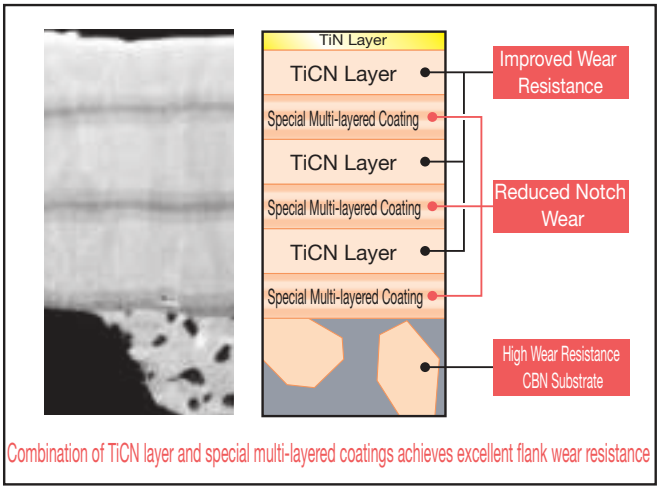
● BNC2020

· General-purpose grade suitable for typical hardened steel machining applications.
Achieves further stability in machining of a wide range of hardened steel components.

· Achieves long tool life thanks to highly wear-resistant, highly adhesive coating and tough CBN substrate.
Achieves long, stable tool life even in high-efficiency and interrupted machining.

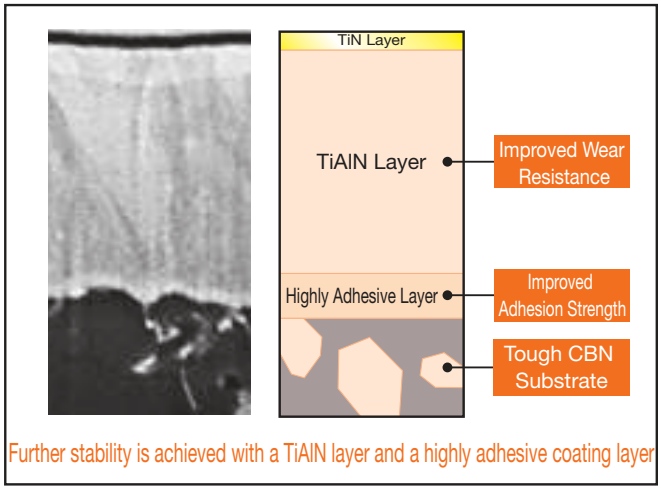
■ CBN Substrate and Coating Structure of BNC2010 and BNC2020

BNC2010



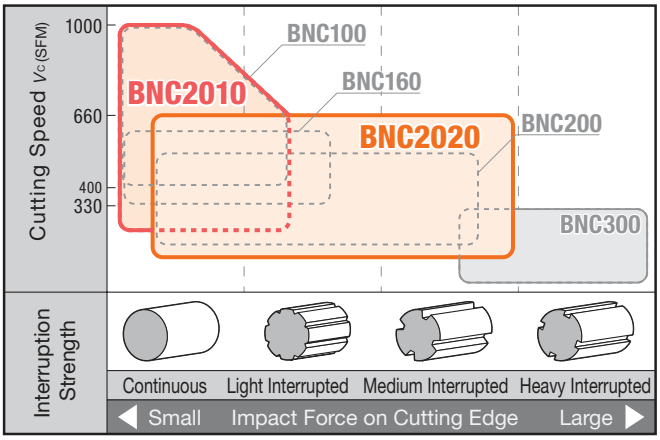
Combination of TiCN layer and special multi-layered coatings achieves excellent flank wear resistance

BNC2020



Further stability is achieved with a TiAlN layer and a highly adhesive coating layer

■ Application Range



■ Recommended Cutting Conditions

● BNC2010

Cutting Speed v_c (SFM)	
400 150 660 250 1000	
Feed Rate f (IPR)	Depth of Cut a_p (inch)
.0012 - .0098	.0012 - .0138

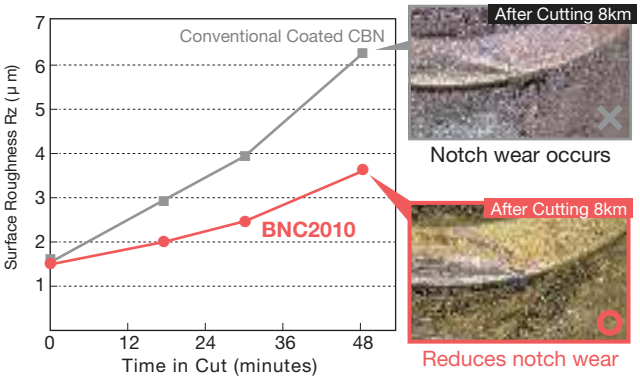
● BNC2020

Cutting Speed v_c (SFM)	
165 330 500 660 730	
Feed Rate f (IPR)	Depth of Cut a_p (inch)
.0012 - .0157	.0012 - .0197

Cutting Oil: Continuous Cutting Dry, Wet
Interrupted Cutting Dry

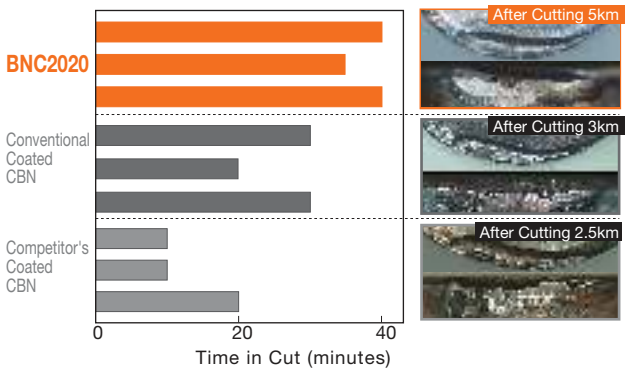
■ Cutting Performance

● BNC2010



Part Material: Low Carbon Alloy Steel 58-62HRC (Continuous)
Tool Cat. No.: 4NC-DNGA432 Cutting Edge Treatment: S01225
Cutting Conditions: v_c = 530 SFM, f = .0031 IPR, a_p = .0039" Wet

● BNC2020



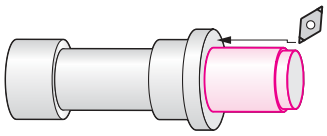
Part Material: 15CrMo Alloy Structural Steel 58-62HRC (Interrupted Cutting)
Tool Cat. No.: 4NC-CNGA433 Cutting Edge Treatment: S01225
Cutting Conditions: v_c = 430 SFM, f = .0039 IPR, a_p = .0236" Dry

■ Application Examples

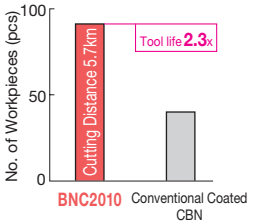
BNC2010

[Continuous External Turning of Main Shaft] (58 to 60 HRC)

BNC2010 provides excellent wear resistance and achieves excellent surface roughness.



Surface Roughness Ra = 0.6μm

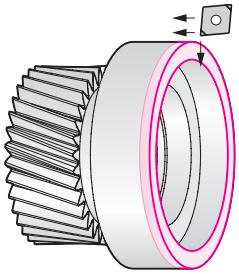


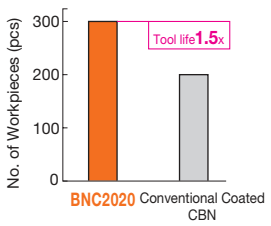
Tool Cat. No.: 4NC-DNGA432 (BNC2010)
Cutting Conditions: v_c = 660 SFM, f = .0039 IPR, a_p = .0138" Dry

BNC2020

[Carburised Layer Removal for Sun Gear] (58 to 60 HRC)

BNC2020 achieves long tool life in high load cutting.

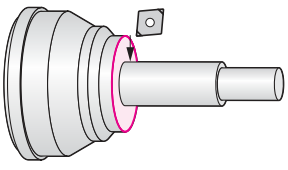




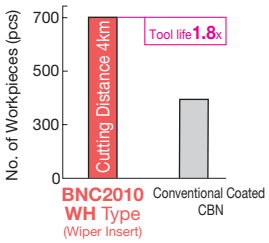
Tool Cat. No.: 4NC-CNGA432 (BNC2020)
Cutting Conditions: v_c = 330 SFM, f = .0059 IPR, a_p = .0197" Wet

[Facing of CVJ Outer Race] (58 to 60 HRC)

BNC2010 with a WH type wiper insert maintains excellent surface roughness for a long time.



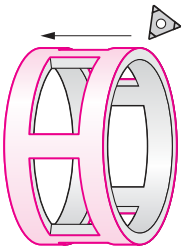
Surface Roughness Rz = 1.6μm

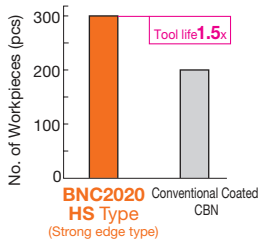


Tool Cat. No.: 4NC-CNGA433WH (BNC2010)
Cutting Conditions: v_c = 500 SFM, f = .0079 IPR, a_p = .0079" Dry

[Interrupted Machining of CVJ Cage Window] (58 to 60 HRC)

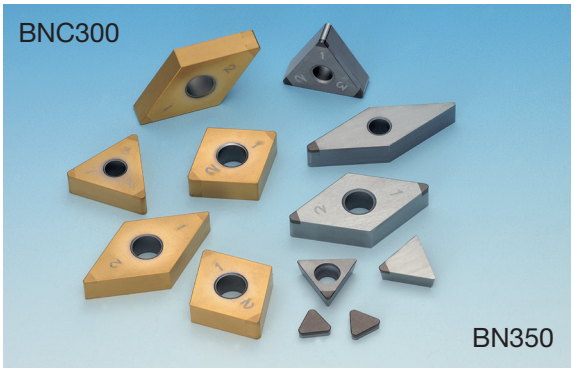
BNC2020 strong edge HS type provides stable performance in interrupted cutting.





Tool Cat. No.: 6NC-TNGA333HS (BNC2020)
Cutting Conditions: v_c = 400 SFM, f = .0039 IPR, a_p = .0059" Dry

The Ultimate in Interrupted Cutting of Hardened Steel



■ General Features

BNC300

A CBN substrate that emphasizes toughness is coupled with a highly wear-resistant TiAlN-based coating layer that has improved adhesion strength. With a good balance of fracture and wear resistance, this grade achieves a long, stable tool life in interrupted cutting or in a mixture of continuous and interrupted cutting.

BN350

CBN - SUMIBORON with the highest fracture resistance and toughest CBN. Reliable grade for achieving stable tool life in heavy interrupted cutting conditions.

■ Features

●BNC300

· Long, stable tool life in interrupted cutting
Achieving long, stable tool life in heavy interrupted cutting, with superior fracture resistance.

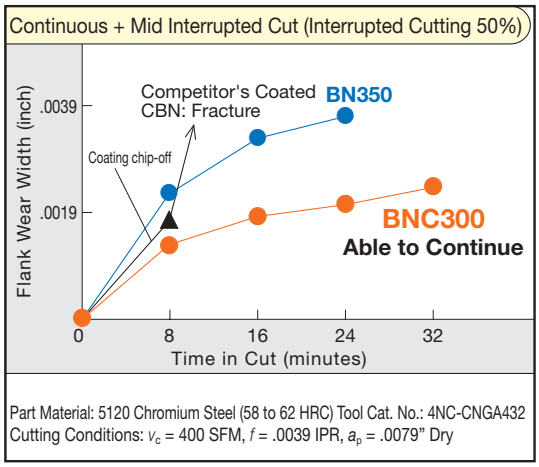
· Superior dimensional tolerance
TiAlN-based high-wear-resistance coating with good adhesion strength. Achieves superior dimensional tolerance even in interrupted cutting.

· Supports various work material shapes
Achieves long, stable tool life even in workpieces requiring both continuous and interrupted cutting.

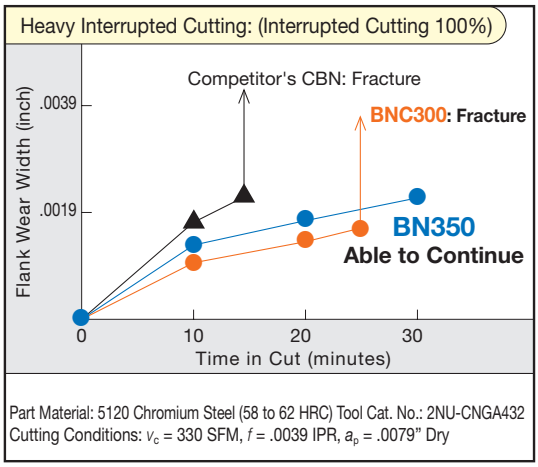
●BN350

· Superb stability with regard to fracture
Superior fracture resistance, preventing the fractures that commonly occur during interrupted cutting. Achieves a long, stable tool life.

■ Cutting Performance



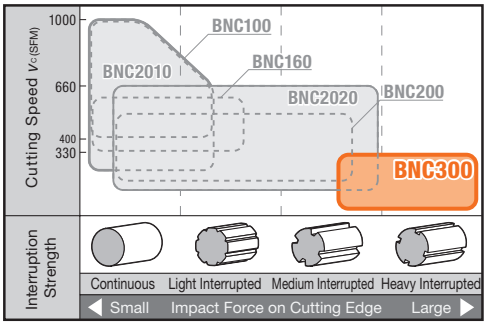
● **BNC300** has a superior balance of fracture and wear resistance.



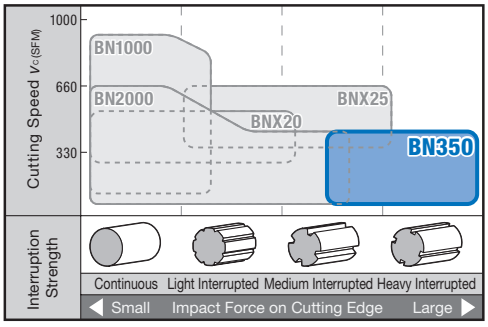
● **BN350** exhibits very good fracture resistance.

■ Application Range

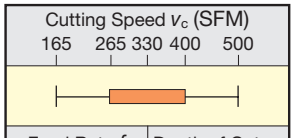
• Coated CBN (SUMIBORON)



• CBN (SUMIBORON)



■ Recommended Cutting Conditions (BNC300/BN350 common)

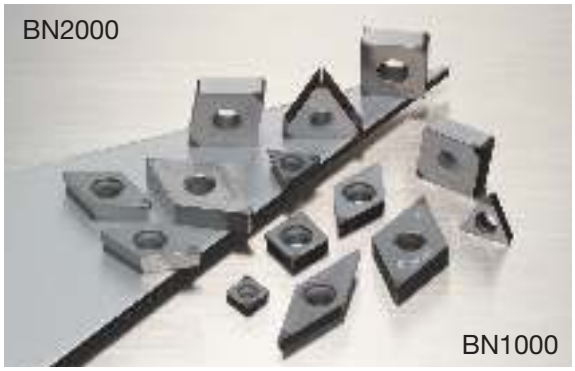


Feed Rate f (IPR)	Depth of Cut a_p (inch)
.0012 - .0079	.0012 - .0118

Coolant: Dry

MEMO

BN1000 / BN2000



■ General Features

Uncoated CBN - SUMIBORON grades that have a newly developed high-purity ceramic binder applied to them. Both fracture and wear resistance are combined to achieve a stable tool life in a wide variety of hardened steel machining.
We offer a wide selection of tools starting with single-cornered types.

■ Features

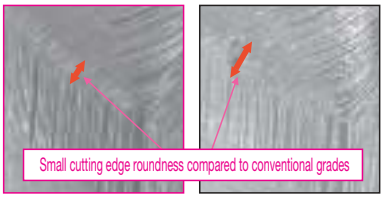
● BN1000

- **CBN - SUMIBORON grade for high-speed machining with the best wear resistance,** providing superior tool life in continuous cutting to light interrupted cutting.
- **Improved fracture resistance while also emphasizing wear resistance**
  Improved hardness and thermal resistance from the high-purity TiCN ceramic binder.

● BN2000

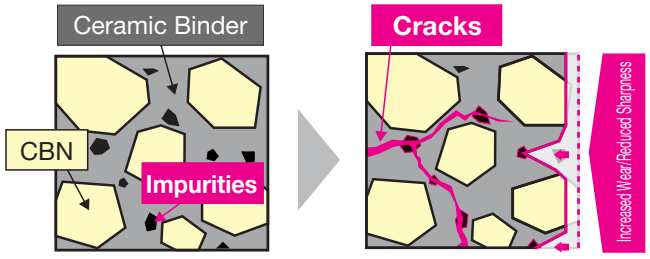
- **General-purpose grade suitable for typical hardened steel machining applications**
  Provides stable tool life in everything from continuous cutting to light to medium interrupted cutting.
- **Has a high degree of both fracture and wear resistance**
  Significant improvements in the performance of both by employing a high-purity ceramic binder.
- **Stable surface roughness achieved by increasing edge sharpness (right figure)**

Sharpness Comparison



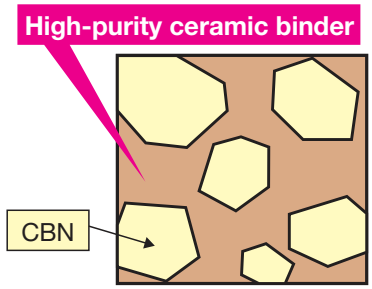
■ Newly Developed High-Purity Ceramic Binder

Conventional Grade



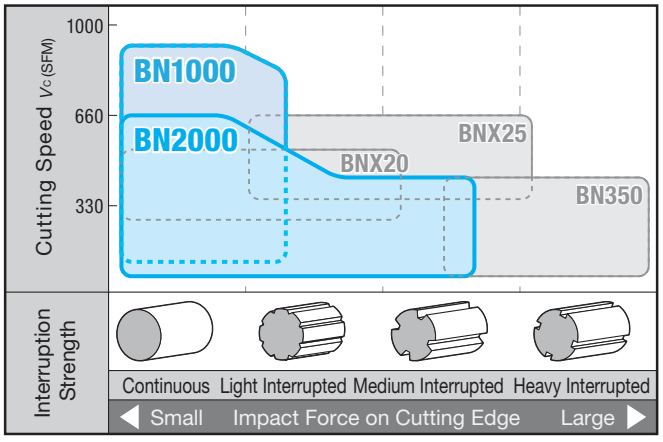
The impurities contained in the ceramic binder for conventional grades decrease the sintered body strength and thermal resistance, leading to cracks (breakage) and wear.

BN1000 / BN2000



With a newly developed high-purity ceramic binder, BN1000 / BN2000 achieve toughness and improved thermal resistance by decreasing impurities to an extreme.

■ Application Range



■ Recommended Cutting Conditions

● BN1000

Cutting Speed V_c (SFM)	
165 330 400 500 660 825 1000	
Feed Rate f (IPR)	Depth of Cut a_p (inch)
.0012 - .0059	.0012 - .0079

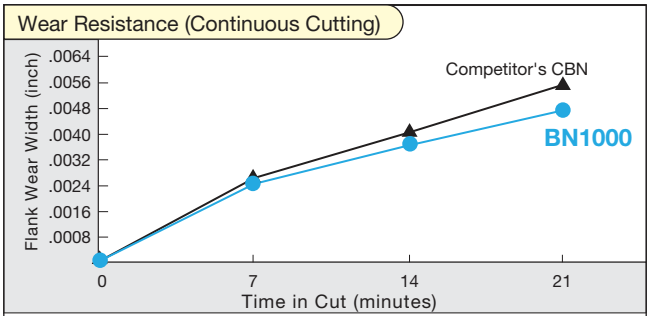
● BN2000

Cutting Speed V_c (SFM)	
165 300 330 400 500 660 825 1000	
Feed Rate f (IPR)	Depth of Cut a_p (inch)
.0012 - .0079	.0012 - .0117

Cutting Oil: Continuous Cutting Dry, Wet
Interrupted Cutting Dry

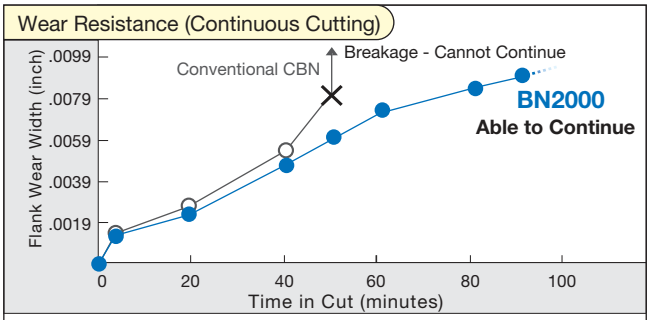
■ Cutting Performance

● BN1000



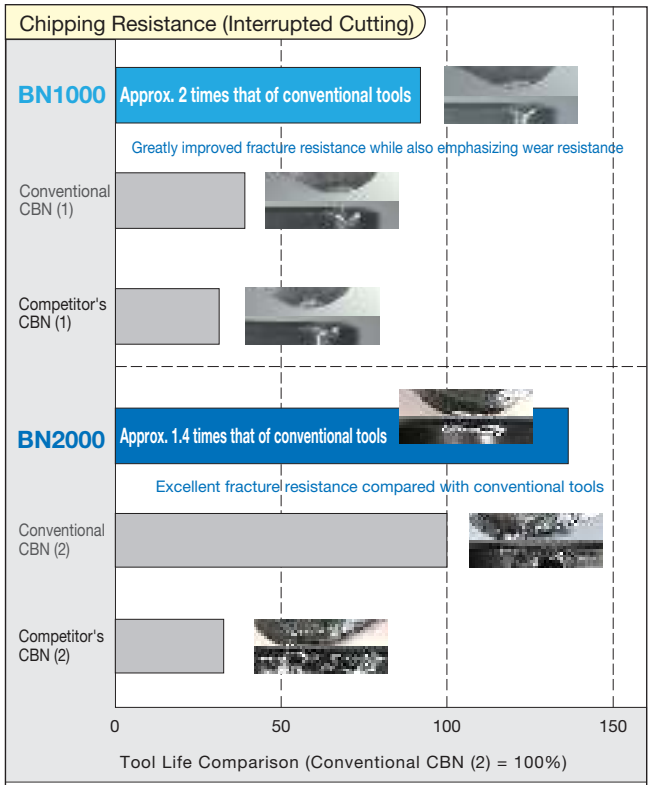
Part Material: High Carbon Steel Round Bar (58 to 62HRC)
Tool Cat. No.: 2NU-CNGA432
Cutting Conditions: v_c = 500 SFM, f = .0039 IPR, a_p = .0079" Dry

● BN2000



Part Material: Chromium Molybdenum Steel Round Bar (58 to 62HRC)
Tool Cat. No.: 2NU-CNGA432
Cutting Conditions: v_c = 330 SFM, f = .0039 IPR, a_p = .0079" Dry

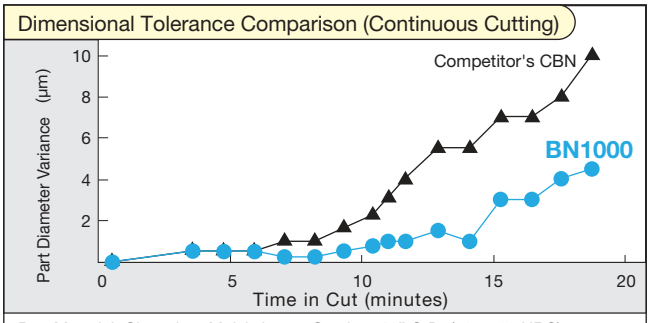
● BN1000 / BN2000



Part Material: 15CrMo Alloy Structural Steel 8V Grooved (58-62HRC)
Tool Cat. No.: 2NU-CNGA432
Cutting Conditions: v_c = 400 SFM, f = .0039 IPR, a_p = .0079" Dry

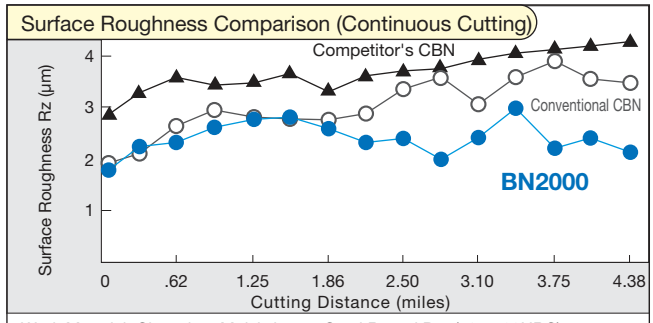
■ Machining Precision

● BN1000



Part Material: Chromium Molybdenum Steel ø5.12" O.D. (58 to 62 HRC)
Tool Cat. No.: 2NU-CNGA432
Cutting Conditions: v_c = 660 SFM, f = .0039 IPR, a_p = .0039" Wet

● BN2000

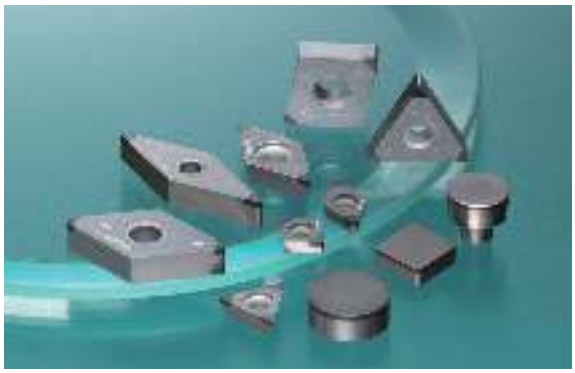


Work Material: Chromium Molybdenum Steel Round Bar (58 to 62HRC)
Tool Cat. No.: 2NU-CNGA432
Cutting Conditions: v_c = 330 SFM, f = .0031 IPR, a_p = .0079" Dry

BN7000

K Cast Iron | Sintered Alloy

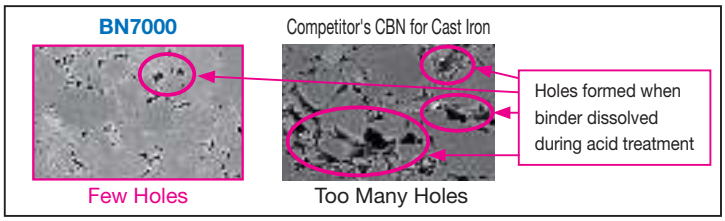
For high-speed finishing of cast iron, powdered metals and exotic alloys



■ General Features

Medium-grain CBN sintered to a high density to achieve the maximum content percentage.
Also delivers superior fracture resistance by increasing the bonding strength between CBN particles. Provides long, stable tool life for high-speed finishing work with cast iron, powdered metals and exotic alloys.

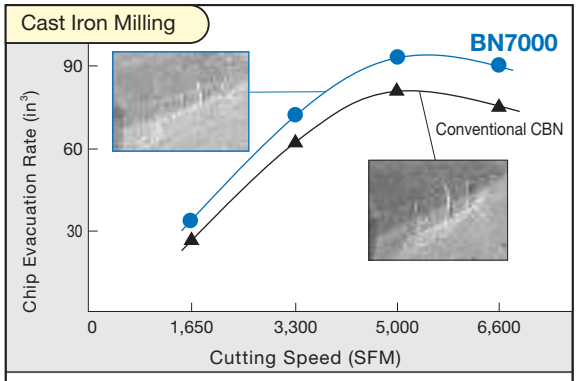
Acid-treated CBN Sintered Body Structure



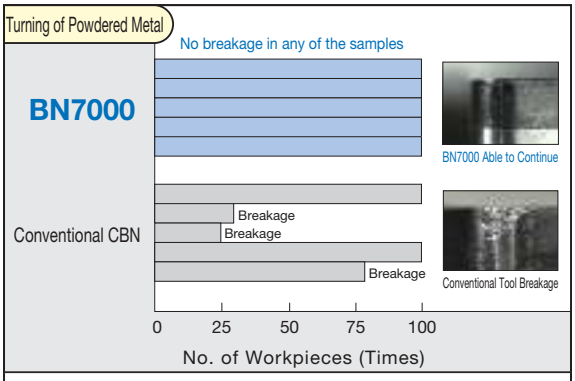
■ Features

- Excellent for high-speed finishing of cast iron
  Excellent fracture resistance and reduced occurrence of thermal cracking in high speed machining of gray cast iron.
- High-efficiency machining of powdered metal
  Standard + 2 different types of edge treatment, achieving long, stable tool life in machining of powdered metal of any shape or hardness.
- Able to machine any exotic alloy
  Exhibits high performance for the machining of exotic alloys such as rolls, HSS, heat-resistant alloys, etc.

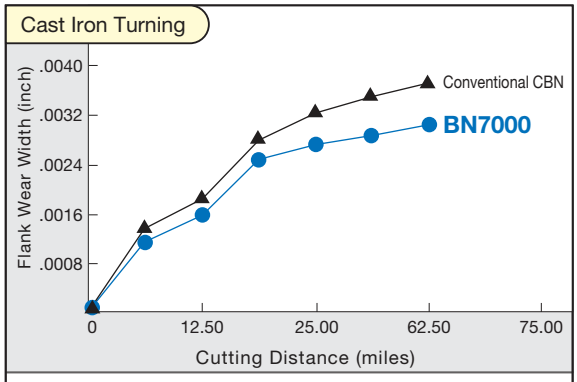
■ Cutting Performance



Part Material: Grey Cast Iron (Pearlite)
Tool Cat. No.: FMU4100R SNEW1203ADTR
Cutting Conditions: v_c =1650 - 6,600 SFM, f = .0079 IPR, a_p = .00118" Dry

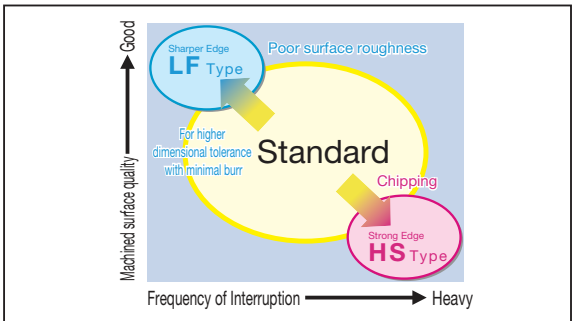


Work Material: SMF4040 (70HRB, Interrupted Cutting)
Tool Cat. No.: 2NU-CNGA432
Cutting Conditions: v_c = 825 SFM, f = .0039 IPR, a_p = .0118" Dry

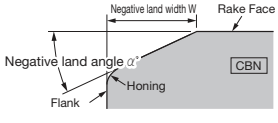


Work Material: FC300 (Pearlite)
Tool Cat. No.: 2NU-CNGA432
Cutting Conditions: v_c = 2,650 SFM, f = .0059 IPR, a_p = .0079" Wet

■ Recommended Cutting Edge Treatment



	α	W	Honing
Standard	15°	.12 mm	No
LF Type	Sharp Edge		No
HS Type	25°	.12 mm	Yes



BN7500

Sintered Alloy

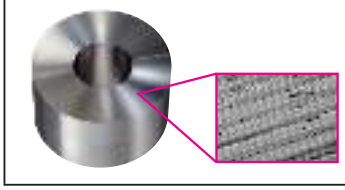
Achieves high-precision, high-efficiency machining of powdered metal



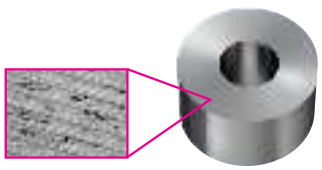
■ General Features

High-density sintered micro-grained CBN grains provide good sharpness and wear resistance to produce an excellent machined face surface on powdered metals during finishing. Excellent sharpness and wear resistance for high-quality machined surfaces in powdered metal finishing.

Surface finish using the BN7500



Surface finish using previous CBN



- The previous CBN left white blemishes on the machined surface, whereas the BN7500 leaves a better, glossy surface finish

■ Features

- Excellent for finishing of powdered metal

  Excellent machined surface quality and surface roughness.

- Available with 5 different types of edge treatment for machining sintered parts of any shape or hardness

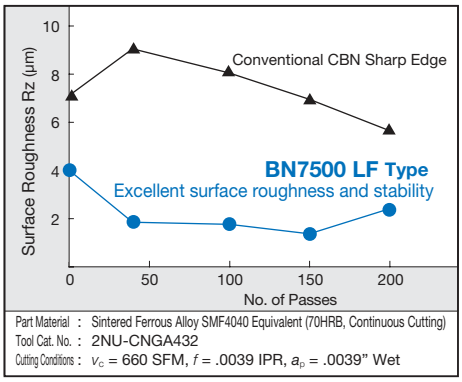
  LF has a sharper edge designed specifically for machining powdered metal with minimal burr and improved machining precision.

  HS has a strengthened cutting edge for stable chipping resistance during interrupted cutting and finishing.

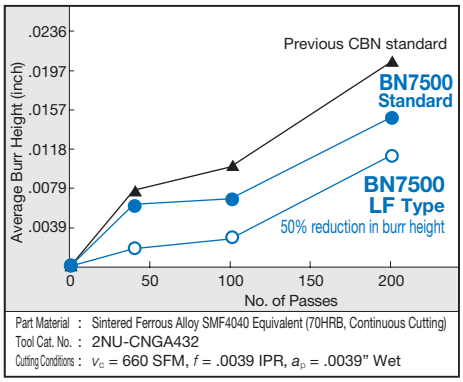
  Provides machining stability by reducing the variation in early milling surface roughness with the type emphasizing LE surface roughness.

  LS has an excellent balance of fracture resistance and sharpness, and supports finishing that includes light interrupted cutting.

■ Cutting Performance

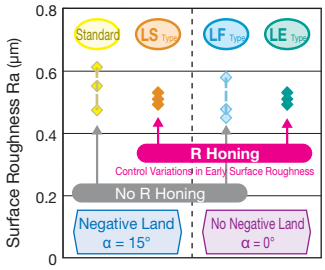


Part Material : Sintered Ferrous Alloy SMF4040 Equivalent (70HRB, Continuous Cutting)
Tool Cat. No. : 2NU-CNGA432
Cutting Conditions : v_c = 660 SFM, f = .0039 IPR, a_p = .0039" Wet



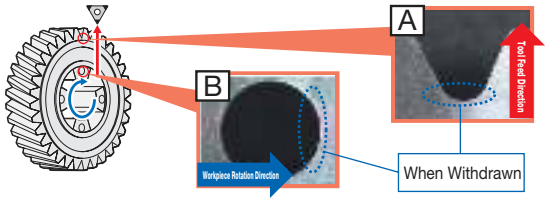
Part Material : Sintered Ferrous Alloy SMF4040 Equivalent (70HRB, Continuous Cutting)
Tool Cat. No. : 2NU-CNGA432
Cutting Conditions : v_c = 660 SFM, f = .0039 IPR, a_p = .0039" Wet

● Finished Surface Roughness during Initial Machining

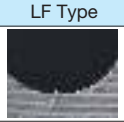
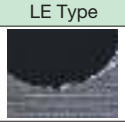
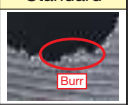
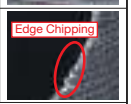


Able to control early surface roughness variations by applying R honing to the cutting edge.

● Feed and Burr Relationship

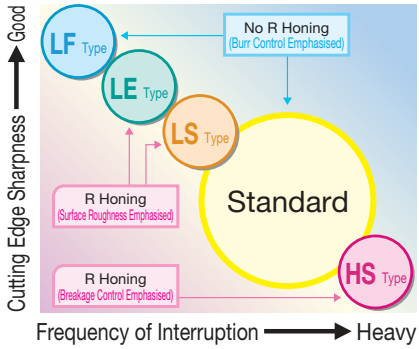


- The LF type without R honing has a cutting edge sharpness superior to the LE type with R honing and can control burrs better.
- For a feed rate of .0039 IPR or higher, the LS type has a cutting edge sharpness superior to the standard type and can control burrs better.

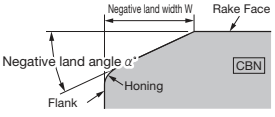
	LF Type	LE Type	LS Type	Standard
Diagram A				 Burr
Diagram B				 Edge Chipping

Part Material: VVT Facing
Tool Cat. No.: 3NU-TNGA331
Cutting Conditions: v_c = 660 SFM, f = .0039 IPR, a_p = .0039" Wet

■ Recommended Cutting Edge Treatment



	α	W	Honing
Standard	15°	.12 mm	No
LF	α°= 0°		
LE	(No Negative Land)		Yes
LS	15°	.07 mm	
HS	25°	.05 mm	



BNS800

From finishing to roughing of cast iron and exotic alloys



■ General Features

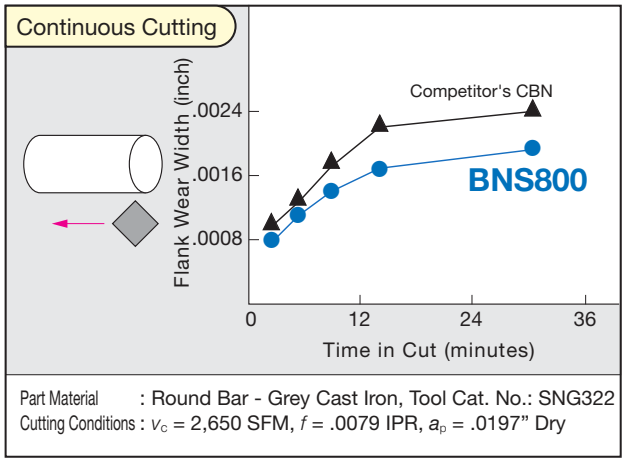
Enables great reductions in machining costs with a dedicated grade combining wear resistance and fracture resistance, and solid structure allowing the whole insert to be used as a cutting edge. Unlike conventional brazed type inserts, which are not suitable for high speed cutting and roughing, this grade can be used even for high-speed finishing processes.
Additionally, the RM type cutter is designed exclusively for Solid CBN - SUMIBORON and is suitable for high-speed rough milling.

■ Features

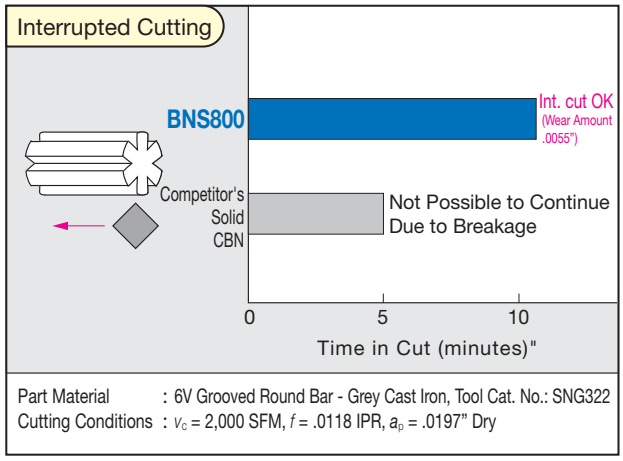
- Larger cutting depths
  100% solid CBN structure where the whole cutting edge length can be used.
- Supports high-precision finishing
  Grade with excellent balance of wear resistance and fracture resistance.
- Achieves overall cost reductions
  All corners of the insert can be utilized for greater economy.

BNS800 Dedicated Tool Holder ☞ L100 to L102
BNS800 Dedicated Cutter ☞ L121

■ Cutting Performance



Part Material : Round Bar - Grey Cast Iron, Tool Cat. No.: SNG322
Cutting Conditions : v_c = 2,650 SFM, f = .0079 IPR, a_p = .0197" Dry



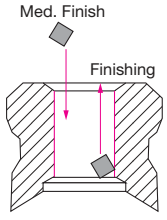
Part Material : 6V Grooved Round Bar - Grey Cast Iron, Tool Cat. No.: SNG322
Cutting Conditions : v_c = 2,000 SFM, f = .0118 IPR, a_p = .0197" Dry

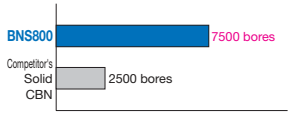
■ Application Examples

• Wear resistance is better than competitors' products

• Double our competitors' fracture resistance

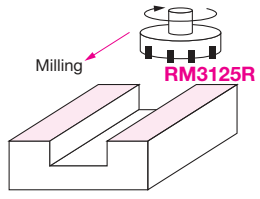
• Grey Cast Iron Engine Cylinder Bore

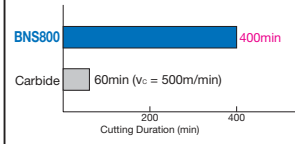




Cutting Conditions	Med. Finish	Finishing
Grade	BNS800	
Cat. No.	SNG322	
v_c	3,300 SFM	
f	.0118 IPR	.0099 IPR
a_p	.079"	
Coolant	Wet	

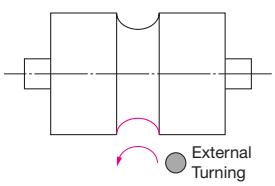
• Grey Cast Iron Machine Bed / Milling

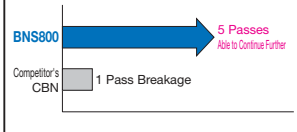




Cutting Conditions	Roughing
Grade	BNS800
Cat. No.	SNEN322W
v_c	5,000 SFM
f_z	.0079 IPT
a_p	.099" (2 Passes)
Coolant	Dry

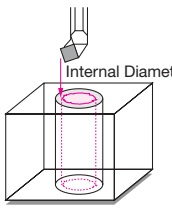
• Carbide (Co15%) Roll Cutting

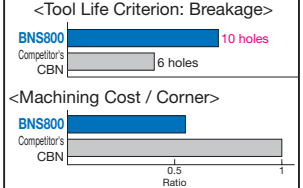




Cutting Conditions	Finishing
Grade	BNS800
Cat. No.	RNG32
v_c	130 SFM
f	.0059 IPR
a_p	.079"
Coolant	Wet

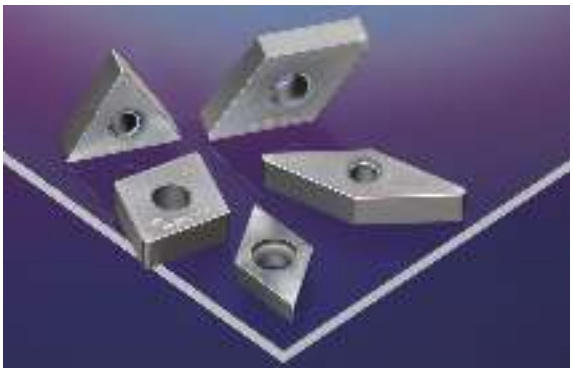
• Colmonoy Sprayed Bore Face





Cutting Conditions	Roughing	Finishing
Grade	BNS800	
Cat. No.	SNG323	SNG322
v_c	260 SFM	
f	.0015 IPR	.0012 IPR
a_p	up to .118"	.0197"
Coolant	Wet	

Coated CBN grades for ductile cast iron machining

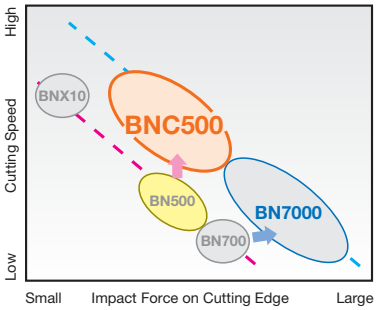


■ General Features

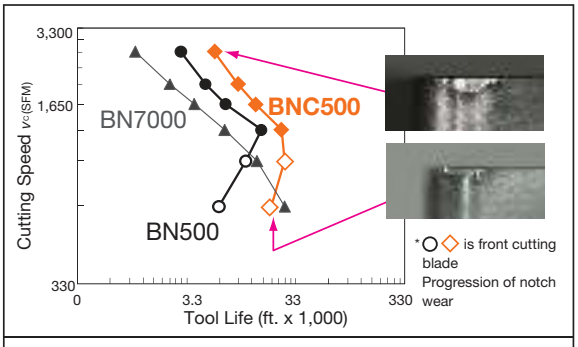
Broad improvements in the toughness of the CBN substrate and wear resistance through the use of a newly developed high-purity TiC binder. In addition, it demonstrates exceptional wear resistance by combining a ceramic coating with excellent thermal resistance. High-speed, high-precision machining is achieved when finishing ductile cast iron. It also provides a long, stable tool life for machining high-strength ductile cast iron, special cast irons such as vermicular cast iron and centrifugally-cast cast iron.

■ Features

- Stable tool life for high-speed machining of ductile cast iron
  Superior wear resistance, making stable machining possible under high-speed conditions.
- Supports high-precision machining
  Can maintain excellent dimensional tolerance and surface roughness over many hours.

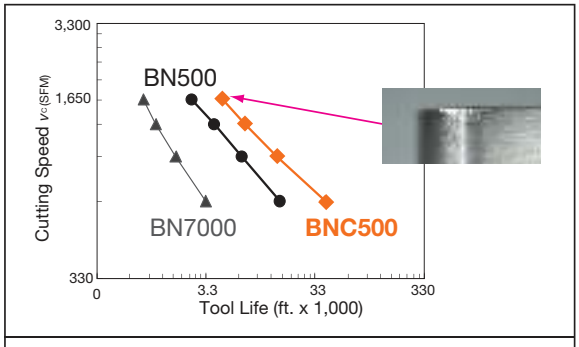


● Cast Iron Continuous Cutting (V-T Chart)



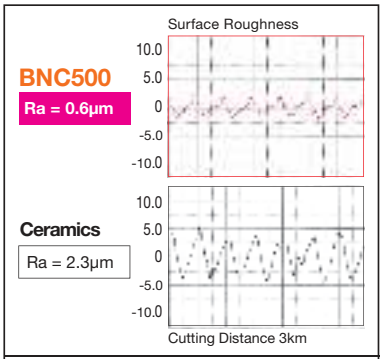
Part Material: Ductile Cast Iron (160HB) Tool Cat. No.: 4NC-CNGA432
Cutting Conditions: f = .0079 IPR, a_p = .0079" Wet
Tool Life Criterion: $V_B$max. = .0079"

● Ductile Cast Iron Continuous Cutting (V-T Chart)



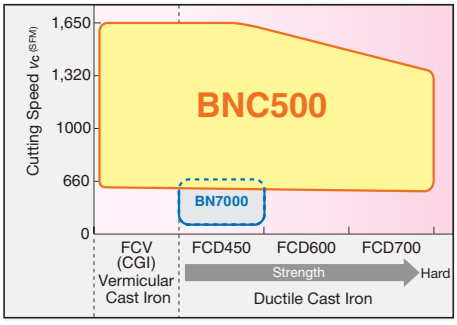
Part Material: 100-70-03 Cast Iron (260HB) Tool Cat. No.: 4NC-CNGA432
Cutting Conditions: f = .0079 IPR, a_p = .0079" Wet
Tool Life Criterion: $V_B$max. = .0079"

■ Machined Surface Quality

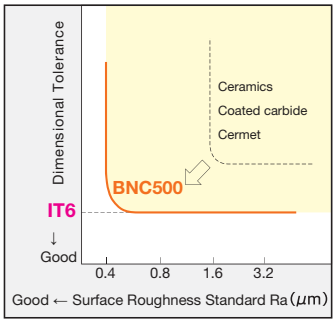


Part Material: Ductile Cast Iron FCD700 (260HB)
Cutting Conditions: V_C=1,320 SFM, f =.0039 IPR
a_p=.0039" Wet

■ Application Range



■ High-Precision Machining



■ Recommended Cutting Conditions

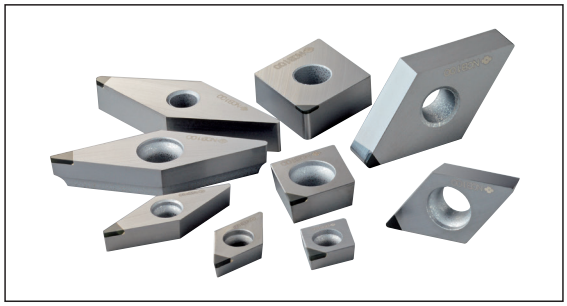
Cutting Speed V_c (SFM)			
660	1,000	1,320	1,650

Feed Rate f (IPR)	Depth of Cut a_p (inch)
.0039 to .0157	≤ .0197

Cutting Oil: Wet

Nano-Polycrystalline CBN

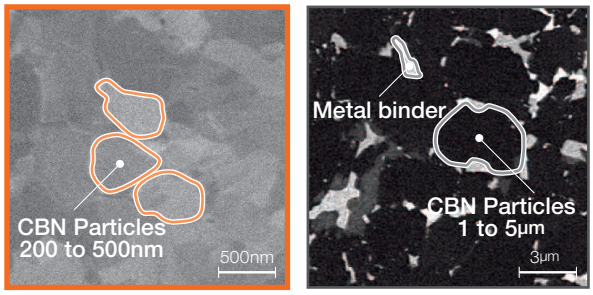
New



■ General Features

Binderless CBN, which does not contain any binders, is a CBN sintered product with directly and strongly bonded nano- to sub-micron CBN particles.
Compared to conventional CBN grades, this provides high hardness and thermal conductivity, making it highly efficient with a long tool life when machining exotic alloys such as titanium alloys and cobalt-chrome alloys.

■ Sintered Composition (SEM Image)



SUMIBORON Binderless　Conventional CBN

■ Physical Values

	SUMIBORON Binderless	Conventional CBN
CBN Content (vol%)	100	90 to 95
Binder	—	WC-Co
Hardness Hv (GPa)	51 to 54	41 to 44
Thermal Conductivity (W/m·K)	180 to 200	100 to 120

Binderless CBN NCB100

New



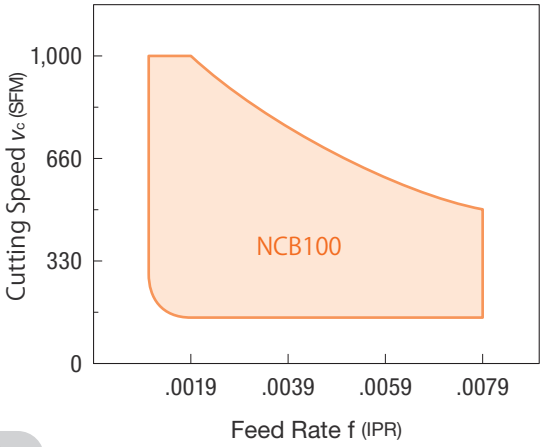
■ General Features

Adopts a nano-polycrystalline CBN sintered cutting edge with hardness and thermal conductivity significantly higher than conventional sintered CBN. Enables overwhelmingly longer tool life and improved efficiency and machining accuracy when machining exotic alloys such as titanium alloys or cobalt-chrome alloys.

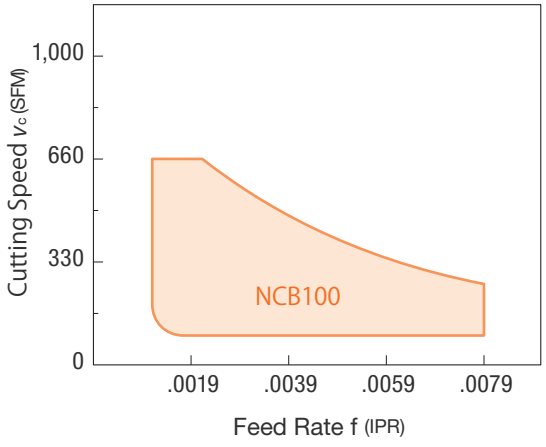
■ Features

- Ideal for high efficiency finishing of exotic alloys such as titanium alloys and cobalt-chrome alloys
  Exhibits outstanding wear resistance due to the excellent hardness and thermal conductivity of nano-polycrystalline CBN
- Excellent dimensional tolerance and machined surface roughness maintained for extended periods
  Tool replacement count can be drastically reduced compared to conventional grades, enabling work efficiency to be improved and total costs to be reduced

■ Application Range (Machining Titanium Alloy)

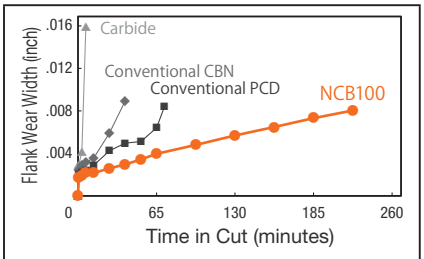


■ Application Range (Cobalt-chrome alloy machining)



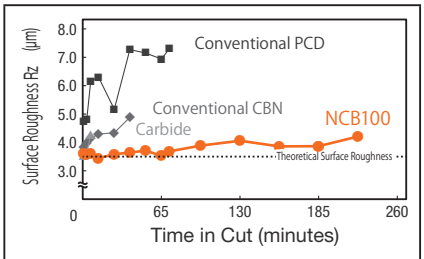
■ Cutting Performance (Machining Titanium Alloy)

● Wear Resistance

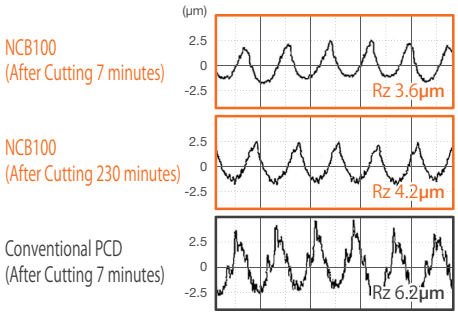


Part Material: Titanium Alloy (Ti-6Al-4V)
Tool Used: CNGA432
Cutting Conditions: V_c = 500 SFM, f = .0059 IPR
a_p = .0197" Wet (High Pressure Coolant)

● Machined Surface Roughness

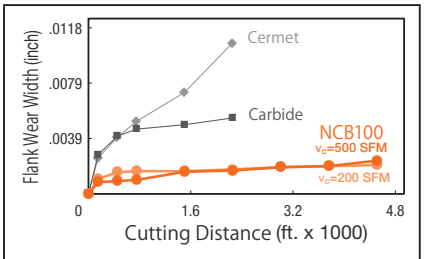


Part Material: Titanium Alloy (Ti-6Al-4V)
Tool Used: CNGA432
Cutting Conditions: V_c = 500 SFM, f = .0059 IPR
a_p = .0197" Wet (High Pressure Coolant)



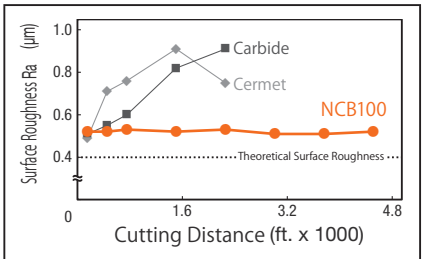
■ Cutting Performance (Machining Cobalt-chrome Alloy)

● Wear Resistance

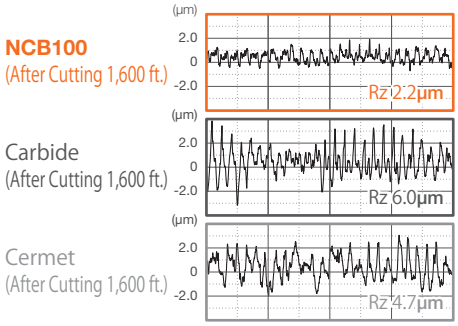


Part Material: Cobalt-chrome alloy (forging)
Tool: VNGA332
Cutting Conditions: V_c = 200, 500 SFM, f = .0039 IPR
a_p = .0157" Wet

● Machined Surface Roughness



Part Material: Cobalt-chrome alloy (forging)
Tool: VNGA332
Cutting Conditions: V_c = 200 SFM, f = .0039 IPR
a_p = .0157" Wet



■ Recommended Cutting Conditions

● Titanium Alloy

Part Material		Grade	Recommended Cutting Conditions Min. - Max.		
Composition	Hardness (HRC)		Cutting Speed v_c (SFM) 165 330 500 660 825 1000	Feed Rate f (IPR)	Depth of Cut a_p (inch)
Ti-6Al-4V	30 - 35	**NCB100**		.0019 - .0079	.0039 - .0197
Ti-5Al-5V-5Mo-3Cr	32 - 38	**NCB100**		.0019 - .0079	.0039 - .0197
Ti-10V-2Fe-3Al	32 - 38	**NCB100**		.0019 - .0079	.0039 - .0197

● Cobalt-chrome Alloy

Part Material		Grade	Recommended Cutting Conditions Min. - Max.		
Composition	Hardness (HRC)		Cutting Speed v_c (SFM) 165 330 500 660	Feed Rate f (IPR)	Depth of Cut a_p (inch)
Co-30Cr-5Mo	35 - 45	**NCB100**		.0019 - .0079	.0039 - .0118

● Carbide

Part Material		Grade	Recommended Cutting Conditions Min. - Max.		
Composition	Hardness (HRA)		Cutting Speed v_c (SFM) 15 30 45 65 80 100 115 130	Feed Rate f (IPR)	Depth of Cut a_p (inch)
WC-20Co	Less than 85	**NCB100**		.0012 - .0079	.0012 - .0079

*SUMIDIA BINDERLESS NPD10 is recommended for carbide machining of 83HRA or more.

● Other

Part Material		Grade	Recommended Cutting Conditions Min. - Max.		
Composition / Material	Hardness (HV)		Cutting Speed v_c (SFM) 30 165 330 660 1,000 1,320	Feed Rate f (IPR)	Depth of Cut a_p (inch)
Cermet Material (Ferrous metal including binder)	1,000 - 1,500	**NCB100**		.0019 - .0079	.0039 - .0118

Insert Identification

Regrindable Type

CNMA120408(-)B

(1) (2)

(1) ISO Symbol
(ISO Standard Classification)
B2, B3

(2) Additional Information
Refer to Table 1

Table 1 (2) Additional Information

Symbol	Old Symbol	Code Description
(-)B	(-)B	Full-top CBN
-BSTN	-BSN	Full-top CBN (Sharper Edge Type)

One-use Type
(Disposable)

2NU - CNGA120408LT

(1) (2) (3) (4)

(1) No. of Cutting Edges
Refer to Table 2

(2) Type Symbol
Refer to Table 3

(3) ISO Symbol
(ISO Standard Classification) B2, B3

(4) Additional Information
Refer to Table 4

(Table 2) (1) No. of Cutting Edges

Symbol	No. of Cutting Edges	Type
(None)	No. of Cutting Edges: 1	1-cornered type
2	No. of Cutting Edges: 2	Multi-Corner Type
3	No. of Cutting Edges: 3	
4	No. of Cutting Edges: 4	
6	No. of Cutting Edges: 6	

(Table 3) (2) Type Symbol

Symbol	Type	Grade
NC	Coated SUMIBORON Series	BNC2010,2020, BNC100,160, BNC200, 300, 500
NU	Non-Coated SUMIBORON Series SUMIBORON Binderless	BNX10, 20 BN1000, 2000, 350 BN500, 700, 7000, 7500 NCB100
NS	Non-Coated SUMIBORON Series	BNX25

*The NS type is a single-use insert for the BNX25 grade, using the latest brazing technique. The shape is the same as the NU type.

*Cat. numbers that begin with a "T-" are 10pcs pack

Table 4 (4) Additional Information L28

Symbol	Old Symbol	Code Description	
		SUMIBORON	Coated SUMIBORON
No	No	Standard Cutting Edge	
LF LE	F	Sharp edge type	
LT	S	Sharper Edge Type	
LS	M	General-purpose Type for Continuous Cutting	Sharper Edge Type
ES	—	—	High Efficiency Type
HT HS	T	Strong Edge Type	
WG WH W	W	Wiper Insert Type	
N-FV N-LV N-SV	N-SV	Chipbreaker Type	

■ Cutting Performance (Machining Titanium Alloy)

One-Use Insert NU Type / NS Type



■ **Features**

- Affordable version of the previously expensive sintered CBN material, at its best size.
- One-use type eliminates regrinding, making tool management easy.
- Reduce required storage space with 10pcs pack.

Multi-Cornered, One-Use Insert



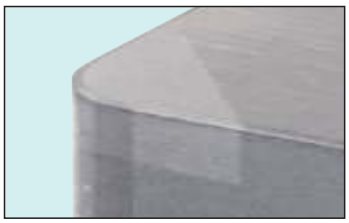


■ **Features**

- Multiple SUMIBORON cutting edges are brazed onto one insert. Price per edge is lower than normal single-corner, single-use inserts.
- Coated SUMIBORON is available as a double-faced insert. Diamond type inserts have 4 cutting edges and triangular inserts have 6 cutting edges.
- Multi-cornered one-use type has G-class tolerance with side faces ground. In addition, all edges are numbered for easy cutting edge management.

One-Use Wiper Inserts

WG / WH Type



■ **Features**

- SUMIBORON single-use insert with wiper edge for hardened steel machining.
- Excellent surface roughness comparable to grinding.
- Improved machining efficiency is possible with higher speeds and feeds.
- Lineup of low feed WG types and high feed WH types.

One-Use Insert With Chipbreaker

Break Master FV Type / LV Type / SV Type



■ **Features**

- One-use SUMIBORON insert with chipbreaker. SV type is ideal for carburised layer removal, while LV and FV types are ideal for hardened steel machining.
- Chipbreaker incorporated on the CBN cutting edge to maintain chip control capabilities throughout the machining process.
- Unique chipbreaker design can be applied to both hardened and non-hardened parts with effective chip control.

Solid SUMIBORON



■ **Features**

- BNS800 realizes a 100% solid CBN structure. With no brazed portion, this grade is excellent for the roughing of cast iron at large depths of cut.

FV / LV / SV

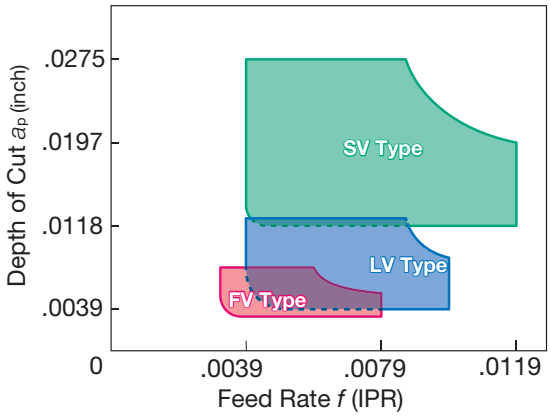




■ Features

- One-use CBN - SUMIBORON insert with chipbreaker. SV type is ideal for carburized layer removal, while FV and LV types are ideal for hardened steel machining.
- Chipbreaker incorporated on the CBN cutting edge to maintain chip control capabilities throughout the machining process.
- Unique chipbreaker design can be applied to both hardened and non-hardened parts with effective chip control.
- SV lineup includes Coated CBN - SUMIBORON BNC2010/ BNC160 for good wear resistance and BNC2020/BNC200, which enables high efficiency machining.
- FV and LV lineup include Coated CBN - SUMIBORON BNC2020/BNC200 for general purpose, BNC2010/BNC160 for good wear resistance and CBN - SUMIBORON BN2000 also for general purpose.

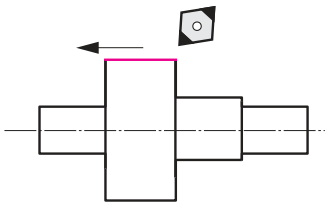
■ Application Range



*For hardened parts (above 50HRC), use a depth of cut below .0197".

■ Application Examples

External Carburized Layer Removal



· No constant stoppages or incorrect part dimension problems and the chips are small.
· Double the tool life of competitors' CBN.

Break Master SV



Tool Life = 200 pcs

BNC200 (No Breaker)



Tool Life = 200 pcs

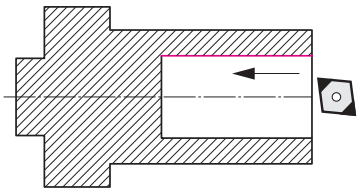
Competitor CBN (with chipbreaker)



Tool Life = 100 pcs

Part Material: Low Alloy Steel Carburized Steel (Shaft)
Tool Cat. No.: 4NC-CNGG432SV (BNC200)
Cutting Conditions: v_c=500 SFM, f = .0059 IPR
a_p = .0197", 2 Passes Wet

Finishing of Hardened Steel



· Improved chip control for internal diameter machining

Break Master FV



Tool Life = 300 pcs

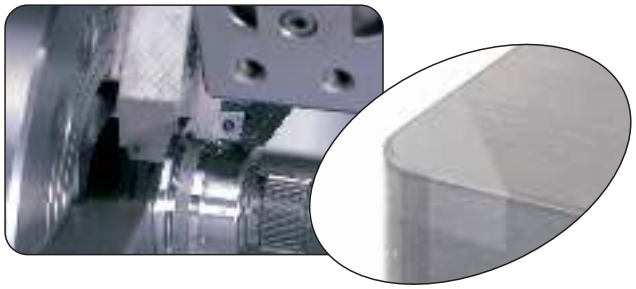
BNC200 (No Breaker)



Tool Life = 300 pcs

Part Material: Carburized Steel 60HRC (Automotive Component)
Tool Cat. No.: 2NC-CCGT21.51FV (BNC200)
Cutting Conditions: v_c= 265 SFM, f = .0031 IPR
a_p= .0059" Wet

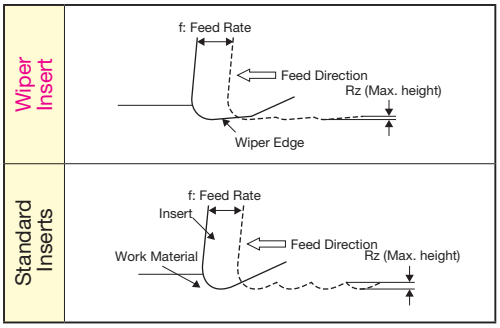
WG / WH



■ Features

- CBN - SUMIBORON single-use insert with wiper edge for hardened steel machining.
- Excellent surface roughness comparable to grinding.
- Improved machining efficiency with higher speeds and feeds.
- Lineup of standard feed: WG and high feed: WH.

■ Wiper Insert Operation



■ Wiper Insert Finished Surface Roughness

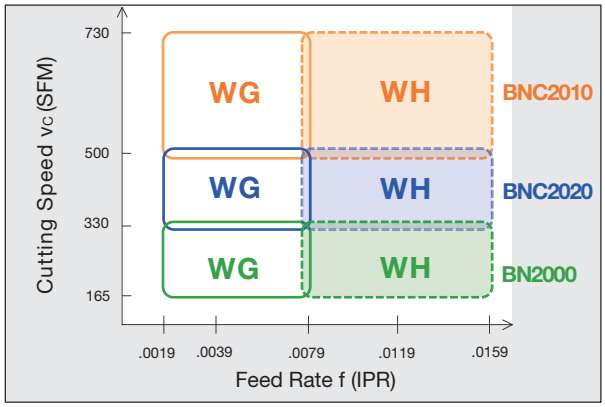
	Wiper Insert (WG / WH)		Standard Insert (No Wiper, .0313" Nose Radius)	
	Low Feed Machining (f= .0039 IPR)	High Feed Cutting (f= .0117)	Low Feed Machining (f= .0039 IPR)	High Feed Cutting (f= .0117)
Surface Roughness	WG	WH		
Surface Roughness Rz (Max. Height)	0.63µm	1.39µm	1.98µm	9.20µm

The wiper insert offers good finished surface roughness and improved machining efficiency.

■ Recommended Cutting Conditions

(Surface Roughness Standard 1.6s to 3.2s)

- For optimum effectiveness, use wiper inserts for continuous cutting. Note that a nose radius insert should be used for profiling.
- Chattering and undulation may occur. Use work material and machines with high rigidity.



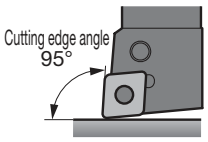
WG: Feed Rate f = .0079 IPR or Less Recommended (Finished Surface Roughness Rz = 1.6 to 3.2µm)
WH: Feed Rate f = .0079 IPR or More Recommended (Finished Surface Roughness Rz = 1.6 to 3.2µm)
Lineup of 5 grades to suit each cutting speed (BN2000, BNC2010, BNC2020, BNC200, BNC160)

■ Precautions when Using Wiper Inserts

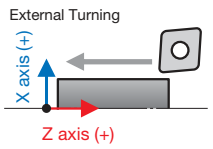
CNGA / CCGA / WNGA

WG Type / WH Type Wiper Insert

· Use a holder with a cutting edge angle of 95°.
· Machining program modification required CNGA / CCGA/ WNGA wiper inserts do not comply with the ISO standard. Correct the cutting edge position (tool offset) as explained on the right.



CNGA / CCGA / WNGA Wiper Insert Cutting Edge Position Offset (WG / WH)

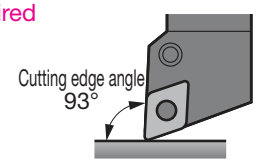


Nose Radius	Type	X-axis direction	Z-axis direction
.0156"	WG	-.0008"	-.0008"
	WH	-.0024"	-.0024"
.0313" / .0469"	WG	-.0004"	-.0004"
	WH	-.0024"	-.0024"

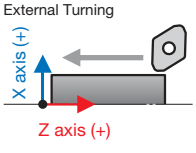
DNGA / DCGA

WG Type / WH Type Wiper Insert

· Use a holder with a cutting edge angle of 93°.
· Machining program modification required DNGA / DCGA wiper inserts do not comply with the ISO standard. Correct the cutting edge position (tool offset) as explained on the right.



DNGA / DCGA Wiper Insert Cutting Edge Position Offset (WG / WH)



Nose Radius	Type	X-axis direction	Z-axis direction
.0156"	WG	-.0067"	-.0004"
	WH	-.0276"	-.0024"
.0313"	WG	-.0020"	0
	WH	-.0228"	-.0020"

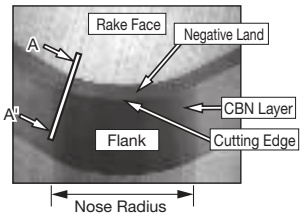
Note: Unlike other contour shapes, the DNGA / DCGA can only exhibit wiper effect for outer and inner diameter machining, and cannot be used for facing.

CBN Insert Edge Specification

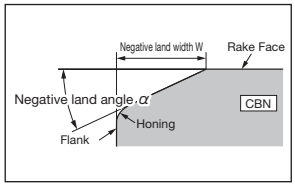
CBN Insert Edge Treatment

All SUMIBORON inserts are enhanced with the optimum cutting edge preparation for the various grades and geometries (shown on the right). This is to avoid cutting edge fracture caused by the heavy loads generated during the machining of high-hardness materials such as hardened steel. As the pioneer of CBN tools, SUMIBORON's vast selection of grades and edge treatment combinations makes Sumitomo the world leader for hardened steel machining.

Close-up of cutting edge



Section A-A'



■ CBN Insert Edge Specification Overview

Series	Part Material	Grade	Negative/ Positive	Standard				Low-resistance L / High-Efficiency E					Strong Edge H				
				Edge Specification Identification Code	α	W	Honing	Notation	Edge Specification Identification Code	α	W	Honing	Notation	Edge Specification Identification Code	α	W	Honing
Uncoated CBN SUMIBORON	Hardened Steel	BNX10	Negative/Positive	T01225	25°	0.12	No	—	—	—	—	—	—	—	—	—	—
		BNX20	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215*	15°	0.12	No	—	—	—	—	—
		BNX25	Negative/Positive	S01725	25°	0.17	Yes	—	—	—	—	—	—	—	—	—	—
		BN1000	Negative/Positive	S01225	25°	0.12	Yes	—	—	—	—	—	—	—	—	—	—
		BN2000	Negative/Positive	S01225	25°	0.12	Yes	LT	T01215	15°	0.12	No	HS	S01235	35°	0.12	Yes
		BN350	Negative	T01225	25°	0.12	No	—	—	—	—	—	HT	T01235	35°	0.12	No
			Positive	T01235	35°	0.12	No						—	—	—	—	—
	Cast Iron Powdered Metal Exotic Alloy	BN500	Negative/Positive	T01215	15°	0.12	No	—	—	—	—	—	—	—	—	—	—
		BN700	Negative/Positive	T01215	15°	0.12	No	LF	Sharp Edge	0°	0	No	HS	S01225	25°	0.12	Yes
		BN7000	Negative/Positive	T01215	15°	0.12	No	LF	Sharp Edge	0°	0	No	HS	S01225	25°	0.12	Yes
		BN7500	Negative/ Positive	T01215	15°	0.12	No	LF	Sharp Edge	0°	0	No	HS	S00525	25°	0.05	Yes
								LE	Sharp Edge	0°	0	Yes					
								LS	S00715	15°	0.07	Yes					
		BNS800	Negative	T02020	20°	0.20	No	LF	Sharp Edge	0°	0	No	—	—	—	—	—
Coated CBN SUMIBORON	Hardened Steel	BNC2010	Negative/Positive	S01225	25°	0.12	Yes	LE	Sharp Edge	0°	0	Yes	HS	S01730	30°	0.17	Yes
		BNC2020	Negative/ Positive	S01225	25°	0.12	Yes	LT	T00515	15°	0.05	No	HS	S02735	35°	0.27	Yes
								ES	S00535	35°	0.05	Yes					
		BNC100	Negative/Positive	S01225	25°	0.12	Yes	LS	S01715	15°	0.17	Yes	—	—	—	—	—
		BNC160	Negative/Positive	S01225	25°	0.12	Yes	LS	S01020	20°	0.10	Yes	HS	S01730	30°	0.17	Yes
		BNC200	Negative/Positive	S01225	25°	0.12	Yes	LS	S01015	15°	0.10	Yes	HS	S01735	35°	0.17	Yes
		BNC300	Negative/Positive	S01225	25°	0.12	Yes	LS	S00515	15°	0.05	Yes	HS	S01735	35°	0.17	Yes
	Cast Iron	BNC500	Negative/Positive	S01215	15°	0.12	Yes	—	—	—	—	—	HS	S01225	25°	0.12	Yes
Binderless CBN	Cast Iron/Exotic Alloy Cemented Carbides and Hard Brittle Materials	NCB100	Negative/Positive	T01215	15°	0.12	No	—	—	—	—	—	—	—	—	—	—

*BNX20 inserts with an inscribed circle of less than ø4.76 will have an identification code of T00715.

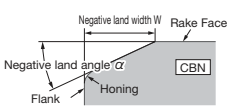
■ Insert Edge Specification with Wiper / Chipbreaker

Series	Work Material	Grade	Other Types					
			Notation	Edge Specification Identification Code	α	W	Honing	Type
Uncoated CBN SUMIBORON	Hardened Steel	BN2000	WG	S01215	15°	0.12	Yes	Wiper
			WH	S01215	15°	0.12	Yes	Wiper
			N-FV	—	0°	0	Yes	With Chipbreaker
			N-LV	S00535	35°	0.05	Yes	With Chipbreaker
	Cast Iron Exotic Alloy	BNS800	W	T02020	20°	0.20	No	Wiper
			LFW	Sharp Edge	0°	0	No	Wiper Sharp Edge
Coated CBN SUMIBORON	Hardened Steel	BNC2010 BNC2020	WG	S01215	15°	0.12	Yes	Wiper
			WH	S01215	15°	0.12	Yes	Wiper
			N-FV	—	0°	0	Yes	With Chipbreaker
			N-LV	S00535	35°	0.05	Yes	With Chipbreaker
			N-SV	S01235	35°	0.12	Yes	With Chipbreaker
		BNC100	W	S01715	15°	0.17	Yes	Wiper
		BNC160 BNC200	WG	S01215	15°	0.12	Yes	Wiper
			WH	S01215	15°	0.12	Yes	Wiper
			W	S01215	15°	0.12	Yes	Wiper
			N-FV	—	0°	0	Yes	With Chipbreaker
			N-LV	S00535	35°	0.05	Yes	With Chipbreaker
			N-SV	S01235	35°	0.12	Yes	With Chipbreaker
	Cast Iron	BNC500	W	S01215	15°	0.12	Yes	Wiper

■ Edge Specification Identification Code

Edge Treatment Notation				
No	Standard Cutting Edge			
L	Low Resistance	+	F	Sharp Edge
E	High Efficiency		E	Honing
H	Strong Edge		T	Negative Land
			S	Negative Land + Honing
WG/WH/W	Wiper			
N-FV/N-LV/ N-SV	With Chipbreaker			

● Edge specification identification code



S 0 1 2 2 5

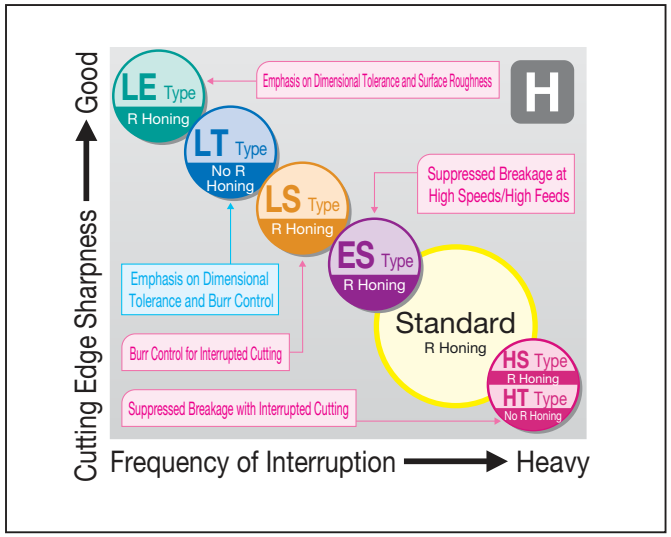
Negative land width
Negative land angle
Cutting Edge Shape T : Negative land
S : Negative land + honing

Ex.: S01225
→ 25°/0.12mm Negative Land with Honing

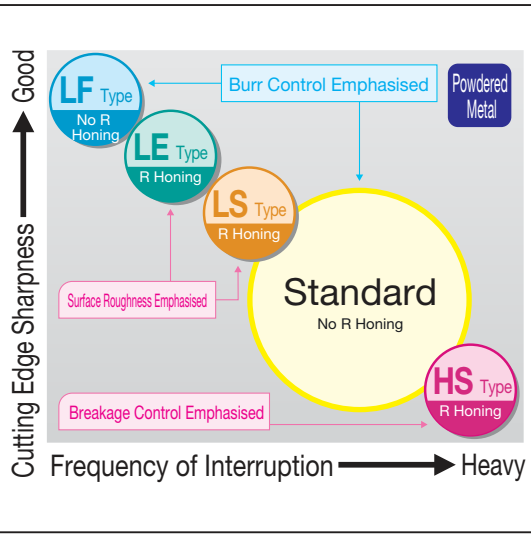
CBN Insert Edge Specification

■ Edge Treatment Performance

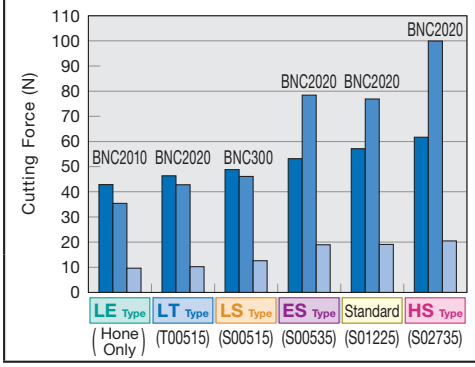
Machining of Hardened Steel



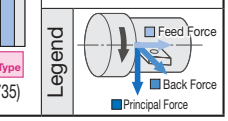
Powdered Metal Machining



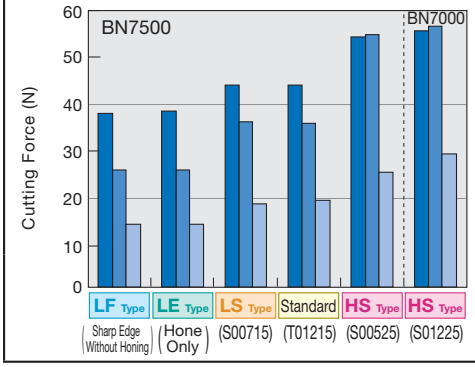
Comparison of Cutting Force with Coated CBN (v_c = 330 SFM)



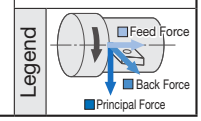
Part Material: Alloy Structural Steel
Tool Cat. No. DNGA432
Cutting Conditions:
v_c = 330 SFM
f = .0039 IPR
a_p = .0039"
Dry



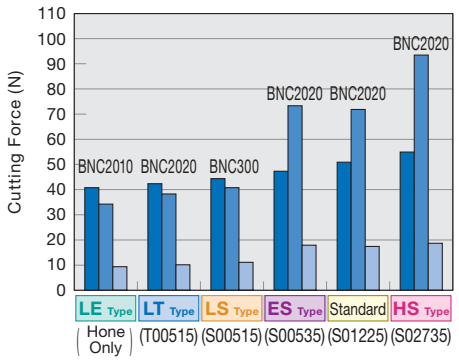
Cutting Force Comparison (Feed Rate: f = .0019 IPR)



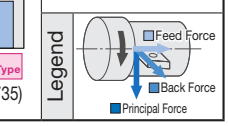
Part Material: Alloy Structural Steel
Tool Cat. No. CNGA432
Cutting Conditions:
v_c = 660 SFM
f=.0019 IPR
a_p = .0079"
Dry



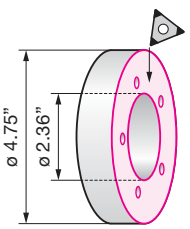
Comparison of Cutting Force with Coated CBN (v_c = 660 SFM)



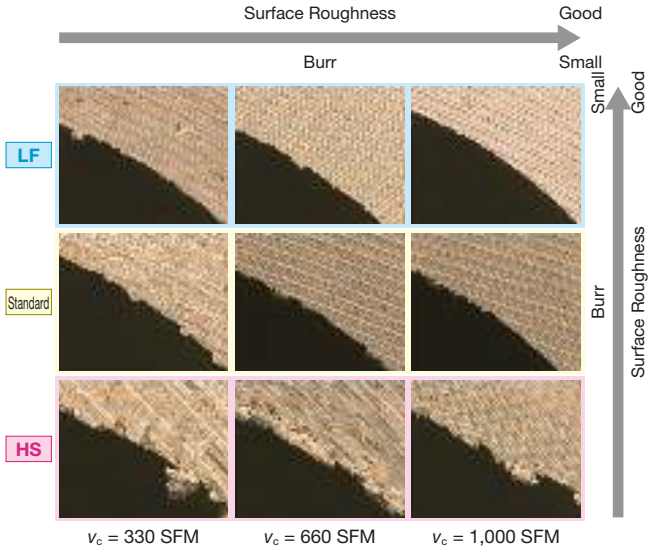
Part Material: Low Alloy Steel
Tool Cat. No.: DNGA432
Cutting Conditions:
v_c = 660 SFM
f = .0039 IPR
a_p = .0039"
Dry



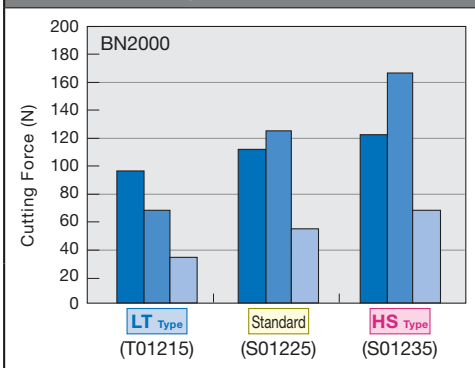
Relationship between Cutting Edge Treatment and Machining Quality



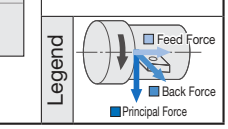
Part Material: Powder Metal 90HRB
Tool Cat. No.: 3NU-TNGA332 (BN7500)
Edge Specification: LF Type, Standard, HS Type
Cutting Conditions: v_c = 330, 660, 1,000 SFM
f = .0039 IPR
a_p = .0079"
Wet



Comparison of Cutting Force for Uncoated SUMIBORON



Part Material: Bearing Steel
Tool Cat. No.: CNGA120408
Cutting Conditions:
v_c = 660 SFM
f = .0039 IPR
a_p = .0079"
Dry



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

CN■■43● Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Recommended Application

		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✖	●	◕	◔	✖								
	Sintered Components										◕			●		

Applicable External Holders ☞ C5 to C10 Applicable Internal Holders ☞ E12 to E14

Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
		NUCNMA430.5	**NU-CNMA120402**			.0078	.0984					●									—	—
		NUCNMA431	**NU-CNMA120404**			.0156	.0984	▲	●		●	●	●	●		★	★	★	▲		—	—
		NUCNMA432	**NU-CNMA120408**	1	1	.0313	.0945	●	●		●	●	●	●		★	★	★			—	—
	Standard	**NUCNMA433**	**NU-CNMA120412**			.0469	.0906	●	●		●	●	●	●	▲	★	★	★	●		—	—
		T-NUCNMA431	**T-NU-CNMA120404**			.0156	.0984				★	★		★		★					—	—
		T-NUCNMA432	**T-NU-CNMA120408**	10	1	.0313	.0945				★	★		★		★					—	—
		T-NUCNMA433	**T-NU-CNMA120412**			.0469	.0906				★	★		★		★					—	—
		NUCNGA431	**NU-CNGA120404** New			.0156	.0984														—	★
	Standard	**NUCNGA432**	**NU-CNGA120408** New	1	1	.0313	.0945														—	★
		NUCNGA433	**NU-CNGA120412** New			.0469	.0906														—	★
		NSCNMA431	**NS-CNMA120404**			.0156	.0984			●	—	—	—	—	—	—	—	—	—	—	—	—
	Standard	**NSCNMA432**	**NS-CNMA120408**	1	1	.0313	.0945			●	—	—	—	—	—	—	—	—	—	—	—	—
		NSCNMA433	**NS-CNMA120412**			.0469	.0906			▲	—	—	—	—	—	—	—	—	—	—	—	—

*Depth of cut for single-use types is 0.0197 inch or less.

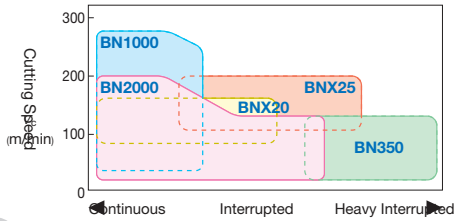
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
		2NUCNGA431	**2NU-CNGA120404**			.0156	.0984	●	●		●	●	●	●			●	★		●	—	
		2NUCNGA432	**2NU-CNGA120408**	1	2	.0313	.0945		●		●	●	●	●			●	★		●	—	
	Standard	**2NUCNGA433**	**2NU-CNGA120412**			.0469	.0906		●		●	●	●	●			●	★		●	—	
		T-2NUCNGA431	**T-2NU-CNGA120404**			.0156	.0984					★									—	
		T-2NUCNGA432	**T-2NU-CNGA120408**	10	2	.0313	.0945					★		★			★	★			—	
		T-2NUCNGA433	**T-2NU-CNGA120412**			.0469	.0906					★									—	
Wiper Insert	S01215	**2NUCNGA431W**	**2NU-CNGA120404W**	1	2	.0156	.0945											▲			—	
		2NUCNGA432W	**2NU-CNGA120408W**			.0313	.0906							●				▲			—	
		2NUCNGA431WG	**2NU-CNGA120404WG**			.0156	.0945					●								●	—	
	S01215	**2NUCNGA432WG**	**2NU-CNGA120408WG**	1	2	.0313	.0945					●								●	—	
		2NUCNGA433WG	**2NU-CNGA120412WG**			.0469	.0906					★									—	
Wiper Insert		**2NUCNGA431WH**	**2NU-CNGA120404WH**			.0156	.0945					●								●	—	
	S01215	**2NUCNGA432WH**	**2NU-CNGA120408WH**	1	2	.0313	.0906					●								●	—	
		2NUCNGA433WH	**2NU-CNGA120412WH**			.0469	.0866					★									—	

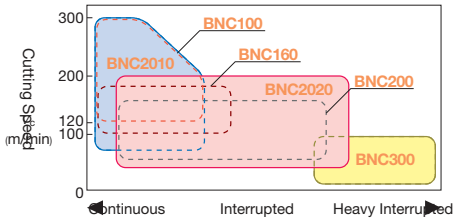
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



C 80° Diamond



CN■■43● Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Applicable External Holders ☞ C5 to C10 Applicable Internal Holders ☞ E12 to E14

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended General Cutting ● 1st Recommended ○ 2nd Recommended Interrupted Cutting ● 1st Recommended ○ 2nd Recommended

Recommended Application		Uncoated CBN														Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✖								
	Sintered Components										◕			●		

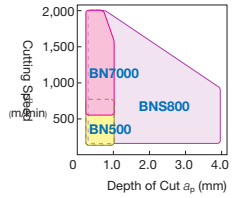
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
 Break Master	Honing	2NUCNGG431FV	2NU-CNGM120404N-FV	1	2	.0156	.0984					●										
		2NUCNGG432FV	2NU-CNGM120408N-FV			.0313	.0945					●										
 Break Master	S00535	2NUCNGG431LV	2NU-CNGM120404N-LV	1	2	.0156	.0984					●										
		2NUCNGG432LV	2NU-CNGM120408N-LV			.0313	.0945					●										
		2NUCNGG433LV	2NU-CNGM120412N-LV			.0469	.0906					★										
 Low Cutting Force	Sharp Edge	2NUCNGA431LF	2NU-CNGA120404LF	1	2	.0156	.0984										●	★		●		
		2NUCNGA432LF	2NU-CNGA120408LF			.0313	.0945										●	★		●		
 Low Cutting Force	Honing	2NUCNGA431LE	2NU-CNGA120404LE	1	2	.0156	.0984													●		
		2NUCNGA432LE	2NU-CNGA120408LE			.0313	.0945													●		
 Sharper Edge	T01215	2NUCNGA431LT	2NU-CNGA120404LT	1	2	.0156	.0984				●	●										—
		2NUCNGA432LT	2NU-CNGA120408LT			.0313	.0945				●	●										—
		2NUCNGA433LT	2NU-CNGA120412LT			.0469	.0906				●	●										—
 General-purpose for Continuous Cutting	S00715	2NUCNGA431LS	2NU-CNGA120404LS	1	2	.0156	.0984													●		
		2NUCNGA432LS	2NU-CNGA120408LS			.0313	.0945													●		
 Strong Edge	T01235	2NUCNGA431T	2NU-CNGA120404HT	1	2	.0156	.0984							★								—
		2NUCNGA432T	2NU-CNGA120408HT			.0313	.0945							★								—
		2NUCNGA433T	2NU-CNGA120412HT			.0469	.0906							★								—

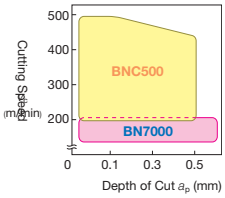
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

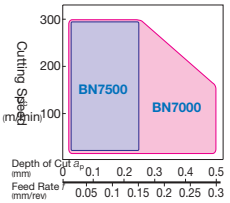
(C) Gray Cast Iron



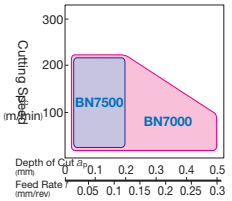
(D) Ductile Cast Iron



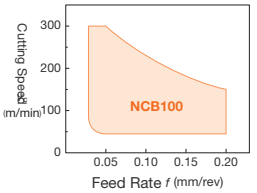
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✲ 2nd Recommended

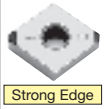
CN■■43● Uncoated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron								○	●				◕		
S	Exotic Alloy									●				◕	◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components									◕				●		

Applicable External Holders ☞ C5 to C10 Applicable Internal Holders ☞ E12 to E14

Multi-Cornered Single-Use / Negative (With Hole)

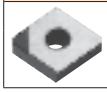
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
 Strong Edge	BN2000→S01235 BN7000→S01225 BN700→S01225 BN7500→S00525	**2NUCNGA431HS** **2NUCNGA432HS** **2NUCNGA433HS**	**2NU-CNGA120404HS** **2NU-CNGA120408HS** **2NU-CNGA120412HS**	1	2	.0156 .0313 .0469	.0984 .0945 .0906					●					● ★ ● ▲ ★ ▲					

*Depth of cut for single-use types is 0.0197inch or less.

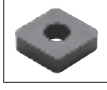
Multi-Cornered / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**2MDCNGA432** **2MDCNMA431** **2MDCNMA432** **2MDCNMA433**	**2MD-CNGA120408** **2MD-CNMA120404** **2MD-CNMA120408** **2MD-CNMA120412**	1	2	.0313 .0156 .0313 .0469	.1339 .1378 .1339 .1102										●					—

Negative (With Hole)

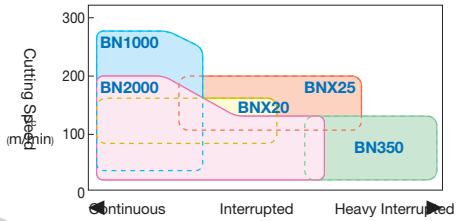
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**CNMA431** **CNMA432** **CNMA433**	**CNMA120404** **CNMA120408** **CNMA120412**	1	1	.0156 .0313 .0469	.1811 .1772 .1732		● ● ●			★ ● ★	● ● ●			★ ★ ★	● ●	★ ★				— — —

Solid / Negative (With Hole)

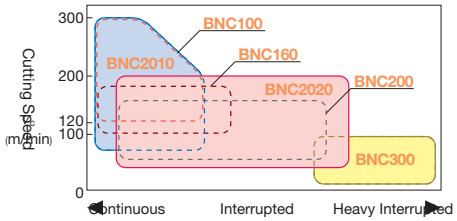
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**CNGA432** **CNGA433**	**CNGA120408** **CNGA120412**	1	Solid	.0313 .0469	.5077 .5077	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	● ●	— —

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



CN■■43● Coated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	● ◔ ✱ ○ ○
	Sintered Components	

Applicable External Holders ☞ C5 to C10 Applicable Internal Holders ☞ E12 to E14

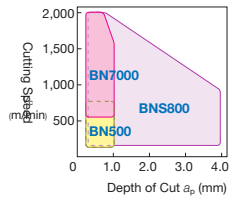
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	2NCCNGA431	2NC-CNGA120404	1	2	.0156	.0984	★	★				★			
		2NCCNGA432	2NC-CNGA120408			.0313	.0945	●	●	●	●	●	●			
		2NCCNGA433	2NC-CNGA120412			.0469	.0906	●	●	●	●	●	●			
		2NCCNGA434*	2NC-CNGA120416*			.0625	.1299	★	★	★		★	★			
		2NCCNGA435*	2NC-CNGA120420*			.0787	.1260	★	★	★		★	★			
		2NCCNGA436*	2NC-CNGA120424*			.0938	.1220	★	★	★		★	★			
	Standard	4NCCNGA430.5	4NC-CNGA120402	1	4	.0078	.0984	★	★							
		4NCCNGA431	4NC-CNGA120404			.0156	.0984	●	●	●	●	●	●	●	●	★
		4NCCNGA432	4NC-CNGA120408			.0313	.0945	●	●	●	●	●	●	●	●	★
		4NCCNGA433	4NC-CNGA120412			.0469	.0906	●	●	●	●	●	●		●	★
		4NCCNGA434*	4NC-CNGA120416*			.0625	.1299	★	★	★		★	★			
		4NCCNGA435*	4NC-CNGA120420*			.0787	.1260	★	★	★		★	★			
		4NCCNGA436*	4NC-CNGA120424*			.0938	.1220	★	★	★		★	★			
 Wiper Insert	S01215	4NCCNGA431WG	4NC-CNGA120404WG	1	4	.0156	.0945	●	●			●	●			
		4NCCNGA432WG	4NC-CNGA120408WG			.0313	.0945	●	●			●	●			
		4NCCNGA433WG	4NC-CNGA120412WG			.0469	.0906	★	●			★	●			
 Wiper Insert	S01215	4NCCNGA431WH	4NC-CNGA120404WH	1	4	.0156	.0945	●	●			▲	●			
		4NCCNGA432WH	4NC-CNGA120408WH			.0313	.0906	●	●			●	●			
		4NCCNGA433WH	4NC-CNGA120412WH			.0469	.0866	●	●			★	★			
 Wiper Insert	BNC100→S01715 BNC160→S01215 BNC200→S01215 BNC500→S01215	4NCCNGA431W	4NC-CNGA120404W	1	4	.0156	.0984	●	●	●	●	●	●	▲	●	
		4NCCNGA432W	4NC-CNGA120408W			.0313	.0945	●	●	●	●	●	●	●	●	★
		4NCCNGA433W	4NC-CNGA120412W			.0469	.0906	●	●	●	●	●	●			
 Break Master	Honing	4NCCNGG431FV	4NC-CNGG120404N-FV	1	4	.0156	.0984	★	●			●	●			
		4NCCNGG432FV	4NC-CNGG120408N-FV			.0313	.0945	●	●			●	●			
		4NCCNGG433FV	4NC-CNGG120412N-FV			.0469	.0906	★	★			★	★			
 Break Master	S00535	4NCCNGG431LV	4NC-CNGG120404N-LV	1	4	.0156	.0984	●	●			●	●			
		4NCCNGG432LV	4NC-CNGG120408N-LV			.0313	.0945	●	●			●	●			
		4NCCNGG433LV	4NC-CNGG120412N-LV			.0469	.0906	★	★			★	★			
 Break Master	S01235	4NCCNGG432SV	4NC-CNGG120408N-SV	1	4	.0313	.0945		●			●	●			
		4NCCNGG433SV	4NC-CNGG120412N-SV			.0469	.0906	●	●			★	●			

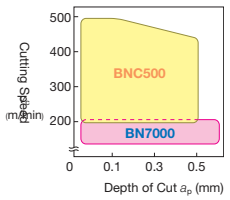
*For use with the CBN holders for high-efficiency machining shown on page L111.

CBN Application Range Map

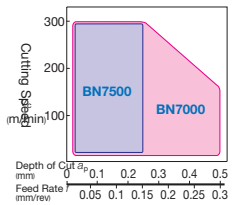
(C) Gray Cast Iron



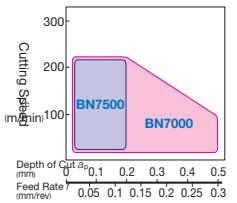
(D) Ductile Cast Iron



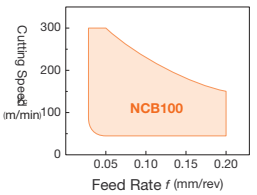
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

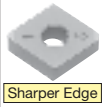
Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✖	○	○				
	Sintered Components									

CN■■43● Coated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

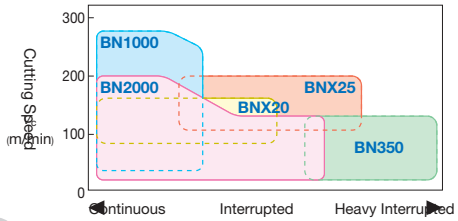
Applicable External Holders ☞ C5 to C10 Applicable Internal Holders ☞ E12 to E14

Multi-Cornered Single-Use / Negative (With Hole)

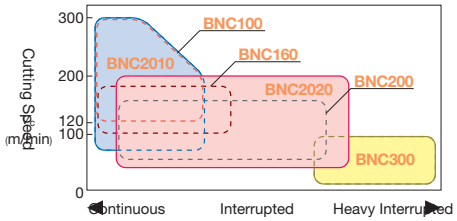
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
 Wiper Insert Break Master	S01235	4NCCNGG432SVW	4NC-CNGG120408N-SVW	1	4	.0313	.0906						●			
 Low Cutting Force	Honing	2NCCNGA431LE	2NC-CNGA120404LE	1	2	.0156	.0984	★								
		2NCCNGA432LE	2NC-CNGA120408LE			.0313	.0945	★								
		2NCCNGA433LE	2NC-CNGA120412LE			.0469	.0906	★								
 Sharper Edge	T00515	2NCCNGA430.5LT	2NC-CNGA120402LT	1	2	.0078	.0984		★							
		2NCCNGA431LT	2NC-CNGA120404LT			.0156	.0984		●							
		2NCCNGA432LT	2NC-CNGA120408LT			.0313	.0945		●							
		2NCCNGA433LT	2NC-CNGA120412LT			.0469	.0906		●							
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	2NCCNGA431LS	2NC-CNGA120404LS	1	2	.0156	.0984			★						
		2NCCNGA432LS	2NC-CNGA120408LS			.0313	.0945			★	●		●			
		2NCCNGA433LS	2NC-CNGA120412LS			.0469	.0906			★	●		●			
 Strong Edge	S01730	2NCCNGA432HS	2NC-CNGA120408HS	1	2	.0313	.0945	●	●	●		●	●			
		2NCCNGA433HS	2NC-CNGA120412HS			.0469	.0906	●	●	●		●	●			
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	4NCCNGA431LS	4NC-CNGA120404LS	1	4	.0156	.0984				●	●	★			
		4NCCNGA432LS	4NC-CNGA120408LS			.0313	.0945				●	●	●			
		4NCCNGA433LS	4NC-CNGA120412LS			.0469	.0906				●	●	★			
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735 BNC300→S01735 BNC500→S01225	4NCCNGA431HS	4NC-CNGA120404HS	1	4	.0156	.0984	●	●	★		★	●			★
		4NCCNGA432HS	4NC-CNGA120408HS			.0313	.0945	●	●	★		●	●			★
		4NCCNGA433HS	4NC-CNGA120412HS			.0469	.0906	●	●	★		●	●			★
 High-Efficiency	S00535	4NCCNGA431ES	4NC-CNGA120404ES	1	4	.0156	.0984		★							
		4NCCNGA432ES	4NC-CNGA120408ES			.0313	.0945		●							
		4NCCNGA433ES	4NC-CNGA120412ES			.0469	.0906		●							

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



C 80° Diamond



CNG32● Uncoated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	—
	Thickness	.1250		

Applicable External Holders ☞ L111

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ● ●
S	Exotic Alloy	● ◔ ●
H	Hardened Steel	○ ◔ ✲ ● ◔ ◔ ✱
	Sintered Components	◔ ●

Solid / Negative (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100 (Binderless CBN)
	Standard	**CNG322**	**CNGN090308**	1	Solid	.0313	.3740	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		CNG323	**CNGN090312**			.0469	.3701	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
 Low Cutting Force	Sharp Edge	**CNG322LF**	**CNGN090308LF**	1	Solid	.0313	.3740	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		CNG323LF	**CNGN090312LF**			.0469	.3701	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

CNG43● Uncoated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	—
	Thickness	.1875		

Applicable External Holders ☞ L109

Recommended Application		
K	Cast Iron	○ ● ●
S	Exotic Alloy	● ◔ ●
H	Hardened Steel	○ ◔ ✲ ● ◔ ◔ ✱
	Sintered Components	◔ ●

Solid / Negative (Dimple Lock)

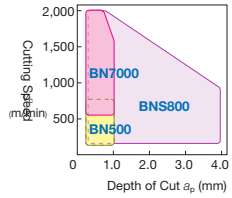
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100 (Binderless CBN)
	Standard	**CNGX433**	**CNGX120412**	1	Solid	.0469	.4961	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		CNGX434	**CNGX120416**			.0625	.4921	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—

Solid / Negative (Without Hole)

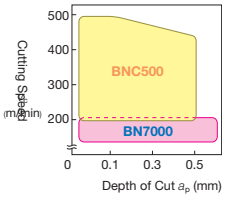
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100 (Binderless CBN)
	Standard	**CNG432**	**CNGN120408**	1	Solid	.0313	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		CNG433	**CNGN120412**			.0469	.4961	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		CNG434	**CNGN120416**			.0625	.4921	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

CBN Application Range Map

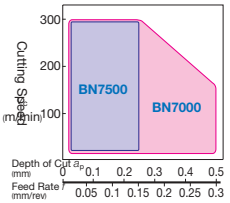
(C) Gray Cast Iron



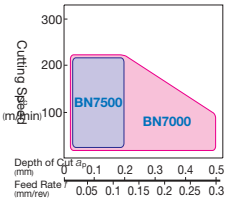
(D) Ductile Cast Iron



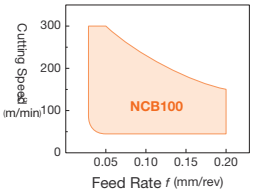
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ●: 1st Recommended ○: 2nd Recommended; General Cutting ◕: 1st Recommended ◔: 2nd Recommended; Interrupted Cutting ✱: 1st Recommended ✲: 2nd Recommended

CCEW03X1● Uncoated

Dimensions (inch)				
	Inscribed Circle	.1378	Hole Dia.	.0748
	Thickness	.0551		

Applicable Internal Holders ☞ E31, E32

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components										◕			●		

Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
 Low Cutting Force	Sharp Edge	**NU-CCEW03X102LF**	**NU-CCEW03X102LF**	1	1	.0078	.0472										★	★		★	—	

*Depth of cut for single-use types is 0.0197 inch or less.

CCEW04X1● Uncoated

Dimensions (inch)				
	Inscribed Circle	.1693	Hole Dia.	.0906
	Thickness	.0709		

Applicable Internal Holders ☞ E31, E32

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components										◕			●		

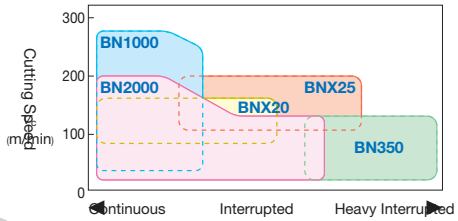
Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
 Low Cutting Force	Sharp Edge	**NU-CCEW04X102LF**	**NU-CCEW04X102LF**	1	1	.0078	.0787										★				—	

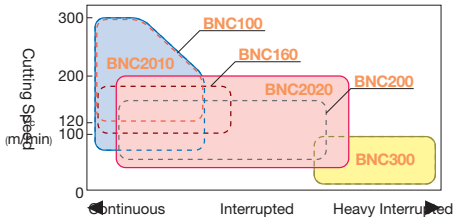
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



C 80° Diamond



CCG■21.5● Uncoated

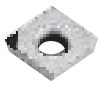
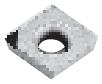
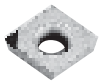
Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1102
	Thickness	.0937		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ◒ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application			Uncoated CBN														Binderless CBN
			BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	K	Cast Iron									○	●				◒	
	S	Exotic Alloy										●				◒	●
	H	Hardened Steel	○	◔	✲	●	◒	◔	✱								
		Sintered Components										◒			●		

Applicable External Holders ☞ C34, D13, D17, D22, D23 Applicable Internal Holders ☞ E30 to E33

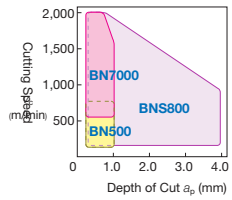
Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUCCGA21.50.5**	**NU-CCGW060202**	1	1	.0078	.0984				★	●	●								—	
		NUCCGA21.51	**NU-CCGW060204**			.0156	.0984 *				●	●	●				★	★			—	★
		NUCCGA21.52	**NU-CCGW060208**			.0313	.0945					●									—	
		T-NUCCGA21.50.5	**T-NU-CCGW060202**	10	1	.0078	.0984					★									—	
		T-NUCCGA21.51	**T-NU-CCGW060204**			.0156	.0984					★									—	
 Sharper Edge	T01215	**NUCCGA21.50.5LT**	**NU-CCGW060202LT**	1	1	.0078	.0984		●			●									—	—
		NUCCGA21.51LT	**NU-CCGW060204LT**			.0156	.0984					●									—	—
		NUCCGA21.52LT	**NU-CCGW060208LT**			.0313	.0945					●									—	—
 Strong Edge	S01235	**NUCCGA21.50.5HS**	**NU-CCGW060202HS**	1	1	.0078	.0984					●									—	
		NUCCGA21.51HS	**NU-CCGW060204HS**			.0156	.0984					●									—	

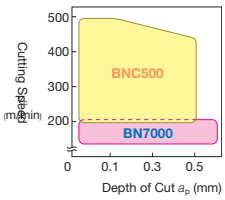
*Use NS (NS-CCGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.
*NCB100 cutting edge length is .0906.

CBN Application Range Map

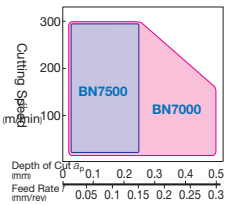
(C) Gray Cast Iron



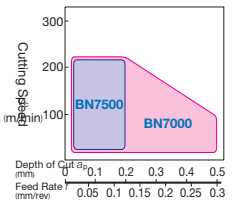
(D) Ductile Cast Iron



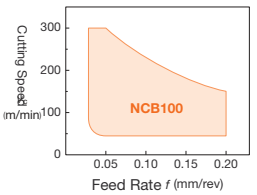
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✲ 2nd Recommended

CCG■21.5● Uncoated

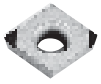
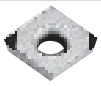
Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1102
	Thickness	.0937		

Recommended Application

		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components										◕			●		

Applicable External Holders ☞ C34 Applicable Internal Holders ☞ E30 to E33

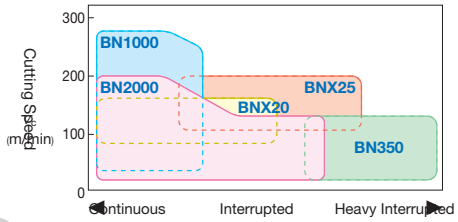
Multi-Cornered Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	2NUCCGA21.50.5	2NU-CCGW060202	1	2	.0078	.0906										●	▲			—	
		2NUCCGA21.51	2NU-CCGW060204			.0156	.0906										●	▲		●	—	
		2NUCCGA21.52	2NU-CCGW060208			.0313	.0945										●	▲		●	—	
 Wiper Insert	S01215	2NUCCGA21.50.5WG	2NU-CCGW060202WG	1	2	.0078	.0906					●								●	—	
		2NUCCGA21.51WG	2NU-CCGW060204WG			.0156	.0906					●								●	—	
		2NUCCGA21.52WG	2NU-CCGW060208WG			.0313	.0945					●								●	—	
 Break Master	Honing	2NUCCGT21.50.5FV	2NU-CCGT060202N-FV	1	2	.0078	.0906					●									—	
		2NUCCGT21.51FV	2NU-CCGT060204N-FV			.0156	.0906					●									—	
		2NUCCGT21.52FV	2NU-CCGT060208N-FV			.0313	.0945					●									—	

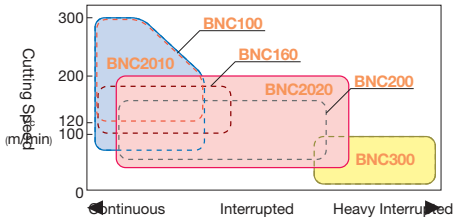
*Use 2NS (2NS-CCGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



C 80° Diamond



CCG■21.5● Coated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1102
	Thickness	.0937		

Applicable External Holders C34 Applicable Internal Holders E30 to E33

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

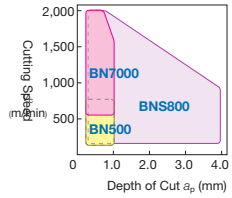
Recommended Application		
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	● ● ✱ ○ ○
	Sintered Components	

Multi-Cornered Single-Use / 7° Positive (With Hole)

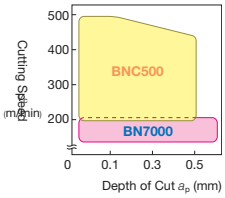
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**NCCCGA21.51**	**NC-CCGW060204**	1	1	.0156	.0906	●	●		●	●	●		●	
	Standard	**2NCCCGA21.50.5**	**2NC-CCGW060202**	1	2	.0078	.0945	★	●				●			★
		2NCCCGA21.51	**2NC-CCGW060204**			.0156	.0906	★	●				●			★
		2NCCCGA21.52	**2NC-CCGW060208**			.0313	.0906	●	●							★
 Wiper Insert	S01215	**2NCCCGA21.50.5WG**	**2NC-CCGW060202WG**	1	2	.0078	.0945	●	●			●	●			
		2NCCCGA21.51WG	**2NC-CCGW060204WG**			.0156	.0906	●	●			●	●			
		2NCCCGA21.52WG	**2NC-CCGW060208WG**			.0313	.0906	●	●			●	●			
 Break Master	Honing	**2NCCCGT21.50.5FV**	**2NC-CCGT060202N-FV**	1	2	.0078	.0906	●	●			●	●			
		2NCCCGT21.51FV	**2NC-CCGT060204N-FV**			.0156	.0906	★	●			●	●			
		2NCCCGT21.52FV	**2NC-CCGT060208N-FV**			.0313	.0906	●	●			●	●			
 Low Cutting Force	Honing	**2NCCCGA21.50.5LE**	**2NC-CCGW060202LE**	1	2	.0078	.0945	★								
		2NCCCGA21.51LE	**2NC-CCGW060204LE**			.0156	.0906	★								
 Sharper Edge	T00515	**2NCCCGA21.50.5LT**	**2NC-CCGW060202LT**	1	2	.0078	.0945		★							
		2NCCCGA21.51LT	**2NC-CCGW060204LT**			.0156	.0906		●							
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	**2NCCCGA21.50.5LS**	**2NC-CCGW060202LS**	1	2	.0078	.0945						★			
		2NCCCGA21.51LS	**2NC-CCGW060204LS**			.0156	.0906						★			

CBN Application Range Map

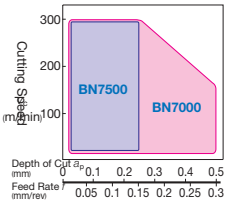
(C) Gray Cast Iron



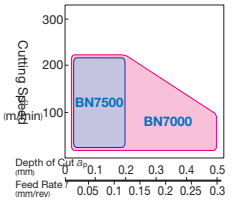
(D) Ductile Cast Iron



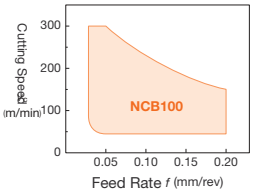
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✱ 2nd Recommended

CCG■32.5● Uncoated

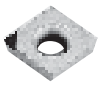
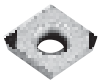
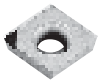
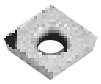
Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

Recommended Application

		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✱	●	◕	◔	✖								
	Sintered Components										●			●		

Applicable External Holders ☞ C34 Applicable Internal Holders ☞ E30 to E33

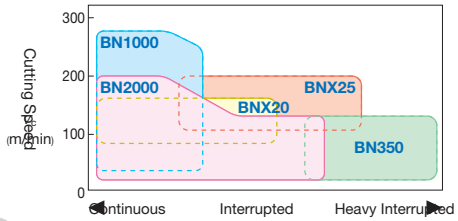
Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	NUCCGA32.50.5	NU-CCGW09T302	1	1	.0078	.0984				●	●	●								—	
		NUCCGA32.51	NU-CCGW09T304			.0156	.0984				●	●	●	●			★	★			—	★
		NUCCGA32.52	NU-CCGW09T308			.0313	.0945					●									—	★
		T-NUCCGA32.50.5	T-NU-CCGW09T302	10	1	.0078	.0984					★									—	
		T-NUCCGA32.51	T-NU-CCGW09T304			.0156	.0984					★									—	
 Break Master	Honing	2NUCCGT32.50.5LV	2NU-CCGT09T302N-LV	1	2	.0078	.0906					●									—	
 Sharper Edge	T01215	NUCCGA32.50.5LT	NU-CCGW09T302LT	1	1	.0078	.0984					●									—	—
		NUCCGA32.51LT	NU-CCGW09T304LT			.0156	.0984					●									—	—
		NUCCGA32.52LT	NU-CCGW09T308LT			.0313	.0945					●									—	—
 Strong Edge	S01235	NUCCGA32.50.5HS	NU-CCGW09T302HS	1	1	.0078	.0984					●									—	
		NUCCGA32.51HS	NU-CCGW09T304HS			.0156	.0984					●									—	
		NUCCGA32.52HS	NU-CCGW09T308HS			.0313	.0945					●									—	

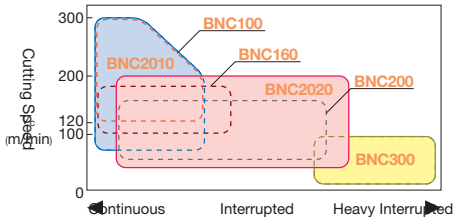
*Use NS (NS-CCGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



C 80° Diamond



CCG■32.5● Uncoated

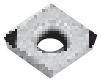
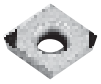
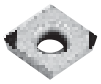
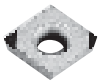
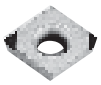
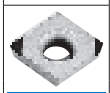
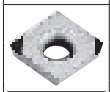
Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

Applicable External Holders C34 Applicable Internal Holders E30 to E33

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ● 1st Recommended ○ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ●
S	Exotic Alloy	●
H	Hardened Steel	○ ●
	Sintered Components	● ●

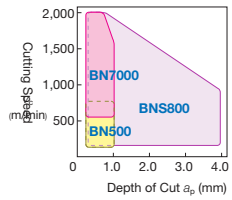
Multi-Cornered Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	2NUCCGA32.51	2NU-CCGW09T304	1	2	.0156	.0984				●			●			●	▲		●	—	
		2NUCCGA32.52	2NU-CCGW09T308			.0313	.0945				●			●			●	▲		●	—	
 Wiper Insert	S01215	2NUCCGA32.51W	2NU-CCGW09T304W	1	1	.0156	.0945											▲			—	
 Wiper Insert	S01215	2NUCCGA32.50.5WG	2NC-CCGW09T302WG	1	2	.0078	.0984					●								●	—	
		2NUCCGA32.51WG	2NU-CCGW09T304WG			.0156	.0945					●								●	—	
		2NUCCGA32.52WG	2NU-CCGW09T308WG			.0313	.0945					●								●	—	
 Wiper Insert	S01215	2NUCCGA32.51WH	2NU-CCGW09T304WH	1	2	.0156	.0945					★									—	
		2NUCCGA32.52WH	2NU-CCGW09T308WH			.0313	.0906					★									—	
 Break Master	Honing	2NUCCGT32.51FV	2NU-CCGT09T304N-FV	1	2	.0156	.0945					★									—	
		2NUCCGT32.52FV	2NU-CCGT09T308N-FV			.0313	.0906					★									—	
 Break Master	S00535	2NUCCGT32.51LV	2NU-CCGT09T304N-LV	1	2	.0156	.0945					●									—	
		2NUCCGT32.52LV	2NU-CCGT09T308N-LV			.0313	.0906					●									—	
 Sharper Edge	Honing	2NUCCGA32.52LT	2NU-CCGW09T308LT	1	2	.0313	.0945				●										—	—

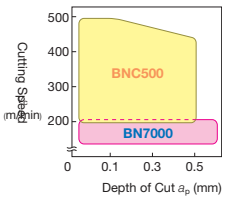
*Use NS (NS-CCGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

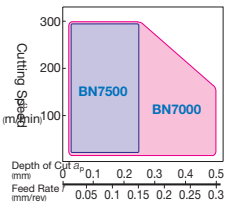
(C) Gray Cast Iron



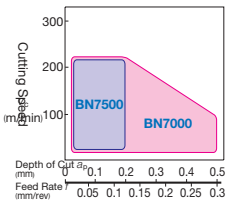
(D) Ductile Cast Iron



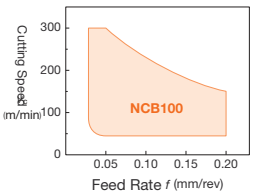
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended | General Cutting ◕ 1st Recommended ◔ 2nd Recommended | Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

Recommended Application		Coated CBN
K	Cast Iron	●
S	Exotic Alloy	
H	Hardened Steel	● ◕ ✖ ○ ○
	Sintered Components	

CCG■32.5● Coated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

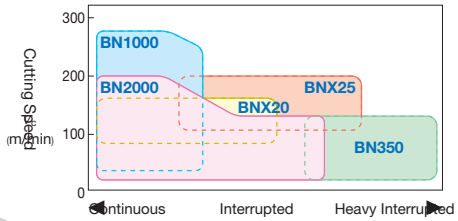
Applicable External Holders ☞ C34 Applicable Internal Holders ☞ E30 to E33

Multi-Cornered Single-Use / 7° Positive (With Hole)

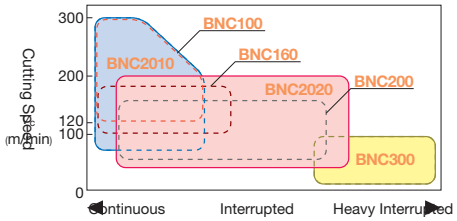
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	2NCCCGA32.50.5	2NC-CCGW09T302	1	2	.0078	.0984	★	●			★	●	●		★
		2NCCCGA32.51	2NC-CCGW09T304			.0156	.0984	●	●	●	●	●	●	●		★
		2NCCCGA32.52	2NC-CCGW09T308			.0313	.0945	●	●	●	●	●	●	●	●	●
 Wiper Insert	S01215	2NCCCGA32.50.5WG	2NC-CCGW09T302WG	1	2	.0078	.0984	●	●			●	●			
		2NCCCGA32.51WG	2NC-CCGW09T304WG			.0156	.0945	★	●			●	●			
		2NCCCGA32.52WG	2NC-CCGW09T308WG			.0313	.0945	●	●			●	●			
 Wiper Insert	S01215	2NCCCGA32.51WH	2NC-CCGW09T304WH	1	2	.0156	.0945	★	★			★	★			
		2NCCCGA32.52WH	2NC-CCGW09T308WH			.0313	.0906	★	★			★	★			
 Wiper Insert	BNC100-S01715 BNC160-S01215 BNC200-S01215 BNC2010-S01215 BNC2020-S01215	2NCCCGA32.51W	2NC-CCGW09T304W	1	2	.0156	.0945	●	●		●	●	●	▲		
 Break Master	Honing	2NCCCGT32.51FV	2NC-CCGT09T304N-FV	1	2	.0156	.0945	★	★			★	★			
		2NCCCGT32.52FV	2NC-CCGT09T308N-FV			.0313	.0906	★	★			★	★			
 Break Master	S00535	2NCCCGT32.50.5LV	2NC-CCGT09T302N-LV	1	2	.0078	.0906	●	●			●	●			
		2NCCCGT32.51LV	2NC-CCGT09T304N-LV			.0156	.0945	★	●			●	●			
		2NCCCGT32.52LV	2NC-CCGT09T308N-LV			.0313	.0906	★	●			●	●			
 Low Cutting Force	Honing	2NCCCGA32.50.5LE	2NC-CCGW09T302LE	1	2	.0078	.0984	★								
		2NCCCGA32.51LE	2NC-CCGW09T304LE			.0156	.0984	★								
		2NCCCGA32.52LE	2NC-CCGW09T308LE			.0313	.0945	★								
 Sharper Edge	T00515	2NCCCGA32.50.5LT	2NC-CCGW09T302LT	1	2	.0078	.0984		★							
		2NCCCGA32.51LT	2NC-CCGW09T304LT			.0156	.0984		●							
		2NCCCGA32.52LT	2NC-CCGW09T308LT			.0313	.0945		●							

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



C 80° Diamond

CCG■32.5● Coated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

Applicable External Holders C34 Applicable Internal Holders E30 to E33

(Legend) Continuous Cutting: 1st Recommended, 2nd Recommended; General Cutting: 1st Recommended, 2nd Recommended; Interrupted Cutting: 1st Recommended, 2nd Recommended

Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✖	○	○				
	Sintered Components									

Multi-Cornered Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	**2NCCCGA32.50.5LS**	**2NC-CCGW09T302LS**	1	2	.0078	.0984					★	★			
		2NCCCGA32.51LS	**2NC-CCGW09T304LS**			.0156	.0984			★	●	●	●			
		2NCCCGA32.52LS	**2NC-CCGW09T308LS**			.0313	.0945			★	●	●	●			
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735 BNC300→S01735 BNC500→S01225	**2NCCCGA32.51HS**	**2NC-CCGW09T304HS**	1	2	.0156	.0984			★						
		2NCCCGA32.52HS	**2NC-CCGW09T308HS**			.0313	.0945			★						

CCGE62● Uncoated

Dimensions (inch)				
	Inscribed Circle	.1875	Hole Dia.	—
	Thickness	.0625		

Applicable Holder: Special Holder

(Legend) Continuous Cutting: 1st Recommended, 2nd Recommended; General Cutting: 1st Recommended, 2nd Recommended; Interrupted Cutting: 1st Recommended, 2nd Recommended

Recommended Application		Uncoated CBN														Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron								○	●					◕	
S	Exotic Alloy									●					◕	●
H	Hardened Steel	○	◔	✖	●	◕	◔	✖								
	Sintered Components									◕				●		

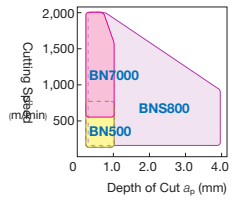
One-Use / 7° Positive (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUCCGE621**	**NU-CCGN040104**	1	1	.0156	.0984					★	●								—	
		NUCCGE622	**NU-CCGN040108**			.0313	.0945					★	★								—	
		T-NUCCGE621	**T-NU-CCGN040104**	10	1	.0156	.0984					★									—	
		T-NUCCGE622	**T-NU-CCGN040108**			.0313	.0945					★									—	
 Strong Edge	S01235	**NUCCGE621HS**	**NU-CCGN040104HS**	1	1	.0156	.0984					★									—	
		NUCCGE622HS	**NU-CCGN040108HS**			.0313	.0945					★									—	

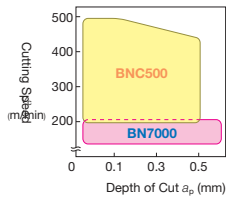
*Use NS (NS-CCGN) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

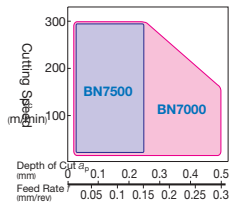
(C) Gray Cast Iron



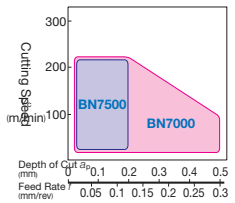
(D) Ductile Cast Iron



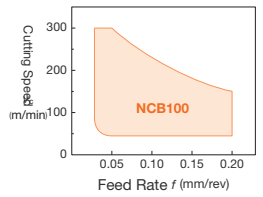
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

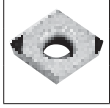
(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting: ● 1st Recommended ○ 2nd Recommended

CCGA43● Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Applicable External Holders ☞ C9 Applicable Internal Holders ☞ E33

Multi-Cornered / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
								Recommended Application: K Cast Iron, S Exotic Alloy, H Hardened Steel, Sintered Components														Uncoated CBN; Binderless CBN
	Standard	2NUCCGA431	2NU-CCGW120404	1	2	.0156	.0984										●	▲			—	
		2NUCCGA432	2NU-CCGW120408			.0313	.0945										●	▲			—	

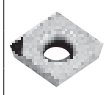
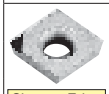
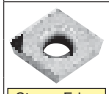
(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting: ● 1st Recommended ○ 2nd Recommended

CPGA2.51.5● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3125	Hole Dia.	.1339
	Thickness	.0937		

Applicable Internal Holders ☞ E35 to E37

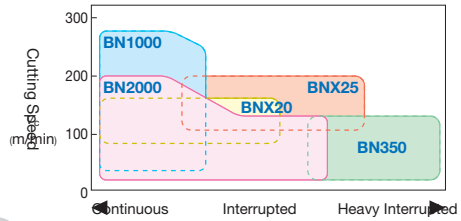
Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
								Recommended Application: K Cast Iron, S Exotic Alloy, H Hardened Steel, Sintered Components														Uncoated CBN; Binderless CBN
	Standard	NUCPGA2.51.50.5	NU-CPGW080202	1	1	.0078	.0984					●	●								—	
		NUCPGA2.51.51	NU-CPGW080204			.0156	.0984				★	●	●								—	
		NUCPGA2.51.52	NU-CPGW080208			.0313	.0945					●	●								—	
 Sharper Edge	T01215	NUCPGA2.51.51LT	NU-CPGW080204LT	1	1	.0156	.0984					★									—	—
 Strong Edge	S01235	NUCPGA2.51.50.5HS	NU-CPGW080202HS	1	1	.0078	.0984					★									—	
		NUCPGA2.51.51HS	NU-CPGW080204HS			.0156	.0984					★									—	
		NUCPGA2.51.52HS	NU-CPGW080208HS			.0313	.0945					★									—	

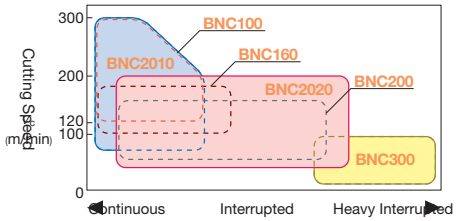
*Use NS (NS-CPGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



C 80° Diamond



CPGA2.51.5 Coated

Dimensions (inch)				
	Inscribed Circle	.3125	Hole Dia.	.1339
	Thickness	.0937		

(Legend) Continuous Cutting: 1st Recommended, 2nd Recommended; General Cutting: 1st Recommended, 2nd Recommended; Interrupted Cutting: 1st Recommended, 2nd Recommended

Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✖	○	○				
	Sintered Components									

Applicable Internal Holders E35 to E37

Multi-Cornered Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**2NCCPGA2.51.50.5**	**2NC-CPGW080202**	1	2	.0078	.0984	★	★							
		2NCCPGA2.51.51	**2NC-CPGW080204**			.0156	.0984	★	★							

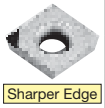
CPGA32 Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1250		

Recommended Application		Uncoated CBN															
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN NCB100
K	Cast Iron								○	●					◕	
S	Exotic Alloy									●					◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✖								
	Sintered Components										◕			●		

Applicable Internal Holders E35 to E37

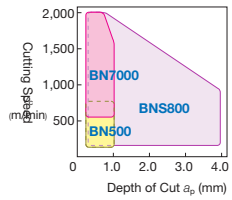
Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUCPGA320.5**	**NU-CPGW090302**	1	1	.0078	.0984				★	★	●								—	
		NUCPGA321	**NU-CPGW090304**			.0156	.0984				★	★	●								—	
		NUCPGA322	**NU-CPGW090308**			.0313	.0945				★	★	★								—	
 Sharper Edge	T01215	**NUCPGA320.5LT**	**NU-CPGW090302LT**	1	1	.0078	.0984					★									—	—
		NUCPGA321LT	**NU-CPGW090304LT**			.0156	.0984					★									—	—
		NUCPGA322LT	**NU-CPGW090308LT**			.0313	.0945					★									—	—
 Strong Edge	S01235	**NUCPGA320.5HS**	**NU-CPGW090302HS**	1	1	.0078	.0984					★									—	
		NUCPGA321HS	**NU-CPGW090304HS**			.0156	.0984					★									—	
		NUCPGA322HS	**NU-CPGW090308HS**			.0313	.0945					★									—	

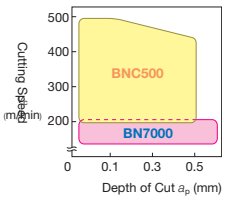
*Use NS (NS-CPGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

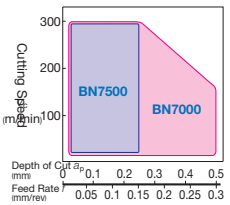
(C) Gray Cast Iron



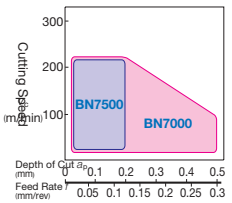
(D) Ductile Cast Iron



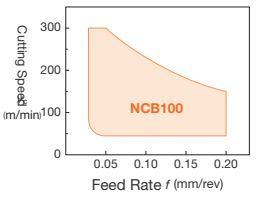
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



C 80° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✚ 2nd Recommended

Recommended Application

K Cast Iron										●
S Exotic Alloy										
H Hardened Steel	●	◕	✖	○	○					
Sintered Components										

CPGA32● Coated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1250		

Applicable Internal Holders ☞ E35 to E37

Multi-Cornered Single-Use / 11° Positive (With Hole)

Coated CBN

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**2NCCPGA320.5**	**2NC-CPGW090302**	1	2	.0078	.0984	★	★							
		2NCCPGA321	**2NC-CPGW090304**			.0156	.0984	★	★							

CPGA32.5● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

Applicable Internal Holders ☞ E34, E36

Recommended Application

K Cast Iron									○	●				◕	
S Exotic Alloy										●				◕	●
H Hardened Steel	○	◔	✚	●	◕	◔	✖								
Sintered Components										◕			●		

Multi-Cornered / 11° Positive (With Hole)

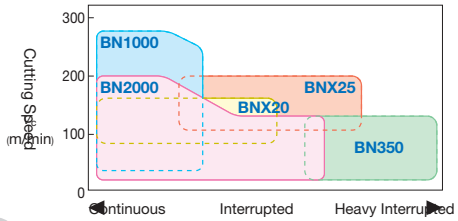
Uncoated CBN

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**2NUCPGA32.51**	**2NU-CPGW09T304**	1	2	.0156	.0984										●	▲			—	
		2NUCPGA32.52	**2NU-CPGW09T308**			.0313	.0945										●	▲			—	

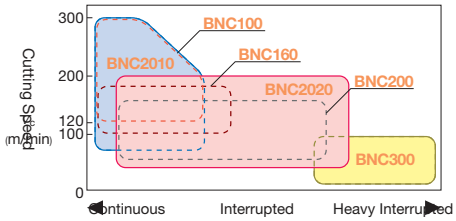
Binderless CBN

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



D 55° Diamond



DNGA33● Coated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

Applicable External Holders ☞ C11, C12 Applicable Internal Holders ☞ E15, E17 to E19

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	●	✱	○	○				
	Sintered Components									

Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**2NCDNGA331**	**2NC-DNGA110404**	1	2	.0157	.0984	★	★							
		2NCDNGA332	**2NC-DNGA110408**			.0315	.0827	★	★							
		2NCDNGA333	**2NC-DNGA110412**			.0472	.0787	★	★							

DN■■43● Uncoated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Applicable External Holders ☞ C10 - C12 Applicable Internal Holders ☞ E15 to E19

Recommended Application		Uncoated CBN																
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100 (Binderless CBN)
K	Cast Iron									○	●				●	
S	Exotic Alloy										●				●	●
H	Hardened Steel	○	○	✱	●	●	○	✱								
	Sintered Components										●			●		

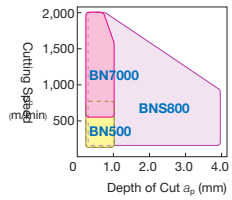
Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUDNMA430**	**NU-DNMA150401**	1	1	.0039	.1063					★									—	—
		NUDNMA430.5	**NU-DNMA150402**			.0078	.0984					●									—	—
		NUDNMA431	**NU-DNMA150404**			.0156	.0984	●	●		★	●	●	●		★	★	★			—	—
		NUDNMA432	**NU-DNMA150408**			.0313	.0827	●	●		●	●	●	●		★	★	★			—	—
		NUDNMA433	**NU-DNMA150412**			.0469	.0787		▲		▲	●	●	▲		★	★	★			—	—
		NSDNMA431	**NSDNMA150404**	1	1	.0156	.0984			★	—	—	—	—	—	—	—	—	—	—	—	—
		NSDNMA432	**NSDNMA150408**			.0313	.0827			●	—	—	—	—	—	—	—	—	—	—	—	—
		T-NUDNMA431	**T-NU-DNMA150404**	10	1	.0156	.0984				★	★		★		★					—	
		T-NUDNMA432	**T-NU-DNMA150408**			.0313	.0827				★	★		★		★					—	
		T-NUDNMA433	**T-NU-DNMA150412**			.0469	.0787									★					—	
		**NUDNGA431**	**NU-DNGA150404** New	1	1	.0156	.0984														—	★
		NUDNGA432	**NU-DNGA150408** New			.0313	.0827														—	★
		NUDNGA433	**NU-DNGA150412** New			.0469	.0787														—	★

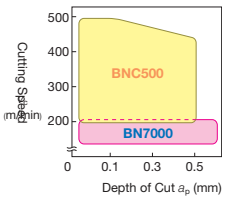
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

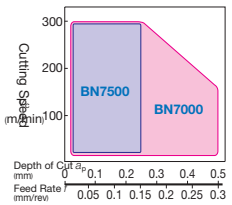
(C) Gray Cast Iron



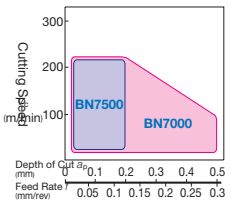
(D) Ductile Cast Iron



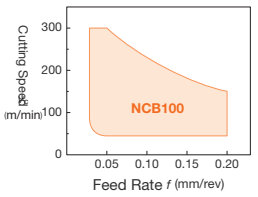
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



D 55° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✲ 2nd Recommended

DN■■43● Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components										●			●		

Applicable External Holders ☞ C10 to C12 Applicable Internal Holders ☞ E15 to E19

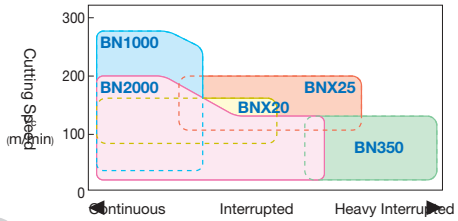
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**2NUDNGA431**	**2NU-DNGA150404**	1	2	.0156	.0984				●	●	●	●			●	★		●	—	
		2NUDNGA432	**2NU-DNGA150408**			.0313	.0827		●		●	●	●	●			●	★		●	—	
		2NUDNGA433				.0469	.0787		●		●	●	●	●			●	▲			—	
		T-2NUDNGA431	**T-2NU-DNGA150404**	10	2	.0156	.0984					★									—	
		T-2NUDNGA432	**T-2NU-DNGA150408**			.0313	.0827					★		★			★	★			—	

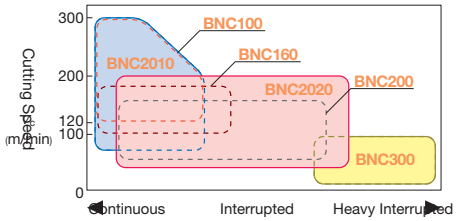
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



D 55° Diamond



DN■■43● Uncoated

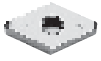
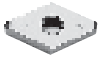
Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Applicable External Holders C10 to C12 Applicable Internal Holders E15 to E19

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended General Cutting ● 1st Recommended ○ 2nd Recommended Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ● ●
S	Exotic Alloy	● ● ●
H	Hardened Steel	○ ○ ✱ ● ● ○ ✱
	Sintered Components	● ●

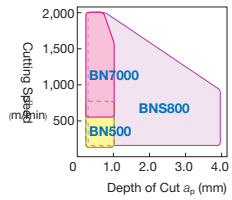
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
 Wiper Insert	S01215	2NUDNGA431WG	2NU-DNGA150404WG	1	2	.0156	.0906					●									—	
		2NUDNGA432WG	2NU-DNGA150408WG			.0313	.0787					●								●	—	
 Wiper Insert	S01215	2NUDNGA431WH	2NU-DNGA150404WH	1	2	.0156	.0827					●								●	—	
		2NUDNGA432WH	2NU-DNGA150408WH			.0313	.0709					●								●	—	
 Break Master	Honing	2NUDNGG431FV	2NU-DNGM150404N-FV	1	2	.0156	.0984					●									—	
		2NUDNGG432FV	2NU-DNGM150408N-FV			.0313	.0827					●									—	
 Break Master	S00535	2NUDNGG431LV	2NU-DNGM150404N-LV	1	2	.0156	.0984					●									—	
		2NUDNGG432LV	2NU-DNGM150408N-LV			.0313	.0827					●									—	
		2NUDNGG433LV	2NU-DNGM150412N-LV			.0469	.0787					★									—	
 Low Cutting Force	Sharp Edge	2NUDNGA431LF	2NU-DNGA150404LF	1	2	.0156	.0984										●	★			—	
		2NUDNGA432LF	2NU-DNGA150408LF			.0313	.0827										●	★			—	
 Sharper Edge	T01215	2NUDNGA431LT	2NU-DNGA150404LT	1	2	.0156	.0984					●									—	—
		2NUDNGA432LT	2NU-DNGA150408LT			.0313	.0827					●									—	—
		2NUDNGA433LT	2NU-DNGA150412LT			.0469	.0787				●	●									—	—
 Strong Edge	T01235	2NUDNGA431T	2NU-DNGA150404HT	1	2	.0156	.0984							★							—	
		2NUDNGA432T	2NU-DNGA150408HT			.0313	.0827							★							—	
 Strong Edge	BN2000→S01235 BN7000→S01225 BN700→S01225 BN7500→S00525	2NUDNGA431HS	2NU-DNGA150404HS	1	2	.0156	.0984					●					★	★			—	
		2NUDNGA432HS	2NU-DNGA150408HS			.0313	.0827					●					●	▲			—	
		2NUDNGA433HS	2NU-DNGA150412HS			.0469	.0787					●					●	▲			—	

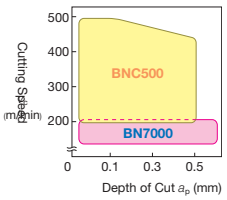
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

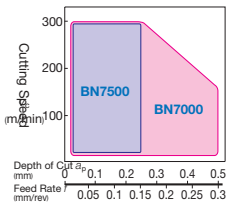
(C) Gray Cast Iron



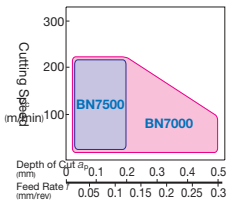
(D) Ductile Cast Iron



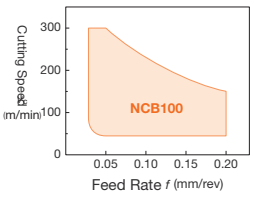
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



D 55° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended ✚ 2nd Recommended

DN■■43● Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✚	●	◕	◔	✖								
	Sintered Components										◕			●		

Applicable External Holders ☞ C10 to C12 Applicable Internal Holders ☞ E15 to E19

Multi-Cornered / Negative (With Hole)

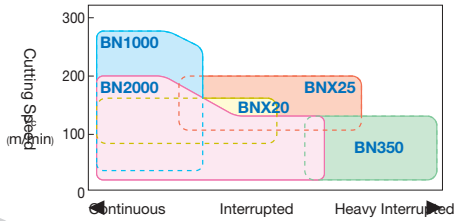
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**2MDDNGA432**	**2MD-DNGA150408**	1	2	.0313	.1220										●				—	
	Standard	**2MDDNMA431**	**2MD-DNMA150404**	1	2	.0156	.1378		●				●				●	▲		●	—	—
		2MDDNMA432	**2MD-DNMA150408**			.0313	.1220														—	—
		2MDDNMA433	**2MD-DNMA150412**			.0469	.1102														—	—

Negative (With Hole)

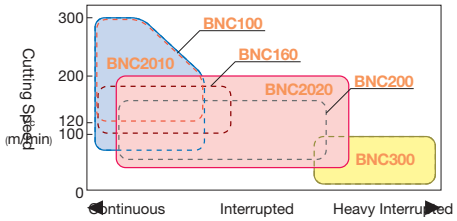
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**DNMA431**	**DNMA150404**	1	1	.0156	.1969		●			★	●				●				—	—
		DNMA432	**DNMA150408**			.0313	.1850		●			★	●			★	●	★			—	—
		DNMA433	**DNMA150412**			.0469	.1693					★	●				●	★			—	—

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



D 55° Diamond



DNG■43● Coated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	● ● ✱ ○ ○
	Sintered Components	

Applicable External Holders ☞ C10 to C12 Applicable Internal Holders ☞ E15 to E19

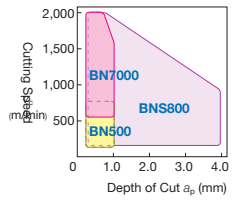
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	2NCDNGA431	2NC-DNGA150404	1	2	.0156	.0984	★	★				★			
		2NCDNGA432	2NC-DNGA150408			.0313	.0827	●	●	●	●	●	●			
		2NCDNGA433	2NC-DNGA150412			.0469	.0787	●	●	●	●	●	●			
		2NCDNGA434*	2NC-DNGA150416*			.0625	.1339	★	★	★		★	★			
		2NCDNGA435*	2NC-DNGA150420*			.0787	.1181	★	★	★		★	★			
		2NCDNGA436*	2NC-DNGA150424*			.0938	.1063	★	★	★		★	★			
	Standard	4NCDNGA430.5	4NC-DNGA150402	1	4	.0078	.1024	★	★							
		4NCDNGA431	4NC-DNGA150404			.0156	.0984	●	●	●	●	●	●			★
		4NCDNGA432	4NC-DNGA150408			.0313	.0827	●	●	●	●	●	●	●	●	●
		4NCDNGA433	4NC-DNGA150412			.0469	.0787	●	●	●	▲	●	●	●	●	★
		4NCDNGA434*	4NC-DNGA150416*			.0625	.1339	★	★	★		★	★			
		4NCDNGA435*	4NC-DNGA150420*			.0787	.1181	★	★	★		★	★			
		4NCDNGA436*	4NC-DNGA150424*			.0938	.1063	★	★	★		★	★			
 Wiper Insert	S01215	4NCDNGA431WG**	4NC-DNGA150404WG**	1	4	.0156	.0906	●	●			●	●			
		4NCDNGA432WG**	4NC-DNGA150408WG**			.0313	.0787	●	●			●	●			
 Wiper Insert	S01215	4NCDNGA431WH**	4NC-DNGA150404WH**	1	4	.0156	.0827	●	●			●	●			
		4NCDNGA432WH**	4NC-DNGA150408WH**			.0313	.0709	●	●			●	●			
 Break Master	Honing	4NCDNGG431FV	4NC-DNGG150404N-FV	1	4	.0156	.0984	●	●			●	●			
		4NCDNGG432FV	4NC-DNGG150408N-FV			.0313	.0827	●	●			●	●			
		4NCDNGG433FV	4NC-DNGG150412N-FV			.0469	.0787	★	★			★	★			
 Break Master	S00535	4NCDNGG431LV	4NC-DNGG150404N-LV	1	4	.0156	.0984	●	●			●	●			
		4NCDNGG432LV	4NC-DNGG150408N-LV			.0313	.0827	●	●			●	●			
		4NCDNGG433LV	4NC-DNGG150412N-LV			.0469	.0787	★	★			★	★			

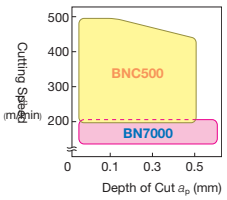
* For use with the CBN holders for high-efficiency machining shown on page L111 and L112. ** Use a holder with a cutting edge angle of 93°.

CBN Application Range Map

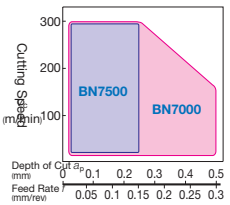
(C) Gray Cast Iron



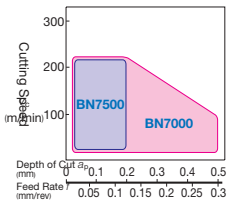
(D) Ductile Cast Iron



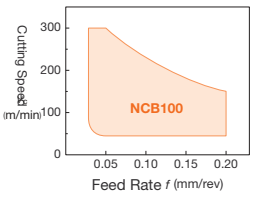
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



D 55° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended ◯ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended ✖ 2nd Recommended

Recommended Application		Coated CBN
	K Cast Iron	●
	S Exotic Alloy	
	H Hardened Steel	● ◕ ✖ ◯ ◯
	Sintered Components	

DNG■43● Coated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

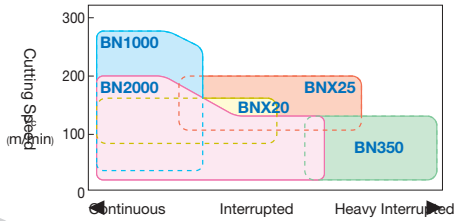
Applicable External Holders ☞ C10 to C12 Applicable Internal Holders ☞ E15 to E19

Multi-Cornered Single-Use / Negative (With Hole)

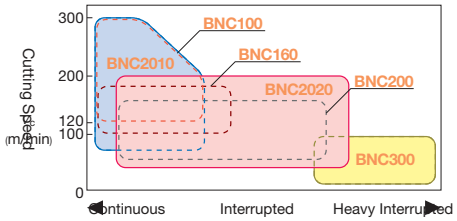
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
 Break Master	S01235	**4NCDNGG432SV**	**4NC-DNGG150408N-SV**	1	4	.0313	.0827	★	●			●	●			
		4NCDNGG433SV	**4NC-DNGG150412N-SV**			.0469	.0787	★	●			★	●			
 Low Cutting Force	Honing	**2NCDNGA431LE**	**2NC-DNGA150404LE**	1	2	.0156	.0984	★								
		2NCDNGA432LE	**2NC-DNGA150408LE**			.0313	.0827	★								
		2NCDNGA433LE	**2NC-DNGA150412LE**			.0469	.0787	★								
 Sharper Edge	T00515	**2NCDNGA430.5LT**	**2NC-DNGA150402LT**	1	2	.0078	.1024		★							
		2NCDNGA431LT	**2NC-DNGA150404LT**			.0156	.0984		●							
		2NCDNGA432LT	**2NC-DNGA150408LT**			.0313	.0827		●							
		2NCDNGA433LT	**2NC-DNGA150412LT**			.0469	.0787		●							
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	**2NCDNGA431LS**	**2NC-DNGA150404LS**	1	2	.0156	.0984			★						
		2NCDNGA432LS	**2NC-DNGA150408LS**			.0313	.0827			★	●		●			
		2NCDNGA433LS	**2NC-DNGA150412LS**			.0469	.0787			★	●		●			
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	**4NCDNGA431LS**	**4NC-DNGA150404LS**	1	4	.0156	.0984				●	●	★			
		4NCDNGA432LS	**4NC-DNGA150408LS**			.0313	.0827				●	●	★			
		4NCDNGA433LS	**4NC-DNGA150412LS**			.0469	.0787				▲	▲	★			
 High-Efficiency	S00535	**4NCDNGA431ES**	**4NC-DNGA150404ES**	1	4	.0156	.0984		★							
		4NCDNGA432ES	**4NC-DNGA150408ES**			.0313	.0827		●							
		4NCDNGA433ES	**4NC-DNGA150412ES**			.0469	.0787		●							
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735 BNC300→S01735	**2NCDNGA432HS**	**2NC-DNGA150408HS**	1	2	.0313	.0827	●	●	●		●	●			
		2NCDNGA433HS	**2NC-DNGA150412HS**			.0469	.0787	●	●	●		●	●			
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735 BNC300→S01735 BNC500→S01225	**4NCDNGA431HS**	**4NC-DNGA150404HS**	1	4	.0156	.0984	●	●	★		●	●			★
		4NCDNGA432HS	**4NC-DNGA150408HS**			.0313	.0827	●	●	★		★	●			★
		4NCDNGA433HS	**4NC-DNGA150412HS**			.0469	.0787	●	●	★		●	●			★

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



D 55° Diamond



DNMA44● Uncoated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.2500		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ● ◕
S	Exotic Alloy	● ◕ ●
H	Hardened Steel	○ ◔ ✲ ● ◕ ◔ ✱
	Sintered Components	◕ ● ●

Applicable External Holders ☞ C10, C12 Applicable Internal Holders ☞ E19

Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100 (Binderless CBN)
	Standard	**NUDNMA441**	**NU-DNMA150604**	1	1	.0156	.0984					★									—	
		NUDNMA442	**NU-DNMA150608**			.0313	.0827					★									—	
		NUDNMA443	**NU-DNMA150612**			.0469	.0787					★									—	

*Use NS (NS-DNMA) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

DNGA44● Coated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.2500		

Recommended Application		
K	Cast Iron	●
S	Exotic Alloy	
H	Hardened Steel	● ◕ ✱ ○ ○
	Sintered Components	

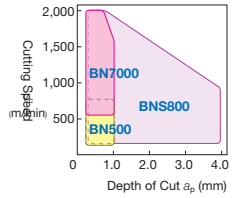
Applicable External Holders ☞ C10, C12 Applicable Internal Holders ☞ E19

Multi-Cornered Single-Use / Negative (With Hole)

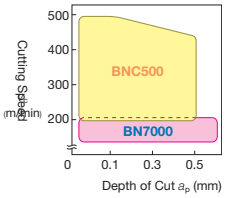
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**4NCDNGA441**	**4NC-DNGA150604**	1	4	.0156	.0984	★	★							
		4NCDNGA442	**4NC-DNGA150608**			.0313	.0827	★	★							
		4NCDNGA443	**4NC-DNGA150612**			.0469	.0787	★	★							

CBN Application Range Map

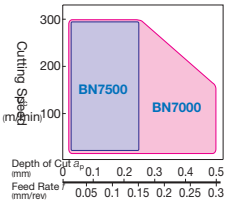
(C) Gray Cast Iron



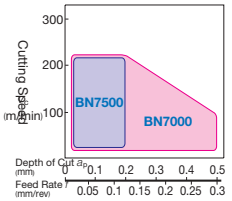
(D) Ductile Cast Iron



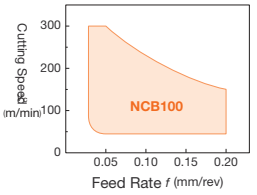
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



D 55° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended ✣ 2nd Recommended

DNG322● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	—
	Thickness	.1250		

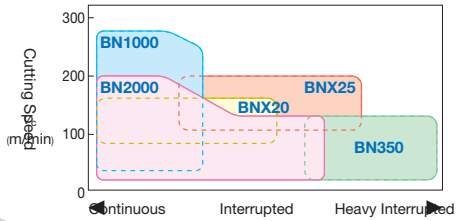
Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron								○	●					◕	
S	Exotic Alloy									●					◕	●
H	Hardened Steel	○	◔	✣	●	◕	◔	✖								
	Sintered Components									●				●		

Solid / Negative (Without Hole)

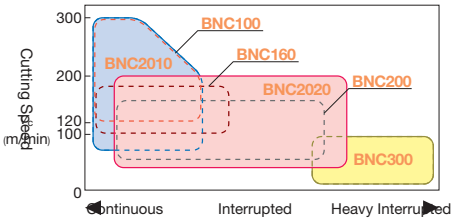
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**DNG322**	**DNGN110308**	1	Solid	.0313	.4252	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		DNG323	**DNGN110312**			.0469	.4134	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
 Low Cutting Force	Sharp Edge	**DNG322F**	**DNGN110308LF**	1	Solid	.0313	.4252	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		DNG323F	**DNGN110312LF**			.0469	.4134	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



D 55° Diamond



DCG■21.5● Uncoated

Dimensions (inch)	Inscribed Circle	.2500	Hole Dia.	.1102
	Thickness	.0937		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	K Cast Iron									○	●				◔	
	S Exotic Alloy										●				◔	●
	H Hardened Steel	○	◔	✲	●	◔	◔	✱								
	Sintered Components										◔			●		

Applicable External Holders ☞ C35, D14, D18, D19, D24, D25 Applicable Internal Holders ☞ E38 to E41

Uncoated CBN | Binderless CBN

Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	NUDCGA21.50.5	NU-DCGW070202	1	1	.0078	.1063				★	●	●								—	
		NUDCGA21.51	NU-DCGW070204			.0156	.0984				★	●	●				★	★			—	★
		NUDCGA21.52	NU-DCGW070208			.0313	.0827					●									—	
		T-NUDCGA21.50.5	T-NU-DCGW070202	10	1	.0078	.1063					★									—	
		T-NUDCGA21.51	T-NU-DCGW070204			.0156	.0984					★									—	
 Sharper Edge	T01215	NUDCGA21.50.5LT	NU-DCGW070202LT	1	1	.0078	.1063					●									—	—
		NUDCGA21.51LT	NU-DCGW070204LT			.0156	.0984					●									—	—
		NUDCGA21.52LT	NU-DCGW070208LT			.0313	.0827					●									—	—
 Strong Edge	S01235	NUDCGA21.50.5HS	NU-DCGW070202HS	1	1	.0078	.1063					●									—	
		NUDCGA21.51HS	NU-DCGW070204HS			.0156	.0984					●									—	

*Use NS (NS-DCGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

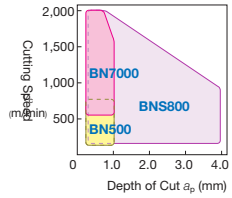
Multi-Cornered Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	2NUDCGA21.50.5	2NU-DCGW070202	1	2	.0078	.1063										●				—	
		2NUDCGA21.51	2NU-DCGW070204			.0156	.0984				●						●	▲		●	—	
		2NUDCGA21.52	2NU-DCGW070208			.0313	.0827				●						●			●	—	
 Wiper Insert	S01215	2NUDCGA21.50.5WG	2NU-DCGW070202WG	1	2	.0078	.1024					●								●	—	
		2NUDCGA21.51WG	2NU-DCGW070204WG			.0156	.0984					●								●	—	
		2NUDCGA21.52WG	2NU-DCGW070208WG			.0313	.0787					●								●	—	
 Break Master	Honing	2NUDCGT21.50.5FV	2NU-DCGT070202N-FV	1	2	.0078	.1063					●									—	
		2NUDCGT21.51FV	2NU-DCGT070204N-FV			.0156	.0945					★									—	

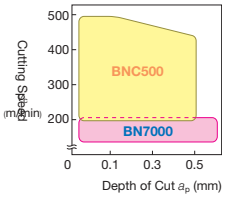
*Use 2NS (2NS-DCGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

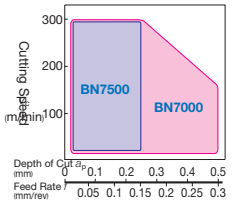
(C) Gray Cast Iron



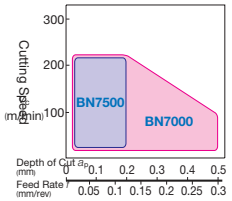
(D) Ductile Cast Iron



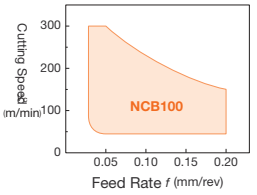
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



D 55° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended, ○ 2nd Recommended; General Cutting: ◕ 1st Recommended, ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended, ✚ 2nd Recommended

Recommended Application		Coated CBN
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	● ◕ ✖ ○ ○
	Sintered Components	

DCG■21.5● Coated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1102
	Thickness	.0937		

Applicable External Holders ☞ C35, D14, D18, D19, D24, D25
Applicable Internal Holders ☞ E38 to E41

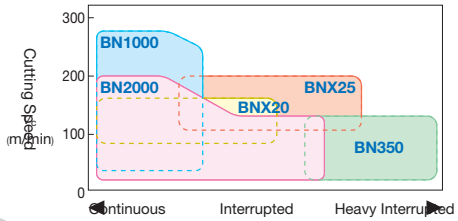
Multi-Cornered One-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	2NCDCGA21.50.5	2NC-DCGW070202	1	2	.0078	.1024	★	●				●			
		2NCDCGA21.51	2NC-DCGW070204			.0156	.0984	★	●		●	●	●			★
		2NCDCGA21.52	2NC-DCGW070208			.0313	.0827	●	●							
 Wiper Insert	Standard	2NCDCGA21.50.5WG**	2NC-DCGW070202WG	1	2	.0078	.0984	●	●			●	●			
		2NCDCGA21.51WG**	2NC-DCGW070204WG			.0156	.0945	●	●			●	●			
		2NCDCGA21.52WG**	2NC-DCGW070208WG			.0313	.0787	●	●			●	●			
 Break Master	Honing	2NCDCGT21.50.5FV	2NC-DCGT070202N-FV	1	2	.0078	.0945	●	●			●	●			
		2NCDCGT21.51FV	2NC-DCGT070204N-FV			.0156	.0945	★	●			●	●			
		2NCDCGT21.52FV	2NC-DCGT070208N-FV			.0313	.0787	●	●			●	●			
 Sharper Edge	T00515	2NCDCGA21.50.5LT	2NC-DCGW070202LT	1	2	.0078	.1024		●							
		2NCDCGA21.51LT	2NC-DCGW070204LT			.0156	.0984		●							
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	2NCDCGA21.50.5LS	2NC-DCGW070202LS	1	2	.0078	.1024						★			
		2NCDCGA21.51LS	2NC-DCGW070204LS			.0156	.0984				●		●			

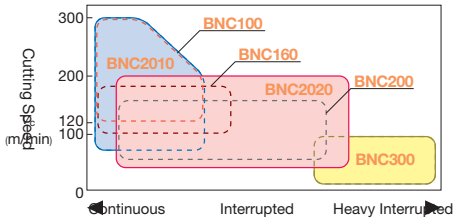
** Use a holder with a cutting edge angle of 93°

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



D 55° Diamond



DCG■32.5● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ● ◔
S	Exotic Alloy	● ◔ ●
H	Hardened Steel	○ ◔ ✲ ● ◔ ◔ ✱
	Sintered Components	◔ ● ◔

Applicable External Holders ☞ C35, D14, D18, D19, D24 to D26 Applicable Internal Holders ☞ E38 to E41

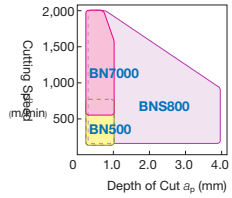
Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	NUDCGA32.50.5	NU-DCGW11T302	1	1	.0078	.1063				★	●					★	★			—	
		NUDCGA32.51	NU-DCGW11T304			.0156	.0984		●		★	●	●				★	★			—	★
		NUDCGA32.52	NU-DCGW11T308			.0313	.0827					●									—	★
		NUDCGA32.53	NU-DCGW11T312			.0469	.0787					●									—	
		T-NUDCGA32.50.5	T-NU-DCGW11T302	10	1	.0078	.1063					★									—	
		T-NUDCGA32.51	T-NU-DCGW11T304			.0156	.0984					★									—	
 Low Cutting Force	Sharp Edge	NUDCGA32.50.5LF	NU-DCGW11T302LF	1	1	.0078	.1063										★	★			—	
		NUDCGA32.51LF	NU-DCGW11T304LF			.0156	.0984										★	★			—	
 Sharper Edge	T01215	NUDCGA32.50.5LT	NU-DCGW11T302LT	1	1	.0078	.1063					●									—	—
		NUDCGA32.51LT	NU-DCGW11T304LT			.0156	.0984					●									—	—
		NUDCGA32.52LT	NU-DCGW11T308LT			.0313	.0827					●									—	—
		NUDCGA32.53LT	NU-DCGW11T312LT			.0469	.0787					●									—	—
 Strong Edge	S01235	NUDCGA32.50.5HS	NU-DCGW11T302HS	1	1	.0078	.1063					●									—	
		NUDCGA32.51HS	NU-DCGW11T304HS			.0156	.0984					●									—	
		NUDCGA32.52HS	NU-DCGW11T308HS			.0313	.0827					●									—	

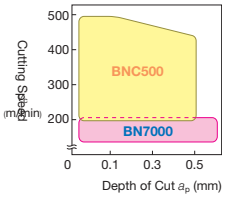
*Use NS (NS-DCGW) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

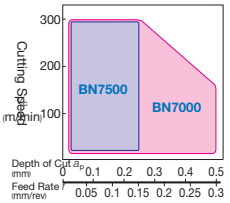
(C) Gray Cast Iron



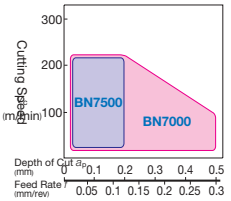
(D) Ductile Cast Iron



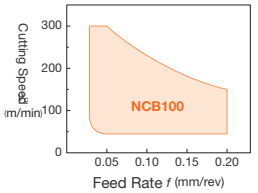
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



D 55° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

DCG■32.5● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

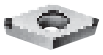
Recommended Application

		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✖								
	Sintered Components										◕			●		

Uncoated CBN | Binderless CBN

Applicable External Holders ☞ C35, D14, D18, D19, D24 to D27 | Applicable Internal Holders ☞ E38 to E41

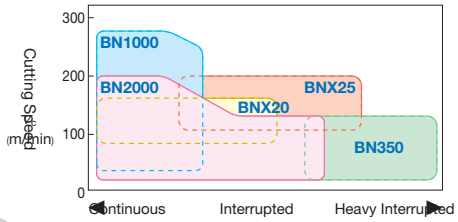
Multi-Cornered Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	2NUDCGA32.50.5	2NU-DCGW11T302	1	2	.0078	.1063										★			●	—	
		2NUDCGA32.51	2NU-DCGW11T304			.0156	.0984				●			●			●	▲		●	—	
		2NUDCGA32.52	2NU-DCGW11T308			.0313	.0827				●			●			●	▲		●	—	
		T-2NUDCGA32.51	T-2NU-DCGW11T304	10	2	.0156	.0984													★	—	
 Wiper Insert	S01215	2NUDCGA32.50.5WG*	2NU-DCGW11T302WG*	1	2	.0078	.1024					●								●	—	
		2NUDCGA32.51WG*	2NU-DCGW11T304WG*			.0156	.0906					●								●	—	
		2NUDCGA32.52WG*	2NU-DCGW11T308WG*			.0313	.0827					●								●	—	
 Wiper Insert	S01215	2NUDCGA32.51WH*	2NU-DCGW11T304WH*	1	2	.0156	.0827					★									—	
		2NUDCGA32.52WH*	2NU-DCGW11T308WH*			.0313	.0709					★									—	
 Break Master	Honing	2NUDCGT32.50.5FV	2NU-DCGT11T302N-FV	1	2	.0078	.1063					●									—	
		2NUDCGT32.51FV	2NU-DCGT11T304N-FV			.0156	.0945					★									—	
		2NUDCGT32.52FV	2NU-DCGT11T308N-FV			.0313	.0787					★									—	
 Break Master	S00535	2NUDCGT32.50.5LV	2NU-DCGT11T302N-LV	1	2	.0078	.1063					●									—	
		2NUDCGT32.51LV	2NU-DCGT11T304N-LV			.0156	.0945					●									—	
		2NUDCGT32.52LV	2NU-DCGT11T308N-LV			.0313	.0787					●									—	
 Low Cutting Force	Sharp Edge	2NUDCGA32.50.5LF	2NU-DCGW11T302LF	1	2	.0078	.1063										★			●	—	
		2NUDCGA32.51LF	2NU-DCGW11T304LF			.0156	.0984										★			●	—	
		2NUDCGA32.52LF	2NU-DCGW11T308LF			.0313	.0827										★			●	—	
 Low Cutting Force	Honing	2NUDCGA32.50.5LE	2NU-DCGW11T302LE	1	2	.0078	.1063													●	—	
		2NUDCGA32.51LE	2NU-DCGW11T304LE			.0156	.0984													●	—	
		2NUDCGA32.52LE	2NU-DCGW11T308LE			.0313	.0827													●	—	
 General-purpose for Continuous Cutting	S00715	2NUDCGA32.50.5LS	2NU-DCGW11T302LS	1	2	.0078	.1063													●	—	
		2NUDCGA32.51LS	2NU-DCGW11T304LS			.0156	.0984													●	—	
		2NUDCGA32.52LS	2NU-DCGW11T308LS			.0313	.0827													●	—	

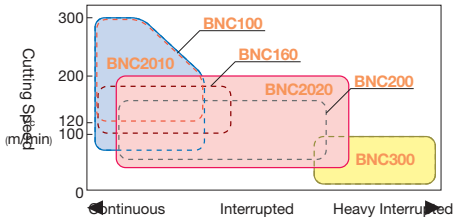
*Use 2NS (2NS-DCGW) for BNX25.
*Depth of cut for single-use types is 0.0197 inch or less.
*Use a holder with a cutting edge angle of 93°.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



D 55° Diamond



DCG■32.5● Coated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

(Legend) Continuous Cutting: ● 1st Recommended, ○ 2nd Recommended; General Cutting: ● 1st Recommended, ○ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended, ✱ 2nd Recommended

Recommended Application		
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	● ● ✱ ○ ○
	Sintered Components	

Applicable External Holders ☞ C35, D14, D18, D19, D24 to D28 Applicable Internal Holders ☞ E38to E41

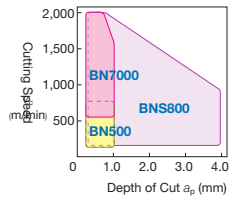
Multi-Cornered One-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	2NCDCGA32.50.5	2NC-DCGW11T302	1	2	.0078	.1063	★	●			★	●	●		★
		2NCDCGA32.51	2NC-DCGW11T304			.0156	.0984	●	●	●	●	●	●		●	★
		2NCDCGA32.52	2NC-DCGW11T308			.0313	.0827	●	●	●	●	●	●	▲	▲	★
 Wiper Insert	S01215	2NCDCGA32.50.5WG*	2NC-DCGW11T302WG*	1	2	.0078	.1024	●	●			●	●			
		2NCDCGA32.51WG*	2NC-DCGW11T304WG*			.0156	.0906	●	●			●	●			
		2NCDCGA32.52WG*	2NC-DCGW11T308WG*			.0313	.0827	●	●			●	●			
 Wiper Insert	S01215	2NCDCGA32.51WH*	2NC-DCGW11T304WH*	1	2	.0156	.0827	★	★			★	★			
		2NCDCGA32.52WH*	2NC-DCGW11T308WH*			.0313	.0709	★	★			★	★			
 Break Master	Honing	2NCDCGT32.51FV	2NC-DCGT11T304N-FV	1	2	.0156	.0945	★	★			★	★			
		2NCDCGT32.52FV	2NC-DCGT11T308N-FV			.0313	.0787	★	★			★	★			
 Break Master	S00535	2NCDCGT32.50.5LV	2NC-DCGT11T302N-LV	1	2	.0078	.1063	●	●			●	●			
		2NCDCGT32.51LV	2NC-DCGT11T304N-LV			.0156	.0945	★	●			●	●			
		2NCDCGT32.52LV	2NC-DCGT11T308N-LV			.0313	.0787	★	●			●	●			
 Low Cutting Force	Honing	2NCDCGA32.50.5LE	2NC-DCGW11T302LE	1	2	.0078	.1063	★								
		2NCDCGA32.51LE	2NC-DCGW11T304LE			.0156	.0984	★								
		2NCDCGA32.52LE	2NC-DCGW11T308LE			.0313	.0827	★								
 Sharper Edge	T00515	2NCDCGA32.50.5LT	2NC-DCGW11T302LT	1	2	.0078	.1063		★							
		2NCDCGA32.51LT	2NC-DCGW11T304LT			.0156	.0984		●							
		2NCDCGA32.52LT	2NC-DCGW11T308LT			.0313	.0827		●							

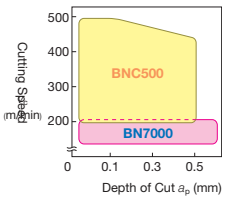
*Use a holder with a cutting edge angle of 93°.

CBN Application Range Map

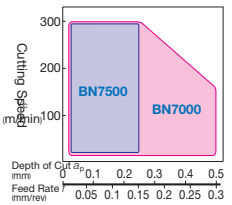
(C) Gray Cast Iron



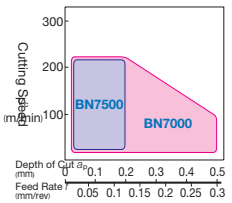
(D) Ductile Cast Iron



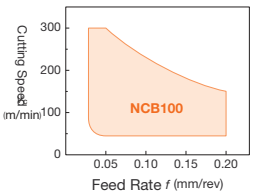
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



D 55° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended ◯ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended ✚ 2nd Recommended

Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✖	◯	◯				
	Sintered Components									

DCG■32.5●

Coated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

Applicable External Holders ☞ C35, D14, D18, D19, D24 to D29
Applicable Internal Holders ☞ E38 to E41

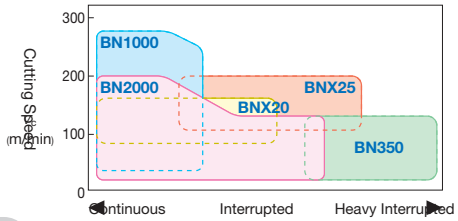
Multi-Cornered One-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	**2NCDCGA32.50.5LS**	**2NC-DCGW11T302LS**	1	2	.0078	.1063					★	★			
		2NCDCGA32.51LS	**2NC-DCGW11T304LS**			.0156	.0984			★	●	★	●			
		2NCDCGA32.52LS	**2NC-DCGW11T308LS**			.0313	.0827			★	●	★	●			
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735 BNC300→S01735 BNC500→S01225	**2NCDCGA32.51HS**	**2NC-DCGW11T304HS**	1	2	.0156	.0984			●						
		2NCDCGA32.52HS	**2NC-DCGW11T308HS**			.0313	.0827			★						

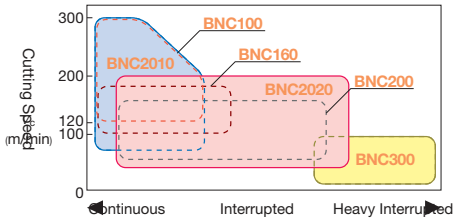
*Use a holder with a cutting edge angle of 93°.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



R Round



RNG● Uncoated

Dimensions (inch)	Inscribed Circle	.3750 to .5000	Hole Dia.	—
	Thickness	.1250 to .1875		

Applicable External Holders ☞ L108

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	K Cast Iron									○	●				●	
	S Exotic Alloy										●				●	●
	H Hardened Steel	○	○	✱	●	●	○	✱								
	Sintered Components										●			●		

Uncoated CBN — Binderless CBN

Solid / Negative (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**RNG32**	**RNGN090300**	1	Solid	.1875	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
	Standard	**RNG32B**	**RNGN090300-B**	1	Full Top	.1875		●								●					
 Low Cutting Force	Sharp Edge	**RNG32F**	**RNGN090300LF**	1	Solid	.1875	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
	Standard	**RNG42**	**RNGN120300**	1	Solid	.2500	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
 Low Cutting Force	Sharp Edge	**RNG42F**	**RNGN120300LF**	1	Solid	.2500														★	
	Standard	**RNG43**	**RNGN120400**	1	Solid	.2500	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
	Standard	**RNG43B**	**RNGN120400-B**	1	Full Top	.2500		●					●			●	▲				

RNG● Coated

Dimensions (inch)	Inscribed Circle	.2500 to .3750	Hole Dia.	—
	Thickness	.1250		

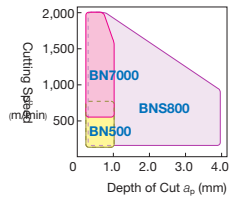
Recommended Application		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	K Cast Iron									●
	S Exotic Alloy									
	H Hardened Steel	●	●	✱	○	○				
	Sintered Components									

Coated CBN

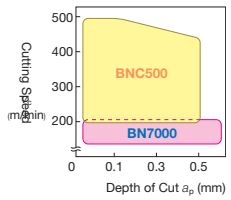
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**RNG22-S**	**RNGN060300-S**	1	Solid	.1250						●			
		RNG32-S	**RNGN090300-S**			.1875						●			

CBN Application Range Map

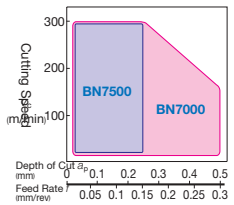
(C) Gray Cast Iron



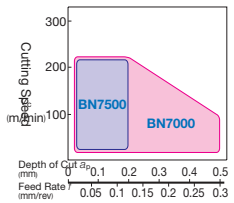
(D) Ductile Cast Iron



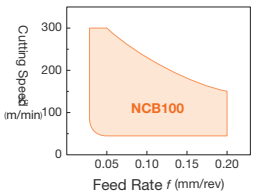
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



S Square

Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

SN■A43● Uncoated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Recommended Application

		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron								○	●				◕		
S	Exotic Alloy									●				◕	◕	●
H	Hardened Steel	○	◔	✖	●	◕	◔	✖								
	Sintered Components									◕				●		

Applicable External Holders ☞ C14 to C19 Applicable Internal Holders ☞ E20 to E22

Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUSNMA431**	**NU-SNMA120404**	1	1	.0156	.0984				●	★				★	★	★			—	—
		NUSNMA432	**NU-SNMA120408**			.0313	.0906				★	★	●	●		★	★	★			—	—
		NUSNMA433	**NU-SNMA120412**			.0469	.0827				★	★	●	●		★	★	★			—	—
		T-NUSNMA431	**T-NU-SNMA120404**	10	1	.0156	.0984					★									—	—
		T-NUSNMA432	**T-NU-SNMA120408**			.0313	.0906					★				★					—	—
		T-NUSNMA433	**T-NU-SNMA120412**			.0469	.0827					★		★							—	—

*Depth of cut for single-use types is 0.0197 inch or less.

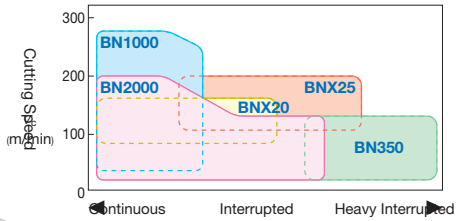
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**2NUSNGA431**	**2NU-SNGA120404**	1	2	.0156	.0984		★			●	★				★				—	
		2NUSNGA432	**2NU-SNGA120408**			.0313	.0906		★		●	●	★	●			★	★			—	
		2NUSNGA433	**2NU-SNGA120412**			.0469	.0827		★		●	★	●	●			●	▲			—	
		T-2NUSNGA431	**T-2NU-SNGA120404**	10	2	.0156	.0984					★									—	
		T-2NUSNGA432	**T-2NU-SNGA120408**			.0313	.0906					★									—	
		T-2NUSNGA433	**T-2NU-SNGA120412**			.0469	.0827					★									—	
 Sharper Edge	T01215	**2NUSNGA431LT**	**2NU-SNGA120404LT**	1	2	.0156	.0984					★									—	—
		2NUSNGA432LT	**2NU-SNGA120408LT**			.0313	.0906					★									—	—
		2NUSNGA433LT	**2NU-SNGA120412LT**			.0469	.0827					★									—	—
 Strong Edge	S01235	**2NUSNGA431HS**	**2NU-SNGA120404HS**	1	2	.0156	.0984					★									—	
		2NUSNGA432HS	**2NU-SNGA120408HS**			.0313	.0906					★									—	
		2NUSNGA433HS	**2NU-SNGA120412HS**			.0469	.0827					★					●				—	

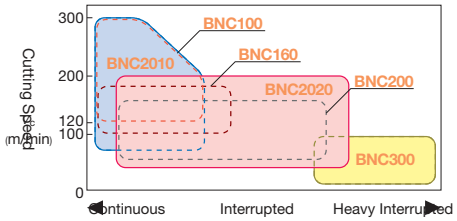
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



S Square

SN■A43● Uncoated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended / General Cutting ● 1st Recommended ○ 2nd Recommended / Interrupted Cutting ● 1st Recommended ○ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ●
S	Exotic Alloy	●
H	Hardened Steel	○ ○ ○ ● ● ○ ○
	Sintered Components	● ● ●

Applicable External Holders ☞ C14 to C19 Applicable Internal Holders ☞ E20 to E22

Multi-Cornered / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**2MDSNMA431**	**2MD-SNMA120404**	1	2	.0156	.1378						●								—	—
		2MDSNMA432	**2MD-SNMA120408**			.0313	.1378						●					▲			—	—

Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**SNMA432**	**SNMA120408**	1	1	.0313	.1850					★	▲				●	★			—	—
		SNMA433	**SNMA120412**			.0469	.1811					★					●	★			—	—

Solid / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**SNGA432**	**SNGA120408**	1	Solid	.0313	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		SNGA433	**SNGA120412**			.0469	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

SNGA43● Coated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

Recommended Application		
K	Cast Iron	●
S	Exotic Alloy	
H	Hardened Steel	● ● ○ ○
	Sintered Components	

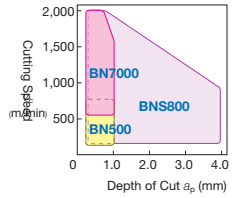
Applicable External Holders ☞ C14 to C19 Applicable Internal Holders ☞ E20 to E22

Multi-Cornered Single-Use / Negative (With Hole)

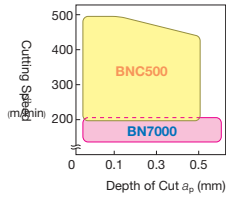
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**2NCSNGA432**	**2NC-SNGA120408**	1	2	.0313	.0906		●				●			★
		2NCSNGA433	**2NC-SNGA120412**			.0469	.0827		●				●			★
	Standard	**4NCSNGA431**	**4NC-SNGA120404**	1	4	.0156	.0984	★	★							
		4NCSNGA432	**4NC-SNGA120408**			.0313	.0906	★	★							
		4NCSNGA433	**4NC-SNGA120412**			.0469	.0827	★	★							

CBN Application Range Map

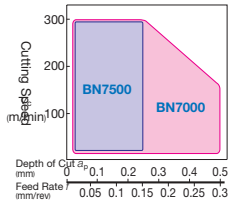
(C) Gray Cast Iron



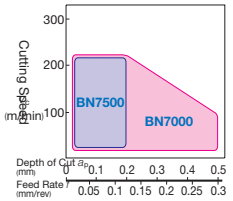
(D) Ductile Cast Iron



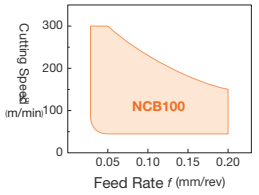
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



S Square



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✚ 2nd Recommended

SN■■32● Uncoated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	—
	Thickness	.1250		

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✚	●	◕	◔	✖								
	Sintered Components										◕			●		

Negative (Without Hole)

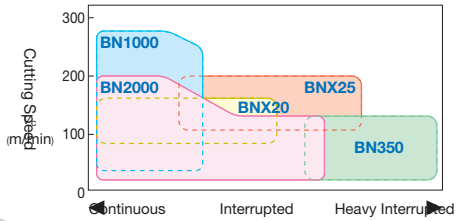
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**SNG322B**	**SNGN090308-B**	1	4	.0313	.3750										★	★				

Solid / Negative (Without Hole)

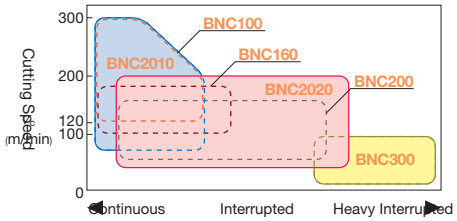
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**SNG322** **SNG323**	**SNGN090308** **SNGN090312**	1	Solid	.0313 .0469	.3750 .3750	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	● ●	— —
 Low Cutting Force	Sharp Edge	**SNG322F** **SNG323F**	**SNGN090308LF** **SNGN090312LF**	1	Solid	.0313 .0469	.3750 .3750	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —	★ ★	— —
 Wiper Insert	T02020	**SNEN322W**	**SNEN090308W**	1	Solid	.0313	.3750														●	

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



S Square

SNG42● Uncoated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	—
	Thickness	.1250		

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ● ●
S	Exotic Alloy	● ● ●
H	Hardened Steel	○ ○ ✱ ● ● ○ ✱
	Sintered Components	● ●

Solid / Negative (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	**SNG422**	**SNGN120308**	1	Solid	.0313	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		SNG423	**SNGN120312**			.0469	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		SNG424	**SNGN120316**			.0625	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
 Low Cutting Force	Sharp Edge	**SNG422F**	**SNGN120308LF**	1	Solid	.0313	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		SNG423F	**SNGN120312LF**			.0469	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

SNG■43● Uncoated

Dimensions (inch)	Inscribed Circle	.5000	Hole Dia.	—
	Thickness	.1875		

Recommended Application		
K	Cast Iron	○ ● ●
S	Exotic Alloy	● ● ●
H	Hardened Steel	○ ○ ✱ ● ● ○ ✱
	Sintered Components	● ●

Applicable External Holders ☞ C48 to C51

Negative (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	**SNG432**	**SNGN120408**	1	1	.0313	.1890	—	★	—	—	★	—	—	—	★	—	—	—	—	—	—
		SNG433	**SNGN120412**			.0469	.1890	—	—	—	—	★	—	—	—	—	—	—	—	—	—	—

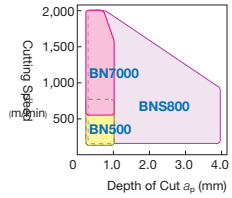
Applicable External Holders ☞ C48 to C51

Solid / Negative (Dimple Lock)

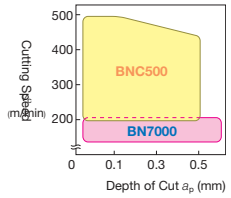
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	**SNGX433**	**SNGX120412**	1	Solid	.0469	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		SNGX434	**SNGX120416**			.0625	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—

CBN Application Range Map

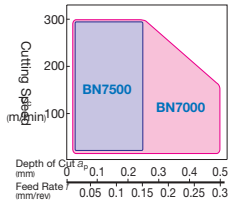
(C) Gray Cast Iron



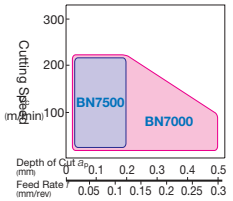
(D) Ductile Cast Iron



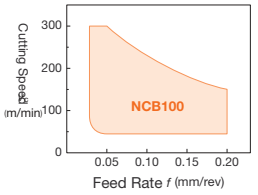
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



S Square

Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

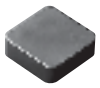
SNG43● Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	—
	Thickness	.1875		

Applicable External Holders ☞ C48 to C51

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✪	●	◕	◔	✖								
	Sintered Components										◕			●		

Solid / Negative (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**SNG432**	**SNGN120408**	1	Solid	.0313	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		SNG433	**SNGN120412**			.0469	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		SNG434	**SNGN120416**			.0625	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		SNG435	**SNGN120420**			.0787	.5000	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

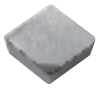
SPG32● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	—
	Thickness	.1250		

Applicable Internal Holders ☞ E45

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✪	●	◕	◔	✖								
	Sintered Components										◕			●		

One-Use / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUSPG321**	**NU-SPGN090304**	1	1	.0156	.0984					★					★	★			—	
		NUSPG322	**NU-SPGN090308**			.0313	.0984					★				★	★	★			—	
		T-NUSPG321	**T-NU-SPGN090304**	10	1	.0156	.0984					★									—	
		T-NUSPG322	**T-NU-SPGN090308**			.0313	.0984					★									—	
 Sharper Edge	T01215	**NUSPG321LT**	**NU-SPGN090304LT**	1	1	.0156	.0984					★									—	—
		NUSPG322LT	**NU-SPGN090308LT**			.0313	.0984					★									—	—
 Strong Edge	S01235	**NUSPG321HS**	**NU-SPGN090304HS**	1	1	.0156	.0984					★									—	
		NUSPG322HS	**NU-SPGN090308HS**			.0313	.0984					★									—	

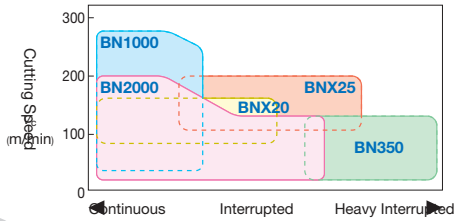
*Use NS (NS-SPGN) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

11° Positive (Without Hole)

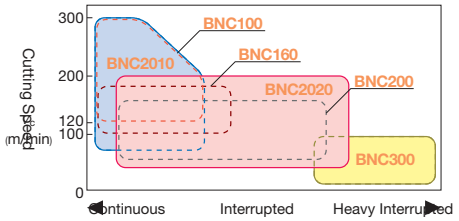
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**SPG321**	**SPGN090304**	1	1	.0156	.1890										★	★			—	—
		SPG322	**SPGN090308**			.0313	.1890										★	★			—	—

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



S Square

SPG42● Uncoated

Dimensions (inch)				
	Inscribed Circle	.500	Hole Dia.	—
	Thickness	.1250		

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended | General Cutting ◕ 1st Recommended ◔ 2nd Recommended | Interrupted Cutting ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application			Uncoated CBN														Binderless CBN
			BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel		○	◔	✲	●	◕	◔	✱							
	Sintered Components											◕			●		

Applicable External Holders ☞ C52

11° Positive (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE
	Standard	**SPG421**	**SPGN120304**	1	1	.0156	.1890

BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
					●								—	—

SPGA32● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	—
	Thickness	.1250		

Recommended Application			Uncoated CBN														Binderless CBN
			BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel		○	◔	✲	●	◕	◔	✱							
	Sintered Components											◕			●		

Applicable Internal Holders ☞ E45

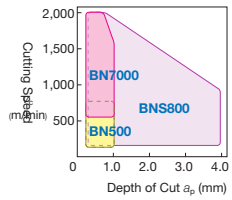
11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE
	Standard	**SPGA322**	**SPGW090308**	1	1	.0313	.3740

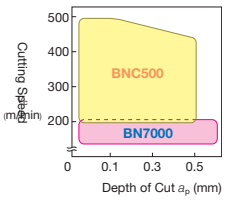
BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
					●			●					—	—

CBN Application Range Map

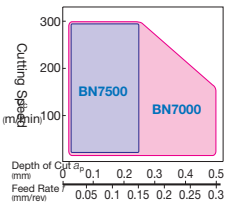
(C) Gray Cast Iron



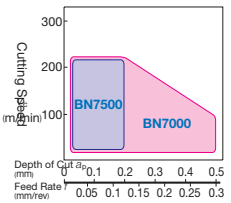
(D) Ductile Cast Iron



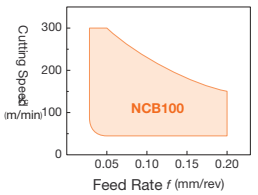
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

TN■■33● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

Recommended Application		Uncoated CBN														Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✱	●	◕	◔	✱								
	Sintered Components										◕			●		

Applicable External Holders ☞ C20 to C26 Applicable Internal Holders ☞ E23 to E25

Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUTNMA330**	**NU-TNMA160401**	1	1	.0039	.0984					★									—	—
		NUTNMA330.5	**NU-TNMA160402**			.0078	.0945					★									—	—
		NUTNMA331	**NU-TNMA160404**			.0156	.0906		▲		●	●	●	●		★	★	★			—	—
		NUTNMA332	**NU-TNMA160408**			.0313	.0787		●		●	●	●	●		★	★	★			—	—
		NUTNMA333	**NU-TNMA160412**			.0469	.0787		▲		●	●		●		★	★	★			—	—
		T-NUTNMA331	**T-NU-TNMA160404**	10	1	.0156	.0906				★	★		★		★					—	—
		T-NUTNMA332	**T-NU-TNMA160408**			.0313	.0787				★	★		★		★					—	—
		NSTNMA331	**NS-TNMA160404**	1	1	.0156	.0906			●	—	—	—	—	—	—	—	—	—	—	—	—
		NSTNMA332	**NS-TNMA160408**			.0313	.0787			●	—	—	—	—	—	—	—	—	—	—	—	—

*Depth of cut for single-use types is 0.0197 inch or less.

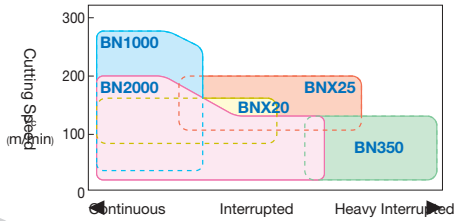
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**3NUTNGA331**	**3NU-TNGA160404**	1	3	.0156	.0906		★		★	●	●	●			●	★		●	—	
		3NUTNGA332	**3NU-TNGA160408**			.0313	.0787		★		●	●	●	●			●	★		●	—	
		3NUTNGA333	**3NU-TNGA160412**			.0469	.0787		★		●	●	●	●			★	▲		●	—	
		3NSTNGA331	**3NS-TNGA160404**	1	3	.0156	.0906			★	—	—	—	—	—	—	—	—	—	—	—	—
		3NSTNGA332	**3NS-TNGA160408**			.0313	.0787			★	—	—	—	—	—	—	—	—	—	—	—	—
		T-3NUTNGA331	**T-3NU-TNGA160404**	10	3	.0156	.0906					★					★	★		★	—	—
		T-3NUTNGA332	**T-3NU-TNGA160408**			.0313	.0787					★		★			★	★			—	—
		T-3NUTNGA333	**T-3NU-TNGA160412**			.0469	.0787					★									—	—

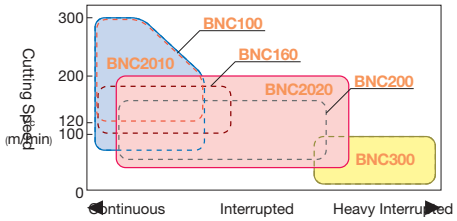
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TN■■33● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ● ◔
S	Exotic Alloy	● ◔ ●
H	Hardened Steel	○ ◔ ✲ ● ◔ ◔ ✱
	Sintered Components	● ●

Applicable External Holders ☞ C20 to C26 Applicable Internal Holders ☞ E23 to E25

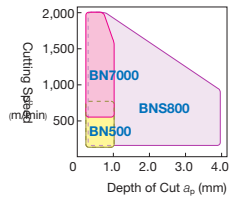
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800 (Binderless CBN)	NCB100 (Binderless CBN)
 Break Master	S00535	3NUTNGG331LV	3NU-TNGM160404N-LV	1	3	.0156	.0906					★									—	
		3NUTNGG332LV	3NU-TNGM160408N-LV			.0313	.0787					★									—	
		3NUTNGG333LV	3NU-TNGM160412N-LV			.0469	.0787					★									—	
 Low Cutting Force	Sharp Edge	3NUTNGA331LF	3NU-TNGA160404LF	1	3	.0156	.0906										★	★		●	—	
		3NUTNGA332LF	3NU-TNGA160408LF			.0313	.0787										★	★		●	—	
 Low Cutting Force	Honing	3NUTNGA331LE	3NU-TNGA160404LE	1	3	.0156	.0906													●	—	
		3NUTNGA332LE	3NU-TNGA160408LE			.0313	.0787													●	—	
 Sharper Edge	T01215	3NUTNGA331LT	3NU-TNGA160404LT	1	3	.0156	.0906				●	●									—	—
		3NUTNGA332LT	3NU-TNGA160408LT			.0313	.0787				●	●									—	—
		3NUTNGA333LT	3NU-TNGA160412LT			.0469	.0787				▲	●									—	—
 General-purpose for Continuous Cutting	S00715	3NUTNGA331LS	3NU-TNGA160404LS	1	3	.0156	.0906													★	—	
		3NUTNGA332LS	3NU-TNGA160408LS			.0313	.0787													●	—	
 Strong Edge	T01235	3NUTNGA331T	3NU-TNGA160404HT	1	3	.0156	.0906							★							—	
		3NUTNGA332T	3NU-TNGA160408HT			.0313	.0787							★							—	
		3NUTNGA333T	3NU-TNGA160412HT			.0469	.0787							★							—	
 Strong Edge	BN2000→S01235 BN7000→S01225 BN700→S01225 BN7500→S00525	3NUTNGA331HS	3NU-TNGA160404HS	1	3	.0156	.0906					●					★	★		●	—	
		3NUTNGA332HS	3NU-TNGA160408HS			.0313	.0787					★					●	★		●	—	
		3NUTNGA333HS	3NU-TNGA160412HS			.0469	.0787					●									—	

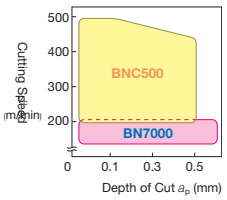
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

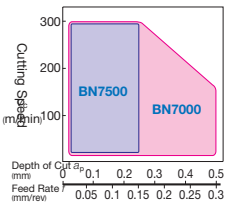
(C) Gray Cast Iron



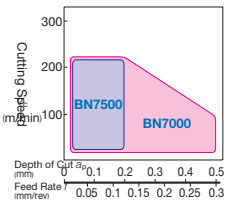
(D) Ductile Cast Iron



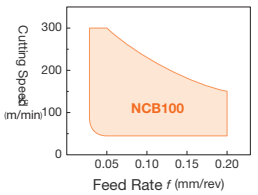
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✲ 2nd Recommended

TN■■33● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

Recommended Application		Uncoated CBN														Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components										◕			●		

Applicable External Holders ☞ C20 to C26 Applicable Internal Holders ☞ E23 to E25

Multi-cornered/Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**3MDTNMA331**	**3MD-TNMA160404**	1	3	.0156	.1260						●								—	—
		3MDTNMA332	**3MD-TNMA160408**			.0313	.1142						●					▲			—	—

Negative (With Hole)

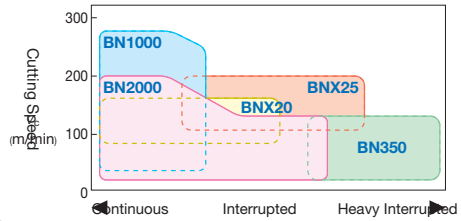
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TNMA330.5**	**TNMA160402**	1	1	.0078	.1417		●			★									—	—
		TNMA331	**TNMA160404**			.0156	.1378		★			★	●								—	—
		TNMA332	**TNMA160408**			.0313	.1260					★	●			★	★	★			—	—
		TNMA333	**TNMA160412**			.0469	.1142					★				★	★	★			—	—

Solid / Negative (With Hole)

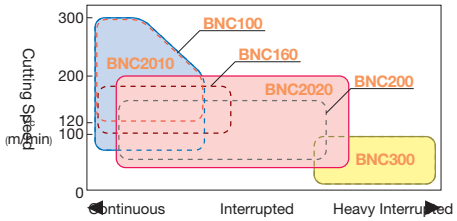
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TNGA332**	**TNGA160408**	1	Solid	.0313	.6024	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		TNGA333	**TNGA160412**			.0469	.5827	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TNG■33● Coated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	● ● ✱ ○ ○
	Sintered Components	

Applicable External Holders ☞ C20 to C26 Applicable Internal Holders ☞ E23 to E25

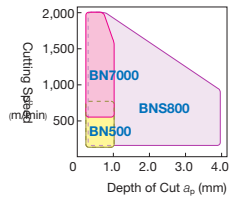
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	3NCTNGA331	3NC-TNGA160404	1	3	.0156	.0906	★	★				★			
		3NCTNGA332	3NC-TNGA160408			.0313	.0787	●	●	●	●	●	●			
		3NCTNGA333	3NC-TNGA160412			.0469	.0787	★	★							
		3NCTNGA334*	3NC-TNGA160416*			.0625	.1299	★	★	★		★	★			
		3NCTNGA335*	3NC-TNGA160420*			.0787	.1181	★	★	★		★	★			
		3NCTNGA336*	3NC-TNGA160424*			.0938	.1063	★	★	★		★	★			
	Standard	6NCTNGA330.5	6NC-TNGA160402	1	6	.0078	.0945	★	★							
		6NCTNGA331	6NC-TNGA160404			.0156	.0906	●	●	●	★	●	●	▲	●	★
		6NCTNGA332	6NC-TNGA160408			.0313	.0787	●	●	●	●	●	●		●	★
		6NCTNGA333	6NC-TNGA160412			.0469	.0787	●	●	●	●	●	●			★
		6NCTNGA334*	6NC-TNGA160416*			.0625	.1299	★	★	★		★	★			
		6NCTNGA335*	6NC-TNGA160420*			.0787	.1181	★	★	★		★	★			
		6NCTNGA336*	6NC-TNGA160424*			.0938	.1063	★	★	★		★	★			
 Break Master	Honing	6NCTNGG331FV	6NC-TNGG160404N-FV	1	6	.0156	.0906	★	★			★	★			
		6NCTNGG332FV	6NC-TNGG160408N-FV			.0313	.0787	★	★			★	★			
		6NCTNGG333FV	6NC-TNGG160412N-FV			.0469	.0787	★	★			★	★			
 Break Master	S00535	6NCTNGG331LV	6NC-TNGG160404N-LV	1	6	.0156	.0906	★	★			★	★			
		6NCTNGG332LV	6NC-TNGG160408N-LV			.0313	.0787	★	★			★	★			
		6NCTNGG333LV	6NC-TNGG160412N-LV			.0469	.0787	★	★			★	★			
 Break Master	S01235	6NCTNGG332SV	6NC-TNGG160408N-SV	1	6	.0313	.0787	★	●			★	●			
		6NCTNGG333SV	6NC-TNGG160412N-SV			.0469	.0787	★	★			★	★			
 Low Cutting Force	Honing	3NCTNGA331LE	3NC-TNGA160404LE	1	3	.0156	.0906	★								
		3NCTNGA332LE	3NC-TNGA160408LE			.0313	.0787	★								
		3NCTNGA333LE	3NC-TNGA160412LE			.0469	.0787	★								
 Sharper Edge	T00515	3NCTNGA330.5LT	3NC-TNGA160402LT	1	3	.0078	.0945		★							
		3NCTNGA331LT	3NC-TNGA160404LT			.0156	.0906		●							
		3NCTNGA332LT	3NC-TNGA160408LT			.0313	.0787		●							
		3NCTNGA333LT	3NC-TNGA160412LT			.0469	.0787		★							

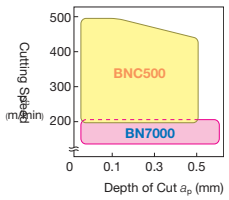
*For use with CBN holders for the high-efficiency machining shown on page L112 & L113.

CBN Application Range Map

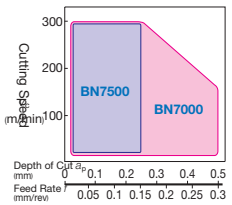
(C) Gray Cast Iron



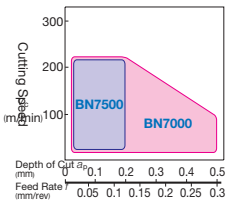
(D) Ductile Cast Iron



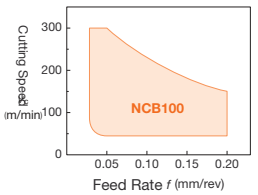
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended ✚ 2nd Recommended

Recommended Application		Coated CBN
K	Cast Iron	●
S	Exotic Alloy	
H	Hardened Steel	● ◕ ✖ ○ ○
	Sintered Components	

TNG■33●

Coated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

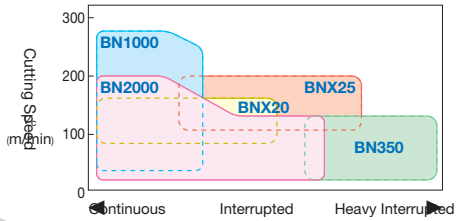
Applicable External Holders C20 to C26 Applicable Internal Holders E23 to E25

Multi-Cornered Single-Use / Negative (With Hole)

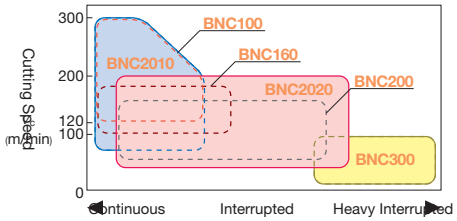
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	3NCTNGA331LS 3NCTNGA332LS 3NCTNGA333LS	3NC-TNGA160404LS 3NC-TNGA160408LS 3NC-TNGA160412LS	1	3	.0156 .0313 .0469	.0906 .0787 .0787			★ ★ ★	 ▲ 	 	 ● 			
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	6NCTNGA331LS 6NCTNGA332LS 6NCTNGA333LS	6NC-TNGA160404LS 6NC-TNGA160408LS 6NC-TNGA160412LS	1	6	.0156 .0313 .0469	.0906 .0787 .0787				★ ● ●	● ● ★	★ ★ ★			
 High-Efficiency	S00535	6NCTNGA331ES 6NCTNGA332ES 6NCTNGA333ES	6NC-TNGA160404ES 6NC-TNGA160408ES 6NC-TNGA160412ES	1	6	.0156 .0313 .0469	.0906 .0787 .0787		★ ★ ★							
 Strong Edge	BNC2020→S02735 BNC200→S01735 BNC300→S01735	3NCTNGA332HS	3NC-TNGA160408HS	1	3	.0313	.0787		●	●			●			
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735 BNC300→S01735 BNC500→S01225	6NCTNGA331HS 6NCTNGA332HS 6NCTNGA333HS	6NC-TNGA160404HS 6NC-TNGA160408HS 6NC-TNGA160412HS	1	6	.0156 .0313 .0469	.0906 .0787 .0787	● ● ●	● ● ●	★ ★ ★	 ▲	● ● ●	● ● ●			★ ★ ★

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TNMA43 Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application																
K	Cast Iron									○	●				◔	
S	Exotic Alloy										●				◔	●
H	Hardened Steel	○	◔	✲	●	◔	◔	✱								
	Sintered Components										◔			●		

Applicable External Holders C20 to C26 Applicable Internal Holders E23 to E25

Negative (With Hole)

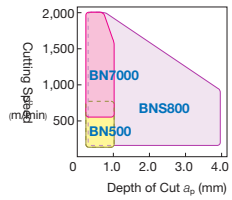
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	Binderless CBN: BNS800	NCB100
	Standard	**TNMA431**	**TNMA220404**	1	1	.0156	.1378		●												—	—
		TNMA432	**TNMA220408**			.0313	.1260		●			★	●								—	—
		TNMA433	**TNMA220412**			.0469	.1142					★	●								—	—

Single-Use / Negative (With Hole)

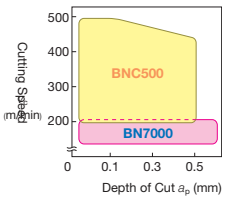
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	Binderless CBN: BNS800	NCB100
	Standard	**NUTNMA431**	**NU-TNMA220404**	1	1	.0156	.0906		●		●		●								—	—
		NUTNMA432	**NU-TNMA220408**			.0313	.0787	●	●		●		●								—	—
		NUTNMA433	**NU-TNMA220412**			.0469	.0787		●		●		●								—	—

CBN Application Range Map

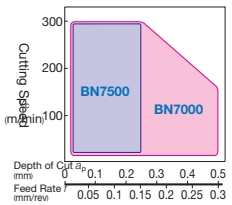
(C) Gray Cast Iron



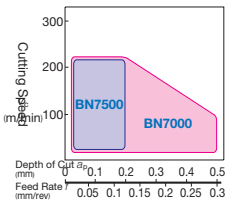
(D) Ductile Cast Iron



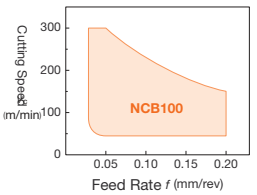
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended ✚ 2nd Recommended

TNG22● Uncoated

Dimensions (inch)	Inscribed Circle	.2500	Hole Dia.	—
	Thickness	.1250		

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✚	●	◕	◔	✖								
	Sintered Components										◕			●		

Solid / Negative (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TNG222**	**TNGN110308**	1	Solid	.0313	.3858	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		TNG223	**TNGN110312**			.0469	.3622	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
 Low Cutting Force	Sharp Edge	**TNG222F**	**TNGN110308LF**	1	Solid	.0313	.3858	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		TNG223F	**TNGN110312LF**			.0469	.3622	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

TNG33 Uncoated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	—
	Thickness	.1875		

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✚	●	◕	◔	✖								
	Sintered Components										◕			●		

Negative (Without Hole)

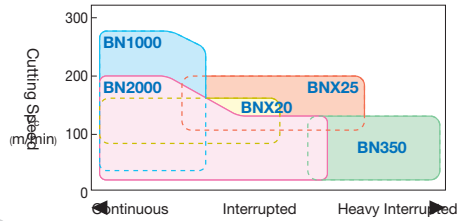
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TNG331**	**TNGN160404**	1	1	.0156	.1378					★										—
		TNG332	**TNGN160408**			.0313	.1260	—	★	—	—	★	—	—	—	—	—	—	—	—	●	—
		TNG333	**TNGN160412**			.0469	.1142	—	—	—	—	★	—	—	—	—	—	—	—	—	●	—

Solid / Negative (Without Hole)

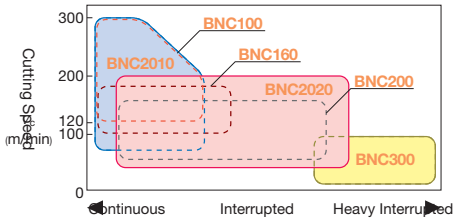
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TNG332**	**TNGN160408**	1	Solid	.0313	.6024	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		TNG333	**TNGN160412**			.0469	.5827	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—
		TNG334	**TNGN160416**			.0625	.5591	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—
		TNG335	**TNGN160420**			.0787	.5354	—	—	—	—	—	—	—	—	—	—	—	—	—	★	—

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TBGE52● Uncoated

Dimensions (inch)	Inscribed Circle	.1563	Hole Dia.	—
	Thickness	.0625		

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ● ●
S	Exotic Alloy	● ● ●
H	Hardened Steel	○ ○ ✱ ● ● ○ ✱
	Sintered Components	● ●

Applicable Internal Holders E74

5° Positive (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
								Uncoated CBN													Binderless CBN	
	Standard	**TBGE520.5B**	**TBGN060102B**	1	3	.0078	.2559					●	●								—	
		TBGE521B	**TBGN060104B**			.0156	.2480					●	●	★		★	●				—	
		TBGE521BSN	**TBGN060104-BSTN**			.0156	.2480		★												—	
		TBGE522B	**TBGN060108B**			.0313	.2244					★	●	★		★	★				—	
		TBGE522BSN	**TBGN060108-BSTN**			.0313	.2244		★												—	

*STN inserts are sharper edge type

TCGA21.5● Uncoated

Dimensions (inch)	Inscribed Circle	.2500	Hole Dia.	.1100
	Thickness	.0938		

Recommended Application		
K	Cast Iron	○ ● ●
S	Exotic Alloy	● ● ●
H	Hardened Steel	○ ○ ✱ ● ● ○ ✱
	Sintered Components	● ●

Applicable External Holders C39, C40, D27 Applicable Internal Holders E47

7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
								Uncoated CBN													Binderless CBN	
	Standard	**3NUTCGA21.51**	**3NU-TCGW110204**	1	3	.0156											●	▲			—	
		3NUTCGA21.52	**3NU-TCGW110208**			.0313											●	▲			—	

TCGA21.5● Coated

Dimensions (inch)	Inscribed Circle	.2500	Hole Dia.	.1100
	Thickness	.0938		

Recommended Application		
K	Cast Iron	●
S	Exotic Alloy	
H	Hardened Steel	● ● ✱ ○ ○
	Sintered Components	

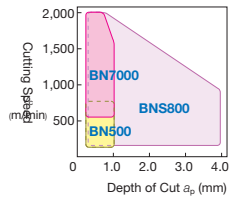
Applicable External Holders C39, C40, D27 Applicable Internal Holders E47

7° Positive (with hole)

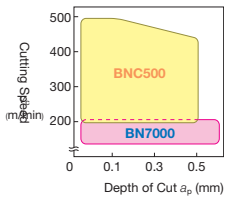
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
								Coated CBN								
	Standard	**NCTCGA21.51**	**NC-TCGW110204**	1	1	.0156	.0906	●	●		●	●	●			
		NCTCGA21.52	**NC-TCGW110208**			.0313	.0787	●	●		●	●	●			
		3NCTCGA21.51	**3NC-TCGW110204**	1	3	.0156	.0984						●			●

CBN Application Range Map

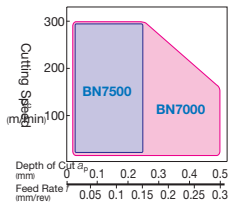
(C) Gray Cast Iron



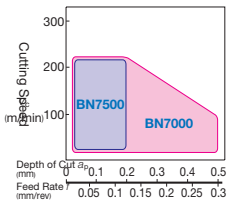
(D) Ductile Cast Iron



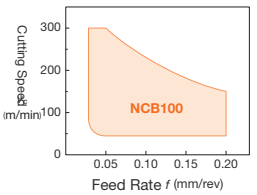
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended | General Cutting ◕ 1st Recommended ◔ 2nd Recommended | Interrupted Cutting ✖ 1st Recommended ✚ 2nd Recommended

TCGA32.5● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

Applicable External Holders ☞ C39, C40, D27 Applicable Internal Holders ☞ E47

7° positibe(with hole)

Recommended Application		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
		Uncoated CBN														Binderless CBN
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✚	●	◕	◔	✖								
	Sintered Components										◕			●		

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE
	Standard	**3NUTCGA32.52**	**3NU-TCGW16T308**	1	3	.0313	

TCGA32.5● Coated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1563		

Applicable External Holders ☞ C39, C40, D27 Applicable Internal Holders ☞ E47

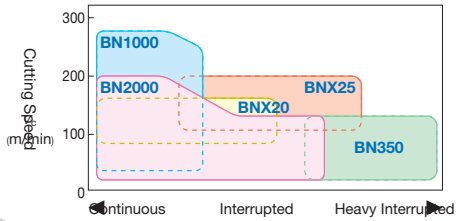
7° positibe(with hole)

Recommended Application		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
		Coated CBN								
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✖	○	○				
	Sintered Components									

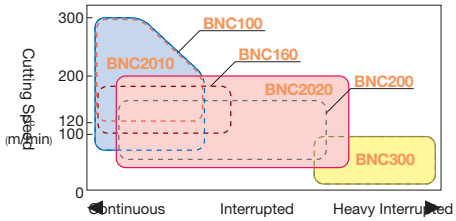
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE
	Standard	**3NCTCGA32.52**	**3NC-TCGW16T308**	1	3	.0313	.0787

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular

TPG■63● Uncoated

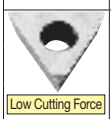
Dimensions (inch)	Inscribed Circle	.1875	Hole Dia.	.0945
	Thickness	.0937		

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended | General Cutting ● 1st Recommended ○ 2nd Recommended | Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	K Cast Iron									○	●				●	
	S Exotic Alloy										●				●	●
	H Hardened Steel	○	○	✱	●	●	○	✱								
	Sintered Components										●			●		
		Uncoated CBN													Binderless CBN	

Applicable Internal Holders ☞ E46, E48, E50 to E52

Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUTPGD630.5**	**NU-TPGW080202**	1	1	.0078	.1024				★	●	●				●	★			—	
		NUTPGD631	**NU-TPGW080204**			.0156	.0984	★			●	●	●				●	★	▲		—	
		NUTPGD632	**NU-TPGW080208**			.0313	.0866					●					★	★			—	
		T-NUTPGD630.5	**T-NU-TPGW080202**	10	1	.0078	.1024					★									—	
		T-NUTPGD631	**T-NU-TPGW080204**			.0156	.0984				★	★									—	
 Low Cutting Force	Sharp Edge	**NUTPGD631F**	**NU-TPGW080204LF**	1	1	.0156	.0984										★	★			—	
 Sharper Edge	T01215	**NUTPGD630.5S**	**NU-TPGW080202LT**	1	1	.0078	.1024						●								—	—
		NUTPGD631S	**NU-TPGW080204LT**			.0156	.0984						★								—	—
		NUTPGD630.5LT	**NU-TPGW080202LT**			.0078	.1024					●									—	—
		NUTPGD631LT	**NU-TPGW080204LT**			.0156	.0984					★									—	—
 Strong Edge	S01235	**NUTPGD630.5HS**	**NU-TPGW080202HS**	1	1	.0078	.1024					●									—	
		NUTPGD631HS	**NU-TPGW080204HS**			.0156	.0984					●									—	
		NUTPGD632HS	**NU-TPGW080208HS**			.0313	.0866					●									—	

*Use NS (NSTPGD) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

TPG■63● Coated

Dimensions (inch)	Inscribed Circle	.1875	Hole Dia.	.0945
	Thickness	.0937		

Recommended Application		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	K Cast Iron									●
	S Exotic Alloy									
	H Hardened Steel	●	●	✱	○	○				
	Sintered Components									
		Coated CBN								

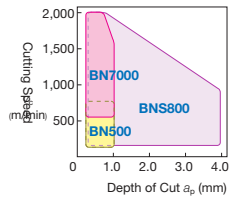
Applicable Internal Holders ☞ E46, E48, E50 to E52

Multi-Cornered Single-Use / 11° Positive (With Hole)

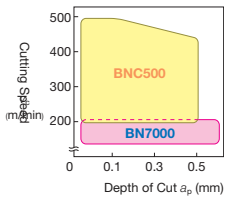
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**3NCTPGA630.5**	**3NC-TPGW080202**	1	3	.0078	.1024	★	★							
		3NCTPGA631	**3NC-TPGW080204**			.0156	.0984	★	★							

CBN Application Range Map

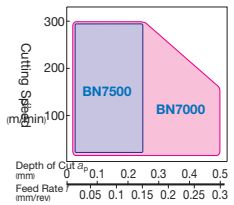
(C) Gray Cast Iron



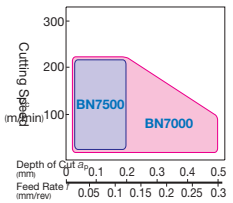
(D) Ductile Cast Iron



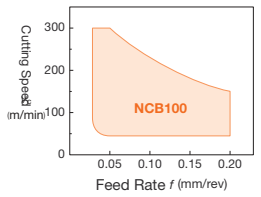
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✲ 2nd Recommended

TPG■1.81.5● Uncoated

Dimensions (inch)	Inscribed Circle	.2189	Hole Dia.	.1020
	Thickness	.0937		

Applicable Internal Holders ☞ E48, E52

Recommended Application

		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components										●			●		
		Uncoated CBN														Binderless CBN

Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cuttiag Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	NUTPGA1.81.50.5	NU-TPGW090202	1	1	.0078	.1024					●	▲				★	★			—	
		NUTPGA1.81.51	NU-TPGW090204			.0156	.0984				★	●	●				★	★			—	
		NUTPGA1.81.52	NU-TPGW090208			.0313	.0866					●									—	
 Sharper Edge	T01215	NUTPGA1.81.50.5LT	NU-TPGW090202LT	1	1	.0078	.1024					●									—	—
		NUTPGA1.81.51LT	NU-TPGW090204LT			.0156	.0984					●									—	—
 Strong Edge	S01235	NUTPGA1.81.50.5HS	NU-TPGW090202HS	1	1	.0078	.1024					●									—	
		NUTPGA1.81.51HS	NU-TPGW090204HS			.0156	.0984					●									—	

*Use NS (NSTPGA) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

TPG■1.81.5● Coated

Dimensions (inch)	Inscribed Circle	.2189	Hole Dia.	.1020
	Thickness	.0937		

Applicable Internal Holders ☞ E48, E52

Recommended Application

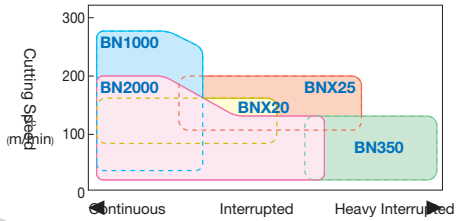
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✱	○	○				
	Sintered Components									
		Coated CBN								

Multi-Cornered Single-Use / 11° Positive (With Hole)

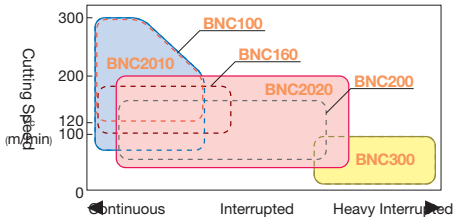
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	3NCTPGA1.81.50.5	3NC-TPGW090202	1	3	.0078	.1024	★	★							★
		3NCTPGA1.81.51	3NC-TPGW090204			.0156	.0984	★	★							★

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TPGA21.5 Uncoated

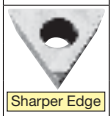
Dimensions (inch)	Inscribed Circle	.2500	Hole Dia.	.1100
	Thickness	.0937		

Applicable Internal Holders E48, E52

(Legend) Continuous Cutting: 1st Recommended, 2nd Recommended; General Cutting: 1st Recommended, 2nd Recommended; Interrupted Cutting: 1st Recommended, 2nd Recommended

Recommended Application		
K	Cast Iron	○ 1st ● 2nd
S	Exotic Alloy	● 1st ● 2nd
H	Hardened Steel	○ ○ ● ● ● ○ ✖
	Sintered Components	● ●

Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	NUTPGA21.50.5	NU-TPGW110202	1	1	.0078	.0984					●					★	★			—	
		NUTPGX21.50.5	NU-TPGW110202			.0078	.0984	●					●				★	★			—	
		NUTPGA21.51	NU-TPGW110204			.0156	.0906	●				●									—	
		NUTPGX21.51S	NU-TPGW110204			.0156	.0906						●								—	
		T-NUTPGA21.51	T-NU-TPGW110204	10	1	.0156	.0906					★									—	
 Sharper Edge	T01215	NUTPGA21.50.5LT	NU-TPGW110202LT	1	1	.0078	.0984					●									—	—
		NUTPGA21.51LT	NU-TPGW110204LT			.0156	.0906					●									—	—
		NUTPGA21.51S	NU-TPGW110204LT			.0156	.0906						●								—	
 Strong Edge	S01235	NUTPGA21.51HS	NU-TPGW110204HS	1	1	.0156	.0906					●									—	

*Use NS (NSTPGA) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

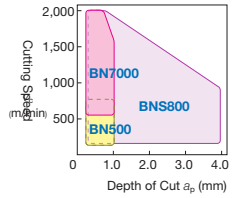
Multi-Cornered Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	3NUTPGA21.51	3NU-TPGW110204	1	3	.0156	.0906										●	▲		●	—	
		3NUTPGA21.52	3NU-TPGW110208			.0313	.0787										●			●	—	
 Low Cutting Force	Sharp Edge	3NUTPGA21.51LF	3NU-TPGW110204LF	1	3	.0156	.0906										★			●	—	
 Low Cutting Force	Honing	3NUTPGA21.51LE	3NU-TPGW110204LE	1	3	.0156	.0906													●	—	
 General-purpose for Continuous Cutting	S00715	3NUTPGA21.51LS	3NU-TPGW110204LS	1	3	.0156	.0906													●	—	

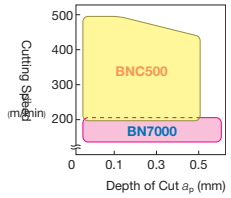
*Use 3NS (3NSTPGA) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

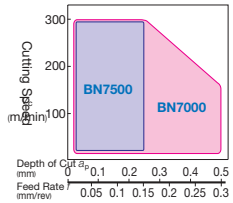
(C) Gray Cast Iron



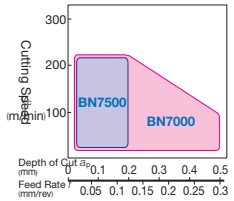
(D) Ductile Cast Iron



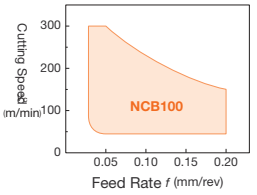
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended, ○ 2nd Recommended; General Cutting: ◕ 1st Recommended, ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended, ✚ 2nd Recommended

Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✖	○	○				
	Sintered Components									

TPGA21.5● Coated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1100
	Thickness	.0937		

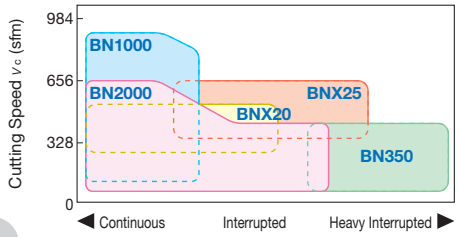
Applicable Internal Holders ☞ E48, E50

Multi-Cornered Single-Use / 11° Positive (With Hole)

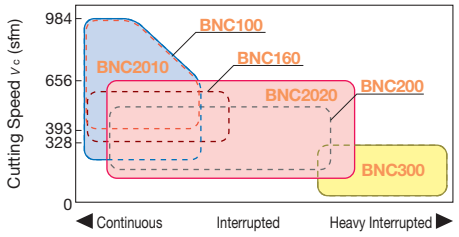
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**3NCTPGA21.51**	**3NC-TPGW110204**	1	3	.0156	.0984									●
		3NCTPGA21.52	**3NC-TPGW110208**			.0313	.0787									●

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TPG■22● Uncoated

Dimensions (inch)	Inscribed Circle	.2500	Hole Dia.	.1339
	Thickness	.1250		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ●
S	Exotic Alloy	● ●
H	Hardened Steel	○ ○ ✱ ● ● ○ ✱
	Sintered Components	● ●

Applicable Internal Holders ☞ E46, E48, E50 to E52

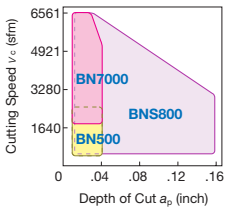
Multi-Cornered Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	3NUTPGA220.5	3NU-TPGW110302	1	3	.0078	.0945										●	▲			—	
		3NUTPGA221	3NU-TPGW110304			.0156	.0984										●	▲		●	—	
		3NUTPGA222	3NU-TPGW110308			.0313	.0866										●	▲		●	—	
 Break Master	Honing	3NUTPGT221FV	3NU-TPGT110304N-FV	1	3	.0156	.0866					★									—	
		3NUTPGT222FV	3NU-TPGT110308N-FV			.0313	.0748					★									—	
 Low Cutting Force	Sharp Edge	3NUTPGA220.5LF	3NU-TPGW110302LF	1	3	.0078	.1024										★			●	—	
		3NUTPGA221LF	3NU-TPGW110304LF			.0156	.0984										★			●	—	
		3NUTPGA222LF	3NU-TPGW110308LF			.0313	.0866										★			●	—	
 Low Cutting Force	Honing	3NUTPGA221LE	3NU-TPGW110304LE	1	3	.0156	.0984													●	—	
 General-purpose for Continuous Cutting	S00715	3NUTPGA221LS	3NU-TPGW110304LS	1	3	.0156	.0984													●	—	

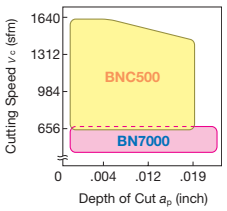
*Use 3NS (3NSTPGA) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

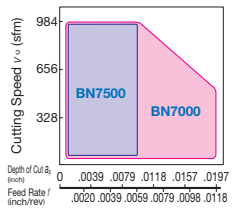
(C) Gray Cast Iron



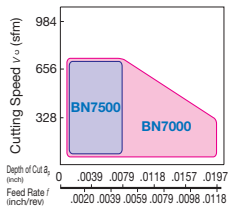
(D) Ductile Cast Iron



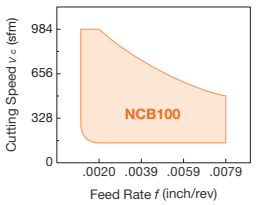
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✲ 2nd Recommended

TPG■22● Uncoated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1339
	Thickness	.1250		

Recommended Application

		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components										◕			●		

Uncoated CBN | Binderless CBN

Applicable Internal Holders ☞ E46, E48, E50 to E52

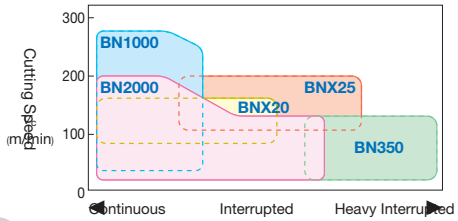
Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUTPGA220.5**	**NU-TPGW110302**	1	1	.0078	.1024				▲	●	●			★	★	★			—	
		NUTPGA221	**NU-TPGW110304**			.0156	.0984	●	●		●	●	●	●		★	★	★			—	
		NUTPGA222	**NU-TPGW110308**			.0313	.0866	●	●		●	●	●	●		★	★	★			—	
		NSTPGA221	**NS-TPGW110304**	1	1	.0156	.0984			★											—	
		NSTPGA222	**NS-TPGW110308**			.0313	.0906			★											—	
		T-NUTPGA220.5	**T-NU-TPGW110302**	10	1	.0078	.1024				★	★									—	
		T-NUTPGA221	**T-NU-TPGW110304**			.0156	.0984				★	★		★							—	
		T-NUTPGA222	**T-NU-TPGW110308**			.0313	.0866				★	★		★							—	
 Low Cutting Force	Sharp Edge	**NUTPGA220.5LF**	**NU-TPGW110302LF**	1	1	.0078	.1024										★	★			—	
		NUTPGA221LF	**NU-TPGW110304LF**			.0156	.0984										★	★			—	
		NUTPGA222LF	**NU-TPGW110308LF**			.0313	.0866										★	★			—	
 Sharper Edge	T01215	**NUTPGA220.5LT**	**NU-TPGW110302LT**	1	1	.0078	.1024					●									—	—
		NUTPGA221LT	**NU-TPGW110304LT**			.0156	.0984		★			●	★								—	—
		NUTPGA222LT	**NU-TPGW110308LT**			.0313	.0866		★			●	★								—	—
 Strong Edge	S01235	**NUTPGA220.5HS**	**NU-TPGW110302HS**	1	1	.0078	.1024					●									—	
		NUTPGA221HS	**NU-TPGW110304HS**			.0156	.0984					●									—	
		NUTPGA222HS	**NU-TPGW110308HS**			.0313	.0866					●									—	

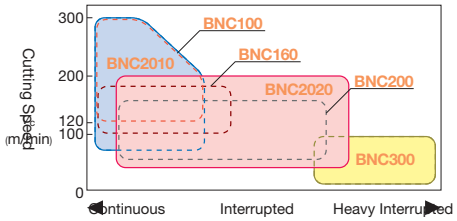
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TPG■22● Uncoated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1339
	Thickness	.1250		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ●
S	Exotic Alloy	● ◕ ●
H	Hardened Steel	○ ◔ ✲ ● ◕ ◔ ✱
	Sintered Components	◕ ●

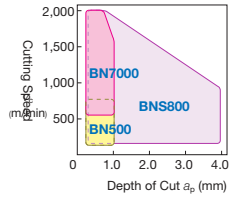
Applicable Internal Holders ☞ E46, E48, E50 to E52

11° Positive (With Hole)

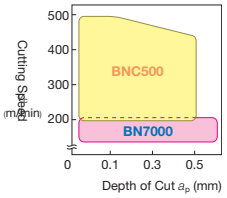
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	Binderless CBN: NCB100
	Standard	**TPGA221**	**TPGW110304**	1	1	.0156	.1378		●			★	●				★	★			—	—
		TPGA222	**TPGW110308**			.0313	.1260					★	●								—	—
 Strong Edge	S01235	**TPG221HS**	**TPGW110304HS**	1	1	.0156	.1378					★									—	
		TPGA222HS	**TPGW110308HS**			.0313	.1260					★									—	

CBN Application Range Map

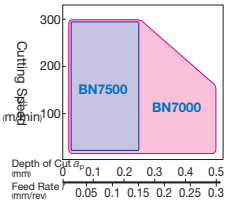
(C) Gray Cast Iron



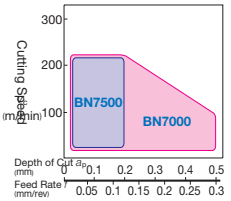
(D) Ductile Cast Iron



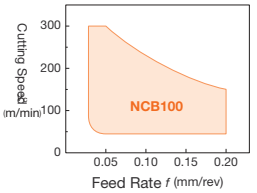
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended ◯ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended ✚ 2nd Recommended

Recommended Application		Coated CBN
K	Cast Iron	●
S	Exotic Alloy	
H	Hardened Steel	● ◕ ✖ ◯ ◯
	Sintered Components	

TPG■22●

Coated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1339
	Thickness	.1250		

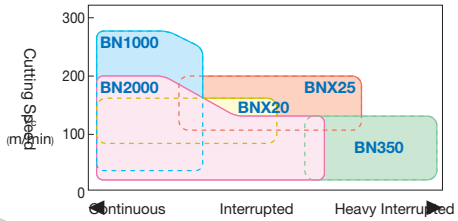
Applicable Internal Holders ☞ E46, E49 to E52

Multi-Cornered Single-Use / 11° Positive (With Hole)

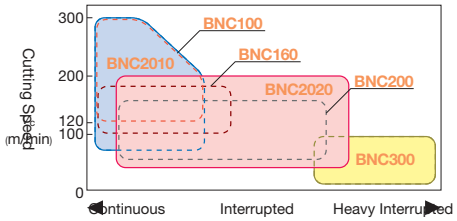
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**NCTPGA221**	**NC-TPGW110304**	1	1	.0156	.0906	●	●		●	●	●		▲	
		NCTPGA222	**NC-TPGW110308**			.0313	.0787	●	●			▲	●	▲		
	Standard	**3NCTPGA220.5**	**3NC-TPGW110302**	1	3	.0078	.0945	★	★							
		3NCTPGA221	**3NC-TPGW110304**			.0156	.0906	★	●	★	★	★	●			★
		3NCTPGA222	**3NC-TPGW110308**			.0313	.0787	★	●	★	★	★	●			★
 Break Master	Honing	**3NCTPGT221FV**	**3NC-TPGT110304N-FV**	1	3	.0156	.0866	★	★			★	★			
		3NCTPGT222FV	**3NC-TPGT110308N-FV**			.0313	.0748	★	★			★	★			
 Low Cutting Force	Honing	**3NCTPGA220.5LE**	**3NC-TPGW110302LE**	1	3	.0078	.0945	★								
		3NCTPGA221LE	**3NC-TPGW110304LE**			.0156	.0906	★								
		3NCTPGA222LE	**3NC-TPGW110308LE**			.0313	.0787	★								
 Sharper Edge	T00515	**3NCTPGA220.5LT**	**3NC-TPGW110302LT**	1	3	.0078	.0945		★							
		3NCTPGA221LT	**3NC-TPGW110304LT**			.0156	.0906		●							
		3NCTPGA222LT	**3NC-TPGW110308LT**			.0313	.0787		●							
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	**3NCTPGA221LS**	**3NC-TPGW110304LS**	1	3	.0156	.0906			★	★	●	●			
		3NCTPGA222LS	**3NC-TPGW110308LS**			.0313	.0787			★	★	★	●			
 Strong Edge	S01735	**3NCTPGA221HS**	**3NC-TPGW110304HS**	1	3	.0156	.0906			★						
		3NCTPGA222HS	**3NC-TPGW110308HS**			.0313	.0787			★						

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TPGA32● Uncoated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1250		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application																
K	Cast Iron									○	●				◔	
S	Exotic Alloy										●				◔	●
H	Hardened Steel	○	◔	✲	●	◔	◔	✱								
	Sintered Components										◔			●		

Applicable Internal Holders ☞ E48, E52

Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	Binderless CBN: BNS800	NCB100
	Standard	**NUTPGA320.5**	**NU-TPGW160302**	1	1	.0078	.0945					●										
		NUTPGA321	**NU-TPGW160304**			.0156	.0906				●	●	●	●								
		NUTPGA322	**NU-TPGW160308**			.0313	.0787				●	●	●	●								

*Depth of cut for single-use types is 0.0197 inch or less.

TPGA33● Uncoated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1875		

Recommended Application																
K	Cast Iron									○	●				◔	
S	Exotic Alloy										●				◔	●
H	Hardened Steel	○	◔	✲	●	◔	◔	✱								
	Sintered Components										◔			●		

Applicable Internal Holders ☞ E46, E48, E51 to E52

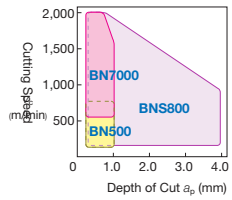
Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	Binderless CBN: BNS800	NCB100
	Standard	**NUTPGA331**	**NU-TPGW160404**	1	1	.0156	.0984	●	●		●	●	●	●		★	●	★			—	
		NUTPGA332	**NU-TPGW160408**			.0313	.0866	●	●		●	●	●	●		★	●	★			—	
		NSTPGA331	**NS-TPGW160404**	1	1	.0156	.0984			★	—	—	—	—	—	—	—	—	—	—	—	—
		NSTPGA332	**NS-TPGW160408**			.0313	.0906			★	—	—	—	—	—	—	—	—	—	—	—	—
		T-NUTPGA331	**T-NU-TPGW160404**	10	1	.0156	.0984				★	★		★		★					—	
		T-NUTPGA332	**T-NU-TPGW160408**			.0313	.0866				★	★		★							—	

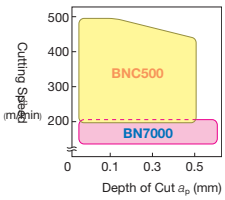
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

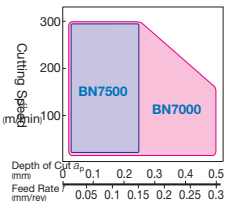
(C) Gray Cast Iron



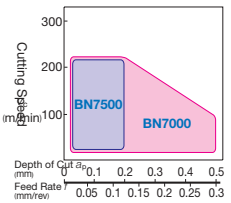
(D) Ductile Cast Iron



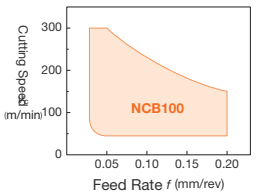
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended | General Cutting ◕ 1st Recommended ◔ 2nd Recommended | Interrupted Cutting ✱ 1st Recommended ✲ 2nd Recommended

TPGA33● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1875		

Recommended Application

		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✱								
	Sintered Components										◕			●		

Uncoated CBN | Binderless CBN

Applicable Internal Holders ☞ E46, E48, E51 to E52

Single-Use / 11° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
 Low Cutting Force	Sharp Edge	**NUTPGA331F**	**NU-TPGW160404LF**	1	1	.0156	.0984											★			—	
		NUTPGA331LF	**NU-TPGW160404LF**			.0156	.0984										★					
 Sharper Edge	T01215	**NUTPGA331LT**	**NU-TPGW160404LT**	1	1	.0156	.0984		★			●	★								—	—
		NUTPGA332LT	**NU-TPGW160408LT**			.0313	.0866		★			●	★								—	—
 Strong Edge	S01235	**NUTPGA331HS**	**NU-TPGW160404HS**	1	1	.0156	.0984					●									—	
		NUTPGA332HS	**NU-TPGW160408HS**			.0313	.0866					●									—	

*Depth of cut for single-use types is 0.0197 inch or less.

11° Positive (With Hole)

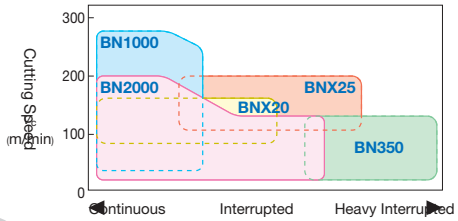
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TPGA331**	**TPGW160404**	1	1	.0156	.1378		★			★	●								—	—
		TPGA332	**TPGW160408**			.0313	.1260		★			★	●								—	—
 Strong Edge	S01235	**TPGA331HS**	**TPGW160404HS**	1	1	.0156	.1378					★									—	
		TPGA332HS	**TPGW160408HS**			.0313	.1260					★									—	

Multi-Cornered Single-Use / 11° Positive (With Hole)

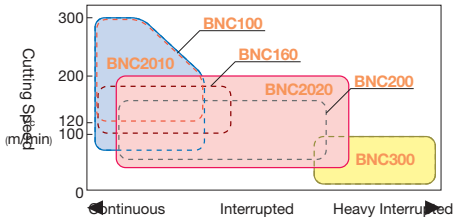
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**3NUTPGA331**	**3NU-TPGW160404**	1	3	.0156	.0984				●			●			●	▲			—	
		3NUTPGA332	**3NU-TPGW160408**			.0313	.0906				●			●			●				—	

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TPGA33● Coated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1875		

Applicable Internal Holders ☞ E46, E48, E51 to E52

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

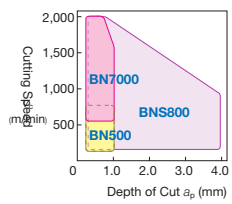
Recommended Application										
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✱	○	○				
	Sintered Components									

Multi-Cornered Single-Use / 11° Positive (With Hole)

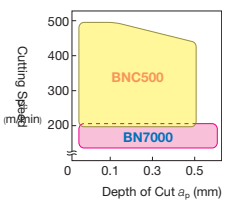
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**3NCTPGA331**	**3NC-TPGW160404**	1	3	.0156	.0906	●	●		●	●	★			★
		3NCTPGA332	**3NC-TPGW160408**			.0313	.0787	●	●		★	●	●	●		★
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	**3NCTPGA331LS**	**3NC-TPGW160404LS**	1	3	.0156	.0906		●		★		★			
		3NCTPGA332LS	**3NC-TPGW160408LS**			.0313	.0787		●		★		★			
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735 BNC300→S01735 BNC500→S01225	**3NCTPGA331HS**	**3NC-TPGW160404HS**	1	3	.0156	.0906	★	★				★			
		3NCTPGA332HS	**3NC-TPGW160408HS**			.0313	.0787	★	★				★			

CBN Application Range Map

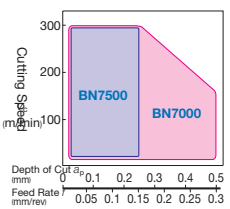
(C) Gray Cast Iron



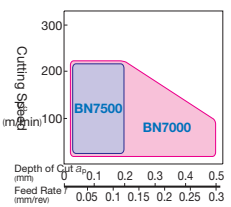
(D) Ductile Cast Iron



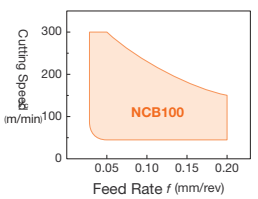
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended | General Cutting ● 1st Recommended ○ 2nd Recommended | Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

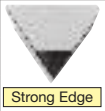
TPG■1.81.5● Uncoated

Dimensions (inch)				
	Inscribed Circle	.2187	Hole Dia.	—
	Thickness	.0937		

Recommended Application		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	K Cast Iron									○	●				◕	
	S Exotic Alloy										●				◕	●
	H Hardened Steel	○	◔	✖	●	◕	◔	✖								
	Sintered Components										◕			●		

Uncoated CBN | Binderless CBN

11° Positive (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TPG1.81.51**	**TPGN090204**	1	1	.0156	.1378					★									—	
		TPGE1.81.51	**TPGN090204**			.0156	.1378									★						
 Strong Edge	S01235	**TPG1.81.51HS**	**TPGN090204HS**	1	1	.0156	.1378					★									—	

TPG22● Uncoated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	—
	Thickness	.1250		

Applicable Internal Holders ☞ E49

Recommended Application		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	K Cast Iron									○	●				◕	
	S Exotic Alloy										●				◕	●
	H Hardened Steel	○	◔	✖	●	◕	◔	✖								
	Sintered Components										◕			●		

Uncoated CBN | Binderless CBN

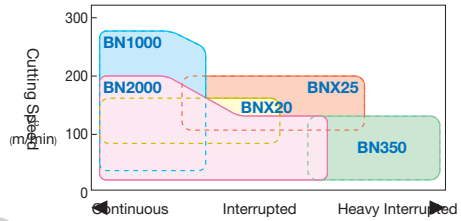
One-Use / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUTPG220.5**	**NU-TPGN110302**	1	1	.0078	.0945					★									—	
		NUTPG221	**NU-TPGN110304**			.0156	.0906		★		●	●	●	●		★	★	★			—	
		NUTPG222	**NU-TPGN110308**			.0313	.0787		●		●	●	●	★		★	★	★			—	
		T-NUTPG221	**T-NU-TPGN110304**	10	1	.0156	.0906					★									—	
		T-NUTPG222	**T-NU-TPGN110308**			.0313	.0787					★									—	
 Sharper Edge	T01215	**NUTPG220.5LT**	**NU-TPGN110302LT**	1	1	.0078	.0945					●									—	—
		NUTPG221LT	**NU-TPGN110304LT**			.0156	.0906					●									—	—
		NUTPG222LT	**NU-TPGN110308LT**			.0313	.0787					★									—	—
	Standard	**3NUTPG221**	**3NU-TPGN110304**	1	3	.0156	.0906										●	▲			—	
		3NUTPG222	**3NU-TPGN110308**			.0313	.0787										●	▲			—	

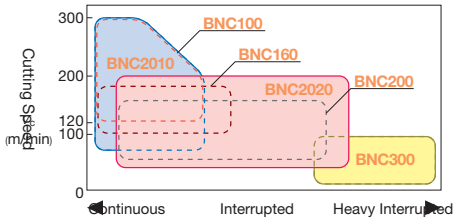
*Use NS (NS-TPGN) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TPG■22● Uncoated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	—
	Thickness	.1250		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✱ 2nd Recommended

Recommended Application																
K	Cast Iron									○	●				●	
S	Exotic Alloy										●				●	●
H	Hardened Steel	○	○	✱	●	●	○	✱								
	Sintered Components										●			●		

Applicable Internal Holders E49

One-Use / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	S01235	**NUTPG221HS**	**NU-TPGN110304HS**	1	1	.0156	.0906					●									—	
Strong Edge		**NUTPG222HS**	**NU-TPGN110308HS**			.0313	.0787					●									—	

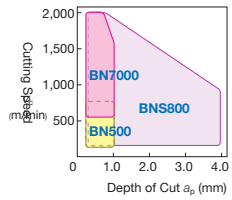
*Depth of cut for single-use types is 0.0197 inch or less.

11° Positive (Without Hole)

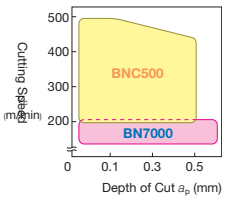
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TPG221**	**TPGN110304**	1	1	.0156	.1378		●			★	●			▲	●	★			—	—
		TPG222	**TPGN110308**			.0313	.1260		●			★	●				●	▲			—	—
	S01235	**TPGA221HS**	**TPGN110304HS**	1	1	.0156	.1378					★									—	
Strong Edge		**TPGA222HS**	**TPGN110308HS**			.0313	.1260															

CBN Application Range Map

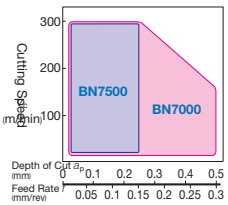
(C) Gray Cast Iron



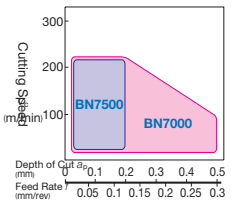
(D) Ductile Cast Iron



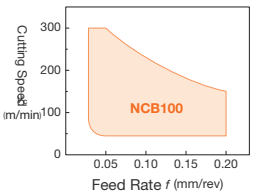
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



T Triangular



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended | General Cutting ◕ 1st Recommended ◔ 2nd Recommended | Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

TPG32● Uncoated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	—
	Thickness	.1250		

Recommended Application		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	K Cast Iron									○	●				◕	
	S Exotic Alloy										●				◕	●
	H Hardened Steel	○	◔	✖	●	◕	◔	✖								
	Sintered Components										◕			●		

Applicable External Holders ☞ C53 Applicable Internal Holders ☞ E49

One-Use / 11° Positive (Without Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUTPG320.5**	**NU-TPGN160302**	1	1	.0078	.0945					●									—	
		NUTPG321	**NU-TPGN160304**			.0156	.0906	▲	●		●	●	●	●			★	★			—	
		NUTPG322	**NU-TPGN160308**			.0313	.0787	▲	●		●	●	●	●		★	★	★			—	
		T-NUTPG321	**T-NU-TPGN160304**	10	1	.0156	.0906					★									—	
		T-NUTPG322	**T-NU-TPGN160308**			.0313	.0787					★									—	
 Sharper Edge	T01215	**NUTPG321LT**	**NU-TPGN160304LT**	1	1	.0156	.0906					●									—	—
		NUTPG322LT	**NU-TPGN160308LT**			.0313	.0787					●									—	—
 Strong Edge	S01235	**NUTPG321HS**	**NU-TPGN160304HS**	1	1	.0156	.0906					●									—	
		NUTPG322HS	**NU-TPGN160308HS**			.0313	.0787					●									—	
	Standard	**3NUTPG321**	**3NU-TPGN160304**	1	3	.0156	.0906											▲			—	
		3NUTPG322	**3NU-TPGN160308**			.0313	.0787										●	▲			—	

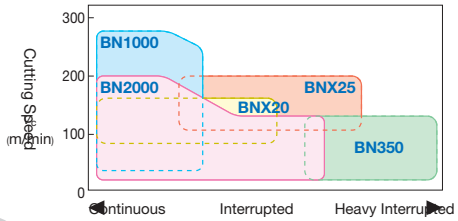
*Use NS (NSTPG) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

11° Positive (Without Hole)

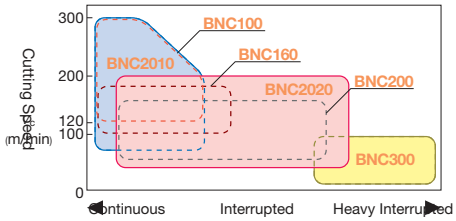
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TPG321**	**TPGN160304**	1	1	.0156	.1378		●			★	●			★	★	★	●		—	—
		TPG322	**TPGN160308**			.0313	.1260		●			★	●				●				—	—
		TPG323	**TPGN160312**			.0469	.1142										●	▲			—	—
 Strong Edge	S01235	**TPG321HS**	**TPGN160304HS**	1	1	.0156	.1378					★									—	
		TPG322HS	**TPGN160308HS**			.0313	.1260					★									—	

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



T Triangular



TPG43● Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	—
	Thickness	.1875		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application			Uncoated CBN														Binderless CBN
			BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	K	Cast Iron									○	●				◔	
	S	Exotic Alloy										●				◔	●
	H	Hardened Steel	○	◔	✲	●	◔	◔	✱								
		Sintered Components										◔			●		

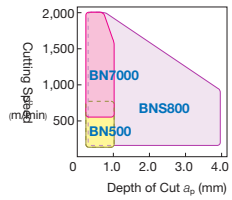
Applicable External Holders ☞C53

11° Positive (Without Hole)

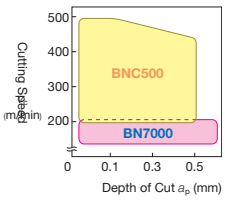
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**TPG432**	**TPGN220408**	1	1	.0313	.1260		●			★									—	—
 Strong Edge	S01235	**TPG432HS**	**TPGN220408HS**	1	1	.0313	.1260					★									—	

CBN Application Range Map

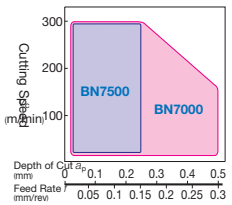
(C) Gray Cast Iron



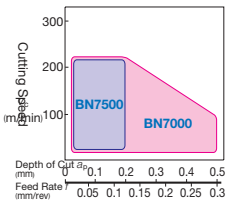
(D) Ductile Cast Iron



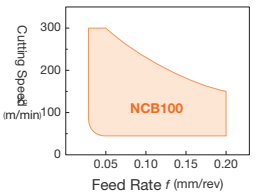
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



V 35° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

VN■■33● Uncoated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

Recommended Application

		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✲	●	◕	◔	✖								
	Sintered Components										◕			●		

Applicable External Holders ☞ C29 to C31 Applicable Internal Holders ☞ E26

Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
		NUVNMA330	**NU-VNMA160401**			.0039	.1378					●									—	—
		NUVNMA330.5	**NU-VNMA160402**			.0078	.1299					●									—	—
		NUVNMA331	**NU-VNMA160404**	1	1	.0156	.1102	●	●		●	●	●	●		★	★	★			—	—
		NUVNMA332	**NU-VNMA160408**			.0313	.0787	●	●		●	●	●	●		★	★	★	●		—	—
		NUVNMA333	**NU-VNMA160412**			.0469	.0669		●		●	★	●	●							—	—
	Standard	**NSVNMA331**	**NS-VNMA160404**	1	1	.0156	.1102			●											—	—
		NSVNMA332	**NS-VNMA160408**			.0313	.0787			●											—	—
		T-NUVNMA331	**T-NU-VNMA160404**	10	1	.0156	.1102				★	★		★							—	—
		T-NUVNMA332	**T-NU-VNMA160408**			.0313	.0787				★	★		★							—	—
	Standard	**NUVNGA331**	**NU-VNGA160404** New	1	1	.0156	.0984														—	★
		NUVNGA332	**NU-VNGA160408** New			.0313	.0630														—	★

*Depth of cut for single-use types is 0.0197 inch or less.

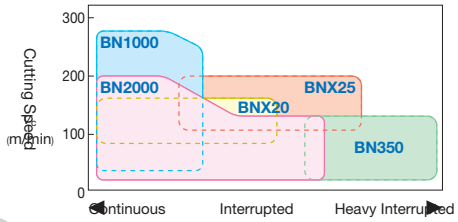
Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
		2NUVNGA331	**2NU-VNGA160404**			.0156	.1102		★		●	●	●	●			●	★		●	—	
		2NUVNGA332	**2NU-VNGA160408**	1	2	.0313	.0787		●		●	●	●	●			●	★		●	—	
		2NUVNGA333	**2NU-VNGA160412**			.0469	.0669										●				—	
	Standard	**2NSVNGA331**	**2NS-VNGA160404**	1	2	.0156	.1102			★											—	
		2NSVNGA332	**2NS-VNGA160408**			.0313	.0787			★											—	
		T-2NUVNGA331	**T-2NU-VNGA160404**	10	2	.0156	.1102					★									—	
		T-2NUVNGA332	**T-2NU-VNGA160408**			.0313	.0787					★									—	

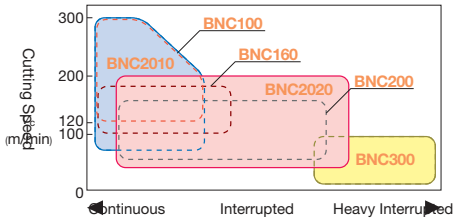
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



V 35° Diamond



VN■■33● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended / General Cutting ● 1st Recommended ○ 2nd Recommended / Interrupted Cutting ● 1st Recommended ○ 2nd Recommended

Recommended Application		
K	Cast Iron	○ ● ●
S	Exotic Alloy	● ● ●
H	Hardened Steel	○ ○ ○ ● ● ○ ●
	Sintered Components	● ● ●

Applicable External Holders ☞ C29 to C31 Applicable Internal Holders ☞ E26

Multi-Cornered Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100 (Binderless CBN)
 Break Master	S00535	**2NUVNGG331LV**	**2NU-VNGM160404N-LV**	1	2	.0156	.1102					★									—	
		2NUVNGG332LV	**2NU-VNGM160408N-LV**			.0313	.0787					★									—	
 Low Cutting Force	Sharp Edge	**2NUVNGA332LF**	**2NU-VNGA160408LF**	1	2	.0313	.0787										●				—	
 Sharper Edge	T01215	**2NUVNGA331LT**	**2NU-VNGA160404LT**	1	2	.0156	.1102				●	●									—	—
		2NUVNGA332LT	**2NU-VNGA160408LT**			.0313	.0787				●	●									—	—
 Strong Edge	T01235	**2NUVNGA331T**	**2NU-VNGA160404HT**	1	2	.0156	.1102							★							—	
		2NUVNGA332T	**2NU-VNGA160408HT**			.0313	.0787							★							—	
 Strong Edge	BN2000→S01235 BN7000→S01225 BN700→S01225	**2NUVNGA331HS**	**2NU-VNGA160404HS**	1	2	.0156	.1102					★					●	▲			—	
		2NUVNGA332HS	**2NU-VNGA160408HS**			.0313	.0787					●					●				—	

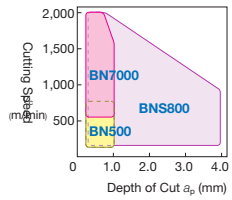
*Depth of cut for single-use types is 0.0197 inch or less.

Multi-Cornered / Negative (With Hole)

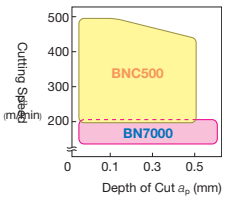
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Uncoated CBN: BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100 (Binderless CBN)
	Standard	**2MDVNMA331**	**2MD-VNMA160404**	1	2	.0156	.1220		●				●				●				—	—
		2MDVNMA332	**2MD-VNMA160408**			.0313	.1535						●								—	—
		2MDVNMA333	**2MD-VNMA160412**			.0469	.1142						●								—	—

CBN Application Range Map

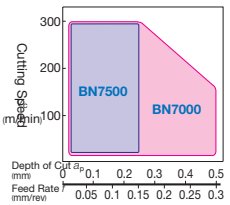
(C) Gray Cast Iron



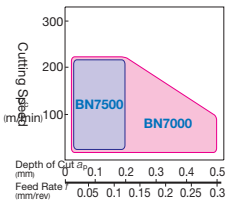
(D) Ductile Cast Iron



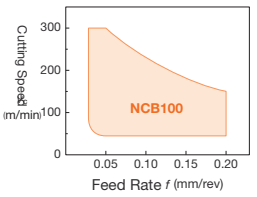
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



V 35° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✚ 2nd Recommended

VN■■33● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

Recommended Application

		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✚	●	◕	◔	✖								
	Sintered Components										◕			●		

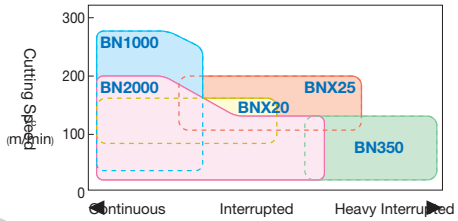
Applicable External Holders ☞ C29 to C31 Applicable Internal Holders ☞ E26

Negative (With Hole)

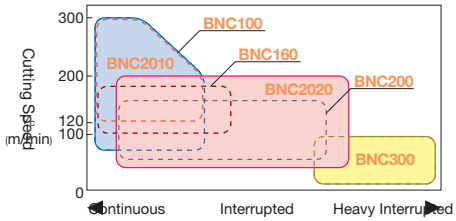
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**VNMA331**	**VNMA160404**	1	1	.0156	.1969		●			★					●				—	—
		VNMA332	**VNMA160408**			.0313	.1614		●			★	●			▲	●	★			—	—

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



V 35° Diamond



VNG■33● Coated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

Applicable External Holders C29 to C31 Applicable Internal Holders E26

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting ✱ 1st Recommended ✱ 2nd Recommended

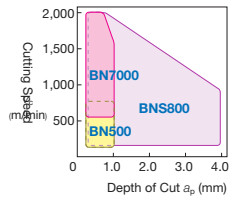
Recommended Application		
K	Cast Iron	
S	Exotic Alloy	
H	Hardened Steel	● ● ✱ ○ ○
	Sintered Components	

Multi-Cornered Single-Use / Negative (With Hole)

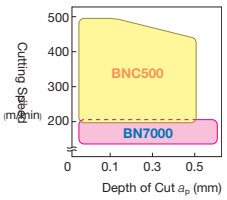
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**2NCVNGA331**	**2NC-VNGA160404**	1	2	.0156	.1102	●	★				●			
		2NCVNGA332	**2NC-VNGA160408**			.0313	.0787	●	●	●	●	●	●			
	Standard	**4NCVNGA330.5**	**4NC-VNGA160402**	1	4	.0078	.1299	★	★							
		4NCVNGA331	**4NC-VNGA160404**			.0156	.1102	●	●	●	●	●	●	●	●	★
		4NCVNGA332	**4NC-VNGA160408**			.0313	.0787	●	●	●	●	●	●	●	●	★
		4NCVNGA333	**4NC-VNGA160412**			.0469	.0669		●				●			
 Break Master	Honing	**4NCVNGG331FV**	**4NC-VNGG160404N-FV**	1	4	.0156	.1102	★	★			★	★			
		4NCVNGG332FV	**4NC-VNGG160408N-FV**			.0313	.0787	★	★			★	★			
 Break Master	S00535	**4NCVNGG331LV**	**4NC-VNGG160404N-LV**	1	4	.0156	.1102	★	★			★	★			
		4NCVNGG332LV	**4NC-VNGG160408N-LV**			.0313	.0787	★	★			★	★			
 Sharper Edge	T00515	**2NCVNGA330.5LT**	**2NC-VNGA160402LT**	1	2	.0078	.1299		★							
		2NCVNGA331LT	**2NC-VNGA160404LT**			.0156	.1102		●							
		2NCVNGA332LT	**2NC-VNGA160408LT**			.0313	.0787		●							
		2NCVNGA333LT	**2NC-VNGA160412LT**			.0469	.0669		★							
 Sharper Edge	S01015	**2NCVNGA332LS**	**2NC-VNGA160408LS**	1	2	.0313	.0787						●			
 Sharper Edge	BNC2020→S02735 BNC200→S01735 BNC300→S01735	**2NCVNGA332HS**	**2NC-VNGA160408HS**	1	2	.0313	.0787		●	●			●			
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015	**4NCVNGA331LS**	**4NC-VNGA160404LS**	1	4	.0156	.1102				▲	●	●			
		4NCVNGA332LS	**4NC-VNGA160408LS**			.0313	.0787				●	●	●			
		4NCVNGA333LS	**4NC-VNGA160412LS**			.0469	.0669						★			

CBN Application Range Map

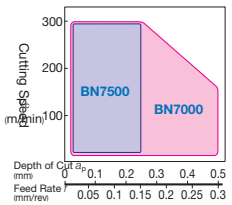
(C) Gray Cast Iron



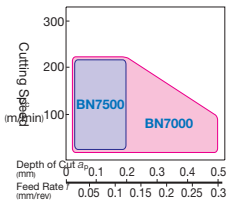
(D) Ductile Cast Iron



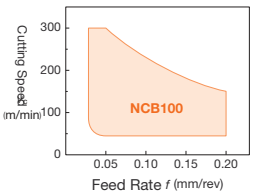
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



V 35° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended / General Cutting ◕ 1st Recommended ◔ 2nd Recommended / Interrupted Cutting ✖ 1st Recommended ✕ 2nd Recommended

VNG■33● Coated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1500
	Thickness	.1875		

Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	◕	✖	○	○				
	Sintered Components									

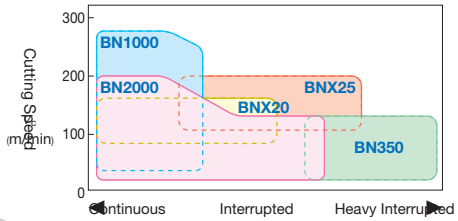
Applicable External Holders ☞ C29 to C31 Applicable Internal Holders ☞ E26

Multi-Cornered Single-Use / Negative (With Hole)

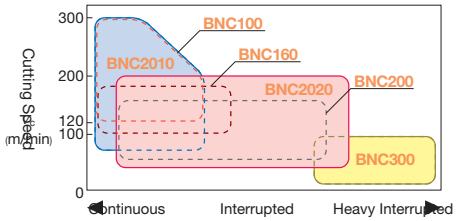
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
 High-Efficiency	S00535	**4NCVNGA331ES**	**4NC-VNGA160404ES**	1	4	.0156	.1102		★							
		4NCVNGA332ES	**4NC-VNGA160408ES**			.0313	.0787		●							
		4NCVNGA333ES	**4NC-VNGA160412ES**			.0469	.0669		★							
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735 BNC300→S01735 BNC500→S01225	**4NCVNGA331HS**	**4NC-VNGA160404HS**	1	4	.0156	.1102	●	★	★		●	●			★
		4NCVNGA332HS	**4NC-VNGA160408HS**			.0313	.0787	●	●	★		●	●			★
		4NCVNGA333HS	**4NC-VNGA160412HS**			.0469	.0669		★				★			

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



V 35° Diamond



VBGA22● Uncoated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1102
	Thickness	.1250		

(Legend) Continuous Cutting: ● 1st Recommended, ○ 2nd Recommended; General Cutting: ● 1st Recommended, ○ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended, ✱ 2nd Recommended

Recommended Application		Uncoated CBN														Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◕	
S	Exotic Alloy										●				◕	●
H	Hardened Steel	○	◔	✱	●	◕	◔	✱								
	Sintered Components										◕			●		

Applicable External Holders D15, D30 Applicable Internal Holders E53 to E57

Single-Use / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUVBGA220.5**	**NU-VBGW110302**	1	1	.0078	.1260				★	●									—	
		NUVBGA221	**NU-VBGW110304**			.0156	.1102 *				★	●					★	★			—	★
		NUVBGA222	**NU-VBGW110308**			.0313	.0787 **					●					★	★			—	★
 Sharper Edge	T01215	**NUVBGA220.5LT**	**NU-VBGW110302LT**	1	1	.0078	.1260					●									—	—
		NUVBGA221LT	**NU-VBGW110304LT**			.0156	.1102					●									—	—
		NUVBGA222LT	**NU-VBGW110308LT**			.0313	.0787					★									—	—
 Strong Edge	S01235	**NUVBGA220.5HS**	**NU-VBGW110302HS**	1	1	.0078	.1260					●										
		NUVBGA221HS	**NU-VBGW110304HS**			.0156	.1102					●										
		NUVBGA222HS	**NU-VBGW110308HS**			.0313	.0787					●										

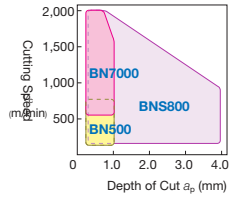
Use NS (NSVBGA) for BNX25. Depth of cut for single-use types is 0.0197 inch or less.
* NCB100 cutting edge length is .0984".
** NCB100 cutting edge length is .0630".

Multi-Cornered Single-Use / 5° Positive (With Hole)

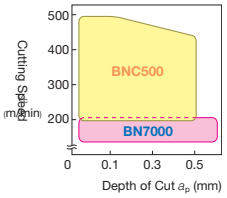
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**2NUVBGA221**	**2NU-VBGW110304**	1	2	.0156	.1102										●	▲			—	
		2NUVBGA222	**2NU-VBGW110308**			.0313	.0787										●	▲			—	

CBN Application Range Map

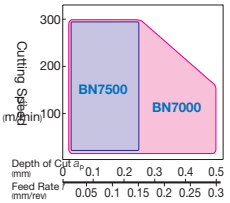
(C) Gray Cast Iron



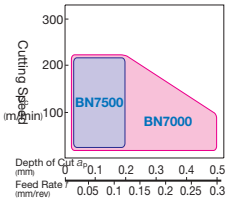
(D) Ductile Cast Iron



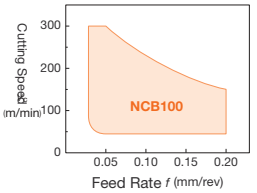
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



V 35° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✖ 2nd Recommended

Recommended Application

	Coated CBN									
	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K Cast Iron									●
S Exotic Alloy									
H Hardened Steel	●	◕	✖	○	○				
Sintered Components									

VBGA22● Coated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1102
	Thickness	.1250		

Applicable External Holders ☞ D15, D30 Applicable Internal Holders ☞ E53 to E57

Multi-Cornered Single-Use / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**2NCVBGA220.5**	**2NC-VBGW110302**	1	2	.0078	.1260	★	★							
		2NCVBGA221	**2NC-VBGW110304**			.0156	.1102	●	●		●	●	●	●	●	★
		2NCVBGA222	**2NC-VBGW110308**			.0313	.0787	★	●				●	●		★
 Sharper Edge	T00515	**2NCVBGA220.5LT**	**2NC-VBGW110302LT**	1	2	.0078	.1260		★							
		2NCVBGA221LT	**2NC-VBGW110304LT**			.0156	.1102		●							
 Sharper Edge	S01715	**2NCVBGA221LS**	**2NC-VBGW110304LS**	1	2	.0156	.1102				●					

VBGA33● Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1875		

Applicable External Holders ☞ D30 Applicable Internal Holders ☞ E53 to E54

Recommended Application

	Uncoated CBN														Binderless CBN
	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K Cast Iron								○	●					◕	
S Exotic Alloy									●					◕	●
H Hardened Steel	○	◔	✖	●	◕	◔	✖								
Sintered Components										●			●		

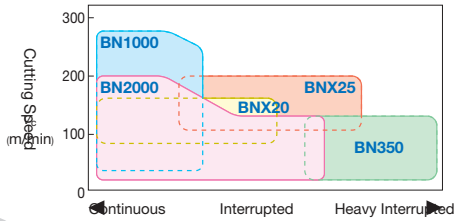
Single-Use / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUVBGA330.5**	**NU-VBGW160402**	1	1	.0078	.1496				★	●									—	
		NUVBGA331	**NU-VBGW160404**			.0156	.1299 *				★	●									—	★
		NUVBGA332	**NU-VBGW160408**			.0313	.0984 **				★	●									—	★
 Sharper Edge	T01215	**NUVBGA330.5LT**	**NU-VBGW160402LT**	1	1	.0078	.1496					●									—	—
		NUVBGA331LT	**NU-VBGW160404LT**			.0156	.1299					●									—	—
		NUVBGA332LT	**NU-VBGW160408LT**			.0313	.0984					●									—	—
 Strong Edge	S01235	**NUVBGA331HS**	**NU-VBGW160404HS**	1	1	.0156	.1299					●									—	
		NUVBGA332HS	**NU-VBGW160408HS**			.0313	.0984					●									—	

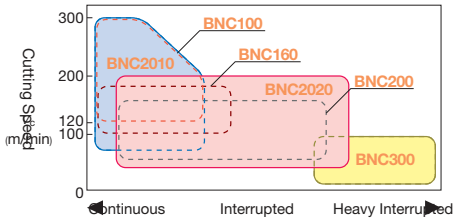
Depth of cut for single-use types is 0.0197 inch or less.
* NCB100 cutting edge length is .0984". ** NCB100 cutting edge length is .0630"

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



V 35° Diamond



VBGA33● Uncoated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1875		

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended | General Cutting ● 1st Recommended ○ 2nd Recommended | Interrupted Cutting ● 1st Recommended ○ 2nd Recommended

Recommended Application		Uncoated CBN														
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron								○	●					●	
S	Exotic Alloy									●					●	●
H	Hardened Steel	○	○	○	●	●	○	○								
	Sintered Components										●			●		

Binderless CBN

Applicable External Holders D30 Applicable Internal Holders E53 to E54

Multi-Cornered Single-Use / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE
	Standard	**2NUVBGA331**	**2NU-VBGW160404**	1	2	.0156	.1299
		2NUVBGA332	**2NU-VBGW160408**			.0313	.0984

*Depth of cut for single-use types is 0.0197 inch or less.

VBGA33● Coated

Dimensions (inch)	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1875		

Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron									●
S	Exotic Alloy									
H	Hardened Steel	●	●	○	○					
	Sintered Components									

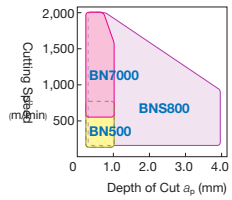
Applicable External Holders D30 Applicable Internal Holders E53 to E54

Multi-Cornered Single-Use / 5° Positive (With Hole)

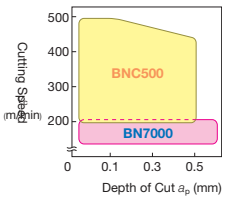
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE
	Standard	**2NCVBGA330.5**	**2NC-VBGW160402**	1	2	.0078	.1496
		2NCVBGA331	**2NC-VBGW160404**			.0156	.1299
		2NCVBGA332	**2NC-VBGW160408**			.0313	.0984
 Low Cutting Force	Honing	**2NCVBGA330.5LE**	**2NC-VBGW160402LE**	1	2	.0078	.1496
		2NCVBGA331LE	**2NC-VBGW160404LE**			.0156	.1299
		2NCVBGA332LE	**2NC-VBGW160408LE**			.0313	.0984
 Sharper Edge	T00515	**2NCVBGA330.5LT**	**2NC-VBGW160402LT**	1	2	.0078	.1496
		2NCVBGA331LT	**2NC-VBGW160404LT**			.0156	.1299
		2NCVBGA332LT	**2NC-VBGW160408LT**			.0313	.0984

CBN Application Range Map

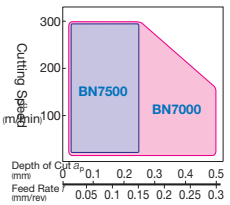
(C) Gray Cast Iron



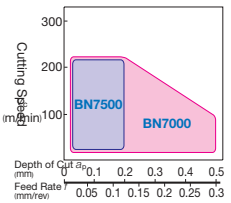
(D) Ductile Cast Iron



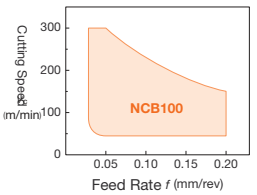
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



V 35° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ○ 2nd Recommended; Interrupted Cutting: ✖ 1st Recommended ✖ 2nd Recommended

VCGA1.51.5● Uncoated

Dimensions (inch)	Inscribed Circle	.1875	Hole Dia.	.0906
	Thickness	.0937		

Applicable Internal Holders ☞ E59 to E60

Recommended Application		Uncoated CBN													Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron								○	●					◒	
S	Exotic Alloy									●					◒	●
H	Hardened Steel	○	◔	✖	●	◒	◔	✖								
	Sintered Components										●			●		

Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	NUVCGA1.51.50.5	NU-VCGW080202	1	1	.0078	.1299					★									—	
		NUVCGA1.51.51	NU-VCGW080204			.0156	.1102					★									—	
		NUVCGA1.51.52	NU-VCGW080208			.0313	.0787					★									—	
 Sharper Edge	T01215	NUVCGA1.51.50.5LT	NU-VCGW080202LT	1	1	.0078	.1299					★									—	—
		NUVCGA1.51.51LT	NU-VCGW080204LT			.0156	.1102					★									—	—
		NUVCGA1.51.52LT	NU-VCGW080208LT			.0313	.0787					★									—	—
 Strong Edge	S01235	NUVCGA1.51.51HS	NU-VCGW080204HS	1	1	.0156	.1102					★									—	
		NUVCGA1.51.52HS	NU-VCGW080208HS			.0313	.0787					★									—	

*Depth of cut for single-use types is 0.0197 inch or less.

VCGA63● Coated

Dimensions (inch)	Inscribed Circle	.1875	Hole Dia.	.0906
	Thickness	.0937		

Applicable Internal Holders ☞ E59 to E60

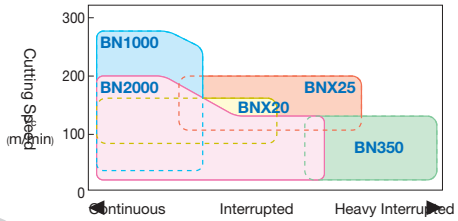
Recommended Application		Coated CBN								
		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
K	Cast Iron								●	
S	Exotic Alloy									
H	Hardened Steel	●	◒	✖	○	○				
	Sintered Components									

Multi-Cornered Single-Use / 7° Positive (With Hole)

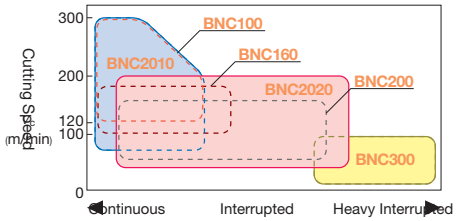
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	2NCVCGA630.5	2NC-VCGW080202	1	2	.0078	.1299	★	★							
		2NCVCGA631	2NC-VCGW080204			.0156	.1102	★	★							

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



V 35° Diamond



VCGA22● Uncoated

Dimensions (inch)				
	Inscribed Circle	.2500	Hole Dia.	.1102
	Thickness	.1250		

(Legend) Continuous Cutting: ● 1st Recommended, ○ 2nd Recommended; General Cutting: ● 1st Recommended, ○ 2nd Recommended; Interrupted Cutting: ● 1st Recommended, ○ 2nd Recommended

Recommended Application		Uncoated CBN														Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron								○	●					●	
S	Exotic Alloy									●					●	●
H	Hardened Steel	○	○	○	●	●	○	✖								
	Sintered Components										●			●		

Applicable External Holders ☞ C41, C43, D15, D28 Applicable Internal Holders ☞ E58 to E60

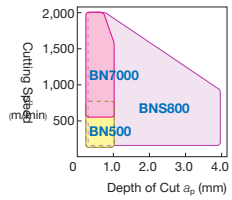
Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUVCGA220.5**	**NU-VCGW110302**	1	1	.0078	.1299				★	●	●								—	
		NUVCGA221	**NU-VCGW110304**			.0156	.1102				★	●	●								—	
 Strong Edge	S01235	**NUVCGA220.5HS**	**NU-VCGW110302HS**	1	1	.0078	.1299					●									—	
		NUVCGA221HS	**NU-VCGW110304HS**			.0156	.1102					★									—	

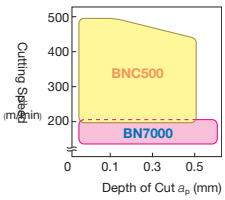
*Use NS (NS-VCGA) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

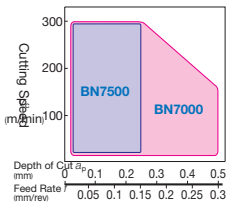
(C) Gray Cast Iron



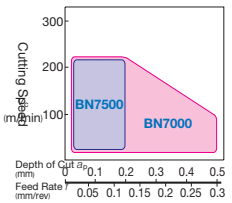
(D) Ductile Cast Iron



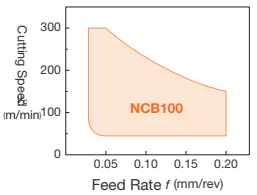
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



V 35° Diamond



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ○ 2nd Recommended; General Cutting ◕ 1st Recommended ◔ 2nd Recommended; Interrupted Cutting ✖ 1st Recommended ✚ 2nd Recommended

VC■■33 Uncoated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1875		

Recommended Application		Uncoated CBN													Binderless CBN
	K Cast Iron									○	●			◕	
	S Exotic Alloy										●			◕	●
	H Hardened Steel	○	◔	✚	●	◕	◔	✖							
	Sintered Components										◕			●	

Applicable External Holders ☞ C41 to C43, D20 Applicable Internal Holders ☞ E58

Single-Use / 7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUVCGA331** **NUVCGA332**	**NU-VCGW160404** **NU-VCGW160408**	1	1	.0156 .0313	.1102 * .0748 **										★ ★	★ ★			— —	★ ★

Use NS (NSVCGA) for BNX25. Depth of cut for single-use types is 0.0197 inch or less.
* NCB100 cutting edge length is .0984".
** NCB100 cutting edge length is .0630".

7° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**VCMA331** **VCMA332**	**VCMW160404** **VCMW160408**	1	1	.0156 .0313	.2047 .1693		★ ★							★					— —	— —

VCGA33● Coated

Dimensions (inch)				
	Inscribed Circle	.3750	Hole Dia.	.1732
	Thickness	.1875		

Recommended Application		Coated CBN									
	K Cast Iron										●
	S Exotic Alloy										
	H Hardened Steel	●	◕	✖	○	○					
	Sintered Components										

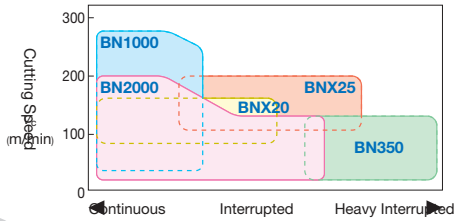
Applicable External Holders ☞ C41 to C43, D20 Applicable Internal Holders ☞ E58

Multi-Cornered Single-Use / 7° Positive (With Hole)

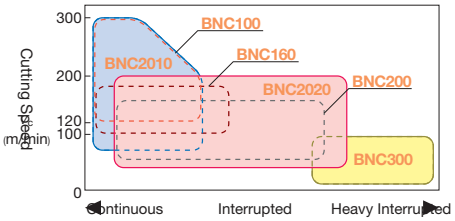
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	**2NCVCGA331** **2NCVCGA332**	**2NC-VCGW160404** **2NC-VCGW160408**	1	2	.0156 .0313	.1102 .0748	● ●	● ●		▲ ●	● ●	● ●			
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015 BNC300→S00515	**2NCVCGA331LS** **2NCVCGA332LS**	**2NC-VCGW160404LS** **2NC-VCGW160408LS**	1	2	.0156 .0313	.1102 .0748				★ ★	★ ★	★ ★			
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735	**2NCVCGA331HS** **2NCVCGA332HS**	**2NC-VCGW160404HS** **2NC-VCGW160408HS**	1	2	.0156 .0313	.1102 .0748	★ ★	● ●			★ ★	★ ★			

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



W Trigon



WNMA43 Uncoated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application		Uncoated CBN														Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◔	
S	Exotic Alloy										●				◔	●
H	Hardened Steel	○	◔	✲	●	◔	◔	✱								
	Sintered Components										◔			●		

Applicable External Holders C32, C33 Applicable Internal Holders E28, E29

Single-Use / Negative (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**NUWNMA431**	**NU-WNMA080404**	1	1	.0156	.1299				●	●	★	●					●		—	—
		NUWNMA432	**NU-WNMA080408**			.0313	.1102		★		●	●	●	●							—	—
		NUWNMA433	**NU-WNMA080412**			.0469	.0787						●								—	—

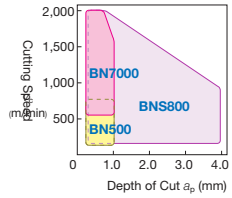
*Use NS (NS-WNMA) for BNX25. *Depth of cut for single-use types is 0.0197 inch or less.

Multi-Cornered Single-Use / Negative (With Hole)

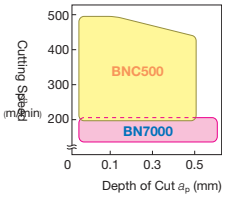
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
	Standard	**3NUWNGA432**	**3NU-WNGA080408**	1	3	.0313	.0787				●			●			●	▲			—	
		3NUWNGA433	**3NU-WNGA080412**			.0469	.0787							●			●	▲			—	

CBN Application Range Map

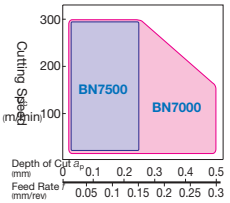
(C) Gray Cast Iron



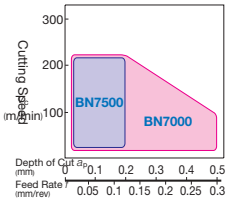
(D) Ductile Cast Iron



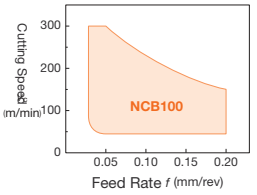
(E) General Powdered Metal



(F) High-density Powdered Metal



(G) Titanium Alloy



W Trigon



Standard Edge Specification Details ☞ L28, L29

	BNX10	BNX20	BNX25	BN1000 BN2000 BN250	BN350 BN300	BNC2010 BNC2020	BNC100 BNC160	BNC200 BNC300	BNC500	BN500	BN7000 BN700 BN600	BN7500	BNS800	NCB100
Neg.	T01225	S01225	S01725	S01225	T01225	S01225	S01225	S01225	S01215	T01215	T01215	T01215	T02020	T01215
Pos.					T01235								-	

(Legend) Continuous Cutting ● 1st Recommended ◯ 2nd Recommended | General Cutting ◕ 1st Recommended ◔ 2nd Recommended | Interrupted Cutting ✖ 1st Recommended ✚ 2nd Recommended

Recommended Application		BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	K Cast Iron									●
	S Exotic Alloy									
	H Hardened Steel	●	◕	✖	◯	◔				
	Sintered Components									

WNGA43● Coated

Dimensions (inch)				
	Inscribed Circle	.5000	Hole Dia.	.2031
	Thickness	.1875		

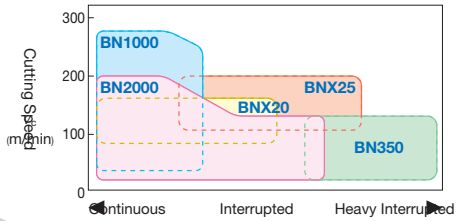
Applicable External Holders ☞ C32, C33 Applicable Internal Holders ☞ E28, E29

Multi-Cornered Single-Use / Negative (With Hole)

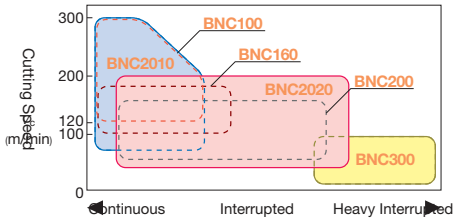
Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	Coated CBN: BNC2010	BNC2020	BNC300	BNC100	BNC160	BNC200	BNC80	BNC150	BNC500
	Standard	6NCWNGA431	6NC-WNGA080404	1	6	.0156	.0906	★	★							
		6NCWNGA432	6NC-WNGA080408			.0313	.0787	●	●		●	●	●	★	★	
		6NCWNGA433	6NC-WNGA080412			.0469	.0787	★	★							
 Wiper Insert	S01215	6NCWNGA432WG	6NC-WNGA080408WG	1	6	.0313	.0787	●	●			●	●			
		6NCWNGA433WG	6NC-WNGA080412WG			.0469	.0787	●	●			●	●			
 Wiper Insert	S01215	6NCWNGA432WH	6NC-WNGA080408WH	1	6	.0313	.0748	●	●			●	●			
		6NCWNGA433WH	6NC-WNGA080412WH			.0469	.0787	●	●			●	●			
 Sharper Edge	T00515	3NCWNGA432LT	3NC-WNGA080408LT	1	3	.0313	.0787		★							
 Sharper Edge	BNC100→S01715 BNC160→S01020 BNC200→S01015	6NCWNGA432LS	6NC-WNGA080408LS	1	6	.0313	.0787				★	★	★			
 Strong Edge	BNC2010→S01730 BNC2020→S02735 BNC160→S01730 BNC200→S01735	6NCWNGA432HS	6NC-WNGA080408HS	1	6	.0313	.0787	★	●			★	★			

CBN Application Range Map

(A) Uncoated CBN



(B) Coated CBN



W Trigon



WBED52● Uncoated

Dimensions (inch)				
	Inscribed Circle	.1563	Hole Dia.	.0866
	Thickness	.0625		

(Legend) Continuous Cutting: ● 1st Recommended ○ 2nd Recommended; General Cutting: ● 1st Recommended ◔ 2nd Recommended; Interrupted Cutting: ✱ 1st Recommended ✲ 2nd Recommended

Recommended Application		Uncoated CBN														Binderless CBN
		BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
K	Cast Iron									○	●				◔	
S	Exotic Alloy										●				◔	●
H	Hardened Steel	○	◔	✲	●	◔	◔	✱								
	Sintered Components										◔			●		

Applicable Internal Holders ☞ E61, E62

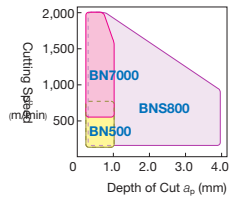
Single-Use / 5° Positive (With Hole)

Shape	Cutting Edge Specification	Sumitomo Cat. No.	ISO Cat. No.	Pcs/ Pack	No. of Cutting Edges	Nose Radius RE	Effective Cutting Edge Length LE	BNX10	BNX20	BNX25	BN1000	BN2000	BN250	BN350	BN300	BN500	BN7000	BN700	BN600	BN7500	BNS800	NCB100
 Low Cutting Force	Sharp Edge	**NUWBED520.5LF**	**NU-WBEW060102L-LF**	1	1	.0078	.0512										★	★			—	

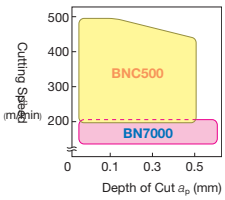
*Depth of cut for single-use types is 0.0197 inch or less.

CBN Application Range Map

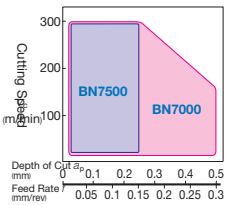
(C) Gray Cast Iron



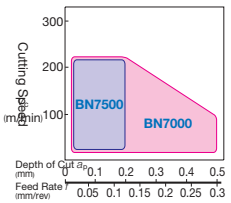
(D) Ductile Cast Iron



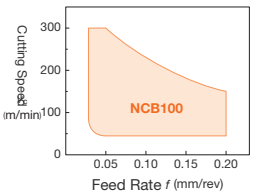
(E) General Powdered Metal



(F) High-density Powdered Metal

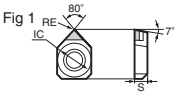


(G) Titanium Alloy



Turning Insert

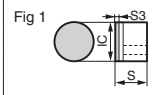
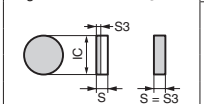
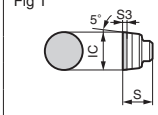
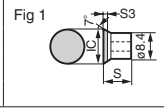
Dimensions (inch)

Shape	Sumitomo Cat. No.	ISO Cat. No.	Coated BN1000	BN2000	BN350	BN7000	BNC2020	BNC200	Inscribed Circle IC	Thickness S	Nose Radius RE	Hole Dia.	Applicable Holder	Fig
  Fig 1	**NUZNEX620.5**	**NU-ZNEX040102**	★	●		★	—	—	.1875	.0625	.0079	.0906	SUMIBORON Small Dia. Boring Bar (BNZ) → L117	1
	NUZNEX621	**NU-ZNEX040104**	★	●		●	—	—	.1875	.0625	.0157	.0906		1
	T-NUZNEX620.5	**T-NU-ZNEX040102**		★			—	—	.1875	.0625	.0079	.0906		1
	T-NUZNEX621	**T-NU-ZNEX040104**		★			—	—	.1875	.0625	.0157	.0906		1
	NCZNEX620.5	**NC-ZNEX040102**					●	●	.1875	.0625	.0079	.0906		
	NCZNEX621	**NC-ZNEX040104**					●	●	.1875	.0625	.0157	.0906		

*Use NS (NS-ZNEX) for BNX25.
*T-NU-ZNEX is a 10-piece pack.

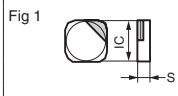
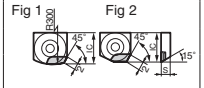
Round Insert

Dimensions (inch)

Shape	Sumitomo Cat. No.	ISO Cat. No.	BN1000	BN2000	BNX20	BN250	BN350	BN500	BN7000	BN700	BNS800	Inscribed Circle IC	Thickness S	CBN Layer Thickness S3	Applicable Holder	Fig
  Fig 1	**RNGA0906M0**	**RNGA0906M0**		★							—	.3543	.2500	.0315	SUMIBORON Round Insert Holder (PRGN) → L120	1
  Fig 1 Fig 2	**RNG32B**	**RNGN090300-B**			●	●						.3750	.1250	.0315	Special Holder	
	RNG43B	**RNGN120400-B**							★	★	—	.5000	.1875	.0315		1
	RNG32	**RNGN090300**	—	—			—	—	—	—	●	.3750	.1250	.1250	Solid SUMIBORON Holders (CRDN, CRSN) → L108	2
	RNG32LF	**RNGN090300 LF**	—	—			—	—	—	—	★	.3750	.1250	.1250		2
	RNG42	**RNGN120300**	—	—			—	—	—	—	●	.5000	.1250	.1250		2
	RNG42LF	**RNGN120300 LF**	—	—			—	—	—	—	★	.5000	.1250	.1250		2
	RNG43	**RNGN120400**	—	—			—	—	—	—	●	.5000	.1875	.1875		2
  Fig 1	**RBG08-B**	**RBG08-B**							★		—	.3150	.2559	.0315	SUMIBORON for Machining Rolls SEC-R (BNRN) →L121	1
	RBG10-B	**RBG10-B**							★		—	.3937	.3543	.0315		1
	RBG12-B	**RBG12-B**							★		—	.4724	.4331	.0315		1
	RBG16-B	**RBG16-B**							★		—	.6299	.5118	.0315		1
	RBG20-B	**RBG20-B**							★		—	.7874	.5906	.0315		1
	RBG26-B	**RBG26-B**							★		—	1.0236	.5906	.0315		1
  Fig 1	**RCGA0906M0**	**RCGA0906M0**		★							—	.3543	.2500	.0315	SUMIBORON Round Insert Holder (PRGC, PRDC) → L120	1

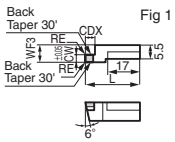
Milling Insert

Dimensions (inch)

Shape	Sumitomo Cat. No.	ISO Cat. No.	BN1000	BN2000	BN7000	BN700	Inscribed Circle IC	Thickness S	Applicable Holder	Fig
  Fig 1	**CSN43MT**	**CSN43MT**		★			.5000	.1875	ACE Mill (DNF)	1
  Fig 1 Fig 2	**SNEW1203ADTR**	**SNEW1203ADTR**			●	★	.5000	.1250	BN Finish Mill EASY (FMU) →L125	1
	SNEW1203ADTR-S	**SNEW1203ADTR-S**			★	★	.5000	.1250		2

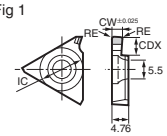
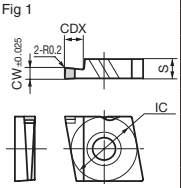
Grooving / Threading Tool Insert

Dimensions (inch)

Shape (Right Hand)	Sumitomo Cat. No.	ISO Cat. No.	BN2000 R	BN2000 L	BN250 R	BN250 L	BN350 R	BN350 L	Groove Width CW	Groove Depth CDX	Nose Radius RE	Overall Length L	Cutting Edge Distance WF3	Applicable Holder	Fig
 	**BNGNT0200R/L**	**BNGNT0200R/L**				●	●		.0787	.1575	.0079	.9843	.2362	SUMIBORON Grooving Tool (BNGG) →L123	1
	BNGNT0250R/L	**BNGNT0250R/L**				●	●		.0984	.1575	.0079	.9843	.2362		1
	BNGNT0300R/L	**BNGNT0300R/L**			●	●	★		.1181	.1969	.0157	.9843	.2362		1
	BNGNT0400R/L	**BNGNT0400R/L**			●	●	●		.1575	.2362	.0157	1.0236	.2362		1
	BNGNT0500R/L	**BNGNT0500R/L**					★		.1969	.2362	.0157	1.0236	.2362		1
	BNGNT0600R/L	**BNGNT0600R/L**					★		.2362	.2756	.0157	1.0630	.2362		1

Insert for Grooving Tool Holders

Dimensions (inch)

Shape	Sumitomo Cat. No.	ISO Cat. No.	BN2000 R	BN2000 L	BNC30G R	BNC30G L	BN7000 R	BN7000 L	BN7500 R	BN7500 L	Inscribed Circle IC	Width of Cut CW	Nose Radius RE	Groove Depth CDX	Hole Dia.	Applicable Holder	Fig
 	**TGAR4125**	**TGAR4125**	★		—	—					.5000	.0492	.0079	.0787	.2165	Grooving Tool (GWC, GWCS, GWCI) →F33 to F36	1
	TGAR4150	**TGAR4150**	★		—	—					.5000	.0591	.0079	.1378	.2165		1
	TGAR4200	**TGAR4200**	★		—	—					.5000	.0787	.0079	.1378	.2165		1
	TGAR4250	**TGAR4250**	★		—	—					.5000	.0984	.0079	.1575	.2165		1
	TGAR4300	**TGAR4300**	★		—	—					.5000	.1181	.0079	.1575	.2165		1
	TGAR4350	**TGAR4350**	★		—	—					.5000	.1378	.0079	.1969	.2165		1
	TGAR4400	**TGAR4400**	★		—	—					.5000	.1575	.0079	.1969	.2165		1
 	**CGAR/L4062**	**-**	●	●	●	●					.6250	.062	.0079	.1378	.2165	SUMIBORON Grooving Tool (GWB) →L122	
	CGAR/L4094	**-**	●	●	●	●					.6250	.094	.0079	.1575	.2165		
	CGAR/L4125	**-**	●	●	●	●					.6250	.125	.0079	.1969	.2165		
	CGAR/L1504150	**CGAR/L1504150**	★	●	●	●	●	●	●	●	.6250	.0591	.0079	.1378	.2165		1
	CGAR/L1504200	**CGAR/L1504200**	●	●	●	●	●	●	●	●	.6250	.0787	.0079	.1378	.2165		1
	CGAR/L1504250	**CGAR/L1504250**	★	●	●	●					.6250	.0984	.0079	.1575	.2165		1
	CGAR/L1504300	**CGAR/L1504300**	●	●	●	●	●	●	●	●	.6250	.1181	.0079	.1575	.2165		1
	CGAR/L1504350	**CGAR/L1504350**	★	★	●	●					.6250	.1378	.0079	.1969	.2165		1
	CGAR/L1504400	**CGAR/L1504400**	●	●	●	●	●	●	●	●	.6250	.1575	.0079	.1969	.2165		1
	CGAR/L1504450	**CGAR/L1504450**	★	★	●	●					.6250	.1772	.0079	.1969	.2165		1
	CGAR/L6189	**-**	●	●	●	●					.6250	.189	.0079	.1969	.2165		
	CGAR/L1506500	**CGAR/L1506500**	●	●	●	●					.6250	.1969	.0079	.1969	.2165		1
	CGAR/L1506550	**CGAR/L1506550**	★	★	●	●					.6250	.2165	.0079	.1969	.2165		1
	CGAR/L1506600	**CGAR/L1506600**	●	●	●	●					.6250	.2362	.0079	.1969	.2165		1

R

General Turning and Profiling
Clamp-on

CRDN
External Diameter / Profiling

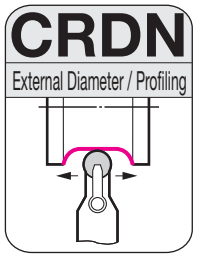
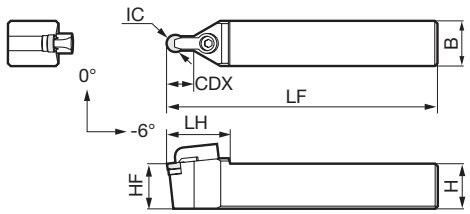


Fig 1



Insert L61



(1) RNG32
(2) RNG42
(3) RNG43

Holder

Parts

Dimensions (mm)

Cat. No.	Stock	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Head LH	Depth of Cut CDX	Applicable Insert	Fig	Clamp	Double Screw	Shim	Shim Set Screw	Wrench
CRDN N2525-32	★	*9.525*	*25*	*25*	*150*	*25*	*35*	*15*	RNG32	1	CCM8-LONG	WB8-22T	SRND32	SPP3	LT27
CRDN N2525-42	★	*12.7*	*25*	*25*	*150*	*25*	*35*	*20*	RNG42	1			SRND42		
CRDN N2525-43	★	*12.7*	*25*	*25*	*150*	*25*	*35*	*20*	RNG43	1					

R

General Turning and Face Grooving
Clamp-on

CRSN
External Diameter / Facing

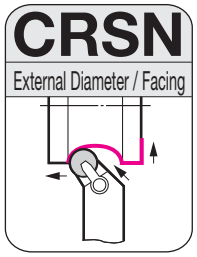


Fig 1

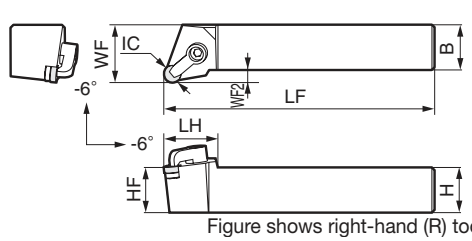


Figure shows right-hand (R) tool.

Insert L61



(1) RNG32
(2) RNG42
(3) RNG43

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp	Double Screw	Shim	Shim Set Screw	Wrench
CRSN R/L2525-32	★		*9.525*	*25*	*25*	*150*	*32*	*25*	*30*	*7*	RNG32	1	CCM8-LONG	WB8-22T	SRND32	SPP3	LT27
CRSN R/L2525-42	★		*12.7*	*25*	*25*	*150*	*32*	*25*	*30*	*7*	RNG42	1			SRND42		
CRSN R/L2525-43	★		*12.7*	*25*	*25*	*150*	*32*	*25*	*30*	*7*	RNG43	1					

Please refer to C Section: ceramic holders CRDNN (C48) and CRSN(R/L) and methods for holding dimple lock inserts



General Turning
Dimple Lock

XSBN
External Turning

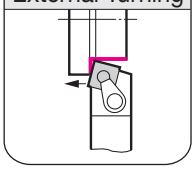


Fig 1

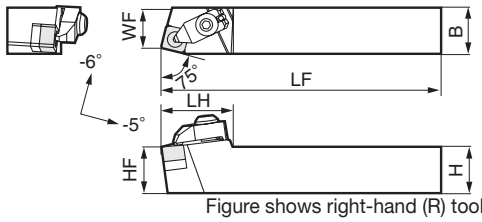


Figure shows right-hand (R) tool.

Insert L65



Holder / Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp	Bolt	Shim	Shim Set Screw	Spring	Wrench
XSBN R/L2525-43	★		*25*	*25*	*150*	*21.5*	*25*	*38*	SNGX43○○	1	DSLX8	BH0825	SSND433	SPP3	GSP10	LH050



General Turning and Facing
Dimple Lock

XCLN
External Diameter / Facing

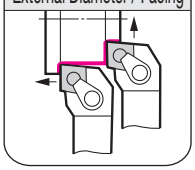


Fig 1

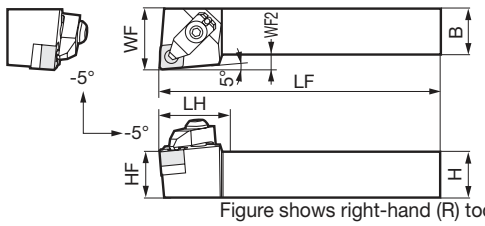


Figure shows right-hand (R) tool.

Insert L35



Holder / Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Offset WF2	Applicable Insert	Fig	Clamp	Bolt	Shim	Shim Set Screw	Spring	Wrench
XCLN R/L2525-43	★		*25*	*25*	*150*	*32*	*25*	*33*	*7*	CNGX43○○	1	DSLX8	BH0825	SCND433	SPP3	GSP10	LH050

Please refer to C Section: ceramic holders CRDNN (C48) and CRSN(R/L) and methods for holding dimple lock inserts

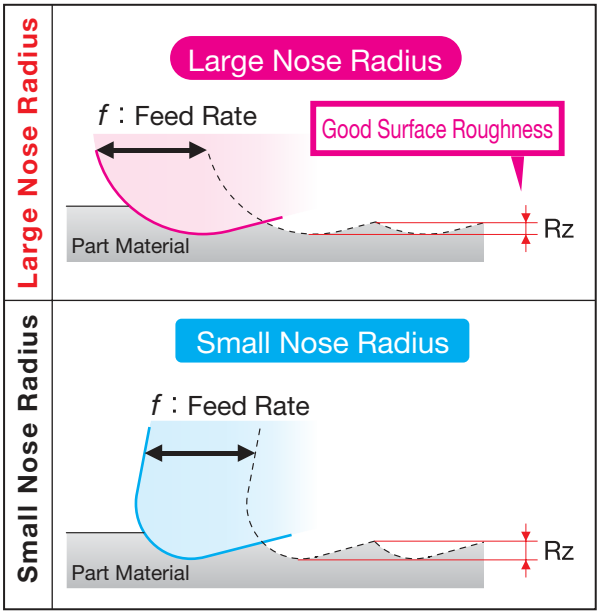
Inserts & Special Holders for High Efficiency Machining



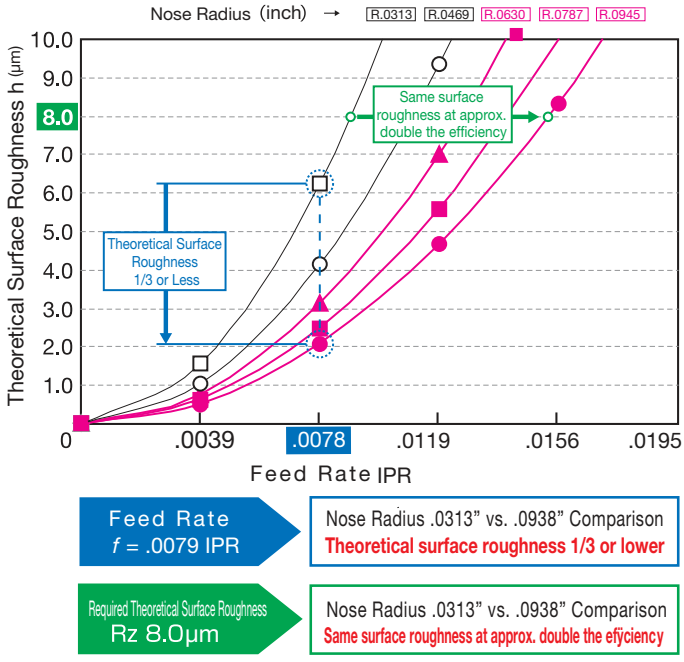
■ Features

- Improved finished surface roughness with high-feed cutting
- Ideal for profiling when when low surface roughness is required

● Operation with different nose radii



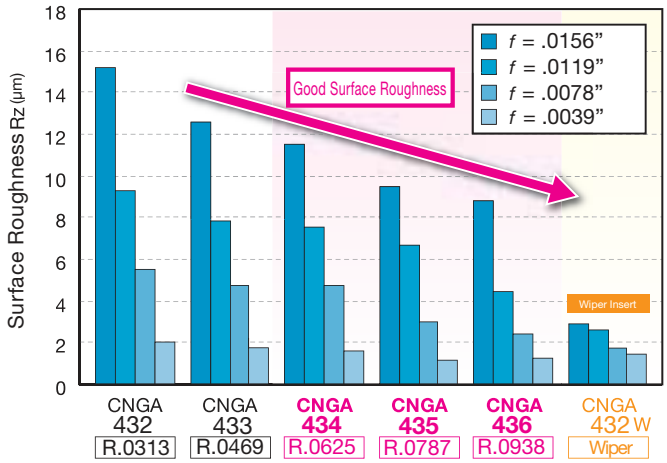
● Comparison of Theoretical Surface Roughness



Feed Rate *f* = .0079 IPR	Nose Radius .0313" vs. .0938" Comparison **Theoretical surface roughness 1/3 or lower**
Required Theoretical Surface Roughness Rz 8.0µm	Nose Radius .0313" vs. .0938" Comparison **Same surface roughness at approx. double the efficiency**

* Actual value of surface roughness is approximately 1.5 to 3 times higher (for steel).
* Theoretical surface roughness is calculated using the following formula: [h = (f^2 / 8r) x 10^3].

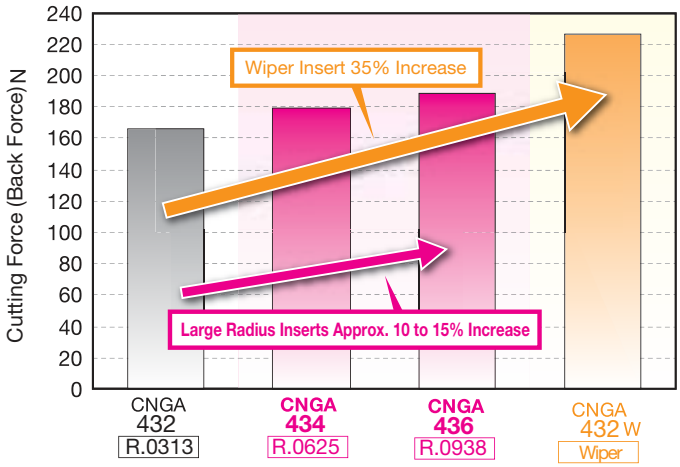
● Machined surface roughness comparison with different nose radii



Inserts with a larger nose radius also give better surface roughness during actual machining

Part Material: Chromium Molybdenum Steel (60HRC)
Cutting Conditions: v_c = 330 SFM, a_p = .0039" Dry

● Cutting force comparison with different nose radii



Low cutting force compared to wiper insert enables high-feed cutting

Part Material: Chromium Molybdenum Steel (60HRC)
Cutting Conditions: v_c = 500 SFM, f = .0117 IPR, a_p = .0039" Dry

Inserts & Special Holders for High Efficiency Machining

C 80° | 95° 95° | CBN

DCLN

External Turning and Facing

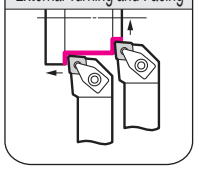


Fig 1

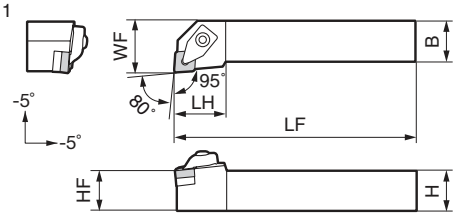


Figure shows right-hand (R) tool.

Insert L33



(1) 2NC-CNGA434 (4) 4NC-CNGA434
(2) 2NC-CNGA435 (5) 4NC-CNGA435
(3) 2NC-CNGA436 (6) 4NC-CNGA436

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shims	Upper Surface Wrench	Lower Surface Wrench
DCLN R/L 2525M12-R24	★	★	*25*	*25*	*150*	*32*	*25*	*32*		1							
DCLN R/L 3225P12-R24	★		*32*	*25*	*170*	*32*	*32*	*32*	○NC-CNGA43○	1	SCP-2	5.0	CNS1204-R24	BFTX0409N	TRX15 (*)	LH040	LH025
DCLN R/L 3232P12-R24	★		*32*	*32*	*170*	*40*	*32*	*32*		1							

*Dedicated tool holder for .063"/.079"/.094" nose radius inserts. Other sizes cannot be used.
*Wrench for shim is sold separately from the main body.

Clamp Set Parts C63

D 55° | 93° | CBN

DDJN

External / Profiling

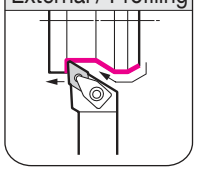


Fig 1

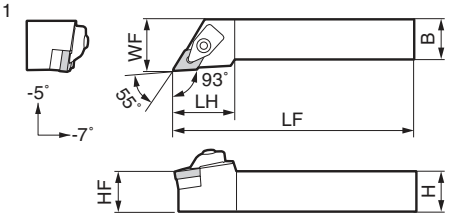


Figure shows right-hand (R) tool.

Insert L51



(1) 2NC-DNGA434 (4) 4NC-DNGA434
(2) 2NC-DNGA435 (5) 4NC-DNGA435
(3) 2NC-DNGA436 (6) 4NC-DNGA436

Holder

Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shims	Upper Surface Wrench	Lower Surface Wrench
DDJN R/L 2525M15-R24	★	★	*25*	*25*	*150*	*32*	*25*	*32*		1							
DDJN R/L 3225P15-R24	★		*32*	*25*	*170*	*32*	*32*	*38*	○NC-DNGA43○	1	SCP-2	5.0	DNS1504-R24	BFTX0409N	TRX15 (*)	LH040	LH025
DDJN R/L 3232P15-R24	★		*32*	*32*	*170*	*40*	*32*	*38*		1							

*Dedicated tool holder for .063"/.079"/.094" nose radius inserts. Other sizes cannot be used.
*Wrench for shim is sold separately from the main body.

Clamp Set Parts C63

D 55° | 107.5° | CBN

DDHN

External / Profiling

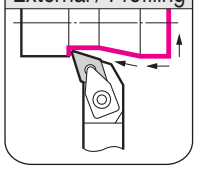


Fig 1

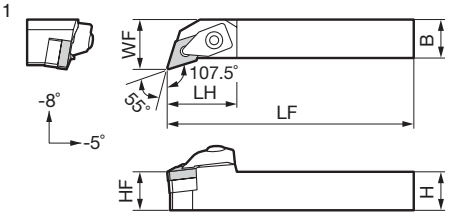


Figure shows right-hand (R) tool.

Insert L51



(1) 2NC-DNGA434 (4) 4NC-DNGA434
(2) 2NC-DNGA435 (5) 4NC-DNGA435
(3) 2NC-DNGA436 (6) 4NC-DNGA436

Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shims	Upper Surface Wrench	Lower Surface Wrench
DDHN R/L 2525M15-R24	★	★	*25*	*25*	*150*	*35*	*25*	*35*	○NC-DNGA43○	1	SCP-2	5.0	DNS1504-R24	BFTX0409N	TRX15 (*)	LH040	LH025

*Dedicated tool holder for .063"/.079"/.094" nose radius inserts. Other sizes cannot be used.
*Wrench for shim is sold separately from the main body.

Clamp Set Parts C63

N·m Recommended Tightening Torque (N·m)

Inserts & Special Holders for High Efficiency Machining



DDNN

External / Profiling

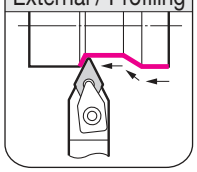


Fig 1

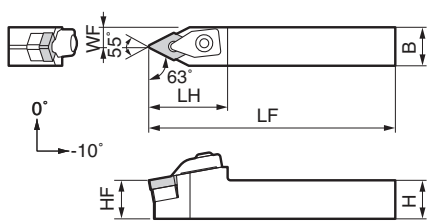


Figure shows right-hand (R) tool.

Insert L51



(1) 2NC-DNGA434
(2) 2NC-DNGA435
(3) 2NC-DNGA436
(4) 4NC-DNGA434
(5) 4NC-DNGA435
(6) 6NC-DNGA436

Holder / Parts

Dimensions (mm)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shims	Upper Surface Wrench	Lower Surface Wrench
DDNN N 2525M15-R24	★	*25*	*25*	*150*	*13*	*25*	*40*	○NC-DNGA43○	1	SCP-2	5.0	DNS1504-R24	BFTX0409N	TRX15 (*)	LH040	LH025

*Dedicated tool holder for .063"/.079"/.094" nose radius inserts. Other sizes cannot be used.
*Wrench for shim is sold separately from the main body.

Clamp Set Parts C63



DTGN

External Turning

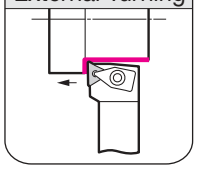


Fig 1

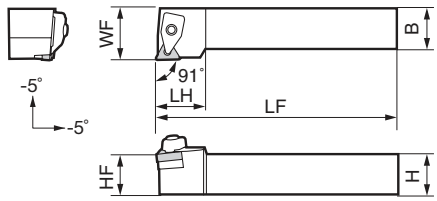


Figure shows right-hand (R) tool.

Insert L71



(1) 3NC-TNGA334
(2) 3NC-TNGA335
(3) 3NC-TNGA336
(4) 6NC-TNGA334
(5) 6NC-TNGA335
(6) 6NC-TNGA336

Holder / Parts

Dimensions (mm)

Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge WF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig	Clamp Set	N·m	Shim	Shim Screw	Wrench for Shims	Upper Surface Wrench	Lower Surface Wrench
DTGN R/L 2525M16-R24	★	★	*25*	*25*	*150*	*32*	*25*	*32*	○NC-TNGA33○	1	SCP-1	5.0	TNS1604-R24	BFTX0307N	TRX10 (*)	LH040	LH025
DTGN R/L 3225P16-R24	★		*32*	*25*	*170*	*32*	*32*	*32*		1							
DTGN R/L 3232P16-R24	★		*32*	*32*	*170*	*40*	*32*	*32*		1							

*Dedicated tool holder for .063"/.079"/.094" nose radius inserts. Other sizes cannot be used.
*Wrench for shim is sold separately from the main body.

Clamp Set Parts C63

Inserts & Special Holders for High Efficiency Machining



DTFN

Facing

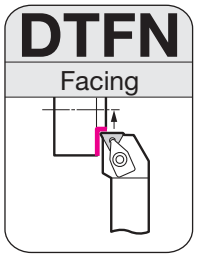


Fig 1

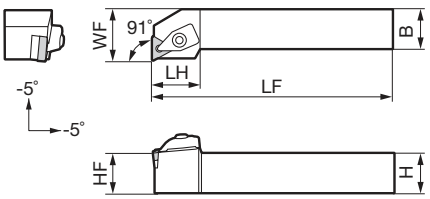


Figure shows right-hand (R) tool.

Insert L71



(1) 3NC-TNGA334
(2) 3NC-TNGA335
(3) 3NC-TNGA336
(4) 6NC-TNGA334
(5) 6NC-TNGA335
(6) 6NC-TNGA336

Holder

Parts

Dimensions (mm)

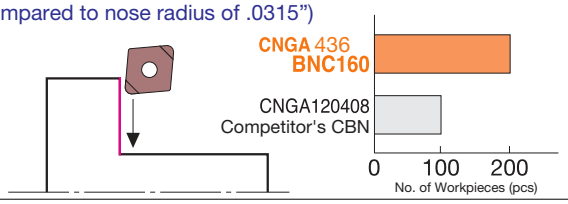
Cat. No.	Stock		Height	Width	Overall Length	Cutting Edge	Cutting Edge Height	Head	Applicable Insert	Fig	Clamp Set		Shim	Shim Screw	Wrench for Shims	Upper Surface Wrench	Lower Surface Wrench
	R	L	H	B	LF	WF	HF	LH				N·m					
DTFN R/L 2525M16-R24	★	★	25	25	150	32	25	30	○NC-TNGA33○	1	SCP-1	5.0	TNS1604-R24	BFTX0307N	TRX10 (*)	LH040	LH025

*Dedicated tool holder for .063"/.079"/.094" nose radius inserts. Other sizes cannot be used.
*Wrench for shim is sold separately from the main body.

Clamp Set Parts C63

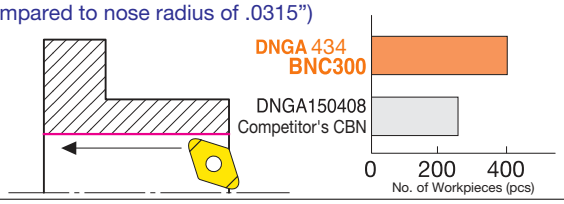
Application Example (For Automotive Components)

Nose radius of .094" achieves 2x greater tool life
(compared to nose radius of .0315")



Work Material: Carburised Steel (60HRC)
Cutting Conditions: [R.094"] v_c = 400 SFM, f = .014 IPR, a_p = .0079"
[R.0315"] v_c = 400 SFM, f = .0079 IPR, a_p = .0079"

Nose radius of .0630" achieves 1.5x greater tool life
(compared to nose radius of .0315")



Part Material: Carburized Steel (60HRC)
Cutting Conditions: v_c = 330 SFM, f = .0059 IPR, a_p = .0039"

BSME Type



■ Features

- Achieves the minimum bore diameter of ø2.5mm in boring of hardened steel
- Achieves high-precision cutting edge positioning thanks to the newly developed clamp mechanism
- Expands the range of small hole boring to achieve more high-efficiency machining requiring no grinding
- BSME Type (Brazed Type)
  Can be used with work diameters from ø2.5 to 5.0mm
- SEXC Type (Indexable Insert Type)
  Can be used with work diameters from ø4.0 to 6.0mm

Expansion | Carbide (Coolant Hole) | CBN

SUMIBORON
Brazed

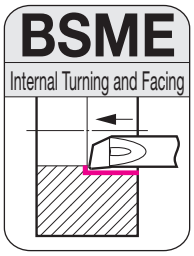


Fig 1

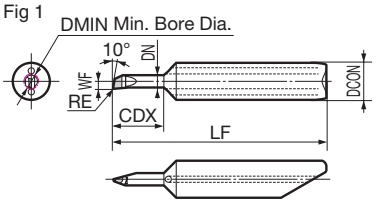
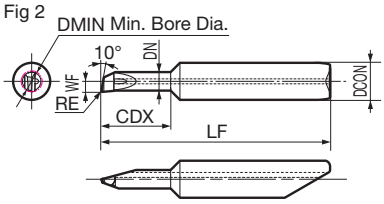


Fig 2



Holder (SUMIBORON)

Dimensions (*mm*)

Cat. No.	BN2000 R	BN2000 L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Max. Boring Depth CDX	Corner Radius RE	Applicable Sleeve	Fig
BSME R/L 25020D2S6	★	★	***2.5***	*6.0*	*2.0*	*32.0*	*1.20*	*5.3*	*0.2*		1
BSME R/L 25020D3S6	★	★	***2.5***	*6.0*	*2.0*	*34.5*	*1.20*	*7.8*	*0.2*		1
BSME R/L 25020D4S6			***2.5***	*6.0*	*2.0*	*37.0*	*1.20*	*10.3*	*0.2*		1
BSME R/L 30020D2S6	★	★	***3.0***	*6.0*	*2.5*	*32.8*	*1.45*	*6.3*	*0.2*		2
BSME R/L 30020D3S6	★	★	***3.0***	*6.0*	*2.5*	*35.8*	*1.45*	*9.3*	*0.2*		2
BSME R/L 30020D4S6			***3.0***	*6.0*	*2.5*	*38.8*	*1.45*	*12.3*	*0.2*		2
BSME R/L 35020D2S6	★	★	***3.5***	*6.0*	*3.0*	*33.5*	*1.70*	*7.3*	*0.2*		2
BSME R/L 35020D3S6	★	★	***3.5***	*6.0*	*3.0*	*37.0*	*1.70*	*10.8*	*0.2*		2
BSME R/L 35020D4S6			***3.5***	*6.0*	*3.0*	*40.5*	*1.70*	*14.3*	*0.2*	HBSM6020	2
BSME R/L 40020D2S6	★	★	***4.0***	*6.0*	*3.5*	*33.9*	*1.95*	*8.3*	*0.2*	HBSM6020A	2
BSME R/L 40020D3S6	★	★	***4.0***	*6.0*	*3.5*	*37.9*	*1.95*	*12.3*	*0.2*		2
BSME R/L 40020D4S6			***4.0***	*6.0*	*3.5*	*41.9*	*1.95*	*16.3*	*0.2*		2
BSME R/L 45020D2S6	★	★	***4.5***	*6.0*	*4.0*	*35.0*	*2.20*	*9.3*	*0.2*		2
BSME R/L 45020D3S6	★	★	***4.5***	*6.0*	*4.0*	*39.5*	*2.20*	*13.8*	*0.2*		2
BSME R/L 45020D4S6			***4.5***	*6.0*	*4.0*	*44.0*	*2.20*	*18.3*	*0.2*		2
BSME R/L 50020D2S6	★	★	***5.0***	*6.0*	*4.5*	*35.8*	*2.45*	*10.3*	*0.2*		2
BSME R/L 50020D3S6	★	★	***5.0***	*6.0*	*4.5*	*40.8*	*2.45*	*15.3*	*0.2*		2
BSME R/L 50020D4S6			***5.0***	*6.0*	*4.5*	*45.8*	*2.45*	*20.3*	*0.2*		2

The BSME Type requires HBSM6020 (A) adapter sleeve (sold separately).

Fig 1

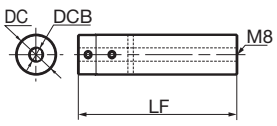
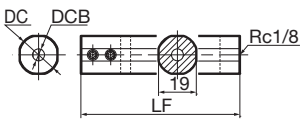
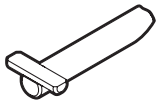


Fig 2



Alignment Jig

Cat. No.	Stock	
AFBSM60	★	

This jig is used for centring sleeves when setting them into holders.

Sleeve

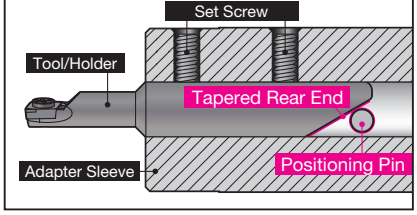
Dimensions (Inch / *mm*)

Cat. No.	Stock	OD Dia. DC	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM601905	●	.750	*6.0*	*80*	1		
HBSM60254	●	1.000	*6.0*	*80*	1	BT0506	TH025
HBSM6020	★	*20*	*6.0*	*80*	1		
HBSM6020A	★	*20*	*6.0*	*80*	2		

Adapter sleeve is optional.

Newly Developed Clamp Mechanism

Achieves high-precision cutting edge positioning by combining a tool/holder that has a tapered rear end with a sleeve having an internal positioning pin.
(common to BSME and SEXC types)



• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

SEXC Type

Expansion | Carbide (Coolant Hole) | CBN

SUMIBORON
Screw-on

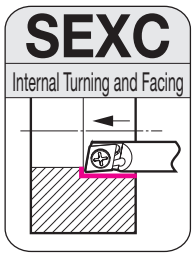
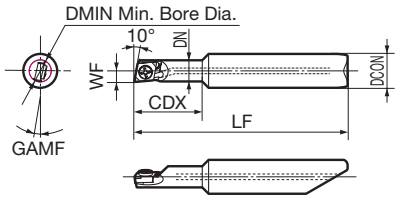


Fig 1



Holder

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Min. Bore Dia. DMIN	Diameter DCON	Neck Diameter DN	Overall Length LF	Cutting Edge Distance WF	Max. Boring Depth CDX	Rake Angle GAMF	Applicable Sleeve	Fig	Bolt	Bolt N·m	Wrench
E06D2-SEXC R/L03-04P	★	★	***4.0***	*6.0*	*3.75*	*33.75*	*1.95*	*8*	-13°	HBSM6020 HBSM6020A	1	MIB1.6-2	0.2	SDBSM
E06D3-SEXC R/L03-04P	★	★	***4.0***	*6.0*	*3.75*	*37.75*	*1.95*	*12*	-13°		1			
E06D2-SEXC R/L03-05P	★	★	***5.0***	*6.0*	*4.75*	*35.25*	*2.45*	*10*	-12°		1	MIB1.6-2.5	0.2	
E06D3-SEXC R/L03-05P	★	★	***5.0***	*6.0*	*4.75*	*40.25*	*2.45*	*15*	-12°		1			
E06D2-SEXC R/L03-06P	★	★	***6.0***	*6.0*	*5.75*	*36.75*	*2.95*	*12*	-11°		1	MIB1.6-3	0.2	
E06D3-SEXC R/L03-06P	★	★	***6.0***	*6.0*	*5.75*	*42.75*	*2.95*	*18*	-11°		1			

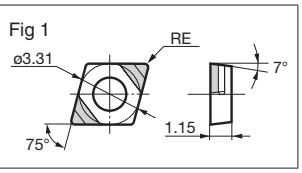
The SEXC Type needs the HBSM6020 (A) adapter sleeve (sold separately).

Insert (SUMIBORON)

Dimensions (*mm*)

Cat. No.	BN2000	BN7000	Nose Radius RE	Fig
2NU-ECXA030X02LE	★		0.2	1
2NU-ECXA030X02LF	★	★	0.2	1

Fig 1



Part Number Suffix: LE: Honing, LF: Sharp Edge

Fig 1

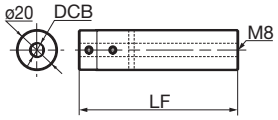
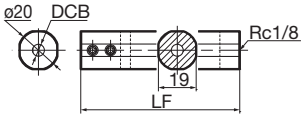


Fig 2

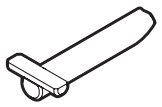


Sleeve

Dimensions (*mm*)

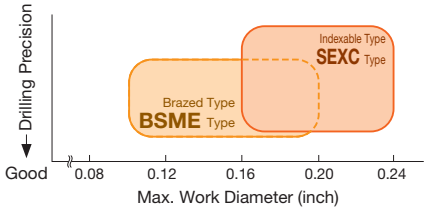
Cat. No.	Stock	Bore Dia. DCB	Overall Length LF	Fig	Set Screw	Wrench
HBSM6020	★	*6.0*	*80*	1	BT0506	TH025
HBSM6020A	★	*6.0*	*80*	2		

Alignment Jig

Cat. No.	Stock	
AFBSM60	★	

This jig is used for centring sleeves when setting them into holders.

Application Range



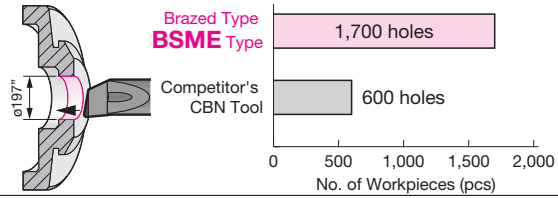
Recommended Cutting Conditions

Spindle Speed *n*	Above 2,000 RPM	May cause chattering or chipping at the cutting edge in low-speed machining.
Depth of Cut a_p	0.0004" to 0.006"	Excessive depth of cut causes deformation of the tool, which consequently leads to deterioration of dimensional tolerance.
Feed Rate *f*	0.0004 to 0.004 IPR	–

Application Examples

Hardened Alloy Steel Valve Component — BSME

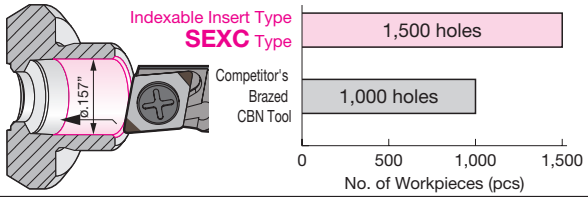
The BSME type provides stable machining and a tool life that is over 2 times longer than our competitors' CBN tools.



Part Material: Hardened Alloy Steel Valve Component (Automotive Component)
Tool: BSME R50020D2S6 Grade: BN2000
Cutting Conditions: v_c = 387 SFM (7,500 RPM), *f* = 0.0008 IPR, a_p = 0.004" Dry

Bearing Steel: Small Automotive Component — SEXC

The SEXC type provides drastically reduced tool costs and a tool life that is 1.5 times longer than our competitors' brazed CBN tools.



Part Material: Bearing Steel Small Automotive Component (60HRC)
Holder: E06D2-SEXC R/L03-04P Insert: 2NU-ECXA 030X02LF (BN2000)
Cutting Conditions: v_c = 164 SFM (4,000 RPM), *f* = 0.0008 IPR, a_p = 0.0008" Wet

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)

BNBX Type



SUMIBORON
Brazed

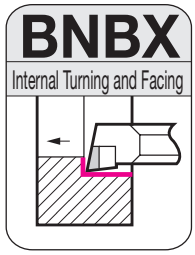
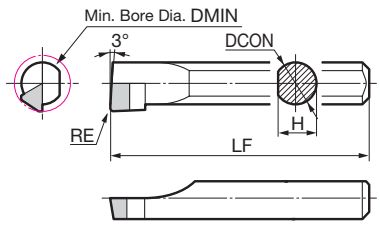


Fig 1



Holder (SUMIBORON)

Dimensions (*mm*)

Cat. No.	BN2000	BN7000	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Nose Radius RE	Applicable Sleeve	Fig
BNBX020R	★	★	***2.5***	*2.0*	*1.8*	*40*	*0.2*	HBX2016	1
BNBX025R	★	★	***3.0***	*2.5*	*2.2*	*40*	*0.2*	HBX2516	1
BNBX030R	★	★	***3.5***	*3.0*	*2.7*	*40*	*0.2*	HBX3016	1
BNBX035R	★	★	***4.0***	*3.5*	*3.2*	*40*	*0.2*	HBX3516	1
BNBX040R	★	★	***4.5***	*4.0*	*3.7*	*40*	*0.2*	HBX4016	1
BNBX045R	★	★	***5.0***	*4.5*	*4.2*	*40*	*0.2*	HBX4516	1
BNBX050R	★	★	***5.5***	*5.0*	*4.7*	*60*	*0.2*	HBX5016	1
BNBX055R	★	★	***6.0***	*5.5*	*5.2*	*60*	*0.2*	HBX5516	1
BNBX060R	★	★	***6.5***	*6.0*	*5.7*	*60*	*0.2*	HBX6016	1
BNBX065R	★		***7.0***	*6.5*	*6.2*	*60*	*0.2*	HBB6516	1
BNBX070R	★		***7.5***	*7.0*	*6.7*	*80*	*0.2*	HBB716	1
BNBX075R	★		***8.0***	*7.5*	*7.2*	*80*	*0.2*	HBB7516	1
BNBX080R	★		***8.5***	*8.0*	*7.7*	*80*	*0.2*	HBB816	1

BNBX bars can be used with HBB type sleeves, but HBX type sleeves are recommended for bars below ø6mm.

Fig 1

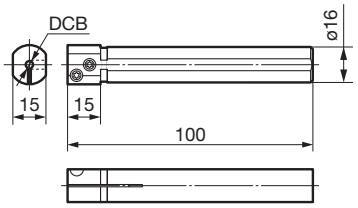
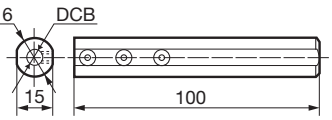


Fig 1



Sleeve (HBX Type)

Dimensions (*mm*)

Cat. No.	Stock	Bore Dia. DCB	Applicable Bar	Fig
HBX2016	★	*2.0*	BNBX020R	1
HBX2516	★	*2.5*	BNBX025R	1
HBX3016	★	*3.0*	BNBX030R	1
HBX3516	★	*3.5*	BNBX035R	1
HBX4016	★	*4.0*	BNBX040R	1
HBX4516	★	*4.5*	BNBX045R	1
HBX5016	★	*5.0*	BNBX050R	1
HBX5516	★	*5.5*	BNBX055R	1
HBX6016	★	*6.0*	BNBX060R	1

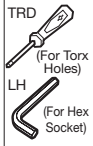
Sleeve (HBB Type)

Dimensions (*mm*)

Cat. No.	Stock	Bore Dia. DCB	Applicable Bar	Fig
HBB6516	★	*6.5*	BNBX065R	1
HBB716	★	*7.0*	BNBX070R	1
HBB7516	★	*7.5*	BNBX075R	1
HBB816	★	*8.0*	BNBX080R	1

HBB Type sleeve can also be used with ø2.5 to 6.0mm holders.

Spare Parts (for Adapter Sleeve)

Applicable Sleeve	Flat Screw		Set Screw	Wrench
				
HBX2○○○	BFTX0409N	**1.5**	BT06035T	TRD15
HBX3○○○	BFTX0409N	**3.0**	BT06035T	TRD15
HBX4○○○				
HBX5○○○				
HBX6○○○				
HBB○○○○	-	-	BT0404	LH020

N·m Recommended Tightening Torque (N·m)

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

BNZ Type



SUMIBORON
Screw-on

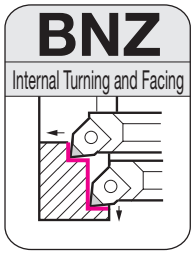
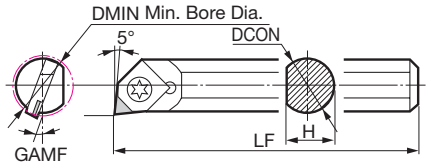


Fig 1



Holder

Parts

Dimensions (*mm*)

Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Flat Screw		Wrench	Adapter Sleeve
										 (For Torx Holes)	
BNZ606R	★	***7.0***	*6.0*	*5.5*	*80*	-14°	1	BFTX0204N	**0.5**	TRX06	HBB616
BNZ608R	★	***9.0***	*8.0*	*7.5*	*100*	-12°	1				HBB816
BNZ610R	★	***11.0***	*10.0*	*9.5*	*125*	-10°	1				-
BNZ612R	★	***13.0***	*12.0*	*11.0*	*130*	-8°	1				
BNZ616R	★	***17.0***	*16.0*	*15.0*	*145*	-6°	1				
BNZ620R	★	***21.0***	*20.0*	*19.0*	*160*	-5°	1				

Insert (SUMIBORON)

Dimensions (Inch)

Quantity	Cat. No.	BNC2010	BNC2020	BN1000	BN2000	BN7000	Nose Radius RE
Single pack	**NU-ZNEX620.5**	-	-	●	●	●	.0079
	NU-ZNEX621	-	-	●	●	●	.0157
	NC-ZNEX620.5LE	●	-	-	-	-	.0079
	NC-ZNEX621LE	●	-	-	-	-	.0157
	NC-ZNEX620.5LT	-	●	-	-	-	.0079
	NC-ZNEX621LT	-	●	-	-	-	.0157
10 pack	**T-NU-ZNEX620.5**	-	-		●		.0079
	T-NU-ZNEX621	-	-		●		.0157

Fig 1

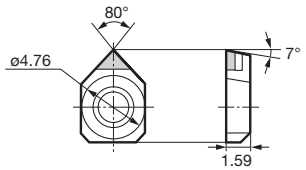
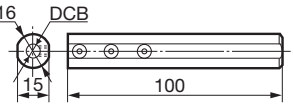


Fig 1



Sleeve

Dimensions (*mm*)

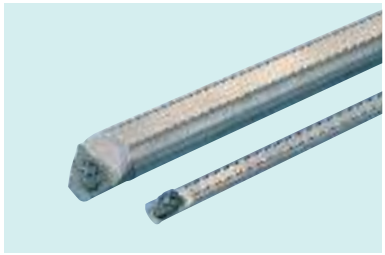
Cat. No.	Stock	Bore Dia. DCB	Applicable Holders	Fig
HBB616	★	*6.0*	BNZ606R	1
HBB816	★	*8.0*	BNZ608R	1

HBX Type sleeve (HBX6016) can also be used with BNZ606R.

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

N·m Recommended Tightening Torque (N·m)

BNB Type



- High rigidity full cemented carbide boring bar shank
  - Minimal deformation produces boring with excellent dimensional tolerance.
  - Minimal chatter produces superior surface finish.
- Full-top CBN - SUMIBORON insert enables 3 cutting edges
- Can be used with PCD - SUMIDIA inserts for non-ferrous metal machining
- Now with economical single-corner NF Type PCD - SUMIDIA insert

T 60° | 92° | CBN | PCD

SUMIBORON
Clamp-on

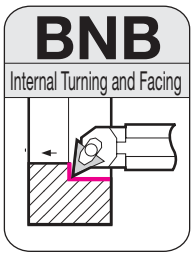


Fig 1

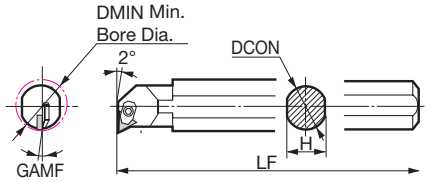


Figure shows right-hand (R) tool.

Holder

Parts

Dimensions (inch/ *mm*)

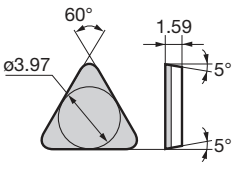
Cat. No.	Stock	Min. Bore Dia. DMIN	Diameter DCON	Height H	Overall Length LF	Rake Angle GAMF	Fig	Clamp	Bolt	Nut	Wrench (For Hex Socket)
BNB508R	★	**0.394" (10.0)**	0.315" *(8.0)*	0.276" *(7.0)*	5.512" *(140)*	-9°	1	BNBC	BH0306	BNBW-2	TH020
BNB510R	★	**0.472" (12.0)**	0.394" *(10.0)*	0.354" *(9.0)*	5.512" *(140)*	-8°	1				
BNB512R	★	**0.551" (14.0)**	0.472" *(12.0)*	0.433" *(11.0)*	6.299" *(160)*	-6°	1		FBUP3-A0-9	BNBW-4	
BNB516R	★	**0.708" (18.0)**	0.630" *(16.0)*	0.551" *(14.0)*	7.086" *(180)*	-5°	1				
BNB520R	★	**0.866" (22.0)**	0.787" *(20.0)*	0.708" *(18.0)*	7.086" *(180)*	-4°	1		BH0310	BNBW-7	

Insert (CBN - SUMIBORON, PCD - SUMIDIA)

Dimensions (*mm*)

Cat. No.	CBN - SUMIBORON BNX10	BNX20	BN2000	BN350	BN500	BN7000	PCD - SUMIDIA DA150	DA1000	Nose Radius RE
TBGN060102B		★	★				★	★	*0.2*
TBGN060104B	★	★	★	★	★	★	★	★	*0.4*
TBGN060108B		★	★	★	★	★			*0.8*
TBGN060102-BSTN*	-	★	-	-	-	-	-	-	*0.2*
TBGN060104-BSTN*	-	★	-	-	-	-	-	-	*0.4*
TBGN060108-BSTN*	-	★	-	-	-	-	-	-	*0.8*
NF-TBGN060102**	-	-	-	-	-	-	-	★	*0.2*
NF-TBGN060104**	-	-	-	-	-	-	-	★	*0.4*

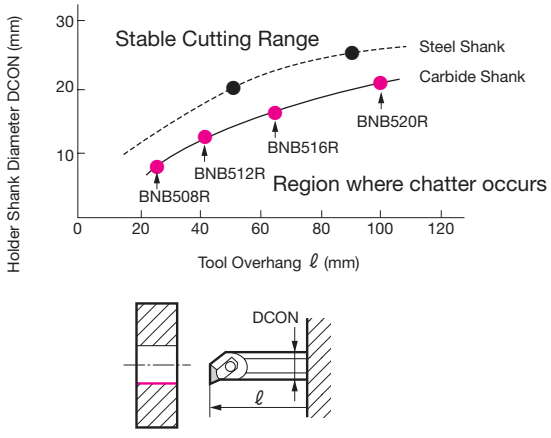
Fig 1



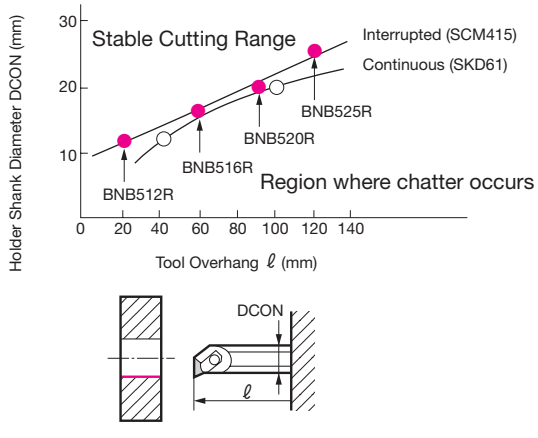
* TBGN ○○○○○○-BSTN is only available in BNX20 grade and has a smaller negative land angle.
(BSTN: -15°, B: -25°. However, the negative land angle is uniquely configured for each grade.)

** NF-TBGN is a single corner insert. (This is not a Full-Top insert)

Performance



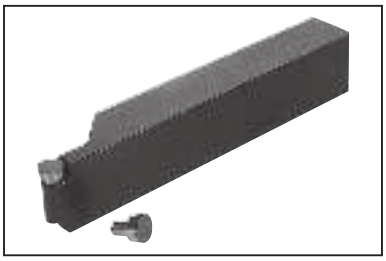
Work Material: SKD61 (60HRC)
Insert Cat. No.: TBGN060104B
Cutting Conditions: v_c=100m/min, f =0.1mm/rev, a_p=0.2mm



Work Material: SCM415 (61HRC) Internal Diameter ø45 (6U Groove)
Insert Cat. No.: TBGN060104B
Cutting Conditions: v_c=100m/min, f =0.1mm/rev, a_p=0.2mm

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

TRGT Type



- Clamping by cutting force alone
  - Secure clamping is achieved by inserting the tapered portion of the insert into the holder.
  - The lack of protrusions on the insert rake face allows smooth chip evacuation.
- Round insert enables various machining operations
  Small round insert with stable clamping can be applied to various machining operations.

TRGT
External / Profiling

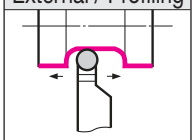


Fig 1

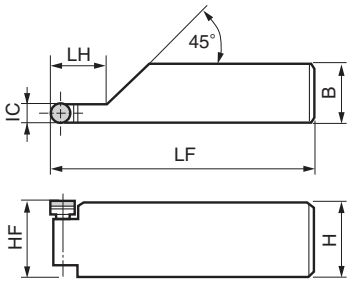


Figure shows right-hand (R) tool.

Holder

Dimensions (*mm*)

Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge Height HF	Head LH	Applicable Insert	Fig
TRGT R/L2020K05	★		*5*	*20*	*20*	*125*	*20*	*16*	RTGN 0508M0	1
TRGT R/L2020K06	★		*6*	*20*	*20*	*125*	*20*	*16*	RTGN 0608M0	1
TRGT R/L2525M07			*7*	*25*	*25*	*150*	*25*	*20*	RTGN 0711M0	1
TRGT R/L2525M08	★		*8*	*25*	*25*	*150*	*25*	*20*	RTGN 0811M0	1
TRGT R/L3225P09	★		*9*	*32*	*25*	*170*	*32*	*25*	RTGN 0914M0	1
	★		*10*	*32*	*25*	*170*	*32*	*25*	RTGN 1014M0	1
TRGT R/L3225P12			*12*	*32*	*25*	*170*	*32*	*25*	RTGN 1214M0	1

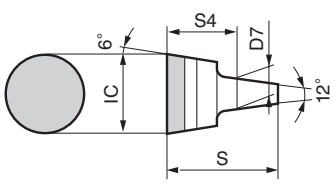
Inserts are not embedded into tool holders.

Insert (C B N - SUMIBORON)

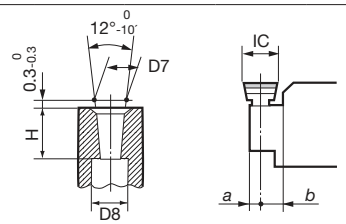
Dimensions (*mm*)

Cat. No.	BN2000	BNX20	BN7000	Inscribed Circle IC	Diameter D7	Thickness S	Thickness 2 S4	Fig
RTGN 0508M0		★		*5*	*2.5*	*7.5*	*3.5*	1
RTGN 0608M0		★		*6*	*3.5*	*7.5*	*3.5*	1
RTGN 0711M0		★		*7*	*3.5*	*11.0*	*5.0*	1
RTGN 0811M0		★		*8*	*4.5*	*11.0*	*5.0*	1
RTGN 0914M0		★		*9*	*5.5*	*14.0*	*6.0*	1
RTGN 1014M0		★		*10*	*5.5*	*14.0*	*6.0*	1
RTGN 1214M0		★		*12*	*7.5*	*14.0*	*6.0*	1

Fig 1



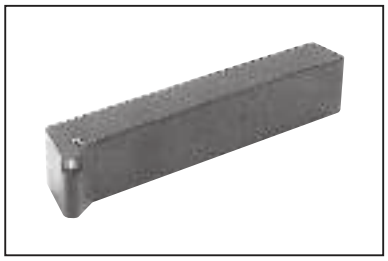
Insert Mounting Details



Supported Insert Diameter IC	H	D7	D8	*a*	*b*
5	*4.0*	*2.5*	*1.9*	*1.85*	*3.2*
6	*4.0*	*3.5*	*2.9*	*2.35*	*3.7*
7	*6.0*	*3.5*	*2.5*	*2.75*	*4.3*
8	*6.0*	*4.5*	*3.5*	*3.25*	*4.8*
9	*7.5*	*5.5*	*4.2*	*4.15*	*5.9*
10	*7.5*	*5.5*	*4.2*	*4.15*	*5.9*
12	*7.5*	*7.5*	*6.2*	*5.15*	*6.9*

• USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

PR Type / SJB Type



- Lever lock clamping system
  - Easy operation; the lack of protrusions on the insert rake face allows smooth chip evacuation.
- Versatile round insert can be applied to various operations.

PRGC
External Profiling

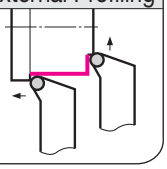
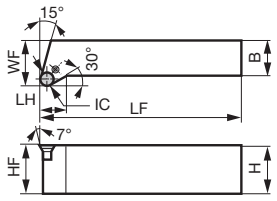


Fig 1



Holder

Dimensions (mm)

Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge WF	Edge Height HF	Head LH	Applicable Insert	Fig
PRGC R/L3225P9	★	★	9	32	25	170	32	32	18	RCGA094	1

PRDC
For General External Turning

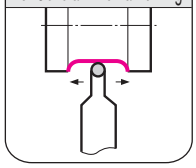
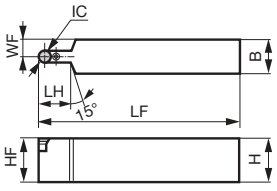


Fig 1



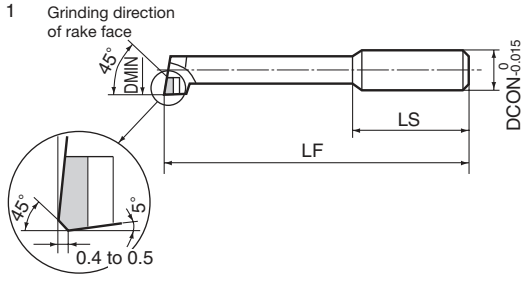
Holder

Dimensions (mm)

Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge WF	Edge Height HF	Head LH	Applicable Insert	Fig
PRDC N 3225P9		★	9	32	25	170	12.5	32	25	RCGA094	1

SJB
Drilling

Fig 1



Holder (SUMIBORON)

Dimensions (mm)

Cat. No.	BN250	Diameter DCON	Min. Bore Dia. DMIN	Overall Length LF	Length LS	Fig
SJB 0804	★	8	4	45	32	1
SJB 0805	★	8	5	45	32	1
SJB 0806	★	8	6	50	30	1
SJB 0808	★	8	8	60	30	1
SJB 1006	★	10	6	50	30	1
SJB 1008	★	10	8	60	30	1
SJB 1010	★	10	10	70	30	1
SJB 1012	★	10	12	70	30	1
SJB 1015	★	10	15	70	30	1

PRGN
For General External Turning

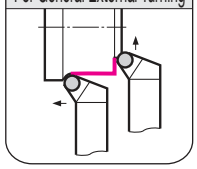
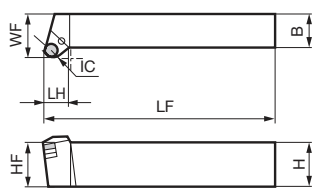


Fig 1



Holder

Dimensions (mm)

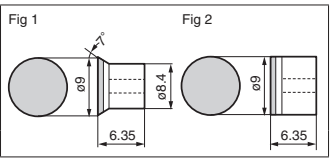
Cat. No.	Stock R	Stock L	Inscribed Circle IC	Height H	Width B	Overall Length LF	Cutting Edge WF	Edge Height HF	Head LH	Applicable Insert	Fig
PRGN R/L3225P9	★	★	9	32	25	170	32	32	10	RNGA094	1

Inserts are not embedded into tool holders.

Insert (SUMIBORON)

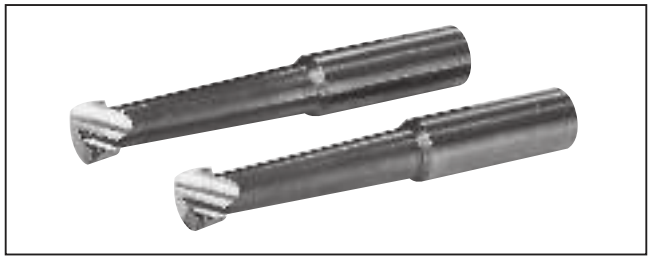
Dimensions (mm)

Cat. No.	BN2000	BNX20	BN350	BN7000	Fig
RCGA094	★				1
RNGA094	★	★			2



Parts

Good Holders	Shim	Lever Pin	Bolt	Shim Set Screw	Wrench
PRGC R/L3225P9 PRDCN 3225P9	LSR817	LCL3S	LCS3	LSP3	LH025
PRGN R/L3225P9	LSR917				



Recommended Cutting Conditions (SJB Type)

Spindle Speed n	Above 800 min^{-1}	Low speeds may cause chattering and chipping on the cutting edge.
Depth of Cut a_p	.0039 to .0117 inch/ radius	Excessive depth of cut may cause larger tool deformation, resulting in deterioration of bore accuracy.
Feed Rate f	.0017 to .0039 IPR	-

Please refer to C Section: ceramic holders CRDNN (C48) and CRSN(R/L) and methods for holding dimple lock inserts

BNRN Type



- Insert can be reground and used again
  - The same holder can be used for a reground insert by adjusting the slide locator with a clamp.
- Reliable holder design
  - The tip of the clamp is a cemented carbide chipbreaker that can withstand wear from chips.
  - Slide locator uses HSS for durability.

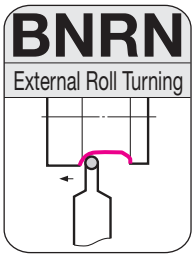
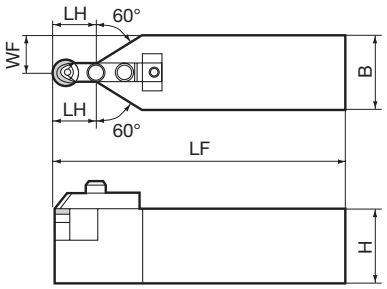


Fig 1



Body

Dimensions (*mm*)

Cat. No.	Stock	Height H	Width B	Overall Length LF	Cutting Edge WF	Head LH	Applicable Insert New Cat. No.	Applicable Insert (Regrindable range)	Fig
BNRN 3232-08-07		*32*	*32*	*200*	*16*	*13*	RBG08-B	8.0 to 7.0	1
BNRN 4038-10-09		*40*	*38*	*250*	*19*	*17*	RBG10-B	10.0 to 9.0	1
BNRN 4038-12-11		*40*	*38*	*250*	*19*	*20*	RBG12-B	12.0 to 11.0	1
BNRN 5050-14-12		*50*	*50*	*350*	*25*	*25*	*	14.0 to 12.0	1
BNRN 5050-16-14		*50*	*50*	*350*	*25*	*25*	RBG16-B	16.0 to 14.0	1
BNRN 5050-18-16		*50*	*50*	*350*	*25*	*30*	*	18.0 to 16.0	1
BNRN 5050-20-18		*50*	*50*	*350*	*25*	*30*	RBG20-B	20.0 to 18.0	1
BNRN 5050-22-20		*50*	*50*	*350*	*25*	*35*	*	22.0 to 20.0	1
BNRN 5050-24-22		*50*	*50*	*350*	*25*	*35*	*	24.0 to 22.0	1
BNRN 5050-26-24		*50*	*50*	*350*	*25*	*35*	RBG26-B	26.0 to 24.0	1

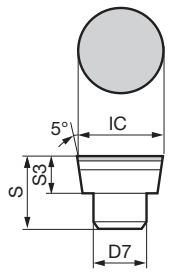
*Blank space indicates holders for reground inserts. Inserts are sold separately.

Insert (SUMIBORON)

Dimensions (mm)

Cat. No.	BN7000	Inscribed Circle IC	Diameter D7	Thickness 2 S3	Thickness S	Fig
RBG 08-B	★	*8.0*	*4.0*	*4.0*	*6.5*	1
RBG 10-B	★	*10.0*	*5.0*	*5.0*	*9.0*	1
RBG 12-B	★	*12.0*	*6.0*	*6.0*	*11.0*	1
RBG 16-B	★	*16.0*	*8.0*	*8.0*	*13.0*	1
RBG 20-B	★	*20.0*	*10.0*	*10.0*	*15.0*	1
RBG 26-B	★	*26.0*	*14.0*	*10.0*	*15.0*	1

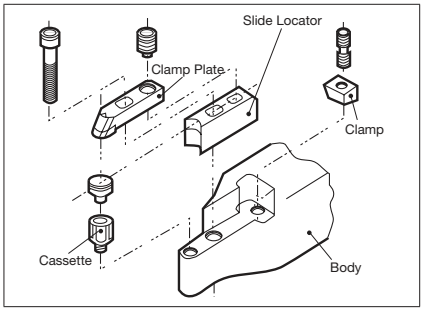
Fig 1



Parts

Applicable Holders	Slide Locator	Clamp	Cassette	Clamp Plate	Cap Screw	Set Screw	Double Screw	Wrench
BNRN 3232-08-07	BNRS R-08	BNRC-08	BNRE-08	BNRW-08	BX0425	BTD0609	WB5-18	LH025
BNRN 4038-10-09	BNRS R-10		BNRE-10					LH030
BNRN 4038-12-11	BNRS R-12	BNRC-12	BNRE-12	BNRW-12	BX0635	BTD0812	WB6-20	LH030
BNRN 5050-14-12	BNRS R-14		BNRE-14		BX0640		WB6-30	LH040 LH050
BNRN 5050-16-14	BNRS R-16	BNRC-16	BNRE-16	BNRW-16	BX0640	BTD0812	WB8-30	LH040 LH050
BNRN 5050-18-16	BNRS R-18		BNRE-18				WB6-30	
BNRN 5050-20-18	BNRS R-20	BNRC-20	BNRE-20	BNRW-20			WB8-30	
BNRN 5050-22-20	BNRS R-22		BNRE-22				WB6-30	
BNRN 5050-24-22	BNRS R-24	BNRC-26	BNRE-24	BNRW-26	BX0840	BTD0818	WB6-30	LH040 LH060
BNRN 5050-26-24	BNRS R-26		BNRE-26				WB8-30	

Structure



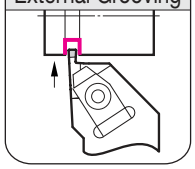
GWB Type



■ Features

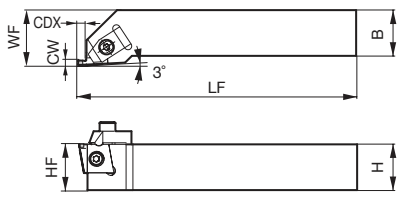
- Vertically-mounted insert enhances tool rigidity
- Double clamping holder design improves stability during continuous and interrupted cutting. Can also be used for traverse cutting
- Long tool life for interrupted cutting applications with the Coated CBN-SUMIBORON BNC30G grade for grooving (BN2000 recommended for continuous cutting)
- Suited for grooving various types of hardened steel. Variety of widths available from .059 to .236" and 1.5 to 6.0mm

GWB
External Grooving



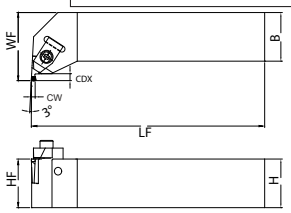
External | CBN

Fig 1



Double Clamp
for Hardened Steel Shallow Grooves

Fig. 2



Holder

Parts

Dimensions (inch / *mm*)

	Cat. No.	Stock R	Stock L	Height H	Width B	Overall Length LF	Cutting Edge Distance WF	Cutting Edge Height HF	Width of Cut CW	Max. Groove Depth CDX	Group No.	Fig	Clamp	Cap Screw	N·m	Flat Screw	Spring	Wrench
Inch	**GWB R/L 165D4**	●	●	1.00	1.00	6.0 (6.039)	1.181	1.0	.059 ≤ CW ≤ .177	.138 to .197	1	1	TF72 (Right Hand) / TF73 (Left Hand)	BX0520T	5.0	BFTX0511N	GSP06	TRX20
Inch	**GWB R/L 165D6**	●	●	1.00	1.00	6.039	1.181	1.0	.059 ≤ CW ≤ .236	.197	2	1						
Inch 90° Series	**GWBS R/L 125D4**	●	●	.750	.750	6.000	.880	.750	.059 ≤ CW ≤ .177	.138 to .197	1	2						
Inch 90° Series	**GWBS R/L 165D4**	●	●	1.00	1.00	6.000	1.167	1.0	.059 ≤ CW ≤ .177	.138 to .197	1	2						
Inch 90° Series	**GWBS R/L 165D6**	●	●	1.00	1.00	6.000	1.167	1.0	.177 ≤ CW ≤ .236	.197	2	2						
Inch 90° Series	**GWBS R/L 205D4**	●	●	1.25	1.25	6.000	1.75	1.25	.059 ≤ CW ≤ .177	.138 to .197	1	2						
Metric	**GWB R/L 2525-45**	★	★	*25*	*25*	*151 (150)*	*30*	*25*	*1.5 ≤ CW ≤ 4.5*	*3.5 to 5.0*	1	1						
Metric	**GWB R/L 2525-60**	★	★	*25*	*25*	*151*	*30*	*25*	*4.5 < CW ≤ 6.0*	*5.0*	2	1						

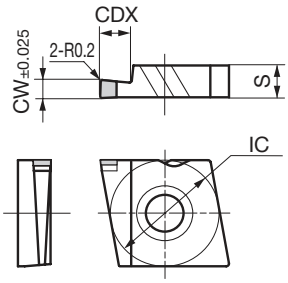
Dimensions in ( ) are for width of cut (CW) of 3.0 or less. GWBR holders take Right-Handed insert – GWBL take Left-Handed inserts. GWBSR takes Left-Handed insert and clamp, GWBSL take Right-Handed insert and clamp.

Insert (□SUMIBORON)

Dimensions (inch / *mm*)

Cat. No.	BN7000 R	BN7000 L	BN7500 R	BN7500 L	BN2000 R	BN2000 L	BNC30G R	BNC30G L	Width of Cut CW	Groove Depth CDX	Inscribed Circle IC	Thickness S	Group No.	Applicable Holder	Fig
CGA R/L 4062					●	●	●	●	.062	.1378	.625	.1875	1	GWB R/L 1□□D4	1
CGA R/L 4094					●	●	●	●	.094	.1575	.625	.1875	1	GWB R/L 2525-45	1
CGA R/L 4125					●	●	●	●	.125	.1969	.625	.1875	1		1
CGA R/L 6189					●	●	●	●	.189	.1969	.625	.250	2	GWB R/L 2525-60 / GWB R/L 1□□D6	1
CGA R/L 1504150	●	●	●	●	●	●	●	●	*1.5*	*3.5*	*15.875*	*4.76*			1
CGA R/L 1504200	●	●	●	●	●	●	●	●	*2.0*	*3.5*	*15.875*	*4.76*			1
CGA R/L 1504250					●	●	●	●	*2.5*	*4.0*	*15.875*	*4.76*		GWB R/L 1□□D4	1
CGA R/L 1504300	●	●	●	●	●	●	●	●	*3.0*	*4.0*	*15.875*	*4.76*	1	GWB R/L 2525-45	1
CGA R/L 1504350					●	●	●	●	*3.5*	*5.0*	*15.875*	*4.76*			1
CGA R/L 1504400	●	●	●	●	●	●	●	●	*4.0*	*5.0*	*15.875*	*4.76*			1
CGA R/L 1504450					●	●	●	●	*4.5*	*5.0*	*15.875*	*4.76*			1
CGA R/L 1506500					●	●	●	●	*5.0*	*5.0*	*15.875*	*6.35*			1
CGA R/L 1506550					●	●	●	●	*5.5*	*5.0*	*15.875*	*6.35*	2	GWB R/L 2525-60 GWB R/L 1□□D6	1
CGA R/L 1506600					●	●	●	●	*6.0*	*5.0*	*15.875*	*6.35*			1

Fig 1



* It is also possible to manufacture widths of cut other than those listed above (CW = 1.5 to 6.0mm).

Grade Features (See page L9 for details on BN7000 & BN7500)

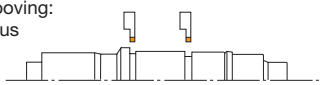
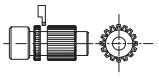
Grade	Application Range	Features	HV(GPa)	TRS(GPa)
BN2000	Continuous Grooving	General-purpose grade with superior wear resistance	31 to 34	1.0 to 1.1
BNC30G	Interrupted Grooving	Grade suited to interrupted grooving. Features tough substrate and special ceramic coating that exhibits both peel-off and wear resistance.	33 to 35	1.1 to 1.2

Recommended Cutting Conditions

Cutting Conditions	H Hardened Steel
Cutting Speed v_c (SFM)	260 to 400
Feed Rate f (IPR)	.0016 to .0032

* In order to avoid thermal cracking of the SUMIBORON cutting edge during interrupted cutting, ensure that the work material is thoroughly dry before cutting.

Application Examples

Tooling	Work Material	Tool Cat. No.	Cutting Condition	Tool Life Comparison
Shaft Grooving: Continuous  Required Surface Roughness for Groove Sides: Ra0.4μm	Carburised steel 58 to 62HRC	CGAR1504200 BN2000	v_c: 120m/min f : 0.05mm/rev Groove Depth: 2mm Dry	
Spline Grooving: Interrupted 	Carburised steel 58 to 62HRC	CGAR1504200 BNC30G	v_c: 100m/min f : 0.05mm/rev Groove Depth: 1.6mm Dry	

N·m Recommended Tightening Torque (N·m) • USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

CGA PSC / BNGG

CGA PSC

■ Features & Benefits

- New double clamping system provides reliable grooving of hardened steel
- 80° tangentially mounted CGA style insert for improved rigidity
- Wide range of widths and grades for continuous and interrupted grooving operations
- New special coated CBN grade BNC30G extends tool life of insert





■ Cassette

Cat. No. R / L	Stock R	Stock L	Grooving Width w (mm)	Grooving Depth a_r (mm)	Insert	Insert Screw	Tightening Torque (N·m)	Insert Wrench	Clamp	Cap Screw	Tightening Torque (N·m)	Clamp Wrench
GWBCM□45	★	★	1.5 - 2.0	3.5	CGA1504□□0 CGA4□□□	BFTX0511N	5.0	TRX20	CLWN01	BX0414	3.0	LH030
			2.5 - 3.0	4.0								
GWBCM□60	★	★	3.5 - 6.0	5.0	CGA1506□□0 CGA6□□□							

■ Holder

Holder (R/L)	Catalog Number	Stock	Stock	B	WF	LH	Torx Screw	Tightening Torque (N·m)	Wrench	Note
	PSC40GM00 R/L	★	★	40 mm	22 mm	82 mm	BFTX0619N	7.5	TRD25	Right handed Cassette goes with right handed holder
	PSC50GM00 R/L	★	★	50mm	27 mm	82 mm				Left handed Cassette goes with left handed holder
	PSC40GM90 R/L	★	★	40 mm	43 mm	52.5 mm				Right handed Cassette goes with left handed holder
	PSC50GM90 R/L	★	★	50 mm	48 mm	55 mm				Left handed Cassette goes with right handed holder

BNGG

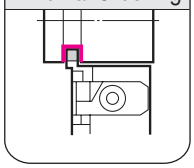
External CBN



■ Features & Benefits

- Improved rigidity for longer tool life
  Strong clamping reduces insert breakage and holder chatter
- Enhanced tooling for 2mm fine grooves or threading
  Grooving and threading can be done by changing the support

BNGG
External Grooving



BNGG-TT
External Threading

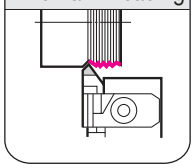


Fig 1 (Grooving)

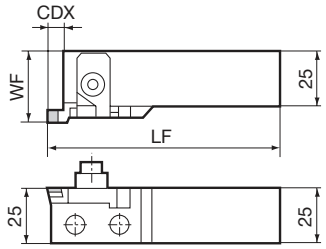
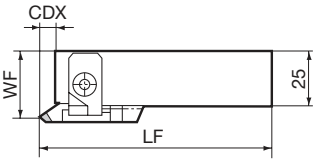


Fig. 2 (Threading)



Holder

Dimensions (inch/ *mm*)

	Cat. No.	Stock R	Stock L	Cutting Edge Distance WF	Groove Depth CDX	Overall Length LF	Applicable Insert	Shank Size	Fig
Grooving	BNGG R/L 160	●		1.250	.200	6.000	BNGNT	1.00 x 1.00	1
	BNGG R/L2525-200	★		*30.5*	*4*	*150*	BNGNT0200 R/L	25mm x 25mm	1
	BNGG R/L2525-250	★		*30.5*	*4*	*150*	BNGNT0250 R/L		1
	BNGG R/L2525-300	★		*30.5*	*5*	*150*	BNGNT0300 R/L		1
	BNGG R/L2525-400	★		*30.5*	*6*	*151*	BNGNT0400 R/L		1
	BNGG R/L2525-500	★		*30.5*	*6*	*151*	BNGNT0500 R/L		1
	BNGG R/L2525-600	★		*30.5*	*7*	*152*	BNGNT0600 R/L		1
	BNGG R/L2525-TT	★		*28.5*	*5*	*150*	BNTT1020 R/L, BNTT1530 R/L		2

Inserts are not embedded into tool holders.

* Holder body is universal. The anvil can be configured for different groove widths or threading by changing the support.

Insert (□SUMIBORON) • USA Stocked Item ★ Worldwide Warehouse Item ▲ USA Limited Availability Item

Dimensions (mm)

	Cat. No.	BN250 R	BN250 L	BN200 R	BN200 L	BN350 R	BN350 L	BNX25 R	BNX25 L	Width of Cut CW	Groove Depth CDX	Nose Radius RE	Overall Length L	Cutting Edge Distance WF3	Applicable Holder	Fig
Grooving	BNGNT0200 R/L	●				●				**2.0**	4.0	0.2	25	6.0	BNGG R/L 2525-200	1
	BNGNT0250 R/L	●				●				**2.5**	4.0	0.2	25	6.0	BNGG R/L 2525-250	1
	BNGNT0300 R/L	●				●				**3.0**	5.0	0.4	25	6.0	BNGG R/L 2525-300	1
	BNGNT0400 R/L	●				●				**4.0**	6.0	0.4	26	6.0	BNGG R/L 2525-400	1
	BNGNT0500 R/L	●				●				**5.0**	6.0	0.4	26	6.0	BNGG R/L 2525-500	1
	BNGNT0600 R/L	●				●				**6.0**	7.0	0.4	27	6.0	BNGG R/L 2525-600	1
Threading	BNTT1020 R/L	●								Pitch 1.0 to 2.0		0.14	25	4.0	BNGG R/L 2525-TT	2
	BNTT1530 R/L	●								Pitch 1.5 to 3.0		0.2	25	4.0		2

Fig. 1 (Grooving)

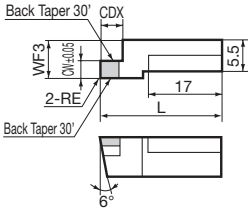
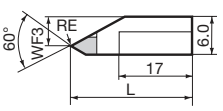


Fig. 2 (Threading)



Parts **Anvil Sold Separately**

Applicable Holder	Anvil	Clamp	Adjustment Screw	Spring	Cap Screw	Wrench	
BNGG R/L 160	BNGS R/L	BNGC R/L	FMJ	GSP06	BX0615 (For Clamp) BX0414 (For Support)	LH050 (For Clamp) LH030 (For Support)	1.8×45
BNGG R/L2525-200	BNGS R/L 200						
BNGG R/L2525-250	BNGS R/L 250						
BNGG R/L2525-300	BNGS R/L 300						
BNGG R/L2525-400	BNGS R/L 400						
BNGG R/L2525-500	BNGS R/L 500						
BNGG R/L2525-600	BNGS R/L 600						
BNGG R/L2525-TT	BNGS R/L TT						

Anvil Sold Separately BNGG R/L 160 does not include anvil, please order anvil according to insert being used

Recommended Cutting Conditions

• Grooving

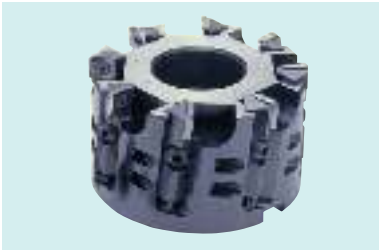
Cutting Conditions	H Hardened Steel
Cutting Speed v_c (SFM)	250 – 400
Feed Rate *f* (ipr)	.001 - .0025

• Threading

Cutting Conditions	H Hardened Steel
Cutting Speed v_c (m/min)	250 – 400
Feed Rate *f* (in.)	Maximum Pitch .118

N·m Recommended Tightening Torque (N·m)

High-speed Finishing for Cast Iron



- High speed finishing cutter for gray cast iron milling that uses removable cartridges enabling simple, precise, run-out adjustment.
- Utilizes BN7000/BN700 grade insert with excellent wear and fracture resistance.
- Available in shell type and small diameter type with shank.

■ Features

- High-speed machining at v_c = up to 6,600 SFM.
- Surpasses Ra 32 µin. finished surface roughness.
- Safety structure for centrifugal force under high-speed cutting conditions.
- Runout is less than 10µm: just attach the cartridge.
- Easy runout adjustment using external setting.
- Running cost is reduced because of the economical insert.



■ Application Range

Grey Cast Iron (200 to 250HB) with pearlite matrix
and Grey cast iron (130 to 160HB) with ferrite matrix
[Example] Engine blocks, cylinder heads, etc.

■ Specifications

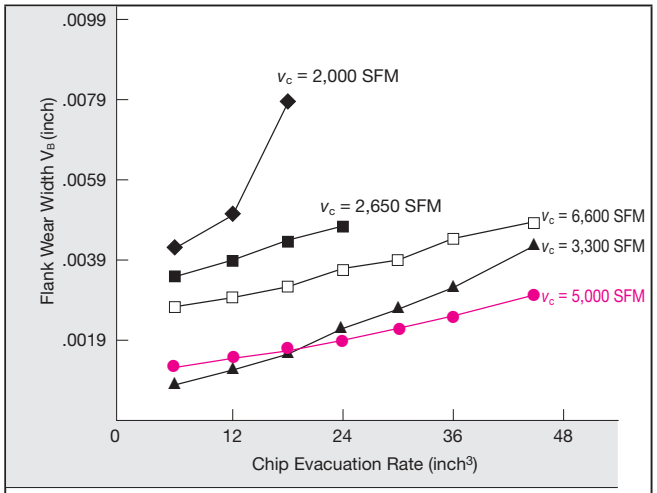
• Shell	ø80 to ø315mm (FMU Type)
With Shank	ø40 to ø63mm (FMU-E Type)
• Regular Blade	SNEW1203ADTR/L
• Low Thrust Blade	SNEW1203ADTR/L-S

■ Recommended Cutting Conditions

• Cutting Speed	v_c = 2,650 to 6,600 SFM
• Feed Rate	f_z = .004" to .012 IPT
• Depth of Cut	a_p = .020" or less
• Coolant	Dry

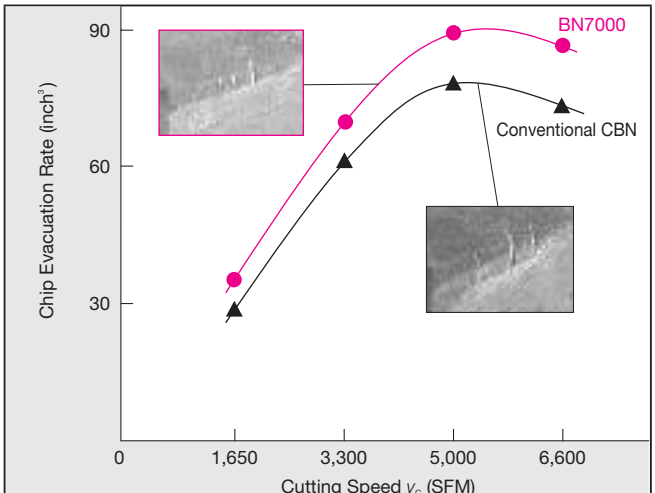
■ Cutting Performance

• Wear Diagram



Part Material: Grey Cast Iron240HB (Pearlite)
Cutting Speed: v_c = 2,000 to 6,600 SFM Feed Rate: f_z = .0059 IPT
Depth of Cut: a_p = .0197" , Dry Tool Grade: BN700

• Estimated Tool Life



Part Material: Grey Cast Iron(Pearlite)
Cutting Speed: v_c = 1,650 to 6,600 SFM Feed Rate: f_z = .0079 IPT
Depth of Cut: a_p = .0118" Dry Tool Cat. No.: FMU4100R SNEW1203ADTR

Milling of ductile cast iron and alloy steel casting does not produce the best results. Dry cutting is recommended. Wet cutting will result in breakage of cutting edges in the early stages due to thermal cracking.

FMU / FMU-E Type

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 90°



Fig 1

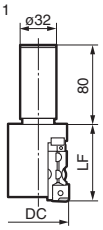


Fig 2

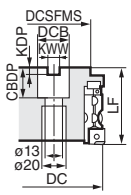


Fig 3

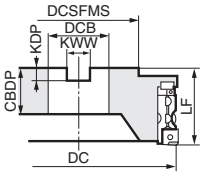


Fig 4

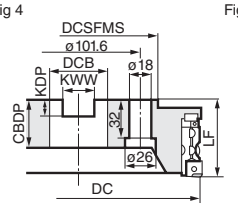
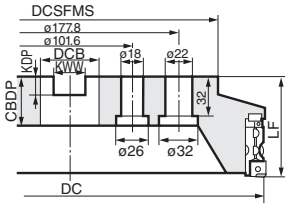


Fig 5



Body

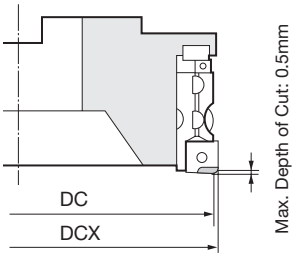
Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FMU4040ER**	★	***37***	*40*	-	*63*	-	-	-	-	*2*	*1.0*	1
	FMU4050ER	★	***47***	*50*	-	*63*	-	-	-	-	*3*	*1.2*	1
	FMU4063ER	★	***60***	*63*	*60*	*63*	***25.4***	*9.5*	*6*	*25*	*4*	*1.0*	2
	FMU4080R	★	***80***	*82.8*	*60*	*63*	***25.4***	*9.5*	*6*	*25*	*6*	*1.7*	2
	FMU4100R	★	***100***	*102.8*	*75*	*63*	***31.75***	*12.7*	*8*	*38*	*8*	*2.5*	3
	FMU4125R	★	***125***	*127.8*	*75*	*63*	***38.1***	*15.9*	*10*	*38*	*10*	*3.9*	3
	FMU4160R	★	***160***	*162.8*	*100*	*63*	***50.8***	*19.1*	*11*	*38*	*12*	*6.3*	3
	FMU4200R	★	***200***	*202.8*	*130*	*63*	***47.625***	*25.4*	*14*	*40*	*16*	*9.3*	4
	FMU4250R		***250***	*252.8*	*130*	*63*	***47.625***	*25.4*	*14*	*40*	*20*	*14.5*	4
	FMU4315R		***315***	*317.8*	*240*	*80*	***47.625***	*25.4*	*14*	*40*	*24*	*25.0*	5

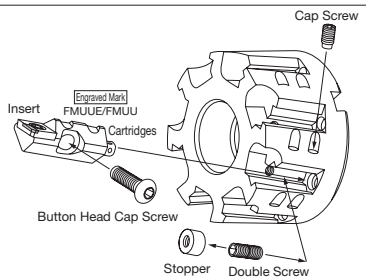
Inserts are sold separately. ★ Worldwide Warehouse item

Maximum Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°



Structure



Insert

Dimensions (mm)

Grade		SUMIBORON		
Process	High-speed / Light	K	K	
	General-purpose	K	K	
	Roughing			
Cat. No.		BN7000	BN700	Fig
SNEW1203ADTR		•	•	1
SNEW1203ADTR-S		•	•	2

Part number suffix -S denotes a low-thrust insert.

Fig 1

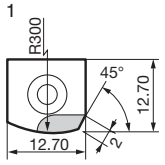
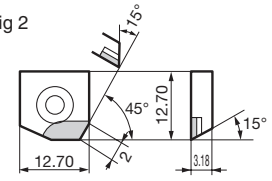


Fig 2



Cartridges

Cartridges	Flat Screw		Adjustment Bolt	O-ring	Wrench	Wrench
		N·m			(For Flat Screws)	
FMUU(E)*	BFTX0509N	5.0	FMUJ	P3	TTX20	TH015

* FMU4040ER / 4050ER / 4063ER use FMUUE type cartridges.
* FMUU / FMUUE are pre-assembled with flat screws and adjustment screws (with O-rings attached).

Setting Gauge



FMU-SET (Sold Separately)

Parts

Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)
				(For Cartridges)	(For Cap Screws)	(For Stoppers)
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025

* FMU4040ER, 4050ER and 4063ER use BH0615 bolts.
* SUMI-P Anti-seizure cream included in the package.

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
K	Gray Cast Iron	250HB	2,650 - 6,600	0.004 - 0.012	BN7000(Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

Rake Angle		
	Radial	-6° 45'
	Axial	-5° 45'

3mm / 75°



Fig 1

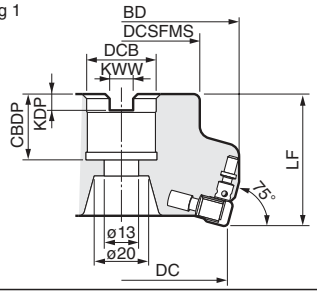
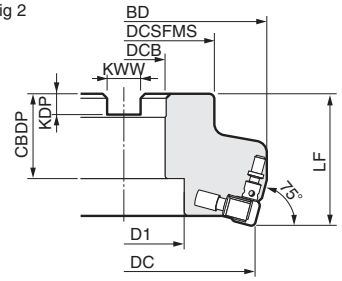


Fig 2



High-speed, High-efficiency Milling for Cast Iron

- High-Efficiency Milling of Gray Cast Iron
  - · Utilises solid SUMIBORON BNS800 for high-speed cutting of v_c = 60 SFM.
  - · High speed roughing with depth of cut up to 0.118"
  - · Wiper insert for high-speed finishing
- Low Cost
  - · Economical double-sided insert with 8 usable corners
  - · Insert can be reground and used again
- Simple Runout Adjustment Mechanism
  - · Simple design for insert direct mounting
  - · Easy yet precise runout precision adjustment

Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Maximum Spindle Speed (min⁻¹)	Weight (kg)	Fig
Inch	**RM3080R**	●	**80**	90	60	-	50	**25.40**	9.5	6	25	6	9,000	1.6	1
	RM3100R	●	**100**	110	70	46	50	**31.75**	12.7	8	32	8	8,000	2.1	2
	RM3125R	●	**125**	135	80	59	63	**38.10**	15.9	10	38	10	7,000	3.9	2
	RM3160R	●	**160**	170	100	80	63	**50.80**	19.1	11	38	12	6,000	5.9	2

Inserts are sold separately.

Insert

●USA Stock Standard Item

Dimensions (mm)

Grade		SUMIBORON
Process	High-speed / Light	K
	General-purpose	K
	Roughing	K

Cat. No.	BNS800	Fig
SNGN090308	●	1
SNGN090312	●	1
SNEN090308W	●	2

Fig 1

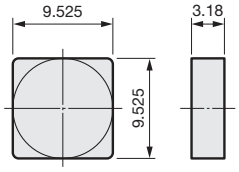
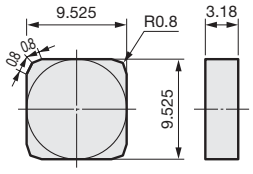
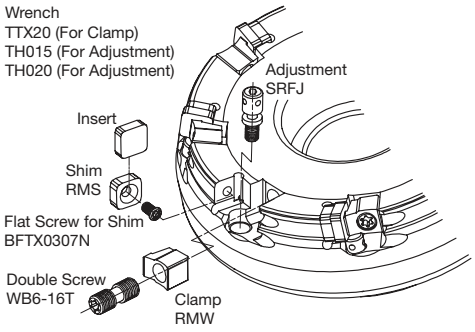


Fig 2 Wiper Insert





Parts

Clamp	Double Screw	Shim	Flat Screw for Shim		Adjustment Screw	Wrench (For Clamp)	Wrench (For Adjustment)	Wrench (For Adjustment)
RMW	WB6-16T	RMS	BFTX0307N	N·m 2.0	SRFJ	TTX20	TH015	TH020

N·m Recommended Tightening Torque (N·m)

CAUTION

- · Do not use inserts with different catalogue numbers, such as a mix of standard and wiper inserts, on a single cutter setting.
- · New and reground inserts cannot be mixed for use. Use either only new inserts or only reground inserts.
- · Inserts can only be reground once (inscribed circle dimension must be at least 9.125mm).

For hardened steel machining, use the ACE MILL DNF Type.
Insert: L64

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
K	Gray Cast Iron	250HB	2,625 - 5,000	0.002 - 0.008	BNS800 (Dry)

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

BES Type

Rake Angle		
	Radial	0°
	Axial	0°

0.4 to 0.7 mm



Fig 1

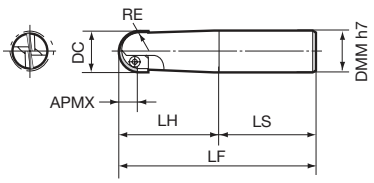
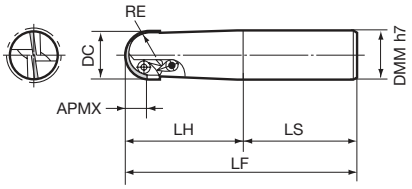


Fig 2



- High-speed Endmilling of Cast Iron Die Molds
  - Balanced cutting with 2 effective teeth for high-efficiency finishing process.
  - Unique blade type design with improved central insert fracture resistance for high-precision machining.
  - Good fracture and wear resistance with SUMIBORON BN500 grade for longer FC/FCD materials tool life.

Body

Dimensions (mm)

Cat. No.	Stock	Ballnose Radius RE	Dia. DC	Depth APMX	Head LH	Shank LS	Overall Length LF	Shank DMM	Fig
BES 160S		*8.0*	*16*	*10.0*	*50*	*60*	*110*	*20*	1
BES 200S		*10.0*	*20*	*13.0*	*60*	*80*	*140*	*25*	1
BES 250S		*12.5*	*25*	*15.5*	*70*	*80*	*150*	*32*	1
BES 300S		*15.0*	*30*	*18.0*	*80*	*80*	*160*	*32*	1
BES 400S		*20.0*	*40*	*23.0*	*100*	*100*	*200*	*42*	2
BES 500S		*25.0*	*50*	*28.0*	*120*	*100*	*220*	*50*	2

Inserts are sold separately.

Insert (SUMIBORON)

Dimensions (mm)

Cat. No.	BN500	Ballnose Radius RE	Depth APMX	Length L	Width W1	Thickness S	Applicable Endmill	Fig
BEST 160S		*8.0*	*10.0*	*13.0*	*6.8*	*3.5*	BES 160S	1
BEST 160L		*8.0*	*13.0*	*13.0*	*6.8*	*3.5*		1
BEST 200S		*10.0*	*13.0*	*20.0*	*8.5*	*4.5*	BES 200S	1
BEST 200L		*10.0*	*20.0*	*20.0*	*8.5*	*4.5*		1
BEST 250S		*12.5*	*15.5*	*22.5*	*10.5*	*5.0*	BES 250S	1
BEST 250L		*12.5*	*22.5*	*22.5*	*10.5*	*5.0*		1
BEST 300S		*15.0*	*18.0*	*25.0*	*12.0*	*6.0*	BES 300S	1
BEST 300L		*15.0*	*25.0*	*25.0*	*12.0*	*6.0*		1
BEST 400S		*20.0*	*23.0*	*30.0*	*16.0*	*7.5*	BES 400S	2
BEST 400L		*20.0*	*30.0*	*30.0*	*16.0*	*7.5*		2
BEST 500S		*25.0*	*28.0*	*35.0*	*20.0*	*8.0*	BES 500S	2
BEST 500L		*25.0*	*35.0*	*35.0*	*20.0*	*8.0*		2

Fig 1

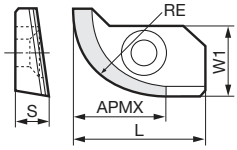
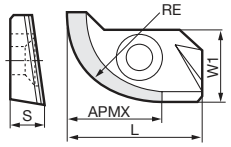


Fig 2



Parts

Applicable Endmill	Clamp	Double Screw	Flat Screw		Wrench	Wrench
				N·m		
BES 160S	-	-	BFTX 0306N	2.0	TRX 10	-
BES 200S	-	-	BFTX 0407N	3.0	TRX 15	-
BES 250S	-	-	BFTX 0509N	5.0	TRX 20	-
BES 300S	-	-	BFTX 0511N	5.0	TRX 20	-
BES 400S	CCM 6BL	WB 6-13	BXF 0616	-	-	LH 030 LH 040
BES 500S	CCM 6BL	WB 6-16	BXF 0616	-	-	LH 030 LH 040

Important Notes

(1) Use a high-rigidity machine and select a high cutting speed with a low depth of cut.
(2) Use dry cutting conditions.

Recommended Cutting Conditions

(Min. - **Optimum** - Max.)

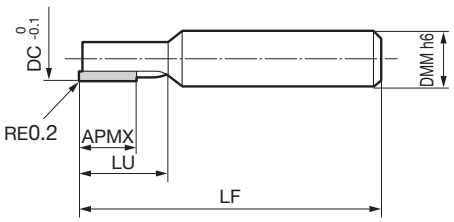
ISO	Cat. No.	Cast Iron (FC)				Ductile Cast Iron (FCD)			
		Cutting Speed v_c (m/min)	Feed Rate f (mm/rev)	Depth of Cut a_p (mm)	Pitch feed p_f(mm)	Cutting Speed v_c (m/min)	Feed Rate f (mm/rev)	Depth of Cut a_p (mm)	Pitch feed p_f(mm)
K	**BES 160S**	250-**500**-1000	0.1-**0.2**-0.4	0.1-**0.3**-0.4	0.2-**0.3**-0.5	250-**500**-1000	0.1-**0.2**-0.3	0.1-**0.2**-0.3	0.2-**0.3**-0.5
	BES 200S	250-**600**-1250	0.2-**0.4**-0.6	0.1-**0.3**-0.4	0.3-**0.5**-0.7	250-**600**-1250	0.1-**0.3**-0.5	0.1-**0.2**-0.4	0.3-**0.5**-0.7
	BES 250S	300-**750**-1500	0.3-**0.5**-0.7	0.2-**0.4**-0.5	0.4-**0.6**-0.9	300-**750**-1500	0.2-**0.4**-0.6	0.2-**0.3**-0.5	0.4-**0.6**-0.9
	BES 300S	350-**800**-1500	0.3-**0.5**-0.7	0.2-**0.4**-0.5	0.5-**0.8**-1.1	350-**800**-1500	0.2-**0.4**-0.6	0.2-**0.3**-0.5	0.5-**0.8**-1.1
	BES 400S	500-**1000**-1500	0.3-**0.6**-1.0	0.3-**0.5**-0.7	0.6-**1.0**-1.4	500-**1000**-1500	0.2-**0.5**-0.8	0.3-**0.4**-0.7	0.6-**1.0**-1.4
	BES 500S	600-**1200**-1500	0.3-**0.6**-1.0	0.3-**0.5**-0.7	0.8-**1.3**-1.8	600-**1200**-1500	0.2-**0.5**-0.8	0.3-**0.4**-0.7	0.8-**1.3**-1.8

N·m Recommended Tightening Torque (N·m)

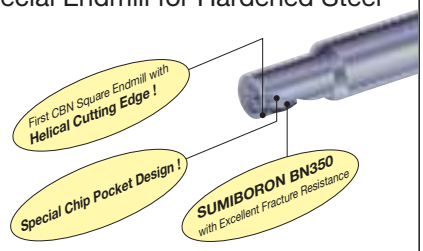
1 Flute | CBN | 15° Helix Angle | Side Milling



Fig 1



●Special Endmill for Hardened Steel

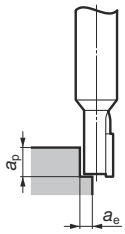


Body

Dimensions (mm)

Cat. No.	Stock	Blade Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Shank Dia. DMM	Fig
BNES 1060	★	*6.0*	*7.0*	*11.0*	*60*	*10*	1
BNES 1080	★	*8.0*	*10.0*	*14.0*	*70*	*10*	1
BNES 1100	★	*10.0*	*12.0*	*17.0*	*75*	*12*	1
BNES 1120	★	*12.0*	*14.0*	*20.0*	*80*	*12*	1
BNES 1140	★	*14.0*	*16.0*	*21.5*	*80*	*16*	1
BNES 1160	★	*16.0*	*18.0*	*24.0*	*80*	*16*	1

Grade: BN350



Recommended Cutting Conditions

1. Use dry cutting (air blow) conditions.
2. Down cut (climb milling) is recommended.
3. Make overhang as short as possible and use a high-rigidity machine.

Surface Milling

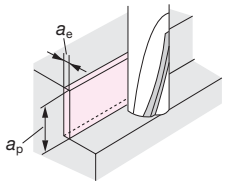
Part Material (Hardness)	High-Hardness Hardened Steel (50 to 57HRC)		
Cutting Conditions	Cutting Speed V_C 100 to 170m/min		
DC(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Depth of Cut a_e (mm)
ø6 to 8	4,000 to 9,000	240 to 540	up to 0.1
ø10 to 12	2,700 to 5,400	180 to 360	up to 0.15
ø14 to 16	2,000 to 3,800	140 to 260	up to 0.2

Part Material (Hardness)	High-Hardness Hardened Steel (58 to 65HRC)		
Cutting Conditions	Cutting Speed V_C 80 to 150m/min		
DC(mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Depth of Cut a_e (mm)
ø6 to 8	3,200 to 8,000	150 to 370	up to 0.08
ø10 to 12	2,100 to 4,800	120 to 370	up to 0.12
ø14 to 16	1,600 to 3,400	110 to 230	up to 0.15

Performance

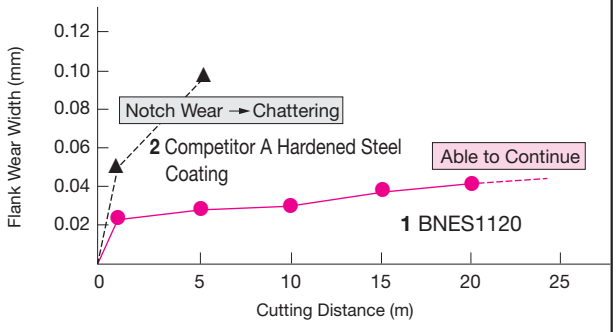
● Wear resistance enables high-efficiency machining

Tooling ●Side Milling



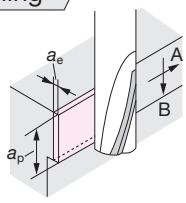
Cutting Conditions

●Work Material: SKD11 (Hardened) 60HRC
●Cutting Conditions: **1** v_c = 100m/min
v_f = 186mm/min
2 v_c = 40m/min
v_f = 186mm/min
Down-cut, Dry
a_p = 8mm, a_e = 0.05mm



● Finished surface roughness similar to grinding

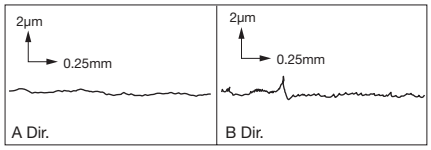
Tooling ●Side Milling



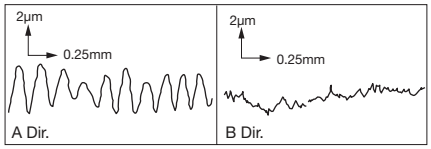
Cutting Conditions

●Work Material: SCr15 (Hardened) 55 to 58HRC
●Cutting Conditions: v_c = 130m/min
v_f = 310mm/min
Down-cut, Dry
a_p = 4mm, a_e = 0.05mm

1 BNES1080



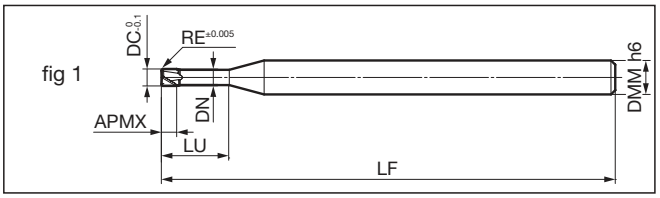
2 Conventional Type (Straight Blade Type/ø8)



BNBR Type

2 Flutes | CBN | Corner r | Side Milling | Face Milling | Profiling

fig 1



Identification Code

BNBR 2 D050 R010 - 015 4

Series Code	Number of Teeth	Dia.	Nose Radius	Neck Length	Shank Dia.

Body

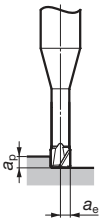
Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Radius RE	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Wiper Edge	Fig
BNBR2D020R005-0054	★	0.2	0.05	0.1	0.5	50	0.17	4	No	1
BNBR2D030R005-0054	★	0.3	0.05	0.15	0.5	50	0.27	4	No	1
BNBR2D040R005-0054	★	0.4	0.05	0.2	0.5	50	0.37	4	No	1
BNBR2D050R005-0054	★	0.5	0.05	0.3	0.5	50	0.47	4	No	1
BNBR2D050R005-0154	★	0.5	0.05	0.3	1.5	50	0.47	4	No	1
BNBR2D050R005-0254	★	0.5	0.05	0.3	2.5	50	0.47	4	No	1
BNBR2D050R010-0154	★	0.5	0.10	0.3	1.5	50	0.47	4	No	1
BNBR2D050R010-0254	★	0.5	0.10	0.3	2.5	50	0.47	4	No	1
BNBR2D100R005-0304	★	1.0	0.05	0.7	3.0	50	0.97	4	Yes	1
BNBR2D100R005-0504	★	1.0	0.05	0.7	5.0	50	0.97	4	Yes	1
BNBR2D100R010-0304	★	1.0	0.10	0.7	3.0	50	0.97	4	Yes	1
BNBR2D100R010-0504	★	1.0	0.10	0.7	5.0	50	0.97	4	Yes	1
BNBR2D100R020-0304	★	1.0	0.20	0.7	3.0	50	0.97	4	Yes	1
BNBR2D100R020-0504	★	1.0	0.20	0.7	5.0	50	0.97	4	Yes	1
BNBR2D100R030-0304	★	1.0	0.30	0.7	3.0	50	0.97	4	Yes	1
BNBR2D100R030-0504	★	1.0	0.30	0.7	5.0	50	0.97	4	Yes	1
BNBR2D150R010-0454	★	1.5	0.10	1.2	4.5	50	1.47	4	Yes	1
BNBR2D150R010-0754	★	1.5	0.10	1.2	7.5	50	1.47	4	Yes	1
BNBR2D150R020-0454	★	1.5	0.20	1.2	4.5	50	1.47	4	Yes	1
BNBR2D150R020-0754	★	1.5	0.20	1.2	7.5	50	1.47	4	Yes	1
BNBR2D150R030-0454	★	1.5	0.30	1.2	4.5	50	1.47	4	Yes	1
BNBR2D150R030-0754	★	1.5	0.30	1.2	7.5	50	1.47	4	Yes	1
BNBR2D200R010-0604	★	2.0	0.10	1.5	6.0	50	1.97	4	Yes	1
BNBR2D200R020-0604	★	2.0	0.20	1.5	6.0	50	1.97	4	Yes	1
BNBR2D200R030-0604	★	2.0	0.30	1.5	6.0	50	1.97	4	Yes	1
BNBR2D200R050-0604	★	2.0	0.50	1.5	6.0	50	1.97	4	Yes	1

Grade: BNX20

Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant.
   Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions as necessary as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

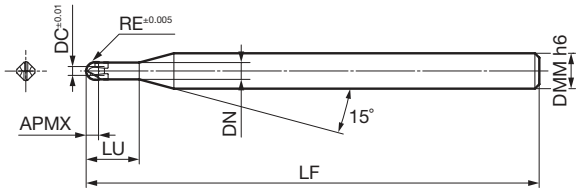


Part Material			STAVAX, NAK80, SKD61 (Up to 52HRC)				ELMAX, DC53, SKD11 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
DC (*mm*)	RE (*mm*)	LU (*mm*)	Spindle Speed (min^{-1})	Feed Rate (*mm/min*)	a_p (*mm*)	a_e (*mm*)	Spindle Speed (min^{-1})	Feed Rate (*mm/min*)	a_p (*mm*)	a_e (*mm*)	Spindle Speed (min^{-1})	Feed Rate (*mm/min*)	a_p (*mm*)	a_e (*mm*)
0.2	0.05	0.5	40,000	400	0.005	0.03	40,000	400	0.005	0.03	40,000	250	0.005	0.02
0.3	0.05	0.5	40,000	500	0.010	0.05	40,000	500	0.010	0.05	40,000	300	0.005	0.03
0.4	0.05	0.5	40,000	600	0.015	0.1	40,000	600	0.015	0.1	40,000	400	0.01	0.05
0.5	0.05	0.5	40,000	600	0.02	0.15	40,000	600	0.02	0.15	40,000	400	0.01	0.1
	0.05	1.5	40,000		0.02	0.1	40,000		0.02	0.1	35,000			0.05
	0.1		40,000				40,000				35,000			
	0.05	2.5	40,000		0.01	0.05	40,000		0.01	0.05	35,000			
	0.1		40,000				40,000				35,000			
1.0	0.05	3.0	35,000	800	0.03	0.3	35,000	800	0.03	0.2	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
	0.05	5.0	35,000		0.02	0.2	35,000	800	0.02	0.1	30,000	600	0.01	0.1
	0.1		35,000				35,000				30,000			
	0.2		35,000				35,000				30,000			
	0.3		35,000				35,000				30,000			
1.5	0.1	4.5	26,000	800	0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
	0.1	7.5	26,000		0.03	0.5	26,000	800	0.03	0.3	20,000	600	0.02	0.3
	0.2		26,000				26,000				20,000			
	0.3		26,000				26,000				20,000			
2.0	0.1	6.0	20,000	800	0.03	0.7	20,000	800	0.03	0.7	15,000	600	0.03	0.7
	0.2		20,000				20,000				15,000			
	0.3		20,000				20,000				15,000			
	0.5		20,000				20,000				15,000			

BNBP Type

2 Flutes | CBN | Ballnose R | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (*mm*)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Dia. DN	Shank Dia. DMM	Fig
BNBP2R020-0124	★	*0.20*	*0.4*	*0.3*	*1.2*	*50*	*0.37*	*4*	1
BNBP2R020-0126	★	*0.20*	*0.4*	*0.3*	*1.2*	*50*	*0.37*	*6*	1
BNBP2R020-0204	★	*0.20*	*0.4*	*0.3*	*2.0*	*50*	*0.37*	*4*	1
BNBP2R020-0304	★	*0.20*	*0.4*	*0.3*	*3.0*	*50*	*0.37*	*4*	1
BNBP2R020-0404	★	*0.20*	*0.4*	*0.3*	*4.0*	*50*	*0.37*	*4*	1
BNBP2R030-0154	★	*0.30*	*0.6*	*0.4*	*1.5*	*50*	*0.57*	*4*	1
BNBP2R030-0156	★	*0.30*	*0.6*	*0.4*	*1.5*	*50*	*0.57*	*6*	1
BNBP2R030-0304	★	*0.30*	*0.6*	*0.4*	*3.0*	*50*	*0.57*	*4*	1
BNBP2R030-0404	★	*0.30*	*0.6*	*0.4*	*4.0*	*50*	*0.57*	*4*	1
BNBP2R030-0504	★	*0.30*	*0.6*	*0.4*	*5.0*	*50*	*0.57*	*4*	1
BNBP2R030-0604	★	*0.30*	*0.6*	*0.4*	*6.0*	*50*	*0.57*	*4*	1
BNBP2R050-0254	★	*0.50*	*1.0*	*0.6*	*2.5*	*50*	*0.97*	*4*	1
BNBP2R050-0256	★	*0.50*	*1.0*	*0.6*	*2.5*	*50*	*0.97*	*6*	1
BNBP2R050-0304	★	*0.50*	*1.0*	*0.6*	*3.0*	*50*	*0.97*	*4*	1
BNBP2R050-0404	★	*0.50*	*1.0*	*0.6*	*4.0*	*50*	*0.97*	*4*	1
BNBP2R050-0604	★	*0.50*	*1.0*	*0.6*	*6.0*	*50*	*0.97*	*4*	1
BNBP2R050-0804	★	*0.50*	*1.0*	*0.6*	*8.0*	*50*	*0.97*	*4*	1
BNBP2R075-0404	★	*0.75*	*1.5*	*0.9*	*4.0*	*50*	*1.47*	*4*	1
BNBP2R075-0406	★	*0.75*	*1.5*	*0.9*	*4.0*	*50*	*1.47*	*6*	1
BNBP2R100-0554	★	*1.00*	*2.0*	*1.4*	*5.5*	*50*	*1.97*	*4*	1
BNBP2R100-0556	★	*1.00*	*2.0*	*1.4*	*5.5*	*50*	*1.97*	*6*	1
BNBP2R100-0804	★	*1.00*	*2.0*	*1.4*	*8.0*	*50*	*1.97*	*4*	1

Grade: BN350

Identification Code

BNBP 2 R030 - 015 4

Series Code	Number of Teeth	Ballnose Radius	Neck Length	Shank Dia.

Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant.
   Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions according to actual conditions as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.

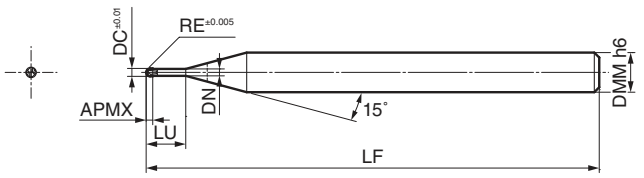
Part Material		STAVAX, NAK80, SKD61 (Up to 52HRC)				ELMAX, DC53, SKD11 Modified (Up to 62HRC)				YXR3, SKH (Up to 70HRC)			
RE (*mm*)	LU (*mm*)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (*mm*)	p_f (*mm*)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (*mm*)	p_f (*mm*)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	a_p (*mm*)	p_f (*mm*)
0.2	*1.2*	40,000	1,000	*0.005*	*0.010*	40,000	800	*0.005*	*0.010*	40,000	600	*0.005*	*0.005*
	2.0	40,000	800	*0.005*	*0.010*	40,000	600	*0.005*	*0.010*	40,000	400	*0.005*	*0.005*
	3.0	40,000	600	*0.005*	*0.010*	40,000	500	*0.005*	*0.010*	40,000	300	*0.005*	*0.005*
	4.0	40,000	500	*0.005*	*0.010*	40,000	400	*0.005*	*0.005*	40,000	200	*0.005*	*0.005*
0.3	*1.5*	40,000	1,600	*0.020*	*0.020*	40,000	1,400	*0.010*	*0.020*	40,000	1,200	*0.010*	*0.020*
	2.0	40,000	1,500	*0.010*	*0.020*	40,000	1,300	*0.010*	*0.020*	40,000	1,100	*0.010*	*0.010*
	3.0	40,000	1,400	*0.010*	*0.020*	40,000	1,200	*0.010*	*0.020*	40,000	1,000	*0.010*	*0.010*
	4.0	30,000	1,200	*0.010*	*0.010*	30,000	1,000	*0.010*	*0.010*	30,000	700	*0.005*	*0.010*
	5.0	30,000	800	*0.010*	*0.010*	30,000	700	*0.005*	*0.010*	30,000	600	*0.005*	*0.005*
	6.0	30,000	600	*0.005*	*0.010*	30,000	500	*0.005*	*0.005*	30,000	400	*0.005*	*0.005*
0.5	*2.5*	40,000	2,800	*0.040*	*0.050*	40,000	2,800	*0.030*	*0.040*	40,000	2,200	*0.020*	*0.030*
	3.0	40,000	2,600	*0.040*	*0.050*	40,000	2,600	*0.030*	*0.040*	40,000	2,100	*0.020*	*0.030*
	4.0	40,000	2,400	*0.030*	*0.050*	40,000	2,400	*0.020*	*0.030*	40,000	2,000	*0.020*	*0.020*
	6.0	25,000	1,500	*0.020*	*0.030*	25,000	1,500	*0.010*	*0.020*	25,000	1,300	*0.010*	*0.010*
	8.0	16,000	1,200	*0.020*	*0.020*	16,000	1,100	*0.010*	*0.020*	16,000	850	*0.010*	*0.010*
0.75	*4.0*	32,000	2,400	*0.030*	*0.030*	32,000	2,200	*0.020*	*0.030*	32,000	2,000	*0.020*	*0.020*
1.0	*5.5*	40,000	4,000	*0.050*	*0.050*	40,000	4,000	*0.030*	*0.030*	40,000	3,000	*0.020*	*0.030*
	8.0	32,000	3,000	*0.030*	*0.050*	32,000	2,600	*0.020*	*0.030*	32,000	2,200	*0.010*	*0.020*

BNBC Type

Copper Alloy

2 Flutes | CBN | Ballnose R | Side Milling | Face Milling | R-Grooving | Profiling

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Neck Length LU	Overall Length LF	Head Diameter DN	Shank Dia. DMM	Fig
BNBC 2R010-0034	★	*0.1*	*0.2*	*0.2*	*0.3*	*50*	*0.17*	*4*	1
BNBC 2R010-0104	★	*0.1*	*0.2*	*0.2*	*1.0*	*50*	*0.17*	*4*	1
BNBC 2R020-0054	★	*0.2*	*0.4*	*0.3*	*0.5*	*50*	*0.37*	*4*	1
BNBC 2R020-0204	★	*0.2*	*0.4*	*0.3*	*2.0*	*50*	*0.37*	*4*	1
BNBC 2R030-0104	★	*0.3*	*0.6*	*0.4*	*1.0*	*50*	*0.57*	*4*	1
BNBC 2R030-0304	★	*0.3*	*0.6*	*0.4*	*3.0*	*50*	*0.57*	*4*	1
BNBC 2R050-0304	★	*0.5*	*1.0*	*0.6*	*3.0*	*50*	*0.97*	*4*	1

Grade: BN700

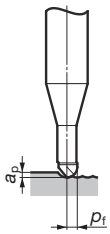
Identification Code

BNBC 2 R030 - 010 4

Series Code	Number of Teeth	Ballnose Radius		Neck Length	Shank Dia.

Recommended Cutting Conditions

1. Use a machine with high rigidity for stable cutting.
2. Non-water soluble cutting oil is recommended. Supply as a mist or external coolant.
   Take fire prevention precautions to avoid fire hazards caused by sparks igniting during machining or tool breakage.
3. Shorten overhang as much as possible.
4. Adjust cutting conditions according to actual conditions as machine rigidity and other conditions may vary.
5. Depths of cut shown in the table of conditions are maximum depths. Adjust the actual depth of cut to the desired machined surface roughness.



Surface Milling

PArt Material / Cutting Conditions / Cat. No.	Copper Alloy			
	Spindle Speed (min⁻¹)	Feed Rate (mm/min)	Standard Depth of Cut (mm) a_p	Standard Depth of Cut (mm) p_f
BNBC 2R010-0034	20,000 -50,000	350	0.01	0.02
BNBC 2R010-0104		350	0.007	0.015
BNBC 2R020-0054	20,000 -50,000	800	0.025	0.05
BNBC 2R020-0204		700	0.02	0.03
BNBC 2R030-0104	20,000 -50,000	1,400	0.05	0.15
BNBC 2R030-0304		1,200	0.04	0.1
BNBC 2R050-0304	20,000 -50,000	2,200	0.15	0.35

BNBS Type

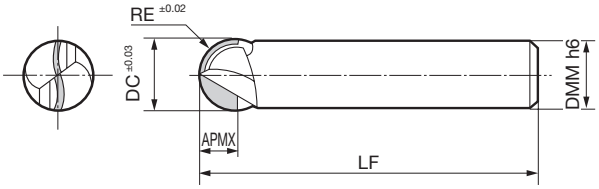
2 Flutes | CBN | Ballnose R | Side Milling | Face Milling | R-Grooving | Profiling



- Combination of Special Grade and Spiral Cutting Edge Design:

The combination of a special tough SUMIBORON grade with a unique cutting edge design is a breakthrough for high efficiency and smooth endmilling of hardened steels.

Fig 1



Body

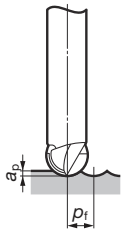
Dimensions (mm)

Cat. No.	Stock	Radius RE	Dia. DC	Cutting Edge Length APMX	Overall Length LF	Shank Dia. DMM	Fig
BNBS 2020S	★	*1.0*	*2.0*	*1.5*	*50*	*4*	1
BNBS 2030S	★	*1.5*	*3.0*	*2.0*	*60*	*6*	1
BNBS 2040S	★	*2.0*	*4.0*	*3.0*	*70*	*6*	1
BNBS 2060S	★	*3.0*	*6.0*	*4.5*	*80*	*6*	1
BNBS 2080S	★	*4.0*	*8.0*	*5.5*	*90*	*8*	1
BNBS 2100S	★	*5.0*	*10.0*	*6.5*	*100*	*10*	1
BNBS 2120S	★	*6.0*	*12.0*	*7.5*	*110*	*12*	1

Grade: BN350

Recommended Cutting Conditions

1. Use a high-rigidity machine and select a high cutting speed with a low feed rate.
2. Use dry cutting conditions.
3. Make overhang as short as possible.
4. If the work material hardness is lower than 50HRC, try the GSX Ballnose endmill .



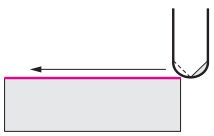
Radius Milling

Part Material / Cutting Conditions		Hardened Steel (50-57HRC)		Hardened Steel (58-65HRC)	
RE(*mm*)		Spindle Speed (min^{-1})	Feed Rate *(mm/min)*	Spindle Speed (min^{-1})	Feed Rate *(mm/min)*
1.0		26,000	*1,100*	22,000	*670*
1.5		18,000	*700*	15,000	*450*
2.0		13,000	*530*	11,000	*330*
3.0		8,800	*610*	7,400	*450*
4.0		6,600	*460*	5,600	*330*
5.0		5,300	*630*	4,500	*400*
6.0		4,400	*530*	3,700	*330*
Standard Depth of Cut	a_p	0.01DC		0.01DC	
	p_f	0.02DC		0.02DC	

Performance

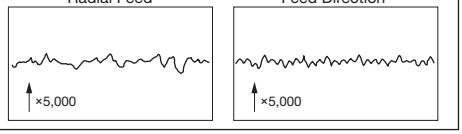
Part Material: D2 Tool Steel (60HRC Hardness)

	BN350
Cutting Speed	825 SFM
Feed Rate *f*	.00157 IPT
Pitch Feed P_f	.0118”
Depth of Cut a_p	.0118”
Tool	BNBS2100S



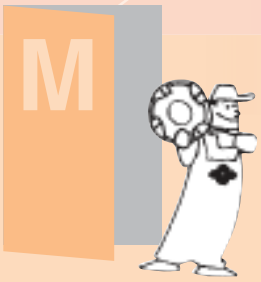
Results

Actual Cutting Length : 365 Linear Feet, v_B = .005 flank wear” → Continued Machining Possible
Finished Surface Roughness : Radial Feed Ry1.8μm,
Axial Feed Direction Ry2.2μm



PCD / Binderless PCD SUMICRYSTAL M1 to M35

M



PCD - SUMIDIA

Grades	PCD - SUMIDIA® Series	M2
	PCD - SUMIDIA® Binderless NPD10 / SUMIDIA DA90	M4
	PCD - SUMIDIA® DA1000	M6
Inserts	PCD - SUMIDIA® BreakMaster LD Type / GD Type	M7
	PCD - SUMIDIA® BreakMaster DM Type	M8
	PCD - SUMIDIA® Insert Identification Table	M9
	Stock Table for PCD - SUMIDIA® Indexable Inserts	M10

M SUMICRYSTAL

SUMICRYSTAL M30
SUMICRYSTAL PD / PDX M31
SUMICRYSTAL UP M32
SUMICRYSTAL UP (Half Cut) M33
SUMICRYSTAL UPT M34
SUMICRYSTAL CD M35

Stock Markings and Symbols

●: Standard stocked item
★: Worldwide Warehouse Item
▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

PCD Inserts



■ General Features

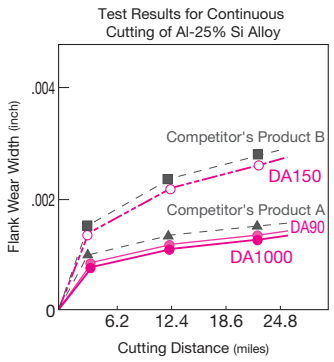
Sumitomo PCD - SUMIDIA® sintered diamond series has 4 grades (DA90, DA150, DA2200, DA1000) with individual features depending on the optimum combination of diamond particle size and binder, as well as the NPD10 grade (nano-polycrystalline diamond) where nano-order diamond particles are directly bound with high strength without using binders.
PCD is suited for a wide range of applications from machining of aluminum alloy to machining of hard brittle materials and cemented carbide.

■ Grades, Features and Applications

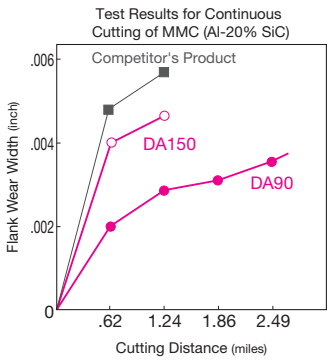
Grade		Features	Applications	Average grain size of diamond particles (μm)	Hardness HK (GPa)	Transverse Rupture Strength (GPa)
SUMIDIA Binderless	NPD10	100% diamond structure that directly binds nano-order diamond particles with high strength. Demonstrates optimum wear and fracture resistance as well as the best edge sharpness.	· Finishing of Cemented Carbide · Machining of Hard Brittle Material (Ceramics)	up to 0.05	120 to 130	≈ 3.15
SUMIDIA®	DA1000	High-density sintered grade made of ultra-fine grained diamond that demonstrates excellent wear and fracture resistance as well as edge sharpness.	· Machining of High-Silicon Aluminum Alloy · Rough, Interrupted and Finishing Machining of Aluminum Alloy · Woodcraft or Wooden Board Cutting/ Facing · General Finishing of Non-Ferrous Metals	up to 0.5	50 to 60	≈ 2.60
	DA2200	Sintered grade made of ultra-fine grained diamond that demonstrates optimum wear and fracture resistance and excellent edge sharpness.	· Rough, Interrupted and Finishing Machining of Aluminum Alloy · Woodcraft or Wooden Board Cutting/ Facing	0.5	45 to 55	≈ 2.45
	DA150	Grade with micro-grained sintered diamond particles. With strong diamond particle bonding, it has an excellent balance of machinability and wear resistance.	· General Finishing of Non-Ferrous Metals · Finishing of Semi-Sintered Ceramics and Mold-Extruded Products · FRP, Hard Rubber & Carbon Cutting · Wooden or Inorganic Board Cutting/Facing	5	50 to 60	≈ 1.95
	DA90	Contains coarser diamond particles than other grades, giving it good wear resistance suitable for the machining of carbides and high-silicon aluminum. Shows the highest diamond content for excellent wear resistance.	· Machining of High-Silicon Aluminum Alloy · Machining of Aluminum Composite (MMC) · Green or Semi-Sintered Cemented Carbide & Ceramic Roughing · Machining of Sintered Ceramics/Stone/ Rock	up to 50	50 to 65	≈ 1.10

Transverse rupture strength measured with test piece equivalent to insert PCD layer

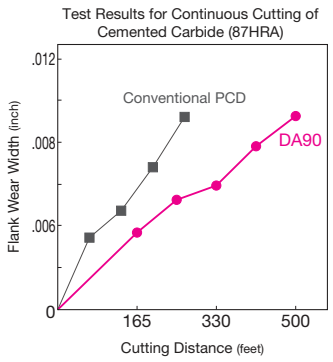
■ Performance



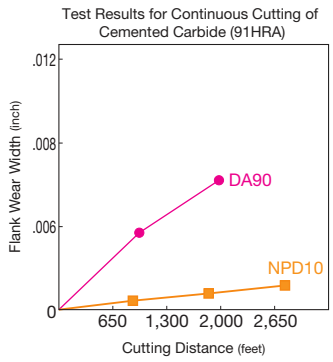
Part Material : Al-25% Si alloy
Tool Cat. No. : SPGN 120304
Holder : FP11R
Cutting Conditions : v_c=1,640 SFM, f=0.004 IPR, a_p=5.1" Dry



Part Material : MMC (Al-20%SiC)
Tool Cat. No. : CNMX 120408
Holder : PCLN2525
Cutting Conditions : v_c=1,150 SFM, f=0.008 IPR, a_p=4.5" Wet



Part Material :
Cemented carbide (87HRA)
Tool Cat. No. : NF-DCMW 070204
Cutting Conditions : v_c = 65 SFM, f = 0.004 IPR, a_p = 5.1" Wet

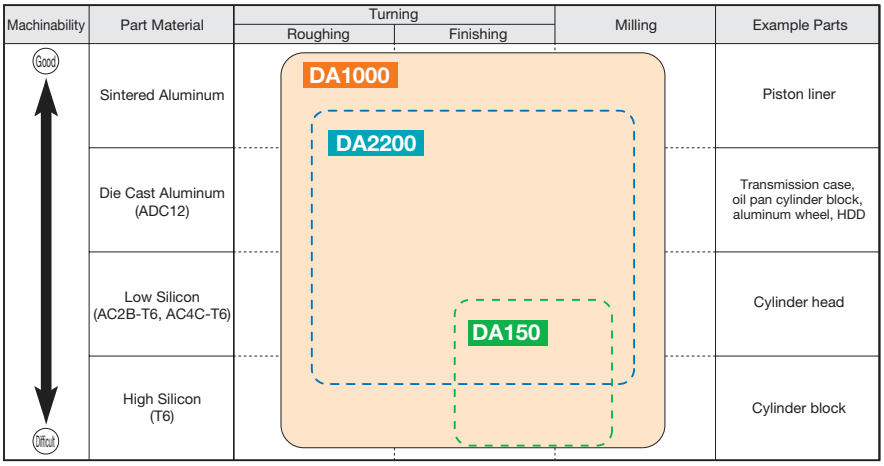


Part Material :
Cemented carbide (91HRA)
Tool Cat. No. :
DCMW 11T304RH (NPD10)
NF-DCMW 11T304(DA90)
Cutting Conditions : v_c = 65 SFM, f = 0.002 IPR, a_p = 1.27" Dry

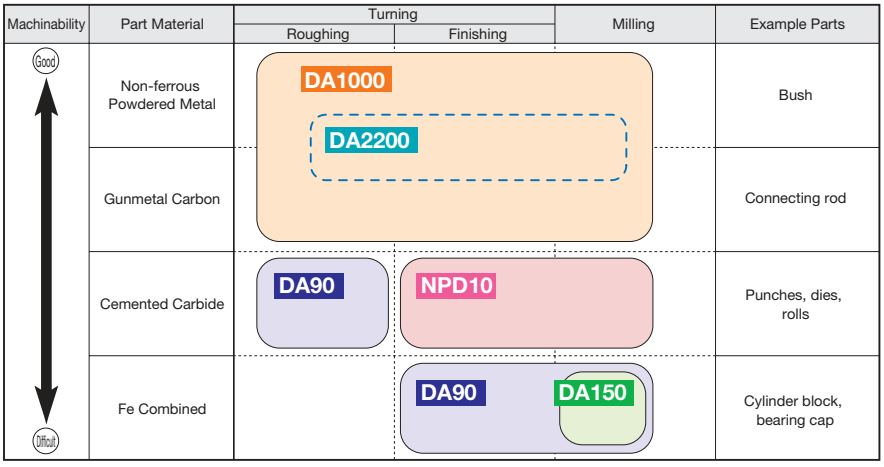
PCD Inserts

■ Application Range

● Aluminum



● Non-aluminum



■ Recommended Cutting Conditions

Part Material	Cutting Speed v_c(SFM)	Feed Rate f(IPR)	Depth of Cut a_p(inch)
Aluminum Alloy	up to 9,850	up to 0.008	up to 0.12
Copper Alloy	up to 3,300	up to 0.008	up to 0.12
Reinforced Plastics	up to 3,300	up to 0.016	up to 0.079
Wooden or Inorganic Board (cutting, etc.)	up to 13,100	up to 0.016	—
Cemented Carbide	up to 100	up to 0.008	up to 0.0197
Carbon	330 to 1,970	0.04	0.079

■ PCD (SUMIDIA) Grinding Method

Functions		Description
Grinding Machine	—	(1) A special-purpose high-rigidity grinding machine. (2) Capable of wet grinding operations.
Grinding Wheel	Abrasive Grain	Diamond
	Grain Size	Rough Grinding: 400 mesh, Finish Grinding: 800 to 1,500 mesh
	Bond	Vitrified or Metal Bond Dedicated for Polycrystalline Diamond Tool
	Concentration	100 to 125
	Dressing	Use a WA stick with a mesh of about 400.
Grinding Conditions	Peripheral Speed	2,600 to 3,300 SFM
	Table Rocking	30 to 60 cycle/min
	Grinding Fluid	Water-soluble Grinding Fluid (Solution Type)
Others	—	(1) The rake face is generally lapped. (2) Inspect for edge chipping using a microscope with a magnification of 30 to 50 times. (3) Machining of non-ferrous metals requires a sharp cutting edge. (4) Surfaces that were cut by EDM should have more than 0.002" ground off.

*Please contact us for details on regrinding of NPD10.

PCD - SUMIDIA Binderless Inserts

Nano-Polycrystalline Diamond

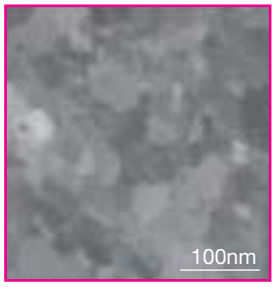


■ General Features

Nano-polycrystalline diamond is polycrystalline diamond that directly binds nano-order diamond particles with high strength without using any binders. This proprietary Sumitomo material is harder than polycrystalline diamond with a binder, achieving excellent wear resistance and fracture resistance.
Binderless PCD tools use this super-high-performance nano-polycrystalline diamond material in their cutting edges.

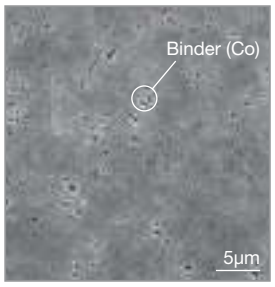
■ Comparison of Structures

Nano-Polycrystalline Diamond Tool SEM Profile



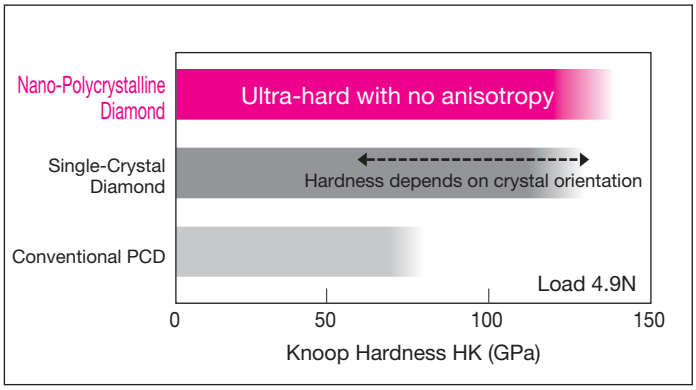
Diamond particles (30 to 50nm)

Conventional PCD SEM Profile



Diamond particles (1 to 10μm)

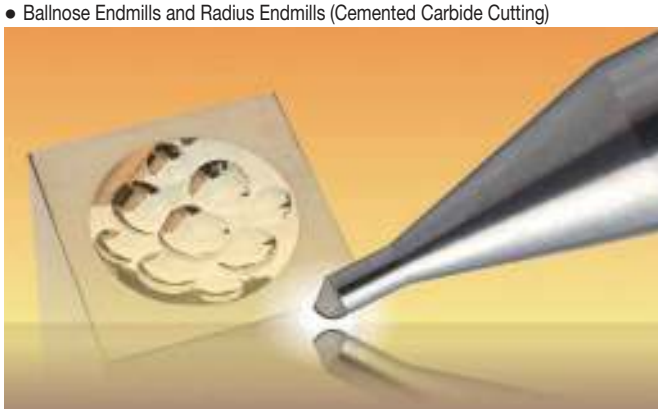
■ Hardness



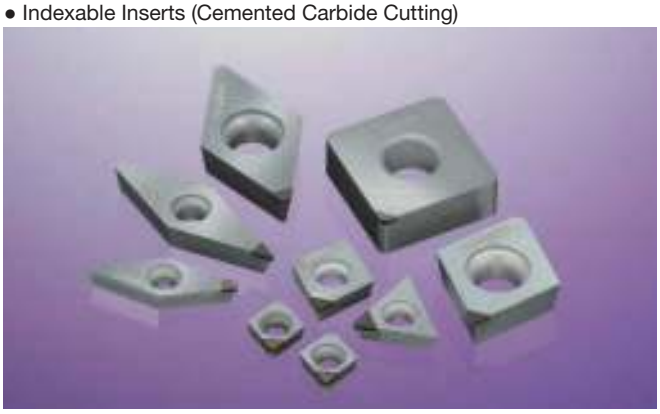
PCD - SUMIDIA - Binderless

■ Application Examples

● Ballnose Endmills and Radius Endmills (Cemented Carbide Cutting)



● Indexable Inserts (Cemented Carbide Cutting)



● Drill (Drilling of Ceramics)



● Tool Holder (Ultra-Precision Cutting of Cemented Carbide)



NPD10/DA90



■ General Features

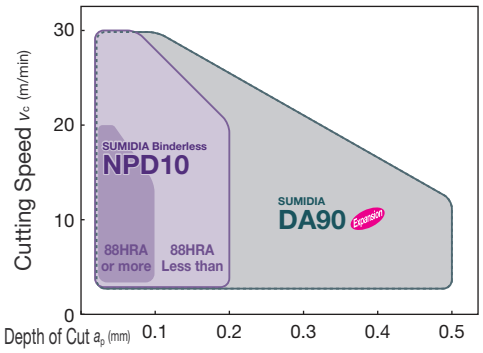
NPD10 is made from high-hardness nano-polycrystalline diamond. This is a pure diamond material, but unlike single-crystal diamonds, it has no anisotropy.
It achieves extended tool life and machining accuracy superior to conventional diamond tools when machining hard brittle materials such as cemented carbide.

DA90 is a PCD - polycrystalline diamond grade in which coarse diamond particles have been sintered to form a dense structure. The high diamond content, with high wear resistance, makes it ideal for roughing of cemented carbide and hard brittle material.
Optimized design and mass production technology have been developed, achieving the same performance as conventional tools with higher cost-performance.

■ Features

- Ideal for Finishing of Hard Brittle Materials Including Cemented Carbide (NPD10)
  High-precision cutting of cemented carbide thanks to the outstanding wear resistance of nano-polycrystalline diamond
- Superior dimensional tolerance maintained for a long time (NPD10)
  Tool replacement count can be drastically reduced compared to conventional diamond tools, enabling work efficiency to be improved and total costs to be reduced.
- Ideal for Roughing of Hard Brittle Materials Including Cemented Carbide (DA90)
  Stable tool life in sintered surface machining of cemented carbide and roughing of hard brittle materials thanks to the outstanding wear resistance of the coarse-grained polycrystalline diamond
- Uses PCD - SUMIDIA NF Insert (DA90)
  Optimized design and mass production technology have been developed, achieving the same performance as conventional tools with higher cost-performance.

■ Application Range (Cemented Carbide Machining)



■ Applications of NPD10 and DA90 (Cemented Carbide)

Grade	SUMIDIA Binderless NPD10		SUMIDIA DA90	
Dimensional Tolerance	◎	Best	△	The first recommendation is NPD10
Tool Life (Wear Resistance)	◎	Best a_p = 0.008" or below f = 0.004 IPR or below recommended	○	a_p = 0.008" or above can also be used
Sintered surface machining of cemented carbide	×	Impossible	◎	Best
Machined surface quality	◎	Best	△	The first recommendation is NPD10

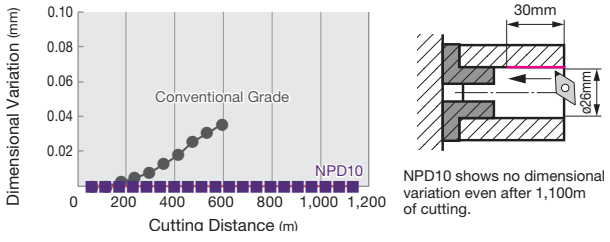
■ Recommended Cutting Conditions (Cemented Carbide Machining)

Part Material				Grade	Cutting Conditions		
Class		Hardness (HRA)	Our Grades		Cutting Speed v_c (SFM)	Feed Rate f (IPR)	Depth of Cut a_p (Inch)
VM, VC	40	88 or more	G5, D2	NPD10	15 - 65	.0012 - .0027	.0012 - .0027
VM, VC	70, 60, 50	83 less than 88	G7, G6	NPD10	15 - 100	.0012 - .0079	.0012 - .0079
VM, VC	—	83 or more	G7, G6 G5, D2	DA90	15 - 100	.0012 - .0079	.0012- .0197

Min. - Max. Coolant: Dry (NPD10)/Wet (DA90)

■ Machining Precision (NPD10)

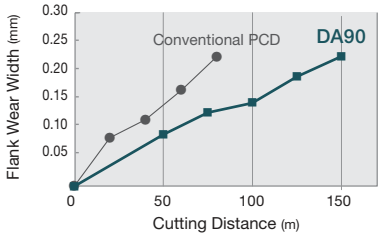
Internal machining of cemented carbide: VM30 (91HRA)



Part Material : Cemented carbide: VM30 (91HRA)
Tool Cat. No. : DCMW 11T304RH
Cutting Conditions : v_c=65 SFM, f=0.002 IPR, a_p=0.002" Dry

■ Wear Resistance (DA90)

External machining of cemented carbide: VC50 (87HRA)



Part Material : Cemented carbide: VC50 (87HRA)
Tool : NF-DCMW 070204
Cutting Conditions : v_c=65 SFM, f=0.004 IPR, a_p=0.008" Wet

DA1000

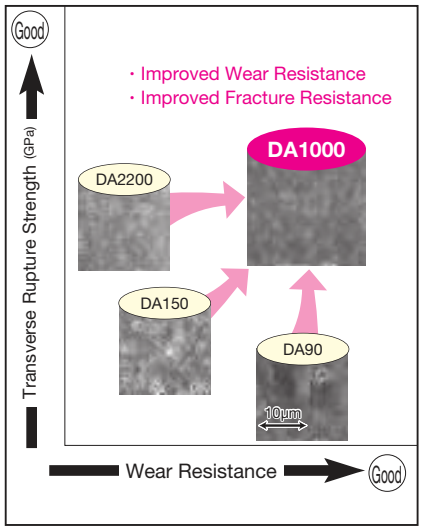


■ Features

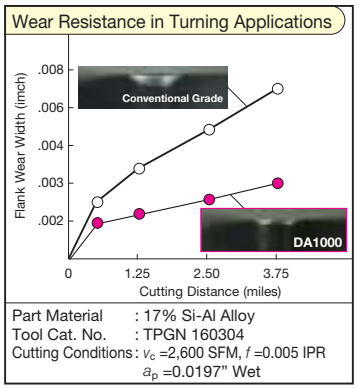
Ultra-high-density sintered ultra-fine grained diamond

- Significantly improved surface roughness on machined surfaces
- Excellent wear resistance and strength
- High-performance, high-precision, high-efficiency machining of all aluminum and non-ferrous alloys

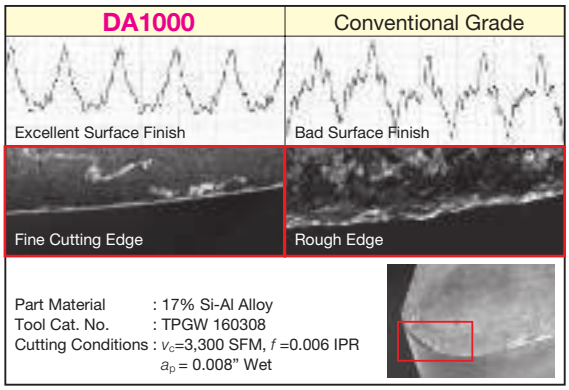
■ Position of DA1000



■ Cutting Performance



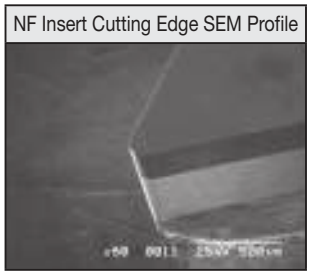
Part Material : 17% Si-Al Alloy
Tool Cat. No. : TPGN 160304
Cutting Conditions : v_c =2,600 SFM, f =0.005 IPR
a_p =0.0197" Wet



Part Material : 17% Si-Al Alloy
Tool Cat. No. : TPGW 160308
Cutting Conditions : v_c=3,300 SFM, f =0.006 IPR
a_p = 0.008" Wet

■ NF Insert

The NF PCD insert uses optimized design and improved mass production techniques that maintain good performance of DA1000 yet offer higher cost efficiency. It makes the most of the PCD - SUMIDIA DA1000 grade, with excellent fracture and wear resistance and good work material finished surface roughness.

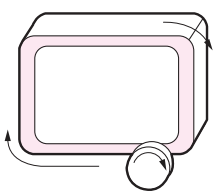


High-precision cutting edge quality

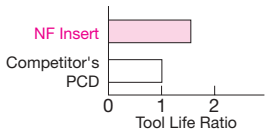
- Total cost effectiveness with high performance and lower price
  - · Optimum design utilizing improved mass production techniques provides a lower cost.
  - · Regrindable type results in huge total cost reduction.
- Wide lineup from general turning to milling
  - · Wide range of items in stock for small diameter boring and external turning to milling.
  - · Negative/positive type inserts that can be used on standard lever-lock and pin-lock type holder are also in stock.

■ Application Examples

• Milling of Aluminum Alloy Oil Pump Cover

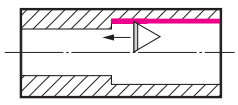


Results:
1.5 times longer tool life than competitors' PCD, with higher cost performance.

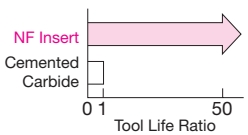


Part Material : A383 Aluminum, Tool Cat. No.: NF-TEEN32R
Cutting Conditions : v_C = 9,850 SFM, f_Z = 0.0024 IPR, a_p = 0.008" Wet

• Boring of Aluminum Valve Bore



Results:
No initial breakage, tool life is more than 50 times that of carbides.



Part Material : A383 Aluminum, Tool Cat. No.: NF-TPGN110304P
Cutting Conditions : v_C = 1,750 SFM, f = 0.00197 IPR, a_p = 0.008" Wet

LD / GD

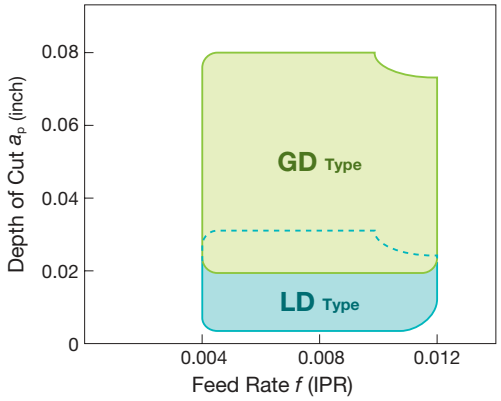


■ Features

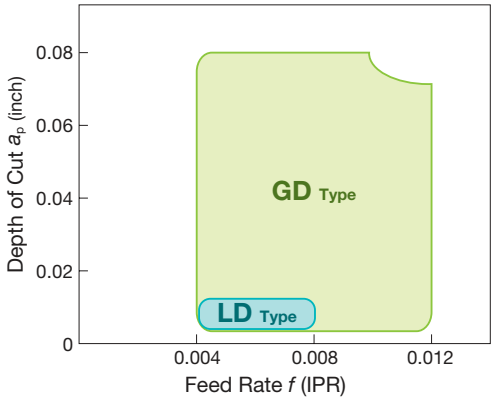
- PCD insert with chipbreaker
- Provides excellent chip control in medium finishing and finishing of aluminum alloy.
- Solves chip control problems and dramatically improves work efficiency.
- Achieves long, stable tool life by employing high-toughness grade DA1000.

■ Application Range

● Wrought Aluminum Alloy (6061)



● Cast Aluminum Alloy (A383)



LD Type Chipbreaker for Finishing

Provides excellent chip control in finishing

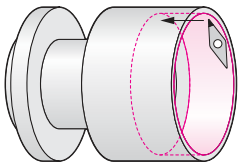


■ Cutting Performance

For Wrought Aluminum Alloy Machining

● Machining Details: Internal Diameter Machining of Machine Components

Provides good chip control at shallow depths of cut for wrought materials





Break Master LD Type



Without Chipbreaker

Part Material: 6061 Aluminum, Tool Cat. No.: NF-VCMT110302N-LD (DA1000)
Cutting Conditions : v_c = 650 SFM, f = 0.008 IPR , a_p = 0.004" Wet

GD Type Chipbreaker for Medium Finishing

Provides excellent chip control in medium finishing

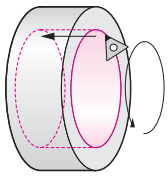


■ Cutting Performance

For Aluminum Alloy Casting Machining

● Machining Details: Internal Diameter Machining of Transmission Components

Finely breaks chips in machining of cast materials





Break Master GD Type

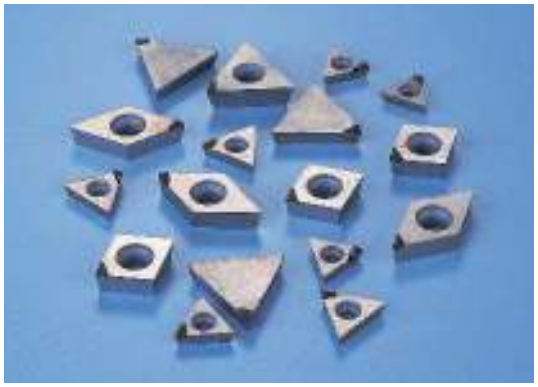


Without Chipbreaker

Part Material: A383 Aluminum, Tool Cat. No.: NF-TPMT110304N-GD (DA1000)
Cutting Conditions : v_c = 1,312 SFM, f = 0.009 IPR, a_p = 0.087" Wet

Note: Regrinding this product will adversely affect chip control performance.

DM



■ Features

- Economy One-Use Type

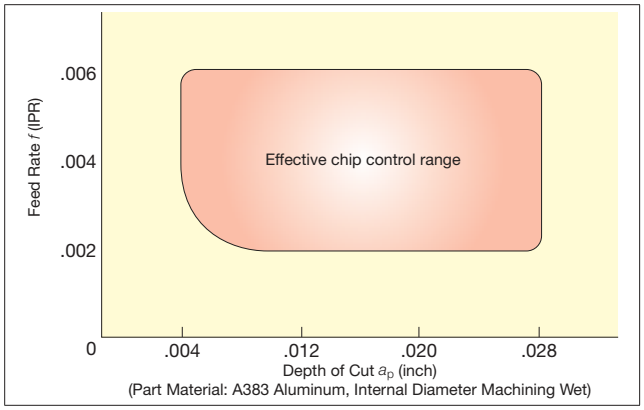
  Familiar to users of CBN - SUMIBORON one-use inserts, now available in PCD - SUMIDIA.

- Cutting Edge with Built-in Chipbreaker for Effective Chip Control

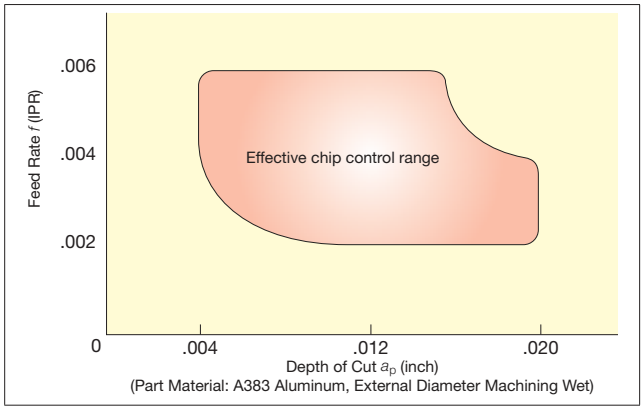
  DM Type chipbreaker solves chip control problems and greatly improves efficiency.

■ Application Range

- For Internal Diameter Machining



- External Turning & Facing (Insert Shape: 55°/80° Diamond Type)





■ Chip Control

- Chips Created by Break Master DM Type



- Chips with No Chipbreaker



■ Application Examples

Machining Details	Cutting Conditions	Results
Internal Boring	Part Material: Aluminum Alloy (AC2A-T6) V_c = 985 SFM f = 0.0024 IPR a_p = 0.014" Wet	With the required finished surface roughness of Ra = 1µm or less, the chips curled at lengths of 2mm or so, and did not remain within the work material.

■ Recommended Cutting Conditions

- Internal Diameter Machining (Insert Shape: Triangular Type)

Feed Rate f	Depth of Cut a_p	Coolant
up to .006 IPR	up to 0.028"	Wet

- External Profiling (Insert Shape: 55°/80° Diamond Type)

Feed Rate f	Depth of Cut a_p	Coolant
up to .006 IPR	up to 0.0197"	Wet

For facing, depth of cut should be less than 0.016".

■ Series

Machining Details	Internal Diameter Machining	External Turning and Facing
Cartridge Unit	NU-TPMR1103 Type	—
	NU-TPMR1603 Type	—
Tool Holder	NU-TPMT0802 Type	NU-CCMT0602 Type
	NU-TPMT0902 Type	NU-CCMT09T3 Type
	NU-TPMT1102 Type	NU-DCMT0702 Type
	NU-TPMT1103 Type	NU-DCMT11T3 Type
	NU-TPMT1604 Type	—

Regrindable Type

ANSI **CNMA 432**

ISO **CNMA 120408 B**

(1) (2)

(1) Insert ISO Code	(2) Additional Information
(ISO Standard Classification) ☞B2, B3	Refer to Table 1

Chart 1 (2) Additional Information

Symbol	Code Description
R	Right Hand
L	Left Hand
B	All-PCD Rake Face Type
-WF	Edge with Special Land for Aluminum Wheel Gloss Finishing
RH	Honing (Edge Treatment)

Single Corner Type

ANSI **NF - CNMA 432 P**

NF - CNMA 120408 P

(1) (2) (3)

(1) Type Code	(2) Insert ISO Code	(3) Additional Information
Refer to Table 2	(ISO Standard Classification) ☞B2, B3	Refer to Table 3

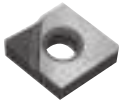
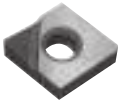
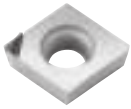
Chart 2 (1) Type Code

Symbol	Code Description
NF	NF Insert ☞M6
NU	Single-Use Insert (Disposable)

Chart 3 (3) Additional Information

Symbol	Code Description
L	Left Hand
P	Full-Length Cutting Edge Type
N-LD	Chipbreaker Type (Neutral) ☞M7
N-GD	
R-DM	Chipbreaker Type (Right Hand) ☞M8
L-DM	Chipbreaker Type (Left Hand) ☞M8

Insert Shape

Full-top PCD Type	Edge with Special Land for Aluminum Wheel Gloss Finishing	NF Insert	Single-Use Insert	Full-Length Cutting Edge Type	Chipbreaker Type
					

C 80° Diamond



(Legend) General Cutting ●: 1st Recommendation

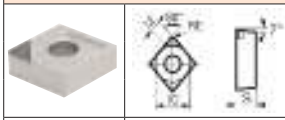
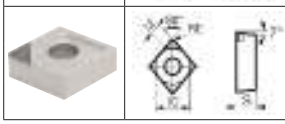
Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch) | PCD (SUMIDIA)

Neg.

CNMA43●

Dimensions (inch)	Inscribed Circle IC	.5000	Hole Dia.	.2031
	Thickness S	.1875		

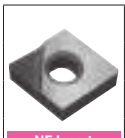
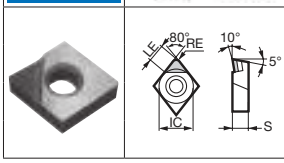
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
	CNMA432	CNMA120408	.0315	.2205				●
	CNMA432H	CNMA120408H	.0315	.2205				●
	NFCNMA432	NF-CNMA120408	.0315	.2205			●	●
	NFCNMA432H	NF-CNMA120408H	.0315	.2205				●

Neg.-Pos.

CNMX43●

Dimensions (inch)	Inscribed Circle IC	.5000	Hole Dia.	.2031
	Thickness S	.1875		

Applicable External Holders ☞ C5 to C10
Applicable Internal Holders ☞ E12 to E14

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFCNMX430.5	NF-CNMX120402	.0079	.2244			★	★
	NFCNMX431	NF-CNMX120404	.0157	.2244			●	●
	NFCNMX432	NF-CNMX120408	.0315	.2205			●	●
	NFCNMX433	NF-CNMX120412	.0472	.2126			★	★
 Break Master	NF-CNMX431LD	NF-CNMX120404N-LD	.0157	.2244			●	
	NF-CNMX432LD	NF-CNMX120408N-LD	.0315	.2205			●	
	NF-CNMX433LD	NF-CNMX120412N-LD	.0472	.2126			●	
 Break Master	NF-CNMX431GD	NF-CNMX120404N-GD	.0157	.2244			●	
	NF-CNMX432GD	NF-CNMX120408N-GD	.0315	.2205			●	
	NF-CNMX433GD	NF-CNMX120412N-GD	.0472	.2126			●	
	CNMX430.5	CNMX120402	.0079	.2244			★	
	CNMX431	CNMX120404	.0157	.2244		★	★	●
	CNMX432	CNMX120408	.0315	.2205		★	★	●
	CNMX433	CNMX120412	.0472	.2205		★		●

7° Pos.

CCMA03X1●●

Dimensions (inch)	Inscribed Circle IC	.1378	Hole Dia.	.0748
	Thickness S	.0551		

Applicable Internal Holders ☞ E31, E32

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFCCMA03X102	NF-CCMW03X102	.0079	.0433	★			
	NFCCMA03X104	NF-CCMW03X104	.0157	.0433	★			

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

C 80° Diamond



7° Pos.

CCMA04X1●●

Dimensions (inch)	Inscribed Circle IC	.1693	Hole Dia.	.0906
	Thickness S	.0709		

Applicable Internal Holders ☞ E31, E32

CC■■21.5●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1102
	Thickness S	.0937		

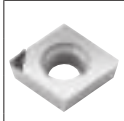
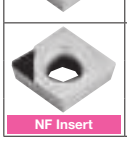
Applicable External Holders ☞ C34

Applicable Internal Holders ☞ E30 to E33

(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch)

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	PCD (SUMIDIA) DA90	DA150	DA1000	DA2200
 NF Insert	NFCCMA04X102	NF-CCMW04X102	.0079	.0591	★			
	NFCCMA04X104	NF-CCMW04X104	.0157	.0591	★			
 NF Insert	NFCCMA21.50.5	NF-CCMW060202	.0079	.0945	★			
	NFCCMA21.51	NF-CCMW060204	.0157	.0945	★			
 NF Insert	NFCCMX21.50	NF-CCMT060201	.0039	.1102			●	●
	NFCCMX21.50.5	NF-CCMT060202	.0079	.1102			●	●
	NFCCMX21.51	NF-CCMT060204	.0157	.1102			●	●
 Break Master	NF-CCMT21.50.5LD	NF-CCMT060202N-LD	.0079	.1142			●	
	NF-CCMT21.51LD	NF-CCMT060204N-LD	.0157	.1142			●	
 Break Master	NF-CCMT21.50.5GD	NF-CCMT060202N-GD	.0079	.1142			●	
	NF-CCMT21.51GD	NF-CCMT060204N-GD	.0157	.1142			●	
 Break Master	NUCCMT21.50.5R-DM	NU-CCMT060202R-DM	.0079	.0984		★		
	NUCCMT21.50.5L-DM	NU-CCMT060202L-DM	.0079	.0984		★		
	NUCCMT21.51R-DM	NU-CCMT060204R-DM	.0157	.0984		★		
	NUCCMT21.51L-DM	NU-CCMT060204L-DM	.0157	.0984		★		
	CCMA21.50	CCMT060201	.0039	.1299		★		
	CCMA21.50.5	CCMT060202	.0079	.1260		★		
	CCMA21.51	CCMT060204	.0157	.1220		★		
 NF Insert	NFCCGA21.50	NF-CCGW060201	.0039	.0945			●	
	NFCCGA21.50.5	NF-CCGW060202	.0079	.0945			●	
	NFCCGA21.51	NF-CCGW060204	.0157	.0945			●	

C 80° Diamond



7° Pos.

CC■■32.5●

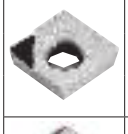
Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1732
	Thickness S	.1563		

Applicable External Holders ☞ C34
Applicable Internal Holders ☞ E30 to E33

(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch) | PCD (SUMIDIA)

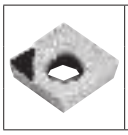
Shape	Sumitomo Cat. No.	ISO Cat. No.	RE	LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFCCMA32.50.5	NF-CCMW09T302	.0079	.0945	★			
	NFCCMA32.51	NF-CCMW09T304	.0157	.0945	★			
	NFCCMA32.52	NF-CCMW09T308	.0315	.0906	●			
 NF Insert	NFCCMX32.50	NF-CCMT09T301	.0039	.1102			★	
	NFCCMX32.50.5	NF-CCMT09T302	.0079	.1102			●	●
	NFCCMX32.51	NF-CCMT09T304	.0157	.1102			●	●
	NFCCMX32.52	NF-CCMT09T308	.0315	.1063			●	●
 Break Master	NF-CCMT32.50.5LD	NF-CCMT09T302N-LD	.0079	.1142			●	
	NF-CCMT32.51LD	NF-CCMT09T304N-LD	.0157	.1142			●	
	NF-CCMT32.52LD	NF-CCMT09T308N-LD	.0315	.1102			●	
 Break Master	NF-CCMT32.50.5GD	NF-CCMT09T302N-GD	.0079	.1142			●	
	NF-CCMT32.51GD	NF-CCMT09T304N-GD	.0157	.1142			●	
	NF-CCMT32.52GD	NF-CCMT09T308N-GD	.0315	.1102			●	
 Break Master	NUCCMT32.50.5R-DM	NU-CCMT09T302R-DM	.0079	.0984		★		
	NUCCMT32.50.5L-DM	NU-CCMT09T302L-DM	.0079	.0984		★		
	NUCCMT32.51R-DM	NU-CCMT09T304R-DM	.0157	.0984		★		
	NUCCMT32.51L-DM	NU-CCMT09T304L-DM	.0157	.0984		★		
	CCMA32.50	CCMT09T301	.0039	.1299		★		
	CCMA32.50.5	CCMT09T302	.0079	.1260		★		
	CCMA32.51	CCMT09T304	.0157	.1220		★		
 NF Insert	NFCCGA32.50.5	NF-CCGW09T302	.0079	.0945			●	
	NFCCGA32.51	NF-CCGW09T304	.0157	.0945			●	
	NFCCGA32.52	NF-CCGW09T308	.0315	.0906			●	

11° Pos.

CPMX2.51.5●

Dimensions (inch)	Inscribed Circle IC	.3126	Hole Dia.	.1339
	Thickness S	.0937		

Applicable Internal Holders ☞ E35 to E37

Shape	Sumitomo Cat. No.	ISO Cat. No.	RE	LE	DA90	DA150	DA1000	DA2200
	CPMX2.51.50.5	CPMT080202	.0079	.1654			★	●
	CPMX2.51.51	CPMT080204	.0157	.1654			★	●
	CPMX2.51.52	CPMT080208	.0315	.1614			★	●

CPMX21.5●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	—
	Thickness S	.1563		

Shape	Sumitomo Cat. No.	ISO Cat. No.	RE	LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFCPMX21.51	NF-CPMT060204	.0157	.0945			●	●
	NFCPMX21.52	NF-CPMT060208	.0315	.0866			●	●

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

C 80° Diamond



11° Pos.

(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

CPMX32●

Dimensions (inch)				
	Inscribed Circle IC	.3750	Hole Dia.	.1732
	Thickness S	.1250		

Applicable Internal Holders E35 to E37

CP■■32.5●

Dimensions (inch)				
	Inscribed Circle IC	.3750	Hole Dia.	—
	Thickness S	.1563		

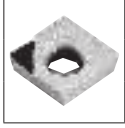
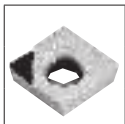
CPGA32●

Dimensions (inch)				
	Inscribed Circle IC	.3750	Hole Dia.	—
	Thickness S	.1250		

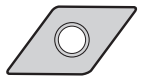
CPG42●

Dimensions (inch)				
	Inscribed Circle IC	.5000	Hole Dia.	—
	Thickness S	.1250		

Dimensions (inch)

Shape	Sumitomo Cat. No.	ISO Cat. No.	RE	LE	PCD (SUMIDIA) DA90	DA150	DA1000	DA2200
 NF Insert	NFCPMX320.5	NF-CPMT090302	.0079	.1102			●	●
	NFCPMX321	NF-CPMT090304	.0157	.1102			●	●
	NFCPMX322	NF-CPMT090308	.0315	.1063			●	●
	CPMX320.5	CPMT090302	.0079	.1102				●
	CPMX321	CPMT090304	.0157	.1102				●
	CPMX322	CPMT090308	.0315	.1063				●
	CPEW32.52PDFR	CPEW09T308PDFR	.0315	.2205				●
 NF Insert	NFCPMX32.51	NF-CPMT09T304	.0157	.1102			●	●
	NFCPMX32.52	NF-CPMT09T308	.0315	.1063			●	●
 NF Insert	NFCPGA321	NF-CPGW090304	.0157	.1102			●	
	NFCPGA322	NF-CPGW090308	.0315	.1063			●	
	CPG422	CPGN120308	.0315	.2205				●

D 55° Diamond



(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

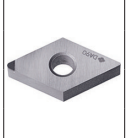
Dimensions (inch) | PCD (SUMIDIA)

Neg.

DNMA43●

Dimensions (inch)	Inscribed Circle IC	.5000	Hole Dia.	.2205
	Thickness S	.1875		

Applicable External Holders ☞ C10 to C12
Applicable Internal Holders ☞ E15 to E19

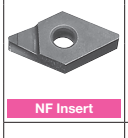
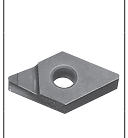
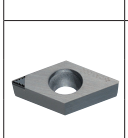
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
	DNMA432	DNMA150408	.0315	.0787				●
	DNMA432H	DNMA150408H	.0315	.0787				●
 NF Insert	NFDNMA432	NF-DNMA150408	.0157	.0787	★			●
	NFDNMA432H	NF-DNMA150408H	.0315	.0787				●
	NFDNMA433	NF-DNMA150412	.0472	.0787	●			

Neg.-Pos.

DNMX43●

Dimensions (inch)	Inscribed Circle IC	.5000	Hole Dia.	.2031
	Thickness S	.1875		

Applicable External Holders ☞ C10 to C12
Applicable Internal Holders ☞ E15 to E19

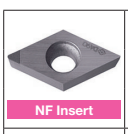
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFDNMX430.5	NF-DNMX150402	.0079	.2520			●	●
	NFDNMX431	NF-DNMX150404	.0157	.2441			●	●
	NFDNMX432	NF-DNMX150408	.0315	.2283			●	●
	NFDNMX433	NF-DNMX150412	.0472	.2126			★	★
	DNMX430.5	DNMX150402	.0079	.2520			★	
	DNMX431	DNMX150404	.0157	.2441		★	★	●
	DNMX432	DNMX150408	.0315	.2283		★	★	●
	DNMX433	DNMX150412	.0472	.2126		★	★	●
 Break Master	NF-DNMX430.5LD	NF-DNMX150402N-LD	.0079	.2520			●	
	NF-DNMX431LD	NF-DNMX150404N-LD	.0157	.2441			●	
	NF-DNMX432LD	NF-DNMX150408N-LD	.0315	.2283			●	
	NF-DNMX433LD	NF-DNMX150412N-LD	.0472	.2126			●	
 Break Master	NF-DNMX430.5GD	NF-DNMX150402N-GD	.0079	.2520			●	
	NF-DNMX431GD	NF-DNMX150404N-GD	.0157	.2441			●	
	NF-DNMX432GD	NF-DNMX150408N-GD	.0315	.2283			●	
	NF-DNMX433GD	NF-DNMX150412N-GD	.0472	.2126			●	

7° Pos.

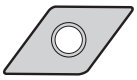
DCM■21●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1102
	Thickness S	.0937		

Applicable External Holders ☞ C35
Applicable Internal Holders ☞ E38 to E41

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFDCMA21.50.5	NF-DCMW070202	.0079	.1024	★			
	NFDCMA21.51	NF-DCMW070204	.0157	.0945	★			
 NF Insert	NFDCMX21.50	NF-DCMT070201	.0039	.1181			●	●
	NFDCMX21.50.5	NF-DCMT070202	.0079	.1181			●	●
	NFDCMX21.51	NF-DCMT070204	.0157	.1102			●	●
 Break Master	NF-DCMT21.50.5LD	NF-DCMT070202N-LD	.0079	.1220			●	
	NF-DCMT21.51LD	NF-DCMT070204N-LD	.0157	.1142			●	

D 55° Diamond



7° Pos.

DCM■21●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1102
	Thickness S	.0937		

Applicable External Holders C35
Applicable Internal Holders E38 to E41

DC■■32.5●

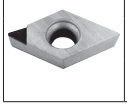
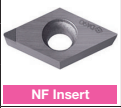
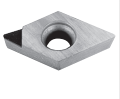
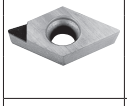
Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1732
	Thickness S	.1563		

Applicable External Holders C35
Applicable Internal Holders E38 to E41

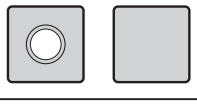
(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch) | PCD (SUMIDIA)

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 Break Master	NF-DCMT21.50.5GD	NF-DCMT070202N-GD	.0079	.1220			●	
	NF-DCMT21.51GD	NF-DCMT070204N-GD	.0157	.1142			●	
 Break Master	NUDCMT21.50.5R-DM	NU-DCMT070202R-DM	.0079	.1181		★		
	NUDCMT21.50.5L-DM	NU-DCMT070202L-DM	.0079	.1181		★		
	NUDCMT21.51R-DM	NU-DCMT070204R-DM	.0157	.1181		★		
	NUDCMT21.51L-DM	NU-DCMT070204L-DM	.0157	.1181		★		
	DCMX21.50	DCMT070201	.0039	.1693		★		●
	DCMX21.50.5	DCMT070202	.0079	.1654		★		●
	DCMX21.51	DCMT070204	.0157	.1575		★		●
 NF Insert	NFDCMA32.50.5	NF-DCMW11T302	.0079	.1024	★			
	NFDCMA32.51	NF-DCMW11T304	.0157	.0945	★			
	NFDCMA32.52	NF-DCMW11T308	.0315	.0787	★			
 NF Insert	NFDCMX32.50	NF-DCMT11T301	.0039	.1181			●	●
	NFDCMX32.50.5	NF-DCMT11T302	.0079	.1181			●	●
	NFDCMX32.51	NF-DCMT11T304	.0157	.1102			●	●
	NFDCMX32.52	NF-DCMT11T308	.0315	.0945			●	●
 Break Master	NF-DCMT32.50.5LD	NF-DCMT11T302N-LD	.0079	.1220			●	
	NF-DCMT32.51LD	NF-DCMT11T304N-LD	.0157	.1142			●	
	NF-DCMT32.52LD	NF-DCMT11T308N-LD	.0315	.0984			●	
 Break Master	NF-DCMT32.50.5GD	NF-DCMT11T302N-GD	.0079	.1220			●	
	NF-DCMT32.51GD	NF-DCMT11T304N-GD	.0157	.1142			●	
	NF-DCMT32.52GD	NF-DCMT11T308N-GD	.0315	.0984			●	
 Break Master	NUDCMT32.50.5R-DM	NU-DCMT11T302R-DM	.0079	.1181		★		
	NUDCMT32.50.5L-DM	NU-DCMT11T302L-DM	.0079	.1181		★		
 Break Master	NUDCMT32.51R-DM	NU-DCMT11T304R-DM	.0157	.1299		★		
	NUDCMT32.51L-DM	NU-DCMT11T304L-DM	.0157	.1299		★		
	DCMX32.50	DCMT11T301	.0039	.1693		★		●
	DCMX32.50.5	DCMT11T302	.0079	.1654		★		●
	DCMX32.51	DCMT11T304	.0157	.1575		★		●
 NF Insert	NFDCGA32.50.5	NF-DCGW11T302	.0079	.1024			●	
	NFDCGA32.51	NF-DCGW11T304	.0157	.0945			●	
	NFDCGA32.52	NF-DCGW11T308	.0315	.0787			●	

S Square



(Legend) General Cutting ●: 1st Recommendation

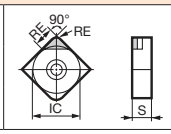
Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Neg.

SNMA43●

Dimensions (inch)				
	Inscribed Circle IC	.5000	Hole Dia.	.1875
	Thickness S	.2031		

Applicable External Holders C14 to C19
Applicable Internal Holders E20 to E22

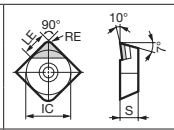
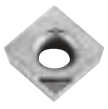
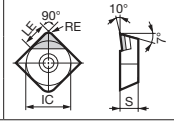
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert 	NFSNMA432	NF-SNMA120408	.0315	.0945	★			
	NFSNMA433	NF-SNMA120412	.0472	.0945	★			

7° Pos.

SCM■2.51●

Dimensions (inch)				
	Inscribed Circle IC	.3125	Hole Dia.	.1339
	Thickness S	.0937		

Applicable External Holders D26

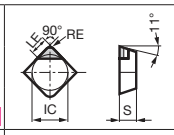
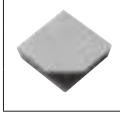
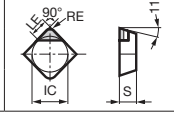
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert 	NFSCMX2.51.50	NF-SCMT070201	.0039	.1181			★	
	NFSCMX2.51.50.5	NF-SCMT070202	.0079	.1181			★	
	NFSCMX2.51.51	NF-SCMT070204	.0157	.1181			★	
 	SCMA2.51.50	SCMT070201	.0039	.1181		★		
	SCMA2.51.50.5	SCMT070202	.0079	.1181		★		
	SCMA2.51.51	SCMT070204	.0157	.1181		★		

11° Pos.

SPG32●

Dimensions (inch)				
	Inscribed Circle IC	.3750	Hole Dia.	—
	Thickness S	.1250		

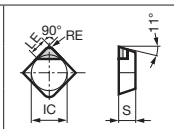
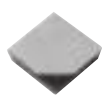
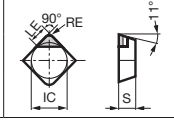
Applicable Internal Holders E45
Applicable Cartridge: CE

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert 	NFSPG321	NF-SPGN090304	.0157	.1890			★	●
	NFSPG322	NF-SPGN090308	.0315	.1890			★	★
 	SPG321	SPGN090304	.0157	.1890		★		

SPG42●

Dimensions (inch)				
	Inscribed Circle IC	.5000	Hole Dia.	—
	Thickness S	.1250		

Applicable External Holders C52
Applicable Cartridge: CE

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert 	NFSPG421	NF-SPGN120304	.0157	.1890			★	▲
	NFSPG422	NF-SPGN120308	.0315	.1890			★	●
 	SPG421	SPGN120304	.0157	.1890		★		●
	SPG422	SPGN120308	.0315	.1890				●

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

S Square

20° Pos.

SEG■320●

Dimensions (inch)				
	Inscribed Circle IC	.3750	Hole Dia.	—
	Thickness S	.1250		

Applicable Cartridge: CE

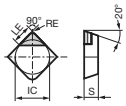
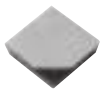
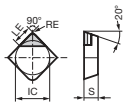
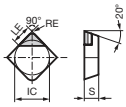
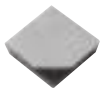
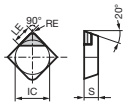
SEG■420●

Dimensions (inch)				
	Inscribed Circle IC	.5000	Hole Dia.	—
	Thickness S	.1250		

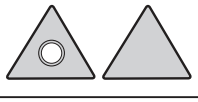
Applicable Cartridge: CE

(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Shape		Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	Dimensions (inch) PCD (SUMIDIA) DA90	DA150	DA1000	DA2200
 NF Insert		**NF-SEGN320.5**	**NF-SEGN090302**						
		**SEGN320.5**	**SEGN090302**	.0079	.1890		★		
 NF Insert		**NF-SEGN420.5**	**NF-SEGN120302**						
		**SEGN420.5**	**SEGN120302**	.0079	.1890		★		

T Triangular



(Legend) General Cutting ●: 1st Recommendation

Recommended Application: N Non-Ferrous Metal ●; Carbide / Hard Brittle Material ●

Dimensions (inch) | PCD (SUMIDIA)

Neg.-Pos.

TNMX33●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1500
	Thickness S	.1875		

Applicable External Holders ☞ C20 to C26
Applicable Internal Holders ☞ E23 to E25

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTNMX330.5	NF-TNMX160402	.0079	.1457			●	●
	NFTNMX331	NF-TNMX160404	.0157	.1417			●	●
	NFTNMX332	NF-TNMX160408	.0315	.1299			●	●
	TNMX330.5	TNMX160402	.0079	.1457			★	
	TNMX331	TNMX160404	.0157	.1417		★	★	★
	TNMX332	TNMX160408	.0315	.1299		★	★	★

5° Pos.

TBG■52●

Dimensions (inch)	Inscribed Circle IC	.1563	Hole Dia.	.0866
	Thickness S	.0626		

Applicable Internal Holders ☞ E46, E51, E52

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTBGD520.5	NF-TBGW060102	.0079	.0906			●	●
	NFTBGD521	NF-TBGW060104	.0157	.0866			●	●
	TBGA520.5	TBGW060102	.0079	.0906		★		
	TBGA521	TBGW060104	.0157	.0866		★		

TBGE52●

Dimensions (inch)	Inscribed Circle IC	.1563	Hole Dia.	—
	Thickness S	.0626		

Applicable Internal Holders ☞ E74

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTBGE520.5	NF-TBGN060102	.0079	.0827			●	●
	NFTBGE521	NF-TBGN060104	.0157	.0787			★	★
	TBGE520.5B	TBGN060102B	.0079	.2559		★	★	●
	TBGE521B	TBGN060104B	.0157	.2441		★	★	●
	TBGE522B	TBGN060108B	.0315	.2244				●

7° Pos.

TCMX1.81.5●

Dimensions (inch)	Inscribed Circle IC	.2189	Hole Dia.	.0984
	Thickness S	.0937		

Applicable External Holders ☞ D27

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTCMX1.81.50.5	NF-TCMT090202	.0079	.1142			●	▲
	NFTCMX1.81.51	NF-TCMT090204	.0157	.1102			●	●
	TCMX1.81.50.5	TCMT090202	.0079	.1063		★		●
	TCMX1.81.51	TCMT090204	.0157	.1024		★		●

TCMX21.5●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1102
	Thickness S	.0937		

Applicable External Holders ☞ D27

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTCMX21.50	NF-TCMT110201	.0039	.1181			●	▲
	NFTCMX21.50.5	NF-TCMT110202	.0079	.1142			●	●
	NFTCMX21.51	NF-TCMT110204	.0157	.1102			●	●
	TCMX21.50	TCMT110201	.0039	.1102				●
	TCMX21.50.5	TCMT110202	.0079	.1063		★		▲
	TCMX21.51	TCMT110204	.0157	.1024		★		●

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

T Triangular



11° Pos.

(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch) | PCD (SUMIDIA)

TPG■63●

Dimensions (inch)	Inscribed Circle IC	.1875	Hole Dia.	.0945
	Thickness S	.0937		

Applicable Internal Holders E48, E50 to E52

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
NF Insert	NFTPGD630	NF-TPGW080201	.0039	.1220			★	★
	NFTPGD630.5	NF-TPGW080202	.0079	.1181			●	●
	NFTPGD631	NF-TPGW080204	.0157	.1142			●	●
	TPGA630.5	TPGW080202	.0079	.1142		★		
	TPGA631	TPGW080204	.0157	.1063		★		

TPM■63●

Dimensions (inch)	Inscribed Circle IC	.1875	Hole Dia.	.0945
	Thickness S	.0937		

Applicable Internal Holders E48, E50 to E52

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
NF Insert	NFTPMA630.5	NF-TPMW080202	.0079	.0984	★			
	NFTPMA631	NF-TPMW080204	.0157	.0945	★			
Break Master	NF-TPMT630.5LD	NF-TPMT080202N-LD	.0079	.1142			●	
	NF-TPMT631LD	NF-TPMT080204N-LD	.0157	.1102			●	
Break Master	NF-TPMT630.5GD	NF-TPMT080202N-GD	.0079	.1142			●	
	NF-TPMT631GD	NF-TPMT080204N-GD	.0157	.1102			●	
Break Master	NUTPMT630.5L-DM	NU-TPMT080202L-DM	.0079	.0984		★		
	NUTPMT631L-DM	NU-TPMT080204L-DM	.0157	.0906		★		

TPGA1.81.5●

Dimensions (inch)	Inscribed Circle IC	.2189	Hole Dia.	.1102
	Thickness S	.0937		

Applicable Internal Holders E48, E50

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
NF Insert	NFTPGA1.81.50.5	NF-TPGW090202	.0079	.1220			●	●
	NFTPGA1.81.51	NF-TPGW090204	.0157	.1142			●	●

TPMT1.81.5●

Dimensions (inch)	Inscribed Circle IC	.2189	Hole Dia.	.1102
	Thickness S	.0937		

Applicable Internal Holders E48, E50

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
Break Master	NF-TPMT1.81.50.5LD	NF-TPMT 090202N-LD	.0079	.1220			●	
	NF-TPMT1.81.51LD	NF-TPMT 090204N-LD	.0157	.1142			●	
Break Master	NF-TPMT1.81.50.5GD	NF-TPMT 090202N-GD	.0079	.1220			●	
	NF-TPMT1.81.51GD	NF-TPMT 090204N-GD	.0157	.1142			●	
Break Master	NUTPMT1.81.50.5L-DM	NU-TPMT 090202L-DM	.0079	.0984		★		
	NUTPMT1.81.51L-DM	NU-TPMT 090204L-DM	.0157	.0906		★		

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

T Triangular



11° Pos.

(Legend) General Cutting ●: 1st Recommendation

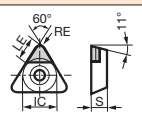
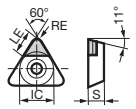
Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch) | PCD (SUMIDIA)

TPGA21.5●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1102
	Thickness S	.0937		

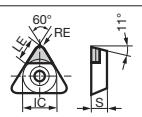
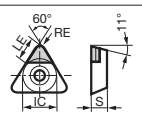
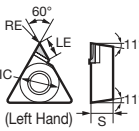
Applicable Holder: Special Holder

Shape		Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert		NFTPGA21.50	NF-TPGW110201	.0039	.1220			●	●
		NFTPGA21.50.5	NF-TPGW110202	.0079	.1181			●	▲
		NFTPGA21.51	NF-TPGW110204	.0157	.1142			●	●
		TPGA21.50.5	TPGW110202	.0079	.1457		★		
		TPGA21.51	TPGW110204	.0157	.1417		★		

TPMT21.5●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1102
	Thickness S	.0937		

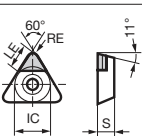
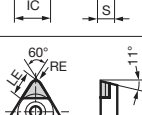
Applicable Holder: Special Holder

 Break Master		NF-TPMT21.50.5LD	NF-TPMT110202N-LD	.0079	.1220			●	
		NF-TPMT21.51LD	NF-TPMT110204N-LD	.0157	.1142			●	
 Break Master		NF-TPMT21.50.5GD	NF-TPMT110202N-GD	.0079	.1220			●	
		NF-TPMT21.51GD	NF-TPMT110204N-GD	.0157	.1142			●	
 Break Master	 (Left Hand)	NUTPMT21.50.5L-DM	NU-TPMT110202L-DM	.0079	.0984		★		
		NUTPMT21.51L-DM	NU-TPMT110204L-DM	.0157	.0906		★		

TPGA22●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1339
	Thickness S	.1250		

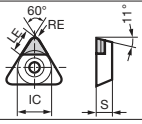
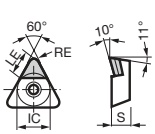
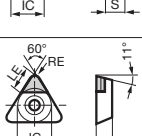
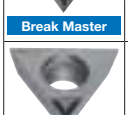
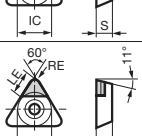
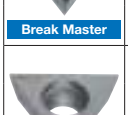
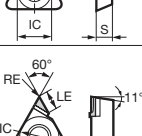
Applicable Internal Holders ☞ E48 to E52

 NF Insert		NFTPGA220	NF-TPGW110301	.0039	.1220			★	★
		NFTPGA220.5	NF-TPGW110302	.0079	.1181			●	●
		NFTPGA221	NF-TPGW110304	.0157	.1142			●	●
		NFTPGA222	NF-TPGW110308	.0315	.1063			●	●
		TPGA220	TPGW110201	.0039	.1457				●
		TPGA220.5	TPGW110302	.0079	.1457		★		●
		TPGA221	TPGW110304	.0157	.1417		★		●
		TPGA222	TPGW110308	.0315	.1299		★		●

TPM■22●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1339
	Thickness S	.1250		

Applicable Internal Holders ☞ E48 to E52

 NF Insert		NFTPMA220.5	NF-TPMW110302	.0079	.0984	★			
		NFTPMA221	NF-TPMW110304	.0157	.0945	★			
		NFTPMA222	NF-TPMW110308	.0315	.0827	★			
 NF Insert		NFTPMX220	NF-TPMT110301	.0039	.1220			●	●
		NFTPMX220.5	NF-TPMT110302	.0079	.1142			●	●
		NFTPMX221	NF-TPMT110304	.0157	.1102			●	●
		NFTPMX222	NF-TPMT110308	.0315	.0984			●	●
 Break Master		NF-TPMT220.5LD	NF-TPMT110302N-LD	.0079	.1220			●	
		NF-TPMT221LD	NF-TPMT110304N-LD	.0157	.1142			●	
		NF-TPMT222LD	NF-TPMT110308N-LD	.0315	.1063			●	
 Break Master		NF-TPMT220.5GD	NF-TPMT110302N-GD	.0079	.1220			●	
		NF-TPMT221GD	NF-TPMT110304N-GD	.0157	.1142			●	
		NF-TPMT222GD	NF-TPMT110308N-GD	.0315	.1063			●	
 Break Master	 (Left Hand)	NUTPMT220.5L-DM	NU-TPMT110302L-DM	.0079	.0984		★		
		NUTPMT221L-DM	NU-TPMT110304L-DM	.0157	.0906		★		

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

T Triangular



11° Pos.

TPM■22●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1339
	Thickness S	.1250		

Applicable Internal Holders E48 to E52

TPGA32●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1732
	Thickness S	.1250		

Applicable Internal Holders E48 & E49

TPGA33●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1732
	Thickness S	.1875		

Applicable Internal Holders E48, E51 to E52

TPM■33●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1732
	Thickness S	.1875		

Applicable Internal Holders E48, E51 to E52

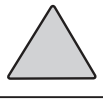
(Legend) General Cutting ●: 1st Recommendation

Recommended Application: N Non-Ferrous Metal ●; Carbide / Hard Brittle Material ●

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
	TPMX22V	TPMT110300	.0000	.1457				●
	TPMX220.5	TPMT110302	.0079	.1417				●
	TPMX221	TPMT110304	.0157	.1378				●
	TPMX222	TPMT110308	.0315	.1260				▲
NF Insert	NFTPGA320.5	NF-TPGW160302	.0079	.1220			●	●
	NFTPGA321	NF-TPGW160304	.0157	.1142			●	●
	NFTPGA322	NF-TPGW160308	.0315	.1063			●	●
NF Insert	NFTPGA330	NF-TPGW160401	.0039	.1220			★	●
	NFTPGA330.5	NF-TPGW160402	.0079	.1181			▲	●
	NFTPGA331	NF-TPGW160404	.0157	.1142			●	●
	NFTPGA332	NF-TPGW160408	.0315	.1063			●	●
	TPGA330.5	TPGW160402	.0079	.1457		★		
	TPGA331	TPGW160404	.0157	.1378		★		●
	TPGA332	TPGW160408	.0315	.1299		★		●
NF Insert	NFTPMA330.5	NF-TPMW160402	.0079	.0984	★			
	NFTPMA331	NF-TPMW160404	.0157	.0945	★			
	NFTPMA332	NF-TPMW160408	.0315	.0827	★			
Break Master	NF-TPMT330.5LD	NF-TPMT160402N-LD	.0079	.1220			●	
	NF-TPMT331LD	NF-TPMT160404N-LD	.0157	.1142			●	
	NF-TPMT332LD	NF-TPMT160408N-LD	.0315	.1063			●	
Break Master	NF-TPMT330.5GD	NF-TPMT160402N-GD	.0079	.1220			●	
	NF-TPMT331GD	NF-TPMT160404N-GD	.0157	.1142			●	
	NF-TPMT332GD	NF-TPMT160408N-GD	.0315	.1063			●	

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

T Triangular



11° Pos.

(Legend) General Cutting ●: 1st Recommendation

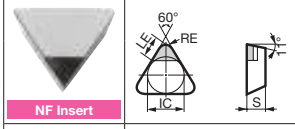
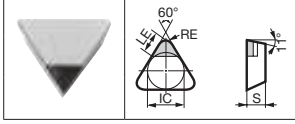
Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch) | PCD (SUMIDIA)

TPG■1.81●

Dimensions (inch)	Inscribed Circle IC	.2189	Hole Dia.	—
	Thickness S	.0937		

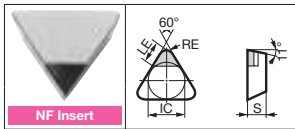
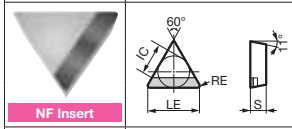
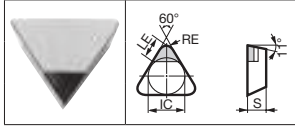
Applicable Cartridge: CP

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTPG1.81.50.5	NF-TPGN090202	.0079	.1220			★	★
	NFTPG1.81.51	NF-TPGN090204	.0157	.1181			★	★
	NFTPG1.81.52	NF-TPGN090208	.0315	.1142			★	
	TPGN1.81.50.5	TPGN090202	.0079	.1457		★		
	TPGN1.81.51	TPGN090204	.0157	.1417		★		

TPG22●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	—
	Thickness S	.1250		

Applicable Internal Holders ☞ E49

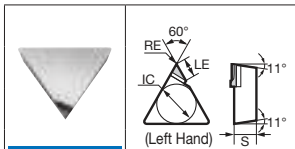
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTPG220.5	NF-TPGN110302	.0079	.1181			●	★
	NFTPG221	NF-TPGN110304	.0157	.1142			●	●
	NFTPG222	NF-TPGN110308	.0315	.1063			●	●
 NF Insert	NFTPG221P	NF-TPGN110304P	.0157	.4094			★	★
	NFTPG222P	NF-TPGN110308P	.0315	.3858			★	★
	TPG220.5	TPGN110302	.0079	.1457		★		
	TPG221	TPGN110304	.0157	.1417		★		●
	TPG222	TPGN110308	.0315	.1299		★		●

Part number suffix P: Full-Length Cutting Edge

TPMR22●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	—
	Thickness S	.1250		

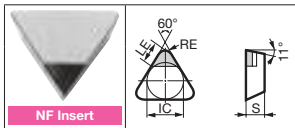
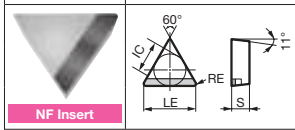
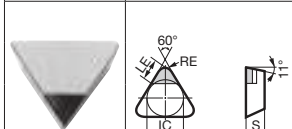
Applicable Internal Holders ☞ E49

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 Break Master (Left Hand)	NUTPMR220.5L-DM	NU-TPMR110302L-DM	.0079	.0984		★		
	NUTPMR221L-DM	NU-TPMR110304L-DM	.0157	.0906		★		

TPG32●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	—
	Thickness S	.1250		

Applicable External Holders ☞ C55
Applicable Internal Holders ☞ E49 & E52

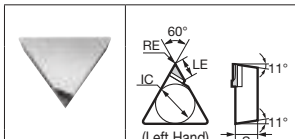
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTPG320.5	NF-TPGN160302	.0079	.1181			●	●
	NFTPG321	NF-TPGN160304	.0157	.1142			●	●
	NFTPG322	NF-TPGN160308	.0315	.1063			●	●
 NF Insert	NFTPG321P	NF-TPGN160304P	.0157	.6260			★	★
	TPG320.5	TPGN160302	.0079	.1457		★		
	TPG321	TPGN160304	.0157	.1417		★		●
	TPG322	TPGN160308	.0315	.1299		★		●
	TPG323	TPGN160312	.0472	.1181	●			●

Part number suffix P: Full-Length Cutting Edge

TPMR32●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	—
	Thickness S	.1252		

Applicable External Holders ☞ C55
Applicable Internal Holders ☞ E49 & E52

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 Break Master (Left Hand)	NUTPMR320.5L-DM	NU-TPMR160302L-DM	.0079	.0984		★		
	NUTPMR321L-DM	NU-TPMR160304L-DM	.0157	.0906		★		

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

T Triangular



(Legend) General Cutting ●: 1st Recommendation

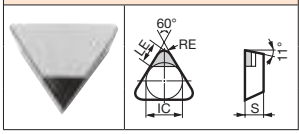
Recommended Application: N Non-Ferrous Metal ●; Carbide / Hard Brittle Material ●

Dimensions (inch) | PCD (SUMIDIA)

11° Pos.

TPG43●

Dimensions (inch)	Inscribed Circle IC	.5000	Hole Dia.	—
	Thickness S	.1875		

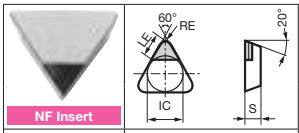
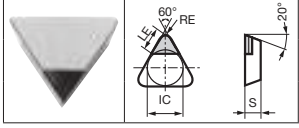
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
	TPG431	TPGN220404	.0157	.1417				●
	TPG432	TPGN220408	.0315	.1299				●

20° Pos.

TEG■21.5●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	—
	Thickness S	.0937		

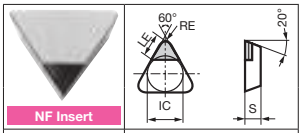
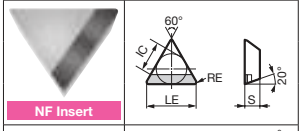
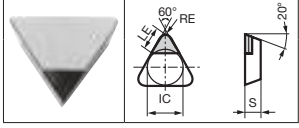
Applicable Cartridge: CE

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTEGE21.50.5	NF-TEGN110202	.0079	.1220			★	★
	NFTEGE21.51	NF-TEGN110204	.0157	.1142			★	★
	TEGN21.50.5	TEGN110202	.0079	.1457		★		
	TEGN21.51	TEGN110204	.0157	.1417		★		

TEGN22●

Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	—
	Thickness S	.1250		

Applicable Cartridge: CE

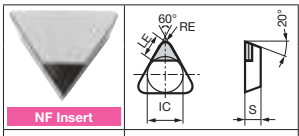
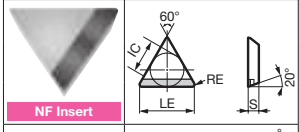
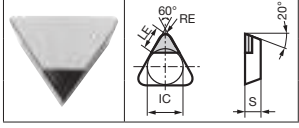
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTEGN220.5	NF-TEGN110302	.0079	.1220			★	★
	NFTEGN221	NF-TEGN110304	.0157	.1142			★	★
	NFTEGN222	NF-TEGN110308	.0315	.1063			★	★
 NF Insert	NFTEGN221P	NF-TEGN110304P	.0157	.4094			★	★
	NFTEGN222P	NF-TEGN110308P	.0315	.3858			★	★
	TEGN220.5	TEGN110302	.0079	.1457		★		
	TEGN221	TEGN110304	.0157	.1417		★		

Part number suffix P: Full-Length Cutting Edge

TEGN32●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	—
	Thickness S	.1250		

Applicable Cartridge: CE

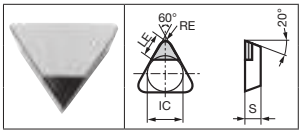
Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFTEGN320.5	NF-TEGN160302	.0079	.1181			★	
	NFTEGN321	NF-TEGN160304	.0157	.1142			★	
 NF Insert	NFTEGN321P	NF-TEGN160304P	.0157	.6260			★	★
	TEGN320.5	TEGN160302	.0079	.1457		★		
	TEGN321	TEGN160304	.0157	.1417		★	★	★

Part number suffix P: Full-Length Cutting Edge

TEGN43●

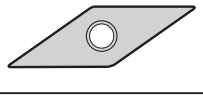
Dimensions (inch)	Inscribed Circle IC	.5000	Hole Dia.	—
	Thickness S	.1874		

Applicable Cartridge: CE

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
	TEGN431	TEGN220404	.0157	.1417		★		

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

V 35° Diamond



(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch) | PCD (SUMIDIA)

Neg.

VNMA33●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1500
	Thickness S	.1875		

Applicable External Holders ☞ C29 to C31

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFVNMA332	NF-VNMA160408	.0315	.0748	★		●	●
	NFVNMA333	NF-VNMA160412	.0472	.0669	●		●	●
	NFVNMA333H	NF-VNMA160412H	.0472	.0669				●
	VNMA333	VNMA160412	.0472	.1850	▲			▲
	VNMA333H	VNMA160412H	.0472	.1850	●			●

Neg.-Pos.

VNMX33●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1500
	Thickness S	.1875		

Applicable External Holders ☞ C29 to C31

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFVNMX330.5	NF-VNMX160402	.0079	.2717			●	●
	NFVNMX331	NF-VNMX160404	.0157	.2520			●	●
	NFVNMX332	NF-VNMX160408	.0315	.2205			●	●
	NFVNMX333	NF-VNMX160412	.0472	.1850			★	●
 Break Master	NF-VNMX330.5LD	NF-VNMX160402N-LD	.0079	.2717			●	
	NF-VNMX331LD	NF-VNMX160404N-LD	.0157	.2520			●	
	NF-VNMX332LD	NF-VNMX160408N-LD	.0315	.2205			●	
	NF-VNMX333LD	NF-VNMX160412N-LD	.0472	.1850			●	
 Break Master	NF-VNMX330.5GD	NF-VNMX160402N-GD	.0079	.2717			●	
	NF-VNMX331GD	NF-VNMX160404N-GD	.0157	.2520			●	
	NF-VNMX332GD	NF-VNMX160408N-GD	.0315	.2205			●	
	NF-VNMX333GD	NF-VNMX160412N-GD	.0472	.1850			●	
	VNMX330.5	VNMX160402	.0079	.2717		★	★	
	VNMX331	VNMX160404	.0157	.2520		★	★	●
	VNMX332	VNMX160408	.0315	.2205		★	★	●
	VNMX333	VNMX160412	.0472	.1850		★	★	●

7° Pos.

VCMA63●

Dimensions (inch)	Inscribed Circle IC	.1875	Hole Dia.	.0906
	Thickness S	.0937		

Applicable Internal Holders ☞ E59, E60

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFVCMA630.5	NF-VCMW080202	.0079	.1260	★			
	NFVCMA631	NF-VCMW080204	.0157	.1102	★			

VCM■22●

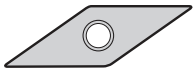
Dimensions (inch)	Inscribed Circle IC	.2500	Hole Dia.	.1102
	Thickness S	.1252		

Applicable External Holders ☞ C41 & C43
Applicable Internal Holders ☞ E58 to E60

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFVCMA220.5	NF-VCMW110302	.0079	.1260	★			
	NFVCMA221	NF-VCMW110304	.0157	.1102	★			
 NF Insert	NFVCMX220	NF-VCMT110301	.0039	.1378			●	●
	NFVCMX220.5	NF-VCMT110302	.0079	.1339			●	★
	NFVCMX221	NF-VCMT110304	.0157	.1181			●	●
 Break Master	NF-VCMT220.5LD	NF-VCMT110302N-LD	.0079	.1496			●	
	NF-VCMT221LD	NF-VCMT110304N-LD	.0157	.1339			●	
 Break Master	NF-VCMT220.5GD	NF-VCMT110302N-GD	.0079	.1496			●	
	NF-VCMT221GD	NF-VCMT110304N-GD	.0157	.1339			●	

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

V 35° Diamond



7° Pos.

VCM■33●

Dimensions (inch)	Inscribed Circle IC	.3750	Hole Dia.	.1732
	Thickness S	.1875		

Applicable External Holders ☞ C41 to C43
Applicable Internal Holders ☞ E58

VCM■2205●

Dimensions (inch)	Inscribed Circle IC	.5000	Hole Dia.	.2165
	Thickness S	.2189		

Applicable External Holders ☞ C59

11° Pos.

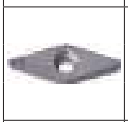
VPMA44●

Dimensions (inch)	Inscribed Circle IC	.5000	Hole Dia.	—
	Thickness S	.2500		

(Legend) General Cutting ●: 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch) | PCD (SUMIDIA)

Shape	Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	DA90	DA150	DA1000	DA2200
 NF Insert	NFVCMA330.5	NF-VCMW160402	.0079	.1457	★			
	NFVCMA331	NF-VCMW160404	.0157	.1299	★			
	NFVCMA332	NF-VCMW160408	.0315	.0945	★		●	●
	NFVCMA333	NF-VCMW160412	.0472	.0827	★		●	▲
	NFVCMA333H	NF-VCMW160412H	.0472	.0827				●
	VCMA333	VCMW160412	.0472	.1929	▲			●
	VCMA333WF	VCMW160412WF	.0472	.1929	▲			●
 NF Insert	NFVCMX331	NF-VCMT160404	.0157	.2559			●	●
	NFVCMX332	NF-VCMT160408	.0315	.2205			●	●
	NFVCMX333	NF-VCMT160412	.0472	.1811			●	●
 Break Master	NF-VCMT331LD	NF-VCMT160404N-LD	.0157	.2559			●	
	NF-VCMT332LD	NF-VCMT160408N-LD	.0315	.2205			●	
	NF-VCMT333LD	NF-VCMT160412N-LD	.0472	.1890			●	
 Break Master	NF-VCMT331GD	NF-VCMT160404N-GD	.0157	.2559			●	
	NF-VCMT332GD	NF-VCMT160408N-GD	.0315	.2205			●	
	NF-VCMT333GD	NF-VCMT160412N-GD	.0472	.1890			●	
	VCMX332	VCMT160408	.0315	.2283			★	★
	VCMX333	VCMT160412	.0472	.1929			★	●
	VCMX333WF	VCMT160412-WF	.0472	.1929			★	●
	VCMA220520	VCMW220520	.0787	.1969				●
	VCMT220520	VCMT220520	.0787	.1969			★	★
	VCMT220530	VCMT220530	.1181	.1969			★	★
	VPMA443	VPMW220612	.0472	.1929				●
	VPMA443WF	VPMW220612WF	.0472	.1929				●

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

W Trigon



5° Pos.

WBMX52●

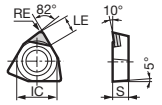
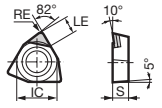
Dimensions (inch)	Inscribed Circle IC	.1563	Hole Dia.	.0866
	Thickness S	.0626		

Applicable Internal Holders ☞ E61, E62

(Legend) General Cutting ● : 1st Recommendation

Recommended Application					
	N Non-Ferrous Metal			●	
	Carbide / Hard Brittle Material	●			

Dimensions (inch)

Shape		Sumitomo Cat. No.	ISO Cat. No.	Nose Radius RE	Effective Cutting Edge Length LE	PCD (SUMIDIA) DA90	DA150	DA1000	DA2200
 NF Insert		**NFWBMX520L**	**NF-WBMT060101L**	.0039	.0709			★	
		NFWBMX520.5L	**NF-WBMT060102L**	.0079	.0709			★	
		NFWBMX521L	**NF-WBMT060104L**	.0157	.0669			★	
		**WBMX520L**	**WBMT060101L**	.0039	.0709				●
		WBMX520.5L	**WBMT060102L**	.0079	.0709				●
		WBMX521L	**WBMT060104L**	.0157	.0669				●

★: Worldwide Warehouse Item

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

SUMIDIA - Binderless PCD Inserts

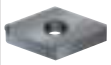
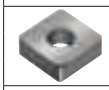
■ PCD - SUMIDIA Binderless NPD10

(Legend) Continuous Cutting ●: 1st Recommendation

Recommended Application: Carbide / Hard Brittle Material ●

Neg.

Dimensions (mm)

Shape	Sumitomo Cat. No.	ISO Cat. No.	NPD10	Cutting Edge Length	Inscribed Circle IC	Thickness S	Hole Dia. D1	Nose Radius RE
	**DNMA432RH**	**DNMA150408RH**	★	1.8	12.7	4.76	5.16	0.8
	DNMA433RH	**DNMA150412RH**	★	1.8				1.2
	**SNMA432RH**	**SNMA120408RH**	★	1.7	12.7	4.76	5.16	0.8
	SNMA433RH	**SNMA120412RH**	★	1.7				1.2
	**VNMA332RH**	**VNMA160408RH**	★	1.8	9.525	4.76	3.81	0.8
	VNMA333RH	**VNMA160412RH**	★	1.5				1.2

■ PCD- SUMIDIA DA90

(Legend) General Cutting ●: 1st Recommendation

Recommended Application: N Non-Ferrous Metal; Carbide / Hard Brittle Material ●

Neg. NF

Dimensions (mm)

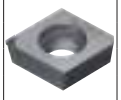
Shape	Sumitomo Cat. No.	ISO Cat. No.	DA90	Cutting Edge Length	Inscribed Circle IC	Thickness S	Hole Dia. D1	Nose Radius RE
	**NF-DNMA432**	**NF-DNMA150408**	★	2.0	12.7	4.76	5.16	0.8
	NF-DNMA433	**NF-DNMA150412**	★	2.0				1.2
	**NF-SNMA432**	**NF-SNMA120408**	★	2.4	12.7	4.76	5.16	0.8
	NF-SNMA433	**NF-SNMA120412**	★	2.4				1.2
	**NF-VNMA332**	**NF-VNMA160408**	★	1.9	9.525	4.76	3.81	0.8
	NF-VNMA333	**NF-VNMA160412**	★	1.7				1.2

(Legend) Continuous Cutting ●: 1st Recommendation

Recommended Application: Carbide / Hard Brittle Material ●

Pos.

Dimensions (mm)

Shape	Relief Angle	Sumitomo Cat. No.	ISO Cat. No.	NPD10	Cutting Edge Length	Inscribed Circle IC	Thickness S	Hole Dia. D1	Nose Radius RE
	7°	**CCMA03X102RH**	**CCMW03X102RH**	★	1.3	3.5	1.4	1.9	0.2
		CCMA03X104RH	**CCMW03X104RH**	★	1.3				0.4
		CCMA04X102RH	**CCMW04X102RH**	★	1.7	4.3	1.8	2.3	0.2
		CCMA04X104RH	**CCMW04X104RH**	★	1.7				0.4
		**CCMA21.50.5RH**	**CCMW060202RH**	★	1.7	6.35	2.38	2.8	0.2
		CCMA21.51RH	**CCMW060204RH**	★	1.7				0.4
		CCMA32.50.5RH	**CCMW09T302RH**	★	1.7	9.525	3.97	4.4	0.2
		CCMA31.51RH	**CCMW09T304RH**	●	1.7				0.4
		CCMA32.52RH	**CCMW09T308RH**	★	1.6				0.8
		**DCMA21.50.5RH**	**DCMW070202RH**	★	2.1	6.35	2.38	2.8	0.2
		DCMA21.51RH	**DCMW070204RH**	★	2.0				0.4
		DCMA32.50.5RH	**DCMW11T302RH**	★	2.1	9.525	3.97	4.4	0.2
		DCMA32.51RH	**DCMW11T304RH**	★	1.9				0.4
		DCMA32.52RH	**DCMW11T308RH**	★	1.6				0.8
	11°	**TPMA630.5RH**	**TPMW080202RH**	★	1.2	4.76	2.38	2.3	0.2
		TPMA631RH	**TPMW080204RH**	★	1.0				0.4
		TPMA220.5RH	**TPMW110302RH**	★	1.5	6.35	3.18	3.4	0.2
		TPMA221RH	**TPMW110304RH**	★	1.3				0.4
		TPMA222RH	**TPMW110308RH**	★	1.0				0.8
		TPMA330.5RH	**TPMW160402RH**	★	2.2	9.525	4.76	4.4	0.2
		TPMA331RH	**TPMW160404RH**	★	2.0				0.4
		TPMA332RH	**TPMW160408RH**	★	1.6				0.8
	7°	**VCMA630RH**	**VCMW080201RH**	★	2.2	4.76	2.38	2.3	0.1
		VCMA630.5RH	**VCMW080202RH**	★	1.9				0.2
		VCMA631RH	**VCMW080204RH**	★	1.5				0.4
		VCMA220.5RH	**VCMW110302RH**	★	2.1	6.35	3.18	2.8	0.2
		VCMA221RH	**VCMW110304RH**	★	1.7				0.4
		VCMA330.5RH	**VCMW160402RH**	★	2.1	9.525	4.76	4.4	0.2
		VCMA331RH	**VCMW160404RH**	★	1.7				0.4
		VCMA332RH	**VCMW160408RH**	★	1.8				0.8
		VCMA333RH	**VCMW160412RH**	★	1.5				1.2

The R portion of the cutting edge is cylindrical shaped.

(Legend) General Cutting ●: 1st Recommendation

Recommended Application: N Non-Ferrous Metal; Carbide / Hard Brittle Material ●

Pos. NF

Dimensions (mm)

Shape	Relief Angle	Cat. No.		DA90	Cutting Edge Length	Inscribed Circle IC	Thickness S	Hole Dia. D1	Nose Radius RE
	7°	**NF-CCMW03X102**	**NF-CCMW03X102**	★	1.1	3.5	1.4	1.9	0.2
		NF-CCMW03X104	**NF-CCMW03X104**	★	1.1				0.4
		NF-CCMW04X102	**NF-CCMW04X102**	★	1.5	4.3	1.8	2.3	0.2
		NF-CCMW04X104	**NF-CCMW04X104**	★	1.5				0.4
		NF-CCMA21.50.5	**NF-CCMW060202**	★	2.4	6.35	2.38	2.8	0.2
		NF-CCMA21.51	**NF-CCMW060204**	★	2.4				0.4
		NF-CCMA32.50.5	**NF-CCMW09T302**	★	2.4	9.525	3.97	4.4	0.2
		NF-CCMA32.51	**NF-CCMW09T304**	★	2.4				0.4
		NF-CCMA32.52	**NF-CCMW09T308**	★	2.3				0.8
		**NF-DCMA21.50.5**	**NF-DCMW070202**	★	2.6	6.35	2.38	2.8	0.2
		NF-DCMA21.51	**NF-DCMW070204**	★	2.4				0.4
		NF-DCMA32.50.5	**NF-DCMW11T302**	★	2.6	9.525	3.97	4.4	0.2
		NF-DCMA32.51	**NF-DCMW11T304**	★	2.4				0.4
		NF-DCMA32.52	**NF-DCMW11T308**	★	2.0				0.8
	11°	**NF-TPMA630.5**	**NF-TPMW080202**	★	2.5	4.76	2.38	2.3	0.2
		NF-TPMA631	**NF-TPMW080204**	★	2.4				0.4
		NF-TPMA220.5	**NF-TPMW110302**	★	2.5	6.35	3.18	3.4	0.2
		NF-TPMA221	**NF-TPMW110304**	★	2.4				0.4
		NF-TPMA222	**NF-TPMW110308**	★	2.1				0.8
		NF-TPMA330.5	**NF-TPMW160402**	★	2.5	9.525	4.76	4.4	0.2
		NF-TPMA331	**NF-TPMW160404**	★	2.4				0.4
		NF-TPMA332	**NF-TPMW160408**	★	2.1				0.8
	7°	**NF-VCMA630.5**	**NF-VCMW080202**	★	3.2	4.76	2.38	2.3	0.2
		NF-VCMA0631	**NF-VCMW080204**	★	2.8				0.4
		NF-VCMA220.5	**NF-VCMW110302**	★	3.2	6.35	3.18	2.8	0.2
		NF-VCMA221	**NF-VCMW110304**	★	2.8				0.4
		NF-VCMA330.5	**NF-VCMW160402**	★	3.7	9.525	4.76	4.4	0.2
		NF-VCMA331	**NF-VCMW160404**	★	3.3				0.4
		NF-VCMA332	**NF-VCMW160408**	★	2.4				0.8
		NF-VCMA333	**NF-VCMW160412**	★	2.1				1.2

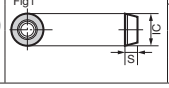
The R portion of the cutting edge is cylindrical shaped.

★: Worldwide Warehouse Item

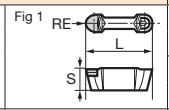
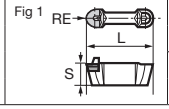
For Turning

Round Insert

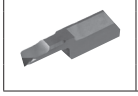
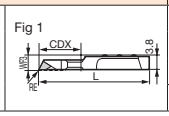
Dimensions (inch)

Shape		Sumitomo Cat. No.	ISO Cat. No.	PCD (SUMIDIA) DA90	DA150	DA1000	DA2200	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Nose Radius RE	Hole Dia.	Fig	Applicable Holder
	Fig1 	RPGA0803M0	RPGW0803M0			★	★	.3150	.1252	—	—	.1299	1	SEC-RP Profiling Tool Holders for Aluminum Wheel Machining (RP02 (Made-to-order item))

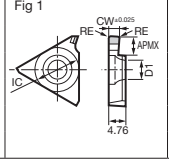
Dogbone Insert

Shape		Sumitomo Cat. No.	ISO Cat. No.	DA90	DA150	DA1000	DA2200	Overall Length L	Thickness S	Nose Radius RE			Fig	Applicable Holder
	Fig 1 	MDE3R	MDE3R				★	1.0236	.3346	.1181			1	SEC-GD Profiling Tool Holders for Aluminum Wheel Machining (GDE) →C60 to C61
		MDE4R	MDE4R				★	1.1811	.3346	.1575			1	
	Fig 1 	MDE3R-AW	MDE3R-AW				★	1.0236	.3346	.1181			1	
		MDE4R-AW	MDE4R-AW				★	1.1811	.3346	.1575			1	

Very Small Dia. Boring Insert

Shape		Sumitomo Cat. No.	ISO Cat. No.	DA2200	Min. Bore Dia. DMIN	WF3	Nose Radius RE	L	CDX	Fig	Applicable Holder
	Fig 1 	KBMXR0311-10	KBMXR0311-10	★	.1181	.1614	.0039	1.1220	.4331	1	Very Small Dia. Boring Bar (CKB) →E66
		KBMXR0411-10	KBMXR0411-10	★	.1575	.1693	.0039	1.1220	.4331	1	
		KBMXR0511-10	KBMXR0511-10	★	.1969	.1772	.0039	1.1220	.4331	1	

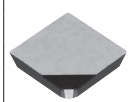
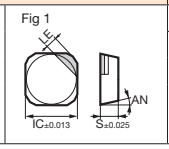
Grooving Insert

Shape		Sumitomo Cat. No.	ISO Cat. No.	DA90	DA150	DA1000	DA2200	Inscribed Circle IC	Width of Cut CW	Nose Radius RE	Max. Groove Depth APMX	Hole Dia. D1	Fig	Applicable Holder
	Fig 1 	TGAR4125	TGAR4125				★	.5000	.0492	.0039	.0787	.2165	1	Grooving Tools (GWC, GWCS, GWCI) →F35
		TGAR4150	TGAR4150				★	.5000	.0591	.0039	.1378	.2165	1	
		TGAR4200	TGAR4200				★	.5000	.0787	.0039	.1378	.2165	1	
		TGAR4250	TGAR4250				★	.5000	.0984	.0039	.1575	.2165	1	
		TGAR4300	TGAR4300				★	.5000	.1181	.0039	.1575	.2165	1	
		TGAR4350	TGAR4350				★	.5000	.1378	.0039	.1969	.2165	1	
		TGAR4400	TGAR4400				★	.5000	.1575	.0039	.1969	.2165	1	

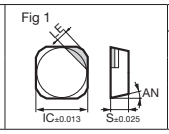
Small Diameter PCD Boring Bars: DABB, see page E75

For Milling

For ACE MILL APG

Shape		Sumitomo Cat. No.	ISO Cat. No.	PCD (SUMIDIA) DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
	Fig 1 	NF-SDC42R	NF-SDC42R	—	★	★	—	.5000	.1252	.1181	.5906	1	APG →H239

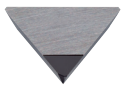
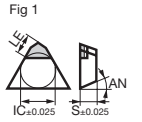
For ACE MILL FPG / Multi Use Endmill FPE

Shape		Sumitomo Cat. No.	ISO Cat. No.	DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
	Fig 1 	NF-SDKN42M	NF-SDKN42M	—	★	★	—	.5000	.1252	.1181	.5906	1	FPG →H242 FPE →H242

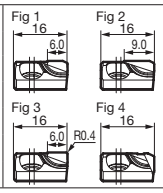
▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

For Milling

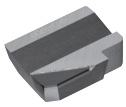
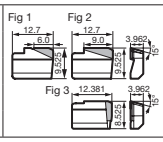
For ACE MILL CHG / Multi Use Endmill CHE

Shape	Sumitomo Cat. No.	ISO Cat. No.	DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
 	NF-TEEN22R	NF-TEEN22R	—	★	★	—	.2500	.1252	.1929			
	NF-TEEN32R	NF-TEEN32R	—	●	●	—	.3750	.1252	.1929	.7874	1	CHG →H240
	NF-TEEN43R	NF-TEEN43R	—	●	●	—	.5000	.1874	.1890			
	TEEN22R	TEEN22R	★			—	.2500	.1252	.1929			
	TEEN32R	TEEN32R	★			—	.3750	.1252	.1929	.7874	1	CHE →H238
	TEEN43R	TEEN43R	★		▲	—	.5000	.1874	.1890			

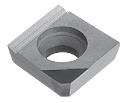
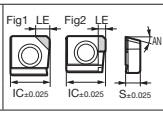
For High-Efficiency Cutter for Aluminum Alloys ALNEX ANX

Shape	Sumitomo Cat. No.	ISO Cat. No.	DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
 	ANB1600R-L	ANB1600R-L		★					.2362			
	ANB1600R-G	ANB1600R-G		★					.2362		1	
	ANB1600R-H	ANB1600R-H		★					.2362			
	ANB1600R-GX	ANB1600R-GX		★					.3543		2	ANX →H178 - H184
	ANB1604R	ANB1604R		★					.2362		3	
	ANB1608R	ANB1608R		★					.2362		3	
	ANB1600R-W	ANB1600R-W		★					—		4	

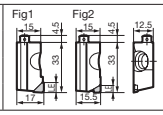
For High-Efficiency Cutter for Aluminum Alloys HF

Shape	Sumitomo Cat. No.	ISO Cat. No.	DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
 	NF-LDEN12T3ZDFR-L	NF-LDEN12T3ZDFR-L	—	●	—	—						
	NF-LDEN12T3ZDFR-G	NF-LDEN12T3ZDFR-G	—	●	—	—	—	—	.2362	—	1	HF →H186 - H191
	NF-LDEN12T3ZDTR-H	NF-LDEN12T3ZDTR-H	—	●	—	—						
	NF-LDEN12T3ZDFR-GX	NF-LDEN12T3ZDFR-GX	—	●	—	—	—	—	.3543	—	2	
	NF-LDEN12T3ZDFR-W	NF-LDEN12T3ZDFR-W	—	●	—	—	—	—	—	—	3	

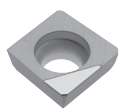
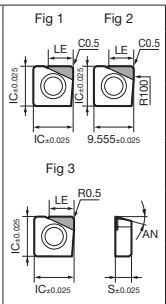
For High-Speed Cutter for Aluminum Alloys RF (Insert)

Shape	Sumitomo Cat. No.	ISO Cat. No.	DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
 	NF-SNEW1204ADFR	NF-SNEW1204ADFR	—	●	●	—	.5000	.1874	.1850	.5906	1	RF →H192-193
	NF-SNEW120404ADFR-H	NF-SNEW120404ADFR-H	—	★	—	—			.3740			
	NF-SNEW1204ADFR-W	NF-SNEW1204ADFR-W	—	●	●	—	.5000	.1874	.0906	.5906	2	

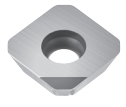
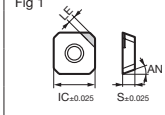
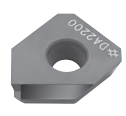
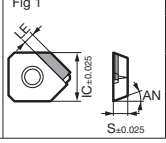
For High-Speed Cutter for Aluminum Alloys RF (Blade)

Shape	Sumitomo Cat. No.	ISO Cat. No.	DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
 	RFB	RFB	—		★	—	—	—	.2559	—	1	RF →H192 - H193
	RFBW	RFBW	—		★	—	—	—	.1772	—	2	

For Small Diameter Cutter for Aluminum Alloys SRF

Shape	Sumitomo Cat. No.	ISO Cat. No.	DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
 	NF-SNEW09T3ADTR	NF-SNEW09T3ADTR	—	●	●	—	.3750	.1559	.2362	.5906	1	SRF →H194 - H195
	NF-SNEW09T3ADTR-U	NF-SNEW09T3ADTR-U	—	●	★	—	.3750	.1559	.2362	.5906	2	
	NF-SNEW09T3ADTR-R	NF-SNEW09T3ADTR-R	—	●	★	—	.3750	.1559	.2362	.5906	3	

For WaveMill WGC & WGX

Shape	Sumitomo Cat. No.	ISO Cat. No.	DA150	DA1000	DA2200	SC10	Inscribed Circle IC	Thickness S	Cutting Edge Length LE	Relief Angle AN	Fig	Applicable Cutter / Endmill
 	NF-SECW13T3AGTN-N	NF-SECW13T3AGTN-N	—	●	●	—	.5276	.1563	.0827	.7874	1	WGC →H237
 	NFXEEW13T3AGFRW	NF-XEEW13T3AGFR-W	—	●	★	—	.5276	.1563	.0984	.7874	1	WGC →H237

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability).

■ General Features

SUMICRYSTAL is the world's first commercially available large-grained high-purity single-crystal diamond, developed by Sumitomo.
Thorough quality control has achieved stable quality, making SUMICRYSTAL ideal as an industrial material.

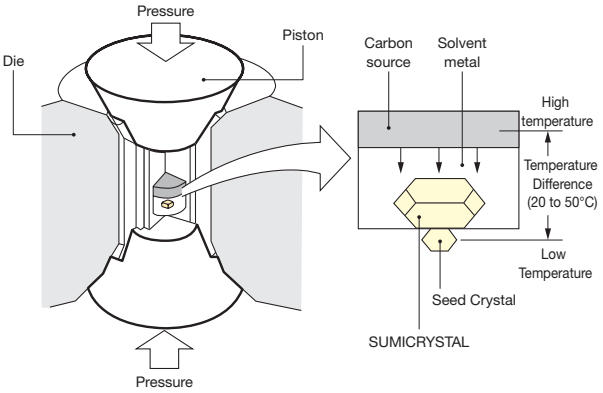


■ Production Method

The synthetic single-crystal diamond SUMICRYSTAL is synthesized in a super high pressure chamber from 5 to 6GPa and high temperatures from 1,300 to 1,600°C. The temperature difference between the raw carbon and the seed crystal is used to grow the diamond on the seed crystal. Through this stringent control of pressures and temperatures, a more stable structure with minimal impurities can be obtained.

● Inside a super high pressure chamber

Synthetic Conditions
Pressure: 5 to 6GPa
Temperature: 1,300 to 1,600°C

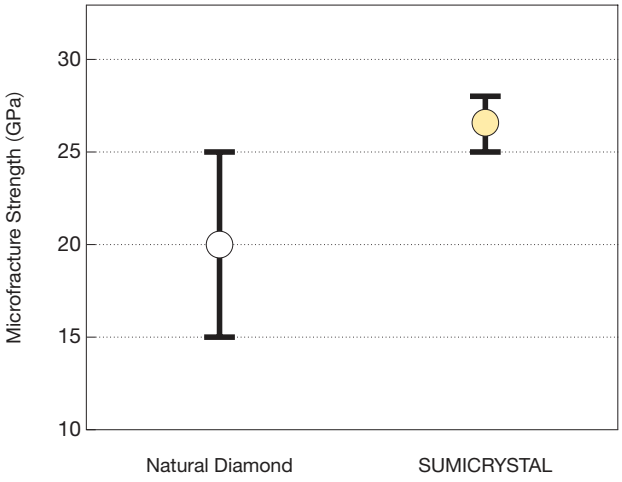


■ Properties

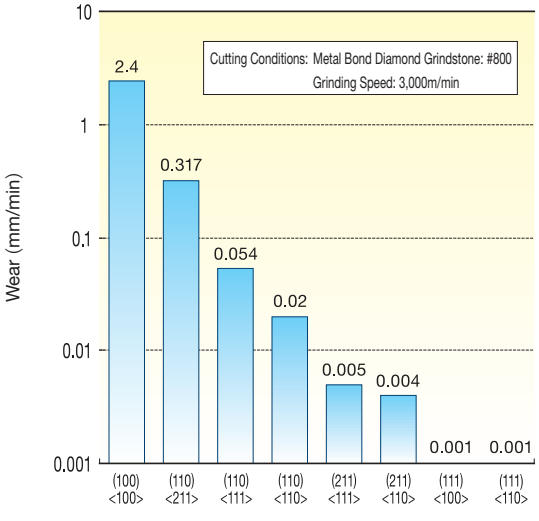
SUMICRYSTAL has 4 main advantages over natural diamond.

1) Structural advantage: Natural diamond is rounded and the crystal orientation is difficult to determine with the naked eye. SUMICRYSTAL, however, has a distinct crystal face which makes the identification much easier.
2) Uniformity: Due to the strictly controlled conditions in which the crystals are grown, uniform quality is obtained consistently.
3) Availability: Unlike the limited supply of natural diamonds, SUMICRYSTAL can be mass produced.
4) SUMICRYSTAL diamond type Ib, which is used for tools, has mechanical and thermal properties equal to or even greater than natural diamond, while containing trace amounts of nitrogen impurities.

● Microfracture Strength of Synthetic Diamond



● Orientation and Wear Resistance



PD / PDX



■ General Features

SUMICRYSTAL PD and PDX are single-crystal synthetic diamonds processed into thin prism shapes for use as dresser blanks. Their stable performance and long tool life improve dressing precision.

SUMICRYSTAL PD

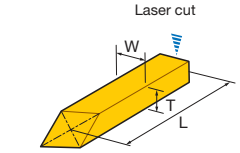
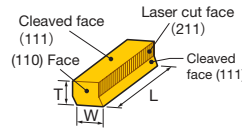
■ Features

● Revolutionary Elongated Shape

(1) Improved retention strength prevents diamonds from falling out.
(2) Consistent cross-section prevents deterioration.
(3) Uniform crystal orientation promotes stable tool life.

■ Standard Cat. No. (PD)

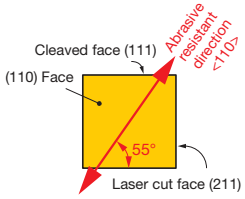
Dimensions (mm)

Shape	Cat. No.	Stock	T	W	L
 · 'L' is the distance between the centre points of both ends. · Both upper and lower (111) faces are cleaved.	PD 0220	●	$0.2^{\pm0.05}$	$0.2^{\pm0.05}$	2.0 to 2.5
	PD 0420	●	$0.4^{\pm0.05}$	$0.4^{\pm0.05}$	2.0 to 2.5
	PD 0630K	●	$0.6^{\pm0.1}$	$0.6^{\pm0.1}$	3.0 to 4.0
	PD 0640K	●			4.0 to 5.0
	PD 0650K	●			5.0 up
	PD 0830K	●	$0.8^{\pm0.1}$	$0.8^{\pm0.1}$	3.0 to 4.0
	PD 0840K	●			4.0 to 5.0
	PD 0850K	●			5.0 up
	PD 1130K	●	$1.1^{\pm0.1}$	$1.1^{\pm0.1}$	3.0 to 4.0
	PD 1140K	●			4.0 to 5.0
 Single cleaved side face with pre-determined abrasive resistant direction.	PD 0630TK	●	$0.6^{\pm0.1}$	$0.6^{\pm0.1}$	3.0 to 4.0
	PD 0640TK	●			4.0 to 5.0
	PD 0830TK	●	$0.8^{\pm0.1}$	$0.8^{\pm0.1}$	3.0 to 4.0
	PD 0840TK	●			4.0 to 5.0
	PD 1130TK	●	$1.1^{\pm0.1}$	$1.1^{\pm0.1}$	3.0 to 4.0
	PD 1140TK	●			4.0 to 5.0

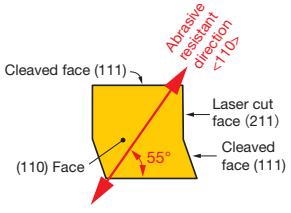
* 1 Sizes other than those indicated above can be ordered. ● mark: Standard stocked item
* 2 These products may have fine impurities within Sumitomo's prescribed range.
* 3 The laser cut faces among other product areas may have chipping within Sumitomo's prescribed range.

■ PD Crystal Orientation

PD

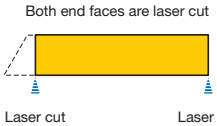


PD-T



■ KK Type

Apart from the standard items listed above, PD is also available in the KK type with both end faces laser-cut.



· When ordering, include "K" after the standard catalogue number.
(Example: PD○○○○KK,
PD○○○○TKK)

· PD0220 and 0420 are not available in the KK type.

SUMICRYSTAL PDX

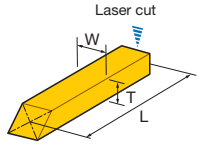
■ Features

● Compared to conventional tools (PD), the product has different face crystal orientation.

(1) Crystal orientation (211) provides better tool life than conventional PD blanks.
(2) Parallel abrasive resistant faces (111) facilitate blank setting during manufacturing of dressers.

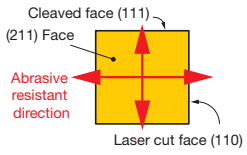
■ Standard Cat. No. (PDX)

Dimensions (mm)

Shape	Cat. No.	Stock	T	W	L
 · 'L' is the distance between the centre points of both ends. · Both upper and lower (111) faces are cleaved.	PDX 0220	●	$0.2^{\pm0.05}$	$0.2^{\pm0.05}$	$2.0^{\pm0.1}$
	PDX 0320	●	$0.3^{\pm0.05}$	$0.3^{\pm0.05}$	
	PDX 0420	●	$0.4^{\pm0.05}$	$0.4^{\pm0.05}$	
	PDX 0630	●	$0.6^{\pm0.1}$	$0.6^{\pm0.1}$	$3.0^{\pm0.5}$
	PDX 0640	●			$4.0^{\pm0.5}$
	PDX 0830	●	$0.8^{\pm0.1}$	$0.8^{\pm0.1}$	$3.0^{\pm0.5}$
	PDX 0840	●			$4.0^{\pm0.5}$
	PDX 1130	●	$1.1^{\pm0.1}$	$1.1^{\pm0.1}$	$3.0^{\pm0.5}$
	PDX 1140	●			$4.0^{\pm0.5}$

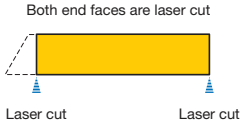
* 1 Sizes other than those indicated above can be ordered. ● mark: Standard stocked item
* 2 These products may have fine impurities within Sumitomo's prescribed range.
* 3 The laser cut faces among other product areas may have chipping within Sumitomo's prescribed range.

■ PDX Crystal Orientation



■ K Type

Apart from the standard items listed above, PDX is also available in the K type with both end faces laser-cut.



· When ordering, include "K" after the standard catalogue number.
(Example: PDX○○○○K)

· PDX0220, 0320 and 0420 are not available in the K type.

UP



■ General Features

Of today's sophisticated cutting-edge technologies, ultra-precision machining processes such as those used for optical element molds are seeing particularly rapid development.
SUMICRYSTAL UP blanks have high performance and reliability, making them optimally suited to these applications.

■ Features

(1) High quality with very low variance.
Stable wear resistance with excellent resistance to cutting edge chipping.
(2) Minimal stock removal during cutting edge formation.
Uniform shape facilitates cutting edge formation.

■ Standard Type

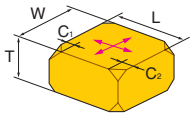
Rectangular parallel type with 6 (100) faces.

■ Economy Type

Peripheral growth faces and top are not cut. Benefits include large volume and low cost.

■ Standard Cat. No. (Standard Type)

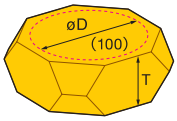
Dimensions (mm)

Shape	Cat. No.	Stock	L	W	C_1,C_2	T
 The red arrows indicate the direction for easy grinding. Crystal face orientations are all (100) except the corners.	**UP 282512**		2.8 to 3.5	2.5 to 3.5	up to 0.8	1.2±0.1
	UP 282515		2.8 to 3.5	2.5 to 3.5	up to 0.8	1.5±0.1
	UP 303015		3.0 to 3.5	3.0 to 3.5	up to 0.3	1.5±0.1
	UP 301415		3.0 to 3.5	1.4 to 1.7	up to 0.3	1.5±0.1
	UP 333014		3.3 to 4.0	3.0 to 4.0	up to 0.9	1.4±0.1
	UP 333017		3.3 to 4.0	3.0 to 4.0	up to 0.9	1.7±0.1
	UP 353514		3.5 to 4.0	3.5 to 4.0	up to 0.4	1.4±0.1
	UP 353517		3.5 to 4.0	3.5 to 4.0	up to 0.4	1.7±0.1
	UP 351717		3.5 to 4.0	1.7 to 2.0	up to 0.4	1.7±0.1

*1 Sizes other than those indicated above can be ordered. Blank: Made-to-order item
*2 These products may have fine impurities, chipping, etc. within Sumitomo's prescribed range.

■ Standard Cat. No. (Economy Type)

Dimensions (mm)

Shape	Cat. No.	Stock	øD Minimum guaranteed dimensions	T
	**UP 2010**		2.0	1.0
	UP 2012			1.2
	UP 2510		2.5	1.0
	UP 2512			1.2
	UP 2515			1.5
	UP 3010		3.0	1.0
	UP 3012			1.2
	UP 3015			1.5
	UP 3510		3.5	1.0
	UP 3512			1.2
	UP 3515			1.5
	UP 4010		4.0	1.0
	UP 4012			1.2
	UP 4015			1.5
	UP 4020			2.0
	UP 4510		4.5	1.0
	UP 4512			1.2
	UP 4515			1.5
	UP 4520			2.0
	UP 5010		5.0	1.0
	UP 5012			1.2
	UP 5015			1.5
	UP 5020			2.0

*1 Sizes other than those indicated above can be ordered. Blank: Made-to-order item
*2 Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present in the minimum guaranteed dimensions of these products.
*3 Impurities, chipping, etc. outside the inspection range may be present outside the minimum guaranteed dimensions of these products.
*4 Some products have ground top surfaces.

● Cutting Tools Using SUMICRYSTAL UP

Wiper Insert for High-Efficiency Cutter for Aluminum Alloy RF Type →M46



* This product was jointly developed with A.L.M.T. Corp.

SUMICRYSTAL SC10 (Wiper Insert)

- SUMICRYSTAL, a single-crystal diamond produced with SEH's original super-high pressure technology, is used for the cutting edge.
- Edge sharpness is retained better than sintered diamonds, greatly reducing burr formation.



SUMICRYSTAL (Single-Crystal Diamond) Surface machined with SC10 wiper insert



Surface machined with SUMIDIA (Sintered Diamond) wiper insert

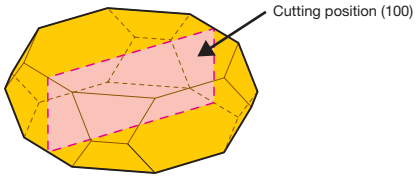
■ General Features

SUMICRYSTAL UP Half Cut products are materials for holders consisting of the UP Economy type material cut in half along the (100) or (110) faces.

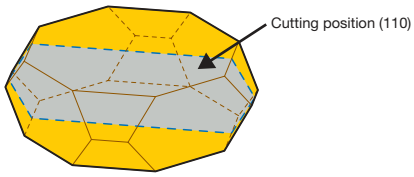
■ Features

(1) Grinding during tool production minimizes the volume removed, reducing machining loss.
(2) Similar shape to the completed tool, reducing material costs.
(3) The cut surface is a smooth laser surface.

■ Type cut along (100) face

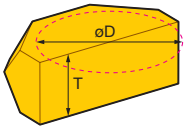


■ Type cut along (110) face



■ Standard Cat. No. (Type Cut Along (100) Face)

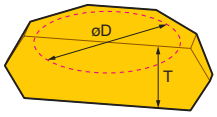
Dimensions (mm)

Shape	Cat. No.	Stock	øD Minimum guaranteed dimensions	T
	UP 2010 (100) 1/2		2.0	1.0
	UP 2012 (100) 1/2			1.2
	UP 2510 (100) 1/2		2.5	1.0
	UP 2512 (100) 1/2			1.2
	UP 2515 (100) 1/2			1.5
	UP 3010 (100) 1/2		3.0	1.0
	UP 3012 (100) 1/2			1.2
	UP 3015 (100) 1/2			1.5
	UP 3510 (100) 1/2		3.5	1.0
	UP 3512 (100) 1/2			1.2
	UP 3515 (100) 1/2			1.5
	UP 4010 (100) 1/2		4.0	1.0
	UP 4012 (100) 1/2			1.2
	UP 4015 (100) 1/2			1.5
	UP 4020 (100) 1/2			2.0
	UP 4510 (100) 1/2		4.5	1.0
	UP 4512 (100) 1/2			1.2
	UP 4515 (100) 1/2			1.5
	UP 4520 (100) 1/2			2.0
	UP 5010 (100) 1/2		5.0	1.0
	UP 5012 (100) 1/2			1.2
	UP 5015 (100) 1/2			1.5
	UP 5020 (100) 1/2			2.0

*1 Sizes other than those indicated above can be ordered. Blank: Made-to-order item
*2 Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present in the minimum guaranteed dimensions of these products.
*3 Impurities, chipping, etc. outside the inspection range may be present outside the minimum guaranteed dimensions of these products.
*4 Some products have ground top surfaces.

■ Standard Cat. No. (Type Cut Along (110) Face)

Dimensions (mm)

Shape	Cat. No.	Stock	øD Minimum guaranteed dimensions	T
	UP 2010 (110) 1/2		2.0	1.0
	UP 2012 (110) 1/2			1.2
	UP 2510 (110) 1/2		2.5	1.0
	UP 2512 (110) 1/2			1.2
	UP 2515 (110) 1/2			1.5
	UP 3010 (110) 1/2		3.0	1.0
	UP 3012 (110) 1/2			1.2
	UP 3015 (110) 1/2			1.5
	UP 3510 (110) 1/2		3.5	1.0
	UP 3512 (110) 1/2			1.2
	UP 3515 (110) 1/2			1.5
	UP 4010 (110) 1/2		4.0	1.0
	UP 4012 (110) 1/2			1.2
	UP 4015 (110) 1/2			1.5
	UP 4020 (110) 1/2			2.0
	UP 4510 (110) 1/2		4.5	1.0
	UP 4512 (110) 1/2			1.2
	UP 4515 (110) 1/2			1.5
	UP 4520 (110) 1/2			2.0
	UP 5010 (110) 1/2		5.0	1.0
	UP 5012 (110) 1/2			1.2
	UP 5015 (110) 1/2			1.5
	UP 5020 (110) 1/2			2.0

*1 Sizes other than those indicated above can be ordered. Blank: Made-to-order item
*2 Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present in the minimum guaranteed dimensions of these products.
*3 Impurities, chipping, etc. outside the inspection range may be present outside the minimum guaranteed dimensions of these products.
*4 Some products have ground top surfaces.

UPT



■ General Features

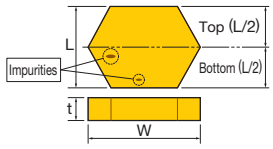
SUMICRYSTAL UPT is a material for holders with a 2-point surface ((110) face) as the main surface.

■ Features

(1) 2-point surface ((110) face) enables use for the same applications as with holders using conventional natural diamonds.
(2) Distinctive shape minimizes the volume removed to make the cutting edge, enabling efficient machining.

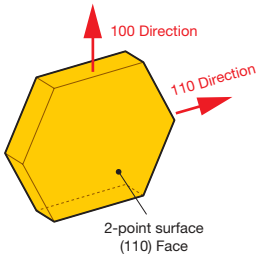
■ Standard Items

Dimensions (mm)

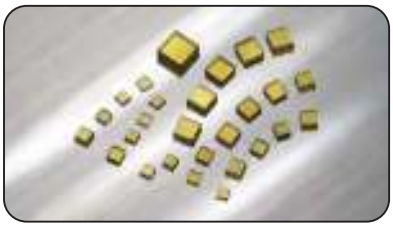
Shape	Cat. No.	Stock	W	L	T
	**UPT 3010**		3.0	2.5	$1.0^{\pm 0.1}$
	UPT 3012				$1.2^{\pm 0.1}$
	UPT 4010		4.0	3.0	$1.0^{\pm 0.1}$
	UPT 4012				$1.2^{\pm 0.1}$

*1 Sizes other than those indicated above can be ordered. Blank: Made-to-order item
*2 Fine impurities, chipping, etc. within Sumitomo's prescribed range may be present at the top (1/2).
*3 Impurities, chipping, etc. outside the inspection range may be present at the bottom (L/2).

■ UPT Crystal Orientation



CD



■ General Features

SUMICRYSTAL CD has optimized crystal orientation and shape as a material for wire drawing dies. Realizing excellent performance through high quality and stability.

■ Features

(1) High quality with very low variance.
High-quality crystal with minimal impurities, chipping and distortion is used to achieve high, stable wear resistance. It also eliminates the need for inspection and selection of raw stones required for natural diamond.

(2) High fracture strength
Resistant to fracture and cracking during wire drawing.

(3) Accurate crystal orientation
(111) is used on the top and bottom surface, limiting crystal misorientation, which causes variance in tool life, to within 1°.

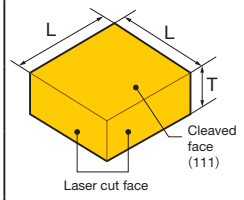
(4) No grinding needed for top and bottom surface
The top and bottom surface are cleaved to form parallel surfaces, eliminating the need for grinding of the top and bottom surface.

■ Standard Type

The outside is machined by laser, achieving a consistent shape for easy setting. Mounting pressure is applied evenly, ensuring sufficient strength even for small volume. Ideal for applications with limited dimensions, such as nozzles and wire guides.

■ Standard Items

Dimensions (mm)

Shape	Cat. No.	Stock	L	T
	**CD 1006(111)**		$1.0^{\pm0.1}$	$0.6^{\pm0.1}$
	CD 1008(111)		$1.0^{\pm0.1}$	$0.8^{\pm0.1}$
	CD 1210(111)		$1.2^{\pm0.1}$	$1.0^{\pm0.1}$
	CD 1411(111)		$1.4^{\pm0.1}$	$1.1^{\pm0.1}$
	CD 1512(111)		$1.5^{\pm0.1}$	$1.2^{\pm0.1}$
	CD 1814(111)		$1.8^{\pm0.1}$	$1.4^{\pm0.1}$
	CD 2016(111)		$2.0^{\pm0.1}$	$1.6^{\pm0.1}$
	CD 2318(111)		$2.3^{\pm0.1}$	$1.8^{\pm0.1}$
	CD 2520(111)		$2.5^{\pm0.1}$	$2.0^{\pm0.1}$

Blank: Made-to-order item

*1 Sizes other than those indicated above can be ordered.
*2 These products may have fine impurities, chipping, etc. within Sumitomo's prescribed range.

MEMO

Parts, Adapters & Holders N

N1 to N34



Parts

Screws N2
Eccentric Pins N4
Lever Pins and Shims N5
Shims/ Clamps / Rings / N7
Shim Pins / Nuts / Drawing Pins / Wrenches N8
Optional Hardware: Shims / Screws / Pins N10

ADAPTERS & HOLDERS

Holder and Collet Highlights N11
Adapters & Holders: Milling Chucks. N12
ER Collet Chucks N14
Straight Shank Synchro Chucks N15
ER Collets -Inch & Metric N16
GB Collets N17
Shrink Fit System N18
Endmill Holders N23
Shellmill Holders. N25

Hardware

ER Collet Nut N27
Sealing Discs N28
Drive Keys and Locking Screws N30
Wrenches. N32
Accessories. N33

Stock Markings and Symbols

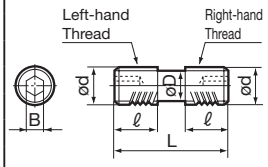
●: Standard stocked item
★: Worldwide Warehouse Item
▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).

Blank: Made-to-order item
— mark: Not available

Screws

■ Screws

Double Screw



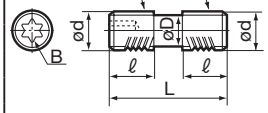
*: Wrench hole on the left-hand thread side only.

	Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
*	WB4-8	●	M4	0.7	7.5	3	3.0	2	—
	WB5-10	●	M5	0.8	10	4	3.8	2.5	—
	WB5-12	●	M5	0.8	12	5	3.8	2.5	—
	WB6-10	●	M6	1.0	10	3.5	4.5	3	—
	WB6-13	●	M6	1.0	13	5	4.5	3	—
	WB6-16	●	M6	1.0	16	6	4.5	3	—
	WB6-20	●	M6	1.0	20	8.5	4.5	3	—
	WB6-30	●	M6	1.0	30	12	4.5	3	—
	WB6E-13	●	M6	1.0	13	5	4.5	2.78	—
	WB8-20	●	M8	1.25	20	8.5	6.2	4	—
	WB8-24	●	M8	1.25	24	8.5	6.2	4	—
	WB8-30	●	M8	1.25	30	11.5	6.2	4	—
	WB8F-20	●	M8	1.0	20	8.5	6.2	4	—
	WB8F-30	●	M8	1.0	30	11.5	6.2	4	—
	WB10-19	●	M10	1.5	19	8	7.9	5	—
	WB10-26	●	M10	1.5	26	11	7.9	5	—
	WB10-35	●	M10	1.5	35	13	7.9	5	—

Double Screw (Single Torx)

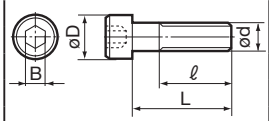
Part number suffix: T indicates right-hand thread, TL indicates left-hand thread

Part number suffix: T indicates left-hand thread, TL indicates right-hand thread



	Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
	WB6-13T	●	M6	1.0	13	5	4.5	T20	—
	WB6-16T	●	M6	1.0	16	6	4.5	T20	—
	WB6-20T	●	M6	1.0	20	8.5	4.5	T20	—
	WB6-20TL	●	M6	1.0	20	8.5	4.5	T20	—
	WB7-15T	●	M7	1.0	15	5.5	5	T25	—
	WB7-20T	●	M7	1.0	20	8.5	5	T25	—
	WB7F-15T	●	M7	0.75	15	5.5	5	T25	—
	WB7F-20TL	●	M7	0.75	20	8.5	5.5	T25	—
	WB8-22T	●	M8	1.25	22	8.5	6.2	T27	—
	WB8-22TL	●	M8	1.25	22	8.5	6.2	T27	—
	WB8-30T	●	M8	1.25	30	11.5	6.2	T27	—
	WB8-30TL		M8	1.25	30	11.5	6.2	T27	—
	WB8R-16T	●	M8	1.25	14	5.5	6.2	T27	—
	WB8L-16T	●	M8	1.25	14	5.5	6.2	T27	—

Cap Screw (Hexagonal Hole)



Torx Hole Type

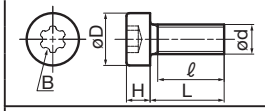


*With Torx Hole

	Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
	BX0304	●	M3	0.5	4	Full	5.5	2.5	—
	BX0308	●	M3	0.5	8	Full	5.5	2.5	—
	BX0315	●	M3	0.5	15	Full	5.5	2.5	—
	BX0320	●	M3	0.5	20	Full	5.5	2.5	—
	BX0408	●	M4	0.7	8	Full	7	3	—
	BX0410	●	M4	0.7	10	Full	7	3	—
	BX0414	●	M4	0.7	14	Full	7	3	—
	BX0425	●	M4	0.7	25	20	7	3	—
	BX0508	●	M5	0.8	8	Full	8.5	4	—
	BX0510	●	M5	0.8	10	Full	8.5	4	—
	BX0512	●	M5	0.8	12	Full	8.5	4	—
	BX0515	●	M5	0.8	15	Full	8.5	4	—
	BX0520	●	M5	0.8	20	Full	8.5	4	5.0
*	BX0520T	●	M5	0.8	20	16	8.5	T20	—
	BX0610	●	M6	1.0	10	Full	10	5	—
	BX0615	●	M6	1.0	15	Full	10	5	—
	BX0620	●	M6	1.0	20	Full	10	5	—
	BX0622	●	M6	1.0	22	18	10	5	—
	BX0625	●	M6	1.0	25	18	10	5	—
	BX0820	●	M8	1.25	20	Full	13	6	—
	BX0830	●	M8	1.25	30	22	13	6	—
	BX0845	●	M8	1.25	45		13	6	
	BX0850	●	M8	1.25	50		13	6	
	BX1035	●	M10	1.5	35	26	16	8	—
	BX1060	●	M10	1.5	60		16	8	
	BX1230	●	M12	1.75	30	Full	18	10	—
	BX1260	●	M12	1.75	60		18	10	
	BX1265	●	M12	1.75	66		18	10	
	BX1660	●	M16	2.0	60		24	14	
	BX2065	●	M20	2.5	65		30	17	
	EHBX0512	●	M5	0.8	12	10.5	8	4	—
*	FADR	●	M7	1.0	10	7	10.5	T25	—

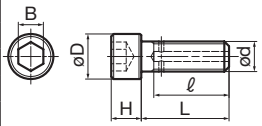
■ Screws

Cap Screw (Torx Plus)



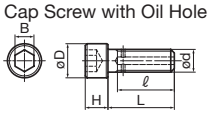
Cat. No.	Stock	d	Pitch	L	ℓ	D	H	B	N·m
BXA0310IP	●	M3	0.5	7.5	Full	5.3	2.4	10IP	2.0

Cap Screw with Oil Hole



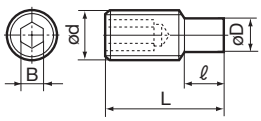
Cat. No.	Stock	d	Pitch	L	ℓ	D	H	B	N·m
BXH0825-D13	●	M8	1.25	25	Full	13	8	6	—
BXH1030-D16	●	M10	1.5	30	Full	16	10	8	—
BXH1235-D18	●	M12	1.75	35	Full	18	12	10	—

Cap Screw with Oil Hole



Cat. No.	Stock	d	Pitch	L	ℓ	D	H1	H2	B	N·m
BXH1235-D33	●	M12	1.75	35	Full	33	10	2	10	—
BXH1635-D40	●	M16	2.0	35	30	40	10	—	14	—
BXH2036-D50	●	M20	2.5	36	29	50	14	4	17	—

Set Screw (Hexagonal Hole)



Torx Hole Type

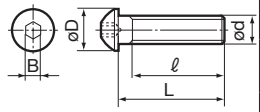


"T" after the part number indicates "Torx hole"

Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
BTD0408	●	M4	0.7	8	2	2.8	2	—
BTD0410	●	M4	0.7	10	2	2.8	2	—
BTD0412	●	M4	0.7	12	2	2.8	2	—
BTD0508	●	M5	0.8	8	2	3.5	2.5	—
BTD05F09	●	M5	0.5	9	2	4	T15	—
BTD0510	●	M5	0.8	10	3	3.5	2.5	—
BTD0518	●	M5	0.8	18	4	3.5	2.5	—
BTD0607	●	M6	1.0	7	2	4	3	—
BTD0609	●	M6	1.0	9	2	4	3	—
BTD0615	●	M6	1.0	15	5	4	3	—
BTD0618	●	M6	1.0	18	5	4	3	—
BTD0620	●	M6	1.0	20	5	4	3	—
BTD0812	●	M8	1.25	12	2	5	4	—
BTD0818	●	M8	1.25	18	6	5	4	—
BTD0820	●	M8	1.25	20	6	5	4	—
BTD0825	●	M8	1.25	25	8.5	5	4	—
BTD0830	●	M8	1.25	30	10	5	4	—
BTD0615T	●	M6	1.0	15	5	4.3	T20	—
BTD0620T	▲	M6	1.0	20	5	4	T20	—
BTD0825T	●	M8	1.25	25	8.5	5	T27	—
BTD0830T	●	M8	1.25	30	10	5	T27	—

Button Head Cap Screw

Hexagonal Hole Type



Torx Hole Type



"T" after the part number indicates "Torx hole"

★: Same wrench hole (B) on the screw end

*: Left-hand threads

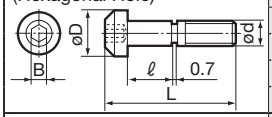
	Cat. No.	Stock	d	Pitch	L	ℓ	D	B	N·m
	BH0304	●	M3	0.5	4	Full	5.5	2	—
	BH0305	●	M3	0.5	5	Full	5.5	2	—
	BH0306	●	M3	0.5	6	Full	5.5	2	—
	FBUP3-A0-9 (equiv. BH0308)	●	M3	0.5	8	Full	5.5	2	1.0
	BH0310	●	M3	0.5	10	Full	5.5	2	—
	BH0315	●	M3	0.5	15	Full	5.5	2	—
	BH03504	●	M3.5	0.6	4	Full	7	2	—
	BH0408	●	M4	0.7	8	Full	6	2.5	—
	BH0410T	●	M4	0.7	10	8	7.5	T15	—
	BH0415	●	M4	0.7	15	Full	7.5	2.5	4.0
	BH0510	●	M5	0.8	10	Full	9.5	3	—
	BH0516	●	M5	0.8	16	14.4	9.5	3	—
	BH0615	●	M6	1.0	15	Full	10.5	4	—
	BH0616	●	M6	1.0	16	14	10.5	4	—
	BH0620	●	M6	1.0	20	Full	10.5	4	5.0
★	BH0824R	●	M8	1.25	24	20	12	4	—
★ *	BH0824L	●	M8	1.25	24	20	12	4	—
	BH0825	●	M8	1.25	25	22.5	14	5	—
★	BH0830R	●	M8	1.25	30	26	12	4	—
★ *	BH0830L	●	M8	1.25	30	26	12	4	—
	BH0832	●	M8	1.25	32	29.5	14	5	—
★	BH1030R	●	M10	1.5	30	26	14	5	—
★ *	BH1030L	●	M10	1.5	30	26	14	5	—
★	BH1036R	●	M10	1.5	36	32	14	5	—
★ *	BH1036L	●	M10	1.5	36	32	14	5	—

N·m Recommended tightening torque (N·m) ▲mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability.)

Screws

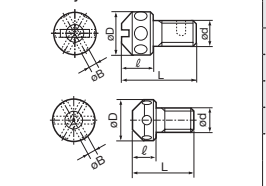
■ Screws

Special Cap Screw (Hexagonal Hole)



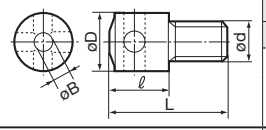
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
BHA0525	●	M5	0.8	25.5	9	8.5	3	—
BHA0625	●	M6	1.0	30	11	10.5	4	—
BHE0407	●	M4	0.7	9.5	2	5.7	2.5	1.8
BHE0510	●	M5	0.8	13	3	7.7	3	2.7

Axial Adjustment Bolt



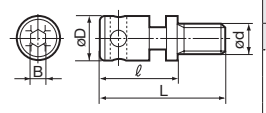
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
AJM4FT	●	M4	0.5	12	5	7.3	2	—
AJM4F	●	M4	0.5	12	5	8	2	—
AJM5F	●	M5	0.5	13	5	9	2	—
AJM6	●	M6	1.0	18	6	10	2.9	—

Axial Adjustment Bolt



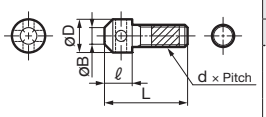
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
RFJ	●	M4	0.7	12	6	6	2	—

Adjustment Bolt



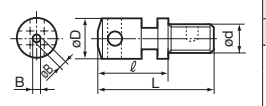
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
SRFJ	●	M4	0.7	17	10.5	6	2	—

Axial Adjustment Bolt



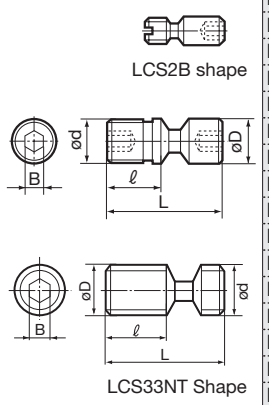
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
FMJ	●	M4	0.5	15	5	6	3	—

Adjustment Bolt



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
FMUJ	●	M4	0.7	17	10.5	6	1	—

Lever Lock Bolt

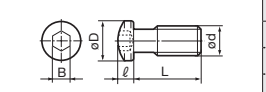


Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
LCS2B	●	M3	0.5	10	3.05	3.6	2	—
LCS3S	●	M6	1.0	15	10	6	2.5	—
LCS3	●	M6	1.0	17	10	6	2.5	—
LCS4	●	M8	1.0	21	10	8	3	—
LCS5	●	M8	1.0	25	12	8	3	—
LCS6	●	M10	1.0	27.2	14.4	9.8	4	—
LCS4CA	●	M8	1.0	17.5	10	8	3	—
LCS5CA	▲	M8	1.0	20.5	12	8	3	—
LCS8	●	M12	1.0	36	18.3	11.8	5	—
LCS10	●	M5	0.8	14.5	8.5	5	2	—
LCS12	●	M6	1.0	17	9.6	6	2.5	—
LCS16	●	M6	1.0	21	13.6	6	2.5	—
LCS20	●	M8	1.0	23.5	13.2	8	3.0	—
LCS25	●	M10	1.0	30	17.4	10	4.0	—
LCS32	●	M12	1.0	36	19.3	12	5.0	—
LCS3TE	●	M6	1.0	15.5	8.5	6	2.5	—
LCS33NT	●	M5	0.8	12	6.2	—	2	—

LCS2B shape

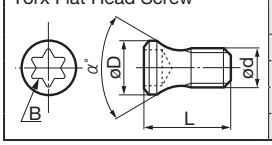
LCS33NT Shape

Fastener Bolt



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
FBH0512	●	M5	0.8	12	3.1	7.3	3	—
FBX0811	●	M8	1.25	11.1	4.9	8.5	4	—
FBX0817	●	M8	1.25	17.1	4.9	8.5	4	—

Torx Flat Head Screw

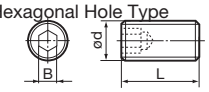


Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
BFT2045T06	●	M2	0.4	4.5	2.7	T6	60	—
BFT2506T08	●	M2.5	0.45	6	3.45	T8	60	—
BFTY02205	●	M2.2	0.45	5	3.05	T7	60	—
BFTY02206	●	M2.2	0.45	5.6	3.05	T7	60	1.0

■ Screws

Set Screw

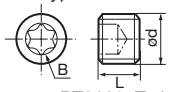
Hexagonal Hole Type



BT0507K shape



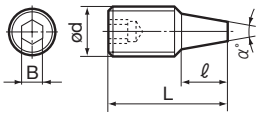
Torx Hole Type



BT06035T shape

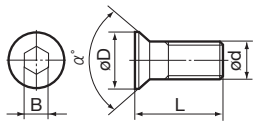
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	—	B	—	N·m
BT0306	●	M3	0.5	6	—	—	1.5	—	—
BT0310	●	M3	0.5	10	—	—	1.5	—	—
BT0404	●	M4	0.7	4	—	—	2	—	—
BT0406	●	M4	0.7	6	—	—	2	—	—
BT0408	●	M4	0.7	8	—	—	2	—	—
BT0412	●	M4	0.7	12	—	—	2	—	—
BT0506	●	M5	0.8	6	—	—	2.5	—	—
BT0507K	●	M5	0.8	7	—	—	2.5	—	—
BT0510	●	M5	0.8	10	—	—	2.5	—	—
BT0610	●	M6	1.0	10	—	—	3	—	—
BT0612	●	M6	1.0	12	—	—	3	—	—
BT0620	●	M6	1.0	20	—	—	3	—	—
BT06035T	●	M6	1.0	3.5	—	—	T15	—	—

Set Screw (Hexagonal Hole)



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	—	B	α°	N·m
BTT0407	●	M4	0.5	7	2.6	—	2	60	—
BTT0411	●	M4	0.5	11	2.6	—	2	60	—
BTT0511	●	M5	0.8	11	5	—	2	20	—
BTT0615		M6	1.0	15	6	—	2.5	20	—

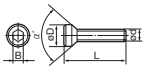
Flat Head Screw (Hexagonal Hole)



*: Left-hand threads

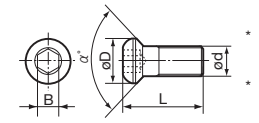
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
ST-1192	●	M8	1.25	20	13.8	14.1	70°	
CLB-1393	●	M3	0.5	7	4	5.5	90°	
ST-1394	●	M4		8.6	6.1	6.9	90°	
CLB-1394	●	M4		8.6	6.1	6.9	90°	
CLB-1695	●	M5	0.8	23.6	20	8.3	90°	
CLB-1696	●	M6	1	29	25	10	90°	
FBUP1-A0-8	●	M3	0.5	6	4.4	2	82	1.0
FBUP2-A0-8	●	M3	0.5	10	5.5	2	82	1.0
FBUP3-A0-8	●	M3.5	0.6	12	7	2	82	1.0
FBUP4-A0-8	●	M5	0.8	15	9.3	3	82	2.7
BFX0307R	●	M3	0.5	7	4	2	60	1.0
BFX0407R	●	M4	0.7	6.5	5.8	2.5	90	1.8
BFX0410R	●	M4	0.7	9.5	5.8	2.5	90	1.8
* BFX0410L	●	M4	0.7	9.5	5.8	2.5	90	1.8
BFX0508	●	M5	0.8	8	7.5	3	90	2.7
BFX0511R	●	M5	0.8	10.5	7.5	3	90	2.7
* BFX0511L	●	M5	0.8	10.5	7.5	3	90	2.7
BFX0611R	●	M6	1.0	11	9.5	3	90	2.7

Special Cap Screw (Hexagonal Hole)



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
BXF0520R	●	M5	0.8	25	8.5	4	90	7.0
BXF0616	●	M6	1.0	16	9	4	90	—

Button Head Flat Screw

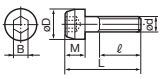


*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
* BHF0203L	●	M2	0.4	4	3	1.5	90	—
BHF0306R	●	M3	0.5	6.3	4.2	2	90	1.0
* BHF0306L	●	M3	0.5	6.3	4.2	2	90	—
BHF0308R	●	M3	0.5	8	4.2	2	90	1.0
* BHF0308L	●	M3	0.5	8	4.2	2	90	—
BHF0407	●	M4	0.7	8.5	6	3	90	—
BHF0410	●	M4	0.7	11.5	6	3	90	—
BHF0623	●	M6	1.0	23	12	4	90	7.0

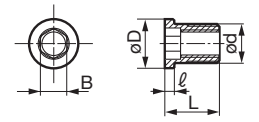
R: right-hand thread, L: left-hand thread

Cap Screw



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	M	N·m
QBX120	●	M12	1.75	54	30	22	10	14	—
QBX160	●	M16	2.0	56	30	28	14	16	—

Special Hollow Screw



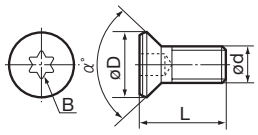
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
BW0507F	●	M5	0.5	7	1.2	6.3	3.5	—
BW0609F	●	M6	0.75	9	1.5	7.7	4	—
ST-1750		M5x0.5	M3.5x0.6	5.5	8.5	6.2		
ST-1760		M6x0.75	0.75	5.5	10	7.7		
ST-1764		M5	0.8	5.8	8	6.3		
ST-1766		M6	1	6.5	10	7.5		
ST-1768		M6	1	13.3	15.5	10.4		
ST-1770		M6	1	11	15	11.9		

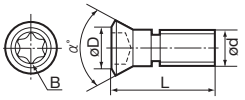
N·m Recommended Tightening Torque (N·m) ▲mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability.)

Screws / Eccentric Pins

■ Screws

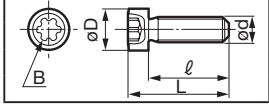
Torx Flat Head Screw





Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
ST-1150	★	M5	0.8	13.5	10	T9	90°	—
ST-1160	★	M6	1	13.5	9.5	T20	90°	—
ST-1180	★	M8	1	13.5	9.5	T25	90°	—
ST-1182	★	M8	1	13.5	9.5	T25	60°	—
ST-1225	★	M2.5	0.45	7	4	T7	55°	—
ST-1230	★	M3.5		9.5	6.5	T15	55°	—
ST-1240	★	M4	0.7	11	6.2	T15	55°	—
ST-1335	★	M3.5	0.6	12	7.2	T20	55°	—
ST-1425	★	M2.5	0.45	5.5	3.3	T7	55°	0.9
ST-1540	★	M4	0.5	14.1	7.9	T15	60°	—
BFN0206T	●	M2	0.4	5.5	3.3	T8	90	1.1
BFN0306T	●	M3	0.5	6	4.2	T10	90	—
BFN0307T	●	M3	0.5	7	4.2	T10	90	2.0
BFN0410T	●	M4	0.7	9.5	5.6	T10	90	2.0
BFN0511T	●	M5	0.8	10.5	7.3	T20	90	—
BFN0611T	●	M6	1.0	11	9.3	T25	90	—
BFS0205T	●	M2	0.4	5.5	3	T8	60	1.1
BFTX016033	●	M1.6	0.35	3.3	2.6	T6	60	0.2
BFTX02507	●	M2.5	0.45	6.5	3.45	T8	60	—
BFTX02508	●	M2.5	0.45	7.5	3.45	T8	60	—
BFTX03508	●	M3.5	0.6	8	5.1	T10	52	2.0
BFTX03584	●	M3.5	0.6	7.4	5.2	T15	60	3.0
BFTX03588	●	M3.5	0.6	8.8	5.2	T15	60	3.4
BFTX0408	●	M4	0.7	8	5.5	T15	60	—
BFTX0414	●	M4	0.7	14.5	5.5	T15	60	3.0
BFTX01604N	●	M1.6	0.35	4.2	2.4	T6	60	0.2
BFTX0203N	●	M2	0.4	3	2.7	T6	60	0.5
BFTX0204N	●	M2	0.4	4.3	2.7	T6	60	0.5
BFTX02205N	●	M2.2	0.45	4.5	3	T6	60	0.5
BFTX02505N	●	M2.5	0.45	4.5	3.45	T8	60	1.1
BFTX02506N	●	M2.5	0.45	5.5	3.45	T8	60	1.5
BFTX0305N	●	M3	0.5	5.3	4.2	T10	60	2.0
BFTX0306N	●	M3	0.5	5.8	4.2	T10	60	2.0
BFTX0307N	●	M3	0.5	6.5	4.2	T10	60	2.0
BFTX03085N	●	M3	0.5	8.5	5.4	T10	60	—
BFTX0309N	●	M3	0.5	9	4.2	T10	60	—
BFTX0312N	●	M3	0.5	12	5.4	T10	60	—
BFTX03509N	●	M3.5	0.6	8.5	4.9	T10	60	—
BFTX0406N	●	M4	0.7	6	5.6	T15	60	—
BFTX0407N	●	M4	0.7	7	5.6	T15	60	3.0
BFTX0409N	●	M4	0.7	9	5.6	T15	60	3.4
BFTX0412N	●	M4	0.7	12	5.5	T15	60	3.0
BFTX0509N	●	M5	0.8	9	7	T20	60	5.0
BFTX0511N	●	M5	0.8	11.5	7	T20	60	5.0
BFTX0513N	●	M5	0.8	13	7	T20	60	5.0
BFTX0515N	●	M5	0.8	15	7	T20	60	—
BFTX0615N	●	M6	1.0	15	9	T25	60	5.0
BFTX0619N	●	M6	1.0	19	9.3	T25	60	5.0
BFTX0203A	●	M2	0.4	3	2.7	T6	90	0.5
BFTX0204A	●	M2	0.4	4.3	2.7	T6	90	0.5
BFTX0305A	●	M3	0.5	5.3	4.3	T10	90	—
BFTX0306A	●	M3	0.5	5.8	4.3	T10	90	2.0
BFTX0307A	●	M3	0.5	6.8	4.3	T10	90	2.0
BFTX0407A	●	M4	0.7	7.3	5.6	T15	90	3.4
BFTX0410A	●	M4	0.7	10.3	5.6	T15	90	3.4
BFTX0509A	●	M5	0.8	9.3	6.9	T20	90	5.0
BFTX0204NS	●	M2	0.4	4.4	3.2	T1.8	82	0.7
BFTX0205NS	●	M2	0.4	5.5	3.2	T1.8	90	0.7
BFTX02506NS	●	M2.5	0.45	6.8	3.6	T2.2	90	1.4
BFTX0307NS	●	M3	0.5	7.8	4.2	T2.9	90	3
BFTX02206NT	●	M2.2	0.45	6	3.2	T1.8	60	0.7
BFTX02507NT	●	M2.5	0.45	7	3.6	T2.2	60	1.4
BFTX0408NT	●	M4	0.7	8	5.8	T3.6	60	5
BFTX0410NT	●	M4	0.7	10	5.8	T3.6	60	5
BFTX02508NV	●	M2.5	0.45	7.5	3.45	T8	60	1.5

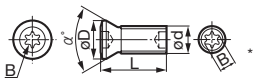
Special Cap Screw BXD Type



Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
BFF2506T08	●	M2.5	0.8	7.5	6	3.45	T8	—
BFF3505T10	●	M3.5	0.6	6.6	5	5	T10	—
BFF4510T15	●	M4.5	0.75	12.1	10.5	5.9	T15	—

■ Screws

Torx Screw (Torx Double Ended)

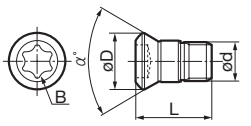


*: Left-hand threads

Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
BFTX0410T8R	●	M4	0.7	9.6	5.6	T8	60	1.1
BFTX0410T8L	●							1.1

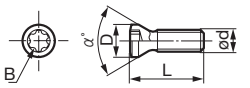
R: right-hand thread, L: left-hand thread

Precision Screw (Torx) <For Ballnose Endmills>



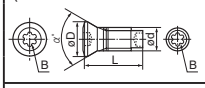
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
BFTG0408F	●	M4	0.5	7.5	5.7	T15	61	3.4
BFTG0409F	●	M4	0.5	8.4	6.15	T15	61	3.4
BFTG0513F	●	M5	0.5	13	6.8	T20	61	5.0
BFTG0617F	●	M6	0.75	16.5	8	T25	61	7.5
BFTG0621F	●	M6	0.75	21	9.5	T25	61	7.5
BFTG0825F	●	M8	0.75	24.5	12	T25	61	7.5

Torx Screw



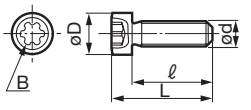
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
BFTX01804IP	●	M1.8	0.35	3.7	2.45	6IP	60	—
BFTX02505IP	●	M2.5	0.45	4.5	3.45	8IP	60	—
BFTX02506IP	●	M2.5	0.45	5.5	3.45	8IP	60	—
BFTX0305 IP	●	M3	0.5	5.3	3.8	8IP	60	2.0
BFTX0306 IP	●	M3	0.5	6	3.8	8IP	60	2.0
BFTX0307 IP	●	M3	0.5	7	4.3	10IP	55	2.0
BFTX0308IP	●	M3	0.5	8	3.8	8IP	60	—
BFTX03510IP08	●	M3.5	0.6	10	5.3	8IP	60	—
BFTX03510IP15	●	M3.5	0.6	10	5.3	15IP	60	—
BFTX03512 IP	●	M3.5	0.6	11.5	5.3	15IP	60	3.0
BFTX03584IP	●	M3.5	0.6	7.4	5.2	15IP	60	—
BFTX0407 IP	●	M4	0.7	8	5.6	15IP	60	3.0
BFTX0409 IP	●	M4	0.7	9	5.6	15IP	60	3.0
BFTX0412 IP	●	M4	0.7	12	5.5	15IP	60	3.0
BFTX0418IP	●	M4	0.7	18	5.5	15IP	60	—
BFTX04513IP20	●	M4.5	0.75	13.1	6.8	20IP	60	—
BFTX0511IP	●	M5	0.8	11.5	7	20IP	60	—
BFTX0513IP	●	M5	0.8	13	7	20IP	60	—
BFTX0615IP	●	M6	1.0	15	9	25IP	60	—

Flat Screw (Torx Plus Double Ended)



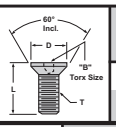
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	D	B	α°	N·m
BFTX0410NSW	●	M4	0.7	10	5.8	2.2	90	1.4
BFTX0410NTW	●	M4	0.7	10	5.85	2.2	60	1.4
BFTX0412NTW	●	M4	0.7	12	5.85	2.2	60	1.4

Cap Screw (Torx Plus)



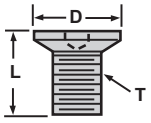
Cat. No.	Stock	Dimensions (mm) d	Pitch	L	ℓ	D	B	N·m
BXD02208 IP	●	M2.2	0.45	7.5	5.7	3.5	8 IP	—
BXD02509 IP	●	M2.5	0.45	9	7	4.1	10 IP	—
BXD03011 IP	●	M3	0.5	10.5	8	4.9	15 IP	—
BXD03512 IP	●	M3.5	0.6	11.5	8.8	5.5	15 IP	—
BXD04014 IP	●	M4	0.7	12.5	9.5	6	20 IP	—
BXD04515 IP	●	M4.5	0.75	14.3	10.8	6.8	25 IP	—

Torx Insert Screws



Sumitomo Cat. No.	D	T	L	B
ST21.5	.130	M2.5x.45	.217	T-8
ST32.5	.213	M4x.7	.315	T-15

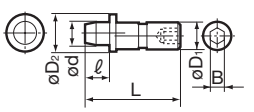
Shim Screws



Sumitomo Cat. No.	Insert I.C.	D	L	H	T
S34	.375	.24	.31	.078	10-32
S46	.500	.30	.50	.094	1/4-28
S58	.625	.40	.62	.125	5/16-24
S68	.750	.46	.62	.140	3/8-24

■ Eccentric Pins

For Boring Bar



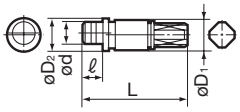
Cat. No.	Stock	Dimensions (mm) d	D1	D2	L	ℓ	B	N·m
CPB43	●	4.5	5.5	7	19	5	3	—
CPB44T	●	4.5	5.5	7	22	5	3	—
CPB45T	●	4.5	5.5	7	27	5	3	—
CPB43S	●	4.5	5.5	7	16	5	3	—
CPB32C	●	3.3	4.1	5.5	14	3.4	2.5	—
CPB32	●	3.4	4.1	5.5	14	3.4	2.5	—
CPB33	●	3.4	4.1	5.5	17	3.4	2.5	—
CPB34	●	3.4	4.1	5.5	14	5	2.5	—
CPB35	●	3.4	4.1	5.5	17	5	2.5	—
CPB42	●	4.5	5.5	7	14	5	3	—
CPB45	●	4.5	5.5	7	23	5	3	—
CPB64	●	6.8	8.2	10.5	24	6.6	4	—

N·m Recommended Tightening Torque (N·m)

Eccentric Pins, Lever Pins and Shims

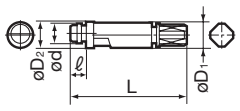
■ Eccentric Pins

For 30 Type Holders



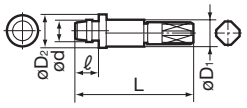
Cat. No.	Stock	d	D1	D2	L	ℓ	—	N·m
P432U	●	5.025	7	7.5	21	4.9	—	—
P433U	●	5.025	7	7.5	24	4.9	—	—
P434U	●	5.025	7	7.5	30	4.9	—	—
P221US	●	2.11	3.5	4	18	3.3	—	—
P321US	●	3.635	5	5.5	18	3.3	—	—
P322US	●	3.635	5	5.5	21	3.3	—	—
P323US	●	3.635	5	5.5	24	3.3	—	—
P332US	●	3.635	5	5.5	21	4.9	—	—
P333US	●	3.635	5	5.5	24	4.9	—	—
P334US	●	3.635	5	5.5	30	4.9	—	—

For 30 Type Holders



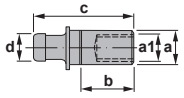
Cat. No.	Stock	d	D1	D2	L	ℓ	—	N·m
P433W	●	5.025	7	7.8	24	4.9	—	—
P434W	●	5.025	7	7.8	30	4.9	—	—
P323WS	●	3.635	5	5.8	24	3.3	—	—
P333WS	●	3.635	5	5.8	24	4.9	—	—
P334WS	●	3.635	5	5.8	30	4.9	—	—

For 60 Type Holders



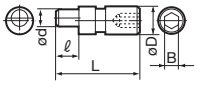
Cat. No.	Stock	d	D1	D2	L	ℓ	—	N·m
CPZ322	●	3.4	4.1	4.9	22	3.3	—	—
CPZ332	●	3.4	4.1	5.5	23	5	—	—
CPZ333	▲	3.4	4.1	5.5	25	5	—	—
CPZ333V	●	3.4	4.1	5.5	29	5	—	—
CPZ334	●	3.4	4.1	5.5	32	5.5	—	—
CPZ334V	●	3.4	4.1	5.5	35	5	—	—
CPZ433	●	4.5	5.5	7	26	5	—	—
CPZ434	●	4.5	5.5	7	32	5	—	—
CPZ435	▲	4.5	5.5	7	39	5	—	—
CPZ645	●	6.8	8.2	10.5	39	6.6	—	—

Pins



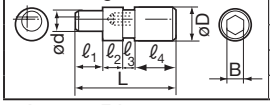
Cat. No.	Stock	a	a1	b	c	d	—	N·m
PN-1642	●	4.5	M3x0.5	7.6	13.2	3.7	—	—
PN-1661	●	6	M4x0.7	5.6	13.5	5	—	—

For Cartridge BU



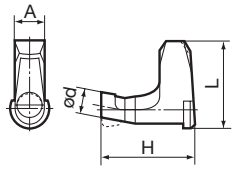
Cat. No.	Stock	d	D	D2	L	ℓ	B	N·m
CPU304C	●	3.3	5.5	—	10	3.5	3	—

For Cartridge BU

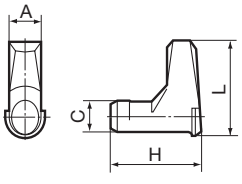


Cat. No.	Stock	d	D	L	ℓ1	ℓ2	ℓ3	ℓ4	B	N·m
CPU405	●	4.5	6.5	17	4.5	3.5	2	7	3	—
CPU405S	●	4.5	6.5	12	4.5	1.5	2	4	3	—

■ Lever Pins



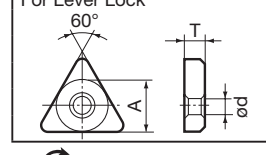
Cat. No.	Stock	A	H	L	d	—	—	N·m
LCL06	●	2.5	6.28	7	2	—	—	—
LCL09	●	3.4	9.3	10.75	3	—	—	—
LCL10	●	3.4	11.8	10.8	3	—	—	—
LCL12	●	3.7	13.4	12.9	3.5	—	—	—
LCL16	●	4.6	17.6	18.4	4.4	—	—	—
LCL20	●	6	18.9	20.4	5.6	—	—	—



Cat. No.	Stock	A	H	L	C	—	—	N·m
LCL3S	●	3.7	10.6	10	3.6	—	—	—
LCL4S	●	4.7	14	14.55	4.4	—	—	—
LCL3	●	3.7	12	10	3.6	—	—	—
LCL4	●	4.7	14	14.55	4.7	—	—	—
LCL5	●	6	17	17.1	6	—	—	—
LCL6	●	7.5	21	20.5	7.5	—	—	—
LCL8	●	8.6	25.4	25.4	8.6	—	—	—
LCL33NT	●	3.2	9.4	10	3.2	—	—	—

■ Shims

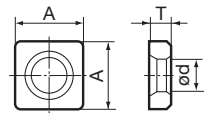
For Lever Lock



Cat. No.	Stock	A	T	d	—	—	—	N·m
LST317	●	9.5	2.7	5.2	—	—	—	—
LST42	●	12.65	3.18	6.9	—	—	—	—

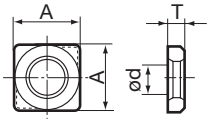
■ Shims

For Lever Lock



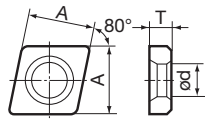
Cat. No.	Stock	A	T	d	—	—	—	N·m
LSS32	●	9.48	3.18	5	—	—	—	—
LSS42	●	12.65	3.18	6.9	—	—	—	—
LSS53	●	15.85	4.76	7.9	—	—	—	—
LSS63	●	19	4.76	10	—	—	—	—
LSS84	●	25.35	6.35	13.2	—	—	—	—

For Lever Lock



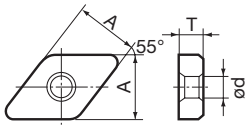
Cat. No.	Stock	A	T	d	—	—	—	N·m
LSS42B	●	12.65	3.18	6.9	—	—	—	—

For Lever Lock



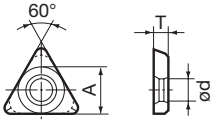
Cat. No.	Stock	A	T	d	—	—	—	N·m
LSC317	●	9.5	2.7	5.2	—	—	—	—
LSC32	●	9.48	3.18	5	—	—	—	—
LSC42	●	12.65	3.18	6.9	—	—	—	—
LSC53	●	15.85	4.76	7.9	—	—	—	—
LSC63	●	19	4.76	10	—	—	—	—

For Lever Lock



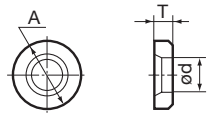
Cat. No.	Stock	A	T	d	—	—	—	N·m
LSD317	●	9.5	2.7	5.2	—	—	—	—
LSD42	●	12.65	3.18	6.9	—	—	—	—

For Lever Lock



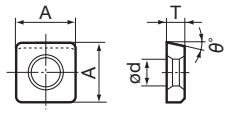
Cat. No.	Stock	A	T	d	—	—	—	N·m
LST317CA	●	9.33	2.7	5	—	—	—	—
LST42CA	●	12.5	3.2	6.7	—	—	—	—

For Lever Lock



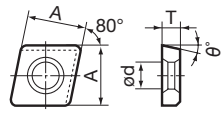
Cat. No.	Stock	A	T	d	—	—	—	N·m
LSR817	●	8.4	2.7	5.2	—	—	—	—
LSR10	●	8.4	3.18	4.7	—	—	—	—
LSR12	●	10	3.18	4.7	—	—	—	—
LSR16	●	13.5	4.76	6.3	—	—	—	—
LSR20	●	17.2	4.76	7.9	—	—	—	—
LSR25	●	22	6.35	9.5	—	—	—	—
LSR32	●	28	6.35	12.7	—	—	—	—

For Lever Lock



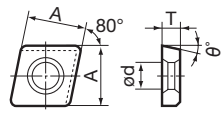
Cat. No.	Stock	A	T	d	—	—	θ°	N·m
LSS42CA	●	12.5	3.2	6.7	—	—	8	—
LSS53CA	●	15.68	4.8	7.7	—	—	10	—

For Lever Lock



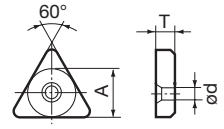
Cat. No.	Stock	A	T	d	—	—	θ°	N·m
LSC53CA	●	15.68	4.8	7.7	—	—	10	—

For Lever Lock



Cat. No.	Stock	A	T	d	—	—	θ°	N·m
LSC42B	●	12.65	3.18	6.9	—	—	8	—

For 20 & 40 Type Holders



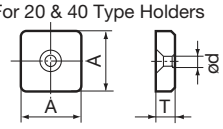
Cat. No.	Stock	A	T	d	—	—	—	N·m
STND323	●	9.3	3.18	3.4	—	—	—	—
STND433	●	12.5	4.76	3.4	—	—	—	—

N·m Recommended tightening torque (N·m) ▲mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability.)

Shims

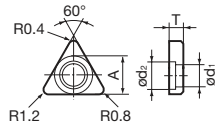
■ Shims

For 20 & 40 Type Holders



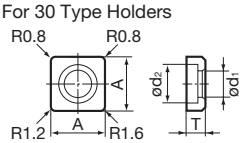
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
SSND423	●	12.5	3.18	3.4	—	—	—	—
SSND433	●	12.5	4.76	3.4	—	—	—	—
SSND533	●	15.65	4.76	3.4	—	—	—	—

For 30 Type Holders



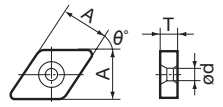
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
EST32	●	9.53	3.18	5.5	5.9	—	—	—
EST43	●	12.7	4.76	7.5	7.9	—	—	—

For 30 Type Holders



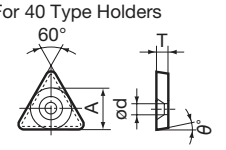
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
ESS42	●	12.7	3.18	7.5	7.9	—	—	—

For 40 Type Holders



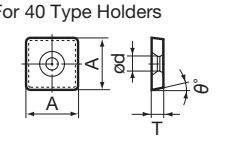
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
SCND433	●	12.65	4.76	3.4	—	—	80	—
SDND433	●	12.65	4.76	3.4	—	—	55	—
SEND423	●	12.5	3.18	3.4	—	—	75	—

For 40 Type Holders



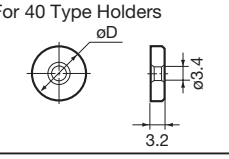
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
STPD322	●	8.4	3.18	3.4	—	—	6	—
STPD422	●	11	3.18	3.4	—	—	6	—
STPL42	●	11	3.18	3.4	—	—	6	—

For 40 Type Holders



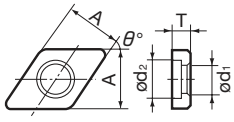
Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	θ°	N·m
SSPD422	●	11.6	3.18	3.4	—	—	6	—
SSPD522	●	14.1	3.18	3.4	—	—	6	—

For 40 Type Holders



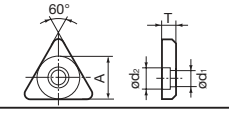
Cat. No.	Stock	Dimensions (mm) D	—	—	—	—	—	N·m
SRND42	●	12.7	—	—	—	—	—	—

For 60 Type Holders



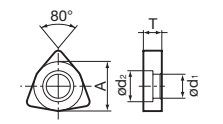
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	θ°	N·m
SVW322	●	9.5	3.18	4.7	6.5	—	35	—
SFW423	●	12.65	3.18	6.2	8	—	50	—
SFW433	●	12.65	4.76	6.2	8	—	50	—
SDW323	●	9.5	3.18	4.7	6.5	—	55	—
SDW423	●	12.65	3.18	6.2	8	—	55	—
SCW323	●	9.5	3.18	4.8	6.5	—	80	—
SCW423	●	12.65	3.18	6.2	8	—	80	—
SCW635	●	19	4.76	9	11.5	—	80	—

For M Type Holders
For Boring Bar



Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
STW323	●	9.5	3.18	4.7	6.5	—	—	—
STW434	●	12.65	4.76	6.2	8	—	—	—

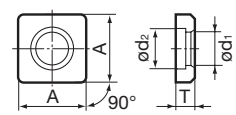
For M Type Holders



Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
SWW433	●	12.65	4.76	6.2	8	—	—	—

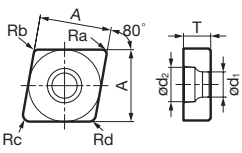
■ Shims

For Boring Bar



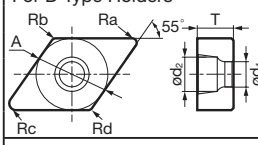
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	—	N·m
SSW423	●	12.65	3.18	6.2	8	—	—	—
SSW635	●	19	4.76	9	11.5	—	—	—

For D Type Holders



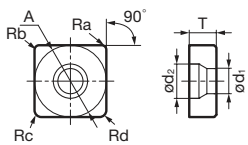
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
CNS1204	●	12.57	4.76	4.4	6	0.8	0.8	1.2	1.2	—
CNS1606	●	15.75	4.76	5.5	7.5	1.2	1.2	1.2	1.2	—
CNS1906	●	18.70	6.35	5.5	7.5	1.6	1.6	1.2	1.2	—
CNS2509	●	25.27	6.35	6.6	9.5	2.4	2.4	2.4	2.4	—
CNS1204-R24	●	12.57	4.76	4.4	6	2	0.8	2.4	1.2	—

For D Type Holders



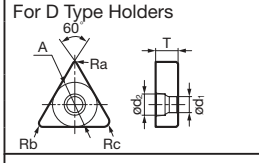
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
DNS1504	●	12.57	6.35	4.4	6	0.8	0.8	1.2	0.8	—
DNS1506	●	12.57	4.76	4.4	6	0.8	0.8	1.2	0.8	—
DNS1504-R24	●	12.57	6.35	4.4	6	2	0.8	2.4	0.8	—

For D Type Holders



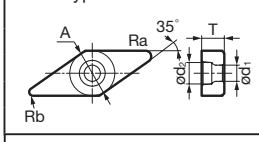
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
SNS1204	●	12.57	4.76	4.4	6	0.8	0.8	1.2	1.2	—
SNS1506	●	15.75	4.76	5.5	7.5	1.2	1.2	1.2	1.2	—
SNS1906	●	18.92	6.35	5.5	7.5	1.2	1.2	1.2	1.2	—
SNS2507	●	25.27	7.93	6.6	9.5	2.4	2.4	2.4	2.4	—
SNS2509	●	25.27	6.35	6.6	9.5	2.4	2.4	2.4	2.4	—

For D Type Holders



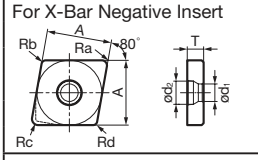
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	N·m
TNS1604	●	9.45	4.76	3.4	4.5	0.4	0.8	1.2	—
TNS1604-R24	●	9.45	4.76	3.4	4.5	1.6	2	2.4	—

For D Type Holders



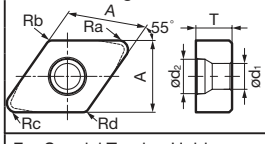
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	N·m
VNS1604	●	9.45	4.76	3.4	4.5	1.2	0.8	—

For X-Bar Negative Insert



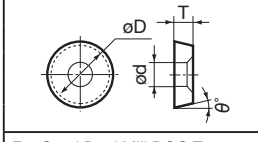
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
CNS1203B	●	12.57	3.18	3.4	4.5	1.2	0.8	1.2	0.8	—
CNS1204B	●	12.57	4.76	4.4	6	1.2	0.8	1.2	0.8	—

For X-Bar Negative Insert



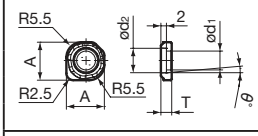
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	Ra	Rb	Rc	Rd	N·m
DNS1104B	●	9.45	4.76	3.4	4.5	1.2	0.8	1.2	0.8	—
DNS1506B	●	12.57	4.76	4.4	6	1.2	0.8	1.2	0.8	—
DNS1504B	●	12.57	6.35	4.4	6	1.2	0.8	1.2	0.8	—

For Special Turning Holder



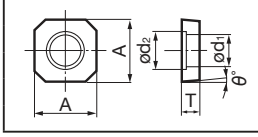
Cat. No.	Stock	Dimensions (mm) D	T	d	—	—	θ°	N·m
SRPH163	●	14	3.2	5.3	—	—	11	—
SRPH203	●	18	3.2	6.3	—	—	11	—

For Sumi Dual Mill DGC Type



Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	θ°	N·m
DGCS13R	●	13.7	3.9	6.8	8.8	—	5	—

For WaveMill WGC/WGX Type



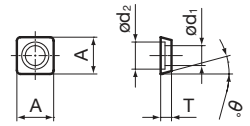
Cat. No.	Stock	Dimensions (mm) A	T	d1	d2	—	θ°	N·m
WGCS13R	●	10.7	3	5.5	7.5	—	5	—

N·m Recommended tightening torque (N·m)

Shims, Clamps, & Rings

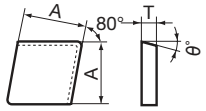
■ Shims

For WaveMill WFX Type



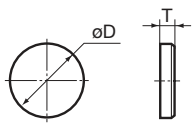
Cat. No.	Stock	Dimensions (mm) A	T	d_1	d_2	—	θ°	N·m
WFXS4R	●	10.2	3	5.5	7.5	—	15	—

For CCLC Holder



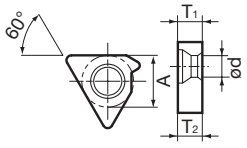
Cat. No.	Stock	Dimensions (mm) A	T	—	—	—	θ°	N·m
SCN204	●	8.7	2.04	—	—	—	7	—

For BNR Holder



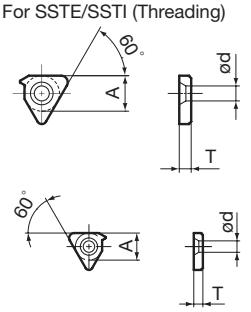
Cat. No.	Stock	Dimensions (mm) D	T	—	—	—	—	N·m
BNRS120	●	11.2	4	—	—	—	—	—

For LTER (Threading)



Cat. No.	Stock	Dimensions (mm) A	T_1	T_2	d	—	—	N·m
LSTE31-0	●	9.5	2.7	2.7	5.2	—	—	—
LSTE31-1	●	9.5	2.67	2.91	5.2	—	—	—
LSTE31-2	●	9.5	2.64	3.11	5.2	—	—	—
LSTE42-0	●	12.65	3.18	3.18	7	—	—	—
LSTE42-1	▲	12.65	3.14	3.45	7	—	—	—
LSTE42-2	▲	12.65	3.09	3.71	7	—	—	—

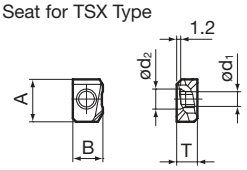
For SSTE/SSTI (Threading)



Cat. No.	Stock	Dimensions (mm) A	T	d	—	—	—	N·m
YE3	●	9.5	3.2	4	—	—	—	—
YI3	●	9.5	3.2	4	—	—	—	—

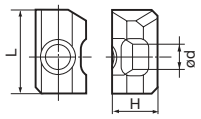
■ Clamps and Seats

Seat for TSX Type



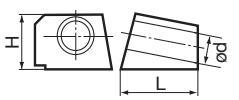
Cat. No.	Stock	Dimensions (mm) A	B	T	d_1	d_2	—	N·m
TSXS13R	●	12.7	9	6.2	4.4	6	—	—

Seat for PWS



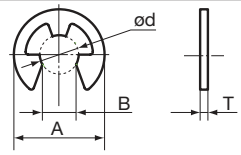
Cat. No.	Stock	Dimensions (mm) d	L	H	—	—	—	N·m
PWSS4R	●	4.6	15	8	—	—	—	—

Clamp for CPG



Cat. No.	Stock	Dimensions (mm) d	L	H	—	—	—	N·m
PTW40R	●	M8	17	12.514	—	—	—	—
PTW41L	●	M8	17	12.675	—	—	—	—
PTW41R	●	M8	17	12.675	—	—	—	—

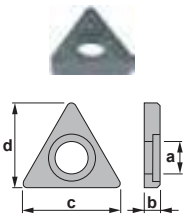
■ Rings



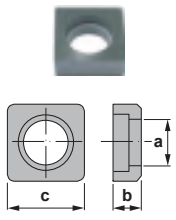
Cat. No.	Stock	Dimensions (mm) A	B	T	d	—	—	N·m
ER03	●	7	2.6	0.6	3	—	—	—
ER04	●	9	3.5	0.6	4	—	—	—
ER05	●	11	4.3	0.6	5	—	—	—

■ Shims

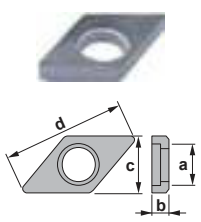
SH-3414



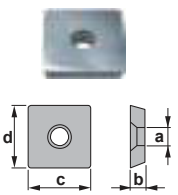
SH-3514



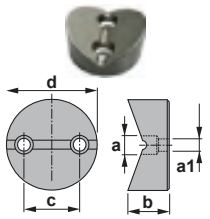
SH-3714



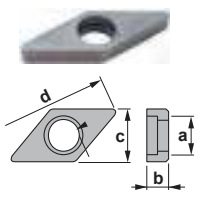
SH-3109 / SH- 3112



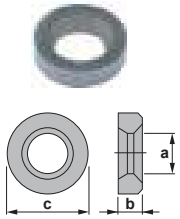
SH-2817-55 / SH-3819-65



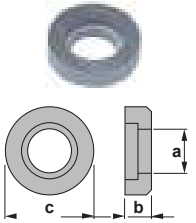
SH-3718



SH-3919 / SH- 3925



SH-3814



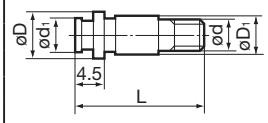
Cat. No.	Stock	Dimensions (mm) a	a1	b	c	d	—	N·m
SH-3414	●	5.3		3.18	13.55	11.9	—	—
TCMT Shim								
SH-3514	●	6.6		3.96	11.4	—	—	—
SCMT Shim								
SH-3714	●	6.6		3.18	8.5	17.4	—	—
DCGT Shim								
SH-2817-55	●	4.5	3	8.8	7	13.55	—	—
RCGX Shim								
SH-3819-65	●	4.5	3	10.56	8.4	16.55	—	—
RCGX Shim								
SH-3718	●	6.7		3.18	8.4	26	—	—
VCMT Shim								
SH-3109	●	2.3		3.18	8.14	8.14	—	—
SPMT Shim								
SH-3112	●	2.3		3.18	11.3	11.3	—	—
SPMT Shim								
SH-3919	●	9.6		4.76	18.4	—	—	—
RNMG Shim								
SH-3925	●	12.9		6.35	24.8	—	—	—
RNMG Shim								
SH-3814	●	5.3		3.18	10.6	—	—	—
RNMG Shim								

N·m Recommended tightening torque (N·m)
▲mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability.)

Shim Pins / Nuts / Drawing Pins / Wrenches

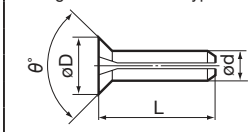
■ Shim Pins

For M Type Holders



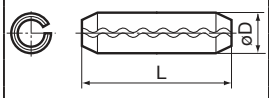
Cat. No.	Stock	d	Pitch	L	D	D_1	d_1	N·m
MP317	●	M4	0.7	15.5	6	4	3.7	—
MP317S	●	M4	0.7	15.5	6	4	3.56	—
MP320	●	M4	0.7	19.5	6	4	3.7	—
MP320S	●	M4	0.7	19.5	6	4	3.56	—
MP416	●	M5	0.8	14	7.5	6	5	—
MP420	●	M5	0.8	20	7.5	6	5	—
MP432	●	M5	0.8	32	7.5	6	5	—

For Light Endmill FMS Type



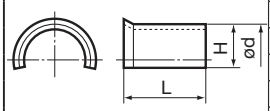
Cat. No.	Stock	d	—	L	D	θ°	—	N·m
SPP308	●	3.2	—	8	4.8	60°	—	—

For 20 & 40 Type Holders



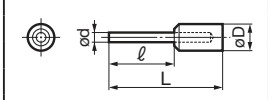
Cat. No.	Stock	—	—	L	D	—	—	N·m
SPP3	●	—	—	14	3.2	—	—	—

For 70 Type Holders



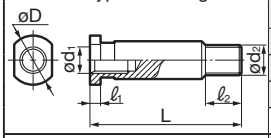
Cat. No.	Stock	d	H	L	—	—	—	N·m
LSP3	●	5	3.3	5.5	—	—	—	—
LSP4	●	6.7	4	7	—	—	—	—
LSP5	●	7.7	4.5	8.5	—	—	—	—
LSP6	●	9.85	6	11.1	—	—	—	—
LSP8	●	13.05	10	12	—	—	—	—
LSP10	●	5	3.3	6.5	—	—	—	—
LSP16	●	6.6	4.5	9	—	—	—	—
LSP20	●	8.2	5.5	9	—	—	—	—
LSP25	●	9.8	6.5	11	—	—	—	—
LSP32	●	13	10	12	—	—	—	—

Pin for MINI Tool Holder



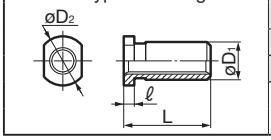
Cat. No.	Stock	d	D	L	ℓ	—	—	N·m
LP04	●	0.4	1.1	4.7	3	—	—	—
LP06	●	0.4	1.1	6	5	—	—	—
LP07	●	0.4	1.1	7.7	3.5	—	—	—

SEC-SV Type or Boring Bars



Cat. No.	Stock	d_1	d_2	L	D	ℓ_1	ℓ_2	N·m
VP20	●	M3.5	M4	12	6.5	≥4.5	≥4.5	—
VP25	●	M3.5	M4	17	6.5	≥4.5	≥4.5	—
VP32	●	M3.5	M4	24	6.5	≥4.5	≥4.5	—

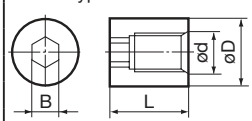
SEC-SV Type or Boring Bars



Cat. No.	Stock	d	Pitch	L	ℓ	D_1	D_2	N·m
VP32B	●	M3.5	0.6	8	1.4	5	6.5	—
VP40B	●	M3.5	0.6	11.5	1.4	5	6.5	—

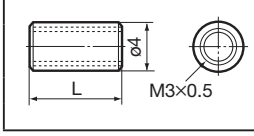
■ Nuts

For M Type Holders



Cat. No.	Stock	d	L	D	B	—	—	N·m
CPM32N	●	M4	7.5	7	3	—	—	—
CPM43N	●	M5	8.5	7	3	—	—	—
CPM43S	●	M5	6	7	3	—	—	—

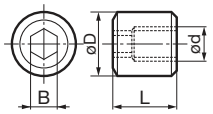
For BNB Holder



Cat. No.	Stock	L	—	—	—	—	—	N·m
BNBW-4	●	4	—	—	—	—	—	—
BNBW-7	●	7	—	—	—	—	—	—

■ Nuts

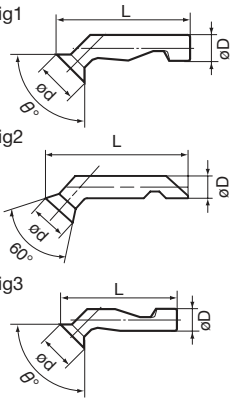
For BNB Holder



Cat. No.	Stock	d	Pitch	L	D	B	—	N·m
CPV33N	●	M4	0.5	6	6	2.5	—	—

■ Drawing Pins

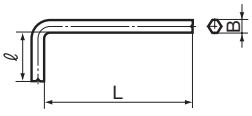
Fig1 / Fig2 / Fig3



Cat. No.	Stock	d	D	L	θ°	—	Shape	N·m
SR083	●	5	2.9	20	60	—		
SR104	●	5.5	3.4	21	60	—		
SR124	●	6	3.9	24	60	—	Fig1	—
SR164	●	8.2	5	32	60	—		
SR204	●	9.2	6	41	60	—		
SR164Q	●	8.2	5	32	60	—	Fig2	—
SW43B	●	7.7	4.9	27.5	90	—	Fig3	—
SR134B	●	6	3.9	22.5	60	—		

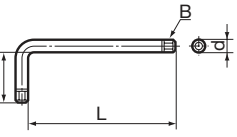
■ Wrenches

L-Shaped Wrench (Hex)



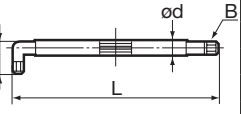
Cat. No.	Stock	B	L	ℓ	—	—	—	N·m
LH015	●	1.5	45	14	—	—	—	—
LH020	●	2	50	16	—	—	—	—
LH025	●	2.5	56	18	—	—	—	—
LH030	●	3	63	20	—	—	—	—
LH035	●	3.5	22	68	—	—	—	—
LH040	●	4	70	25	—	—	—	—
LH050	●	5	80	28	—	—	—	—
LH060	●	6	90	32	—	—	—	—
LH100	●	10	112	40	—	—	—	—
LH020NT	★	2	50	16	—	—	—	—
LH025NT	★	2.5	56	6	—	—	—	—
LH030NT	★	3	63	20	—	—	—	—
LH5/64	★	5/64"	51	17.3				
LH3/32	★	3/32"	57	19				
LH1/8	★	1/8"	66.6	22.7				
LH9/64	★	9/64"	70	24.5				
LH3/16	★	3/16"	82.5	30.7				

L-Shaped Wrench (Torx)



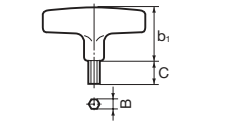
Cat. No.	Stock	B	d	L	ℓ	—	—	N·m
LT08-06	●	T8	2.3	42.5	6	—	—	—
LT15-10	●	T15	2.8	62	10	—	—	—
LT15	●	T15	3.26	54	17.9	—	—	—
LT20	●	T20	3.9	57.2	19.1	—	—	—
LT25	●	T25	4.4	60.3	20.2	—	—	—
LT27	●	T27	4.96	63.5	21.5	—	—	—

Wrench (Torx)



Cat. No.	Stock	B	d	L	ℓ	—	—	N·m
LT25NT	●	3.6	4	65	10	—	—	—

Wrench (Hex)

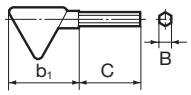


Cat. No.	Stock	B	b_1	C	—	—	—	N·m
TH030	●	3	48	28	—	—	—	—
TH040	●	4	48	37	—	—	—	—
TH050	●	5	48	45	—	—	—	—

N·m Recommended tightening torque (N·m)

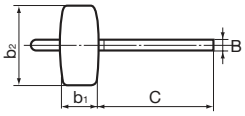
■ Wrenches

T-Shaped Wrench (Hex)



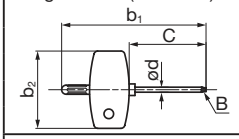
Cat. No.	Stock	Dimensions (mm) B	b1	C	—	—	—	N·m
TH015	●	1.5	35	30	—	—	—	—
TH020	●	2	35	39	—	—	—	—
TH025	●	2.5	35	39	—	—	—	—

Wing Wrench (Hex)



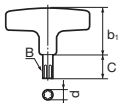
Cat. No.	Stock	Dimensions (mm) B	C	b1	b2	—	—	N·m
TSW040	●	4	60	20	40	—	—	—

Wing Wrench (Torx Plus)



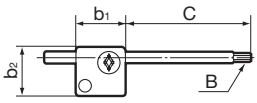
Cat. No.	Stock	Dimensions (mm) B	d	C	b1	b2	—	N·m
TRXW10IP	●	10IP	2.6	40	75	40	—	—

T-Shaped Wrench (Torx)



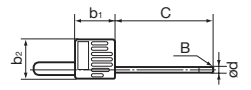
Cat. No.	Stock	Dimensions (mm) B	d	C	b1	—	—	N·m
TTX15W	●	T15	4	97	28	—	—	—
TTX20	●	T20	3.9	58	47	—	—	—
TT25	●	T25	4.4	27	48	—	—	—
TT27	●	T27	5	41	48	—	—	—

Torx Wrench



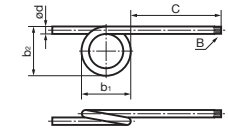
Cat. No.	Stock	Dimensions (mm) B	C	b1	b2	—	—	N·m
TRX06	●	T6	35.5	15	15	—	—	—
TRX08	●	T8	38.5	19	19	—	—	—
TRX10	●	T10	42.1	22	22	—	—	—
TRX15	●	T15	46	22	27	—	—	—
TRX20	●	T20	49	22	30	—	—	—

Torx Wrench



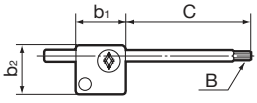
Cat. No.	Stock	Dimensions (mm) d	C	b1	b2	B	—	N·m
RT06	●	2	35	15	15	1.8	—	—
RT08	●	3	38	20	20	2.2	—	—

Torx Wrench



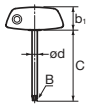
Cat. No.	Stock	Dimensions (mm) d	C	b1	b2	B	—	N·m
RT10	●	3	37	20	20	2.9	—	—

Torx Plus Wrench



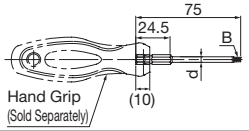
Cat. No.	Stock	Dimensions (mm) B	C	b1	b2	—	—	N·m
TRX06 IP	●	6IP	34	15	15	—	—	—

T-Shaped Wrench (Torx Plus)



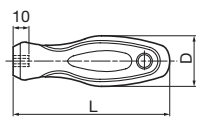
Cat. No.	Stock	Dimensions (mm) B	d	C	b1	—	—	N·m
TTR15 IP	●	15IP	4	80	25.5	—	—	—

Bit (Removable Wrench Tip)



Cat. No.	Stock	Dimensions (mm) B	d	—	—	—	—	N·m
TRB10IP	●	10IP	4	—	—	—	—	—
TRB15IP	●	15IP	4	—	—	—	—	—
TRB20IP	●	20IP	4.5	—	—	—	—	—
TRB25IP	●	25IP	5	—	—	—	—	—

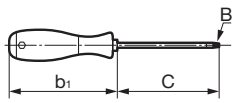
Hand Grip (Removable Handle)



Cat. No.	Stock	Dimensions (mm) D	L	Remarks	N·m
HPS1015	●	32	99.4	For 10IP and 15IP	—
HPL2025	●	35.5	110.3	For 20IP and 25IP	—

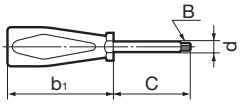
■ Wrenches

Torx Plus Wrench (Screwdriver Type)



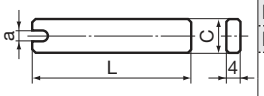
Cat. No.	Stock	Dimensions (mm) B	C	b1	—	—	—	N·m
TRDR08 IP	●	8IP	60	104	—	—	—	—
TRDR10 IP	●	10IP	80	111	—	—	—	—
TRDR15 IP	●	15IP	80	111	—	—	—	—
TRDR20 IP	●	20IP	100	118	—	—	—	—
TRDR25 IP	●	25IP	100	118	—	—	—	—

Torx Wrench (Screwdriver Type)



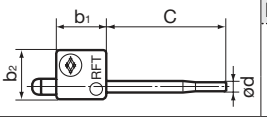
Cat. No.	Stock	Dimensions (mm) B	d	C	b1	—	—	N·m
TRD07	●	T7	2	45	70	—	—	—
TRD08	●	T8	2.3	55	70	—	—	—
TRD15	●	T15	3.3	70	100	—	—	—
TRD20	●	T20	3.9	100	90	—	—	—
TRD25	●	T25	5.3	80	110	—	—	—

Key Wrench



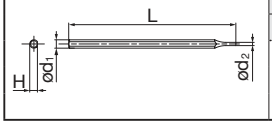
Cat. No.	Stock	Dimensions (mm) L	a	C	—	—	—	N·m
KY25	●	45	2.5	10	—	—	—	—
KY40	●	60	4	13	—	—	—	—

Socket Wrench (Wrench for Axial Adjustment Operation)



Cat. No.	Stock	Dimensions (mm) d	C	b1	b2	—	—	N·m
RFT	●	1.7	35	15	15	—	—	—

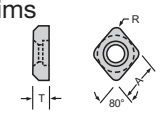
Socket Wrench



Cat. No.	Stock	Dimensions (mm) d1	d2	L	H	—	—	N·m
ANT	●	5	2	100	4.5	—	—	—

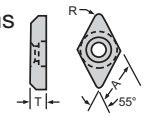
Shims, Pins, Clamps & Screws

80° Diamond Shims



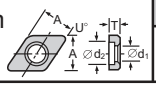
Sumitomo Cat. No.	A Insert I.C.	T	R
ICSN322	.500	.1875	.031
ICSN433	.500	.1875	.047
ICSN533	.625	.1875	.047
ICSN633	.750	.1875	.047

55° Diamond Shims



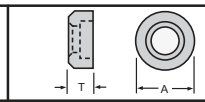
Sumitomo Cat. No.	A Insert I.C.	T	R
IDSN322	.375	.125	.031
IDSN433	.500	.1875	.047
IDSN443	.500	.250	.047
IDSN533	.625	.1875	.047

55°Diamond Shim



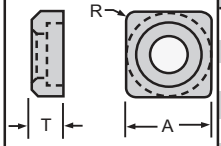
Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	0°
SDW423	12.65	3.18	6.2	8.0	–	55

Round Shims



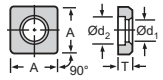
Sumitomo Cat. No.	A Insert I.C.	T	R
IRSN43	.500	.1875	–
IRSN44	.500	.250	–

Square Shims



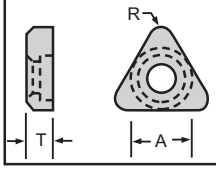
Sumitomo Cat. No.	A Insert I.C.	T	R
ISSN433	.500	.1875	.047
ISSN443	.500	.250	.047
ISSN533	.625	.1875	.047
ISSN543	.625	.250	.047
ISSN633	.750	.1875	.047
ISSN643	.750	.250	.047

Square Shims



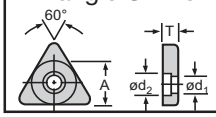
Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	–
SSW423	12.65	3.18	6.2	8	–	–
SSW433	12.65	4.76	6.2	8		
SSW534	15.85	4.76	7.8	9.7		
SSW635	19	4.76	9	11.5	–	–

Triangle Shims



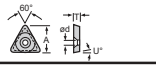
Sumitomo Cat. No.	A Insert I.C.	T	R
ITSN323	.375	.125	.047
ITSN333	.375	.1875	.047
ITSN423	.500	.125	.047
ITSN433	.500	.1875	.047
ITSN534	.625	.1875	.0625

Triangle Shims



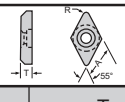
Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	–
STW323	9.5	3.18	4.7	6.5	–	–
STW333	9.5	4.76	4.7	6.5	–	–
STW434	12.65	4.76	6.2	8	–	–
STW534	15.85	4.76	7.8	9.7	–	–

Triangle Shims



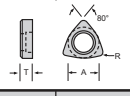
Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	u°
STPD322	8.4	3.18	3.4	–	–	6
STPD422	11.0	3.18	3.4	–	–	6

35° Diamond Shims



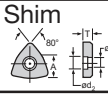
Sumitomo Cat. No.	A Insert I.C.	T	R
IVSN322	.375	.125	.031
IVSN432	.500	.1875	.031
IVSN433	.500	.1875	.047

Trigon Shims



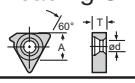
Sumitomo Cat. No.	A Insert I.C.	T	R
IWSN322	.375	.125	.031
IWSN433	.500	.1875	.1875

Trigon Shim



Sumitomo Cat. No.	Size (mm)					
	A	T	d1	d2	–	–
SWW433	12.65	4.76	6.2	8	–	–
SWW544	15.85	5.15	7.8	9.7	–	–

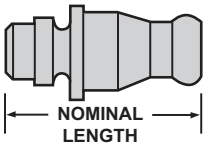
Threading Shim



Sumitomo Cat. No.	Size (mm)					
	A	T	d	–	–	–
LSTE31-0	9.5	2.7	5.2	–	–	–

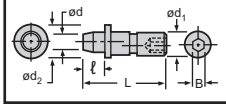
Lock Pins Negative Rake

(Top & Bottom Lock)



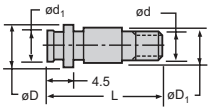
Sumitomo Cat. No.	Insert I.C.	Nominal Length	Hex Wrench	Use With Seat
BWP-46	.500	.578	.094	Yes
NL-23	.250	.328	.0625	No
NL-33	.375	.344	.078	No
NL-33L	.375	.406	.078	No
NL-34	.375	.453	.078	Yes
NL-34L	.375	.516	.078	Yes
NL-44	.500	.516	.094	No
NL-46	.500	.672	.094	Yes
NL-46L	.500	.734	.094	Yes
NL-58	.625	.859	.125	Yes
NL-68	.750	.859	.141	Yes

Cam Pin



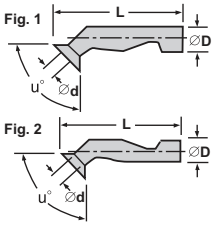
Sumitomo Cat. No.	Size (mm)					
	d	d1	d2	L	ℓ	B
CPB33	3.4	4.1	5.5	17	3.4	2.5
CPB43	4.5	5.5	7	19	5	3
CPB43S	4.5	5.5	7	16	5	3
CPB44T	4.5	5.5	7	22	5	3

Cam Pin



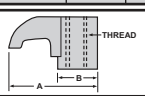
Sumitomo Cat. No.	Size (mm)					
	d	Pitch	L	D	D1	d1
MP416	M5	0.8	14	7.5	6	5
MP420	M5	0.8	20	7.5	6	5
MP531	M6	1.0	19.7	9.5	7	6.26
MP534	M6	1.0	26.1	9.5	7	6.76

Clamp Stud



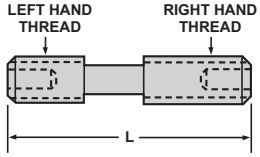
Sumitomo Cat. No.	Size (mm)				
	d	D	L	u°	Shape
SR104B	3	3.4	21	60	Fig. 1
SW43B	4	4.9	27.5	90	Fig. 2
SW42L	4	4.9	22	90	Fig. 2
SW43	4	4.9	27.5	90	Fig. 2
SW53L	4.8	5.9	28.3	90	Fig. 2
SW53R	4.8	5.9	28.3	90	Fig. 2
SW54	4.8	5.9	35.5	90	Fig. 2
SW54B	4.8	5.9	35.5	90	Fig. 2
SW64L	5.5	6.9	33.8	90	Fig. 2
SW64R	5.5	6.9	33.8	90	Fig. 2
SW65	5.5	6.9	44.5	90	Fig. 2
SW65B	5.5	6.9	44.5	90	Fig. 2

Finger Clamp



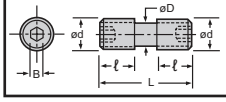
Sumitomo Cat. No.	A	Thread	B
CL19	.550	10-32	.310
CL6	.580	10-32	.310
CL7	.640	10-32	.310
CL20	.730	1/4-28	.375
CL9	.750	5/16-24	.430
CL12	.880	5/16-24	.430
CL30	1.000	5/16-24	.430

Differential Clamp Screws



Inch			
Catalog Number	Thread	L	Wrench Size
XNS35	10-32	.59	3/32
XNS36	10-32	.75	3/32
XNS47	1/4-28	.81	1/8
XNS48	1/4-28	1.00	1/8
XNS58	5/16-24	1.00	5/32
XNS59	5/16-24	1.125	5/32
XNS510	5/16-24	1.25	5/32

Differential Clamp Screw



Sumitomo Cat. No.	Size (mm)					
	d	pitch	L	ℓ	D	B
WB613	M6	1.0	13	5	4.5	3
WB616	M6	1.0	16	6	4.5	3
WB820	M8	1.25	22	8.5	6.2	T27
WB8F20	M8	1.0	20	8.5	6.2	4
WB8F30	M8	1.0	3.0	11.5	6.2	4

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CNC Holders

CNC Holder line provides options for all industry-standard sizes and congurations for collet chucks, end mill holders, shell mill holders, hi-power milling chucks, and face mill holders.

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The finest shrink fit holders available. Precise manufacturing and exclusive “counter bore” technology optimize the advantages of using shrink fit tooling. These holders offer the best part finish quality, longer tool life, and higher feed rates and speeds. All of this is accomplished due to micrometer accuracy in runout, high cutting tool rigidity and extremely high clamping forces.



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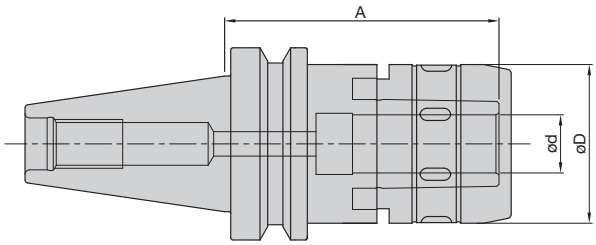
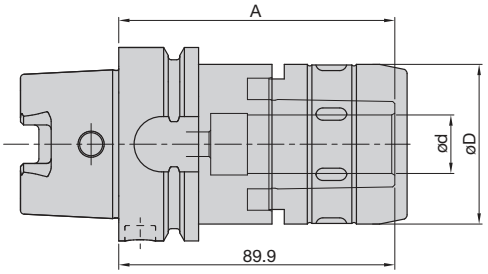
Our tightening fixtures are the best and simplest in the world. You gain immediate access to both the working and taper ends. Less handling just means fewer chances of costly holders being dropped and damaged.





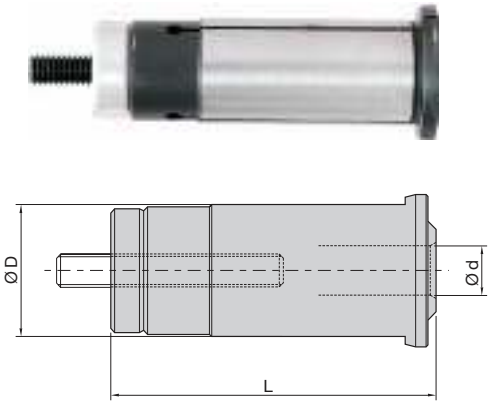
Milling Chucks					
Catalog Number	Dimensions				
	d (*mm*)	d (inch)	D (*mm*)	A (*mm*)	A (inch)
CAT40	Balanced to G6.3 @ 8,000 RPM				
SHPMC0.750-3.54-CAT40	*19.05*	0.75	*52*	*89.9*	3.54
SHPMC1.000-3.54-CAT40	*25.4*	1.00	*58*	*89.9*	3.54
SHPMC1.250-4.25-CAT40	*31.75*	1.25	*66*	*108.0*	4.25
SHPMC25-90-CAT40	*25*	–	*58*	*90*	–
SHPMC32-105-CAT40	*32*	–	*66*	*105*	–
CAT50	Balanced to G6.3 @ 8,000 RPM				
SHPMC0.750-3.54-CAT50	*19.05*	0.75	*52*	*89.9*	3.54
SHPMC0.750-6.50-CAT50	*19.05*	0.75	*52*	*165.1*	6.50
SHPMC1.000-3.54-CAT50	*25.4*	1.00	*58*	*89.9*	3.54
SHPMC1.000-5.31-CAT50	*25.4*	1.00	*58*	*134.9*	5.31
SHPMC1.250-4.13-CAT50	*31.75*	1.25	*66*	*104.9*	4.13
SHPMC1.250-5.31-CAT50	*31.75*	1.25	*66*	*134.9*	5.31
SHPMC2.000-4.72-CAT50	*50.8*	2.00	*103*	*119.9*	4.72
SHPMC2.000-5.90-CAT50	*50.8*	2.00	*103*	*149.9*	5.90
SHPMC32-105-CAT50	*32*	–	*58*	*105*	–
SHPMC50-135-CAT50	*50*	–	*103*	*135*	–
BT30	Balanced to G6.3 @ 8,000 RPM				
SHPMC0.750-3.54-BT30	*19.05*	0.75	*52*	*89.9*	3.54
SHPMC20-90-BT30	*20*	–	*52*	*90*	–
SHPMC25-90-BT30	*25*	–	*58*	*90*	–
SHPMC32-105-BT30	*32*	–	*66*	*105*	–





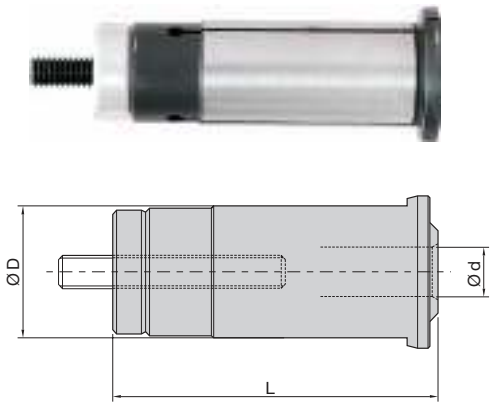
HSK Milling Chucks					
Catalog Number	Dimensions				
	d (*mm*)	d (inch)	D (*mm*)	A (*mm*)	A (inch)
HSK-A63	Balanced to G6.3 @ 8,000 RPM				
SHPMC0.750-3.54-HSKA63	*19.05*	0.75	*52*	*89.9*	3.54
SHPMC1.000-4.13-HSKA63	*25.4*	1.00	*58*	*104.9*	4.13
SHPMC1.250-4.72-HSKA63	*31.75*	1.25	*66*	*119.9*	4.72
SHPMC20-90-HSKA63	*20*	–	*52*	*90*	–
SHPMC25-105-HSKA63	*25*	–	*58*	*105*	–
SHPMC32-135-HSKA63	*32*	–	*66*	*135*	–
HSK-A100	Balanced to G6.3 @ 15,000 RPM				
SHPMC0.750-3.94-HSKA100	–	0.750	*52*	–	3.94
SHPMC1.000-4.53-HSKA100	–	1.000	*58*	–	4.53
SHPMC1.250-5.31-HSKA100	–	1.250	*66*	–	5.31
SHPMC20-100-HSKA100	*20*	–	*52*	*100*	–
SHPMC25-115-HSKA100	*25*	–	*58*	*115*	–
SHPMC32-135-HSKA100	*32*	–	*66*	*135*	–

Adjustable Straight Collets for Milling Chucks (Metric)



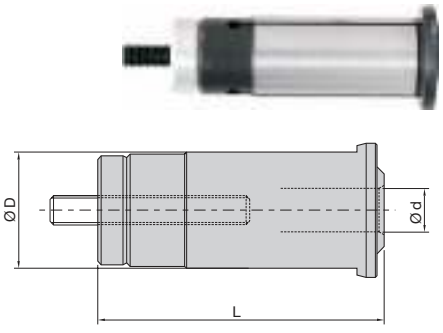
Catalog Number	Dimensions (*mm*)		
	D	d	L
SSC20-6	20	6	63
SSC20-8	20	8	63
SSC20-10	20	10	63
SSC20-12	20	12	63
SSC20-16	20	16	63
SSC25-6	25	6	73
SSC25-8	25	8	73
SSC25-10	25	10	73
SSC25-12	25	12	73
SSC25-16	25	16	73
SSC25-18	25	18	73
SSC25-20	25	20	73
SSC32-6	32	6	79
SSC32-8	32	8	79
SSC32-10	32	10	79
SSC32-12	32	12	79
SSC32-16	32	16	79
SSC32-18	32	18	79
SSC32-20	32	20	79
SSC32-25	32	25	79

Adjustable Straight Collets for Milling Chucks (Inch)



Catalog Number	Dimensions (inch)		
	D	d	L
SSC 0.750-0.250	0.750	0.250	2.48
SSC 0.750-0.312	0.750	0.312	2.48
SSC 0.750-0.375	0.750	0.375	2.48
SSC 0.750-0.437	0.750	0.437	2.48
SSC 0.750-0.500	0.750	0.500	2.48
SSC 0.750-0.562	0.750	0.562	2.48
SSC 0.750-0.625	0.750	0.625	2.48
SSC 1.000-0.250	1.000	0.250	2.87
SSC 1.000-0.312	1.000	0.312	2.87
SSC 1.000-0.375	1.000	0.375	2.87
SSC 1.000-0.437	1.000	0.437	2.87
SSC 1.000-0.500	1.000	0.500	2.87
SSC 1.000-0.562	1.000	0.562	2.87
SSC 1.000-0.625	1.000	0.625	2.87
SSC 1.000-0.750	1.000	0.750	2.87
SSC 1.250-0.250	1.250	0.250	3.11
SSC 1.250-0.312	1.250	0.312	3.11
SSC 1.250-0.375	1.250	0.375	3.11
SSC 1.250-0.437	1.250	0.437	3.11
SSC 1.250-0.500	1.250	0.500	3.11
SSC 1.250-0.562	1.250	0.562	3.11
SSC 1.250-0.625	1.250	0.625	3.11
SSC 1.250-0.750	1.250	0.750	3.11
SSC 1.250-0.875	1.250	0.875	3.11
SSC 1.250-1.000	1.250	1.000	3.11

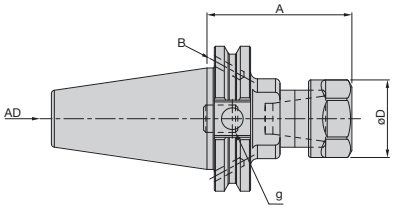
Adjustable Straight Collets for Milling Chucks (Metric to Inch)



Catalog Number	Dimensions		
	D	d	L
SSC32-0.375	32	0.375	3.11
SSC32-0.500	32	0.500	3.11
SSC32-0.625	32	0.625	3.11
SSC32-0.750	32	0.750	3.11
SSC32-1.000	32	1.000	3.11

ER Collet Chucks

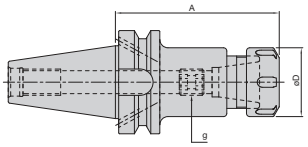




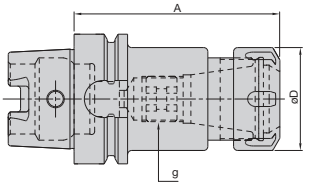
ER Collet Chucks - CAT40	Balanced to G6.3 @ 20,000 RPM					
Catalog Number	Dimensions					
	Collet Type	Range (mm)	D (mm)	A (mm)	A (inch)	g
CAT40						
SCCH-ER16-2.50-CAT40	ER16	1–10	28	63.5	2.50	M10
SCCH-ER16-5.00-CAT40	ER16	1–10	28	127.0	5.00	M10
SCCH-ER20-2.50-CAT40	ER20	1–13	34	63.5	2.50	M12
SCCH-ER20-6.00-CAT40	ER20	1–13	34	152.4	6.00	M12
SCCH-ER25-2.50-CAT40	ER25	2–16	42	63.5	2.50	M16
SCCH-ER25-6.00-CAT40	ER25	2–16	42	152.4	6.00	M16
SCCH-ER32-2.75-CAT40	ER32	2–20	50	69.9	2.75	M22x1.5
SCCH-ER32-6.00-CAT40	ER32	2–20	50	152.4	6.00	M22x1.5
SCCH-ER40-3.00-CAT40	ER40	3–26	63	76.2	3.00	M22x1.5
SCCH-ER40-6.00-CAT40	ER40	3–26	63	152.4	6.00	M22x1.5

ER Collet Chucks - CAT50	Balanced to G6.3 @ 20,000 RPM					
Catalog Number	Dimensions					
	Collet Type	Range (mm)	D (mm)	A (mm)	A (inch)	g
CAT50						
SCCH-ER16-2.50-CAT50	ER16	1–10	28	63.5	2.50	M10
SCCH-ER16-4.00-CAT50	ER16	1–10	28	101.6	4.00	M10
SCCH-ER16-6.00-CAT50	ER16	1–10	28	152.4	6.00	M10
SCCH-ER20-2.50-CAT50	ER20	1–13	34	63.5	2.50	M12
SCCH-ER20-4.00-CAT50	ER20	1–13	34	101.6	4.00	M12
SCCH-ER20-6.00-CAT50	ER20	1–13	34	152.4	6.00	M12
SCCH-ER25-2.50-CAT50	ER25	2–16	42	63.5	2.50	M16
SCCH-ER25-4.00-CAT50	ER25	2–16	42	101.6	4.00	M16
SCCH-ER25-6.00-CAT50	ER25	2–16	42	152.4	6.00	M16
SCCH-ER32-2.75-CAT50	ER32	2–20	50	69.9	2.75	M22x1.5
SCCH-ER32-4.00-CAT50	ER32	2–20	50	101.6	4.00	M22x1.5
SCCH-ER32-6.00-CAT50	ER32	2–20	50	152.4	6.00	M22x1.5
SCCH-ER40-3.00-CAT50	ER40	3–26	63	76.2	3.00	M22x1.5
SCCH-ER40-4.00-CAT50	ER40	3–26	63	101.6	4.00	M22x1.5
SCCH-ER40-6.00-CAT50	ER40	3–26	63	152.4	6.00	M22x1.5





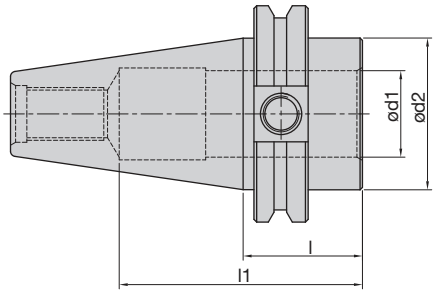




ER Collet Chucks	Balanced to G6.3 @ 20,000 RPM					
Catalog Number	Dimensions					
	Collet Type	Range (mm)	D (mm)	A (mm)	A (inch)	g
BT30						
SCCH-ER16-100-BT30	ER16	1–10	28	100	3.94	M10
SCCH-ER16-150-BT30	ER16	1–10	28	150	5.90	M10
SCCH-ER16-70-BT30	ER16	1–10	28	70	2.76	M10
SCCH-ER20-100-BT30	ER20	1–13	34	100	3.94	M12
SCCH-ER20-70-BT30	ER20	1–13	34	70	2.76	M12
SCCH-ER25-100-BT30	ER25	2–16	42	100	3.94	M12
SCCH-ER25-70-BT30	ER25	2–16	42	70	2.76	M12
SCCH-ER32-100-BT30	ER32	2–20	50	100	3.94	M22x1.5
SCCH-ER32-70-BT30	ER32	2–20	50	70	2.76	M12
SCCH-ER40-100-BT30	ER40	3–26	63	100	3.89	M22x1.5
BT40						
SCCH-ER16-100-BT40	ER16	1–10	28	100	3.94	M10
SCCH-ER16-160-BT40	ER16	1–10	28	160	6.30	M10
SCCH-ER16-70-BT40	ER16	1–10	28	70	2.76	M10
SCCH-ER20-100-BT40	ER20	1–13	34	100	3.94	M12
SCCH-ER20-160-BT40	ER20	1–13	34	160	6.30	M12
SCCH-ER20-70-BT40	ER20	1–13	34	70	2.76	M12
SCCH-ER25-100-BT40	ER25	2–16	42	100	3.94	M16
SCCH-ER25-160-BT40	ER25	2–16	42	160	6.30	M16
SCCH-ER25-70-BT40	ER25	2–16	42	70	2.76	M16
SCCH-ER32-100-BT40	ER32	2–20	50	100	3.94	M22x1.5
SCCH-ER32-160-BT40	ER32	2–20	50	160	6.30	M22x1.5
SCCH-ER32-70-BT40	ER32	2–20	50	70	2.76	M22x1.5
SCCH-ER40-100-BT40	ER40	3–26	63	100	3.94	M22x1.5
SCCH-ER40-160-BT40	ER40	3–26	63	160	6.30	M22x1.5
SCCH-ER40-80-BT40	ER40	3–26	63	80	3.15	M22x1.5

HSK ER Collet Chuck Holders	Balanced to G6.3 @ 20,000 RPM					
Catalog Number	Dimensions					
	Collet Type	Range (mm)	D (mm)	A (mm)	A (inch)	g
HSK-A63						
SCCH-ER16M-100-HSKA63	ER16	1–10	28	100	3.94	M10
SCCH-ER16M-160-HSKA63	ER16	1–10	28	160	6.3	M10
SCCH-ER20-100-HSKA63	ER20	1–13	34	100	3.94	M12
SCCH-ER20M-160-HSKA63	ER20	1–13	34	160	6.3	M12
SCCH-ER25-100-HSKA63	ER25	2–16	42	100	3.94	M16
SCCH-ER25M-160-HSKA63	ER25	2–16	42	160	6.3	M16
SCCH-ER32-100-HSKA63	ER32	2–20	50	100	3.94	M22x1.5
SCCH-ER32-160-HSKA63	ER32	2–20	50	160	6.3	M22x1.5
SCCH-ER40-120-HSKA63	ER40	3–26	63	120	4.72	M22x1.5
SCCH-ER40-160-HSKA63	ER40	3–26	63	160	6.3	M22x1.5
HSK-A100						
SCCH-ER16M-100-HSKA100	ER16M	1–10	22	100	3.94	M10
SCCH-ER20-100-HSKA100	ER20	1–13	34	100	3.94	M12
SCCH-ER25-100-HSKA100	ER25	2–16	42	100	3.94	M16
SCCH-ER32-100-HSKA100	ER32	2–20	50	100	3.94	M22X1.5
SCCH-ER40-120-HSKA100	ER40	3–26	63	120	4.72	M22x1.5
SCCH-ER16M-160-HSKA100	ER16M	1–10	22	160	6.3	M10
SCCH-ER20-160-HSKA100	ER20	1–13	34	160	6.3	M12
SCCH-ER25-160-HSKA100	ER25	2–16	42	160	6.3	M16
SCCH-ER32-160-HSKA100	ER32	2–20	50	160	6.3	M22X1.5
SCCH-ER40-160-HSKA100	ER40	3–26	63	160	6.3	M22x1.5

Straight Shank Synchro Chucks

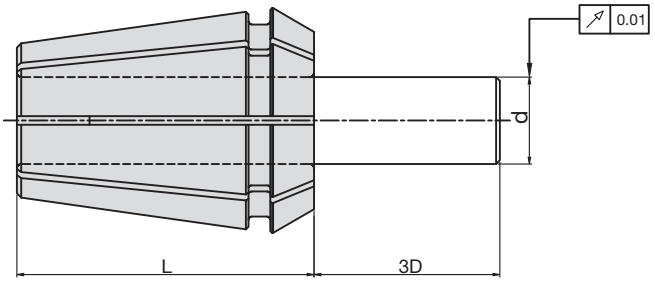




Straight Shank Synchro Chucks					
Catalog Number	Spindle Type	Dimensions			
		d1 (in)	d2(mm)	l1 (mm)	l (in)
SSSC-CT40-1.000	CAT40	1	45	68.5	1.375
SSSC-CT50-1.000	CAT50	1	70	84.5	1.375
SSSC-CT50-1.500	CAT50	1.5	70	84.5	1.375
SSSC-BT40-1.000	BT40	1	45	68.5	1.062
SSSC-BT50-1.000	BT50	1	70	84.5	1.875
SSSC-BT50-1.500	BT50	1.5	70	84.5	1.875

ER Collets - Inch & *Metric*





Spring Collets ER16 (Inch)

Catalog Number	Dimensions (inch)		
	D	L	d
ER16-1/16	0.669	1.063	0.043-0.062
ER16-3/32	0.669	1.063	0.054-0.093
ER16-1/8	0.669	1.063	0.086-0.125
ER16-5/32	0.669	1.063	0.117-0.156
ER16-3/16	0.669	1.063	0.148-0.187
ER16-7/32	0.669	1.063	0.179-0.218
ER16-1/4	0.669	1.063	0.211-0.250
ER16-9/32	0.669	1.063	0.242-0.281
ER16-5/16	0.669	1.063	0.273-0.312
ER16-11/32	0.669	1.063	0.304-0.343
ER16-3/8	0.669	1.063	0.336-0.375
ER16-13/32	0.669	1.063	0.367-0.406
ER16 12pc. Collet Set	–	–	–

ER20(Inch)

ER20-1/8	0.827	1.22	0.086-0.125
ER20-3/16	0.827	1.22	0.148-0.187
ER20-1/4	0.827	1.22	0.211-0.250
ER20-5/16	0.827	1.22	0.273-0.312
ER20-3/8	0.827	1.22	0.336-0.375
ER20-7/16	0.827	1.22	0.398-0.437
ER20-1/2	0.827	1.22	0.461-0.500
ER20 7pc. Collet Set	–	–	–

ER25 (Inch)

ER25-1/8	1.024	1.378	0.086-0.125
ER25-3/16	1.024	1.378	0.148-0.187
ER25-1/4	1.024	1.378	0.211-0.250
ER25-5/16	1.024	1.378	0.273-0.312
ER25-3/8	1.024	1.378	0.336-0.375
ER25-7/16	1.024	1.378	0.398-0.437
ER25-1/2	1.024	1.378	0.461-0.500
ER25-9/16	1.024	1.378	0.523-0.562
ER25-5/8	1.024	1.378	0.586-0.625
ER25 9pc. Collet Set	–	–	–

Spring Collets ER 32(Inch)

Catalog Number	Dimensions (inch)		
	D	L	d
ER32-1/8	1.299	1.575	0.086-0.125
ER32-3/16	1.299	1.575	0.148-0.187
ER32-1/4	1.299	1.575	0.211-0.250
ER32-5/16	1.299	1.575	0.273-0.312
ER32-3/8	1.299	1.575	0.336-0.375
ER32-7/16	1.299	1.575	0.398-0.437
ER32-1/2	1.299	1.575	0.461-0.500
ER32-9/16	1.299	1.575	0.523-0.562
ER32-5/8	1.299	1.575	0.586-0.625
ER32-11/16	1.299	1.575	0.648-0.687
ER32-3/4	1.299	1.575	0.711-0.750
ER32 12pc Collet Set	–	–	–

ER40 (Inch)

ER40-1/8	1.614	1.811	0.086-0.125
ER40-3/16	1.614	1.811	0.148-0.187
ER40-1/4	1.614	1.811	0.211-0.250
ER40-5/16	1.614	1.811	0.273-0.312
ER40-3/8	1.614	1.811	0.336-0.375
ER40-7/16	1.614	1.811	0.398-0.437
ER40-1/2	1.614	1.811	0.461-0.500
ER40-9/16	1.614	1.811	0.523-0.562
ER40-5/8	1.614	1.811	0.586-0.625
ER40-11/16	1.614	1.811	0.648-0.687
ER40-3/4	1.614	1.811	0.711-0.750
ER40-7/8	1.614	1.811	0.836-0.875
ER40-1.0	1.614	1.811	0.961-1.000
ER40 14pc. Collet Set	–	–	–

Spring Collets ER16 (*Metric*)

Catalog Number	Dimensions (*mm*)		
	D	L	d
ER16-1.0	*17*	*27*	*1.0-0.5*
ER16-1.5	*17*	*27*	*1.5-1.0*
ER16-2.0	*17*	*27*	*2.0-1.5*
ER16-2.5	*17*	*27*	*2.5-2.0*
ER16-3.0	*17*	*27*	*3.0-2.5*
ER16-3.5	*17*	*27*	*3.5-3.0*
ER16-4.0	*17*	*27*	*4.0-3.5*
ER16-4.5	*17*	*27*	*4.5-4.0*
ER16-5.0	*17*	*27*	*5.0-4.5*
ER16-5.5	*17*	*27*	*5.5-5.0*
ER16-6.0	*17*	*27*	*6.0-5.5*
ER16-6.5	*17*	*27*	*6.5-6.0*
ER16-7.0	*17*	*27*	*7.0-6.5*
ER16-7.5	*17*	*27*	*7.5-7.0*
ER16-8.0	*17*	*27*	*8.0-7.5*
ER16-8.5	*17*	*27*	*8.5-8.0*
ER16-9.0	*17*	*27*	*9.0-8.5*
ER16-9.5	*17*	*27*	*9.5-9.0*
ER16-10.0	*17*	*27*	*10.0-9.5*
ER16 10pc. Collet Set	–	–	–

ER20 (*Metric*)

ER20-1.0	*21*	*31*	*1.0-0.5*
ER20-2.0	*21*	*31*	*2.0-1.5*
ER20-3.0	*21*	*31*	*3.0-2.5*
ER20-4.0	*21*	*31*	*4.0-3.5*
ER20-5.0	*21*	*31*	*5.0-4.5*
ER20-6.0	*21*	*31*	*6.0-5.5*
ER20-7.0	*21*	*31*	*7.0-6.5*
ER20-8.0	*21*	*31*	*8.0-7.5*
ER20-9.0	*21*	*31*	*9.0-8.5*
ER20-10.0	*21*	*31*	*10.0-9.5*
ER20-11.0	*21*	*31*	*11.0-10.5*
ER20-12.0	*21*	*31*	*12.0-11.5*
ER20-13.0	*21*	*31*	*13.0-12.5*
ER20 12pc. Collet Set	–	–	–

ER25 (*Metric*)

ER25-2.0	*26*	*35*	*2.0-1.5*
ER25-3.0	*26*	*35*	*3.0-2.5*
ER25-4.0	*26*	*35*	*4.0-3.5*
ER25-5.0	*26*	*35*	*5.0-4.5*
ER25-6.0	*26*	*35*	*6.0-5.5*
ER25-7.0	*26*	*35*	*7.0-6.5*
ER25-8.0	*26*	*35*	*8.0-7.5*
ER25-9.0	*26*	*35*	*9.0-8.5*
ER25-10.0	*26*	*35*	*10.0-9.5*
ER25-11.0	*26*	*35*	*11.0-10.5*
ER25-12.0	*26*	*35*	*12.0-11.5*
ER25-13.0	*26*	*35*	*13.0-12.5*
ER25-14.0	*26*	*35*	*14.0-13.5*
ER25-15.0	*26*	*35*	*15.0-14.5*
ER25-16.0	*26*	*35*	*16.0-15.5*
ER25 15pc. Collet Set	–	–	–

Spring Collets ER32 (*Metric*)

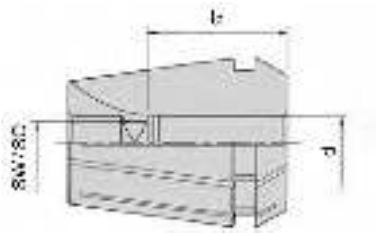
Catalog Number	Dimensions (mm)		
	D	L	d
ER32-2.0	33	40	2.0-1.5
ER32-3.0	33	40	3.0-2.5
ER32-4.0	33	40	4.0-3.5
ER32-5.0	33	40	5.0-4.5
ER32-6.0	33	40	6.0-5.5
ER32-7.0	33	40	7.0-6.5
ER32-8.0	33	40	8.0-7.5
ER32-9.0	33	40	9.0-8.5
ER32-10.0	33	40	10.0-9.5
ER32-11.0	33	40	11.0-10.5
ER32-12.0	33	40	12.0-11.5
ER32-13.0	33	40	13.0-12.5
ER32-14.0	33	40	14.0-13.5
ER32-15.0	33	40	15.0-14.5
ER32-16.0	33	40	16.0-15.5
ER32-17.0	33	40	17.0-16.5
ER32-18.0	33	40	18.0-17.5
ER32-19.0	33	40	19.0-18.5
ER32-20.0	33	40	20.0-19.5
ER32 18pc. Collet Set	–	–	–

ER40 (*Metric*)

ER40-3.0	*41*	*46*	*3.0-2.5*
ER40-4.0	*41*	*46*	*4.0-3.5*
ER40-5.0	*41*	*46*	*5.0-4.5*
ER40-6.0	*41*	*46*	*6.0-5.5*
ER40-7.0	*41*	*46*	*7.0-6.5*
ER40-8.0	*41*	*46*	*8.0-7.5*
ER40-9.0	*41*	*46*	*9.0-8.5*
ER40-10.0	*41*	*46*	*10.0-9.5*
ER40-11.0	*41*	*46*	*11.0-10.5*
ER40-12.0	*41*	*46*	*12.0-11.5*
ER40-13.0	*41*	*46*	*13.0-12.5*
ER40-14.0	*41*	*46*	*14.0-13.5*
ER40-15.0	*41*	*46*	*15.0-14.5*
ER40-16.0	*41*	*46*	*16.0-15.5*
ER40-17.0	*41*	*46*	*17.0-16.5*
ER40-18.0	*41*	*46*	*18.0-17.5*
ER40-19.0	*41*	*46*	*19.0-18.5*
ER40-20.0	*41*	*46*	*20.0-19.5*
ER40-21.0	*41*	*46*	*21.0-20.5*
ER40-22.0	*41*	*46*	*22.0-21.5*
ER40-23.0	*41*	*46*	*23.0-22.5*
ER40-24.0	*41*	*46*	*24.0-23.5*
ER40-25.0	*41*	*46*	*25.0-24.5*
ER40-26.0	*41*	*46*	*26.0-25.5*
ER40 23pc. Collet Set	–	–	–

GB Collects- Inch & *Metric*





GB Collects - Inch

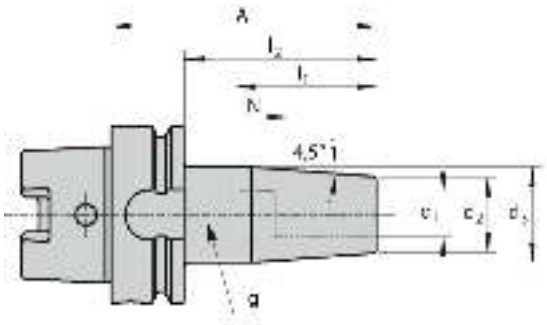
Dimensions				Product Code					
Shank d (in)	Square SW (in)	l2 (*mm*)	Pipe Tap	ER11-GB	ER16-GB	ER20-GB	ER25-GB	ER32-GB	ER40-GB
0.141	0.11	*18*		ER110141GB	ER160141GB				
0.168	0.131	*18*			ER160168GB	ER200168GB	ER250168GB	ER320168GB	
0.194	0.152	*18*			ER160194GB	ER200194GB	ER250194GB	ER320194GB	
0.22	0.165	*18*			ER160220GB	ER200220GB	ER250220GB	ER320220GB	
0.255	0.191	*18*			ER160255GB	ER200255GB	ER250255GB	ER320255GB	ER400255GB
0.318	0.238	*22*			ER160318GB	ER200318GB	ER250318GB	ER320318GB	ER400318GB
0.323	0.242	*22*				ER200323GB	ER250323GB	ER320323GB	ER400323GB
0.367	0.275	*22*				ER200367GB	ER250367GB	ER320367GB	ER400367GB
0.381	0.286	*22*				ER200381GB	ER250381GB	ER320381GB	ER400381GB
0.429	0.322	*25*					ER250429GB	ER320429GB	ER400429GB
0.437	0.328	*25*	3				ER250437GB	ER320437GB	ER400437GB
0.48	0.36	*25*					ER250480GB	ER320480GB	ER400480GB
0.5542	0.406	*25*						ER320542GB	ER400542GB
0.562	0.421	*25*	3					ER320562GB	ER400562GB
0.59	0.442	*25*						ER320590GB	ER400592GB
0.652	0.489	*25*						ER320652GB	ER400652GB
0.687	0.515	*25*	3						ER400687GB
0.697	0.523	*25*							ER400697GB
0.7	0.531	*25*	3						ER400700GB
0.76	0.57	*25*							ER400760GB
0.8	0.6	*28*							ER400800GB

GB Collects - *Metric*

Dimensions				Product Code					
Shank d (*mm*)	Square SW(*mm*)	l2 (*mm*)	STD	ER11-GB	ER16-GB	ER20-GB	ER25-GB	ER32-GB	ER40-GB
2.8	*2.1*	*12*	DIN	ER11280GB					
3.5	*2.7*	*14*	DIN	ER11350GB					
4	*3*	*14*	DIN	ER11400GB					
4	*3.15/3.2*	*18*	ISO,JIS	ER11450GB	ER16400GB	ER20400GB	ER25400GB	ER32400GB	
4.5	*3.4*	*18*	DIN	ER11600GB	ER16450GB	ER20450GB	ER25450GB	ER32450GB	
5	*4*	*18*	ISO,JIS		ER16550GB-JIS	ER20550GB-JIS	ER25550GB-JIS	ER32550GB-JIS	
5.5	*4.3*	*18*	DIN		ER16550GB	ER20550GB	ER25550GB	ER32550GB	
5.5	*4.5*	*18*	JIS		ER16550GB	ER20550GB	ER25550GB	ER32550GB	
6	*4.5*	*18*	JIS		ER16600GB	ER20600GB	ER25600GB	ER32600GB	ER40600GB-JIS
6	*4.9*	*18*	DIN		ER16600GB-JIS	ER20600GB-JIS	ER25600GB-JIS	ER32600GB-JIS	ER40600GB-DIN
6.2	*5*	*18*	JIS		ER16620GB-JIS	ER20620GB-JIS	ER25620GB-JIS	ER32620GB-JIS	ER40620GB
6.3	*5*	*18*	ISO,JIS		ER16630GB	ER20630GB	ER25630GB	ER32630GB	ER40630GB
7	*5.5*	*18*	DIN, JIS		ER16700GB	ER20700GB	ER25700GB	ER32700GB	ER40700GB
7.1	*5.6*	*18*	ISO,JIS		ER16710GB	ER20710GB	ER25710GB	ER32710GB	ER40710GB
8	*6.2/6.3*	*22*	DIN,ISO		ER16800GB	ER20800GB	ER25800GB	ER32800GB	ER40800GB
8.5	*6.5*	*22*	JIS		ER16850GB-JIS	ER20850GB-JIS	ER25850GB-JIS	ER32850GB-JIS	ER40850GB
9	*7.0/7.1*	*22*	DIN,ISO		ER16900GB	ER20900GB	ER25900GB	ER32900GB	ER40900GB
10	*8*	*25*	DIN,ISO			ER2010.00GB	ER2510.00GB	ER3210.00GB	ER4010.00GB
10.5	*8*	*25*	JIS			ER2010.50GB-JIS	ER2510.50GB-JIS	ER3210.50GB	ER4010.50GB
11	*9*	*25*	DIN			ER2011.00GB	ER2511.00GB	ER3211.00GB	ER4011.00GB
1.2	*9*	*25*	ISO			ER2011.20GB	ER2511.20GB	ER3211.20GB	ER4011.20GB
12	*9*	*25*	DIN				ER2512.00GB	ER3212.00GB	ER4012.00GB
12.5	*10*	*25*	ISO,JIS				ER2512.50GB	ER3212.50GB	ER4012.50GB
14	*11.0/11.2*	*25*	DIN,JIS,ISO				ER2514.00GB	ER3214.00GB	ER4014.00GB
15	*12*	*25*	JIS				ER2515.00GB-JIS	ER3215.00GB	ER4015.00GB
16	*12*	*25*	DIN				ER2516.00GB	ER3216.00GB	ER4016.00GB
17	*13*	*25*	JIS					ER3217.00GB	ER4017.00GB
18	*14.0/14.5*	*25*	DIN,ISO					ER3218.00GB	ER4018.00GB
20	*16*	*28*	DIN,ISO					ER3220.00GB	ER4020.00GB
22	*18*	*28*	DIN						ER4022.00GB

HSK-A63 | ThermoGrip® Standard





HSK-A63 | ThermoGrip® Standard - Inch

Catalog Number	Dimensions (inch)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0318-80-HSKA63	0.125	3.15	0.83	1.06	1.42	0.39	M6
ST0476-80-HSKA63	0.187	3.15	0.83	1.06	1.42	0.39	M6
ST0635-80-HSKA63	0.250	3.15	0.83	1.06	1.42	0.39	M5
ST0953-85-HSKA63	0.375	3.34	0.95	1.26	1.65	0.39	M8x1
ST1270-90-HSKA63	0.500	3.54	1.06	1.34	1.85	0.39	M10x1
ST1588-95-HSKA63	0.625	3.74	1.06	1.34	1.97	0.39	M12x1
ST1905-100-HSKA63	0.750	3.94	1.30	1.65	2.05	0.39	M16x1
LONG PROJECTION							
ST0318-120-HSKA63	0.125	4.72	0.83	1.06	1.42	0.39	M6
ST0476-120-HSKA63	0.187	4.72	0.83	1.06	1.42	0.39	M6
ST0635-120-HSKA63	0.250	4.72	0.83	1.06	1.42	0.39	M5
ST0953-120-HSKA63	0.375	4.72	0.95	1.26	1.65	0.39	M8x1
ST1270-120-HSKA63	0.500	4.72	1.06	1.34	1.85	0.39	M10x1
ST1588-120-HSKA63	0.625	4.72	1.06	1.34	1.97	0.39	M12x1
ST2540-120-HSKA63	1.000	4.72	1.73	2.09	2.44	0.39	M16x1
ST3175-120-HSKA63	1.250	4.72	1.73	2.09	2.28	0.39	M16x1
EXTRA LONG PROJECTION							
ST0318-160-HSKA63	0.125	6.30	0.83	1.26	1.42	0.39	M6
ST0476-160-HSKA63	0.187	6.30	0.83	1.26	1.42	0.39	M6
ST0635-160-HSKA63	0.250	6.30	0.83	1.26	1.42	0.39	M5
ST0953-160-HSKA63	0.375	6.30	0.95	1.34	1.65	0.39	M8x1
ST1270-160-HSKA63	0.500	6.30	1.06	1.65	1.85	0.39	M10x1
ST1588-160-HSKA63	0.625	6.30	1.06	1.65	1.97	0.39	M12x1
ST1905-160-HSKA63	0.750	6.30	1.30	2.01	2.05	0.39	M16x1
ST2540-160-HSKA63	1.000	6.30	1.73	2.09	2.44	0.39	M16x1
ST3175-160-HSKA63	1.250	6.30	1.73	2.09	2.28	0.39	M16x1

All holders can be run with internal coolant
Please Order Coolant Tube separately
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm

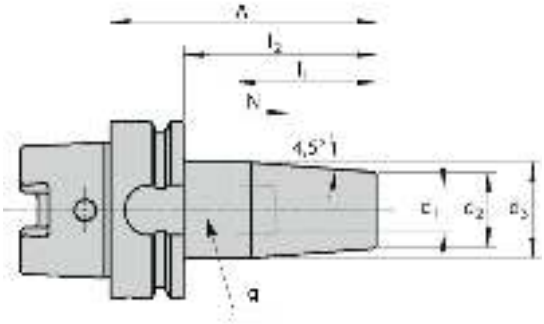
HSK-A63 | ThermoGrip® Standard - *Metric*

Catalog Number	Dimensions (*mm*)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0300-80-HSKA63	*3*	*80*	*15*	*20*	*20*	*5*	M6
ST0400-80-HSKA63	*4*	*80*	*15*	*20*	*20*	*5*	M6
ST0500-80-HSKA63	*5*	*80*	*15*	*20*	*25*	*5*	M6
ST0600-80-HSKA63	*6*	*80*	*21*	*27*	*36*	*10*	M5
ST0800-80-HSKA63	*8*	*80*	*21*	*27*	*36*	*10*	M6
ST1000-85-HSKA63	*10*	*85*	*24*	*32*	*42*	*10*	M8x1
ST1200-90-HSKA63	*12*	*90*	*24*	*32*	*47*	*10*	M10x1
ST1400-90-HSKA63	*14*	*90*	*27*	*34*	*47*	*10*	M10x1
ST1600-95-HSKA63	*16*	*95*	*27*	*34*	*50*	*10*	M12x1
ST1800-95-HSKA63	*18*	*95*	*33*	*42*	*50*	*10*	M12x1
ST2000-100-HSKA63	*20*	*100*	*33*	*42*	*52*	*10*	M16x1
ST2500-115-HSKA63	*25*	*115*	*44*	*53*	*58*	*10*	M16x1
LONG PROJECTION							
ST0600-120-HSKA63	*6*	*120*	*21*	*27*	*36*	*10*	M5
ST0800-120-HSKA63	*8*	*120*	*21*	*27*	*36*	*10*	M6
ST1000-120-HSKA63	*10*	*120*	*24*	*32*	*42*	*10*	M8x1
ST1200-120-HSKA63	*12*	*120*	*24*	*32*	*47*	*10*	M10x1
ST1400-120-HSKA63	*14*	*120*	*27*	*34*	*47*	*10*	M10x1
ST1600-120-HSKA63	*16*	*120*	*27*	*34*	*50*	*10*	M12x1
ST1800-120-HSKA63	*18*	*120*	*33*	*42*	*50*	*10*	M12x1
ST2000-120-HSKA63	*20*	*120*	*33*	*42*	*52*	*10*	M16x1
ST3200-120-HSKA63	*32*	*120*	*44*	*53*	*58*	*10*	M16x1
EXTRA LONG PROJECTION							
ST0600-160-HSKA63	*6*	*160*	*21*	*32*	*36*	*10*	M5
ST0800-160-HSKA63	*8*	*160*	*21*	*32*	*36*	*10*	M6
ST1000-160-HSKA63	*10*	*160*	*24*	*34*	*42*	*10*	M8x1
ST1200-160-HSKA63	*12*	*160*	*24*	*34*	*47*	*10*	M10x1
ST1400-160-HSKA63	*14*	*160*	*27*	*42*	*47*	*10*	M10x1
ST1600-160-HSKA63	*16*	*160*	*27*	*42*	*50*	*10*	M12x1
ST1800-160-HSKA63	*18*	*160*	*33*	*51*	*50*	*10*	M12x1
ST2000-160-HSKA63	*20*	*160*	*33*	*51*	*52*	*10*	M16x1
ST2500-160-HSKA63	*25*	*160*	*44*	*53*	*58*	*10*	M16x1
ST3200-160-HSKA63	*32*	*160*	*44*	*53*	*62*	*10*	M16x1

All holders can be run with internal coolant
Please Order Coolant Tube Catalog separately
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm

HSK-A100 | ThermoGrip® Standard





HSK-A100 | ThermoGrip® Standard-Inch

Catalog Number	Dimensions (inch)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0635-85-HSKA100	0.250	3.35	0.83	1.06	1.42	0.39	M5
ST0953-90-HSKA100	0.375	3.54	0.94	1.26	1.65	0.39	M8X1
ST1270-95-HSKA100	0.500	3.74	1.06	1.34	1.85	0.39	M10X1
ST1588-95-HSKA100	0.625	3.94	1.06	1.34	1.97	0.39	M12X1
ST1905-105-HSKA100	0.750	4.13	1.30	1.65	2.05	0.39	M16X1
LONG PROJECTION							
ST0635-120-HSKA100	0.250	4.72	0.83	1.06	1.42	0.39	M5
ST0953-120-HSKA100	0.375	4.72	0.94	1.26	1.65	0.39	M8X1
ST1270-120-HSKA100	0.500	4.72	1.06	1.34	1.85	0.39	M10X1
ST1588-120-HSKA100	0.625	4.72	1.06	1.34	1.97	0.39	M12X1
ST1905-120-HSKA100	0.750	4.72	1.30	1.65	2.05	0.39	M16X1
ST2540-120-HSKA100	1.000	4.72	1.73	2.09	2.44	0.39	M16X1
ST3175-120-HSKA100	1.250	4.72	1.73	2.09	2.44	0.39	M16X1
EXTRA LONG PROJECTION							
ST0635-160-HSKA100	0.250	6.30	0.83	1.26	1.42	0.39	M5
ST0953-160-HSKA100	0.375	6.30	0.94	1.34	1.65	0.39	M8X1
ST1270-160-HSKA100	0.500	6.30	1.06	1.65	1.85	0.39	M10X1
ST1588-160-HSKA100	0.625	6.30	1.06	1.65	1.97	0.39	M12X1
ST1905-160-HSKA100	0.750	6.30	1.30	2.01	2.05	0.39	M16X1
ST2540-160-HSKA100	1.000	6.30	1.73	2.36	2.44	0.39	M16X1

All holders can be run with internal coolant
Please Order Coolant Tube separately
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm

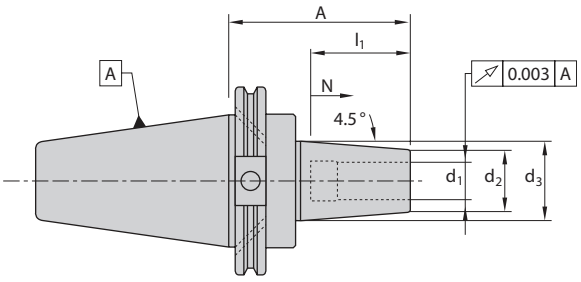
HSK-A100 | ThermoGrip® Standard-*Metric*

Catalog Number	Dimensions (*mm*)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0600-85-HSKA100	*6*	*85*	*21*	*27*	*36*	*10*	M5
ST0800-85-HSKA100	*8*	*85*	*21*	*27*	*36*	*10*	M6
ST1000-90-HSKA100	*10*	*90*	*24*	*32*	*42*	*10*	M8x1
ST1200-95-HSKA100	*12*	*95*	*24*	*32*	*47*	*10*	M10x1
ST1400-95-HSKA100	*14*	*95*	*27*	*34*	*50*	*10*	M10x1
ST1600-100-HSKA100	*16*	*100*	*27*	*34*	*50*	*10*	M12x1
ST1800-100-HSKA100	*18*	*100*	*33*	*42*	*50*	*10*	M12x1
ST2000-105-HSKA100	*20*	*105*	*33*	*42*	*52*	*10*	M16x1
ST2500-115-HSKA100	*25*	*115*	*44*	*53*	*58*	*10*	M16x1
LONG PROJECTION							
ST0600-120-HSKA100	*6*	*120*	*21*	*27*	*36*	*10*	M5
ST0800-120-HSKA100	*8*	*120*	*21*	*27*	*36*	*10*	M6
ST1000-120-HSKA100	*10*	*120*	*24*	*32*	*42*	*10*	M8x1
ST1200-120-HSKA100	*12*	*120*	*24*	*32*	*47*	*10*	M10x1
ST1400-120-HSKA100	*14*	*120*	*27*	*34*	*50*	*10*	M10x1
ST1600-120-HSKA100	*16*	*120*	*27*	*34*	*50*	*10*	M12x1
ST1800-120-HSKA100	*18*	*120*	*33*	*42*	*50*	*10*	M12x1
ST2000-120-HSKA100	*20*	*120*	*33*	*42*	*52*	*10*	M16x1
ST2500-120-HSKA100	*25*	*120*	*44*	*53*	*58*	*10*	M16x1
ST3200-120-HSKA100	*32*	*120*	*44*	*53*	*62*	*10*	M16x1
EXTRA LONG PROJECTION							
ST0600-160-HSKA100	*6*	*160*	*21*	*32*	*36*	*10*	M5
ST0800-160-HSKA100	*8*	*160*	*21*	*32*	*36*	*10*	M6
ST1000-160-HSKA100	*10*	*160*	*24*	*34*	*42*	*10*	M8x1
ST1200-160-HSKA100	*12*	*160*	*24*	*34*	*47*	*10*	M10x1
ST1400-160-HSKA100	*14*	*160*	*27*	*42*	*47*	*10*	M10x1
ST1600-160-HSKA100	*16*	*160*	*27*	*42*	*50*	*10*	M12x1
ST1800-160-HSKA100	*18*	*160*	*33*	*51*	*52*	*10*	M12x1
ST2000-160-HSKA100	*20*	*160*	*33*	*51*	*52*	*10*	M16x1
ST2500-160-HSKA100	*25*	*160*	*44*	*53*	*58*	*10*	M16x1
ST3200-160-HSKA100	*32*	*160*	*44*	*53*	*62*	*10*	M16x1

All holders can be run with internal coolant
Please Order Coolant Tube separately
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm

CAT40 | ThermoGrip® Standard





CAT40 | ThermoGrip® Standard-Inch

Catalog Number	Dimensions (inch)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0318-95-CAT40	0.125	3.74	0.59	0.79	0.79	0.20	M6
ST0476-95-CAT40	0.187	3.74	0.59	0.79	0.79	0.20	M6
ST0635-95-CAT40	0.250	3.74	0.83	1.06	1.42	0.39	M5
ST0953-95-CAT40	0.375	3.74	0.95	1.26	1.65	0.39	M8x1
ST1270-95-CAT40	0.500	3.74	1.06	1.34	1.85	0.39	M10x1
ST1588-95-CAT40	0.625	3.74	1.06	1.34	1.97	0.39	M12x1
ST1905-95-CAT40	0.750	3.74	1.30	1.65	2.05	0.39	M16x1
ST2540-100-CAT40	1.000	3.94	1.73	2.09	2.44	0.39	M16x1
ST3175-100-CAT40	1.250	3.94	1.73	2.09	2.44	0.39	M16x1
LONG PROJECTION							
ST0318-120-CAT40	0.125	4.73	0.59	0.79	0.79	0.20	M6
ST0476-120-CAT40	0.187	4.73	0.59	0.79	0.79	0.20	M6
ST0635-120-CAT40	0.250	4.73	0.83	1.06	1.42	0.39	M5
ST0953-120-CAT40	0.375	4.73	0.95	1.26	1.65	0.39	M8x1
ST1270-120-CAT40	0.500	4.73	1.06	1.34	1.85	0.39	M10x1
ST1588-120-CAT40	0.625	4.73	1.06	1.34	1.97	0.39	M12x1
ST1905-120-CAT40	0.750	4.73	1.30	1.65	2.05	0.39	M16x1
ST2540-120-CAT40	1.000	4.73	1.73	2.09	2.44	0.39	M16x1
ST3175-120-CAT40	1.25	4.73	1.73	2.09	2.44	0.39	M16x1
EXTRA LONG PROJECTION							
ST0318-160-CAT40	0.125	6.30	0.59	0.79	0.79	0.20	M6
ST0476-160-CAT40	0.187	6.30	0.59	0.79	0.79	0.20	M6
ST0635-160-CAT40	0.250	6.30	0.83	1.26	1.42	0.39	M5
ST0953-160-CAT40	0.375	6.30	0.95	1.34	1.65	0.39	M8x1
ST1270-160-CAT40	0.500	6.30	1.06	1.65	1.85	0.39	M10x1
ST1588-160-CAT40	0.625	6.30	1.06	1.65	1.97	0.39	M12x1
ST1905-160-CAT40	0.750	6.30	1.30	1.75	2.05	0.39	M16x1
ST2540-160-CAT40	1.000	6.30	1.73	2.09	2.44	0.39	M16x1
ST3175-160-CAT40	1.250	6.30	1.73	2.09	2.44	0.39	M16x1

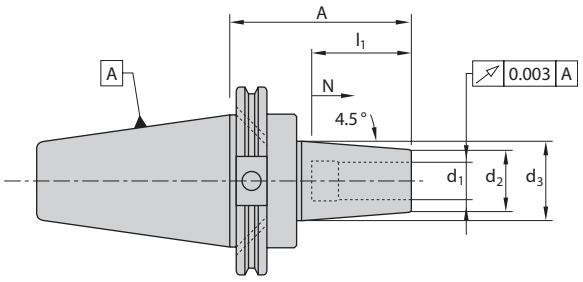
CAT40 | ThermoGrip® Standard- *Metric*

Catalog Number	Dimensions (*mm*)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0300-95-CAT40	*3*	*95*	*15*	*20*	*20*	*5*	M6
ST0400-95-CAT40	*4*	*95*	*15*	*20*	*20*	*5*	M6
ST0500-95-CAT40	*5*	*95*	*15*	*20*	*25*	*5*	M6
ST0600-95-CAT40	*6*	*95*	*21*	*27*	*36*	*10*	M5
ST0800-95-CAT40	*8*	*95*	*21*	*27*	*36*	*10*	M6
ST1000-95-CAT40	*10*	*95*	*24*	*32*	*42*	*10*	M8x1
ST1200-95-CAT40	*12*	*95*	*24*	*32*	*47*	*10*	M10x1
ST1400-95-CAT40	*14*	*95*	*27*	*34*	*47*	*10*	M10x1
ST1600-95-CAT40	*16*	*95*	*27*	*34*	*50*	*10*	M12x1
ST1800-95-CAT40	*18*	*95*	*33*	*42*	*50*	*10*	M12x1
ST2000-95-CAT40	*20*	*95*	*33*	*42*	*52*	*10*	M16x1
ST2500-100-CAT40	*25*	*100*	*44*	*53*	*58*	*10*	M16x1
ST3200-100-CAT40	*32*	*100*	*44*	*53*	*62*	*10*	M16x1
LONG PROJECTION							
ST0600-120-CAT40	*6*	*120*	*21*	*27*	*36*	*10*	M5
ST0800-120-CAT40	*8*	*120*	*21*	*27*	*36*	*10*	M6
ST1000-120-CAT40	*10*	*120*	*24*	*32*	*42*	*10*	M8x1
ST1200-120-CAT40	*12*	*120*	*24*	*32*	*47*	*10*	M10x1
ST1400-120-CAT40	*14*	*120*	*27*	*34*	*47*	*10*	M10x1
ST1600-120-CAT40	*16*	*120*	*27*	*34*	*50*	*10*	M12x1
ST1800-120-CAT40	*18*	*120*	*33*	*42*	*50*	*10*	M12x1
ST2000-120-CAT40	*20*	*120*	*33*	*42*	*52*	*10*	M16x1
ST2500-120-CAT40	*25*	*120*	*44*	*53*	*58*	*10*	M16x1
ST3200-120-CAT40	*32*	*120*	*44*	*53*	*62*	*10*	M16x1
EXTRA LONG PROJECTION							
ST0600-160-CAT40	*6*	*160*	*21*	*32*	*36*	*10*	M5
ST0800-160-CAT40	*8*	*160*	*21*	*32*	*36*	*10*	M6
ST1000-160-CAT40	*10*	*160*	*24*	*34*	*42*	*10*	M8x1
ST1200-160-CAT40	*12*	*160*	*24*	*34*	*47*	*10*	M10x1
ST1400-160-CAT40	*14*	*160*	*27*	*42*	*47*	*10*	M10x1
ST1600-160-CAT40	*16*	*160*	*27*	*42*	*50*	*10*	M12x1
ST1800-160-CAT40	*18*	*160*	*33*	*44*	*50*	*10*	M12x1
ST2000-160-CAT40	*20*	*160*	*44*	*53*	*52*	*10*	M16x1
ST2500-160-CAT40	*25*	*160*	*44*	*53*	*58*	*10*	M16x1
ST3200-160-CAT40	*32*	*160*	*44*	*53*	*62*	*10*	M16x1

NOTE: All Holders Have 5-8-11 UNC Thread for Retention Knob & DIN FORM B Flange Coolant Delivery Option Standard
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm

CAT50 | ThermoGrip® Standard





CAT50 | ThermoGrip® Standard-INCH

Catalog Number	Dimensions (inch)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0635-95-CAT50	0.250	3.74	0.83	1.06	1.42	0.39	M5
ST0953-95-CAT50	0.375	3.74	0.95	1.26	1.65	0.39	M8x1
ST1270-95-CAT50	0.500	3.74	1.06	1.34	1.85	0.39	M10x1
ST1588-95-CAT50	0.625	3.74	1.06	1.34	1.97	0.39	M12x1
ST1905-95-CAT50	0.750	3.74	1.30	1.65	2.05	0.39	M16x1
ST2540-105-CAT50	1.000	4.13	1.73	2.09	2.44	0.39	M16x1
ST3175-105-CAT50	1.250	4.13	1.73	2.09	2.44	0.39	M16x1
EXTRA LONG PROJECTION							
ST0635-160-CAT50	0.250	6.30	0.83	1.26	1.42	0.39	M5
ST0953-160-CAT50	0.375	6.30	0.95	1.34	1.65	0.39	M8x1
ST1270-160-CAT50	0.500	6.30	1.06	1.65	1.85	0.39	M10x1
ST1588-160-CAT50	0.625	6.30	1.06	1.65	1.97	0.39	M12x1
ST1905-160-CAT50	0.750	6.30	1.30	2.01	2.05	0.39	M16x1
ST2540-160-CAT50	1.000	6.30	1.73	2.36	2.44	0.39	M16x1
ST3175-160-CAT50	1.250	6.30	1.73	2.36	2.44	0.39	M16x1

NOTE: All Holders Have 1-8 UNC Thread for Retention Knob & DIN FORM B Flange Coolant Delivery Option-Standard
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm

CAT50 | ThermoGrip® Standard-*Metric*

Catalog Number	Dimensions (*mm*)						
	d_1	A	d_2	d_3	l_1	N	g
STANDARD PROJECTION							
ST0600-95-CAT50	*6*	*95*	*21*	*27*	*36*	*10*	M5
ST0800-95-CAT50	*8*	*95*	*21*	*27*	*36*	*10*	M6
ST1000-95-CAT50	*10*	*95*	*24*	*32*	*42*	*10*	M8x1
ST1200-95-CAT50	*12*	*95*	*24*	*32*	*47*	*10*	M10x1
ST1400-95-CAT50	*14*	*95*	*27*	*34*	*47*	*10*	M10x1
ST1600-95-CAT50	*16*	*95*	*27*	*34*	*50*	*10*	M12x1
ST1800-95-CAT50	*18*	*95*	*33*	*42*	*50*	*10*	M12x1
ST2000-95-CAT50	*20*	*95*	*33*	*42*	*52*	*10*	M16x1
ST2500-105-CAT50	*25*	*105*	*44*	*53*	*58*	*10*	M16x1
ST3200-105-CAT50	*32*	*105*	*44*	*53*	*62*	*10*	M16x1
EXTRA LONG PROJECTION							
ST0600-160-CAT50	*6*	*160*	*21*	*32*	*36*	*10*	M5
ST0800-160-CAT50	*8*	*160*	*21*	*32*	*36*	*10*	M6
ST1000-160-CAT50	*10*	*160*	*24*	*34*	*42*	*10*	M8x1
ST1200-160-CAT50	*12*	*160*	*24*	*34*	*47*	*10*	M10x1
ST1400-160-CAT50	*14*	*160*	*27*	*42*	*47*	*10*	M10x1
ST1600-160-CAT50	*16*	*160*	*27*	*42*	*50*	*10*	M12x1
ST1800-160-CAT50	*18*	*160*	*33*	*51*	*50*	*10*	M12x1
ST2000-160-CAT50	*20*	*160*	*33*	*51*	*52*	*10*	M16x1
ST2500-160-CAT50	*25*	*160*	*44*	*60*	*58*	*10*	M16x1
ST3200-160-CAT50	*32*	*160*	*44*	*60*	*62*	*10*	M16x1

NOTE: All Holders Have 1-8 UNC Thread for Retention Knob & DIN FORM B Flange Coolant Delivery Option-Standard
NOTE: Tool Shank Tolerance must be h6 or better, h4 for holders with ID smaller than 5mm

ThermoGrip® Machine: ISG3430TWK-11-WS

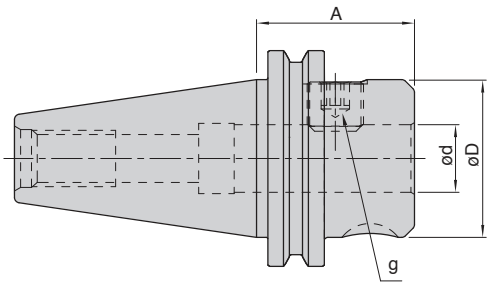


This processor controlled ISG3430TWK-11-WS unit is simple to use. All that needs to be done is to select the tool diameter range. After the induction coil is positioned around the tool holder, push the start button and the coil heats the tool holder sufficiently. When heat cycle is completed, move the coil upward away from tool. Raise the cooling sleeve and press the cooling button, allowing the tool to cool in seconds.

ISG3430TWK-11-WS: It is universal shrinking unit for the professional use of shrinking technology. With its unique coil changing system, the power transfer adjusted to different clamping chucks is guaranteed within a short period of time. Compared to other systems, this makes it possible to clamp the smallest diameter tools. This allows for a constant preparation of a high number of tools. Guaranteed.

ThermoGrip® Machine: ISG3430TWK-11-WS			
Catalog No.	ISG3430TWK-11-WS	Max Tool Length	400mm 15.75”
Dimensions D x W x H	800mm x 560mm x 950mm 31.5” x 22” x 38”	Max Cooling Length	160mm 6.3”
Clamping Range SC	6-32mm 1/8”-1-1/4”	Cooling Type	Liquid/ emulsion
Clamping Range HSS	6-32mm 1/4”-1-1/4”	Cooling Time	20 Seconds
Coil	Quick Change	Geometry Independent Cooling	Yes
Electric Current Supply	3x480V-16A	Max Machine Interface	HSK 100 CAT50
Power kW	11 kW	Required Accessories	setting pot
Weight	115 lbs	Optional Accessories	setting pot



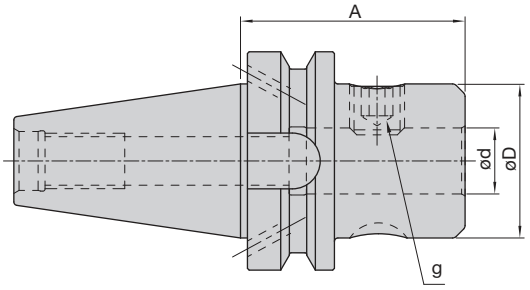


CAT40	Balanced to G6.3 @ 8,000 RPM			
Catalog Number	Dimensions			
	d (inch)	D (*mm*)	A (inch)	g
SSEH-0.125-1.38-CAT40	0.125	*17.5*	1.38	6-32 UNC
SSEH-0.125-4.50-CAT40	0.125	*17.5*	4.50	6-32 UNC
SSEH-0.187-1.38-CAT40	0.187	*17.5*	1.38	8-32 UNC
SSEH-0.187-2.50-CAT40	0.187	*17.5*	2.50	8-32 UNC
SSEH-0.187-4.50-CAT40	0.187	*17.5*	4.50	8-32 UNC
SSEH-0.250-1.38-CAT40	0.250	*19.8*	1.38	1-4-28 UNF
SSEH-0.250-2.50-CAT40	0.250	*19.8*	2.50	1-4-28 UNF
SSEH-0.250-4.50-CAT40	0.250	*19.8*	4.50	1-4-28 UNF
SSEH-0.312-1.38-CAT40	0.312	*25.4*	1.38	5-16-24 UNF
SSEH-0.312-2.50-CAT40	0.312	*25.4*	2.50	5-16-24 UNF
SSEH-0.312-4.50-CAT40	0.312	*25.4*	4.50	5-16-24 UNF
SSEH-0.375-1.38-CAT40	0.375	*25.4*	1.38	3-8-24 UNF
SSEH-0.375-2.50-CAT40	0.375	*25.4*	2.50	3-8-24 UNF
SSEH-0.375-4.50-CAT40	0.375	*25.4*	4.50	3-8-24 UNF
SSEH-0.375-6.50-CAT40	0.375	*25.4*	6.50	3-8-24 UNF
SSEH-0.437-1.75-CAT40	0.437	*35.1*	1.75	7-16-20 UNF
SSEH-0.437-4.50-CAT40	0.437	*35.1*	4.50	7-16-20 UNF
SSEH-0.500-1.75-CAT40	0.500	*35.1*	1.75	7-16-20 UNF
SSEH-0.500-2.62-CAT40	0.500	*35.1*	2.62	7-16-20 UNF
SSEH-0.500-4.62-CAT40	0.500	*35.1*	4.62	7-16-20 UNF
SSEH-0.500-6.62-CAT40	0.500	*35.1*	6.62	7-16-20 UNF
SSEH-0.625-1.75-CAT40	0.625	*38.1*	1.75	1-2-20 UNF
SSEH-0.625-3.75-CAT40	0.625	*38.1*	3.75	1-2-20 UNF
SSEH-0.625-5.75-CAT40	0.625	*38.1*	5.75	1-2-20 UNF
SSEH-0.750-1.75-CAT40	0.750	*44.5*	1.75	5-8-18 UNF
SSEH-0.750-3.75-CAT40	0.750	*44.5*	3.75	5-8-18 UNF
SSEH-0.750-5.75-CAT40	0.750	*44.5*	5.75	5-8-18 UNF
SSEH-0.875-1.75-CAT40	0.875	*50.8*	1.75	5-8-18 UNF
SSEH-0.875-4.00-CAT40	0.875	*50.8*	4.00	5-8-18 UNF
SSEH-0.875-6.00-CAT40	0.875	*50.8*	6.00	5-8-18 UNF
SSEH-1.000-1.75-CAT40	1.000	*50.8*	1.75	3-4-16 UNF
SSEH-1.000-4.00-CAT40	1.000	*50.8*	4.00	3-4-16 UNF
SSEH-1.000-6.00-CAT40	1.000	*50.8*	6.00	3-4-16 UNF
SSEH-1.250-2.00-CAT40	1.250	*63.5*	2.00	3-4-16 UNF
SSEH-1.250-4.25-CAT40	1.250	*63.5*	4.25	3-4-16 UNF
SSEH-1.250-6.25-CAT40	1.250	*63.5*	6.25	3-4-16 UNF
SSEH-1.500-4.62-CAT40	1.500	*69.9*	4.62	3-4-16 UNF
SSEH-1.500-6.62-CAT40	1.500	*69.9*	6.62	3-4-16 UNF

CAT50	Balanced to G6.3 @ 8,000 RPM			
Catalog Number	Dimensions			
	d (inch)	D (*mm*)	A (inch)	g
SSEH-0.187-2.50-CAT50	0.187	*17.5*	2.50	8-32 UNC
SSEH-0.187-4.50-CAT50	0.187	*17.5*	4.50	8-32 UNC
SSEH-0.187-6.50-CAT50	0.187	*17.5*	6.50	8-32 UNC
SSEH-0.250-2.50-CAT50	0.250	*19.8*	2.50	1-4-28 UNF
SSEH-0.250-4.50-CAT50	0.250	*19.8*	4.50	1-4-28 UNF
SSEH-0.250-6.50-CAT50	0.250	*19.8*	6.50	1-4-28 UNF
SSEH-0.312-2.50-CAT50	0.312	*25.4*	2.50	5-16-24 UNF
SSEH-0.312-4.50-CAT50	0.312	*25.4*	4.50	5-16-24 UNF
SSEH-0.312-6.50-CAT50	0.312	*25.4*	6.50	5-16-24 UNF
SSEH-0.375-2.50-CAT50	0.375	*25.4*	2.50	3-8-24 UNF
SSEH-0.375-4.50-CAT50	0.375	*25.4*	4.50	3-8-24 UNF
SSEH-0.375-6.50-CAT50	0.375	*25.4*	6.50	3-8-24 UNF
SSEH-0.375-8.50-CAT50	0.375	*25.4*	8.50	3-8-24 UNF
SSEH-0.437-2.50-CAT50	0.437	*35.1*	2.50	7-16-20 UNF
SSEH-0.500-2.62-CAT50	0.500	*35.1*	2.62	7-16-20 UNF
SSEH-0.500-4.62-CAT50	0.500	*35.1*	4.62	7-16-20 UNF
SSEH-0.500-6.62-CAT50	0.500	*35.1*	6.62	7-16-20 UNF
SSEH-0.500-8.50-CAT50	0.500	*35.1*	8.50	7-16-20 UNF
SSEH-0.625-3.75-CAT50	0.625	*38.1*	3.75	1-2-20 UNF
SSEH-0.625-5.75-CAT50	0.625	*38.1*	5.75	1-2-20 UNF
SSEH-0.625-7.75-CAT50	0.625	*38.1*	7.75	1-2-20 UNF
SSEH-0.750-3.75-CAT50	0.750	*44.5*	3.75	5-8-18 UNF
SSEH-0.750-5.75-CAT50	0.750	*44.5*	5.75	5-8-18 UNF
SSEH-0.750-7.75-CAT50	0.750	*44.5*	7.75	5-8-18 UNF
SSEH-0.750-10.00-CAT50	0.750	*44.5*	10.00	5-8-18 UNF
SSEH-0.875-3.75-CAT50	0.875	*50.8*	3.75	5-8-18 UNF
SSEH-0.875-5.75-CAT50	0.875	*50.8*	5.75	5-8-18 UNF
SSEH-0.875-7.75-CAT50	0.875	*50.8*	7.75	5-8-18 UNF
SSEH-1.000-4.00-CAT50	1.000	*50.8*	4.00	3-4-16 UNF
SSEH-1.000-6.00-CAT50	1.000	*50.8*	6.00	3-4-16 UNF
SSEH-1.000-8.00-CAT50	1.000	*50.8*	8.00	3-4-16 UNF
SSEH-1.000-10.00-CAT50	1.000	*50.8*	10.00	3-4-16 UNF
SSEH-1.250-4.00-CAT50	1.250	*63.5*	4.00	3-4-16 UNF
SSEH-1.250-6.00-CAT50	1.250	*63.5*	6.00	3-4-16 UNF
SSEH-1.250-8.00-CAT50	1.250	*63.5*	8.00	3-4-16 UNF
SSEH-1.250-10.00-CAT50	1.250	*63.5*	10.00	3-4-16 UNF
SSEH-1.500-4.00-CAT50	1.500	*69.9*	4.00	3-4-16 UNF
SSEH-1.500-6.00-CAT50	1.500	*69.9*	6.00	3-4-16 UNF
SSEH-1.500-8.00-CAT50	1.500	*69.9*	8.00	3-4-16 UNF
SSEH-2.000-5.62-CAT50	2.000	*95.3*	5.62	1-14 UNS
SSEH-2.000-9.62-CAT50	2.000	*95.3*	9.62	1-14 UNS

Endmill Holders

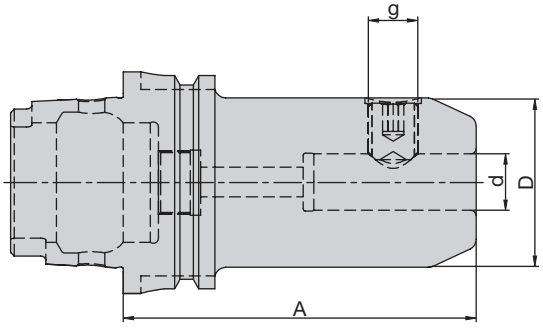




BT30	Balanced to G6.3 @ 8,000 RPM			
Catalog Number	Dimensions			
	d (inch)	D (*mm*)	A (inch)	g
SSEH-0.125-2.36-BT30	0.125	*17.5*	2.36	6-32 UNC
SSEH-0.188-2.36-BT30	0.187	*17.5*	2.36	8-32 UNC
SSEH-0.250-2.36-BT30	0.250	*19.8*	2.36	1-4-28 UNF
SSEH-0.312-2.36-BT30	0.312	*25.4*	2.36	5-16-24 UNF
SSEH-0.375-2.36-BT30	0.375	*25.4*	2.36	3-8-24 UNF
SSEH-0.500-2.36-BT30	0.500	*35.1*	2.36	7-16-20 UNF
SSEH-0.625-2.36-BT30	0.625	*38.1*	2.36	1-2-20 UNF
SSEH-0.750-2.36-BT30	0.750	*44.5*	2.36	5-8-18 UNF

BT40	Balanced to G6.3 @ 8,000 RPM			
Catalog Number	Dimensions			
	d (inch)	D (*mm*)	A (inch)	g
SSEH-0.250-2.55-BT40	0.250	*19.8*	2.55	1-4-28 UNF
SSEH-0.312-2.55-BT40	0.312	*25.4*	2.55	5-16-24 UNF
SSEH-0.375-2.55-BT40	0.375	*25.4*	2.55	3-8-24 UNF
SSEH-0.500-2.55-BT40	0.500	*35.1*	2.55	7-16-20 UNF
SSEH-0.500-4.00-BT40	0.500	*35.1*	4.00	7-16-20 UNF
SSEH-0.625-2.55-BT40	0.625	*38.1*	2.55	1-2-20 UNF
SSEH-0.750-2.55-BT40	0.750	*44.5*	2.55	5-8-18 UNF
SSEH-0.875-3.35-BT40	0.875	*50.8*	3.35	5-8-18 UNF
SSEH-1.000-3.74-BT40	1.000	*50.8*	3.74	3-4-16 UNF
SSEH-1.000-5.00-BT40	1.000	*50.8*	5.00	3-4-16 UNF
SSEH-1.250-3.35-BT40	1.250	*63.5*	3.35	3-4-16 UNF



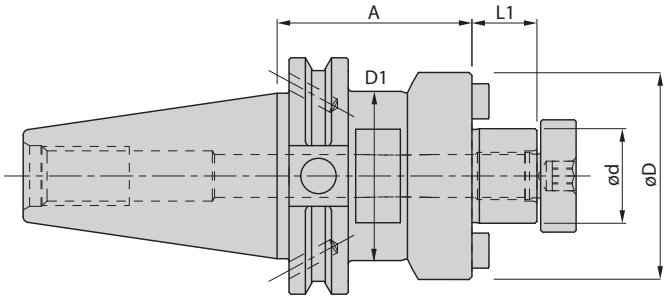


HSK-A63 End Mill Holder	Balanced to G6.3 @ 20,000 RPM			
Catalog Number Holders with Weldon Notch DIN1835-B	Dimensions			
	d (inch)	D (inch)	A (inch)	g
SSEH-0.250"-3.94"/HSK-A63	0.250	1.00	3.94	1/4-28UNF
SSEH-0.375"-3.94"/HSK-A63	0.375	1.10	3.94	3/8-24UNF
SSEH-0.500"-3.94"/HSK-A63	0.500	1.65	3.94	7/16-20UNF
SSEH-0.625"-3.94"/HSK-A63	0.625	1.89	3.94	1/2-20UNF
SSEH-0.750"-3.94"/HSK-A63	0.750	2.05	3.94	5/8-18UNF
SSEH-1.00"-4.33"/HSK-A63	1.000	2.60	4.33	3/4-16UNF
SSEH-1.250"-4.33"/HSK-A63	1.250	2.83	4.33	3/4-16UNF

HSK-A100 End Mill Holders	Balanced to G6.3 @ 20,000 RPM			
Catalog Number Holders with Weldon Notch DIN1835-B	Dimensions			
	d (inch)	D (inch)	A (inch)	g
SSEH-0.250"-3.15"/HSK-A100	0.250	0.78	3.15"	1/4-28UNF-8
SSEH-0.312"-3.15"/HSK-A100	0.312	1.00	3.15"	5/16-24UNF-10
SSEH-0.312"-6.30"/HSK-A100	0.312	1.00	6.30"	5/16-24UNF-10
SSEH-0.375"-3.15"/HSK-A100	0.375	1.00	3.15"	3/8-24UNF-9
SSEH-0.375"-6.30"/HSK-A100	0.375	1.00	6.30"	3/8-24UNF-9
SSEH-0.500"-3.15"/HSK-A100	0.500	1.38	3.15"	7/16-20UNF-12
SSEH-0.500"-6.30"/HSK-A100	0.500	1.38	6.30"	7/16-20UNF-12
SSEH-0.625"-3.94"/HSK-A100	0.625	1.50	3.94"	1/2-20UNF-14
SSEH-0.625"-6.30"/HSK-A100	0.625	1.50	6.30"	1/2-20UNF-14
SSEH-0.750"-3.94"/HSK-A100	0.750	1.75	3.94"	5/8-18UNF-14
SSEH-0.750"-6.30"/HSK-A100	0.750	1.75	6.30"	5/8-18UNF-14
SSEH-1.000"-3.94"/HSK-A100	1.000	2.00	3.94"	3/4-16UNF-14
SSEH-1.000"-6.30"/HSK-A100	1.000	2.00	6.30"	3/4-16UNF-14
SSEH-1.250"-3.94"/HSK-A100	1.250	2.50	3.94"	3/4-16UNF-14
SSEH-1.250"-6.30"/HSK-A100	1.250	2.50	6.30"	3/4-16UNF-14

Shell Mill Holders





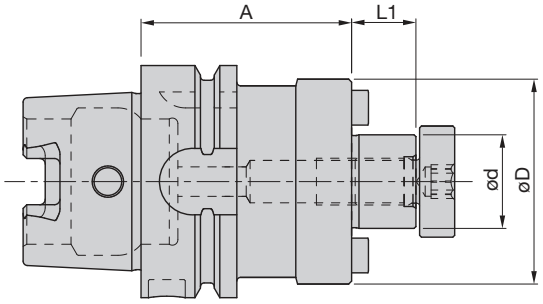
Shell Mill Holder	Balanced to G6.3 @ 8,000 RPM						
Catalog Number	Dimensions						
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L_1 (mm)	D_1 (mm)
CAT40							
SSMH-0.500-1.38-CAT40	12.7	0.50	36.6	35.1	1.38	14.2	25.4
SSMH-0.500-3.50-CAT40	12.7	0.50	36.6	88.9	3.50	14.2	25.4
SSMH-0.750-1.38-CAT40	19.1	0.75	44.4	35.1	1.38	17.5	28.7
SSMH-0.750-3.50-CAT40	19.1	0.75	44.4	88.9	3.50	17.5	28.7
SSMH-0.750-6.00-CAT40	19.1	0.75	44.4	152.4	6.00	17.5	28.7
SSMH-1.000-1.75-CAT40	25.4	1.00	55.6	44.5	1.75	17.5	40.1
SSMH-1.000-2.06-CAT40	25.4	1.00	55.6	52.3	2.06	17.5	40.1
SSMH-1.000-4.00-CAT40	25.4	1.00	55.6	101.6	4.00	17.5	40.1
SSMH-1.000-6.00-CAT40	25.4	1.00	55.6	152.4	6.00	17.5	40.1
SSMH-1.250-2.12-CAT40	31.8	1.25	69.9	53.8	2.12	17.5	50.3
SSMH-1.250-4.00-CAT40	31.8	1.25	69.9	101.6	4.00	17.5	50.3
SSMH-1.500-2.41-CAT40	38.1	1.50	85.9	61.2	2.41	23.9	60.7
SSMH-1.500-4.00-CAT40	38.1	1.50	85.9	101.6	4.00	23.9	60.7
CAT50							
SSMH-0.500-1.50-CAT50	12.7	0.50	36.6	38.1	1.50	14.2	25.4
SSMH-0.500-3.50-CAT50	12.7	0.50	36.6	88.9	3.50	14.2	25.4
SSMH-0.500-5.50-CAT50	12.7	0.50	36.6	139.7	5.50	14.2	25.4
SSMH-0.750-1.50-CAT50	19.1	0.75	44.5	38.1	1.50	17.5	28.7
SSMH-0.750-3.50-CAT50	19.1	0.75	44.5	88.9	3.50	17.5	28.7
SSMH-0.750-5.50-CAT50	19.1	0.75	44.5	139.7	5.50	17.5	28.7
SSMH-0.750-7.00-CAT50	19.1	0.75	44.5	177.8	7.00	17.5	28.7
SSMH-0.750-9.00-CAT50	19.1	0.75	44.5	228.6	9.00	17.5	28.7
SSMH-1.000-10.00-CAT50	25.4	1.00	55.6	254.0	10.00	17.5	40.1
SSMH-1.000-2.00-CAT50	25.4	1.00	55.6	50.8	2.00	17.5	40.1
SSMH-1.000-4.00-CAT50	25.4	1.00	55.6	101.6	4.00	17.5	40.1
SSMH-1.000-6.00-CAT50	25.4	1.00	55.6	152.4	6.00	17.5	40.1
SSMH-1.000-8.00-CAT50	25.4	1.00	55.6	203.2	8.00	17.5	40.1
SSMH-1.250-1.50-CAT50	31.8	1.25	69.9	38.1	1.50	17.5	50.3
SSMH-1.250-3.50-CAT50	31.8	1.25	69.9	88.9	3.50	17.5	50.3
SSMH-1.250-5.50-CAT50	31.8	1.25	69.9	139.7	5.50	17.5	50.3
SSMH-1.250-7.00-CAT50	31.8	1.25	69.9	177.8	7.00	17.5	50.3
SSMH-1.250-9.00-CAT50	31.8	1.25	69.9	228.6	9.00	17.5	50.3
SSMH-1.500-2.40-CAT50	38.1	1.50	85.9	61.0	2.40	23.9	60.7
SSMH-1.500-4.00-CAT50	38.1	1.50	85.9	101.6	4.00	23.9	60.7
SSMH-1.500-6.00-CAT50	38.1	1.50	85.9	152.4	6.00	23.9	60.7
SSMH-1.500-8.00-CAT50	38.1	1.50	85.9	203.2	8.00	23.9	60.7
SSMH-2.000-2.40-CAT50	50.8	2.00	123.9	61.0	2.40	23.9	77.2
SSMH-2.000-4.00-CAT50	50.8	2.00	123.9	101.6	4.00	23.9	77.2
SSMH-2.000-6.00-CAT50	50.8	2.00	123.9	152.4	6.00	23.9	77.2
SSMH-2.000-8.00-CAT50	50.8	2.00	123.9	203.2	8.00	23.9	77.2
SSMH-2.500-2.40-CAT50*	63.5	2.50	123.9	61.0	2.40	28.5	92.2
SSMH-2.500-4.00-CAT50*	63.5	2.50	123.9	101.6	4.00	28.5	92.2

*: Cap Screws need to be puchased separately

Shell Mill Holders	Balanced to G6.3 @ 8,000 RPM						
Catalog Number	Dimensions						
	d (mm)	d (inch)	D (mm)	A (mm)	A (inch)	L_1 (mm)	D_1 (mm)
BT30							
SSMH-0.500-1.18-BT30	12.7	0.50	36.6	30.0	1.18	14.2	25.4
SSMH-0.750-1.18-BT30	19.1	0.75	44.5	30.0	1.18	17.5	28.7
SSMH-1.000-1.77-BT30	25.4	1.00	55.6	45.0	1.77	17.5	40.1
SSMH-16-40-BT30	16	–	38	40	–	17	–
SSMH-22-40-BT30	22	–	48	40	–	19	–
SSMH-27-40-BT30	27	–	58	40	–	21	–
BT40							
SSMH-0.500-4.00-BT40	12.7	0.50	36.6	101.6	4.00	14.2	25.4
SSMH-0.750-1.77-BT40	19.1	0.75	44.5	45.0	1.77	17.5	28.7
SSMH-0.750-4.00-BT40	19.1	0.75	44.5	101.6	4.00	17.5	28.7
SSMH-0.750-6.00-BT40	19.1	0.75	44.5	152.4	6.00	17.5	28.7
SSMH-1.000-1.77-BT40	25.4	1.00	55.6	45.0	1.77	17.5	40.1
SSMH-1.000-4.00-BT40	25.4	1.00	55.6	101.6	4.00	17.5	40.1
SSMH-1.000-6.00-BT40	25.4	1.00	55.6	152.4	6.00	17.5	40.1
SSMH-1.250-2.36-BT40	31.8	1.25	69.9	59.9	2.36	17.5	50.3
SSMH-1.250-5.00-BT40	31.8	1.25	69.9	127.0	5.00	17.5	50.3
SSMH-1.500-2.36-BT40	38.1	1.50	85.9	59.9	2.36	23.9	60.7
SSMH-1.500-5.00-BT40	38.1	1.50	85.9	127.0	5.00	23.9	60.7
SSMH-16-100-BT40	16	–	38	100	–	17	–
SSMH-16-40-BT40	16	–	38	40	–	17	–
SSMH-22-100-BT40	22	–	48	100	–	19	–
SSMH-22-160-BT40	22	–	48	160	–	19	–
SSMH-22-40-BT40	22	–	48	40	–	19	–
SSMH-27-100-BT40	27	–	58	100	–	21	–
SSMH-27-160-BT40	27	–	58	160	–	21	–
SSMH-27-40-BT40	27	–	58	40	–	21	–
SSMH-32-100-BT40	32	–	78	100	–	24	–
SSMH-32-50-BT40	32	–	78	50	–	24	–
SSMH-40-100-BT40	40	–	88	100	–	27	–
SSMH-40-50-BT40	40	–	88	50	–	27	–

Shell Mill Holders





Shell Mill Holders			Balanced to G2.5 @ 15,000 RPM			
Catalog Number	Dimensions					
	d (*mm*)	d (inch)	D (*mm*)	A (*mm*)	A (inch)	L_1 (*mm*)
HSK63						
SSMH-0.500-2.00-HSKA63	*12.7*	0.50	*36.6*	*50.8*	2.00	*14.2*
SSMH-0.750-2.00-HSKA63	*19.1*	0.75	*44.5*	*50.8*	2.00	*17.5*
SSMH-1.000-2.25-HSKA63	*25.4*	1.00	*55.6*	*57.2*	2.25	*17.5*
SSMH-1.250-2.25-HSKA63	*31.8*	1.25	*69.9*	*57.2*	2.25	*17.5*
SSMH-1.500-2.25-HSKA63	*38.1*	1.50	*58.9*	*57.2*	2.25	*23.9*
SSMH-16-100-HSKA63	*16*	–	*38*	*100*	3.94	*17*
SSMH-16-50-HSKA63	*16*	–	*38*	*50*	1.97	*17*
SSMH-22-100-HSKA63	*22*	–	*48*	*100*	3.94	*19*
SSMH-22-50-HSKA63	*22*	–	*48*	*50*	1.97	*19*
SSMH-27-100-HSKA63	*27*	–	*58*	*100*	3.94	*21*
SSMH-27-60-HSKA63	*27*	–	*58*	*60*	2.36	*21*
SSMH-32-100-HSKA63	*32*	–	*78*	*100*	3.94	*24*
SSMH-32-60-HSKA63	*32*	–	*78*	*60*	2.36	*24*
SSMH-40-100-HSKA63	*40*	–	*88*	*100*	3.94	*27*
SSMH-40-60-HSKA63	*40*	–	*88*	*60*	2.36	*27*

Clamping Nut – ER to DIN 6499 – Balanced

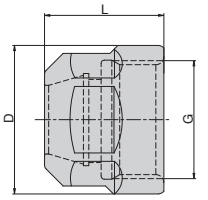


Fig. 1



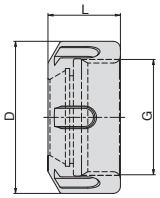
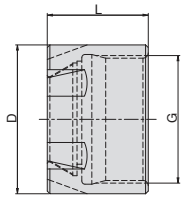


Fig. 2



Catalog Number	Dimensions (*mm*)				Fig
	Size	D	L	G	
ER16-DIN6499	1-10	*28.0*	*17.5*	M22x1.5	1
ER20-DIN6499	1-13	*34.0*	*19.0*	M25x1.5	1
ER25-DIN6499	2-16	*42.0*	*20.0*	M32x1.5	2
ER32-DIN6499	2-20	*50.0*	*22.5*	M40x1.5	2
ER40-DIN6499	3-26	*63.0*	*25.5*	M50x1.5	2

Clamping Nut – "Mini" ER





Catalog Number	Dimensions (*mm*)				Fig
	Size	D	L	G	
ER11M	1-7	*16.0*	*11.3*	M13x0.75	-
ER16M	1-10	*22.0*	*17.0*	M19x1.0	-
ER20M	1-13	*28.0*	*19.0*	M24x1.0	-
ER25M	2-16	*35.0*	*20.0*	M30x1.0	-

Clamping Nut – ER for Sealing Discs

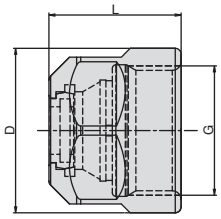


Fig. 1



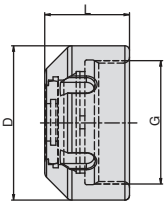


Fig. 2



Catalog Number	Dimensions (*mm*)				Fig
	Size	D	L	G	
ER16-IC	1-10	*28.0*	*22.5*	M22x1.5	1
ER20-IC	1-13	*34.0*	*24.0*	M25x1.5	1
ER25-IC	2-16	*42.0*	*25.0*	M32x1.5	2
ER32-IC	2-20	*50.0*	*27.5*	M40x1.5	2
ER40-IC	3-26	*63.0*	*30.5*	M50x1.5	2



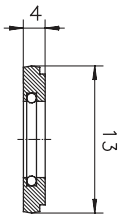


Fig
SD ER 16

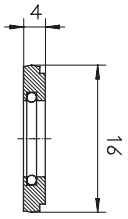


Fig
SD ER 20

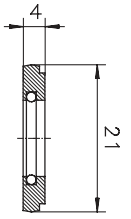


Fig
SD ER 25

Sealing Discs for ER-IC Clamping Nuts		
Catalog Number	Dimensions	
	Sealing Capacity (*mm*)	Sealing Capacity (inch)
Sealing Discs for ER16-IC Clamping Nuts (Inch & Metric)		
SD-ER16-3.0-2.5mm	*3.0-2.5*	0.1181"-0.0984"
SD-ER16-3.5-3.0mm	*3.5-3.0*	0.1378"-0.1181"
SD-ER16-4.0-3.5mm	*4.0-3.5*	0.1575"-0.1378"
SD-ER16-4.5-4.0mm	*4.5-4.0*	0.1772"-0.1575"
SD-ER16-5.0-4.5mm	*5.0-4.5*	0.1969"-0.1772"
SD-ER16-5.5-5.0mm	*5.5-5.0*	0.2165"-0.1969"
SD-ER16-6.0-5.5mm	*6.0-5.5*	0.2362"-0.2160"
SD-ER16-6.5-6.0mm	*6.5-6.0*	0.2559"-0.2362"
SD-ER16-7.0-6.5mm	*7.0-6.5*	0.2756"-0.2559"
SD-ER16-7.5-7.0mm	*7.5-7.0*	0.2953"-0.2756"
SD-ER16-8.0-7.5mm	*8.0-7.5*	0.3150"-0.2953"
SD-ER16-8.5-8.0mm	*8.5-8.0*	0.3347"-0.3150"
SD-ER16-9.0-8.5mm	*9.0-8.5*	0.3543"-0.3347"
SD-ER16-9.5-9.0mm	*9.5-9.0*	0.3740"-0.3543"
SD-ER16-10.0-9.5mm	*10.0-9.5*	0.3937"-0.3740"
Sealing Discs for ER20-IC Clamping Nuts (Inch & Metric)		
SD-ER20-3.0-2.5mm	*3.0-2.5*	0.1181"-0.0984"
SD-ER20-3.5-3.0mm	*3.5-3.0*	0.1378"-0.1181"
SD-ER20-4.0-3.5mm	*4.0-3.5*	0.1575"-0.1378"
SD-ER20-4.5-4.0mm	*4.5-4.0*	0.1772"-0.1575"
SD-ER20-5.0-4.5mm	*5.0-4.5*	0.1969"-0.1772"
SD-ER20-5.5-5.0mm	*5.5-5.0*	0.2165"-0.1969"
SD-ER20-6.0-5.5mm	*6.0-5.5*	0.2362"-0.2160"
SD-ER20-6.5-6.0mm	*6.5-6.0*	0.2559"-0.2362"
SD-ER20-7.0-6.5mm	*7.0-6.5*	0.2756"-0.2559"
SD-ER20-7.5-7.0mm	*7.5-7.0*	0.2953"-0.2756"
SD-ER20-8.0-7.5mm	*8.0-7.5*	0.3150"-0.2953"
SD-ER20-8.5-8.0mm	*8.5-8.0*	0.3347"-0.3150"
SD-ER20-9.0-8.5mm	*9.0-8.5*	0.3543"-0.3347"
SD-ER20-9.5-8.0mm	*9.5-9.0*	0.3740"-0.3543"
SD-ER20-10.0-9.5mm	*10.0-9.5*	0.3937"-0.3740"
SD-ER20-10.5-10mm	*10.5-10.0*	0.4134"-0.3937"
SD-ER20-11.0-10.5mm	*11.0-10.5*	0.4330"-0.4134"
SD-ER20-11.5-11.0mm	*11.5-11.0*	0.4528"-0.4330"
SD-ER20-12.0-11.5mm	*12.0-11.5*	0.4724"-0.4528"
SD-ER20-12.5-12.0mm	*12.5-12.0*	0.4921"-0.4724"
SD-ER20-13.0-12.5mm	*13.0-12.5*	0.5118"-0.4921"
Sealing Discs for ER25-IC Clamping Nuts (Inch & Metric)		
SD-ER25-3.0-2.5mm	*3.0-2.5*	0.1181"-0.0984"
SD-ER25-3.5-3.0mm	*3.5-3.0*	0.1378"-0.1181"
SD-ER25-4.0-3.5mm	*4.0-3.5*	0.1575"-0.1378"
SD-ER25-4.5-4.0mm	*4.5-4.0*	0.1772"-0.1575"
SD-ER25-5.0-4.5mm	*5.0-4.5*	0.1969"-0.1772"
SD-ER25-5.5-5.0mm	*5.5-5.0*	0.2165"-0.1969"
SD-ER25-6.0-5.5mm	*6.0-5.5*	0.2362"-0.2160"
SD-ER25-6.5-6.0mm	*6.5-6.0*	0.2559"-0.2362"
SD-ER25-7.0-6.5mm	*7.0-6.5*	0.2756"-0.2559"
SD-ER25-7.5-7.0mm	*7.5-7.0*	0.2953"-0.2756"
SD-ER25-8.0-7.5mm	*8.0-7.5*	0.3150"-0.2953"
SD-ER25-8.5-8.0mm	*8.5-8.0*	0.3347"-0.3150"
SD-ER25-9.0-8.5mm	*9.0-8.5*	0.3543"-0.3347"
SD-ER25-9.5-9.0mm	*9.5-9.0*	0.3740"-0.3543"
SD-ER25-10.0-9.5mm	*10.0-9.5*	0.3937"-0.3740"
SD-ER25-10.5-10.0mm	*10.5-10.0*	0.4134"-0.3937"
SD-ER25-11.0-10.5mm	*11.0-10.5*	0.4330"-0.4134"
SD-ER25-11.5-11.0mm	*11.5-11.0*	0.4528"-0.4330"
SD-ER25-12.0-11.5mm	*12.0-11.5*	0.4724"-0.4528"
SD-ER25-12.5-12.0mm	*12.5-12.0*	0.4921"-0.4724"
SD-ER25-13.0-12.5mm	*13.0-12.5*	0.5118"-0.4921"
SD-ER25-13.5-13.0mm	*13.5-13.0*	0.5315"-0.5118"
SD-ER25-14.0-13.5mm	*14.0-13.5*	0.5512"-0.5315"
SD-ER25-14.5-14.0mm	*14.5-14.0*	0.5709"-0.5512"
SD-ER25-15.0-14.5mm	*15.0-14.5*	0.5905"-0.5709"
SD-ER25-15.5-15.0mm	*15.5-15.0*	0.6102"-0.5905"
SD-ER25-16.0-15.5mm	*16.0-15.5*	0.6300"-0.6102"

Sealing Discs - Hardware



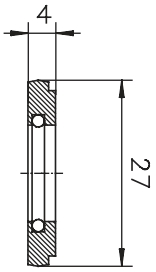


Fig
SD ER 32

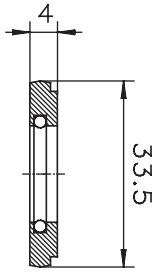
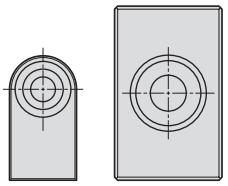


Fig
SD ER 40

Sealing Discs for ER-IC Clamping Nuts		
Catalog Number	Dimensions	
	Sealing Capacity (*mm*)	Sealing Capacity (inch)
Sealing Discs for ER32-IC Clamping Nuts (Inch & Metric)		
SD-ER32-3.0-2.5mm	*3.0-2.5*	0.1181"-0.0984"
SD-ER32-3.5-3.0mm	*3.5-3.0*	0.1378"-0.1181"
SD-ER32-4.0-3.5mm	*4.0-3.5*	0.1575"-0.1378"
SD-ER32-4.5-4.0mm	*4.5-4.0*	0.1772"-0.1575"
SD-ER32-5.0-4.5mm	*5.0-4.5*	0.1969"-0.1772"
SD-ER32-5.5-5.0mm	*5.5-5.0*	0.2165"-0.1969"
SD-ER32-6.0-5.5mm	*6.0-5.5*	0.2362"-0.2160"
SD-ER32-6.5-6.0mm	*6.5-6.0*	0.2559"-0.2362"
SD-ER32-7.0-6.5mm	*7.0-6.5*	0.2756"-0.2559"
SD-ER32-7.5-7.0mm	*7.5-7.0*	0.2953"-0.2756"
SD-ER32-8.0-7.5mm	*8.0-7.5*	0.3150"-0.2953"
SD-ER32-8.5-8.0mm	*8.5-8.0*	0.3347"-0.3150"
SD-ER32-9.0-8.5mm	*9.0-8.5*	0.3543"-0.3347"
SD-ER32-9.5-9.0mm	*9.5-9.0*	0.3740"-0.3543"
SD-ER32-10.0-9.5mm	*10.0-9.5*	0.3937"-0.3740"
SD-ER32-10.5-10.0mm	*10.5-10.0*	0.4134"-0.3937"
SD-ER32-11.0-10.5mm	*11.0-10.5*	0.4330"-0.4134"
SD-ER32-11.5-11.0mm	*11.5-11.0*	0.4528"-0.4330"
SD-ER32-12.0-11.5mm	*12.0-11.5*	0.4724"-0.4528"
SD-ER32-12.5-12.0mm	*12.5-12.0*	0.4921"-0.4724"
SD-ER32-13.0-12.5mm	*13.0-12.5*	0.5118"-0.4921"
SD-ER32-13.5-13.0mm	*13.5-13.0*	0.5315"-0.5118"
SD-ER32-14.0-13.5mm	*14.0-13.5*	0.5512"-0.5315"
SD-ER32-14.5-14.0mm	*14.5-14.0*	0.5709"-0.5512"
SD-ER32-15.0-14.5mm	*15.0-14.5*	0.5905"-0.5709"
SD-ER32-15.5-15.0mm	*15.5-15.0*	0.6102"-0.5905"
SD-ER32-16.0-15.5mm	*16.0-15.5*	0.6300"-0.6102"
SD-ER32-16.5-16.0mm	*16.5-16.0*	0.6496"-0.6300"
SD-ER32-17.0-16.5mm	*17.0-16.5*	0.6693"-0.6496"
SD-ER32-19.0-18.5mm	*19.0-18.5*	0.7480"-0.7284"
SD-ER32-19.5-19.0mm	*19.5-19.0*	0.7677"-0.7480"
SD-ER32-20.0-19.5mm	*20.0-19.5*	0.7874"-0.7677"

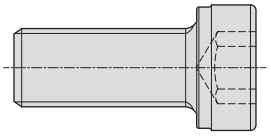
Sealing Discs for ER-IC Clamping Nuts		
Catalog Number	Dimensions	
	Sealing Capacity (*mm*)	Sealing Capacity (inch)
Sealing Discs for ER40-IC Clamping Nuts (Inch & Metric)		
SD-ER40-3.0-2.5mm	*3.0-2.5*	0.1181"-0.0984"
SD-ER40-3.5-3.0mm	*3.5-3.0*	0.1378"-0.1181"
SD-ER40-4.0-3.5mm	*4.0-3.5*	0.1575"-0.1378"
SD-ER40-4.5-4.0mm	*4.5-4.0*	0.1772"-0.1575"
SD-ER40-5.0-4.5mm	*5.0-4.5*	0.1969"-0.1772"
SD-ER40-5.5-5.0mm	*5.5-5.0*	0.2165"-0.1969"
SD-ER40-6.0-5.5mm	*6.0-5.5*	0.2362"-0.2160"
SD-ER40-6.5-6.0mm	*6.5-6.0*	0.2559"-0.2362"
SD-ER40-7.0-6.5mm	*7.0-6.5*	0.2756"-0.2559"
SD-ER40-7.5-7.0mm	*7.5-7.0*	0.2953"-0.2756"
SD-ER40-8.0-7.5mm	*8.0-7.5*	0.3150"-0.2953"
SD-ER40-8.5-8.0mm	*8.5-8.0*	0.3347"-0.3150"
SD-ER40-9.0-8.5mm	*9.0-8.5*	0.3543"-0.3347"
SD-ER40-9.5-9.0mm	*9.5-9.0*	0.3740"-0.3543"
SD-ER40-10.0-9.5mm	*10.0-9.5*	0.3937"-0.3740"
SD-ER40-10.5-10.0mm	*10.5-10.0*	0.4134"-0.3937"
SD-ER40-11.0-10.5mm	*11.0-10.5*	0.4330"-0.4134"
SD-ER40-11.5-11.0mm	*11.5-11.0*	0.4528"-0.4330"
SD-ER40-12.0-11.5mm	*12.0-11.5*	0.4724"-0.4528"
SD-ER40-12.5-12.0mm	*12.5-12.0*	0.4921"-0.4724"
SD-ER40-13.0-12.5mm	*13.0-12.5*	0.5118"-0.4921"
SD-ER40-13.5-13.0mm	*13.5-13.0*	0.5315"-0.5118"
SD-ER40-14.0-13.5mm	*14.0-13.5*	0.5512"-0.5315"
SD-ER40-14.5-14.0mm	*14.5-14.0*	0.5709"-0.5512"
SD-ER40-15.0-14.5mm	*15.0-14.5*	0.5905"-0.5709"
SD-ER40-15.5-15.0mm	*15.5-15.0*	0.6102"-0.5905"
SD-ER40-16.0-15.5mm	*16.0-15.5*	0.6300"-0.6102"
SD-ER40-16.5-16.0mm	*16.5-16.0*	0.6496"-0.6300"
SD-ER40-17.0-16.5mm	*17.0-16.5*	0.6693"-0.6496"
SD-ER40-17.5-17.0mm	*17.5-17.0*	0.6890"-0.6693"
SD-ER40-18.0-17.5mm	*18.0-17.5*	0.7087"-0.6890"
SD-ER40-18.5-18.0mm	*18.5-18.0*	0.7284"-0.7087"
SD-ER40-19.0-18.5mm	*19.0-18.5*	0.7480"-0.7284"
SD-ER40-19.5-19.0mm	*19.5-19.0*	0.7677"-0.7480"
SD-ER40-20.0-19.5mm	*20.0-19.5*	0.7874"-0.7677"
SD-ER40-20.5-20.0mm	*20.5-20.0*	0.8070"-0.7874"
SD-ER40-21.0-20.5mm	*21.0-20.5*	0.8267"-0.8070"
SD-ER40-21.5-21.0mm	*21.5-21.0*	0.8464"-0.8267"
SD-ER40-22.0-21.5mm	*22.0-21.5*	0.8661"-0.8464"
SD-ER40-22.5-22.0mm	*22.5-22.0*	0.8857"-0.8661"
SD-ER40-23.0-22.5mm	*23.0-22.5*	0.9055"-0.8857"
SD-ER40-23.5-23.0mm	*23.5-23.0*	0.9251"-0.9055'
SD-ER40-24.0-23.5mm	*24.0-23.5*	0.9448"-0.9251"
SD-ER40-24.5-24.0mm	*24.5-24.0*	0.9645"-0.9448"
SD-ER40-25.0-24.5mm	*25.0-24.5*	0.9842"-0.9645"
SD-ER40-25.5-25.0mm	*25.5-25.0*	1.0039"-0.9842"
SD-ER40-26.0-25.5mm	*26.0-25.5*	1.0236"-1.0039"

Drive Key for Inch Shell Mill Holders



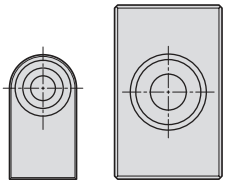
Catalog Number	For Size (inch)
SM64750	0.500"
SM64751	0.750"
SM64752	1.000"
SM64753	1.250"
SM64754	1.500"
SM64755	2.000"
SM64756	2.500"

Locking Screw for Inch Shell Mill Holders



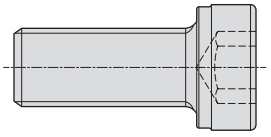
Catalog Number	For Size (inch)
SM64830	0.500"
SM64831	0.750"
SM64832	1.000"
SM64833	1.250"
SM64834	1.500"
SM64835	2.000"
SM64836	2.500"

Drive Key for Metric Shell Mill Holders



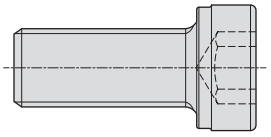
Catalog Number	For Size (*mm*)
SM16-8x8x14	*16*
SM22-10x10x17	*22*
SM27-12x14x20	*27*
SM32-14x14x22	*32*
SM40-15.9x16x21	*40*
SM60-25.4x25x31	*60*

Locking Screw for Metric Shell Mill Holders Drive Keys



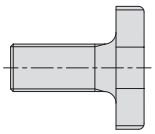
Catalog Number	For Size (*mm*)
M 3 x 8-DIN 912	*16*
M 4 X 8-DIN 912	*22*
M 4 X 14-DIN 912	*27*
M 5 X 13-DIN 912	*32*
M 6 X 16-DIN 912	*40*
M 12 X 25-DIN 912	*60*

Locking Screw for Metric Shell Mill Holders (Small Counterbore)



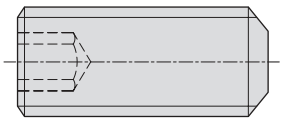
Catalog Number	For Size (*mm*)
M 8 x 20 DIN 912	*16*
M 10 x 30 DIN 912	*22*
M 12 x 35 DIN 912	*27*
M 16 x 40 DIN 912	*32*

Locking Screw for Metric Shell Mill Holders (Large Counterbore)



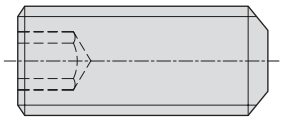
Catalog Number	For Size (*mm*)
M 8 x 16-DIN 6367	*16*
M 10 x 22-DIN 6367	*22*
M 12 x 27-DIN 6367	*27*
M 16 x 32-DIN 6367	*32*
M 20 x 40-DIN 6367	*40*

Locking Screw for End Mill Holders



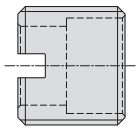
Catalog Number	For Size (inch)
6-32UNSC8	0.125"
8-32UNSC7	0.187"
1/4-28UNF-8	0.250"
5/16-24UNF-10	0.312"
3/8-24UNF-9	0.375"
7/16-20UNF-13	0.437"
7/16-20UNF-12	0.500"
1/2-20UNF-14	0.625"
5/8-18UNF-14	0.750" & 0.875"
3/4-16UNF-14	1.000"
3/4-16UNF-16	1.250" & 1.500"
1-14UNS-23	2.000"

Adjusting Screw Threaded Stud DIN 913 for End Mill Holders



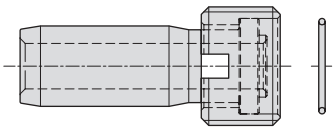
Catalog Number	For Size
M5x5 DIN913	CAT40/50
M5x6 DIN913	BT40
M6x10 DIN913	BT50

Adjusting Screw for ER Collet Chuck Holders



Catalog Number	For Size
M10 x 15-001	ER16
M12 x 15-001	ER20
M16 x 15-001	ER25
M22 x 1.5 x 15-001	ER32 & 40

Coolant Tube for HSK Holders



Catalog Number	For Size
CTHSK 32-10	HSK 32
CTHSK 40-12	HSK 40
CTHSK 50-16	HSK 50
CTHSK 63-18	HSK 63
CTHSK 80-20	HSK 80
CTHSK 100-24	HSK 100

Wrenches for Milling Chucks



Catalog Number	Size (*metric* & inch)
SC-20	*20* & 0.75"
SC-25	*25* & 1.000"
SC-32	*32* & 1.250"
SC-1.5"	1.5"
SC-2.0"	2.0"

Wrenches for ER Collect Holders



Fig. A

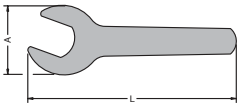


Fig. B

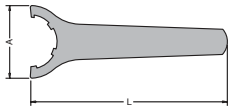
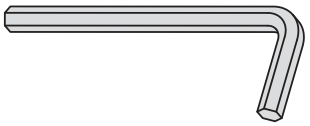


Fig. C

Catalog Number	For Clamping Nut	Dimensions (*mm*)			Fig
		A	L	G	
S-E11M	E11M	*16.8*	*90.0*	-	A
S-E16M	E16M	*22.5*	*110.0*	-	A
S-E20M	E20M	*29.0*	*120.0*	-	A
S-E25M	E25M	*36.0*	*130.0*	-	A
S-GS-SW25	ER16-DIN6499	*42.0*	*140.0*	-	B
S-E20	ER20-DIN6499	*54.0*	*168.0*	-	B
S-E25	ER25-DIN6499	*65.0*	*210.0*	-	C
S-E32	ER32-DIN6499	*75.0*	*250.0*	-	C
S-E40	ER40-DIN6499	*90.0*	*290.0*	-	C

Wrench for Shell Mill Holders Inch Locking Screws



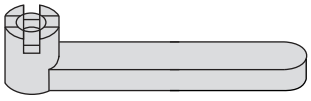
Catalog Number	For Size (inch)
SM 3/16" hex key	0.500
SM 1/4" hex key	0.750
SM 5/16" hex key	1.000 & 1.250
SM 3/8" hex key	1.500
SM 1/2" hex key	2.000 & 2.500

Wrench for Shell Mill Holders Metric Locking Screws (Small Counterbore)



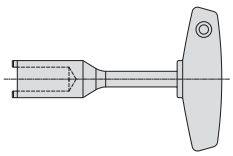
Catalog Number	For Size (*mm*)
SM6 hex key	*16*
SM8 hex key	*22*
SM10 hex key	*27*
SM14 hex key	*32*
SM17 hex key	*40*

Wrench for Shell Mill Holders Metric Locking Screws (Large Counterbore)



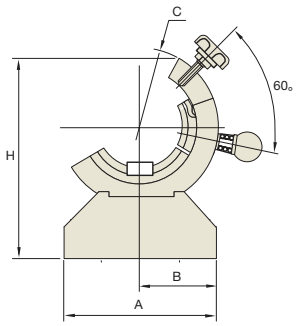
Catalog Number	For Size (*mm*)
SM-16 DIN 6368	*16*
SM-22 DIN 6368	*22*
SM-27 DIN 6368	*27*
SM-32 DIN 6368	*32*
SM-40 DIN 6368	*40*

Wrench for HSK Coolant Tubes



Catalog Number	For Size
S-HSK 32-8.5x115	HSK 32
S-HSK 40-10.5x115	HSK 40
S-HSK 50-14.5x115	HSK 50
S-HSK 63-16.5x136	HSK 63
S-HSK 80-18.5x136	HSK 80
S-HSK 100-22x136	HSK 100





Tool Clamp

- No surface damage such as abrasion and scratch around taper shank closely associated with tool runout
- Easy to assemble and disassemble pull stud bolt
- Convenient and safe when using coolant tube wrench with milling chuck or ER collet chuck

Taper No.	Catalog Number	Dimensions (*mm*)				Weight (kg)
		A	B	C	H	
BT30	STCP30	*125*	*65*	*108*	*135*	3.0
BT40	STCP40	*160*	*80*	*138*	*180*	7.6
BT50	STCP50	*180*	*90*	*165*	*205*	8.6
SK30	STSK30	*125*	*65*	*108*	*135*	3.0
SK40	STSK40	*160*	*80*	*138*	*180*	7.6
SK50	STSK50	*180*	*90*	*165*	*205*	8.6

Spindle Cleaners – Professional Series



These easy to use wipers clean your spindles assuring that toolholder tapers make continuous positive contact for repeatable on-center performance. The wiper can also be used for cleaning the bores of collet chucks and Morse Taper holders.

Catalog Number	Description
ISO30	30-Taper Spindle Clean equipped with cleaning blades
ISO40	40-Taper Spindle Clean equipped with cleaning blades
ISO50	50-Taper Spindle Clean equipped with cleaning blades

Taper Cleaners for HSK Tool Tapers

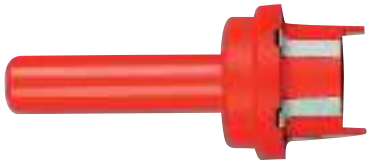


For cleaning HSK tool tapers. Plastic body with leather inserts.

For cleaning HSK tool tapers. Plastic body with leather inserts.

Catalog Number	HSK Form A/C/E
76.208.040	40
76.208.050	50
76.208.063	63

Taper Cleaners for HSK Spindles



For cleaning HSK spindle tapers. Plastic body with leather inserts.

Catalog Number	HSK Form A/C
76.205.032	32
76.205.040	40
76.205.050	50
76.205.063	63
76.205.080	80
76.205.100	100

Taper Cleaners for 7/24 Spindle Tapers (Steep Taper)



For cleaning 7/24 (Steep Taper) spindle tapers. Plastic body with leather inserts.

Catalog Number	CAT Size
76.200.030	30
76.200.040	40
76.200.050	50

Technical Guidance Reference
N35 to N77

N



Technical Guidance
Turning Edition ····· N36
Recommended Running Conditions ····· N40
Milling Edition ····· N53
Endmilling Edition ····· N59
Drilling Edition ····· N60
CBN Edition ····· N65
References ····· N69

■ Calculating Cutting Speed

(1) Calculating rotation speed from cutting speed

$$n = \frac{1{,}000 \times v_c}{\pi \times D_m}$$

n : Spindle Speed (min^{-1})
v_c : Cutting speed (m/min)
D_m : Inner/outer diameter of workpiece (mm)
π : π≈ 3.14

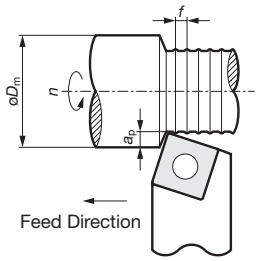
Example: v_c=150m/min, D_m=100mm

$$n = \frac{1{,}000 \times 150}{3.14 \times 100} = 478 \text{ (min}^{-1}\text{)}$$

(2) Calculating cutting speed from rotational speed

$$v_c = \frac{\pi \times D_m \times n}{1{,}000}$$

Refer to the above table



- n : Spindle speed (min^{-1})
- v_c : Cutting speed (m/min)
- f : Feed rate per revolution (mm/rev)
- a_p : Depth of cut (mm)
- D_m : Diameter of workpiece (mm)

■ Calculating Power Requirements

$$P_c = \frac{v_c \times f \times a_p \times k_c}{60 \times 10^3 \times \eta}$$

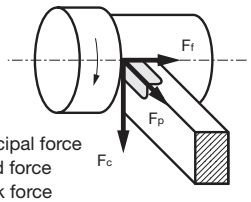
$$H = \frac{P_c}{0.75}$$

P_c : Power requirements (kW)
v_c : Cutting speed (m/min)
f : Feed Rate (mm/rev)
a_p : Depth of cut (mm)
k_c : Specific cutting force (MPa)
H : Required horsepower (HP)
η : Machine efficiency (0.70 to 0.85)

● Rough value of kc

Aluminum: 800MPa
General steel: 2,500 to 3,000MPa
Cast iron: 1,500MPa

■ Three cutting force components



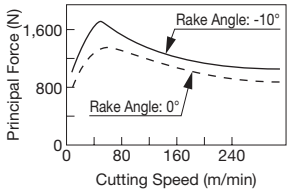
F_c : Principal force
F_f : Feed force
F_p : Back force

● Calculating cutting force

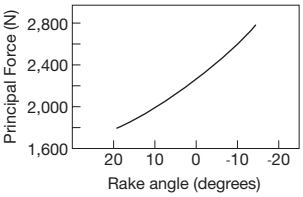
$$P = \frac{k_c \times q}{1{,}000} = \frac{k_c \times a_p \times f}{1{,}000}$$

P : Cutting force (kN)
k_c : Specific cutting force (MPa)
q : Chip area (mm^2)
a_p : Depth of Cut (mm)
f : Feed Rate (mm/rev)

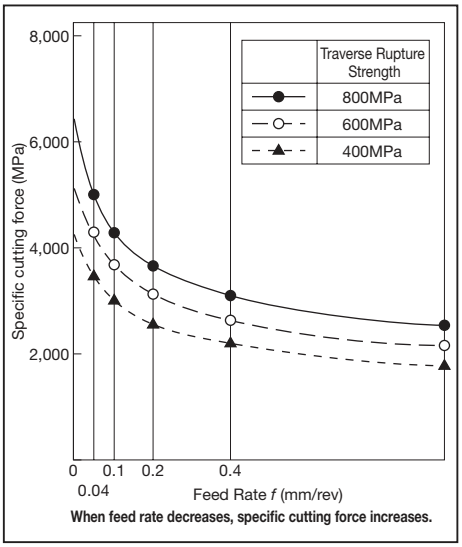
■ Relation between cutting speed and cutting force



■ Relation between rake angle and cutting force



■ Relation between feed rate and specific cutting force (for carbon steel)



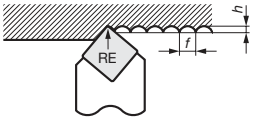
When feed rate decreases, specific cutting force increases.

■ Machined Surface Roughness

● Theoretical (geometrical) surface roughness

$$h = \frac{f^2}{8 \times RE} \times 10^3$$

h: Theoretical surface roughness (μm)
f : Feed rate per revolution (mm/rev)
RE: Nose radius (mm)



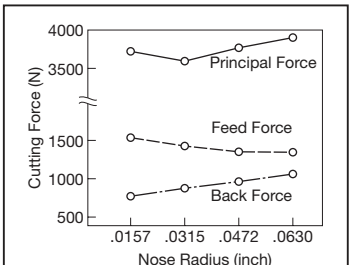
■ Actual surface roughness

Steel:
Theoretical surface roughness × 1.5 to 3
Cast iron:
Theoretical roughness × 3 to 5

● Ways to improve surface finish roughness

(1) Use an insert with a larger nose radius
(2) Optimise the cutting speed and feed rate so that built-up edges do not occur
(3) Select an appropriate insert grade
(4) Use wiper insert

■ Relation between nose radius and 3-part force

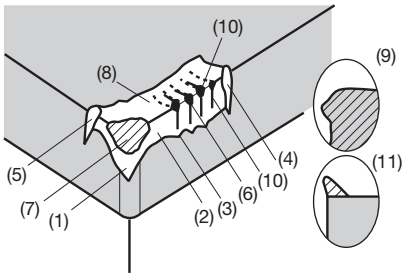


Large nose radius increases back force.

Part Material: Alloy Steel (38HS)
Insert: TNGA43○○
Holder: PTGNR2525-43
Cutting Conditions: v_c =330 SFM,
a_p =.157",
f =0.018 IPR

Forms of Tool Failure and Tool Life, Turning Edition

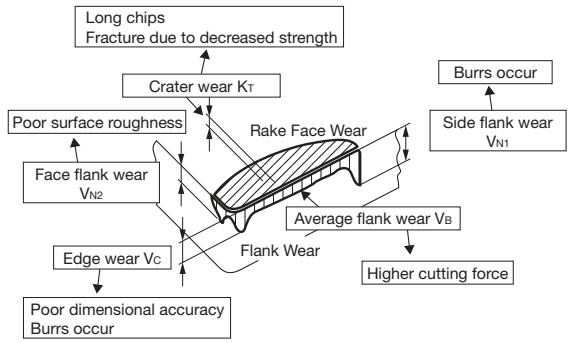
■ Forms of Tool Failure

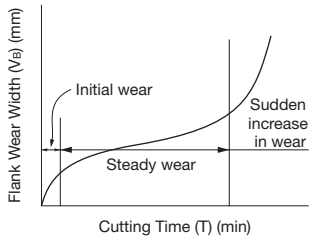
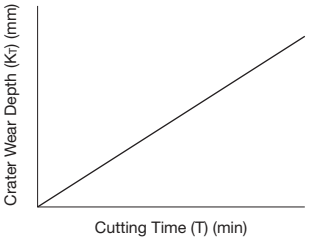


Classification	No.	Name of Failure	Major Causes of Failure
Failure Caused by Mechanical Factors	(1) to (5)	Flank Wear	Wear caused by the scratching effect of hard grains contained in the work material
	(6)	Chipping	Fine breakages caused by high cutting loads or vibration
	(7)	Fracture	Large breakage caused by the impact of an excessive mechanical force acting on the cutting edge
Failure Caused by Thermal and Chemical Reactions	(8)	Crater wear	Cutting chips removing tool material as it flows over its top rake at high temperatures
	(9)	Plastic deformation	Deformation of cutting edge due to softening at high temperatures
	(10)	Thermal cracking	Fatigue from rapid, repeated heating and cooling cycles during interrupted cutting
	(11)	Built-up edges	Work material is pressure welded on the top face of the cutting edge

■ Tool Wear Curve

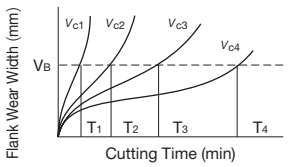
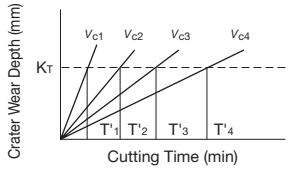
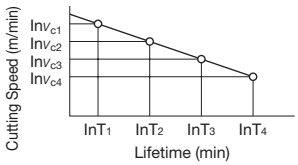
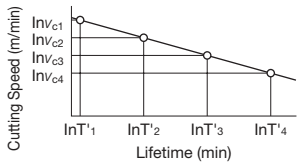
Forms of Tool Wear



Flank wear	Crater wear on rake face
	
· Wear increases rapidly right after starting cutting, then moderately and proportionally, and then rapidly again after a certain value	· Wear increases proportionately to the cutting time

■ Tool Life (V-T)

· This double logarithm graph shows the relative tool life (T) with the specified wear over a range of cutting speeds (Vc) on the X axis, and the cutting speed along the Y axis

	Flank Wear	Crater wear
Tool wear		
Tool life		

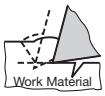
Cutting Edge Failure and Countermeasures, Turning Edition

■ Insert Failure and Countermeasures

Insert Failure	Cause	Countermeasures
Flank Wear 	· Tool grade lacks wear resistance · Cutting speed is too fast · Feed rate is far too slow	· Select a more wear-resistant grade P30→P20→P10 K20→K10→K01 · Increase rake angle · Decrease cutting speed · Increase feed rate
Crater Wear 	· Tool grade lacks crater wear resistance · Rake angle is too small · Cutting speed is too fast · Feed rate and depth of cut are too large	· Select a more crater wear-resistant grade · Increase rake angle · Change the chipbreaker of the insert · Decrease cutting speed · Reduce feed rate and depth of cut
Cutting Edge Chipping 	· Tool grade lacks toughness · Cutting edge breaks off due to chip adhesion · Cutting edge is not strong enough · Feed rate and depth of cut are too large	· Select a tougher grade P10→P20→P30 K01→K10→K20 · Increase amount of honing on cutting edge · Reduce rake angle · Reduce feed rate and depth of cut
Cutting Edge Fracture 	· Tool grade lacks toughness · Cutting edge is not strong enough · Holder is not strong enough · Feed rate and depth of cut are too large	· Select a tougher grade P10→P20→P30 K01→K10→K20 · Select an insert chipbreaker with a strong cutting edge · Select a holder with a larger approach angle · Select a holder with a larger shank size · Reduce feed rate and depth of cut
Adhesion/Built-up Edges 	· Inappropriate grade selection · Cutting edge is not sharp enough · Cutting speed is too slow · Feed rate is too slow	· Select a grade with less affinity to the work material Coated carbide or cermet grades · Select a grade with a smooth coating · Increase rake angle · Reduce honing · Increase cutting speed · Increase feed rate
Plastic Deformation 	· Tool grade lacks thermal resistance · Cutting speed is too fast · Feed rate and depth of cut are too large · Not enough coolant	· Select a more crater wear-resistant grade · Increase rake angle · Decrease cutting speed · Reduce feed rate and depth of cut · Supply sufficient coolant
Notch Wear 	· Tool grade lacks wear resistance · Rake angle is too small · Cutting speed is too fast	· Select a more wear-resistant grade P30→P20→P10 K20→K10→K01 · Increase rake angle · Alter depth of cut to shift the notch location

Chip Control and Countermeasures, Turning Edition

■ Type of Chip Generation

	Flowing	Shearing	Tearing	Cracking
Type				
Condition	Continuous chips with good surface finish	Chip is sheared and separated by the shear angle	Chips appear to be torn from the surface	Chips crack before reaching the cutting point
Application	General cutting of steel and light alloy	Steel, stainless steel (low speed)	Steel, cast iron (very low speed, very small feed rate)	Cutting of general cast iron and carbon
Influence factor	Large ← Deformation of work material → Small Large ← Rake angle → Small Small ← Depth of cut → Large Large ← Cutting speed → Small			

■ Type of Chip Control

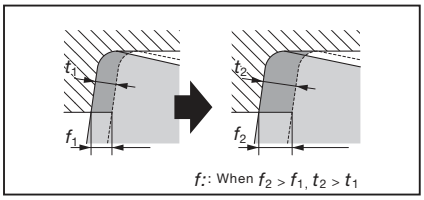
	Depth of cut	A	B	C	D	E
Classification of chip shapes	Large					
	Small					
Evaluation	NC lathe (for automation)	×	×	○	○	△
	General-purpose lathe (for safety)	×	○	○	○ to △	×

Good: C type, D type

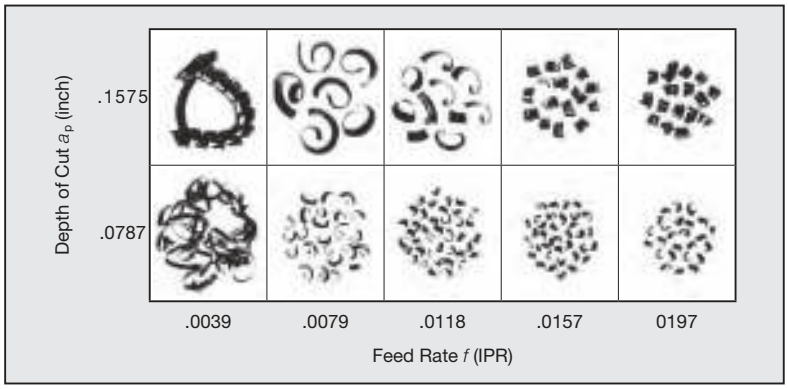
Poor
- A type: Twines around the tool or workpiece, damaging the machined surface and affecting safety
- B type: Causes problems in the automatic chip conveyor and chipping occurs easily
- E type: Causes spraying of chips and poor surface finish due to chattering, along with chipping, large cutting force and high temperatures

■ Factor of Improvement of Chip Control

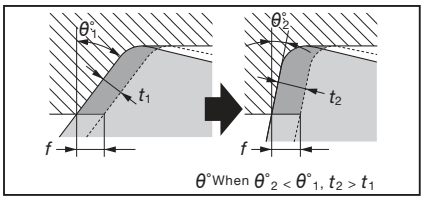
(1) Increase feed rate (*f*)



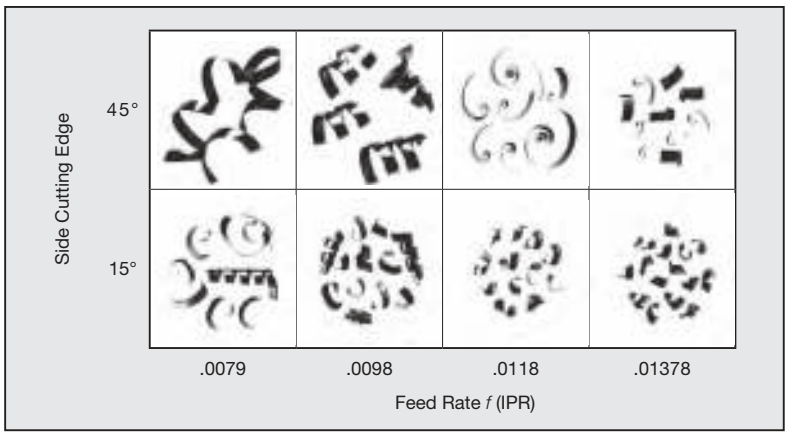
When the feed rate increases, the chip thickness (t) increases and chip control improves.



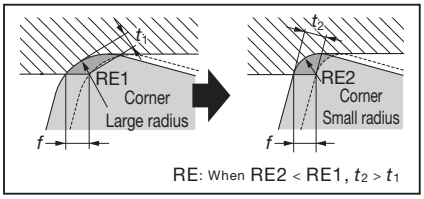
(2) Decrease side cutting edge (θ°)



Even if the feed rate is the same, a smaller side cutting edge angle makes chips thicker and chip control improves.

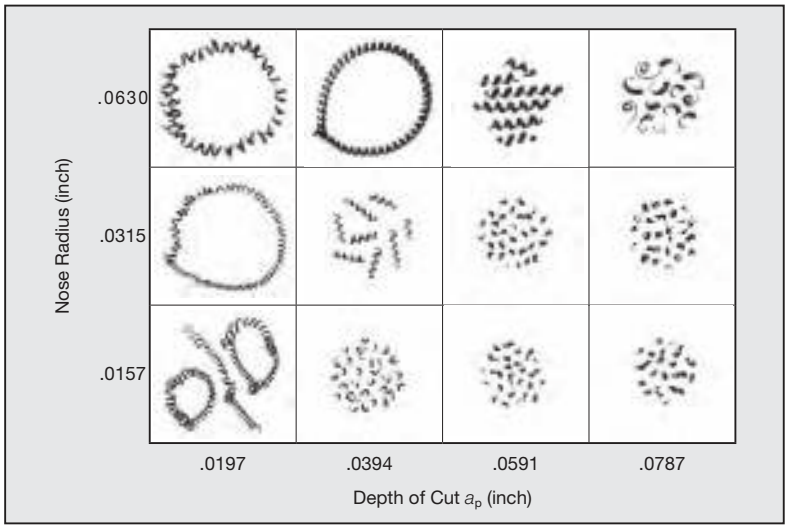


(3) Reduce nose radius (RE)



Even if the feed rate is the same, a smaller nose radius makes chips thicker and chip control improves.

* Cutting force increases proportionately to the length of the contact surface. Therefore, a larger nose radius increases back force which induces chattering. A smaller nose radius produces a rougher surface finish at the same feed rate.



Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .008 IPR. .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .015 ~ .026 IPR .200" D.O.C.
LOW CARBON STEELS 1005, 1006, 1008, 1009, 1010, 1011, 1012, 1013, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1025, 1026, 1029, 1108, 1109, 1110, 1115, 1116, 1117, 1118, 1119, 1211, 1212, 1213, 1215, 1513, 1518, 1522			CUTTING SPEED SFM		
	<250	T1500A	800~1700	800~1450	–
		T1500Z	800~1800	800~1550	–
		T2500Z	600~1500	600~1300	-
		AC8015P	800~1800	800~1600	700~1200
		AC810P	800~1600	800~1400	700~1100
		AC8025P	**350~1200**	**350~1000**	**350~900**
		AC820P	500~1200	500~1000	400~900
		AC8035P	300~700	300~900	300~900
		AC830P	–	500~900	400~850
	220~350	T1500A	700~1300	700~1200	–
		T1500Z	700~1450	700~1300	–
		T2500Z	500~1200	500~1100	-
		AC8015P	700~1500	700~1400	700~1200
		AC810P	700~1200	700~1100	600~950
		AC8025P	**350~1000**	**350~900**	**350~800**
		AC820P	500~1000	500~900	400~800
		AC8035P	300~700	300~800	300~800
		AC830P	–	500~800	400~750
	HRc 35~55	T1500A	400~750	400~650	–
		T1500Z	400~800	400~750	–
		T2500Z	300~750	300~750	-
		AC8015P	**600~950**	**600~900**	**500~800**
		AC810P	400~600	400~550	350~550
		AC8025P	250~500	250~450	250~450
		AC820P	300~500	300~450	300~450
		AC8035P	200~450	200~450	200~450
		AC830P	250~450	200~400	200~400
		NB150H	400~1600		
		NB90S	400~1400	–	–
LOW/MEDIUM CARBON STEEL -- LEADED 10L18, 10L45, 10L50, 11L17, 11L37, 11L41, 11L44, 12L13, 12L14, 12L15	<250	T1500A	1000~1650	1000~1550	–
		T1500Z	1000~1750	1000~1650	–
		T2500Z	600~1200	500~1100	-
		AC8015P	800~1800	800~1600	700~1500
		AC810P	1000~1500	1000~1400	900~1300
		AC8025P	**600~1400**	**550~1300**	**500~1100**
		AC820P	800~1400	750~1300	600~1100
		AC8035P	300~700	300~1000	300~1000
		AC830P	–	750~1200	650~1000
	250 ~ 350	T1500A	900~1350	800~1200	–
		T1500Z	900~1450	800~1300	–
		T2500Z	600~1200	500~1100	-
		AC8015P	700~1500	700~1400	700~1200
		AC810P	900~1200	800~1100	700~1000
		AC8025P	**600~1000**	**500~900**	**450~900**
		AC820P	800~1000	700~900	650~900
		AC8035P	300~700	300~800	300~800
		AC830P	–	700~900	650~900
	Chipbreaker Preference		ESE/ESU/ELU	EGE/ELU	EME/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .008 IPR .005" ~ .060" D.O.C.	Gen. Purpose .010 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .015 ~ .026 IPR .200" D.O.C.
			CUTTING SPEED SFM		
MEDIUM CARBON STEELS 1030, 1033, 1035, 1037, 1038, 1039, 1040, 1042, 1043, 1044, 1045, 1046, 1049, 1050, 1053, 1055, 1132, 1137, 1139, 1140, 1141, 1144, 1145, 1146, 1151, 1524, 1525, 1526, 1527, 1536, 1541, 1547, 1548, 1551, 1552	<250	T1500A	900~1450	900~1300	–
		T1500Z	900~1550	900~1450	–
		T2500Z	600~1200	500~1100	-
		AC8015P	800~1800	800~1600	700~1200
		AC810P	900~1300	900~1200	800~1000
		AC8025P	**600~1000**	**350~900**	**350~800**
		AC820P	800~1000	500~900	450~800
		AC8035P	300~700	300~800	300~800
		AC830P	–	500~800	400~700
	220~350	T1500A	800~1300	700~1200	–
		T1500Z	800~1450	700~1300	–
		T2500Z	500~1200	500~1100	-
		AC8015P	700~1500	700~1400	700~1200
		AC810P	800~1200	700~1100	600~1000
		AC8025P	**400~1000**	**350~900**	**350~900**
		AC820P	600~1000	500~900	450~900
		AC8035P	300~700	300~800	300~800
		AC830P	–	500~850	400~800
	HRc 35~55	T1500A	600~1000	400~900	–
		T1500Z	600~1100	400~1000	–
		T2500Z	400~900	300~800	-
		AC8015P	**700~1200**	**500~900**	**500~800**
		AC810P	500~900	400~750	350~700
		AC8025P	350~750	300~700	300~550
		AC820P	400~750	350~700	300~550
		AC8035P	200~500	200~500	200~500
		AC830P	–	350~600	300~500
		NB150H	400~1600		
		NB90S	400~1400	–	–
MEDIUM HIGH CARBON STEELS --LEADED 41L30, 41L40, 41L45, 41L47, 41L50, 43L40, 41L50, 43640, 51L32, 52L100, 86L20, 86L40	<250	T1500A	800~1550	800~1450	–
		T1500Z	800~1650	800~1550	–
		T2500Z	600~1400	500~1300	-
		AC8015P	800~1800	800~1600	600~1200
		AC810P	800~1400	800~1300	700~1100
		AC8025P	**600~1200**	**500~1000**	**400~900**
		AC820P	800~1200	700~1000	600~900
		AC8035P	300~700	300~800	300~800
		AC830P	–	650~950	550~800
	250 ~ 350	T1500A	800~1450	750~1300	–
		T1500Z	800~1550	750~1450	–
		T2500Z	600~1300	500~1200	-
		AC8015P	700~1500	700~1400	600~1200
		AC810P	800~1300	750~1200	650~1000
		AC8025P	**500~1100**	**450~1000**	**400~900**
		AC820P	700~1100	650~1000	550~900
		AC8035P	300~700	300~800	300~800
		AC830P	–	600~1000	500~800
	Chipbreaker Preference		ESE/ESU/ELU	EGE/ELU	EME/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005" ~ .060" D.O.C.	Gen. Purpose .010 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .015 ~ .026 IPR .200" D.O.C.
			CUTTING SPEED SFM		
ALLOY STEELS– MEDIUM CARBON 1340, 1345, 4042, 4047, 4140, 4142, 4145, 4147, 4340, 50B40, 40B44, 5046, 50B46, 5140, 5145, 5147, 81B45, 8640 ,8642, 8645, 86B45, 8740, 8742, 4150, 4161, 50B50, 4060, 50B60, 5150, 5155, 5160, 51B60, 6150, 8650, 8655, 8660, 9254, 9255, 9260	<250	T1500A	700~1200	700~1100	–
		T1500Z	700~1300	700~1200	–
		T2500Z	500~1100	500~1000	–
		AC8015P	700~1400	700~1200	600~1000
		AC810P	700~1100	700~1000	500~800
		AC8025P	**350~950**	**350~850**	**350~800**
		AC820P	600~950	500~850	450~800
		AC8035P	–	300~800	300~800
		AC830P	–	500~800	400~700
	220~350	T1500A	600~1100	600~1000	–
		T1500Z	600~1200	600~1100	–
		T2500Z	400~1000	400~900	–
		AC8015P	700~1200	700~1100	600~900
		AC810P	600~1000	600~900	–
		AC8025P	**350~900**	**350~800**	**350~750**
		AC820P	500~900	450~800	400~750
		AC8035P	-	200~700	200~700
		AC830P	–	400~750	300~700
	HRc 35~55	T1500A	300~650	300~550	–
		T1500Z	300~800	300~650	–
		T2500Z	300~750	300~600	–
		AC8015P	**600~900**	**500~900**	**500~800**
		AC810P	300~600	300~500	200~500
		AC8025P	250~500	200~450	150~400
		AC820P	250~500	200~450	150~400
		AC8035P	150~400	150~400	150~400
		AC830P	250~400	200~400	150~400
		NB150H	500~1000		
		NB90S	500~900	–	–
HIGH CARBON STEELS 50100, 51100 52100, M-50	<250	T1500A	800~1300	700~1200	–
		T1500Z	800~1450	700~1300	–
		T2500Z	600~1200	500~1100	–
		AC8015P	700~1500	700~1400	600~1200
		AC810P	800~1250	700~1150	600~1000
		AC8025P	**350~850**	**250~750**	**250~700**
		AC820P	450~850	300~750	300~700
		AC8035P	–	200~700	200~650
		AC830P	–	300~750	300~650
	250~350	T1500A	700~1200	600~1100	–
		T1500Z	700~1300	600~1200	–
		T2500Z	500~1100	400~1000	–
		AC8015P	700~1400	700~1300	600~1000
		AC810P	700~1150	600~1100	500~800
		AC8025P	**350~550**	**350~750**	**350~650**
		AC820P	550~850	500~750	400~650
		AC8035P	–	200~700	200~600
		AC830P	–	450~700	400~600
	Chipbreaker Preference		ESE/ESU/ELU	EGE/ELU	EME/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005" ~ .060" D.O.C.	Gen. Purpose .010 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .015 ~ .026 IPR .200" D.O.C.
			CUTTING SPEED SFM		
TOOL STEELS DIE STEELS	<250	T1500A	500~800	350~800	–
		T1500Z	500~950	350~900	–
		T2500Z	400~900	300~800	-
		AC8015P	600~1100	600~1000	600~900
		AC810P	500~900	350~800	300~750
		AC8025P	**350~700**	**300~650**	**250~600**
		AC820P	400~700	350~650	300~600
		AC8035P	300~700	200~600	200~600
		AC830P	–	350~650	300~600
	250~350	T1500A	650~1000	450~950	–
		T1500Z	500~900	350~900	–
		T2500Z	300~800	300~800	-
		AC8015P	600~1100	600~1000	600~900
		AC810P	500~900	450~800	350~750
		AC8025P	**300~750**	**300~650**	**200~600**
		AC820P	400~750	400~650	300~600
		AC8035P	300~700	200~600	200~600
		AC830P	–	300~650	200~600
	HRc 36-50	T1500A	350~550	300~550	–
		T1500Z	300~600	200~550	–
		T2500Z	250~550	200~500	-
		AC8015P	**500~800**	**500~800**	**500~800**
		AC810P	300~600	200~500	200~500
		AC8025P	150~400	150~350	150~300
		AC820P	200~400	200~350	150~300
		AC8035P	150~350	150~350	150~300
		AC830P	200~400	200~350	150~300
		NB150H	300~800		
		NB90S	300~600	–	–
HIGH STRENGTH STEELS 300M, 4340, 4340M 4340V, H13, H11 50100, 51100 52100, M-50	250~300	T1500A	600~1000	450~900	–
		T1500Z	550~1050	450~950	–
		T2500Z	500~1000	400~900	-
		AC8015P	600~1100	600~1000	600~900
		AC810P	500~950	350~850	300~700
		AC8025P	**300~700**	**250~700**	**200~650**
		AC820P	400~700	350~700	300~650
		AC8035P	200~600	200~600	200~600
		AC830P	–	350~700	300~600
	HRc 35-45	T1500A	550~900	350~850	–
		T1500Z	500~1000	350~950	–
		T2500Z	400~900	300~900	-
		AC8015P	**600~1200**	**600~1000**	**600~1000**
		AC810P	500~900	350~850	300~800
		AC8025P	300~800	200~700	200~650
		AC820P	400~800	300~700	250~650
		AC8035P	150~600	150~600	150~600
		AC830P	–	300~650	250~600
	Chipbreaker Preference		ESE/ESU/ELU	EGE/ELU	EME/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005" ~ .060" D.O.C.	Gen. Purpose .010 ~ .020 IPR .040" ~ .200" D.O.C.	Roughing .015 ~ .026 IPR 200" D.O.C.
			CUTTING SPEED SFM		
STAINLES STEEL 300 SERIES AUSTENITIC	160~280	T1500A	350~850	300~650	–
		T1500Z	300~900	300~800	–
		T2500Z	250~850	250~750	–
		AC5015S	300~750	300~700	–
		AC510U	300~700	300~650	–
		AC520U	250~550	300~550	300~550
		AC5025S	250~650	250~600	–
		AC530U	250~500	250~500	250~500
		EH510	300~500	300~500	–
		EH520	–	300~500	300~500
		AC8015P	500~900	500~800	500~700
		AC810P	450~750	400~700	–
		AC8025P	300~700	250~700	250~600
		AC820P	–	300~600	300~550
		AC8035P	–	200~600	200~550
		AC830P	–	250~600	200~550
		AC610M	600~800	500~700	400~600
		AC6020M	350~800	300~700	300~650
		AC6030M	**350~750**	**300~650**	**300~600**
		AC630M	400~650	300~550	300~500
		AC6040M	350~650	300~600	300~500
STAINLESS STEEL 400 SERIES MARTENSITIC	160~260	T1500A	300~850	300~750	–
		T1500Z	300~950	300~850	–
		T2500Z	250~900	250~800	–
		AC5015S	300~750	300~700	–
		AC510U	500~750	450~650	–
		AC5025S	250~650	250~600	–
		AC520U	400~650	400~600	300~500
		AC530U	300~600	300~550	300~500
		EH510	300~600	300~550	–
		EH520	300~600	300~550	300~500
		AC8015P	500~900	500~800	500~700
		AC810P	–	400~700	–
		AC8025P	300~700	250~700	250~600
		AC820P	450~650	300~600	300~550
		AC8035P	–	200~600	200~550
		AC830P	–	250~600	200~550
		AC610M	500~800	500~650	500~600
		AC6020M	400~750	300~700	300~650
		AC6030M	**350~750**	**400~700**	**400~650**
		AC630M	300~650	300~600	300~550
		AC6040M	350~600	250~550	250~500
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150"D.O.C.	Roughing .010 ~ .020 IPR .120 ~ .250" D.O.C.
			CUTTING SPEED SFM		
STAINLESS STEEL 400 SERIES MARTENSITIC cont.	260~380	T1500A	200~600	200~550	–
		T1500Z	200~700	200~650	–
		T2500Z	200~700	200~650	–
		AC5015S	300~750	300~700	300~700
		AC510U	400~700	400~650	–
		AC520U	300~600	300~600	300~550
		AC5025S	250~750	250~700	250~600
		AC530U	300~550	300~500	300~500
		EH510	300~600	300~600	–
		EH520	–	300~550	250~500
		AC8015P	400~900	400~800	–
		AC810P	350~800	250~750	–
		AC8025P	300~750	300~700	300~700
		AC820P	–	200~600	200~600
		AC8035P	–	200~700	200~700
		AC830P	–	200~600	200~600
		AC610M	500~700	500~650	500~600
		AC6020M	400~800	400~750	400~700
		AC6030M	**400~750**	**400~700**	**400~650**
		AC630M	300~650	300~600	300~550
		AC6040M	250~700	250~650	250~600
	HrC 36~46	T1500A	200~600	200~500	–
		T1500Z	200~700	200~650	–
		T2500Z	200~700	200~650	–
		AC5015S	300~700	300~650	300~650
		AC510U	300~650	250~600	–
		AC520U	300~600	250~550	250~550
		AC5025S	250~650	250~600	250~600
		AC530U	250~550	250~500	250~500
		EH510	200~500	200~450	–
		EH520	–	200~450	200~400
		AC8015P	400~800	400~800	–
		AC810P	200~750	200~700	–
		AC8025P	300~700	300~650	300~600
		AC820P	–	200~550	200~500
		AC8035P	–	200~600	200~550
		AC830P	–	200~550	200~500
		AC610M	400~700	400~650	400~600
		AC6020M	**350~800**	**350~700**	**350~650**
		AC6030M	200~700	200~650	200~600
		AC630M	200~650	200~600	200~550
		AC6040M	200~650	200~650	200~600
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR .120~.250" D.O.C.
			CUTTING SPEED SFM		
STAINLESS STEEL PRECIPITATION HARDENING 15-5PH, 16-6PH, 17-4, 17-7PH, 13-8Mo	160~260	T1500A	300~800	250~700	–
		T1500Z	300~900	250~750	–
		T2500Z	250~800	200~700	–
		AC5015S	300~900	300~900	300~750
		AC510U	400~900	350~850	–
		AC520U	400~800	400~750	400~700
		AC5025S	250~800	250~750	250~700
		AC530U	300~600	300~550	300~500
		EH510	350~700	325~600	–
		EH520	–	300~650	250~550
		AC8015P	400~900	400~800	–
		AC810P	400~800	400~700	–
		AC8025P	300~750	300~700	300~700
		AC820P	300~700	300~650	300~600
		AC8035P	–	200~700	200~650
		AC830P	–	300~650	300~600
		AC610M	400~700	400~650	400~600
		AC6020M	300~800	300~750	300~700
		AC6030M	**250~750**	**250~700**	**250~650**
		AC630M	200~650	200~600	200~550
		AC6040M	200~700	200~650	200~600
	25~36	T1500A	200~700	200~600	–
		T1500Z	300~800	300~750	–
		T2500Z	250~750	250~700	–
		AC5015S	300~900	300~800	300~700
		AC510U	300~850	300~750	–
		AC520U	300~750	300~700	300~600
		AC5025S	250~800	250~750	250~700
		AC530U	250~600	250~550	250~500
		EH510	250~450	250~400	–
		EH520	–	250~450	250~425
		AC8015P	400~850	400~800	–
		AC810P	300~800	250~750	–
		AC8025P	300~750	300~700	300~650
		AC820P	300~600	200~600	200~550
		AC8035P	–	200~650	200~550
		AC830P	–	200~600	200~500
		AC610M	500~700	500~650	500~600
		AC6020M	350~750	300~700	300~650
		AC6030M	**250~700**	**200~650**	**200~600**
		AC630M	300~650	300~600	300~550
		AC6040M	250~700	200~600	200~550
	36~46	T1500A	300~650	300~600	–
		T1500Z	300~700	300~650	–
		T2500Z	250~700	250~600	–
		AC5015S	300~750	300~750	300~650
		AC510U	300~650	300~650	–
		AC520U	300~650	300~625	250~600
		AC5025S	200~700	200~700	200~600
		AC530U	250~550	250~500	250~500
		AC8015P	400~800	400~750	–
		AC810P	200~750	200~650	–
		AC8025P	300~750	300~700	300~650
		AC820P	200~550	200~525	200~500
		AC8035P	–	200~550	200~500
		AC830P	–	200~500	200~450
		AC610M	400~700	400~650	400~600
		AC6020M	**350~800**	**350~750**	**350~650**
		AC6030M	250~750	200~650	200~600
		AC630M	300~650	300~600	300~550
		AC6040M	200~700	200~600	200~600
Chipbreaker Preference			EEF/ESU	EEG/EEX/EUP	EEG/EMU

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Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR .120~.250" D.O.C.
			CUTTING SPEED SFM		
STAINLESS STEEL WROUGHT AUSTENITIC NITRONIC 32 NITRONIC 33 NITRONIC 40 NITRONIC 50 NITRONIC 60	160~260	T1500A	200~600	200~550	–
		T1500Z	200~700	200~650	–
		T2500Z	200~600	200~600	-
		EH510/520	250~600	200~500	150~400
		AC5015S	200~750	200~750	200~700
		AC510U	200~750	200~750	200~700
		AC520U	200~750	200~700	200~700
		AC5025S	200~750	200~700	200~700
		AC530U	200~600	200~550	200~500
		AC6020M	300~800	250~750	250~650
		AC6030M	**250~750**	**250~650**	**200~600**
		AC6040M	200~750	200~600	200~500
HIGH TEMP. ALLOYS Nickel Base, Wrought Haynes Alloy 263, Incoloy Alloy 901, 903 Inconel Alloy 617, 625, 702, 706, 718, 721, 722, X-750, 751, M252 Nimonic 75, 80 Waspaloy	25~36	WX1500	600~1500		
		WX2000	400~1500	400~1200	400~1000
		SN1000S	600~1200	600~1100	600~900
		EH510/520	40~130	30~110	30~90
		AC5015S	**100~300**	**90~250**	**80~200**
		AC510U	90~200	80~180	80~150
		AC520U	90~180	70~150	50~120
		AC5025S	80~250	70~225	60~200
		AC530U	80~160	70~140	50~120
Nickel Base, Wrought Hastelloy Alloy	25~36	WX2000	400~1500	400~1200	400~1000
		SN1000S	600~1200	600~1100	600~900
		EH510/520	100~190	80~150	70~130
		AC5015S	**100~300**	**90~250**	**80~200**
		AC510U	120~230	90~190	80~170
		AC520U	120~230	90~190	80~170
		AC5025S	100~250	80~225	70~200
		AC530U	80~180	80~150	50~150
Nickel Base, Wrought Incoloy Alloy 804, 825 Inconel Alloy 600, 601 Refractaloy 26	36~46	EH510/520	60~140	50~130	40~110
		AC5015S	**100~250**	**80~200**	**60~175**
		AC510U	80~180	60~150	50~140
		AC520U	80~180	60~150	50~140
		AC5025S	75~225	70~200	70~200
		AC530U	70~150	50~140	50~120
		WX2000	400~1500	400~1200	400~1000
		SN1000S	600~1200	600~1100	600~900
Nickel Base, Cast Hastalloy Alloy	36~46	EH510/520	60~130	40~120	30~100
		AC5015S	**100~250**	**80~200**	**60~175**
		AC510U	70~200	50~180	40~150
		AC520U	70~170	50~150	40~130
		AC5025S	75~225	70~200	70~200
		AC530U	60~150	50~130	40~120
		WX2000	400~1500	400~1200	400~1000
		SN1000S	600~1200	600~1100	600~900
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

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Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR 120~250" D.O.C.
			CUTTING SPEED SFM		
HIGH TEMP ALLOYS IRON BASE, WROUGHT	180~230	**AC5015S**	**100~300**	**80~250**	**80~225**
		AC510U	120~220	100~200	80~180
		AC520U	120~220	100~200	80~180
		AC5025S	100~250	75~225	70~200
		AC530U	80~150	80~120	70~100
		WX1500	600~1500	–	–
		WX2000	400~1500	400~1200	400~1000
		SN1000S	600~1200	600~1100	600~900
	250~320	**AC5015S**	**100~300**	**80~250**	**80~225**
		AC510U	120~210	90~190	75~160
		AC520U	120~210	90~190	75~160
		AC5025S	100~250	75~225	70~200
		AC530U	80~180	80~160	50~120
		WX1500	600~1500	–	–
		WX2000	400~1500	400~1200	400~1000
		SN1000S	600~1200	600~1100	600~900
COBALT BASE	250-320	**AC5015S**	**100~300**	**80~250**	**80~225**
		AC510U	110~210	100~180	80~160
		AC520U	110~210	100~180	80~160
		AC5025S	100~250	75~225	70~200
		AC530U	80~180	70~150	50~120
		WX1500	600~1500	–	–
		WX2000	400~1500	400~1200	400~1000
		SN1000S	600~1200	600~1100	600~900
STELLITE	250-320	**AC5015S**	**100~300**	**80~250**	**80~225**
		AC510U	110~200	100~170	80~150
		AC520U	110~200	100~170	80~150
		AC5025S	100~250	75~225	70~200
		AC530U	80~180	80~150	50~120
		WX1500	600~1500	–	–
		WX2000	300~1500	300~1200	300~1000
		SN1000S	600~1200	600~1100	600~900
PURE TITANIUM		EH510/520	100~180	90~160	70~140
		AC5015S	**100~300**	**80~250**	**80~200**
		AC510U	100~190	90~170	80~140
		AC520U	100~190	90~170	80~140
		AC5025S	100~250	75~225	70~200
		AC530U	80~150	70~130	50~120
TITANIUM ALLOY Ti-6AL-4V		EH510/520	100~180	90~160	70~140
		AC5015S	**100~300**	**80~250**	**80~200**
		AC510U	120~210	120~190	100~160
		AC520U	120~210	120~190	100~160
		AC5025S	100~250	75~225	70~200
		AC530U	80~170	70~150	50~120
ALUMINUM ALLOYS BRASS ALLOYS		**DA1000***	**1000~10000**	**1000~10000**	–
		DA2200*	1000~10000	1000~10000	–
		DA150*	1000~10000	1000~10000	–
		H1	**500~2000**	**500~2000**	**500~2000**
		EH510/520	800~1700	700~1200	700~1000
		AC5015S	500~1600	500~1400	500~1200
		AC510U	500~1500	500~1200	500~1000
		AC520U	500~1500	500~1200	500~1000
		AC5025S	500~1600	500~1400	500~1200
		G10E	800~1500	700~1200	700~1000
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .012 IPR .005" ~ .100" D.O.C.	Gen. Purpose .008 ~ .020 IPR .040" ~ .120" D.O.C.	Roughing .015 ~ .030 IPR .100"~.180" D.O.C.
		CUTTING SPEED SFM			
COPPER ALLOYS WROUGHT 145, 147, 173, 187, 191, 314, 316, 330, 332, 335, 340, 342, 349, 350, 353, 356, 360, 365, 366, 367, 368, 370, 377, 385, 482, 485, 544, 623, 624, 638, 642, 782		**DA1000***	**2000~3300**	**2000~3300**	–
		DA2200*	2000~3300	2000~3300	–
		DA150*	2000~3300	2000~3300	–
		H1	500~2000	500~2000	500~2000
		EH510/520	800~1300	800~1200	700~1100
		AC5015S	**1000~1800**	**1000~1600**	**800~1400**
		AC510U	1200~1700	1100~1500	900~1300
		AC520U	1200~1700	1100~1500	900~1300
		AC5025S	1000~1800	1000~1600	800~1400
		G10E	800~1100	800~1000	700~900
190, 226, 230, 240, 260, 268,270, 280, 425, 435, 442, 443, 444, 445, 464, 465, 466, 467,613, 618, 630, 632, 651, 655, 667, 675, 687, 694, 770		**DA1000***	**2000~3300**	**2000~3300**	–
		DA2200*	2000~3300	2000~3300	–
		DA150*	2000~3300	2000~3300	–
		H1	500~2000	500~2000	500~2000
		EH510/520	800~1100	600~950	500~850
		AC5015S	**800~1500**	**800~1300**	**700~1200**
		AC510U	900~1300	800~1150	700~1000
		AC520U	900~1300	800~1150	700~1000
		AC5025S	800~1500	800~1300	700~1200
		G10E	800~900	600~750	500~650
411, 413, 505, 512 ,511, 521, 524, 608, 610 ,614, 619, 625, 674, 688, 706, 710 ,715, 7285, 745		**DA1000***	**2000~3300**	**2000~3300**	–
		DA2200*	2000~3300	2000~3300	–
		DA150*	2000~3300	2000~3300	–
		H1	500~2000	500~2000	500~2000
		EH510/520	250~550	200~500	150~450
		AC5015S	**400~1000**	**300~900**	**250~800**
		AC510U	450~750	350~650	300~600
		AC520U	450~750	350~650	300~600
		AC5025S	400~1000	300~900	250~800
		G10E	250~350	200~300	150~250
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR .120~.250" D.O.C.
			CUTTING SPEED SFM		
COPPER ALLOYS, CAST 834, 836, 938, 842, 844, 848, 852, 8545, 8955, 857, 858, 864, 867, 879, 928, 932, 934, 935, 937, 938, 939, 943, 944, 945, 953, 954, 956, 973, 974, 976, 078		**DA1000***	**2000~3300**	**2000~3300**	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	1000~1400	850~1250	750~1150
		AC5015S	**1000~1800**	**1000~1600**	**800~1400**
		AC510U	1200~1600	1050~1500	950~1400
		AC520U	1200~1600	1050~1500	950~1400
		AC5025S	1000~1800	1000~1600	800~1400
		G10E	1000~1200	850~1050	750~950
817, 821, 833, 853, 861, 862, 865, 888, 872, 874 ,875, 876, 878, 903, 905, 915, 9022, 923, 9059, 926, 927, 947, 948, 952, 955, 957, 958		**DA1000***	**2000~3300**	**2000~3300**	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	700~1100	550~850	500~800
		AC5015S	**800~1500**	**800~1300**	**700~1200**
		AC510U	950~1350	700~1100	650~1050
		AC520U	950~1350	700~1100	650~1050
		AC5025S	800~1500	800~1300	700~1200
		G10E	700~900	550~650	500~600
801, 803, 805, 807, 809, 811, 813, 814, 815, 818, 820 ,822, 824, 825, 826, 827, 828, 863, 902, 907, 909, 910, 911, 913, 916, 917, 962, 963, 964, 966, 993		**DA1000***	**2000~3300**	**2000~3300**	–
		DA2200*	2000~3300	2000~3300	
		DA150*	2000~3300	2000~3300	–
		EH510/520	300~600	175~500	150~450
		AC5015S	**400~1000**	**300~900**	**250~800**
		AC510U	500~850	350~725	325~675
		AC520U	500~850	325~725	325~675
		AC5025S	400~1000	300~900	250~800
		G10E	300~400	175~300	150~250
GRAY CAST IRON	<220	BN500*	600~2400	–	–
		BN700*	2000~6000	–	–
		BNS800*	2000~6000	–	–
		SN2000K	1000~3500	800~3500	800~2500
		SN2100K	1000~3500	800~3500	800~2500
		T2000Z	600~1400	500~1200	–
		AC405K	700~1700	700~1500	600~1400
		AC4010K	**600~2000**	**600~1800**	**600~1600**
		AC4015K	600~1800	500~1500	500~1200
		AC415K	600~1600	500~1300	400~1000
		AC420K	600~1500	500~1200	400~1000
		AC700G	–	400~1200	400~900
		AC820P	–	600~1000	500~900
		G10E	200~350	150~300	100~250
		G10E	200~350	150~300	100~250
	Chipbreaker Preference		EEF/ESU	EEG/EEX/EUP	EEG/EMU

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Running Conditions

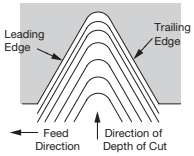
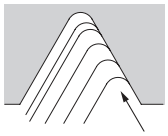
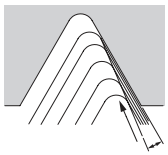
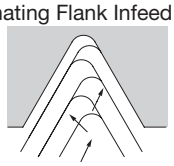
Recommended First Choice

Material	Hardness	Grade	Machining Parameters		
			Finishing .002 ~ .010 IPR .005" ~ .060" D.O.C.	Gen. Purpose .008 ~ .016 IPR .040" ~ .150" D.O.C.	Roughing .010 ~ .020 IPR .120~.250" D.O.C.
			CUTTING SPEED SFM		
GRAY CAST IRON cont.	>220	BN500*	600~2000	–	–
		BN700*	1900~3100	–	–
		BNS800*	1900~3100	–	–
		SN2000K	1000~3500	800~3500	600~2500
		SN2100K	1000~3500	800~3500	600~2500
		T1500Z	500~1350	400~1100	–
		AC405K	600~1600	600~1500	600~1400
		AC4010K	**600~2000**	**600~1800**	**600~1600**
		AC4015K	600~1800	500~1500	500~1200
		AC415K	550~1600	500~1200	450~1000
		AC420K	500~1500	450~1100	400~1000
		AC700G	–	300~1200	400~1000
		AC820P	–	600~1000	500~900
		G10E	200~300	150~300	100~250
DUCTILE IRON NODULAR IRON	<220	BN500*	300~1000	–	–
		T1500Z	350~1000	400~950	–
		SN2000K	600~1700	600~1500	500~1100
		SN2100K	600~1700	600~1500	500~1100
		AC405K	600~1700	600~1500	600~1400
		AC4010K	600~2000	600~1800	600~1600
		AC4015K	**600~1800**	**500~1500**	**500~1200**
		AC415K	500~1500	500~1200	400~1000
		AC420K	500~1400	500~1100	400~1000
		AC700G	–	500~1100	400~1000
		AC820P	–	600~950	600~900
		AC510U	500~800	400~750	350~600
	>220	BN500*	300~900	–	–
		T1500Z	330~900	330~850	–
		SN2000K	500~1700	500~1500	400~1000
		SN2100K	500~1700	500~1500	400~1000
		AC405K	500~1700	500~1500	500~1100
		AC4010K	600~1600	600~1400	600~1200
		AC4015K	**300~1500**	**300~1300**	**300~1100**
		AC415K	400~1300	400~1100	300~1000
		AC420K	400~1100	400~1000	300~900
		AC700G	–	400~900	300~800
		AC820P	–	500~900	450~850
		AC510U	500~800	300~700	300~600
	Chipbreaker Preference		ENZ/FLAT TOP	EGZ/FLAT TOP	EGZ/ FLAT TOP

* mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

The Basics of Threading, Turning Edition

■ Thread Cutting Methods

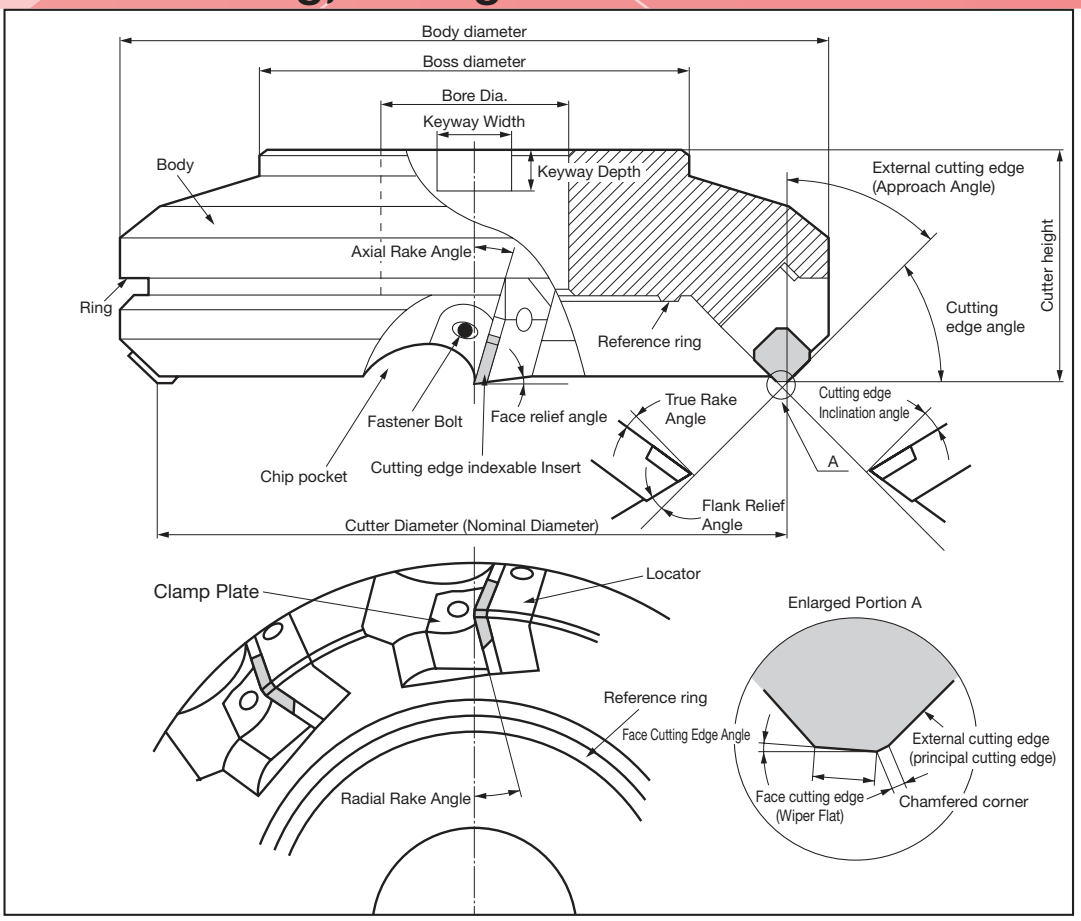
Cutting Method	Features
Radial Infeed 	· Most common threading technique, used mainly for small pitch threads. · Easy to change cutting conditions such as depth of cut, etc. · Long contact point has a tendency to chatter. · Chip control is difficult. · Considerable damage tends to occur on the trailing edge side.
Flank Infeed 	· Effective for large-pitch threads and blemish-prone work material surfaces. · Chips evacuate from one side for good chip control. · The trailing edge side is worn, and therefore the flank is easily worn.
Modified Flank Infeed 	· Effective for large-pitch threads and blemish-prone work material surfaces. · Chips evacuate from one side for good chip control. · Inhibits flank wear on trailing edge side.
Alternating Flank Infeed 	· Effective for large-pitch threads and blemish-prone work material surfaces. · Wears evenly on right and left cut edges. · Since both edges are used alternately, chip control is sometimes difficult.

■ Troubleshooting for Threading

	Failure	Cause	Countermeasures
Cutting Edge Damage	Excessive Wear	· Tool grade	· Select a more wear-resistant grade
		· Cutting conditions	· Reduce cutting speed · Use a suitable quantity and concentration of coolant · Change the number of passes
	Uneven Wear on Right and Left Sides	· Tool mounting	· Check whether the cutting edge inclination angle is appropriate for the thread lead angle · Check whether the tool is mounted properly
		· Cutting conditions	· Change to modified flank infeed or alternating flank infeed
	Chipping	· Cutting conditions	· If built-up edge occurs, increase the cutting speed
	Breakage	· Biting of chips	· Supply enough coolant to the cutting edge
		· Cutting conditions	· Increase the number of passes and reduce the depth of cut for each pass · Use separate tools for roughing and finishing
Shape and Accuracy	Poor Surface Roughness	· Cutting conditions	· If blemished due to low-speed machining, increase the cutting speed · If chattering occurs, decrease the cutting speed · If the depth of cut of the final pass is too small, make it larger
		· Tool grade	· Select a more wear-resistant grade
		· Inappropriate cutting edge inclination angle	· Select the correct shim to ensure relief on the side of the insert
	Inappropriate Thread Shape	· Tool mounting	· Check whether the tool is mounted properly
	Shallow Thread Depth	· Shallow depth of cut	· Check the depth of cut
		· Tool wear	· Check damage to the cutting edge

The Basics of Milling, Milling Edition

■ Parts



■ Milling Calculation Formulas

● Calculating cutting speed

$$v_c = \frac{\pi \times DC \times n}{1{,}000}$$

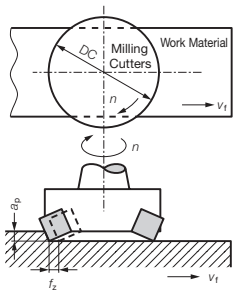
$$n = \frac{1{,}000 \times v_c}{\pi \times DC}$$

● Calculating feed rate

$$v_f = f_z \times z \times n$$

$$f_z = \frac{v_f}{z \times n}$$

v_c : Cutting speed (m/min)
π : $\pi \approx 3.14$
DC : Nominal cutting diameter (mm)
n : Rotation speed (min^{-1})
v_f : Feed rate per minute (mm/min)
f_z : Feed rate per tooth (mm/t)
z : Number of teeth



● Calculating power requirements

$$P_c = \frac{a_e \times a_p \times v_f \times k_c}{60 \times 10^6 \times \eta} = \frac{Q \times k_c}{60 \times 10^3 \times \eta}$$

P_c: Power consumption (kw)
H : Required horsepower (HP)
Q : Chip evacuation amount (cm^3/min)
a_e: Cutting width (mm)
v_f : Feed rate per minute (mm/min)
a_p: Depth of cut (mm)
k_c : Cutting force (MPa)
Rough values (Steel: 2,500 to 3,000MPa / Cast iron: 1,500MPa / Aluminum: 800MPa)
η : Machine efficiency (about 0.75)

● Horsepower requirements

$$H = \frac{P_c}{0.75}$$

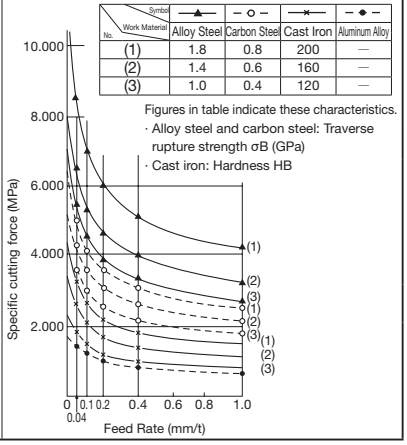
● Chip evacuation amount

$$Q = \frac{a_e \times a_p \times v_f}{1{,}000}$$

● Relation between feed rate, work material and specific cutting force

No. \ Work Material	Alloy Steel	Carbon Steel	Cast Iron	Aluminum Alloy
(1)	1.8	0.8	200	—
(2)	1.4	0.6	160	—
(3)	1.0	0.4	120	—

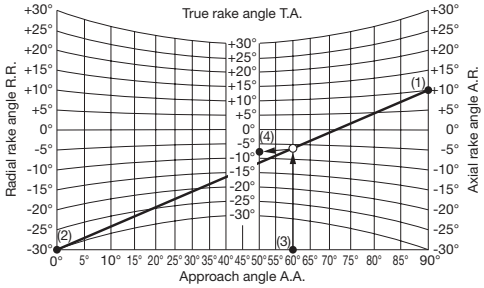
Figures in table indicate these characteristics.
· Alloy steel and carbon steel: Traverse rupture strength σB (GPa)
· Cast iron: Hardness HB



■ Functions of cutting edge angles

	Material	Symbol	Function	Effect
(1) (2)	Axial rake angle Radial rake angle	A.R. R.R.	Determines chip evacuation direction, adhesion, thrust, etc.	Available in positive to negative (large to small) rake angles. Typical combinations: Positive and Negative, Positive and Positive, Negative and Negative
(3)	Approach angle	A.A.	Determines chip thickness and chip evacuation direction	Large: Thin chips Small cutting force
(4)	True rake angle	T.A.	Effective rake angle	Positive (Large): Excellent machinability and low chip adhesion. Low cutting edge strength Negative (Small): Strong cutting edge and easy chip adhesion
(5)	Cutting edge inclination angle	I.A.	Determines chip control direction	Positive (Large): Excellent chip control and small cutting force. Low cutting edge strength
(6)	Face cutting edge angle	F.A.	Determines surface finish roughness	Small: Excellent surface roughness
(7)	Relief angle		Determines cutting edge strength, tool life, chattering	

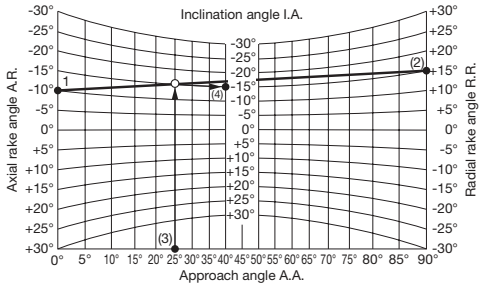
True rake angle (T.A.) table



Example: (1) A.R. (Axial rake angle) = +10°
(2) R.R. (Radial rake angle) = -30°
(3) A.A. (Approach angle) = 60°
-> (4) T.A. (True rake angle) = -8°

Formula: tan T.A.=tan R.R./cos A.A. + tan A.R./sin A.A.

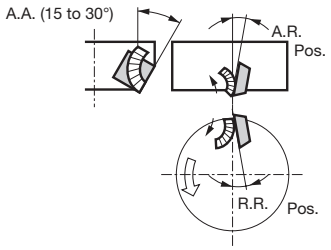
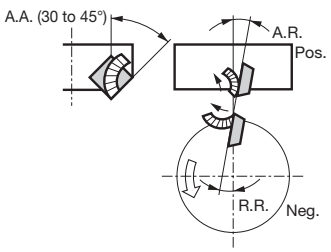
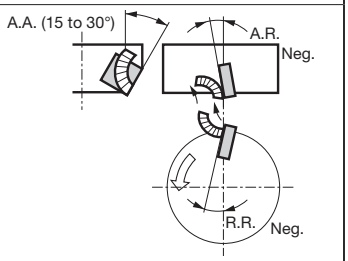
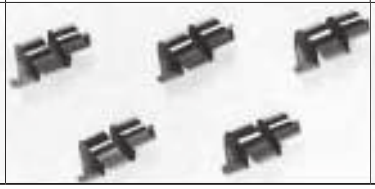
Inclination angle (I.A.) chart



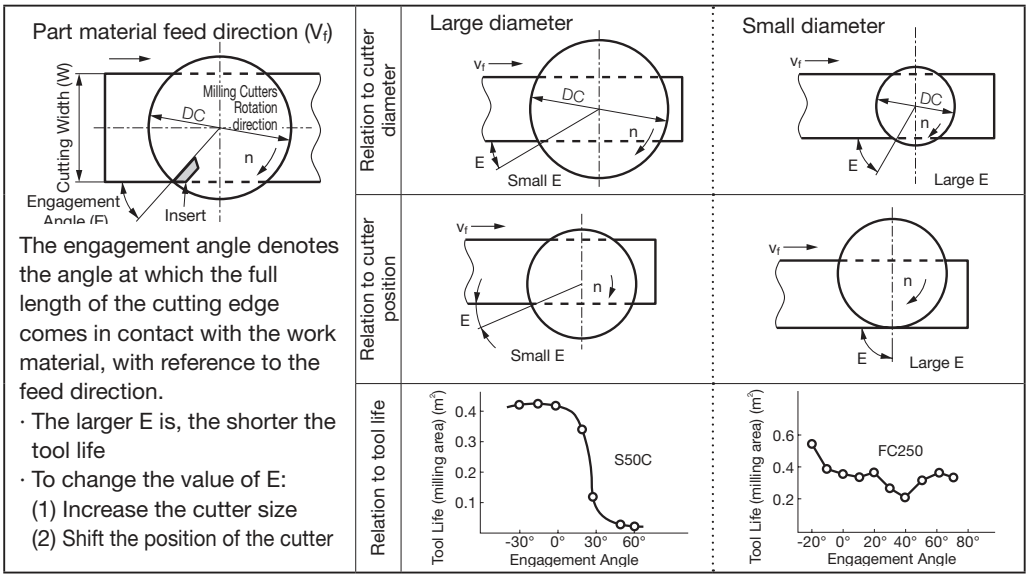
Example: (1) A.R. (Axial rake angle) = -10°
(2) R.R. (Radial rake angle) = +15°
(3) A.A. (Approach angle) = 25°
-> (4) I (inclination angle) = -15°

Formula: tan I.R.=tan A.R./cos A.A. - tan R.R./sin A.A.

■ Rake angle combination and features

	Double Positive type	Negative - Positive type	Double Negative type
Edge combination and chip evacuation A.R.: Axial rake angle R.R : Radial rake angle A.A.: Approach angle : Chip and evacuation direction : Cutter rotation direction			
Advantages	Good sharpness	Excellent chip evacuation and sharpness	Economical design enabling use of both sides of insert Strong cutting edge
Disadvantages	Only single-sided inserts with a lower cutting edge strength can be used	Only single-sided inserts can be used	Dull cutting action
Applications	Machining of aluminum alloy and other materials requiring sharpness	Machining of steel, cast iron, and stainless steel, with suitable strength and good evacuation	For hard materials such as cast iron or poor surfaces such as castings
Cat. No.	ALNEX, WEZ, HF, WAX	WGX, WFX, RSX, MSX	TSX, DGC, DFC, DNX
Chips (Ex.) Part material: Alloy Steel · v_c=430 SFM f_z =.009 in./t a_p=.118”			

■ Relation between engagement angle and tool life

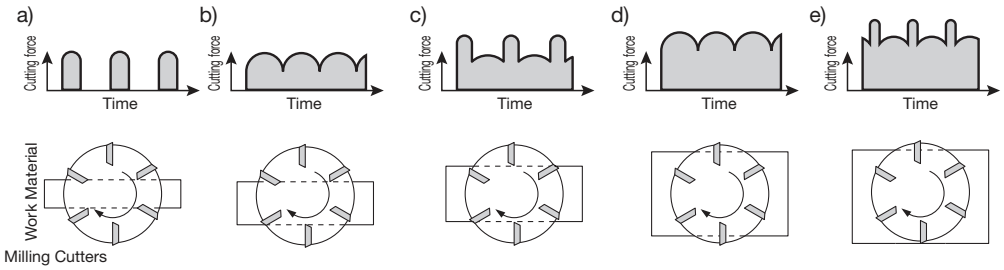


The engagement angle denotes the angle at which the full length of the cutting edge comes in contact with the work material, with reference to the feed direction.

- The larger E is, the shorter the tool life
- To change the value of E:
  (1) Increase the cutter size
  (2) Shift the position of the cutter

● Relation between the number of simultaneously engaged cutting edges and cutting force

Normally, a cutting width 70 to 80% of the cutter diameter is considered appropriate, as shown in example d). However, this may not apply due to the actual rigidity of the machine or workpiece, and the machine horsepower.



- a) · 0 or 1 edge in contact at same time
- b) · Only 1 edge in contact at any time
- c) · 1 or 2 edges in contact
- d) · 2 edges in contact at any time
- e) · 2 to 3 edges in contact

■ Improving surface roughness

(1) Inserts with wiper flat

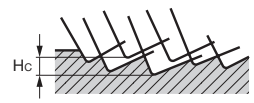
When all of the cutting edges have wiper flats, a few teeth protrude due to inevitable runout and act as wiper inserts.

- Insert equipped with straight wiper flat
  (Face angle: Around 15' to1°)
- Insert equipped with curved wiper flat
  (Curvature: ≈ R500 (example))

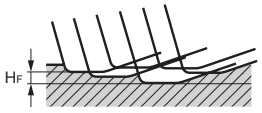
(2) Wiper insert assembling system

A system in which one or two inserts (wiper inserts) protrude with a smooth curved edge just a little beyond the other teeth to wipe the milled surface. (Applicable to WGX Type, DGC Type, etc.)

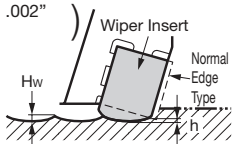
● Surface roughness without wiper flat



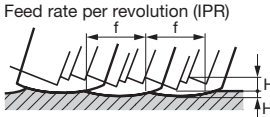
● Surface roughness with straight wiper flat



h: Projection value of wiper insert
(Cast Iron: .002"
Al: .001")

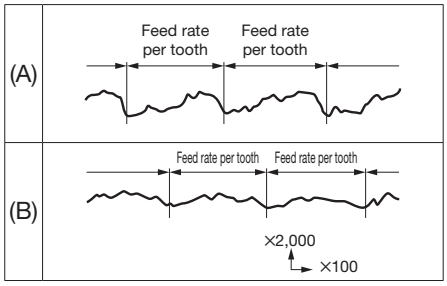


f: Feed rate per revolution (IPR)



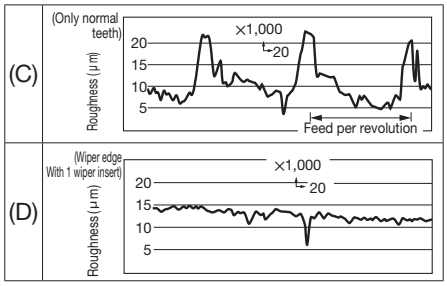
Hc: Surface roughness with only normal teeth
Hw: Surface roughness with wiper insert

● Surface roughness with wiper edge (difference in face cutting edge)



- · Part material: Alloy Steel
- · Cutter: DPG5160R (per tooth)
- · v_c = 510 SFM
  f_z = .0092 in./t
  a_p = .0787"
- · Face Cutting Edge Angle
  (A): 28'
  (B): 6'

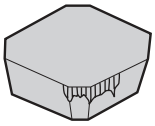
● Effects of wiper insert (example)

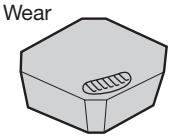
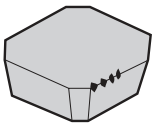


- · Part material: Grey Cast Iron
- · Cutter: DPG4100R
- · Insert: SPCH42R
- · Face runout: .0006"
- · Runout: .0016"
- v_c = 350 SFM
  f_z = .0571 IPR
- (C): Normal teeth
- (D): Per wiper edge

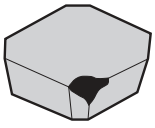
Troubleshooting for Milling, Milling Edition

■Troubleshooting for Milling

<table>
<tr><th colspan="2">Failure</th><th colspan="2">Basic Remedies</th><th>Countermeasure Examples</th></tr>
<tr><td rowspan="5">Cutting Edge Damage</td><td>Excessive Flank Wear
  </td><td>Tool Grade

Cutting Conditions</td><td>· Select a more wear-resistant grade
Carbide (P30→P20 / K20→K10) → {Coated / Cermet}
· Decrease the cutting speed
· Increase feed rate</td><td>· Recommended Insert Grade
<table><tr><th></th><th>Steel</th><th>Cast Iron</th><th>Non-Ferrous Alloy</th></tr><tr><td>Finishing</td><td>T250A, T4500A (Cermet)</td><td>ACK100 (Coated) BN7000 (SUMIBORON)</td><td>DA1000 (SUMIDIA)</td></tr><tr><td>Roughing</td><td>ACP100 (Coated)</td><td>ACK200 (Coated)</td><td>DL1000 (Coated)</td></tr></table></td></tr>
<tr><td>Excessive Crater Wear
  </td><td>Tool Grade
Tool Design
Cutting Conditions</td><td>· Select a crater-resistant grade
· Use a sharp chipbreaker (G → L)
· Decrease the cutting speed
· Reduce depth of cut and feed rate</td><td>· Recommended Insert Grade
<table><tr><th></th><th>Steel</th><th>Cast Iron</th><th>Non-Ferrous Alloy</th></tr><tr><td>Finishing</td><td>T250A, T4500A (Cermet)</td><td>ACK100 (Coated)</td><td>DA1000 (SUMIDIA)</td></tr><tr><td>Roughing</td><td>ACP100 (Coated)</td><td>ACK200 (Coated)</td><td>DL1000 (Coated)</td></tr></table></td></tr>
<tr><td>Chipping
  </td><td>Tool Grade

Tool Design

Cutting Conditions</td><td>· Use a tougher grade
P10→P20→P30
K01→K10→K20
· Select a negative/positive cutter with a large peripheral cutting edge angle (a small approach angle).
· Reinforce the cutting edge (honing)
· Change chipbreaker (G → H)
· Reduce feed rate</td><td>· Recommended Insert Grade
<table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Finishing</td><td>ACP200 (Coated)</td><td>ACK200 (Coated)</td></tr><tr><td>Roughing</td><td>ACP300 (Coated)</td><td>ACK300 (Coated)</td></tr></table>· Recommended cutter: WaveMill WGX Type
· Cutting conditions: Refer to H20</td></tr>
<tr><td>Breakage
  </td><td>Tool Grade

Tool Design

Cutting Conditions</td><td>· If it is due to excessive low speeds or very low feed rates, select a grade resistant to chip adhesion
· If the cause is thermal cracking, select a thermal impact resistant grade
· Select a negative/positive (or double negative) cutter type with a large peripheral cutting edge angle (a small approach angle)
· Reinforce the cutting edge (honing)
· Change chipbreaker (G →→ H)
· Increase insert size (thickness in particular)
· Select appropriate conditions for that particular application</td><td>· Recommended Insert Grade
<table><tr><th></th><th>Steel</th><th>Cast Iron</th></tr><tr><td>Roughing</td><td>ACP300 (Coated)</td><td>ACK300 (Coated)</td></tr></table>· Recommended cutter: WaveMill WGX Type
· Insert thickness: .125 → .187”
· Change chipbreaker: Standard → Strong edge type
· Cutting conditions: Refer to H20</td></tr>
<tr><td rowspan="5">Others</td><td>Unsatisfactory Machined Surface Finish</td><td>Tool Grade

Tool Design

Cutting Conditions</td><td>· Select an adhesion-resistant grade
Carbide → Cermet
· Improve axial runout of cutting edges
(Use a cutter with less runout / Mount the correct insert)
· Use a wiper insert
· Use cutters dedicated for finishing
· Increase the cutting speed</td><td>· Recommended Cutters and Insert Grades
<table><tr><th colspan="2"></th><th>Steel</th><th>Cast Iron</th><th>Non-Ferrous Alloy</th></tr><tr><td rowspan="2">General-purpose</td><td>Cutter Insert</td><td>WGX Type* ACP200 (Coated)</td><td>DGC Type ACK200 (Coated)</td><td>RF type * H1 (Carbide) DL1000 (Coated Carbide)</td></tr><tr><td rowspan="2">Finishing</td><td>Cutter Insert</td><td>WGX Type T4500A (Cermet)</td><td>FMU Type BN7000 (SUMIBORON)</td><td>RF Type DA1000 (SUMIDIA)</td></tr></table>Cutters marked with * can be mounted with wiper inserts.</td></tr>
<tr><td>Chattering</td><td>Tool Design

Cutting Conditions
Others</td><td>· Select a cutter with sharp cutting edges
· Use an irregular pitched cutter
· Reduce the feed rate
· Improve the rigidity of the workpiece and cutter clamp</td><td>· Recommended cutter
For steel: WaveMill WGX Type
For cast iron: Sumi Dual Mill DGC Type
For light alloy: Aluminum Body Cutter RF Type</td></tr>
<tr><td>Unsatisfactory Chip Control</td><td>Tool Design</td><td>· Select a cutter with good chip evacuation features
· Reduce number of teeth
· Enlarge chip pocket</td><td>· Recommended cutter: WaveMill WGX Type</td></tr>
<tr><td>Edge Chipping On Workpiece</td><td>Tool Design

Cutting Conditions</td><td>· Increase the peripheral cutting edge angle (decrease the approach angle)
· Change chipbreaker (G → L)
· Reduce the feed rate</td><td>· Recommended cutter: WaveMill WGX Type</td></tr>
<tr><td>Burr formation</td><td>Tool Design
Cutting Conditions</td><td>· Use a sharp cutter
· Increase feed rate
· Use a burr-proof insert</td><td>· Recommended cutter: WaveMill WGX Type + FG Chipbreaker
Sumi Dual Mill DGC Type + FG Chipbreaker</td></tr>
</table>

Troubleshooting for Milling, Milling Edition

■ Horsepower Consumption

This section contains the horsepower consumption formula and the explanation of the associated variables. A list of commonly encountered materials has been added to assist you when determining the required horsepower for a machining operation.

Machine efficiency, drive type, and amount of time that the machine has been running can effect the horsepower and torque availability at the spindle. Without an extensive list of specifications, it is nearly impossible to predict the capabilities of a machine tool. Sumitomo suggests that unless the capabilities of a machine tool are well known, it is wise to limit the attempted operations to those that require no more than 65% of the machine's rated horsepower.

Please take the time to understand the power requirements of an operation before attempting it, unless you are very familiar with the tool, material, and especially the machine being used.

*Note: If the material that you are machining is not found in this list, contact the material manufacturer for further information. Most material suppliers, or mills, have excellent technical resources available. However, if the material in question exhibits machining properties that are similar to a given material, use the corresponding "K" factor.

■ Horsepower Consumption Formula

$$\text{Horsepower} = \frac{W \times D \times F}{K}$$

W = width of cut (inches)
D = depth of cut (inches)
F = feed rate (inches/minute)
K = 'K' factor for material

'K' factors for some common materials are:

Material	'K'
Magnesium	4.0
Aluminum	4.0
Copper	2.0
Brass	2.5
Bronze	2.0
Malleable iron	1.0
Cast iron	
Ferrite	1.5
Pearlitic	1.0
Chilled	.6
Steel	
up to 150 BHN	1.0
up to 300 BHN	.8
up to 400 BHN	.5
up to 500 BHN	.4

Material	'K'
Stainless steel	
Free machining	1.0
Others	.6
Titanium	
under 100,000 psi	.8
100,000-135,000 psi	.6
135,000 psi and over	.4
High-tensile alloys	
180,000-220,000 psi	.5
220,000-260,000 psi	.4
260,000-300,000 psi	.3
High-temperature alloys	
Nickel base alloys	.4
Cobalt base alloys	.4
Austenitic alloys	.4

■ Lead Angle Effect

The lead angle effect is a commonly known phenomenon in tool design. As the lead angle of a tool (the angle at which the insert is rotated away from its axial center line) increases, the actual thickness of the produced chip decreases from the programmed amount. This allows us to take advantage of increased feed rates over standard zero degree (90 degree shoulder) lead tools.

By comparing the following lead angle figures, it is possible to increase the actual feed rate up to 30% over the suggested numbers (depending on the type of tool), thus increasing productivity.

Tool Lead Angle	% of chip thickness from programmed feed rate
15 degrees	96%
20 degrees	94%
30 degrees	86%
45 degrees	71%

To simplify this calculation we have included a chart that allows easy determination of programmed feed per tooth by choosing desired feed per tooth and then following the column down to the row that matches the lead angle of the tool that is being used.

Example: Find the programmed feed per tooth for a UFO cutter (45 degree lead angle), when the desired feed per tooth is 0.006 IPT.

Answer: Programmed feed per tooth = 0.0085 IPT

■ Programmed Feed Per Tooth vs. Desired Feed Per Tooth

Tool Lead Angle	Desired Feed Per Tooth (IPT)								
	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
	Programmed Feed Per Tooth (IPT)								
15	0.0042	0.0052	0.0063	0.0073	0.0083	0.0094	0.0104	0.0115	0.0125
20	0.0043	0.0053	0.0064	0.0074	0.0085	0.0096	0.0106	0.0117	0.0128
30	0.0047	0.0061	0.0070	0.0081	0.0093	0.0105	0.0116	0.0128	0.0140
45	0.0057	0.0075	0.0085	0.0099	0.0113	0.0127	0.0141	0.0156	0.0170

▲ mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

■ Radial Chip Thinning

Just as the axial rake of a cutting tool can alter the actual chip thickness, so can radial chip thinning. This occurs whenever the radial width of cut is less than 1/2 the cutter diameter. This is commonly found when making periphery cuts while end milling.

Since both tool life and productivity rely on maintaining full chip thickness, it is important to compensate for this scenario. Rather than using the mathematical process to arrive at a *programmed feed rate*, we have included the following chart.

To use this chart it is necessary to have the following information:

1) Desired feed per tooth (as taken from the end mill speed and feed section)
2) Cutter diameter
3) Radial width of cut

The first step is to divide the radial width of cut by the cutter diameter and find the closest value in the first column on the left. Next find the *desired feed per tooth* at the top of the chart and follow that column down to the row that was found in the first step. This will be the *programmed feed per tooth*.

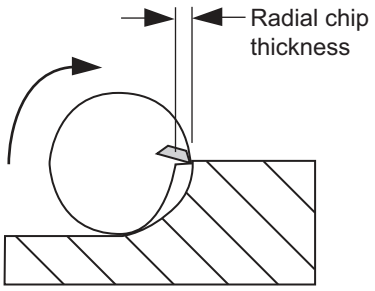
Example: 1.00″ diameter end mill
0.020″ radial width of cut
0.004″ *desired feed per tooth*

Answer: Dividing 0.020″ by 1.00″=0.020

Finding 0.020 in the first column on the left, and then the 0.004″ desired feed per tooth at the top, we find where the two meet and obtain 0.014″ *programmed feed per tooth*.

This results in a large increase in the feed rate. If we use these factors for a four flute tool at 2292 RPM, we have a feed rate of 128 IPM (2292 RPM x 0.014 IPT x 4 Flutes) versus 37 IPM (2292 RPM x 0.004 IPT x 4 Flutes) that might have otherwise been programmed.

As you can see from the illustration below, as radial depth increases, so does chip thickness until we reach 50% of the cutting diameter. At this point we have full, programmed chip load.



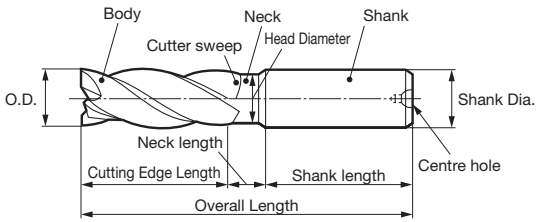
■ Radial Chip Thinning Compensation

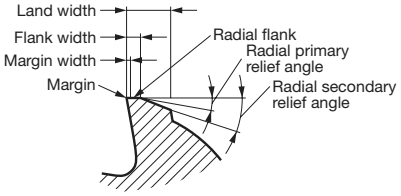
Desired Feed Per Tooth (IPT)									
	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
WOC/Dia.	Programmed Feed Per Tooth (IPT)								
0.005	0.0280	0.0350	0.0420	0.0490	0.0560	0.0630	0.0700	0.0770	0.0840
0.010	0.0200	0.0250	0.0300	0.0350	0.0400	0.0450	0.0500	0.0550	0.0600
0.015	0.0164	0.0205	0.0246	0.0287	0.0328	0.0369	0.0410	0.0451	0.0492
0.020	0.0140	0.0175	0.0210	0.0245	0.0280	0.0315	0.0350	0.0385	0.0420
0.025	0.0128	0.0160	0.0192	0.0224	0.0256	0.0288	0.0320	0.0352	0.0384
0.030	0.0116	0.0145	0.0174	0.0203	0.0232	0.0261	0.0290	0.0319	0.0348
0.035	0.0108	0.0135	0.0162	0.0189	0.0216	0.0243	0.0270	0.0297	0.0324
0.040	0.0100	0.0125	0.0150	0.0175	0.0200	0.0225	0.0250	0.0275	0.0300
0.060	0.0084	0.0105	0.0126	0.0147	0.0168	0.0189	0.0210	0.0231	0.0252
0.080	0.0072	0.0090	0.0108	0.0126	0.0144	0.0162	0.0180	0.0198	0.0216
0.120	0.0060	0.0075	0.0090	0.0105	0.0120	0.0135	0.0150	0.0165	0.0180
0.200	0.0052	0.0065	0.0078	0.0091	0.0104	0.0117	0.0130	0.0143	0.0156
0.300	0.0044	0.0055	0.0066	0.0077	0.0088	0.0099	0.0110	0.0121	0.0132

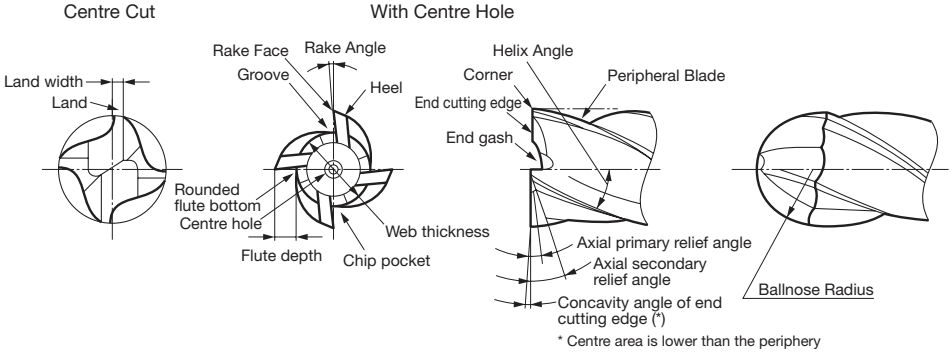
▲ mark: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

The Basics of Endmilling, Endmilling Edition

■ Parts



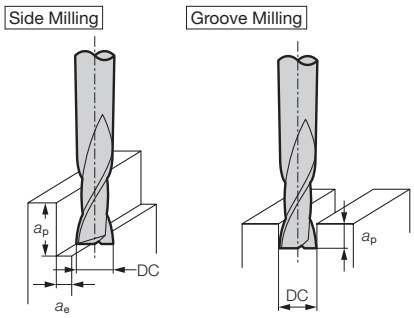




■ Calculating cutting conditions (square endmill)

● Calculating cutting speed

$$v_c = \frac{\pi \times DC \times n}{1{,}000} \qquad n = \frac{1{,}000 \times v_c}{\pi \times DC}$$



● Calculating feed rate per revolution and per tooth

$$v_f = n \times f \qquad f = \frac{v_f}{n}$$

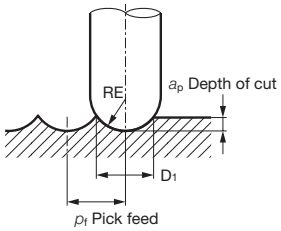
$$v_f = n \times f_z \times z \qquad f_z = \frac{f}{z} = \frac{v_f}{n \times z}$$

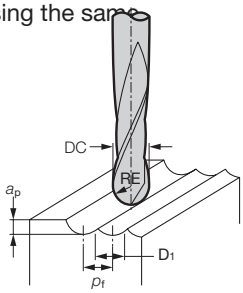
(Ballnose Endmill)

● Calculating notch width (D_1)

$$D_1 = 2 \times \sqrt{2 \times RE \times a_p - a_p^2}$$

●Cutting speed and feed rate (per revolution and per tooth) are calculated using the same formula as the square endmill.

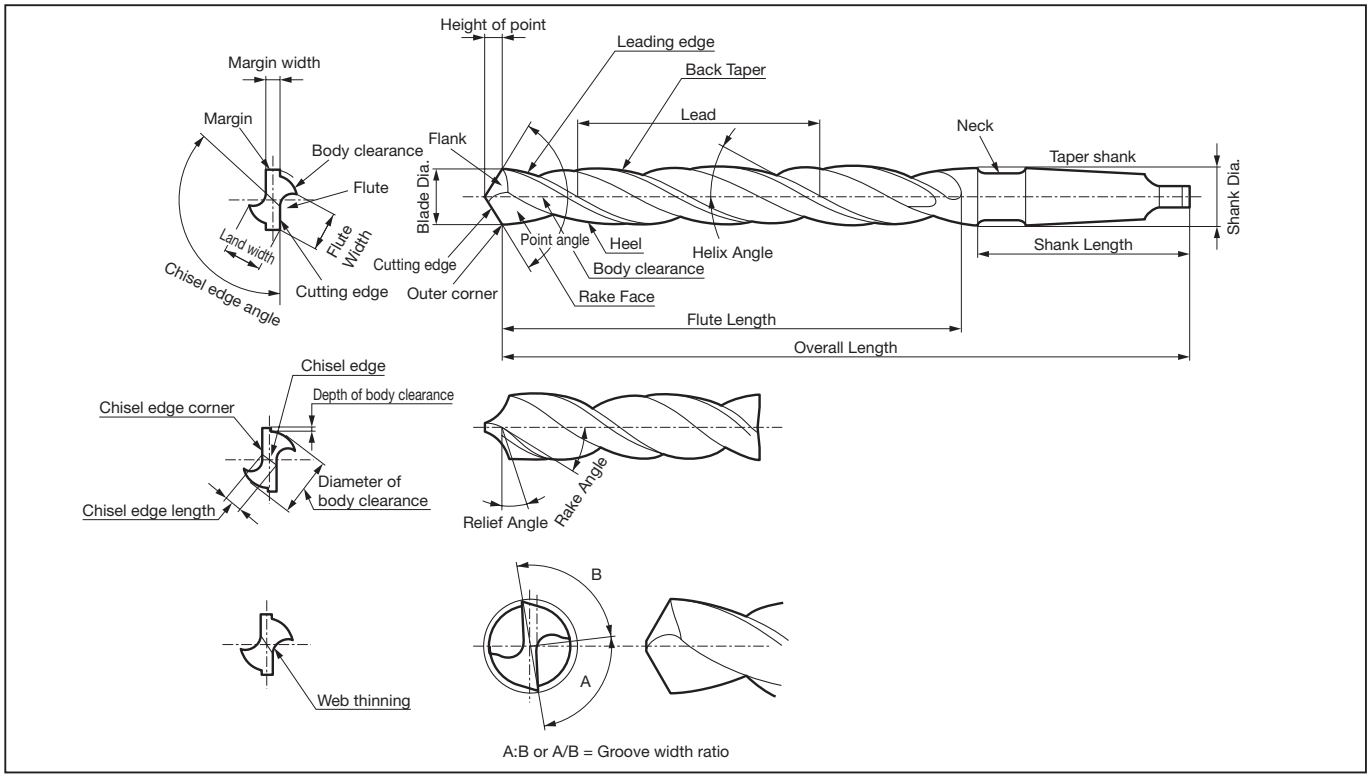




v_c : Cutting speed (m/min)
π : $\pi \approx 3.14$
DC : Endmill diameter (mm)
n : Spindle speed (min^{-1})
v_f : Feed rate (mm/min)
f : Feed rate per revolution (mm/rev)
f_z : Feed rate per tooth (mm/t)
z : Number of teeth
a_p : Depth of cut in axial direction (mm)
a_e : Depth of cut in radial direction (mm)
RE : Ballnose radius

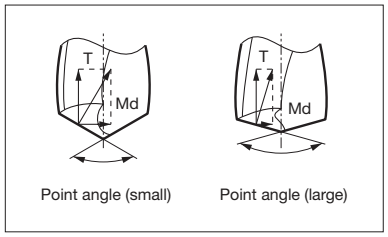
Basics of Drilling, Drilling Edition

■ Parts of Drill



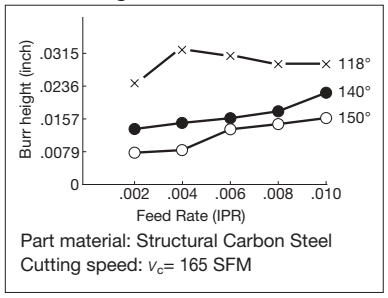
A:B or A/B = Groove width ratio

● Point angle and force



When point angle is large, thrust increases but torque decreases.

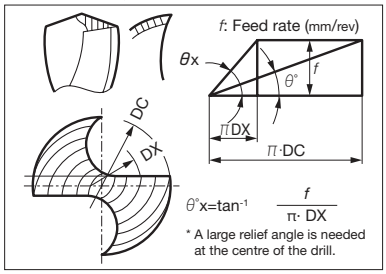
● Point angle and burr



Part material: Structural Carbon Steel
Cutting speed: v_c= 165 SFM

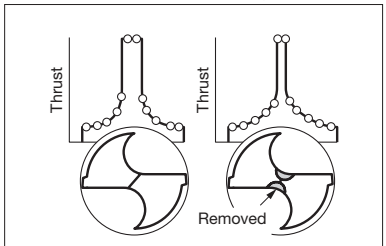
When point angle is large, burr height becomes low.

● Minimum requirement relief angle for drilling



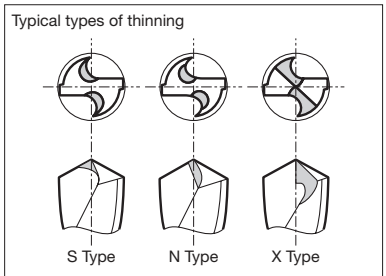
* A large relief angle is needed at the centre of the drill.

● Effects of web thinning



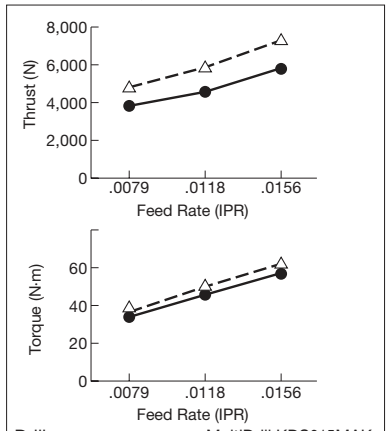
Web thinning decreases the thrust concentrated at the chisel edge, makes the drill edge sharp, and improves chip control.

● Chisel width decreased by thinning



S Type: Standard type used for general purposes.
N Type: Suitable for thin web drills.
X Type: For hard-to-cut materials or deep hole drilling. Entry easier.

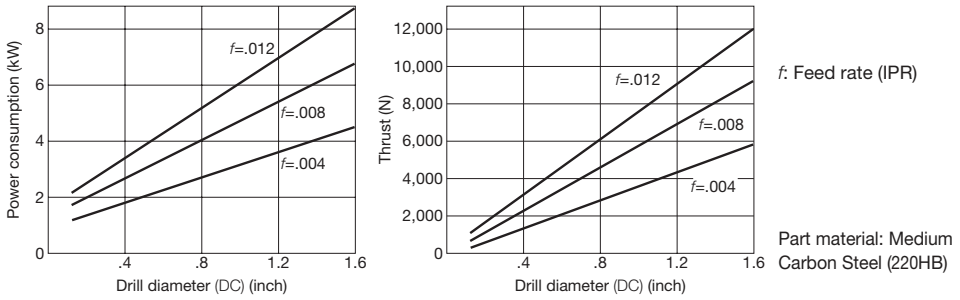
● Relation between edge treatment and cutting force



Drill : MultiDrill KDS215MAK
Edge treatment width : ●.0059”
△→.0091”
Part material : Carbon Steel (230HB)
Cutting conditions : v_c= 165 SFM, wet

Basics of Drilling, Drilling Edition

■ Reference of Power Requirements and Thrust



f: Feed rate (IPR)

Part material: Medium Carbon Steel (220HB)

■ Cutting Condition Selection

● Control cutting force for low-rigidity machines

The following table shows the relation between edge treatment width and cutting force. If the cutting force is too great and causes issues, take measures such as reducing the feed rate or reducing the cutting edge treatment of the drill.

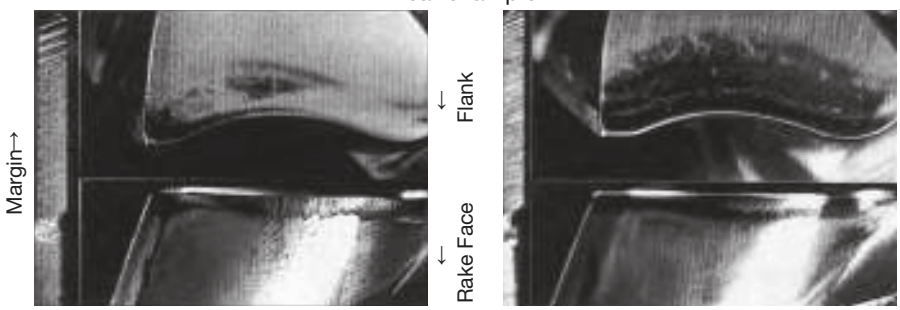
Cutting Conditions		Edge treatment width			
		.0059"		.0019"	
v_c(SFM)	*f* (IPR)	Torque (N/m)	Thrust (N)	Torque (N/m)	Thrust (N)
130	.015	12.8	2,820	12.0	2,520
165	.012	10.8	2,520	9.4	1,920
200	.009	9.2	2,320	7.6	1,640
200	.006	6.4	1,640	5.2	1,100

Drill Diameter : ø.394"
Part material : Carbon Steel (230HB)

● High speed machining recommendation

If the machine has enough power and sufficient rigidity, reasonable tool life can be ensured even when adopting higher efficiency machining; however, sufficient coolant must be supplied.

Wear example

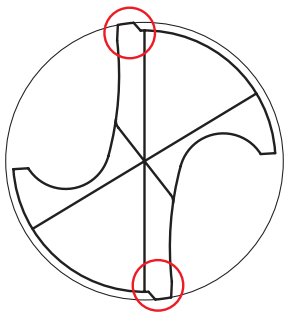


v_c= 200 SFM v_c= 400 SFM

Part material : Carbon Steel (230HB)
Cutting conditions: *f* = .0118 IPR
H=50mm
Tool life : 600 holes (Cutting length: 1.181")

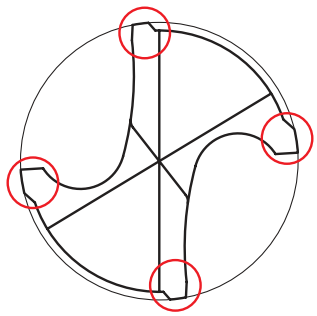
■ Explanation of Margins (Difference between single and double margins)

● Single Margin (2 guides: ○ part)



● Shape used on most drills

● Double Margin (4 guides: ○ part)

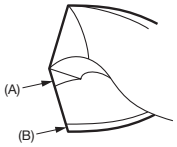


● 4-point guiding reduces hole bending and undulation for improved stability and accuracy during deep hole drilling.

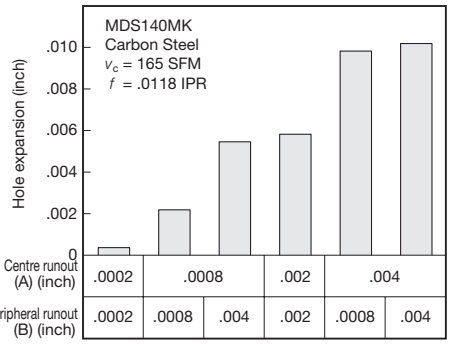
Basics of Drilling, Drilling Edition

■ Runout Accuracy

For the runout accuracy of web-thinned drills, the runout after thinning (A) is important in addition to the difference in lip height (B).



(A): Runout accuracy of thinning point
(B): The difference of the lip height

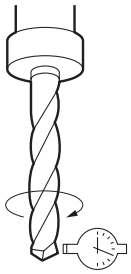


Centre runout (A) (inch)	.0002	.0008		.002	.004	
Peripheral runout (B) (inch)	.0002	.0008	.004	.002	.0008	.004

■ Drill Mounting Peripheral Runout Accuracy

• When the tool rotates

The peripheral runout accuracy of the drill mounted on the spindle should be controlled within .0012". If the runout exceeds the limit, the drilled hole will also become large and an increase in the horizontal cutting force, which may result in drill breakage.



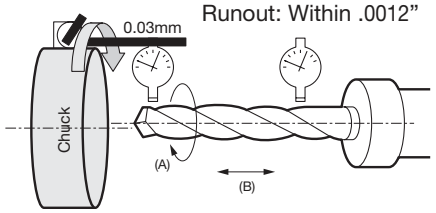
Runout: Within .0012"

Peripheral runout (inch)	Hole expansion 0 .002 (in.)	Cutting Force* 0 22 (lbs)
.0002		
.0035		

* Horizontal cutting force.
Drill: MDS120MK, part material: Carbon Steel (230HB)
Cutting Conditions: v_C= 165 SFM, f = .0118 IPR, H = 1.50"
Water-soluble Coolant

• When the part material rotates

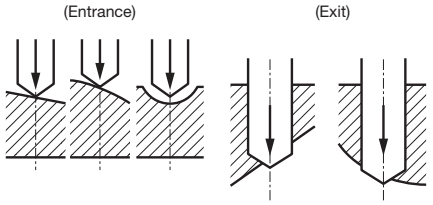
The peripheral runout at the drill edge (A) and the concentricity at (B) should be controlled within .0012".



■ Work Material Surface and Drill Performance

• Part material with slanted or uneven surface

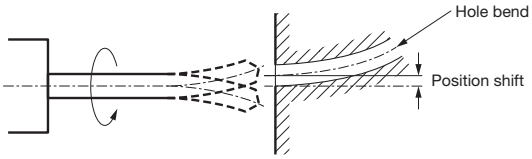
If the surface of the hole entrance or exit is slanted or uneven, decrease the feed rate to 1/3 to 1/2 of the recommended cutting conditions.



■ How to Use a Long Drill

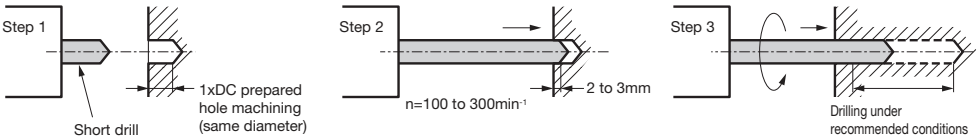
• Problem

When using a long drill (e.g. XHGS Type), SMDH-D Type drill or SMDH-12.5D Type drill at high rotation speeds, the runout of the drill tip may cause a deviation of the entry point as shown on the right, bending the drill hole and resulting in drill breakage.

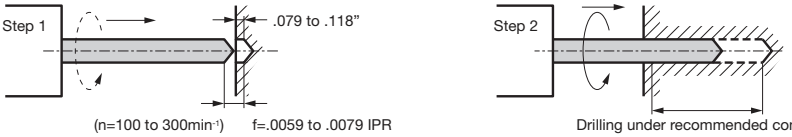


• Remedies

Method 1



Method 2 *Low rotational speed minimises centrifugal forces and prevents the drill from bending.

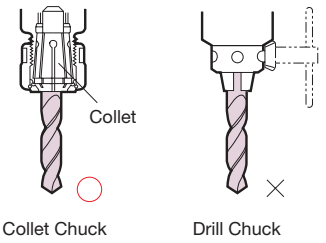


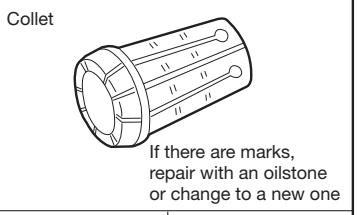
MultiDrill Usage Guidance, Drilling Edition

■ Drill Maintenance

(1) Collet Selection and Maintenance

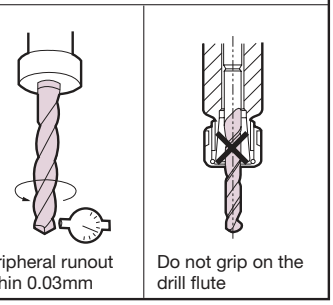
- Ensure proper chucking of drills to prevent vibration. Collet type chucks are recommended, as the grip is strong and can be used with ease.
  (Drill chucks and keyless chucks are not suitable for MultiDrills as they have a weaker grip force.)
- When replacing drills, regularly remove cutting chips inside the collet by cleaning the collet and the spindle with oil. Repair marks with an oilstone.





(2) Drill Mounting

- The peripheral runout of the drill mounted on the spindle must be within 0.03mm.
- Do not chuck on the drill flute.
  (If the drill flute is inside the holder, chip evacuation will be obstructed, causing damage to the drill.)



■ Using Cutting Oil

(1) Choosing Cutting Oil

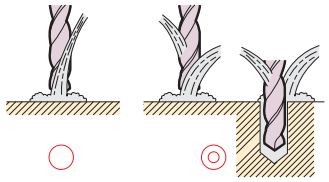
- If the cutting speed is more than 40m/min, cutting oil (JISW1 type 2) is recommended as its cooling effects and chip control capacity are good, and it is highly soluble.
- For optimum tool life at cutting speeds of less than 40m/min, sulfo-chlorinated oil (JISA1 type 1) is recommended as it has a lubricating effect and is non-water soluble. * Insoluble cutting oil may be flammable. To prevent fire, a substantial amount of oil should be used to cool the component so that smoke and heat will not be generated.

(2) Supply of Coolant

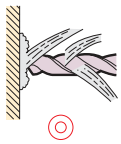
- External Coolant Supply
  There must be a sufficient external supply of coolant at the hole position. Coolant pressure 0.3 to 0.5MPa, coolant volume 3 to 10M/min is a guideline.
- Internal Coolant Supply
  For holes ø4 or smaller, the oil pressure must be at least 1.5MPa to ensure a sufficient supply of coolant. For ø6 and above, if L/D is <3, the pressures should be at 0.5 to 1.0MPa. If L/D is >3, a hydraulic pressure of at least 1 to 2MPa is recommended.

● External Coolant Supply

● Vertical drilling

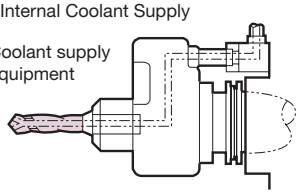


● Horizontal drilling

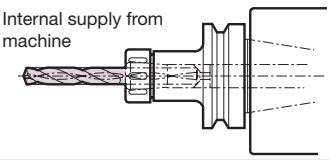


● Internal Coolant Supply

● Coolant supply equipment



● Internal supply from machine

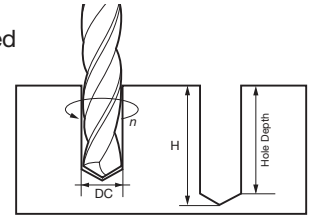


■ Calculation of Power Consumption and Thrust

- Calculating cutting speed

$$v_c = \frac{\pi \times DC \times n}{1{,}000}$$

$$n = \frac{1{,}000 \times v_c}{\pi \times DC}$$



- Calculating feed rate per revolution and per tooth

$$v_f = n \times f \qquad f = \frac{v_f}{n}$$

- Calculation of Cutting Time

$$T = \frac{H}{v_f}$$

v_c : Cutting speed (m/min)
π : π≈3.14
DC : Drill diameter (mm)
n : Rotation speed (min^{-1})
v_f : Feed rate (mm/min)
f : Feed rate per revolution (mm/rev)
H : Drilling depth (mm)
T : Cutting time (min)
HB : Work material Brinell hardness

- Calculation of Power Consumption and Thrust

<Experimental>

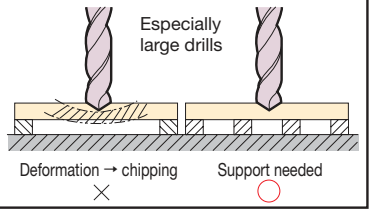
Power consumption (kW) = $HB \times DC^{0.68} \times v_c^{1.27} \times f^{0.59} / 36{,}000$

Thrust (N) = $0.24 \times HB \times DC^{0.95} \times f^{0.61} \times 9.8$

* When designing the machine, an allowance of 1.6 x power consumption and 1.4 x thrust should be given.

■ Clamping of the Workpiece

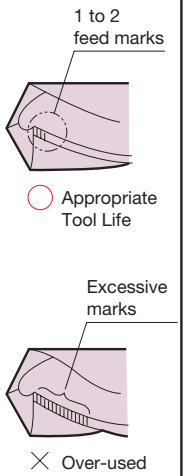
High thrust forces occur during high-efficiency drilling. Therefore, the workpiece must be supported to prevent fractures caused by deformation. Large torques and horizontal cutting forces also occur. Therefore, the workpiece must be clamped firmly enough to withstand them.



■ Drill Regrinding

- When to regrind
  When one or two feed marks (lines) appear on the margin, when corner wear reaches the margin width or when small chipping occurs, it indicates that the drill needs to be sent for regrinding.
- How and where to regrind
  We recommend regrinding and recoating. Regrinding alone may be sufficient, but if the work material is steel, use recoating as well as regrinding to prevent shortening of tool life. Note: Ask us or an approved vendor to recoat with our proprietary coating.
- Regrinding on your own
  Customers regrinding their own drills can obtain MultiDrill Regrinding Instructions from us directly or their vendor.

● Tool life determinant



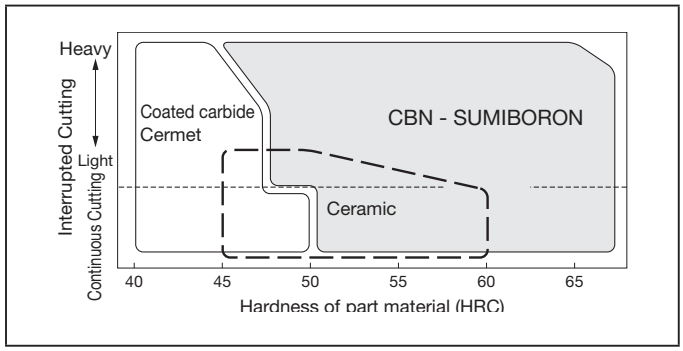
Troubleshooting for Drilling, Drilling Edition

■ Troubleshooting for Drilling

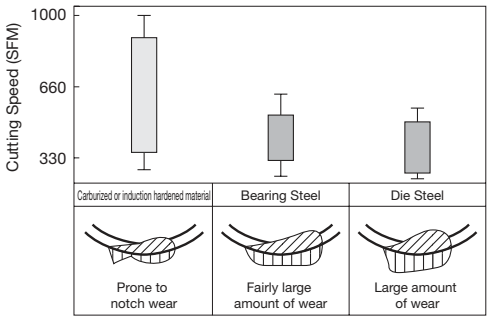
Failure		Cause	Basic Remedies	Countermeasure Examples
Drill Failure	Excessive Wear on Rake Face	· Inappropriate cutting conditions	· Use higher cutting speeds	· Refer to the upper limit of the recommended cutting conditions listed in the Cutting Tools Catalog
			· Increase feed rate	· Refer to the upper limit of the recommended cutting conditions listed in the Cutting Tools Catalog
		· Unsuitable coolant	· Reduce pressure if using internal coolant	· 1.5MPa or less (external coolant supply can be used at hole depths (L/D) of 2 or less)
			· Use coolant with more lubricity	· Use JIS A1 grade No.1 or its equivalent
	Chisel Point Breakage	· Off-center starts	· Reduce feed rate at entry point	· f=.0031 to .0047”
			· Pre-machining of flat surface for entry	· Drill flat base with Flat MultiDrill
		· Equipment, part materials, etc. lack rigidity	· Change cutting conditions to reduce resistance	· Increase v_c to decrease f (reduce thrust)
			· Improve clamp strength of work material	
		· Cutting edge is too weak	· Increase size of chisel width	· Use a chisel with a width of .004 to .008”
			· Increase amount of honing on cutting edge	· Increase the width of the thinning area at the centre by 1.5 times
	Breakage on Peripheral Cutting Edge	· Inappropriate cutting conditions	· Decrease the cutting speed	· Refer to the lower limit of the recommended cutting conditions listed in the Cutting Tools Catalog
			· Reduce feed rate	· Refer to the lower limit of the recommended cutting conditions listed in the Cutting Tools Catalog
		· Unsuitable coolant	· Use coolant with more lubricity	· Use JIS A1 grade No.1 or its equivalent
		· Equipment, part materials, etc. lack rigidity	· Improve clamp strength of work material	
		· Cutting edge is too weak	· Increase amount of honing on cutting edge	· Increase the width of the outer cutting edge by 1.5 times
			· Reduce the front relief angle	· Reduce the front relief angle by 2 to 3°
		· Entry from peripheral cutting edge	· Increase margin width (W margin specification)	· Increase the margin width by 2 to 3 times
		· Interrupted through cutting	· Reduce feed rate	· Refer to the lower limit of the recommended cutting conditions listed in the Cutting Tools Catalog
			· Increase amount of honing on cutting edge	· Increase the width of the outer cutting edge by 1.5 times
			· Reduce the front relief angle	· Reduce the front relief angle by 2 to 3°
	Margin Wear	· Inappropriate cutting conditions	· Decrease the cutting speed	· Refer to the lower limit of the recommended cutting conditions listed in the Cutting Tools Catalog
		· Unsuitable coolant	· Use coolant with more lubricity	· Use JIS A1 grade No.1 or its equivalent
			· Use more coolant	· If using external coolant, switch to internal coolant
		· Remaining margin wear	· Schedule for earlier regrind and ensure back taper	· If margin damage occurs, regrind to 1mm or less
		· Improper tool design	· Increase amount of back taper	· Make back taper 0.5/100
			· Reduce margin width	· Reduce the margin width to around 2/3
	Drill Breakage	· Chip blockage	· Use the optimal cutting conditions and tools	· Refer to recommended cutting conditions listed in the Cutting Tools Catalog
			· Use more coolant	· If using external coolant, switch to internal coolant
		· Holding clamp too weak	· Use strong holding clamp	· If the collet chuck is damaged, replace it · Change the collet holder to the next size up
		· Equipment, part materials, etc. lack rigidity	· Improve clamp strength of part material	
Unsatisfactory Hole Accuracy	Oversized Holes	· Off-centre starts	· Reduce feed rate at entry point	· f=.0031 to .0047”
			· Decrease the cutting speed	· Refer to the lower limit of the recommended cutting conditions listed in the Cutting Tools Catalog
			· Pre-machining added for entry in planar surfaces	· Planar machining with endmill
		· Drill bit lacks rigidity	· Use the optimal drill type for the hole depth	· Refer to the Cutting Tools Catalog
			· Improve overall drill rigidity	· Large web, small groove width
		· Drill bit has runout	· Improve drill mounting precision	· If the collet chuck is damaged, replace it
			· Improve drill retention rigidity	· Change the collet holder to the next size up
		· Equipment, part materials, etc. lack rigidity	· Improve clamp strength of part material	
	Poor Surface Roughness	· Inappropriate cutting conditions	· Increase the cutting speed	· Refer to the upper limit of the recommended cutting conditions listed in the Cutting Tools Catalog
			· Reduce feed rate	· Refer to the lower limit of the recommended cutting conditions listed in the Cutting Tools Catalog
		· Unsuitable coolant	· Use coolant with more lubricity	· Use JIS A1 grade No.1 or its equivalent
	Holes are not straight	· Off-centre starts	· Increase feed rate	· Refer to the upper limit of the recommended cutting conditions listed in the Cutting Tools Catalog
		· Drill is not mounted properly	· Improve drill mounting precision	· If the collet chuck is damaged, replace it
			· Improve drill retention rigidity	· Change the collet holder to the next size up
		· Equipment, part materials, etc. lack rigidity	· Improve clamp strength of part material	
			· Select a double margin tool	· Refer to the Cutting Tools Catalog
Unsatisfactory Chip Control	Chips clog	· Inappropriate cutting conditions	· Increase cutting speeds	· Refer to the upper limit of the recommended cutting conditions listed in the Cutting Tools Catalog
			· Increase feed rate	· Refer to the upper limit of the recommended cutting conditions listed in the Cutting Tools Catalog
		· Poor chip evacuation	· Increase volume if using internal coolant	
	Long Stringy Chips	· Inappropriate cutting conditions	· Increase feed rate	· Refer to the upper limit of the recommended cutting conditions listed in the Cutting Tools Catalog
			· Increase cutting speeds	· Refer to the upper limit of the recommended cutting conditions listed in the Cutting Tools Catalog
		· Strong cooling effect	· Reduce pressure if using internal coolant	· The pressure should be 0.5 MPa or less if using internal coolant
		· Dull cutting edge	· Reduce amount of edge honing	· Reduce the width to around 2/3

Hardened Steel Machining with CBN - SUMIBORON Edition

■ Recommended Zones for CBN by Workpiece Hardness and Shape

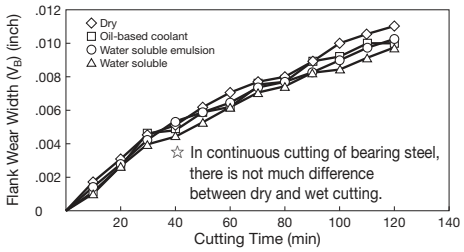


■ Cutting speed recommendations for each part material



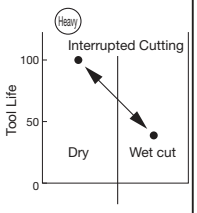
■ Influence of coolant on tool life

● Continuous Cutting



● Interrupted Cutting

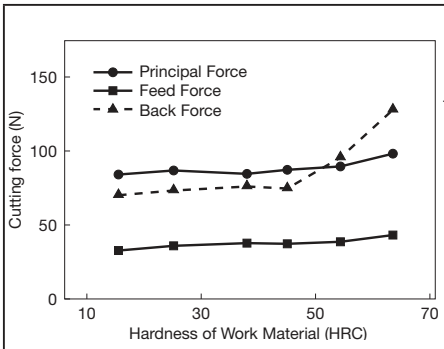
Milling of SKD11 to 4 U grooves
Cutting speed: v_c= 330 SFM
Depth of cut: a_p= .0079"
Feed rate (f)= .0039 IPR

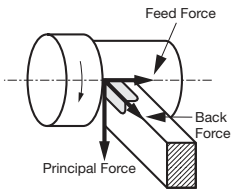


Part material: High Carbon Steel (58 to 62 HRC)
Cutting conditions: TPG321
v_c=330 SFM, a_p=.0059", f=.0039 IPR
Continuous Cutting

For continuous cutting, the influence of coolant on tool life is minimal.
For interrupted cutting, the thermal impact shortens the tool life in wet conditions.

■ Relation between part material hardness and cutting force

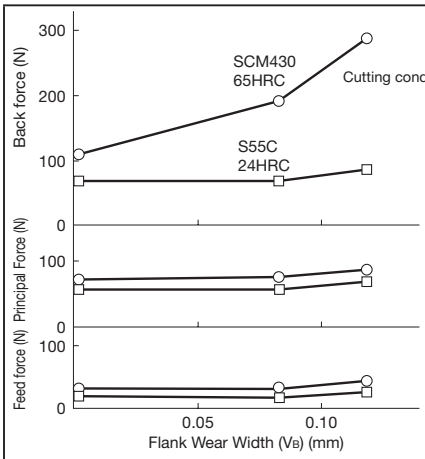




Part Material: Carbon Tool Steel
Cutting Conditions: Cutting speed (v_c) =400 SFM, depth of cut (a_p) =.0079", Feed rate (f) =.0039 IPR

Back force increases substantially for harder workpieces.

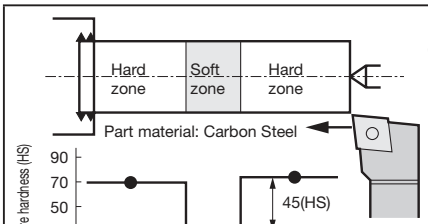
■ Relation between flank wear and cutting force



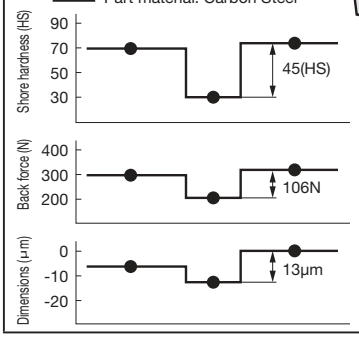
Cutting conditions: Cutting speed (v_c) = 80 m/min
Depth of cut (a_p) = 0.15mm
Feed rate (f) =0.1mm/rev

For hardened steel machining, back force increases substantially due to the expansion of flank wear.

■ Influence of part material hardness on cutting force and accuracy

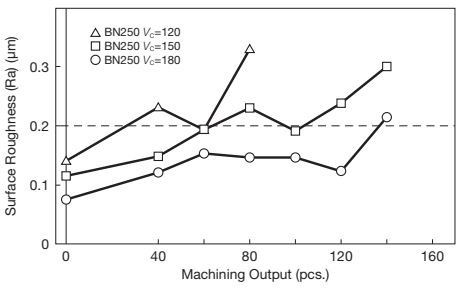


Cutting Speed : v_c = 400 SFM
Depth of Cut : a_p = .0197"
Feed Rate : f = .012 IPR, dry



External dimensions in the soft zone are smaller due to lower cutting forces.

■ Relation between cutting speed and surface roughness

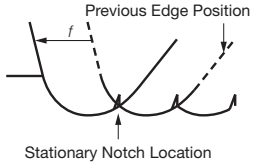
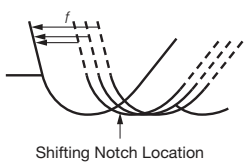


Part material : Alloy Steel 58 to 62HRC
Holder : MTXNR2525
Tool : NU-TNMA160408

Cutting Conditions:
v_c =400,500,600 SFM
f = .0018 IPR
a_p = .0059"
Wet

At high cutting speeds, surface roughness is more stable.

■ Improvement of surface roughness by altering the feed rate

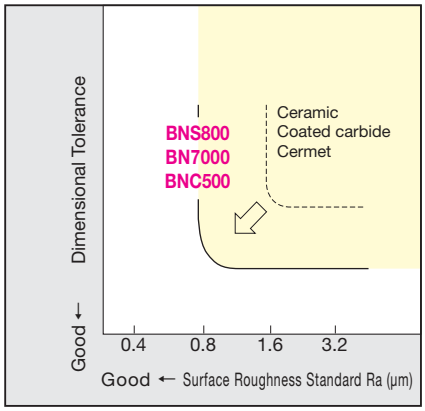
Constant Feed Rate	Variable Feed Rate
	
Stationary Notch Location	Shifting Notch Location
	

☆ Varying the feed rate spreads the notch location over a larger area.
→Surface finish improves and notch wear decreases.

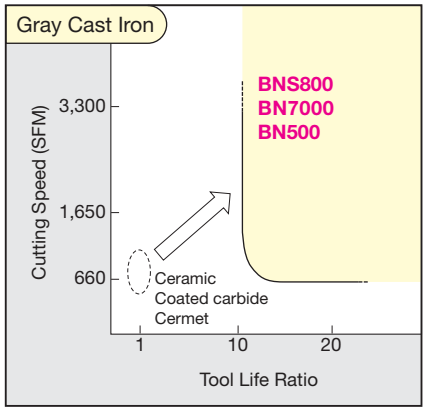
High Speed Machining of Cast Iron with CBN - SUMIBORON Edition

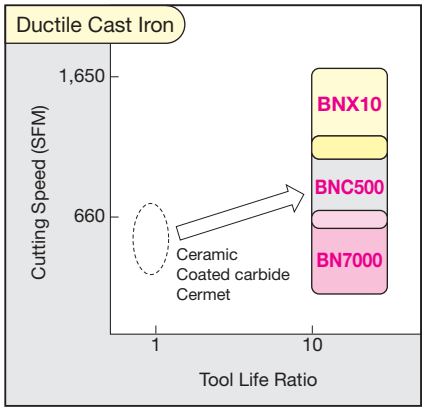
■ Advantages of using CBN - SUMIBORON for cast iron machining

● Higher accuracy



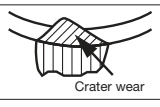
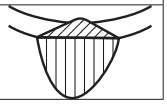
● Longer tool life at higher cutting speeds



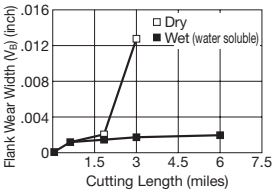


■ Turning

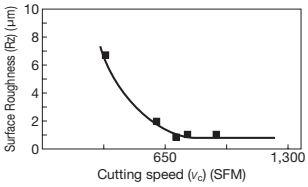
● Cast iron structure and wear shape examples

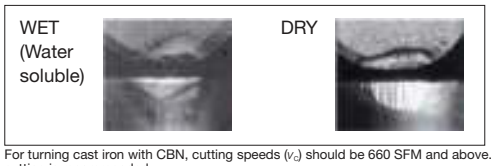
		Grey Cast Iron	Ductile Cast Iron
Structure			
	Matrix	Pearlite	Pearlite + Ferrite
Tool wear shape	Wet		
	Dry	 Crater wear	

(v_c=660 to 1,650 SFM)



Part material : Continuous cutting with Ductile Cast Iron
Tool material : BN500
Tool Shape : SNG432
Cutting Conditions : v_c = 1,500 SFM
a_p=.0098"
f =.0059 IPR
Dry & Wet (water soluble)





For turning cast iron with CBN, cutting speeds (v_c) should be 660 SFM and above. Wet cutting is recommended.

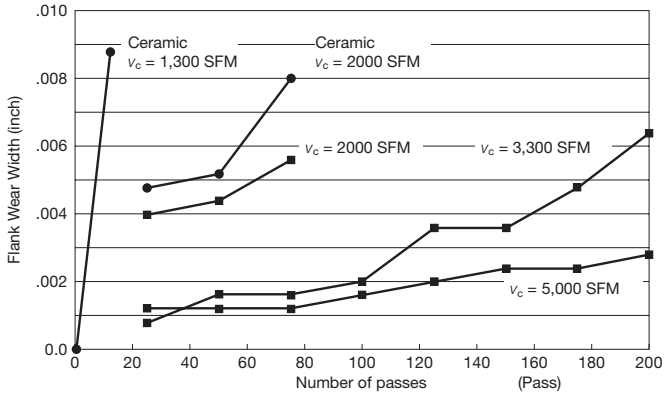
Machine : N/C lathe
Part Material : Ductile Cast Iron 200HB
Holder : MTJNP2525
Tool Grade : BN500
Tool Shape : TNMA332
Cutting Conditions : v_c=360 to 925 SFM
f =.0039 IPR
a_p=.0039"
Wet

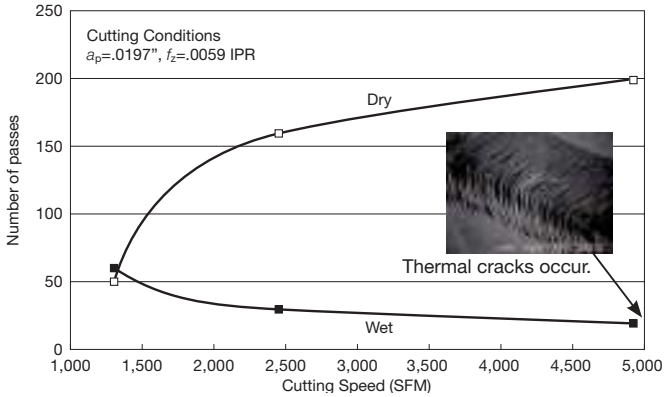
■ Milling

BN Finish Mill EASY (for high-speed finishing of cast iron)



- Enables cutting with v_c of 6,600 SFM
- Surface finish roughness 3.2Rz (1.0Ra)
- Economical insert reduces running costs.
- Unit style enables easy runout adjustment.
- Employs safe, anti-centrifugal-force construction for high-speed conditions.





- Part material: Gray cast iron (FC250)
- Cutting conditions: a_p =.0197", f_z =.0039 IPR dry
- Tool grade: BN7000

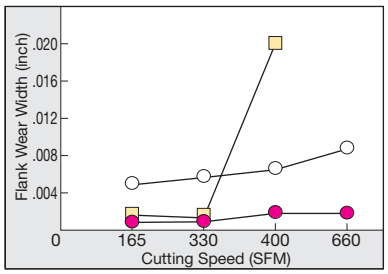
Dry cutting is recommended for high speed milling of cast iron with CBN.

Machining Exotic Alloys with CBN - SUMIBORON Edition

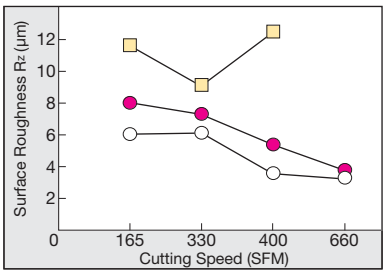
■ Powdered Metal

SUMIBORON — Cemented Carbide — Cermet

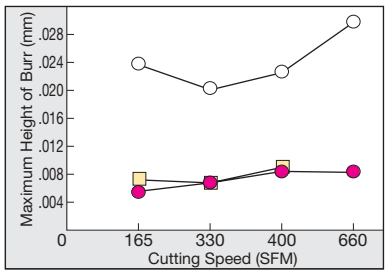
1. Flank wear



2. Surface roughness



3. Height of burr



Part material: Powdered Metal (HRB40), ø3.15-ø3.94" heavy interrupted facing with grooves and drilled holes. (After 40 passes)
Cutting conditions: f=.0039 IR, a_p=.0039" Wet
Tool Cat. No.: TNGA331

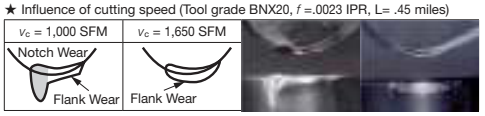
Enables cutting at v_c of up to 330 SFM even with cemented carbide. However, if v_c is around 400 SFM or higher, wear occurs rapidly, resulting in poorer surface roughness and greater spread of burrs. On the other hand, CBN exhibits stability and superior wear resistance, burr prevention and surface roughness, especially at high speeds.

■ Heat-Resistant Alloy

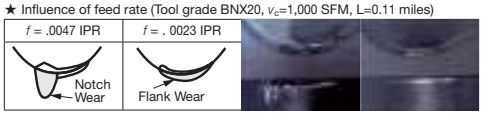
• Nickel based alloy

Typical tool damage of CBN tool when cutting Inconel 718

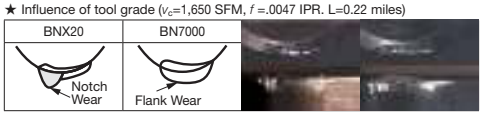
★ Influence of cutting speed (Tool grade BNX20, f =.0023 IPR, L= .45 miles)



★ Influence of feed rate (Tool grade BNX20, v_c=1,000 SFM, L=0.11 miles)



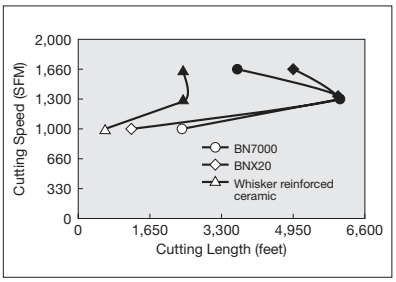
★ Influence of tool grade (v_c=1,650 SFM, f =.0047 IPR. L=0.22 miles)



Cutting Conditions: a_p= .0118", Wet

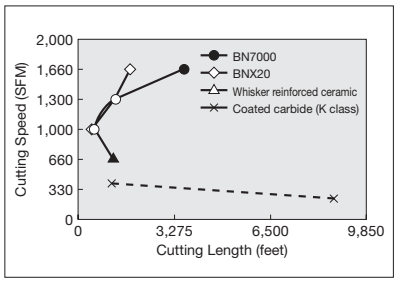
0. 5mm

Cutting conditions: f = .0023 IPR, a_p= .0118", wet



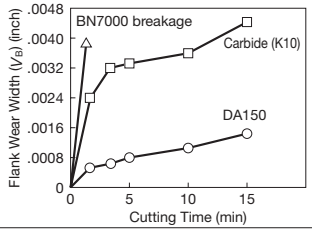
Tool life criteria
Notch wear = .010" (○)
or flank wear = .010"
BNX20 is recommended for high speed and low feed rates; BN7000 is recommended for cutting speeds below v_c = 800 SFM.

Cutting conditions: f = .0047 IPR, a_p= .0118", wet

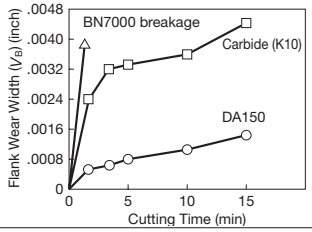


Tool life criteria
Notch wear = .010" (★)
or flank wear = .010"
BN7000 is recommended for cutting at high feed rates (over f = .0039 IPR).

• Ti based alloy



Part material: Ti-6A-4V
Tool: NF-DNMX331
Cutting Conditions: v_c=330 SFM, a_p=.0039", f=.0019 IPR Wet
☆ Our ultra-sharp positive PCD inserts have a strong cutting edge and excellent wear resistance



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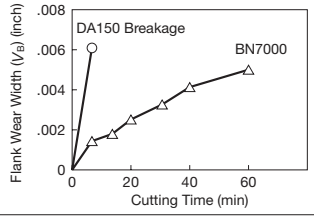
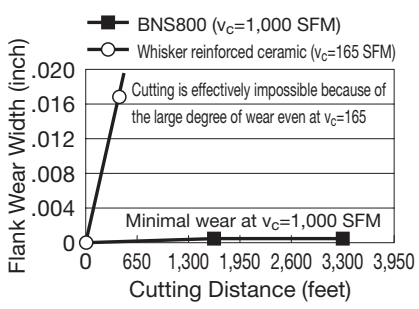


Part material: Ti-6Al-4V
Tool: DNMA434
Cutting Conditions: v_c=400 SFM, a_p=.0118", f=.0098 IPR Wet
☆ Highly fracture-resistant BN7000 negative insert is suitable for high-efficiency machining with large depth of cut and high feed rate.

■ Hard Facing Alloys

Part Material: Colmonoy No.6
(NiCr-based self-fluxing alloy)

Tool Cat. No. : SNG322
Cutting conditions : v_c=165 SFM , 1000 SFM
f = .0039 IPR
a_p= .008"
Dry





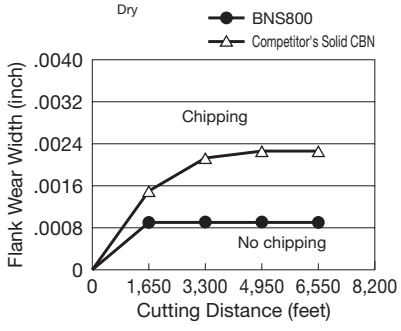
Whisker reinforced ceramic
(v_c = 165 SFM, after 330 feet of cutting)

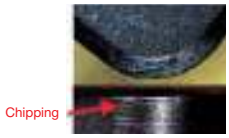


BNS800
(v_c = 1,000 SFM, after 3,300 feet of cutting)

Part Material: Stellite SF-20
(Co-based self-fluxing alloy)

Tool Cat. No. : SNG322
Cutting conditions : v_c= 165 SFM
f = .0039 IPR
a_p= .008"
Dry





Competitor's Solid CBN
(After 6,500 feet of cutting)



BNS800
(After 6,500 feet of cutting)

Cutting Edge Failure & Countermeasures for Machining Hardened Steel - CBN

Insert Failure	Cause	Countermeasures
Flank Wear 	· Grade lacks wear resistance	· Select a more wear-resistant grade (eg BNC2010, BN1000 or BN2000)
	· Cutting speed is too fast	· Reduce the cutting speed to V_c=660 SFM or less (higher feed rate also reduces tool-to-work contact time)
		· Use an insert with a larger relief angle
Crater Wear 	· Grade lacks crater wear resistance	· Select a higher efficiency grade (eg BNC2010, BNX25 or BNX20)
Breakage at Bottom of Crater 	· Cutting speed is too fast	· Reduce the cutting speed to V_c=660 SFM or less and increase the feed rate (low speed, high feed) (higher feed rate alone also reduces tool-to-work contact time)
Flaking 	· Grade lacks toughness	· Select a tougher grade (eg BNC2020 or BN2000)
	· Back force is too high	· Select an insert with a stronger cutting edge (Increase negative land angle and perform honing)
		· If the grade is tough enough, improve the cutting edge sharpness
Notch Wear 	· High stress at boundary	· Change to a grade with a higher notch wear resistance (e.g. BNC2010 or BN2000)
		· Increase cutting speed (500 SFM or more)
		· Change to the Variable Feed Rate method, which alters the feed rate in fixed output intervals
		· Increase negative land angle and perform honing
Chipping at Forward Notch Position 	· Impact to front cutting edge is too large or occurs constantly	· Change to a micro-grained grade with a higher fracture resistance (e.g. BNC300 and BN350)
		· Increase the feed rate (higher feed rates are recommended to reduce chipping)
		· Select an insert with a stronger cutting edge (Increase negative land angle and perform honing)
Chipping at Side Notch Position 	· Impact to side cutting edge is too large or occurs constantly	· Change to a grade with a higher fracture resistance (e.g. BN350 or BNC300)
		· Reduce feed rate
		· Use an insert with a larger side cutting angle
		· Use an insert with a larger nose radius
		· Select an insert with a stronger cutting edge (Increase negative land angle and perform honing)
Thermal Crack 	· Thermal shock is too severe	· Completely dry conditions are recommended
		· Select a grade with better thermal conductivity
		· Reduce cutting speed, feed rate, and depth of cut to decrease the machining load.

Reference: SI Unit Conversion List

■ Basic SI Units

● Quantity as a reference of SI

Quantity	Material	Symbol
Length	Metre	m
Mass	Kilogram	kg
Time	Second	s
Current	Ampere	A
Temperature	Kelvin	K
Quantity of substance	Mol	mol
Luminous intensity	Candela	cd

● Basic unit provided with unique name and symbol (extracted)

Quantity	Material	Symbol
Frequency	Hertz	Hz
Force	Newton	N
Pressure and stress	Pascal	Pa
Energy, work, and heat quantity	Joule	J
Power and efficiency	Watt	W
Voltage	Bolt	V
Electrical resistance	Ohm	Ω

■ SI Prefixes

● Prefix showing integral powers of 10 combined with SI units

Coefficient	Material	Symbol	Coefficient	Material	Symbol	Coefficient	Material	Symbol
10^{24}	Yotta	Y	10^{3}	Kilo	k	10^{-9}	Nano	n
10^{21}	Zeta	Z	10^{2}	Hecto	h	10^{-12}	Pico	p
10^{18}	Exa	E	10^{1}	Deca	da	10^{-15}	Femto	f
10^{15}	Peta	P	10^{-1}	Deci	d	10^{-18}	Atto	a
10^{12}	Tera	T	10^{-2}	Centi	c	10^{-21}	Zepto	z
10^{9}	Giga	G	10^{-3}	Milli	m	10^{-24}	Yocto	y
10^{6}	Mega	M	10^{-6}	Micro	μ			

■ Principal SI Unit Conversion List (portions are SI units)

● Force

N	kgf
1	1.01972×10^{-1}
9.80665	1

● Stress

Pa(N/m^2)	MPa(N/mm^2)	kgf/mm^2	kgf/cm^2	kgf/m^2
1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}	1.01972×10^{-1}
1×10^{6}	1	1.01972×10^{-1}	1.01972×10	1.01972×10^{5}
9.80665×10^{6}	9.80665	1	1×10^{2}	1×10^{6}
9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1	1×10^{4}
9.80665	9.80665×10^{-6}	1×10^{-6}	1×10^{-4}	1

● Pressure

1Pa = 1N/m^2, 1MPa = 1N/mm^2

Pa(N/m^2)	kPa	MPa	GPa	bar	kgf/cm^2	mmHg or Torr
1	1×10^{-3}	1×10^{-6}	1×10^{-9}	1×10^{-5}	1.01972×10^{-5}	7.50062×10^{-3}
1×10^{3}	1	1×10^{-3}	1×10^{-6}	1×10^{-2}	1.01972×10^{-2}	7.50062
1×10^{6}	1×10^{3}	1	1×10^{-3}	1×10	1.01972×10	7.50062×10^{3}
1×10^{9}	1×10^{6}	1×10^{3}	1	1×10^{4}	1.01972×10^{4}	7.50062×10^{6}
1×10^{5}	1×10^{2}	1×10^{-1}	1×10^{-4}	1	1.01972	7.50062×10^{2}
9.80665×10^{4}	9.80665×10	9.80665×10^{-2}	9.80665×10^{-5}	9.80665×10^{-1}	1	7.35559×10^{2}
1.33322×10^{2}	1.33322×10^{-1}	1.33322×10^{-4}	1.33322×10^{-7}	1.33322×10^{-3}	1.35951×10^{-3}	1

1Pa = 1N/m^2

● Work / Energy / Heat Quantity

J	kW·h	kgf·m	kcal
1	2.77778×10^{-7}	1.01972×10^{-1}	2.38889×10^{-4}
3.60000×10^{6}	1	3.67098×10^{5}	8.60000×10^{2}
9.80665	2.72407×10^{-6}	1	2.34270×10^{-3}
4.18605×10^{3}	1.16279×10^{-3}	4.26858×10^{2}	1

1J=1W/s,1J=1N/m

● Power (efficiency and motive energy) / Thermal flow

W	kgf·m/s	PS	kcal/h
1	1.01972×10^{-1}	1.35962×10^{-3}	8.60000×10^{-1}
1×10^{3}	1.01972×10^{2}	1.35962	8.60000×10^{2}
9.80665	1	1.33333×10^{-2}	8.43371
7.355×10^{2}	7.5×10	1	6.32529×10^{2}
1.16279	1.18572×10^{-1}	1.58095×10^{-3}	1

1W = 1J/s, PS: Horsepower

● Specific Heat

J/(kg·K)	1kcal (kg/°C) cal/(g/°C)
1	2.38889×10^{-4}
4.18605×10^{3}	1

● Thermal Conductivity

W/(m/K)	kcal/(h·m·°C)
1	8.60000×10^{-1}
1.16279	1

● Spindle Speed

min^{-1}	rpm
1	1

1min^{-1}=1rpm

■ Metals Symbols Chart (Excerpt)

● Carbon Steels for Structural Use

JIS	AISI	DIN	GB
S10C	1010	C10	10
S15C	1015	C15	15
S20C	1020	C22	20
S25C	1025	C25	25
S30C	1030	C30	30
S35C	1035	C35	35
S40C	1040	C40	40
S45C	1045	C45	45
S50C	1049	C50	50
S55C	1055	C55	55

● Ni-Cr-Mo Steels

SNCM220	8620	21NiCrMo2	20CrNiMo
SNCM240	8640	—	—
SNCM415	—	—	—
SNCM420	4320	—	20CrMo
SNCM439	4340	—	40CrNiMo, 42CrMo, 35CrMo
SNCM447	—	—	—

● Cr Steels

SCr415	—	—	15Cr
SCr420	5120	—	20Cr
SCr430	5130	34Cr4	30Cr
SCr435	5132	37Cr4	35Cr
SCr440	5140	41Cr4	40Cr
SCr445	5147	—	45Cr

● Cr-Mo Steels

SCM415	—	—	15CrMo
SCM420	—	—	20CrMo
SCM430	4131	—	30CrMo
SCM435	4137	34CrMo4	35CrMo
SCM440	4140	42CrMo4	42CrMo
SCM445	4145	—	—

● Mn Steels and Mn-Cr Steels for Mechanical Structures

SMn420	1522	—	20Mn2
SMn433	1534	—	30Mn2, 35Mn2
SMn438	1541	—	40Mn2
SMn443	1541	—	40Mn2, 45Mn2
SMnC420	—	—	15CrMn
SMnC443	—	—	40CrMn

● Carbon Tool Steels

SK1	—	—	T13
SK2	W1-11 $^1/_2$	—	T12
SK3	W1-10	C105W1	T11
SK4	W1-9	—	T10
SK5	W1-8	C80W1	T9
SK6	—	C80W1	T8
SK7	—	C70W2	T7

● High Speed Steels

JIS	AISI	DIN	GB
SKH2	T1	—	W18Cr4V
SKH3	T4	S18-1-2-5	W18Cr4VCo5
SKH10	T15	S12-1-4-5	W12Cr4V5Co5
SKH51	M2	S6-5-2	W6Mo5Cr4V2
SKH52	M3-1	—	W6Mo5Cr4V3
SKH53	M3-2	S6-5-3	CW6Mo5Cr4V3
SKH54	M4	—	—
SKH55	—	S6-5-2-5	W6Mo5Cr4V2Co5
SKH56	M36	—	—

● Alloy Tool Steels

SKS11	F2	—	—
SKS51	L6	—	—
SKS43	W2-9 $^1/_2$	—	V
SKS44	W2-8	—	—
SKD1	D3	X210Cr12	Cr12
SKD11	D2	—	Cr12MoV

● Gray Cast Iron

FC100	No 20B	GG-10	HT100
FC150	No 25B	GG-15	HT150
FC200	No 30B	GG-20	HT200
FC250	No 35B	GG-25	HT250
FC300	No 45B	GG-30	HT300
FC350	No 50B	GG-35	HT350

● Nodular Cast Iron

FCD400	60-40-18	GGG-40	QT400-18
FCD450	—	GGG-40.3	QT450-10
FCD500	80-55-06	GGG-50	QT500-7
FCD600	—	GGG-60	QT600-3
FCD700	100-70-03	GGG-70	QT700-2

● Ferritic Stainless Steels

SUS405	405	X10CrAl13	0CR13Al
SUS429	429	—	1Cr15
SUS430	430	X6Cr17	1Cr17
SUS430F	430F	X7CrMo18	Y1Cr17
SUS434	434	X6CrMo17 1	1Cr17Mo

● Martensitic Stainless Steels

SUS403	403	—	1Cr12,1Cr17Ti
SUS410	410	X10Cr13	1Cr13
SUS416	416	—	Y1Cr13
SUS420JI	420	X20Cr13	2Cr13
SUS420F	420F	—	Y3Cr13
SUS431	431	X20CrNi17 2	1Cr17Ni2
SUS440A	440A	—	7Cr17
SUS440B	440B	—	8Cr17
SUS440C	440C	—	9Cr18

● Austenitic Stainless Steels

JIS	AISI	DIN	GB
SUS201	201	—	1Cr17Mn6Ni5N
SUS202	202	—	1Cr18Mn8Ni5N
SUS301	301	X12CrNi17 7	1Cr17Ni7
SUS302	302	—	1Cr18Ni9
SUS302B	302B	—	—
SUS303	303	X10CrNiS18 9	Y1Cr18Ni9
SUS303Se	303Se	—	Y1Cr18Ni9Se
SUS304	304	X5CrNiS18 10	0Cr19Ni9N
SUS304L	304L	X2CrNi19 11	00Cr18Ni10
SUS304NI	304N	—	0Cr18Ni10
SUS305	305	X5CrNi18 12	1Cr18Ni12
SUS308	308	—	—
SUS309S	309S	—	0Cr23Ni13
SUS310S	310S	—	0Cr25Ni20
SUS316	316	X5CrMo17 12 2	0Cr17Ni12Mo2
SUS316L	316L	X2CrNiMo17 13 2	00Cr17Ni14Mo2
SUS316N	316N	—	0Cr17Ni12Mo2N
SUS317	317	—	0Cr19Ni13Mo3
SUS317L	317L	X2CrNiMo18 16 4	00Cr19Ni13Mo3
SUS321	321	X6CrNiTi18 10	0Cr18Ni10Ti
SUS347	347	X6CrNiNb18 10	0Cr18Ni11Nb
SUS384	384	—	—

● Heat Resistant Steels

SUH31	—	—	4Cr14Ni14W2Mo
SUH35	—	—	5Cr21Mn9Ni4N
SUH36	—	X53CrMnNi21 9	—
SUH37	—	—	2Cr21Ni12N
SUH38	—	—	—
SUH309	309	—	2Cr23Ni13
SUH310	310	CrNi2520	2Cr25Ni21
SUH330	N08330	—	1Cr16Ni35

● Ferritic Heat Resistant Steels

SUH21	—	CrAl1205	1Cr19Al3
SUH409	409	X6CrTi12	06Cr11Ti
SUH446	446	—	2Cr25N

● Martensitic Heat Resistant Steels

SUH1	—	X45CrSi9 3	4Cr9Si2
SUH3	—	—	4Cr10Si2Mo
SUH4	—	—	8Cr20Si2Ni
SUH11	—	—	—
SUH600	—	—	2Cr12MoVNbN

■ Steel and Non-Ferrous Metal Symbols Chart (Excerpt)

● Classifications and Symbols of Steels

Classification	Material	Symbol	Code Description
Steel for Structure	Rolled Steels for welded structures	SM	"M" for "Marine": Usually used in welded marine structures
	Re-rolled Steels	SRB	"R" for "Re-rolled" and "B" for "Bar"
	Rolled steel for general structures	SS	S for "Steel" and S for "Structure"
	Light gauge sections for general structures	SSC	"C" for "Cold" after SS
Steel Sheets	Hot rolled mild steel sheets / plates in coil form	SPH	P for "Plate" and "H" for "Hot"
Steel Tubes	Carbon steel tubes for piping	SGP	"GP" for "Gas Pipe"
	Carbon steel tubes for boiler and heat exchangers	STB	"T" for "Tube" and "B" for "Boiler·
	Seamless steel tubes for high-pressure gas cylinders	STH	"H" for "High Pressure" after ST
	Carbon steel tubes for general structures	STK	"K" for "Kozo" ("structure" in Japanese) after ST
	Carbon steel tubes for mechanical structures	STKM	"M" for "Machine" after STK
	Alloy steel tubes for structures	STKS	"S" for "Special" after STK
	Alloy steel tubes for piping	STPA	"A" for "Alloy" after STP
	Carbon steel tubes for pressure piping	STPG	"P" for "Piping" and "G" for "General" after ST
	Carbon steel tubes for high-temperature piping	STPT	"T" for "Temperature" after ST
	Carbon steel tubes for high-pressure piping	STS	"S" for "Special" after ST
	Stainless steel tubes for piping	SUS-TP	"T" for "Tube" and "P" for "Piping" after SUS
Steel for Mechanical Structures	Carbon steels for mechanical structures	SxxC	"C" for "Carbon"
	Aluminium-chromium-molybdenum steels	SACM	"A" for "Al", "C" for "Cr" and "M" for "Mo"
	Chromium molybdenum steels	SCM	"C" for "Cr" and "M" for "Mo"
	Chromium steels	SCr	"Cr" for "Chromium" after "S" for "Steel"
	Nickel Chromium steels	SNC	"N" for "Nickel" and "C"for "Chromium"
	Nickel Chromium Molybdenum steels	SNCM	"M" for "Molybdenum" in SNC
	Manganese steels for mechanical structures Chromium steels	SMn SMnC	"Mn" for "Manganese" "C" for "Chromium" in SMn
Special Steels – Tool Steels	Carbon tool steels	SK	"K" for "Kogu" ("tool" in Japanese)
	Hollow drill steels	SKC	"C" for "Chisel" after SK
	Alloy tool steel	SKS SKD SKT	S for "Special" after SK D for "Die" after SK T for "Tanzo" - "forging" in Japanese after SK
	High-speed tool steels	SKH	"H" for "High speed" after SK
Special Steels – Stainless Steel	Free cutting sulphuric steels	SUM	"M" for "Machinability" after SU
	High-carbon chromium bearing steels	SUJ	"J" for "Jikuuke" ("bearing" in Japanese) after SU
	Spring steels	SUP	"P" for "Spring" after SU
	Stainless Steel	SUS	"S" for "Stainless Steel" after SU
Special Steels – Heat-resistant Steel	Heat-resistant Steel	SUH	"U" for "Special Usage" and "H" for "Heat"
	Heat-resistant steel bars	SUH-B	"B" for "Bar" after SUH
	Heat-resistant steel sheets	SUHP	"P" for "Plate" after SUH
Forged Steels	Carbon steel forgings for general use	SF	"F" for "Forging"
	Carbon steel booms and billets for forgings	SFB	"B" for "Billet" after SF
	Chromium molybdenum steel forgings	SFCM	"C" for "Chromium" and "M" for "Molybdenum" after SF
	Nickel Chromium Molybdenum steel forgings	SFNCM	"N" for "Nickel" in SFCM
Cast Iron	Gray cast iron	FC	"F" for "Ferrous" and "C" for "Casting"
	Spherical graphite / Ductile cast irons	FCD	"D" for "Ductile" after FC
	Blackheart malleable cast irons	FCMB	"M" for "Malleable" and "B" for "Black" after FC
	Whiteheart malleable cast irons	FCMW	"W" for "White" after FCM
	Pearlite malleable cast iron	FCMP	"P" for "Pearlite" after FCM
Cast Steels	Carbon cast steels	SC	"C" for "Casting"
	Cast stainless steels	SCS	"S" for "Stainless Steel" after SC
	Heat-resistant cast steels	SCH	"H" for "Heat" after SC
	High-manganese cast steels	SCMnH	"Mn" for "Manganese" and "H" for "High" after SC

● Non-Ferrous Metals

Classification	Material	Symbol
Copper and Copper Alloys	Copper and copper alloys - sheets, plates and strips	CxxxxP
		CxxxxPP
		CxxxxR
	Copper and copper alloys - welded pipes and tubes	CxxxxBD
		CxxxxBDS
		CxxxxBE
		CxxxxBF
Aluminum and Aluminum Alloys	Aluminum and Al alloys - Sheets, plates and strips	AxxxxP
		AxxxxPC
	Aluminum and Al alloys Rods, bars, and wires	AxxxxBE
		AxxxxBD
		AxxxxW
	Aluminum and Al alloys - Extruded shapes	AxxxxS
	Aluminum and Al alloy castings	AxxxxFD
		AxxxxFH
Wrought Alloys – Magnesium	Magnesium alloy sheets and plates	MP
Material – Nickel	Nickel-copper alloy sheets and plates	NCuP
	Nickel-copper alloy rods and bars	NCuB
Wrought Materials – Titanium	Titanium rods and bars	TB
Castings	Brass castings	YBsCx
	High-strength brass castings	HBsCx
	Bronze castings	BCx
	Phosphorus Bronze castings	PBCx
	Aluminum bronze castings	AlBCx
	Aluminum alloy castings	AC
	Magnesium alloy castings	MC
	Zinc alloy die castings	ZDCx
	Aluminum alloy die castings	ADC
	Magnesium alloy die castings	MDC
	White metals	WJ
	Aluminum alloy castings for bearings	AJ
	Copper-lead alloy castings for bearings	KJ

References

■ Hardness Scale Comparison Chart

● Approximate corresponding values for steel hardness on the Brinell scale

Brinell 3,000kgf HB	Rockwell Hardness A Scale 60kgf brale HRA	Rockwell Hardness B Scale 100kgf 1/10in ball HRB	Rockwell Hardness C Scale 150kgf brale HRC	Rockwell Hardness D Scale 100kgf brale HRD	Vickers 50kgf HV	Shore Hardness HS	Tensile Strength (GPa)
—	85.6	—	68.0	76.9	940	97	—
—	85.3	—	67.5	76.5	920	96	—
—	85.0	—	67.0	76.1	900	95	—
767	84.7	—	66.4	75.7	880	93	—
757	84.4	—	65.9	75.3	860	92	—
745	84.1	—	65.3	74.8	840	91	—
733	83.8	—	64.7	74.3	820	90	—
722	83.4	—	64.0	73.8	800	88	—
712	—	—	—	—	—	—	—
710	83.0	—	63.3	73.3	780	87	—
698	82.6	—	62.5	72.6	760	86	—
684	82.2	—	61.8	72.1	740	—	—
682	82.2	—	61.7	72.0	737	84	—
670	81.8	—	61.0	71.5	720	83	—
656	81.3	—	60.1	70.8	700	—	—
653	81.2	—	60.0	70.7	697	81	—
647	81.1	—	59.7	70.5	690	—	—
638	80.8	—	59.2	70.1	680	80	—
630	80.6	—	58.8	69.8	670	—	—
627	80.5	—	58.7	69.7	667	79	—
601	79.8	—	57.3	68.7	640	77	—
578	79.1	—	56.0	67.7	615	75	—
555	78.4	—	54.7	66.7	591	73	2.06
534	77.8	—	53.5	65.8	569	71	1.98
514	76.9	—	52.1	64.7	547	70	1.89
495	76.3	—	51.0	63.8	528	68	1.82
477	75.6	—	49.6	62.7	508	66	1.73
461	74.9	—	48.5	61.7	491	65	1.67
444	74.2	—	47.1	60.8	472	63	1.59
429	73.4	—	45.7	59.7	455	61	1.51
415	72.8	—	44.5	58.8	440	59	1.46
401	72.0	—	43.1	57.8	425	58	1.39
388	71.4	—	41.8	56.8	410	56	1.33
375	70.6	—	40.4	55.7	396	54	1.26
363	70.0	—	39.1	54.6	383	52	1.22
352	69.3	(110.0)	37.9	53.8	372	51	1.18
341	68.7	(109.0)	36.6	52.8	360	50	1.13
331	68.1	(108.5)	35.5	51.9	350	48	1.10
321	67.5	(108.0)	34.3	50.1	339	47	1.06
311	66.9	(107.5)	33.1	50.0	328	46	1.03
302	66.3	(107.0)	32.1	49.3	319	45	1.01
293	65.7	(106.0)	30.9	48.3	309	43	0.97
285	65.3	(105.5)	29.9	47.6	301	—	0.95
277	64.6	(104.5)	28.8	46.7	292	41	0.92
269	64.1	(104.0)	27.6	45.9	284	40	0.89
262	63.6	(103.0)	26.6	45.0	276	39	0.87
255	63.0	(102.0)	25.4	44.2	269	38	0.84
248	62.5	(101.0)	24.2	43.2	261	37	0.82
241	61.8	100.0	22.8	42.0	253	36	0.80
235	61.4	99.0	21.7	41.4	247	35	0.78
229	60.8	98.2	20.5	40.5	241	34	0.76
223	—	97.3	(18.8)	—	234	—	—
217	—	96.4	(17.5)	—	228	33	0.73
212	—	95.5	(16.0)	—	222	—	0.71
207	—	94.6	(15.2)	—	218	32	0.69
201	—	93.8	(13.8)	—	212	31	0.68
197	—	92.8	(12.7)	—	207	30	0.66
192	—	91.9	(11.5)	—	202	29	0.64
187	—	90.7	(10.0)	—	196	—	0.62
183	—	90.0	(9.0)	—	192	28	0.62
179	—	89.0	(8.0)	—	188	27	0.60
174	—	87.8	(6.4)	—	182	—	0.59
170	—	86.8	(5.4)	—	178	26	0.57
167	—	86.0	(4.4)	—	175	—	0.56
163	—	85.0	(3.3)	—	171	25	0.55
156	—	82.9	(0.9)	—	163	—	0.52
149	—	80.8	—	—	156	23	0.50
143	—	78.7	—	—	150	22	0.49
137	—	76.4	—	—	143	21	0.46
131	—	74.0	—	—	137	—	0.45
126	—	72.0	—	—	132	20	0.43
121	—	69.8	—	—	127	19	0.41
116	—	67.6	—	—	122	18	0.40
111	—	65.7	—	—	117	15	0.38

1) Figures within the ( ) are not commonly used.
2) Rockwell A, C and D scales utilise a diamond brale.
3) This chart was taken from the JIS Iron and Steel Handbook (1980).

■ Standard of Tapers

● Morse Taper

Fig.1 With Tang

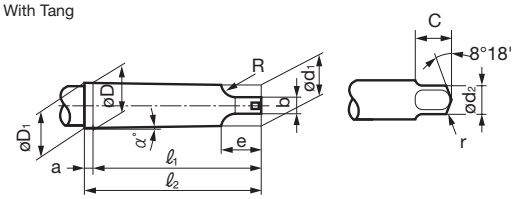
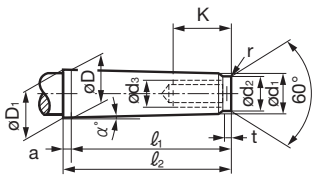


Fig.2 Drawing Thread Type



(Unit: *mm*)

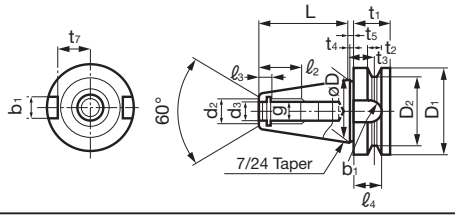
Morse Taper Number	Taper (1)		Taper Angle (α)	Taper						Tang						Fig
				D	a	D_1(2) (approx.)	d_1(2) (approx.)	ℓ_1 (Max)	ℓ_2 (Max)	d_2 (Max)	b	C (Max)	e (Max)	R	r	
0	1/19.212	0.05205	1°29'27"	9.045	3	9.2	6.1	56.5	59.5	6.0	3.9	6.5	10.5	4	1	1
1	1/20.047	0.04988	1°25'43"	12.065	3.5	12.2	9.0	62.0	65.5	8.7	5.2	8.5	13.5	5	1.2	
2	1/20.020	0.04995	1°25'50"	17.780	5	18.0	14.0	75.0	80.0	13.5	6.3	10	16	6	1.6	
3	1/19.922	0.05020	1°26'16"	23.825	5	24.1	19.1	94.0	99.0	18.5	7.9	13	20	7	2	
4	1/19.245	0.05194	1°29'15"	31.267	6.5	31.6	25.2	117.5	124.0	24.5	11.9	16	24	8	2.5	
5	1/19.002	0.05263	1°30'26"	44.399	6.5	44.7	36.5	149.5	156.0	35.7	15.9	19	29	10	3	
6	1/19.180	0.05214	1°29'36"	63.348	8	63.8	52.4	210.0	218.0	51.0	19.0	27	40	13	4	
7	1/19.231	0.05200	1°29'22"	83.058	10	83.6	68.2	286.0	296.0	66.8	28.6	35	54	19	5	

Morse Taper Number	Taper (1)		Taper Angle (α)	Taper						Thread					Fig
				D	a	D_1(2) (approx.)	d_1(2) (approx.)	ℓ_1 (Max)	ℓ_2 (Max)	d_2 (Max)	d_3	K (Min)	t (Max)	r	
0	1/19.212	0.05205	1°29'27"	9.045	3	9.2	6.4	50	53	6	-	-	4	0.2	2
1	1/20.047	0.04988	1°25'43"	12.065	3.5	12.2	9.4	53.5	57	9	M 6	16	5	0.2	
2	1/20.020	0.04995	1°25'50"	17.780	5	18.0	14.6	64	69	14	M10	24	5	0.2	
3	1/19.922	0.05020	1°26'16"	23.825	5	24.1	19.8	81	86	19	M12	28	7	0.6	
4	1/19.254	0.05194	1°29'15"	31.267	6.5	31.6	25.9	102.5	109	25	M16	32	9	1	
5	1/19.002	0.05263	1°30'26"	44.399	6.5	44.7	37.6	129.5	136	35.7	M20	40	9	2.5	
6	1/19.180	0.05214	1°29'36"	63.348	8	63.8	53.9	182	190	51	M24	50	12	4	
7	1/19.231	0.05200	1°29'22"	83.058	10	83.6	70.0	250	260	65	M33	80	18.5	5	

Note (1) The fractional values are the taper standards.
(2) Diameters D_1 and d_1 are calculated from the diameter D value, the taper, a, and ℓ_1 and rounded up to one decimal place.
Remark 1. Tapers are measured using JIS B 3301 ring gauges. At least 75% must be correct.
2. Screws must have metric coarse screw thread as per JIS B 0205 and Class 3 precision as per JIS B 0209.

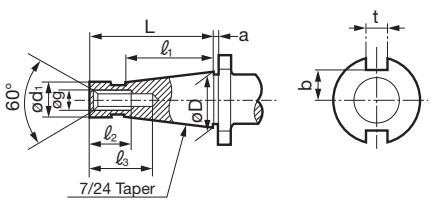
● Bottle Grip Taper

Fig 3



● American Standard Taper (National Taper)

Fig 4



● Bottle Grip Taper

(Units: *mm*)

Taper No.	D (Standard Dimensions)	D_1	D_2	t_1	t_2	t_3	t_4	t_5	d_2	d_3	L	ℓ_2	ℓ_3	ℓ_4	g	b_1	t_7	Fig
BT30	31.75	46	38	20	8	13.6	2	2	14	12.5	48.4	24	7	17	M12	16.1	16.3	3
BT35	38.10	53	43	22	10	14.6	2	2	14	12.5	56.4	24	7	20	M12	16.1	19.6	
BT40	44.45	63	53	25	10	16.6	2	2	19	17	65.4	30	8	21	M16	16.1	22.6	
BT45	57.15	85	73	30	12	21.2	3	3	23	21	82.8	36	9	26	M20	19.3	29.1	
BT50	69.85	100	85	35	15	23.2	3	3	27	25	101.8	45	11	31	M24	25.7	35.4	
BT60	107.95	155	135	45	20	28.2	3	3	33	31	161.8	56	12	34	M30	25.7	60.1	

● American Standard Taper (National Taper)

(Units: *mm*)

Taper No.	Nominal Dimensions	D	d_1		L	ℓ_1 (Min.)	ℓ_2 (Min.)	ℓ_3 (Min.)	g	a	t	b	Fig
30	$1^1/_{4}$"	31.750	17.4	-0.29 -0.36	68.4	48.4	24	34	$^1/_{2}$"	1.6	15.9	16	4
40	$1^3/_{4}$"	44.450	25.3	-0.30 -0.384	93.4	65.4	32	43	$^5/_{8}$"	1.6	15.9	22.5	
50	$2^3/_{4}$"	69.850	39.6	-0.31 -0.41	126.8	101.8	47	62	1"	3.2	25.4	35	
60	$4^1/_{4}$"	107.950	60.2	-0.34 -0.46	206.8	161.8	59	76	$1^1/_{4}$"	3.2	25.4	60	

■ Dimensional Tolerance of Standard Fittings [Excerpt from JIS B 0401 (1999)]

● Dimensional Tolerance Used for Shafts of Standard Fittings

Unit: μm

Classification of Reference Dimensions (mm)		Shaft Tolerance Class																												
or greater	or less	b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9	js5	js6	js7	k5	k6	m5	m6	n6	p6	r6	s6	t6	u6	x6
—	3	-140 -165	-60 -85	-20 -34	-20 -45	-14 -24	-14 -28	-14 -39	-6 -12	-6 -16	-8 -20	-2 -6	-2 -8	0 -4	0 -6	0 -10	0 -14	0 -25	±2	±3	±5	+4 0	+6 0	+6 +2	+8 +2	+10 +4	+12 +6	+16 +10	+20 +14	—	+24 +18	+26 +20
3	6	-140 -170	-70 -100	-30 -48	-30 -60	-20 -32	-20 -38	-20 -50	-10 -18	-10 -22	-10 -28	-4 -9	-4 -12	0 -5	0 -8	0 -12	0 -18	0 -30	±2.5	±4	±6	+6 +1	+9 +1	+9 +4	+12 +4	+16 +8	+20 +12	+23 +15	+27 +19	—	+31 +23	+36 +28
6	10	-150 -186	-80 -116	-40 -62	-40 -76	-25 -40	-25 -47	-25 -61	-13 -22	-13 -28	-13 -35	-5 -11	-5 -14	0 -6	0 -9	0 -15	0 -22	0 -36	±3	±4.5	±7.5	+7 +1	+10 +1	+12 +6	+15 +6	+19 +10	+24 +15	+28 +19	+32 +23	—	+37 +28	+43 +34
10	14	-150 -193	-95 -138	-50 -77	-50 -93	-32 -50	-32 -59	-32 -75	-16 -27	-16 -34	-16 -43	-6 -14	-6 -17	0 -8	0 -11	0 -18	0 -27	0 -43	±4	±5.5	±9	+9 +1	+12 +1	+15 +7	+18 +7	+23 +12	+29 +18	+34 +23	+39 +28	—	+44 +33	+51 +40
14	18																															+56 +45
18	24	-160 -212	-110 -162	-65 -98	-65 -117	-40 -61	-40 -73	-40 -92	-20 -33	-20 -41	-20 -53	-7 -16	-7 -20	0 -9	0 -13	0 -21	0 -33	0 -52	±4.5	±6.5	±10.5	+11 +2	+15 +2	+17 +8	+21 +8	+28 +15	+35 +22	+41 +28	+48 +35	—	+54 +41	+67 +54
24	30																													+54 +41	+61 +48	+77 +64
30	40	-170 -232	-120 -182	-80 -119	-80 -142	-50 -75	-50 -89	-50 -112	-25 -41	-25 -50	-25 -64	-9 -20	-9 -25	0 -11	0 -16	0 -25	0 -39	0 -62	±5.5	±8	±12.5	+13 +2	+18 +2	+20 +9	+25 +9	+33 +17	+42 +26	+50 +34	+59 +43	+64 +48	+76 +60	—
40	50	-180 -242	-130 -192																											+70 +54	+86 +70	
50	65	-190 -264	-140 -214	-100 -146	-100 -174	-60 -90	-60 -106	-60 -134	-30 -49	-30 -60	-30 -76	-10 -23	-10 -29	0 -13	0 -19	0 -30	0 -46	0 -74	±6.5	±9.5	±15	+15 +2	+21 +2	+24 +11	+30 +11	+39 +20	+51 +32	+60 +41	+72 +53	+85 +66	+106 +87	—
65	80	-200 -274	-150 -224																									+62 +43	+78 +59	+94 +75	+121 +102	
80	100	-220 -307	-170 -257	-120 -174	-120 -207	-72 -107	-72 -126	-72 -159	-36 -58	-36 -71	-36 -90	-12 -27	-12 -34	0 -15	0 -22	0 -35	0 -54	0 -87	±7.5	±11	±17.5	+18 +3	+25 +3	+28 +13	+35 +13	+45 +23	+59 +37	+73 +51	+93 +71	+113 +91	+146 +124	—
100	120	-240 -327	-180 -267																									+76 +54	+101 +79	+126 +104	+166 +144	
120	140	-260 -360	-200 -300	-145 -208	-145 -245	-85 -125	-85 -148	-85 -185	-43 -68	-43 -83	-43 -106	-14 -32	-14 -39	0 -18	0 -25	0 -40	0 -63	0 -100	±9	±12.5	±20	+21 +3	+28 +3	+33 +15	+40 +15	+52 +27	+68 +43	+88 +63	+117 +92	+147 +122	—	—
140	160	-280 -380	-210 -310																									+90 +65	+125 +100	+159 +134		
160	180	-310 -410	-230 -330																									+93 +68	+133 +108	+171 +146		
180	200	-340 -455	-240 -355	-170 -242	-170 -285	-100 -146	-100 -172	-100 -215	-50 -79	-50 -96	-50 -122	-15 -35	-15 -44	0 -20	0 -29	0 -46	0 -72	0 -115	±10	±14.5	±23	+24 +4	+33 +4	+37 +17	+46 +17	+60 +31	+79 +50	+106 +77	+151 +122	—	—	—
200	225	-380 -495	-260 -375																									+109 +80	+159 +130			
225	250	-420 -535	-280 -395																									+113 +84	+169 +140			
250	280	-480 -610	-300 -430	-190 -271	-190 -320	-110 -162	-110 -191	-110 -240	-56 -88	-56 -108	-56 -137	-17 -40	-17 -49	0 -23	0 -32	0 -52	0 -81	0 -130	±11.5	±16	±26	+27 +4	+36 +4	+43 +20	+52 +20	+66 +34	+88 +56	+126 +94	—	—	—	—
280	315	-540 -670	-330 -460																									+130 +98				
315	355	-600 -740	-360 -500	-210 -299	-210 -350	-125 -182	-125 -214	-125 -265	-62 -98	-62 -119	-62 -151	-18 -43	-18 -54	0 -25	0 -36	0 -57	0 -89	0 -140	±12.5	±18	±28.5	+29 +4	+40 +4	+46 +21	+57 +21	+73 +37	+98 +62	+144 +108	—	—	—	—
355	400	-680 -820	-400 -540																									+150 +114				
400	450	-760 -915	-440 -595	-230 -327	-230 -385	-135 -198	-135 -232	-135 -290	-68 -108	-68 -131	-68 -165	-20 -47	-20 -60	0 -27	0 -40	0 -63	0 -97	0 -155	±13.5	±20	±31.5	+32 +5	+45 +5	+50 +23	+63 +23	+80 +40	+108 +68	+166 +126	—	—	—	—
450	500	-840 -995	-480 -635																									+172 +132				

■ Dimensional Tolerance of Standard Fittings [Excerpt from JIS B 0401 (1999)]

■ Dimensional Tolerance Used for Holes of Standard Fittings

Unit: μm

Classification of Reference Dimensions (mm)		Hole Tolerance Class																														
or greater	or less	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	JS6	JS7	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7
—	3	+180 +140	+85 +60	+100 +60	+34 +20	+45 +20	+60 +20	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0	+14 0	+25 0	+40 0	±3	±5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-6 -12	-6 -16	-10 -20	-14 -24	—	-18 -28	-20 -30
3	6	+188 +140	+100 +70	+118 +70	+48 +30	+60 +30	+78 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0	+18 0	+30 0	+48 0	±4	±6	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-9 -17	-8 -20	-11 -23	-15 -27	—	-19 -31	-24 -36
6	10	+208 +150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0	+22 0	+36 0	+58 0	±4.5	±7.5	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-12 -21	-9 -24	-13 -28	-17 -32	—	-22 -37	-28 -43
10	14	+220 +150	+138 +95	+165 +95	+77 +50	+93 +50	+120 +50	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0	+27 0	+43 0	+70 0	±5.5	±9	+2 -9	+6 -12	-4 -15	0 -18	-9 -20	-5 -23	-15 -26	-11 -29	-16 -34	-21 -39	—	-26 -44	-33 -51
14	18																																		-38 -56
18	24	+244 +160	+162 +110	+194 +110	+98 +65	+117 +65	+149 +65	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0	+33 0	+52 0	+84 0	±6.5	±10.5	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-18 -31	-14 -35	-20 -41	-27 -48	—	-33 -54	-46 -67
24	30																															-33 -54	-40 -61	-56 -77
30	40	+270 +170	+182 +120	+220 +120	+119 +80	+142 +80	+180 +80	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0	+39 0	+62 0	+100 0	±8	±12.5	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-21 -37	-17 -42	-25 -50	-34 -59	-39 -64	-51 -76	—
40	50	+280 +180	+192 +130	+230 +130																												-45 -70	-61 -86	
50	65	+310 +190	+214 +140	+260 +140	+146 +100	+174 +100	+220 +100	+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+29 +10	+40 +10	+19 0	+30 0	+46 0	+74 0	+120 0	±9.5	±15	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-26 -45	-21 -51	-30 -60	-42 -72	-55 -85	-76 -106	—
65	80	+320 +200	+224 +150	+270 +150																											-32 -62	-48 -78	-64 -94	-91 -121	
80	100	+360 +220	+257 +170	+310 +170	+174 +120	+207 +120	+260 +120	+107 +72	+126 +72	+159 +72	+58 +36	+71 +36	+90 +36	+34 +12	+47 +12	+22 0	+35 0	+54 0	+87 0	+140 0	±11	±17.5	+4 -18	+10 -25	-6 -28	0 -35	-16 -38	-10 -45	-30 -52	-24 -59	-38 -73	-58 -93	-78 -113	-111 -146	—
100	120	+380 +240	+267 +180	+320 +180																											-41 -76	-66 -101	-91 -126	-131 -166	
120	140	+420 +260	+300 +200	+360 +200	+208 +145	+245 +145	+305 +145	+125 +85	+148 +85	+185 +85	+68 +43	+83 +43	+106 +43	+39 +14	+54 +14	+25 0	+40 0	+63 0	+100 0	+160 0	±12.5	±20	+4 -21	+12 -28	-8 -33	0 -40	-20 -45	-12 -52	-36 -61	-28 -68	-48 -88	-77 -117	-107 -147	—	—
140	160	+440 +280	+310 +210	+370 +210																											-50 -90	-85 -125	-119 -159		
160	180	+470 +310	+330 +230	+390 +230																											-53 -93	-93 -133	-131 -171		
180	200	+525 +340	+355 +240	+425 +240	+242 +170	+285 +170	+355 +170	+146 +100	+172 +100	+215 +100	+79 +50	+96 +50	+122 +50	+44 +15	+61 +15	+29 0	+46 0	+72 0	+115 0	+185 0	±14.5	±23	+5 -24	+13 -33	-8 -37	0 -46	-22 -51	-14 -60	-41 -70	-33 -79	-60 -106	-105 -151	—	—	—
200	225	+565 +380	+375 +260	+445 +260																											-63 -109	-113 -159			
225	250	+605 +420	+395 +280	+465 +280																											-67 -113	-123 -169			
250	280	+690 +480	+430 +300	+510 +300	+271 +190	+320 +190	+400 +190	+162 +110	+191 +110	+240 +110	+88 +56	+108 +56	+137 +56	+49 +17	+69 +17	+32 0	+52 0	+81 0	+130 0	+210 0	±16	±26	+5 -27	+16 -36	-9 -41	0 -52	-25 -57	-14 -66	-47 -79	-36 -88	-74 -126		—	—	—	—
280	315	+750 +540	+460 +330	+540 +330																											-78 -130				
315	355	+830 +600	+500 +360	+590 +360	+299 +210	+350 +210	+440 +210	+182 +125	+214 +125	+265 +125	+98 +62	+119 +62	+151 +62	+54 +18	+75 +18	+36 0	+57 0	+89 0	+140 0	+230 0	±18	±28.5	+7 -29	+17 -40	-10 -46	0 -57	-26 -62	-16 -73	-51 -87	-41 -98	-87 -144		—	—	—	—
355	400	+910 +680	+540 +400	+630 +400																											-93 -150				
400	450	+1010 +760	+595 +440	+690 +440	+327 +230	+385 +230	+480 +230	+198 +135	+232 +135	+290 +135	+108 +68	+131 +68	+165 +68	+60 +20	+83 +20	+40 0	+63 0	+97 0	+155 0	+250 0	±20	±31.5	+8 -32	+18 -45	-10 -50	0 -63	-27 -67	-17 -80	-55 -95	-45 -108	-103 -166		—	—	—	—
450	500	+1090 +840	+635 +480	+730 +480																											-109 -172				

■ Dimensional Tolerance and Fittings [Excerpt from JIS B 0401 (1999)]

● Standard Fitting for Holes

Reference Hole	Shaft Tolerance Class																
	Gap fitting							Intermediate fitting			Tight fitting						
H6						g5	h5	js5	k5	m5							
					f6	g6	h6	js6	k6	m6	n6*	p6*					
H7					f6	g6	h6	js6	k6	m6	n6	p6*	r6*	s6	t6	u6	x6
				e7	f7		h7	js7									
H8					f7		h7										
				e8	f8		h8										
			d9	e9													
H9			d8	e8			h8										
		c9	d9	e9			h9										
H10	b9	c9	d9														

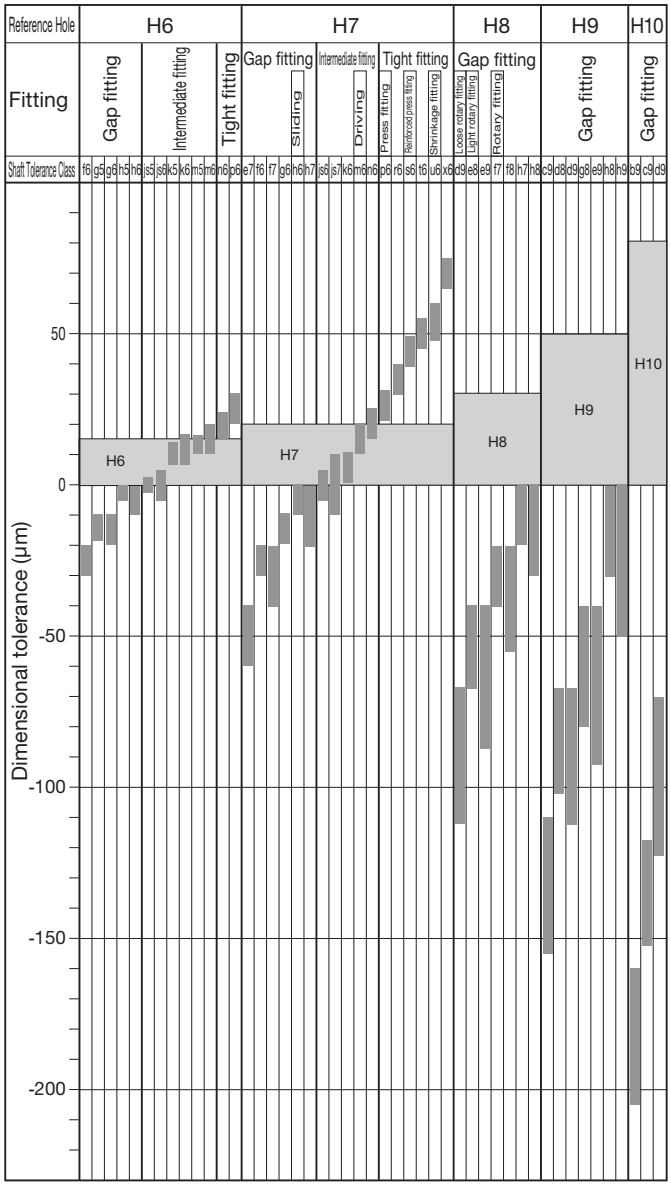
Note: *Exceptions may arise with these fittings depending on the dimension category.

● Standard Fittings for Shafts

Reference Shaft	Hole Tolerance Class																
	Gap fitting							Intermediate fitting			Tight fitting						
h5							H6	JS6	K6	M6	N6*	P6					
h6					F6	G6	H6	JS6	K6	M6	N6	P6*					
					F7	G7	H7	JS7	K7	M7	N7	P7*	R7	S7	T7	U7	X7
h7				E7	F7		H7										
					F8		H8										
h8			D8	E8	F8		H8										
			D9	E9			H9										
h9			D8	E8			H8										
		C9	D9	E9			H9										
	B10	C10	D10														

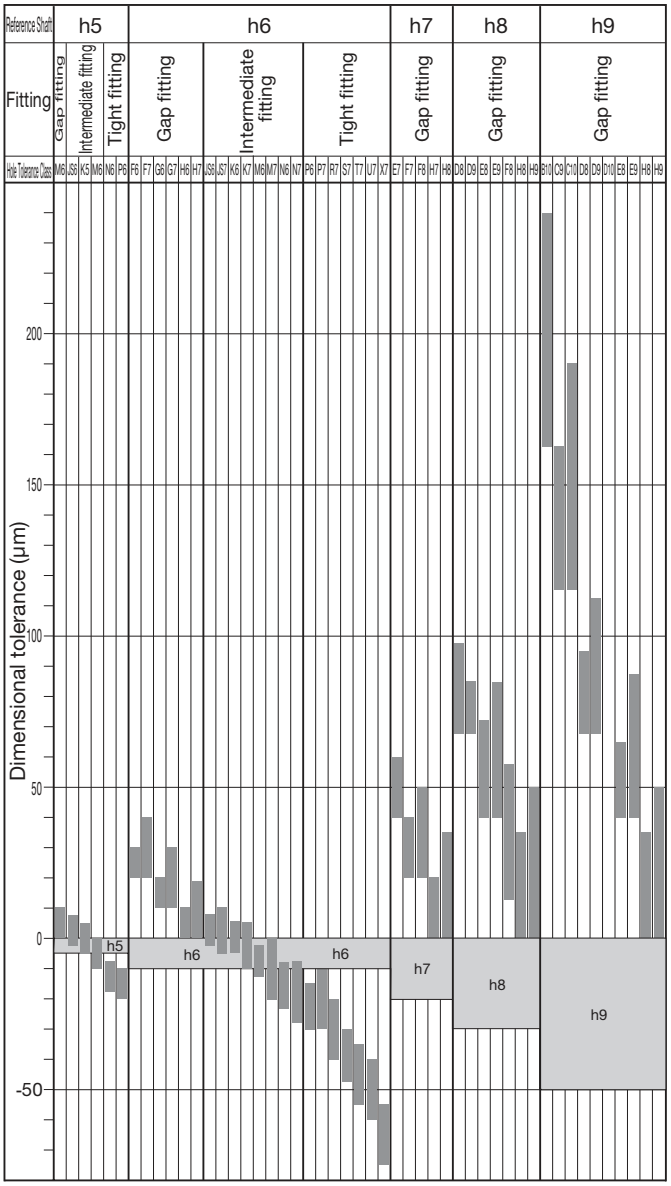
Note: *Exceptions may arise with these fittings depending on the dimension category.

● Correlation of Tolerance Zones in Standard Hole Fittings



Note: The above table is for reference dimensions greater than 18mm up to 30mm.

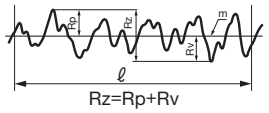
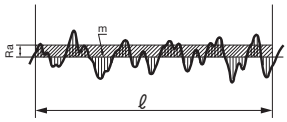
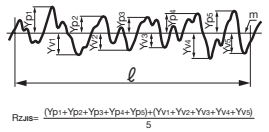
● Correlation of Tolerance Zones in Standard Shaft Fittings



Note: The above table is for reference dimensions greater than 18mm up to 30mm.

■ Surface Roughness

● Types and Definitions of Typical Surface Roughness

Type	Symbol	Method of Determination	Descriptive Figure
R Max.	*1) Rz	This value is found by extracting the reference length in the mean line direction from the surface roughness curve, measuring the intervals between the peaks and valleys in the extracted area in the longitudinal magnification direction of the surface roughness curve, and expressing this value in micrometres (μm). Remarks: When finding Rz, any areas deemed to be scratches are removed before extracting the reference length from an area with no high peaks or low valleys.	 Rz=Rp+Rv
Calculated Roughness	Ra	This value is found by extracting the reference length in the mean line direction from the roughness curve, taking the average line direction of the extracted area as the X-axis and the longitudinal magnification direction as the Y-axis and expressing the value found by the equation below in micrometres (μm) with the roughness curve expressed by y=f(x).	 $Ra=\frac{1}{\ell}\int_0^{\ell}\{f(x)\}dx$
10-point Average Roughness	*2) Rz JIS	This value is found by extracting the reference length in the mean line direction from the roughness curve, finding the sum of the mean absolute peak height taken from the five highest peaks (Yp) and the mean absolute valley height taken from the five lowest valleys (Yv) measured in the longitudinal magnification direction from the average line direction of the extracted area and expressing this value in micrometres (μm).	 $Rz_{JIS}=\frac{(Yp1+Yp2+Yp3+Yp4+Yp5)+(Yv1+Yv2+Yv3+Yv4+Yv5)}{5}$

Designated values for the above types of maximum height (Rz)*1), 10-point average roughness (Rz JIS)*2), calculated average roughness (Ra) classifications, and reference length ℓ are shown on the table at right with triangular symbols.

*1) The maximum height symbol (Rz) is calculated according to the new JIS B 0601:2001 standard. (This value was Ry under the old standard.)

*2) The 10-point average roughness (Rz JIS) is calculated according to the new JIS B 0601:2001 standard. (This value was Rz under the old standard.)

● Relationship with triangular symbol display

Designated values for maximum height *1) (Rz)	Designated values for calculated average roughness (Ra)	Designated values for 10-point average roughness *2) (RzJIS)	Standard reference ℓ length value (*mm*)	Triangular* Symbols
(0.05) 0.1 0.2 0.4	(0.012) 0.025 0.05 0.10	(0.05) 0.1 0.2 0.4	*0.25*	▽▽▽▽
0.8	0.20	0.8		
1.6 3.2 6.3	0.40 0.80 1.6	1.6 3.2 6.3	*0.8*	▽▽▽
12.5 (18) 25	3.2 6.3	12.5 (18) 25	*2.5*	▽▽
(35) 50 (70) 100	12.5 25	(35) 50 (70) 100	*8*	▽
(140) 200 (280) 400 (560)	(50) (100)	(140) 200 (280) 400 (560)	—	—

Remarks: The designated values in ( ) do not apply unless otherwise stated.

* Finish symbols (triangular symbol (▽) and tilde (~)) were removed from JIS in the 1994 revision.

MEMO

A.L.M.T. AL

Diamond Cutting Tools AL1 to AL12



A.L.M.T. Diamond Cutting Tools	Ultra-Precision Cutting Tool UPC ····· AL2
	UPC-Nano Groove / UPC-Nano Endmill ··· AL3
	UPC-Nano Ballnose Endmill / UPC-Nano Profile ··· AL4
	UPC-R ····· AL5
	UPC-F / UPC-T ····· AL6
	BL-UPC ····· AL7
	New D Tools ····· AL8
	New D ····· AL9
	PCD Rotating Tools ····· AL10

A.L.M.T. Corp.

Nano/Microforming Tools

Ultra-Precision Cutting Tool UPC™

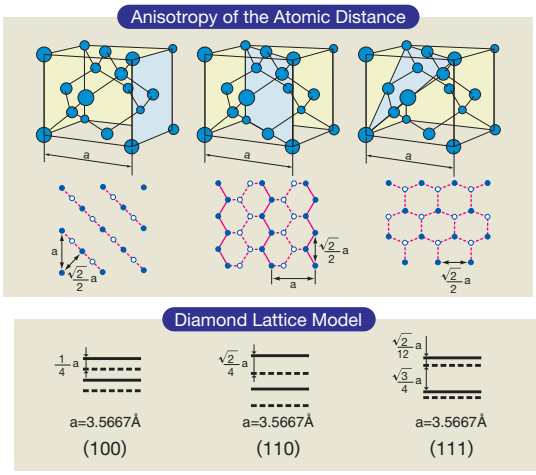
As a leading manufacturer of ultra-precision diamond cutting tools, A.L.M.T. Corp. offers a broad range of nano- and micro-forming cutting tools to meet market needs.
Our many years of experience and extensive knowledge give us a comprehensive understanding of the optimal physical properties of single-crystal diamond.
Our state-of-the-art development process yields the highest precision in ground tool edge measurement. As a result, our diamond cutting tools achieve high-precision microscopic cutting of work materials in the order of nanometres.

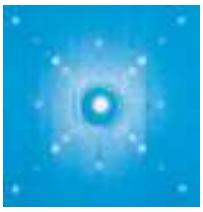


Selection and Measurement Technology

Identify the anisotropy of atoms in single-crystal diamond and pursue the best crystal orientation

Creation of tools to achieve cutting edge sharpness in the order of nanometres starts with the screening and selection of single-crystal diamond.
The lattice constant of diamond is always 3.5667 Å, but the distance between crystal faces varies, causing differences in the ease of cleavage and intrusion of impurities. Therefore, sorting of rough diamonds is important in addition to the identification of crystal orientation according to the machining conditions.





X-Ray Photograph of Single-crystal Diamond

Grinding and Measurement Technologies

Cutting edge grinding technology that produces nanometre-controlled movement

In order to accurately produce nanometre-controlled movement on work materials, a cutting tool requires a sharp cutting edge capable of producing nanometre-sized chips and high profile precision. We have achieved this using our unique grinding and measurement technologies.

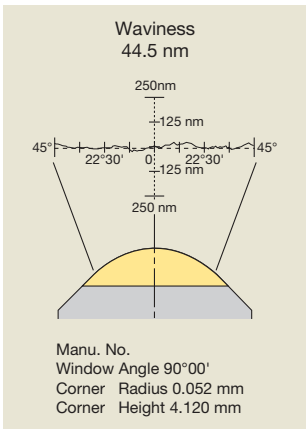
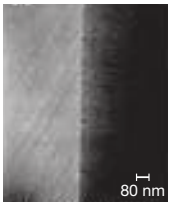


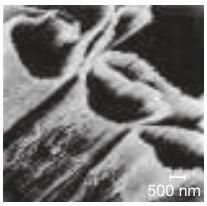
Chart of inspection using our uniquely developed waviness meter



UPC-R SEM Image



Sharply ground single-crystal diamond cutting edge



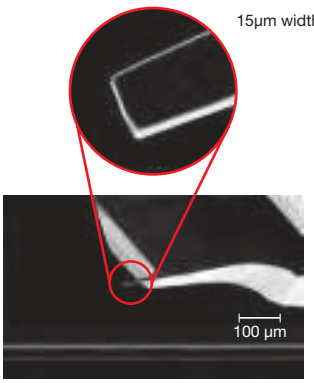
Nanometre-sized chips

Nano/Micro Processing Technology

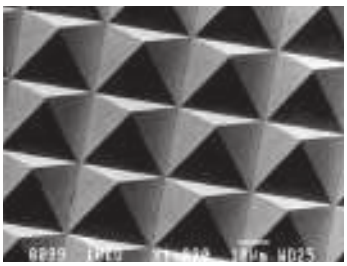
Straightness and surface roughness unattainable with photolithography or ion-beam method

With its cutting edge sharpness in the order of nanometres, A.L.M.T.'s UPC-Nano series achieves a surface roughness and straightness that cannot be obtained by the photolithography or ion-beam method.
This technology is also effective for micrometre-order processing of high aspect ratio.





Size comparison at same magnification
(Nano Endmill (width 15 µm) and human hair (ø50 µm))



Mould surface processed in the order of micrometres

Ultra-fine Grooving Type

UPC™-Nano Groove™

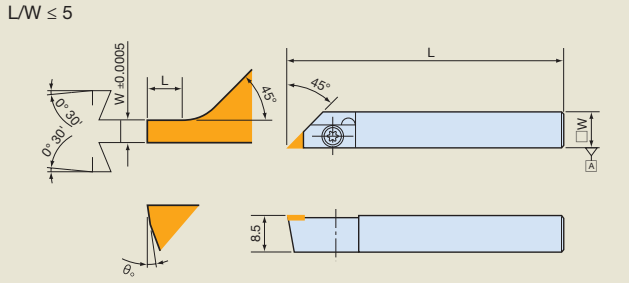


Features

1. 3 µm width of cut grooving tools
2. Provides the world's highest-level dimensional accuracy of ±0.5 µm
3. Durable cutting edge with high-precision grinding
4. Enables high-precision fine grooving that cannot be achieved using the photolithography or ion-beam method

Applications

1. Hologram diffraction grating moulds
2. Fine linear groove milling
3. Moulds with fine groove milling
4. Optical sheet moulds



Standard Size	(1) L : 51, W : □6.35 (2) L : 60, W : □8

Endmill (Square Type)

UPC-Nano Endmill™

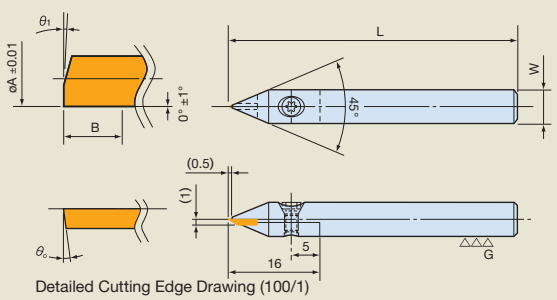


Features

1. Enables 30 µm groove width and world's smallest curves for flexible grooving
2. Enables machining with a high aspect ratio 2.5 times the rotation diameter
3. Durable cutting edge with high-precision grinding
4. Enables high-precision fine grooving that cannot be achieved using the photolithography or ion-beam method

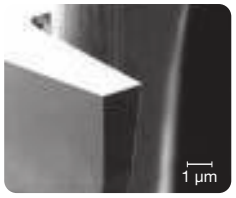
Applications

1. Hologram grating
2. Fine free curve groove milling
3. LCD prism sheet moulds
4. Micro machine parts grooving

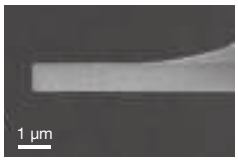


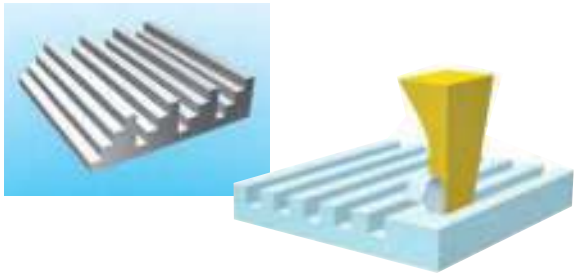
Detailed Cutting Edge Drawing (100/1)

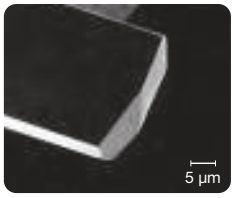
Standard Size	(1) L : 50, W : ø6 (2) L : 30, W : ø4



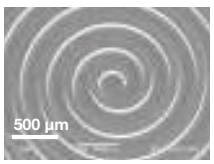
Nano Groove Cutting Edge

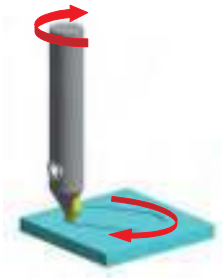






Example of Grooving Using a Nano Endmill





Endmill (Ballnose Type)

UPC-Nano Ballnose Endmill™

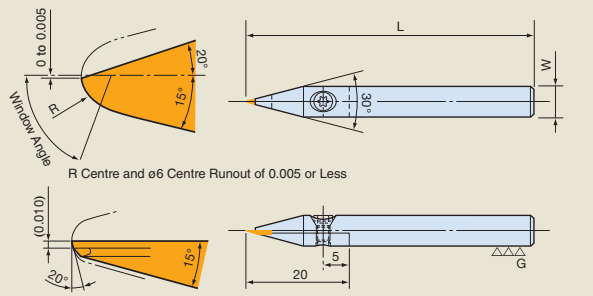


Features

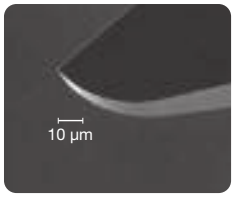
1. Ballnose endmill is world's smallest in its class with radius of 30 µm
2. Provides the world's highest-level precision at 50 nm waviness
3. Enables high-precision 3D machining with its extremely sharp cutting edge

Applications

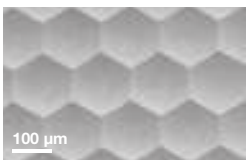
1. Micro lens array
2. Free-form submillimeter lens
3. LCD prism sheet moulds
4. Micro machine parts grooving

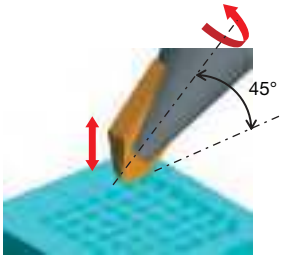


Standard Size	(1) L : 50, W : ø6 (2) L : 30, W : ø4



Example of Grooving Using a Nano Ballnose Endmill





Formed Type

UPC™-Nano Profile™



Features

1. Enables flexible one-pass machining of free-form surfaces including elliptical and paraboloidal surfaces with shape accuracy of 1 µm or less
2. Ensures high-form accuracy in machining of paraboloidal and other free-form surfaces

Applications

1. Optical sheet moulds for LCD panels
2. Micro lens array moulds
3. Various optical element moulds

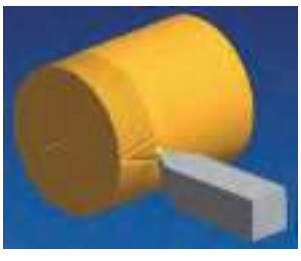


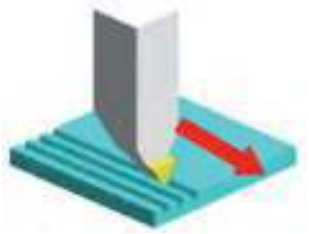
Elliptical Cutting Edge



Parabolic Cutting Edge







UPC™-R





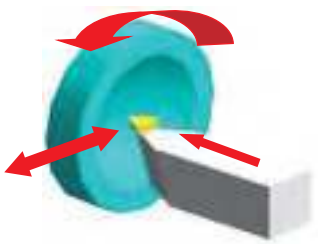
UPC™-R exhibits outstanding performance in ultra-precision spherical and aspherical cutting

Features

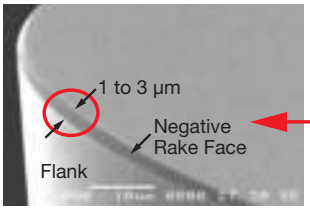
1. Achieves cutting edge arc waviness of 50 nm (0.05 μm) over a wide working angle range of 90°.
2. The cutting edge is uniformly finished in high quality, achieving a surface roughness in the order of nanometres.
3. A record of the cutting edge arc waviness measured with our uniquely developed measuring instrument (with a resolution of 5 nm) is attached to the product for thorough quality control.

Applications

1. Camera lens moulds for CD, DVD, and BD players
2. Lens moulds for digital cameras
3. Camera lens moulds for smartphones, PCs, and tablets
4. Infrared lens
5. Spherical and aspherical mirrors for lasers and X-rays
6. Various spherical and aspherical lenses
7. Profile processing using an ultra-precision processing machine

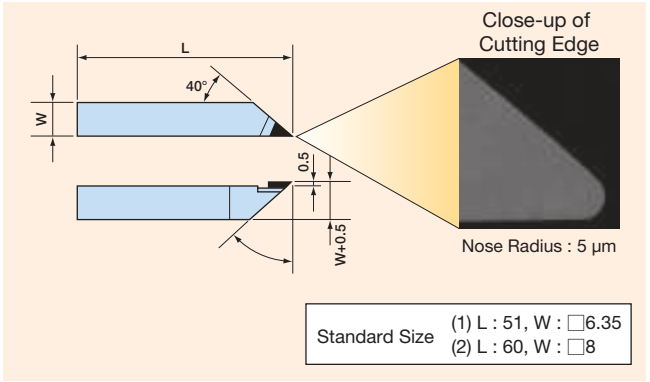


UPC™ Cutting Edge for Infrared (IR) Lenses and Cemented Carbide Moulds



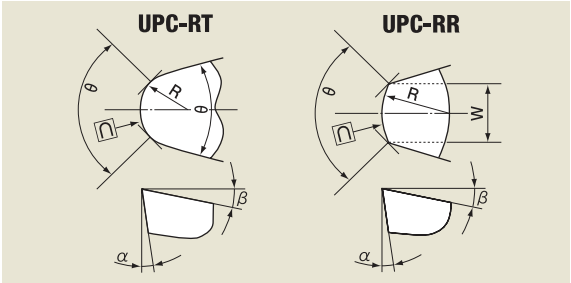


Uniform Negative Rake Face of Cutting Edge (Patented)



Standard Size	(1) L : 51, W : □6.35 (2) L : 60, W : □8

Cutting Edge Shape



Dimensions and Highest Accuracy

Cat. No.		Waviness ∩ θ ≤90°	Waviness ∩ θ ≤120°	Waviness ∩ θ ≤150°	Nose Radius R	Cutting Edge Angle θ	Width of Cut W (RR)	Relief Angle α	Rake Angle β
UPC-R	Very High Precision SS	0.05 μm	0.1 μm	-0.20 μm	0.002 to 200 mm	15° or more	0.5 to 5 mm	0° to 20°	-30° to 10°
	High Precision S	0.25 μm	0.5 μm	1 μm					

UPC™-F



Exhibits full potential for high-efficiency, ultra-precision cutting in planar and cylindrical shapes

Features

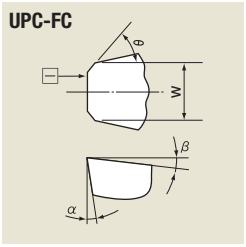
1. Drastically reduces or eliminates running-in machining time.
2. Obtain uniform, high-quality machined surfaces by setting the roundness (sharpness) of the cutting edge according to the work material and cutting conditions.

Applications

1. Laser reflective mirrors
2. Polygon mirrors
3. Photosensitive drums of copying machines
4. Planar and cylindrical mirror finishing

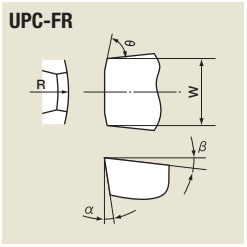
Cutting Edge Shape

UPC-FC



Exclusive Blade Type for Polygon Mirrors

UPC-FR



Dimensions and Highest Accuracy

Cat. No.	Cutting Edge Angle θ	Width of Cut W	Relief Angle α	Rake Angle β	Lateral Rake Angle γ	Rake Face R
UPC-FC	45° to 80°	1.0 to 4.0 mm	0° to 5°	-5° to 0°	0° to 15°	—
UPC-FR	10° to 45°	2.0 to 4.0 mm	2° to 5°	0°	0°	30 to 40 mm



UPC™-T



Ideal for fine grooving such as that for Fresnel lenses

Features

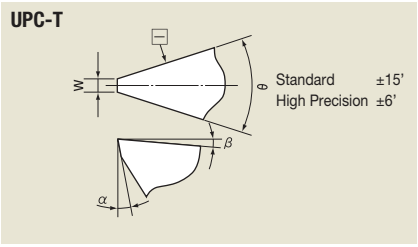
1. The cutting edge is uniform and extremely sharp, free from chipping and undulation.
2. Guarantees the cutting edge shape in the order of submicrons.

Applications

1. LCD prism sheet moulds
2. Fresnel lens moulds
3. Optical sheet moulds
4. Various diffraction grating moulds
5. Other fine grooving

Cutting Edge Shape

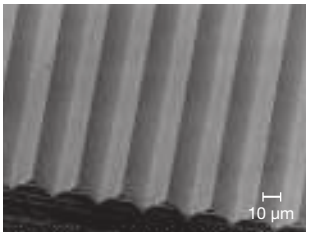
UPC-T



Dimensions and Highest Accuracy

Cat. No.		Cutting Edge Angle θ	Angular Tolerance	Tip Width W	Relief Angle α	Rake Angle β
UPC-T	Very High Precision SS	Less than 45°	±6'	0.2 μm min.	0° to 15°	-5° to 10°
	High Precision S	45° or more	±15'	Pin Angle		



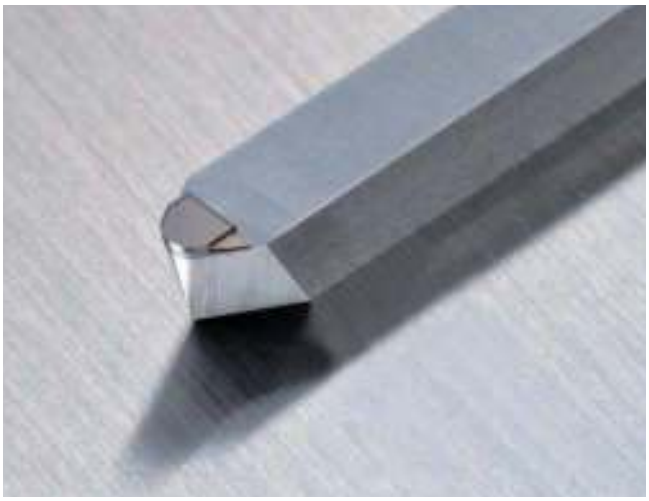


LCD Prism Sheet Moulds

BL-UPC

SUMIDIA™ Binderless (Nano-polycrystalline Diamond)

Ultra-Precision Cutting Tool BL-UPC



Employs SUMIDIA™ Binderless on the cutting edge of UPC™

Achieves long tool life in mirror finish and fine machining of cemented carbides

Features of SUMIDIA™ Binderless

- Fine grains of a few dozen nanometres are firmly and directly bonded together without the use of a binder.
- Harder than single-crystal diamond.
- No anisotropy or specific cleavage.

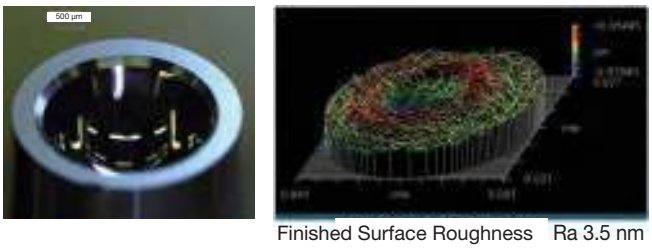
BL-UPC Features

- Superior fracture and wear resistance compared to single-/polycrystalline diamond.
- Sharp and precise cutting edge equivalent to UPC™ (single-crystal diamond).
- Free from uneven wear caused by crystal orientation, as it is not anisotropic.

Applications

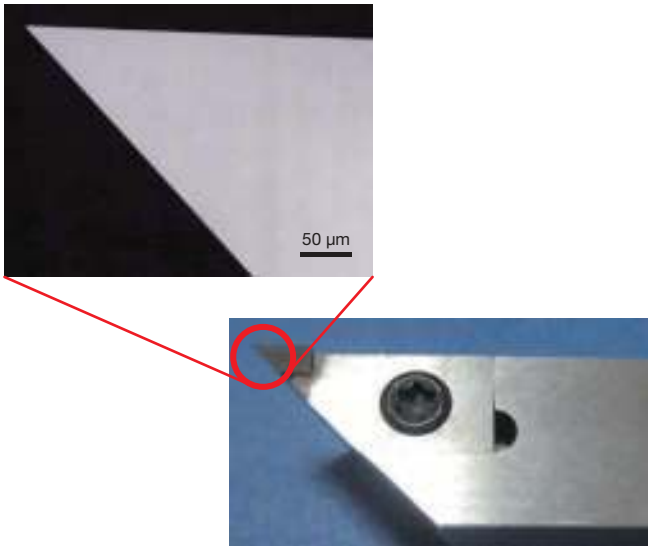
- Moulds for cemented carbide glass lenses
- Large moulds for prism sheets and light guide plates
- Glass lenses
- Machining of other high-hardness and brittle materials

Surface Roughness of Machined Cemented Carbide

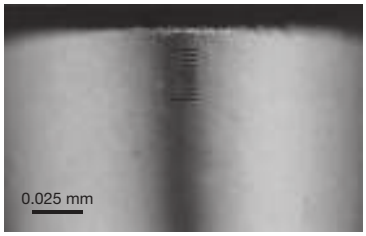


Finished Surface Roughness Ra 3.5 nm

Sharp Cutting Edge Equivalent to Single-Crystal Diamond

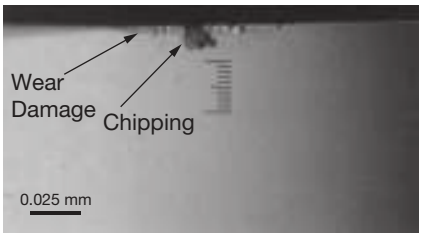


Flank Wear Comparison of Machined Cemented Carbide



BL-UPC

No Large Chipping Found



UPC™ (Single-crystal Diamond)

Large Chipping Found

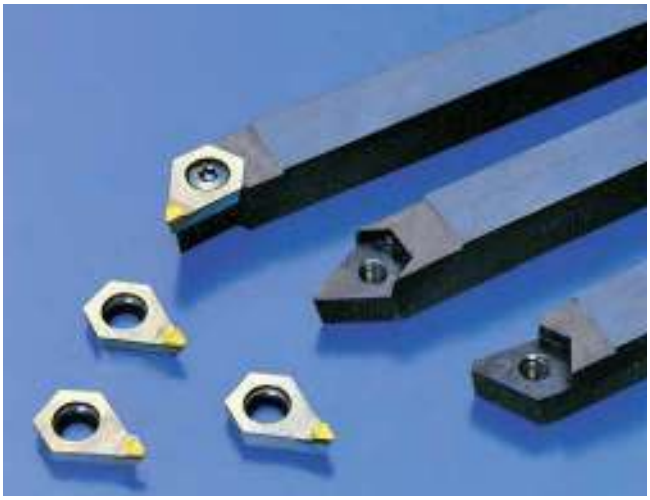
Comparison of Required Characteristics for Cutting Tool Materials

Required Characteristics for Cutting Tool Materials	Diamond		
	Single-crystal	Sintered (Polycrystalline)	Nano-polycrystalline
(1) High hardness	◎	◎	◎
(2) Hardness at high temperatures	○	○	◎
(3) Suitable toughness	×	△	○
(4) High thermal diffusibility	◎	○	◎
(5) Sharpness of cutting edge	◎	×	○

"SUMIDIA™" is a registered trademark of Sumitomo Electric Industries, Ltd.

New D Tools

New D Tools™



***New D Tools*™ NewD**

Achieves stability and long tool life by measuring and optimising the crystal orientation

Features

(1) Reduces variation in tool life, a weakness of single-crystal diamond tools, and achieves 1.5 to 2 times longer tool life than conventional tools on average.
(2) The combination of our uniquely designed inserts and holders enables easy and precise tool setting, as with indexable inserts.
(3) There are inserts for straight cutting and for curved-surface copying. The shape accuracy of the latter is 5μm.
(4) The rake face is free from adhesion and accumulation of chips, maintaining high-quality machined surfaces even during continuous use.
(5) The diamond is firmly attached by a unique brazing method.
(6) Exhibits high durability even during interrupted cutting.
(7) Unlike the conventional type with a retaining cap, there is no retaining cap to hold the diamond. This enables chips to move smoothly on the rake face, improving the machining accuracy.

Applications

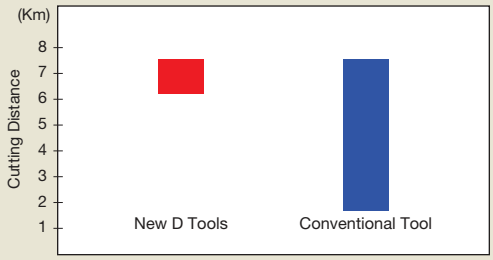
- Automotive components (pistons, aluminum wheels, compressors, commutators, etc.)
- Plastic lenses, resin mould parts
- HDD parts
- Aluminum die cast alloys ad other non-ferrous metal components

Performance of New D Tools

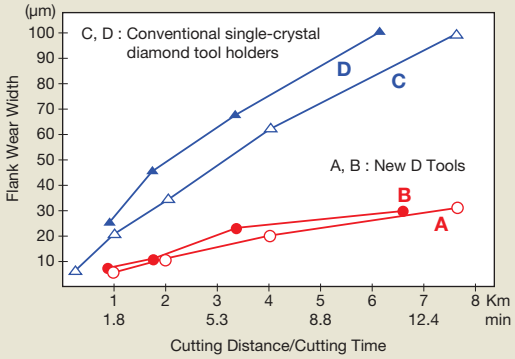
● Cutting Conditions (Data 1.2)

Cutting Speed : 565 m/min Feed Rate : 0.2 mm/rev
Depth of Cut : 0.12 mm Cutting Coolant : Alcohol-Oil Mist
Work Material : High Silicon Aluminum Alloy (Si : 18%)

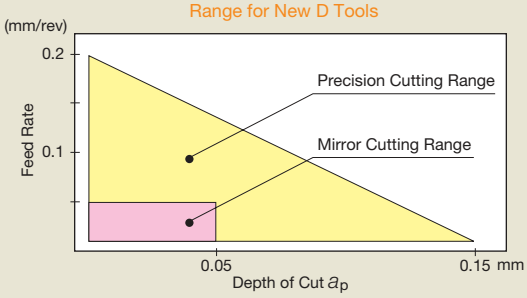
Data 1 Tool Life and Stability Comparisons (Interrupted Cutting) (Cutting distance when flank wear width is 30 μm)



Data 2 Tool Life Comparison for Interrupted Cutting

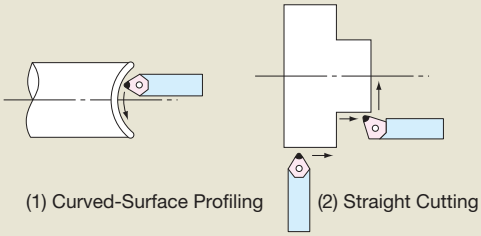


Data 3 Recommended Cutting Condition Range for New D Tools



● Example of Cutting





New D Tools

☐ Insert Cat. No. (Standard Stock)

Insert Specifications	Cat. No.		Nose Radius R	Relief Angle θ	Inscribed Circle øA (mm)	Bore Dia. øB (mm)	Centre Height h (mm)	Applicable Holders
	Long Tool Life Type	*1 High-Precision Type						
Upon Ordering Insert Cat. No. For **NWD-C L 3 02** Nose radius of R0.2 Point Angle 55° Inscribed Circle ø9.525 Relief angle of 7° Long tool life type ("P" for high-precision type)	**NWD-CL302**	**NWD-CP302**	R0.2	7°	ø9.525	ø4.4	$^{+0.2}_{4-0}$	NDH-R1☐ -L1☐ -N1☐ NDH-QR1☐ -QL1☐
	NWD-CL305	**NWD-CP305**	R0.5					
	NWD-CL308	**NWD-CP308**	R0.8					
	NWD-CL310	—	R1.0					
	NWD-CL316	—	R1.6					
	NWD-CL320	—	R2.0					
	NWD-PL302	**NWD-PP302**	R0.2	11°				
	NWD-PL305	**NWD-PP305**	R0.5					
	NWD-PL308	**NWD-PP308**	R0.8					
	NWD-PL202	**NWD-PP202**	R0.2		ø6.35	ø2.8	$^{+0.2}_{3-0}$	NDH-RO☐ -LO☐ -NO☐
	NWD-PL205	**NWD-PP205**	R0.5					
	NWD-PL208	**NWD-PP208**	R0.8					
		*2 For Aluminum Wheels						
	NWD-CL416	**NWD-CL416-AW**	R1.6	7°	ø9.525	ø4.4	$^{+0.2}_{5.5-0}$	NDH-R20V -L20V -R25V -L25V
	NWD-CL420	**NWD-CL420-AW**	R2.0					
	NWD-CL425	**NWD-CL425-AW**	R2.5					

*1 : High-precision type : cutting edge profile accuracy of 5 µm or less.
*2 : With cutting edge treatment for aluminum wheels

☐ Tool Holder Cat. No. (Standard Stock)

Holder Specification	Cat. No.		Dimensions (mm)				Applicable Insert
	Right Hand	Left Hand	W	L	S	h	
	NDH-R06	**NDH-L06**	6	50	6.5	6	NWD-PP2☐☐
	NDH-R08	**NDH-L08**	8	60	8.5	8	-PL2☐☐
	NDH-R10	**NDH-L10**	10	80	10	10	NWD-CL3☐☐
	NDH-R12	**NDH-L12**	12	100	12	12	-PL3☐☐
	NDH-R16	**NDH-L16**	16	125	16	16	-CP3☐☐
	NDH-QR10	**NDH-QL10**	10	80	13	10	-PP3☐☐
	NDH-QR12	**NDH-QL12**	12	100	15	12	
	NDH-QR16	**NDH-QL16**	16	125	19	16	
	NDH-R20V	**NDH-L20V**	20	150	25	20	NWD-CL416
	NDH-R25V	**NDH-L25V**	25	150	32	25	-CL420
							-CL425
	Neutral						
	NDH-N06		6	50	—	6	NWD-PP2☐☐
	NDH-N08		8	60	—	8	-PL2☐☐
	NDH-N10		10	80	—	10	NWD-CL3☐☐
	NDH-N12		12	100	—	12	-PL3☐☐
	NDH-N16		16	125	—	16	-CP3☐☐ -PP3☐☐

Please contact us for specifications not stated above.

Holder Cat. No. Upon Ordering
For **NDH-R 06**
☐6
Right hand
("L" for left hand)

PCD Rotating Tools



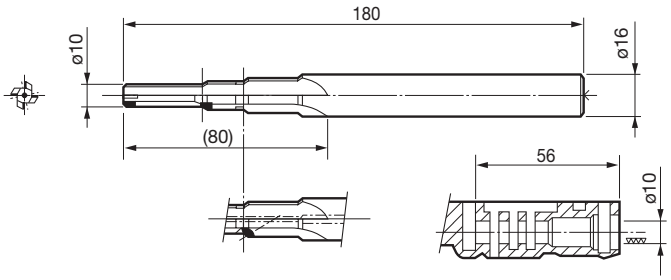
Features

- Multiple parts can be machined in a single pass by using an integrated stepped tool.
- Adoption of diamond offers significantly improved tool life (over 10 times longer than that of carbide tools).
- Surfaces can be machined without burn at a cutting speed of 300 m/min or higher.
- Stable performance can be achieved by using emulsion type water-soluble coolant.
  (Semi-dry cutting is also possible depending on your environment.)

Applications

- Non-Ferrous Metal (Aluminum Alloy, Copper Alloy, etc.)

PCD Reamer Application Example (Automobile hydraulic regulator valve reaming)



Work Shape

Functions	PCD Reamer	Cemented Carbide Reamer
Cutting Speed (m/min)	120	120
Feed Rate (mm/rev)	0.2	0.2
Stock Removal (mm/diameter)	0.4	0.4
Coolant	Water soluble	Oil-based
Machined Surface Roughness (μmRz)	3	8
Circularity (μm)	5	10
Economic Efficiency Ratio	0.5	1

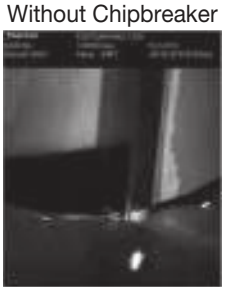
Data 1 : Improved Productivity by Breaking Chips

Negative Land Specification Cutting Edge



Chip breaking function is enhanced to prevent a reduction in productivity due to problems caused by chips. Solutions are proposed according to the type of chip problem.

Without Chipbreaker







Forms long chips that don't curl.
· Wrapping around tool
· Remnants on workpiece

With Chipbreaker



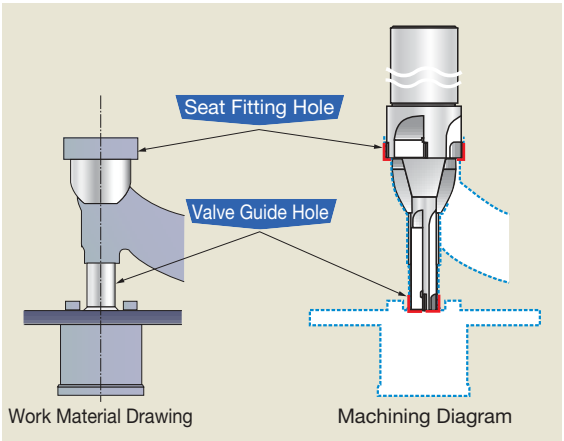




Chips are forcibly curled and cut into fine pieces.
· No wrapping around tool
· No chip remnants

Data 2 : Good Balance between High-Efficiency Cutting and High Machining Accuracy

Precision diamond tooling technology enables high quality coaxial manufacturing with excellent tool runout precision. High-precision and high-efficiency machining can be achieved.



Work Material Drawing　　Machining Diagram

Difference in Performance by Shank Material

Results	1 Flute (Steel)	4 Flutes (Steel)	4 Flutes (Cemented Carbide)
Machining Time (s)	52	26	13
Circularity (mm)	0.01	0.05	0.03
Coaxiality (mm)	0.01	0.07	0.05

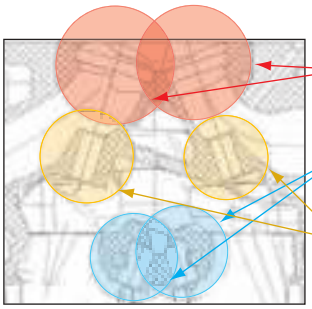
Cutting Conditions

Work Description	Finishing of cylinder heads, guide and seat fitting holes
Work Material	Aluminum alloy castings AC4B
Machine	Horizontal machining centre
Tool Size (mm)	ø11 to ø36 to L150
Spindle Speed (min^{-1})	3,500
Cutting Speed (m/min)	395
Feed Rate (mm/rev)	0.3
Stock Removal (mm/diameter)	0.5
Coolant	Emulsion-type water-soluble oil

PCD Rotating Tools

Machining Process



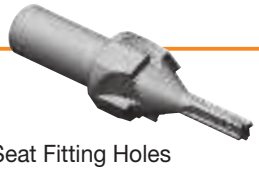


Process 1
Finishing of Valve Seat Fitting Holes

Process 2
Finishing of Hydraulic Lash Adjuster (HLA) Holes

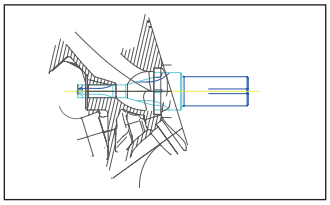
Process 3
Finishing of Intake and Exhaust Valve Guide Holes

Process 1 Finishing of Valve Seat Fitting Holes



Resolves coaxiality and cylindricity issues with the high shank rigidity and high quality cutting edge.

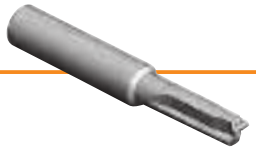




■ Specifications for Finishing of Valve Seat Fitting Holes

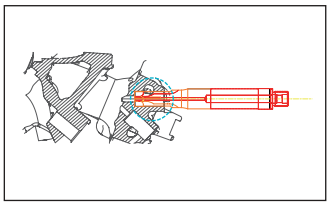
	Machine : Horizontal Machining Centre	
Cutting Conditions	Spindle Speed (min^{-1})	6,000
	Feed Rate (mm/rev)	0.48
	Feed Rate (mm/min)	2,880
	Stock Removal (mm/diameter)	0.6
	Coolant	Emulsion-type water-soluble oil

Process 2 Finishing of Hydraulic Lash Adjuster (HLA) Holes



Achieves high cylindricity using a design ideal for machining of thin-wall parts and stop holes.

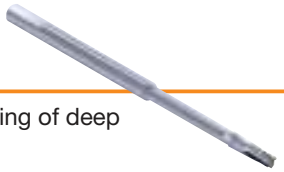




■ Specifications for Finishing of Hydraulic Lash Adjuster (HLA) Holes

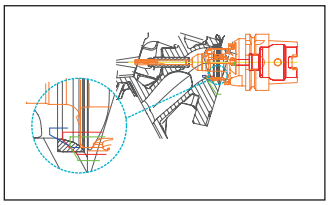
	Machine : Horizontal Machining Centre	
Cutting Conditions	Spindle Speed (min^{-1})	5,000
	Feed Rate (mm/rev)	0.34
	Feed Rate (mm/min)	1,540
	Stock Removal (mm/diameter)	0.5
	Coolant	Emulsion-type water-soluble oil

Process 3 Finishing of Intake and Exhaust Valve Guide Holes



Unique guide shape and effective oil hole design enable high accuracy and high efficiency machining of deep holes with L/D of 10 or more to be achieved.





Machined Part

■ Finishing of Intake and Exhaust Valve Guide Holes

	Machine : Horizontal Machining Centre	
Cutting Conditions	Spindle Speed (min^{-1})	5,000
	Feed Rate (mm/rev)	0.3
	Feed Rate (mm/min)	1,500
	Stock Removal (mm/diameter)	0.1
	Coolant	Emulsion-type water-soluble oil

■ Results

Tool	Tool Life (No. of Holes)	Price Ratio	Cost Ratio	Coaxiality	Inner Diameter Variance
Cemented Carbide	1,200	1	1	—	—
A.L.M.T. PCD Tool	12,000	3	0.8	10 µm	3 µm/10,000 holes

PCD Rotating Tools

PCD Rotating Tools (Applications)

Features

- Tools suitable for particular usage conditions, utilising analysis of structure/fluids/chips, etc.
- Support for special specifications such as mono-block tools and integrated tools.

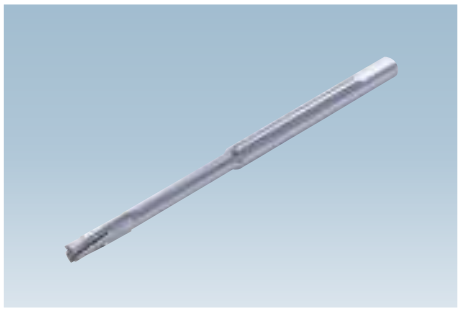
Applications

- Drilling holes into sliding parts of valve guides or hydraulic control valves

■ Multi-Blade Multi-Stage Reamer



■ Gun Reamer



■ Irregular Pitch Reamer



■ Endmill (Ballnose Endmill)



■ Mono-block Tool
(Multi-Blade Multi-Stage Reamer)



■ Mono-block Tool
(Face Milling Cutter)



■ Integrated Tool (Reamer + Cutter)



■ Integrated Tool (Reamer + Tap)



Index O

O1 to O6



Index Reference Guide

- **The catalog numbers in this index are listed in alphabetical order.**
- **Catalogue number markings:**
  - ● **mark: Represents a numeral**

    (Example: APG4●●●R → APG4160R)

  - ■ **mark: Represents an alphabetical character**

    (Example: C●●■-SCLCR●● → C08H-SCLCR06)

Index

A

A-DTR E27
AECT H197-H200
AFBSM E70,E71
ALMT PCD Reamer . . 533-538
ALNEX H178
A-MCKN E12
A-MCLN E12
A-MDQN E15
A-MDUN E15
A-MTFN E23
A-MVUN E26
A-MWLN E28
ANB H181,H183,H184
AND J140
ANH J140
ANT J140
AOET . . . H53,H55,H57,H59,H61,H63,H206,H207
AOMT . . H53,H55,H57,H59,H61,H63,H206,H207
APG H239
APMT H147,H148
APV H233
A-SCFP E34
A-SCLC E30
A-SDQC E38
A-SDUC E38
A-SDUP E42
A-SDXC E34
A-SDXP E42
A-SER F44
ASM2 . . . . . I82,I84
ASM4 . . . . . I83
A-STFC E47
A-STFP E48
A-STUP E48
A-SVQB E53
A-SVQC E58
A-SVUB E53
A-SVUC E58
AXET . . . . . .
H71-H73,H75-H77,H80-H83,H209,H210
AXMT . . . . . .
H70-H77,H80-H83,H209,H210

B

BBT30 . . . . . H205
BCTJP E52
Binderless PCD M24
BMCLN E14
BMDLN E19
BMSKN E22
BMWLN E29
BNB E74
BNBC I118
BNBP I116
BNBR I104
BNBS I119
BNBX E72
BNC E74
BNES I80
BNGG R/L F47
BNGNT F47
BNGS F47
BNTT F47,F73
BNZ E73
B-PCLN E14
B-PTFN E25
B-SCLC E33
BSCLO E37
B-SCLP E36
BSDJO E41
BSDJO E41
B-SDQC E41
B-SDUC E41
BSME E70
BSSKO E45
BSTJO E52
B-STUP E52
B-SVJB E56
B-SVQB E56
B-SVUB E57
B-SVZB E57
BSWJO E62
BTR D11
BU G21
BXBR E69

C

CC■■03X1● B74,L36
CC■■04X1● . . B74-B75,L36
CC■■2.52● B77
CC■■21.5● . . . . . .
B75-B76,L37-L39,M11
CC■■21.51.5● B77
CC■■32.5● . . .B78-B80,L40-L43
CC■■32● B77
CC■■43● B80,L44
CCA PSC F47
CCGE62● L43
CCKN C44
CCLN C45
CCMA03X1●● M10,M27
CCMA04X1●● M11,M27
CCMA21.5..RH M27
CCMA32.5 . . . . . M12
CCMA32.5..RH M27
CDJN C46
Ceramic Inserts . . .B130-B133
CGAR/L F46
CHE H238
CHG H240
CKB F39,E65,E66
CN■■32.5● B20
CN■■32● B20
CN■■33● B21
CN■■43● B22-B25
CN■■54● B26-B27
CN■■64● B28-B29
CN■■85● B29
CN■■86● B30
CNMA43● M10
CNMX43● M10
CP■■1.81.5● B81
CP■■2.51.5● . . .B81-B82,L44-L45
CP■■2.52● B82
CP■■21.5● B81
CP■■32.5● . . .B84,L46,M12,M13
CP■■32● B83,L45-L46
CP■■43● B84
CPEW32.5 . . . . . M13
CPG42● M13
CPG422 . . . . . M13
CPGA32● M13
CPMT H172
CPMX2.51 . . . . . M12
CPMX2.51.5● M12
CPMX32● M13
CRDC C46
CRDN C47
CRGN C47
C-SCLC E32
C-SCLP E35
CSDN C48
CSDP C52
C-SDUC E40
CSKN C49
CSKP C52
CSNH H239
CSRN C50
CSRP C52
C-SSKP E44
CSSN C51
CSTJO E51
CSTJO E51
C-STUB E46
C-STUP E46
C-SVQB E55
C-SVUB E55
C-SVZB E55
CSWJO E61
C-SWUB E62
CTAP C53
CTFP C53
CTG● G21
CTGP C53
CTHSK N31
CTL F57
CTR F57

D

DABB E75
DAE I87,I88
DC■■21.5● . . .B85-B87,L55-L56
DC■■21.51.5● B87
DC■■32.5● . . .B88-B90,L57-L60
DC■■32● B87
DCLN C5,G6,G12,C62
DCMA21.5..RH M27
DCMA32.5..RH M27
DCMX21.5 . . . . . M15
DCMX32.5 . . . . . M15
DCRN G6
D-DCLN E14
D-DDQN E18
D-DDUN E19
DDHN G6
DDJN C10,G7,C62
DDNN G7
D-DTFN E25
D-DVUN E26
D-DWLN E29
DFC H96
DFE I85,I86
DGC H28
DN■■33● B31-B32

DN■■43● B32-B35
DN■■44● B36-B38
DN■■54● B38
DNH. H40
DNMA43..RH. M27
DNMA43● B34,M14
DNMX43● B31,M14
DNX. H40
DP■■21.5● B91
DP■■32.5● B91,L46
DPG. H241
DPMT B91
DPV H231
DPW H241
D-SCLC. E32
D-SCLP E36
DSDN. C14
DSRN. C14,G7
DSSN. C15
D-STUC. E47
D-STUP E51
DTFN G8,C62
DTGN. C20,C62
DTJN C20
DTR55C. F27
DTR55Q. F27
DVJN C29,G8
DVQN C30
DVVN. C29,G8
DWLN C32,G9,G12,C62

E

EHG. H242
ER N16,N17,N27-N29
ESBN. C54
E-SCLC E31
ESDN. C54
ESKN. C55
ESSN. C55
E-STFP E50
E-STUP E50
ETAN C56
ETEN C57
ETFN C57
ETGN. C56
ETXN C57

F

FMU. H201
FPG H242

G

GCGN F11
GCMN F11
GDE. C60-C61
GFS H224
GFX H222
GITL. F43
GND Inserts. F11
GND PSC F20
GNDC F22
GNDF. F25
GNDFS F27
GNDI F28
GNDIS F30
GNDL. F17
GNDL-J F19
GNDL-JX. F18
GNDLS F18
GNDM F13
GNDM-J F15
GNDMS. F14
GNDN F24
GNDS F23
GRHN H225
GSV4. . . . . I74
GSV4-R I92
GSX2 (Inch) I28-I33
GSX2 (Metric) I40-I55
GSX3 (Metric) I56-I59
GSX4 (Inch) I34-I39
GSX4 (Metric) I60-I73
GSX4-R I90
GSXB (Inch/Metric) I27
GSXB (Metric) I106
GSXSLT I120
GSXVL. I76-I78
GSXVL-R I94
GWB F46
GWB F46
GWC F33-F34
GWC F33-F34

H

HBB. E72,E73,E75
HBSM E70,E71
HBX. E69,E72
HF H186-H191
HNEF. H225-H226

I

ISG3430TWK-WS N22
ISO (Spindle Clean) N34

K

KBMF E68
KBMG E68
KBMX E65,E67,E68
KBMZ E68

L

LNEX . . . H113,H115,H117,H119,H121,H123,H125,H127,H129,H131,H216
LNGX. H222-H224
LNMX. H135,H136
LTER F64

M

MA. H205
MCFN C5
MCFN C7
MCGN C6
MCKN C6
MCLN C7
MCMNN C7
MCRN C8
MDE. C61
MDF. J44-J48
MDJN C11
MDPN C11
MDQN C12
MDSS J88-J89
MDUS J88-J89
MDW-GS2. 445-449
MDW-GS4. 450-453
MDW-HGS3 455-459
MDW-HGS5 460-465
MDW-HGS8 466-469
MDW-NHGS 486-487
MDW-PHT. J71-J75
MDW-PHV. J76
MDW-XHV. J76
MINIT. G21
MLDH J85-J87
MRGN C13
MSDN C15
MSKN C16
MSRN C16
MSSN C17
MSX. H142
MSX-M H212
MTAN. C20
MTCN C21
MTENN C63
MTENNS C21
MTFN. C22
MTGN C22
MTJN. C23
MTJNS. C23
MTRN C24
MTXN. C23
MU¢. G20
MVJN. C31
MVPC C59
MVVN C31
MVXC C59
MWLN C32

N

NC-ZNEX. E73
NF-CCGA21.5 . . . . . M11
NF-CCGA32.5 . . . . . M12
NF-CCMA03X M10,M27
NF-CCMA04X M11,M27
NF-CCMA21.5. . . . . M11,M27
NF-CCMA32.5. . . . . M12,M27
NF-CCMT21.5 . . . . . M11
NF-CCMT32.5 . . . . . M12
NF-CCMX21.5. . . . . M11
NF-CCMX32.5. . . . . M12
NF-CNMX43 . . . . . M10
NF-CPGA32 . . . . . M13
NF-CPMX21.5 . . . . . M12
NF-CPMX32 . . . . . M13
NF-CPMX32.5 . . . . . M13
NF-DCGA32.5 . . . . . M15
NF-DCMA21.5. . . . . M14,M27
NF-DCMA32.5. . . . . M15,M27

NF-DCMT21.5 . . . . . M14,M15
NF-DCMT32.5 . . . . . M15
NF-DCMX21.5 . . . . . M14
NF-DCMX32.5 . . . . . M15
NF-DNMA43 . . . . . M14,M27
NF-DNMX43 . . . . . M14
NF-LDEN H188-H191
NF-SCMX2.51.5 . . . . . M16
NF-SDC M28
NF-SECW H237
NF-SEGN32 . . . . . M17
NF-SEGN42 . . . . . M17
NF-SNEW H193,H195
NF-SNMA43 . . . . . M16,M27
NF-SPG32 . . . . . M16
NF-SPG42 . . . . . M16
NF-TBGD52 . . . . . M18
NF-TBGE52 . . . . . M18
NF-TCMX1.81.5 . . . . . M18
NF-TCMX21.5 . . . . . M18
NF-TEGE21.5 . . . . . M22
NF-TEGN22 . . . . . M23
NF-TEGN32 . . . . . M23
NF-TNMX33 . . . . . M18
NF-TPG1.81.5 . . . . . M22
NF-TPG22 . . . . . M22
NF-TPG32 . . . . . M22
NF-TPGA1.81.5 . . . . . M19
NF-TPGA21.5 . . . . . M20
NF-TPGA22 . . . . . M20
NF-TPGA32 . . . . . M21
NF-TPGA33 . . . . . M21
NF-TPGD63 . . . . . M19
NF-TPMA22 . . . . . M20,M27
NF-TPMA33 . . . . . M21,M27
NF-TPMA63 . . . . . M19,M27
NF-TPMT1.81.5 . . . . . M19
NF-TPMT21.5 . . . . . M20
NF-TPMT22 . . . . . M20
NF-TPMT33 . . . . . M21
NF-TPMT63 . . . . . M19
NF-TPMX22 . . . . . M20
NFV H232
NF-VCMA22 . . . . . M24,M27
NF-VCMA33 . . . . . M25,M27
NF-VCMA63 . . . . . M24,M27
NF-VCMT22 . . . . . M24
NF-VCMT33 . . . . . M25
NF-VCMX22 . . . . . M24
NF-VCMX22 . . . . . M25
NF-VNMA33 . . . . . M24,M27
NF-VNMX33 . . . . . M24
NF-WBMX52 . . . . . M26
NPDB I113
NPDBS I112
NPDRS I102
NQAD H235
NRV H230
NU-CCMT21.5 . . . . . M11
NU-CCMT32.5 . . . . . M12
NU-DCMT21.5 . . . . . M15
NU-DCMT32.5 . . . . . M15
NU-TPMR22 . . . . . M22
NU-TPMR32 . . . . . M22
NU-TPMT1.81.5 . . . . . M19
NU-TPMT21.5 . . . . . M20
NU-TPMT22 . . . . . M20
NU-TPMT63 . . . . . M19
NU-ZNEX E73

O

ONET H32-H39
ONMT H32-H39

P

PBT D11
PCBN C8
PCBN C8
PCFN C9
PCFN C9
PCLC D17
PCLN C9
PCLN C9
PCT J129-J130
PDJC D24
PDJC-X D18
PDJN C12
PDJN C12
PDL J127-J128
PRDC C36
PRDC C36
PRGC C36
PRGC C36
PRSC G10
PSBN C17
PSBN C17
PSC G2-G17
PSC● G15-G18
PSDN C18
PSDN C18
PSKN C19
PSKN C19
PSSN C19
PSSN C19
PTFN C24
PTFN C24
PTGN C25
PTGN G21
PTGN C25
PTTN C25
PTTN C25
PWC H243
PWLN C33
PWS H134

R

RBG L106
RC■■●●●●●● B92
RDET H153-H159,H213
RF H192
RF H192,H193
RM H202
RM H202
RN■■●●● B39
RNG L61,L106
RNG■● L61
RP■■●●●●●● B93
RPGA0803 . . . . . M28
RPGX B133
RS-PTXN D16
RS-SCL D13
RS-SDU D14
RS-SDX D14
RS-SVVP D15
RS-SVX D15
RSX H150,H213

S

S-(Wrench) N32
SBN F52
SBT D11
SBT-R D11
SBU F52
SC(Wrench) N32
SC■■2.51.5● B94,M16
SC■■32.5● B95
SC■■32● B94
SC■■43● B96
SCAC D23
SCAC-X D17
SCCH N14
S-CKB E66
SCLC C34,D22,G9,G13
SCLC-X D17
SCNC D23
S-CSKP E45
S-CTFP E49
SCTR/L F56
SDAC D19,D25
SDC H233
SDCB I114
SDCH H233
S-DCLN E13
SDCN H231
S-DDQN E16
S-DDUN E16
SD-ER_ N28-N29
SDET H193
SDJC C35,D18,G9
SDNC D25
SDPC C35,D19
SDPC-X D19
S-DSKN E20
S-DTFN E23
S-DTR E27
S-DWLN E28
SE■■2.51.5● B103
SE■■32● B103
SE■■42● B103
S-ECLN E13
S-EDUN E17
S-EDZN E18
SEET-AGFN H237
SEET-AGSN H237
SEET-AGSR (WGX) . H20-H27

SEGN32. . . . . M17
SEGN42. . . . . M17
SEKN. H242
SEMR H242
SEMT-AGSN H237
SEMT-AGSR (WGX). H20-H27
SER/L F44
S-ESKN E21
S-ESYN E22
S-ETFN E24
SEXC E71
SFEN H238
SFKN H238
SFKR H238
SFT D12
SG-CB-L/R F45
SGIT F43
SG-L/R F45
SGW D10
SHPMC N12
S-HSK (Wrench) N32
SJB L120
SM (Drive Key). N32
SM (Key/Wrench). N32
SMA. H205
SMC H177
SMDH J90-J105
SMDT J90-J105
SN■■106● B51
SN■■32● B40,L64
SN■■42● B52
SN■■43● B41-B44,B52,L62,L65
SN■■53● B53
SN■■54● B45-B46
SN■■63● B53
SN■■64● B47-B48
SN■■85● B49
SN■■86● B50
SNB2. . . . . I110
SNB-DL. I109
SNC4. . . . . H230
SNEF H232
SNEN090308W H202
SNET13T6. . . . . H32-H39
SNEW H193,H201
SNG43● L65-L66
SNGN090308 . . . . . H202
SNHG H173
SNMA43..RH. M27
SNMA43● M16
SNMN4 . . . . . H230
SNMT1205 . . . . . H42-H44
SNMT13T6 . . . . . H32-H39
SOETH87-H95,H140,H141,H175,H176,
H208,H211,H215
SOMTH87-H95,H140,H141,H175,H176,
H208,H211,H215
SP■■2.51.5● B100
SP■■2.52● B97
SP■■21.5● B97
SP■■32.5● B99
SP■■32● B98,B100
SP■■42● B101
SP■■43● B99,B101
SP■■53● B102
SP■■63● B102
SPB D8
SPBR. D8,D9
S-PCLN E13
S-PDUN. E17
S-PDZN E17
SPG. H177
SPG32● L66,M16
SPG42● L67,M16
SPGA32● L67
SPMN H177
SPMT. H169
S-PSKN E20
S-PSYN E21
S-PTFN E24
S-PWLN. E28
SRA J142-J144
SRB J139,J140
SRD J139,J140
SRDC. C37
SRF H194
SRG. J137, J138
SRGC C37
SRL J139
SRSC. C37,G10
SSBC. D26
S-SCLC E31
S-SCLP E35
SSDC (endmill) I89
SSDC (Holder) C38
S-SDF G19
S-SDQC. E39
S-SDUC. E39
S-SDZC E40
SSEH-R I101
SSEHVL-R. I100
SSEHVL-W-R I96
SSEH-W-R I98
SSH F41
SSKC. G13
SSMH 554-555
SSR/L F44
S-SSKC E43
S-SSKP E44
SSTER. F65
SSTIR F66
S-SVJC E59
S-SVQB. E54
S-SVQC. E59
S-SVUB E54
S-SVUC. E60
S-SVZC E60
S-SWUB E61
S-SWUP E63
STAC D27
STDC. C39
STER F65
STFC C39,G14
STFH F52
STFSR/L F53
STGC. C40,D27
STGP. G21
STHR/L F76
STIR. F66
STJC D27
STTC C40
SumiGrip F51
SumiNotch. F44
SVHB. G11
SVHC. C41
SVJB G11
SVJC C41,D20,G11
SVLC C41,D28
SVLP D29
SVNB. D30
SVPC. C43,D28
SVPP D29
SVVC C42

T

TBGA52. . .B104-B105,L75,M18
TBGE52. . . . . M18
TBGN. E74
TC■■1.81.5● B106
TC■■21.5● . .B107-B108,L75,M18
TC■■22● B108
TC■■32.5● B109
TCMX1.81.5. . . . . M18
TCMX21.5 . . . . . M18
TE■■●●● B120
TEGN21.5 . . . . . M23
TEGN22. . . . . M23
TEGN32. . . . . M23
TEGN43. . . . . M23
TEKN H238
TGA F35-F36
TGA-BF F37
THR/L F76
TME. F73
TMI F73
TN■■1.81.5● B54
TN■■2.52● B55
TN■■21.75● B55
TN■■22● B54
TN■■32● B55-B56,B65
TN■■33● . .B56-B60,B65,L68-L72
TN■■43● . B60-B62,B65,73
TN■■44● B63
TN■■54● B63
TN■■66● B64
TNG22● L74
TNG33● L74
TNMX33. . . . . M18
TNPT F73
T-NU-ZNEX E73
TP■■1.81.5● . . .B111,B117,L78,L88,M19
TP¢¢21.5● B112,L79
TP■■22● . . . B113-B114,B117-B118,L81-L84,L88-L89
TP■■32.5● B115,L76
TP■■32● . .B115,B118,M22
TP■■33● .B116,B119,L85-L87

TP■■43● B119
TP■■63● B110,L77
TPG22● M22
TPG32● L90,M22
TPG43● L91,M23
TPGA21.5 . . . . . M20
TPGA22 . . . . . M20
TPGA33 . . . . . M21
TPGA63 . . . . . M19
TPGN1.81.5 . . . . . M22
TPMA22..RH M27
TPMA33..RH M27
TPMA63..RH M27
TPMX22 . . . . . M20
T-REX C27-C28
TSE H172
TSM H173
TSX H108
TSX-M H216
TUE F73
TWE F73

U

UFO H238
UW H238

V

VB■■22● . .B121-B122,L97-L98
VB■■33● . . . B123,L98-L99
VC■■1.51.5● L100
VC■■22● . . .B124-B125,L101
VC■■2205● B127,M25
VC■■33● B126,L102
VC■■63● B124,L100
VCMA22..RH M27
VCMA2205 . . . . . M25
VCMA33 . . . . . M25
VCMA33..RH M27
VCMA63..RH M27
VCMT2205 . . . . . M25
VCMX33 . . . . . M25
VN■■33● . . .B66-B68,L92-L96
VN■■43● B68
VNMA33 . . . . . M24
VNMA33..RH M27
VNMX33 . . . . . M24
VPMA44 . . . . . M25

W

WAX H196
WB■■ B128
WBMF H170
WBMR H167
WBMX52 (PCD) H26
WCFH F54
WCFL F51
WCFN F51
WCFR F51
WCFS F55
WCLN C10
WDMT H144,H145,H212
WDX J106-J130
WEX H64
WEX-M H209
WEZ H46
WEZM H206
WFX H84
WFXC H174
WFXC-M H215
WFXH H137
WFXH-M H211
WFX-M H208
WGX H16
WMM H146
WN■■ B69-B73
WP■■ B129
WRCX H160
WRCX-M H214
WRX H78
WRX H78-H83
WTENNS C26
WTJNS C26
WWLN C33

X

XEEW H20-H27,H237
XNEU H32-H39
XNGT H42-H44
XNMU H101-H107
XOEW H87-H95

Z

ZNMT H168-H169
ZPGU H171

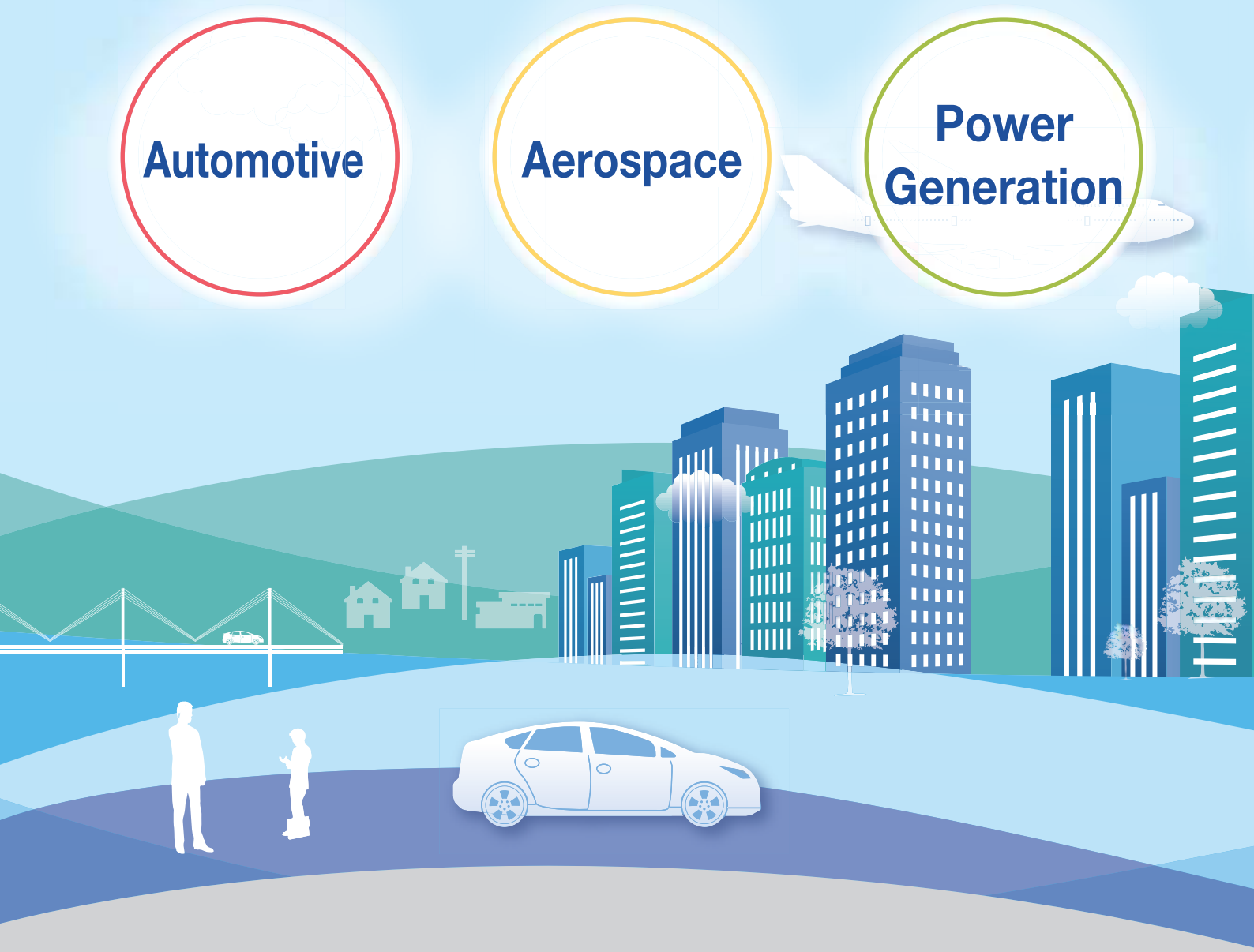
#

16ER F67
16IR F68
2NU-ECXA E71
6SS43M H232
6SS53M H232

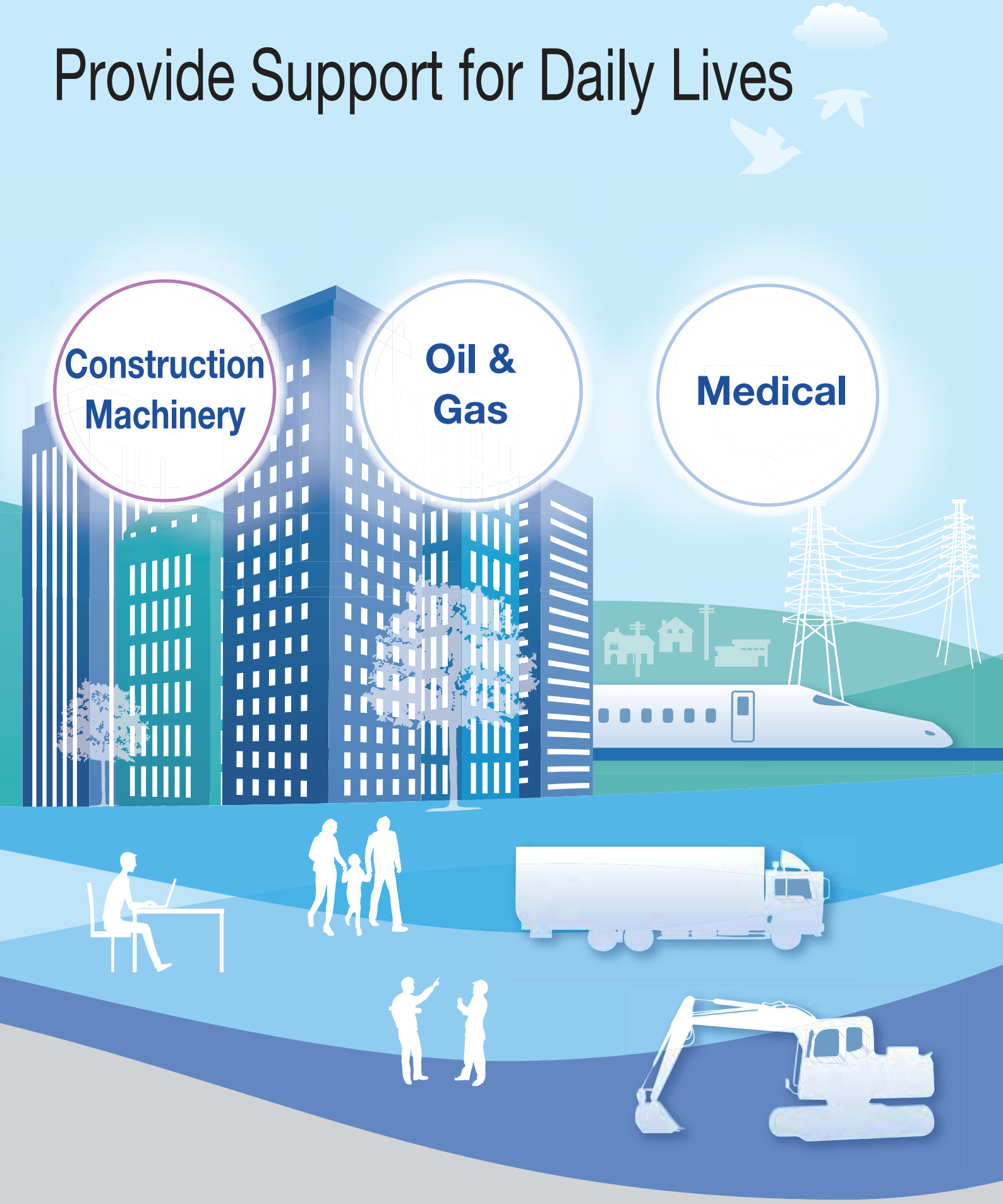
M E M O

Sumitomo's Innovative Tools

Sumitomo Electric promises to understand the needs of our customers and use outstanding creativity to provide excellent products and services that are safe, socially useful and satisfy the needs of all of our customers, including quality and affordability, while also supporting people's daily lives.



Provide Support for Daily Lives



Carbide Tool Product Safety Pamphlet / Cutting Tool Edition

Sumitomo Electric Hardmetal pursues product manufacturing with a focus on both quality and safety.
Take note of each of the following points when using IGETALLOY, SUMIBORON or SUMIDIA products for safe use.

1. Carbide Tool Product Usage

Be sure to read this pamphlet thoroughly before handling or using any kind of carbide tool product or carbide tool material. Furthermore, as part of your employee safety training, make sure that all staff are well aware of the contents of this pamphlet.

2. Basic Characteristics of Carbide Tool Materials

2-1. Understanding the Terminology in this Pamphlet

Carbide Tool Material: Overall name for tool materials such as cemented carbide, cermet, ceramics, CBN, and polycrystalline diamond.
Cemented Carbide: Tool material using WC (tungsten carbide) as the main constituent
Carbide: Nickname for carbide tool materials. In a narrow sense, it is used as an abbreviation of cemented carbide.
Carbide Tool: Overall name for tools that use carbide tool materials

2-2. Physical Characteristics

Appearance: Depends on the material. Ex: Gray, black, gold, etc.
Smell: Odourless
Hardness: Carbide / cermet Hv5 to 30GPa, ceramics Hv10 to 40GPa
CBN Hv20 to 50GPa, polycrystalline diamond Hv80 to 120GPa
Specific Gravity: Carbide 9 to 16, cermet 5 to 9, ceramics 2 to 7, CBN and polycrystalline diamond 3 to 5

2-3. Constituents

Carbides, nitrides, carbon nitrides and oxides of W, Ti, Al, Si, Ta, and B, in addition to alloys containing Co, Ni, Cr, Mo and other constituents.

3. Precautionary Notes for Handling Carbide Tool Materials

- While carbide materials are extremely hard, they also possess characteristics of brittle materials. Accordingly, they may break if subjected to shock or if excessive tightening force is applied.
- Carbide materials have a high specific gravity: if the product is large or there are many items, they should be handled carefully as heavy items.
- Carbide materials have a different rate of thermal expansion from metal materials. Therefore, if the operating temperature is much higher (or lower) than the designed value, hot-fit/cool-fit (shrink fit) tools may crack.
- Carbide materials may corrode in liquids such as grinding fluid or lubricant, decreasing the strength of the tool. Consequently, store them with care.

4. Precautionary Notes on the Use of Carbide Tools

- The strength of carbide tools can be drastically reduced if the surface shape is changed. Always use a diamond grindstone for finishing.
- Carbide tools generate cutting dust when cutting. There may be harmful physical effects if a large amount is inhaled. Install a ventilation device and wear a protective mask and gloves when using the tool. If the dust gets on the skin or in the eyes, immediately wash out and rinse with water.
- If discarding lubricant used when grinding carbide materials or brazed products, the liquid will contain heavy metal constituents and should be discarded appropriately.
- When regrinding a carbide tool, check that no cracks have formed after regrinding is complete.
- Cracks may form if attempting to mark carbide materials and products with a laser or electric pen. Make sure areas where stress is applied are not marked.
- Residual cracks will form on the surface if electrical discharge machining carbide materials, decreasing the strength. If EDM is required, completely grind away these cracks.
- If brazing carbide materials, take care as if the temperature of the brazing material is too hot or too cold the carbide may come loose or become damaged.

■ Precautionary Notes on the Use of Cutting Tools

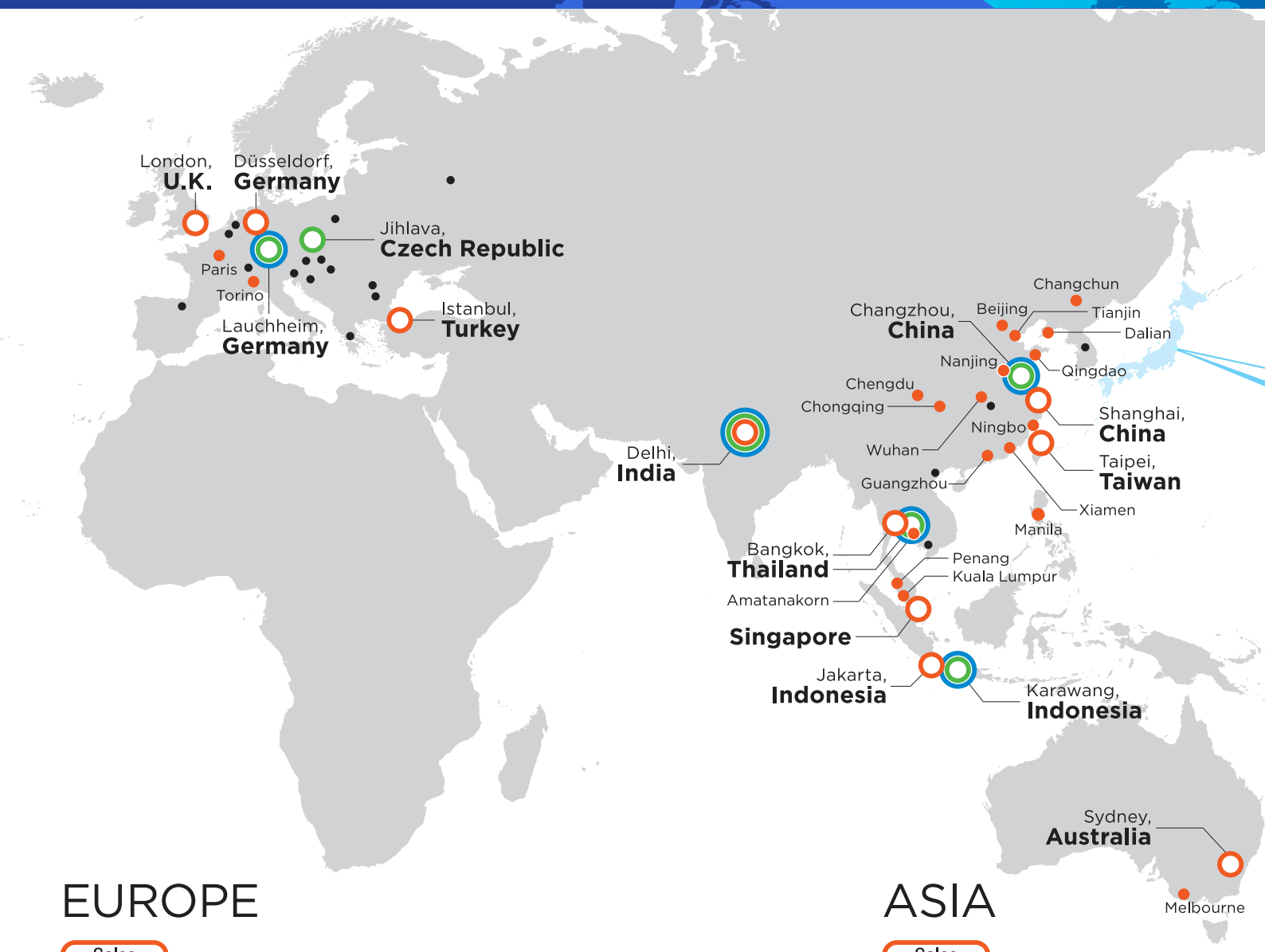
Product Line	Dangers	Countermeasures
General Cutting Tools	◎ As the tools have sharp cutting edges, you may cut your hands if they come into direct contact with the edges.	* Please use gloves and other protective gear, especially when removing a product from its case or mounting it onto a machine.
	◎ Incorrect use or inappropriate application conditions could result in injuries caused by tool breakage or projectiles.	* Use safety covers, safety glasses and other protection measures. * Always operate within recommended conditions. Please refer to the instruction manuals or catalogues.
	◎ If there is a sharp increase in cutting force due to high impact loads or excessive wear, injuries may result from tool breakage or projectiles.	* Use safety covers, safety glasses and other protection measures. * Replace the tools before the indicated product lifetimes expire.
	◎ High temperature chips or lengthy chips being discharged may cause injuries or burns.	* Use safety covers, safety glasses and other protection measures. * When clearing chips, please wear safety gloves and use an appropriate tool.
	◎ Both the tool and work material will heat up during machining. Burns may occur if touched with bare hands immediately after machining operations.	* Use gloves and other protective measures, especially when removing products from their cases.
	◎ Chips may ignite or catch fire from sparks during machining or from heat produced from breakage.	* Please do not use this product in places where there are highly flammable or highly explosive materials. * If non-water-soluble coolant is used, precautions against fire must be taken beforehand.
	◎ At high rotational speeds, injuries may result from tool breakage if the cutter (including the machine tool jig) is not balanced or if there is runout vibration.	* Use safety covers, safety glasses and other protection measures. * Please perform a dry run to ensure that there is no vibration or abnormal noises.
	◎ Burrs formed on workpieces are sharp and may cause injuries.	* Do not handle with bare hands.
General Indexable Insert Tools	◎ If inserts or holder parts are not clamped properly, they may drop off or be flung out during machining.	* Remove any foreign particles and clean all contact and clamping parts before mounting the inserts. * Check that inserts and parts have been properly clamped for mounting. Use wrenches provided for securing. Do not use inserts or parts not specified by the manufacturer.
	◎ Using pipes to aid tightening may cause insert or tool breakage as a result of over tightening.	* Do not use tightening aids such as pipes, etc. Use the included wrench.
	◎ The use of tools at high speeds is dangerous, as inserts may be flung out due to centrifugal force. Take extra care when handling very small drills.	* Always operate within recommended conditions. Please refer to the instruction manuals or catalogues.
Milling Cutters	◎ As the cutters have sharp cutting edges, you may cut your hands if they come into direct contact with the edges.	* Please use gloves and other protective measures, especially when removing products from their cases.
	◎ Injuries may result from tool breakage or projectiles if there is rotational imbalance in the cutter, which causes wobbling or vibrations.	* Rotational speeds should be kept within recommended conditions. * Regular maintenance should be performed to maintain the rotational balance and accuracy of the machine's spindle bearings. Worn bearings will lead to rotational imbalance and runout.
Drills	◎ When using rotary tools to perform through hole drilling, disc-shaped chips may be flung out at high speeds. Be careful, as the disc has extremely sharp edges.	* Use safety covers, safety glasses and other protection measures. A cover must also be mounted on the chuck.
	◎ Drills with very small diameters have sharp tips and will prick the fingers. Surgery will be required if the drills break inside the finger. Drills may also scatter when fractured. Drills may also scatter shards when fractured.	* Take extra care when handling very small drills. Use gloves and other protective gear such as safety glasses.
Brazed Tools	◎ Injuries may result from a dislodged insert or from tool breakage.	* Please ensure that tools have been properly brazed before use. * Please do not use the product under high-temperature conditions.
Others	◎ Tools that have been repeatedly brazed run a risk of breaking easily while in use.	* Do not use tools that have been brazed repeatedly, as their strength will be lowered.
	◎ There is a danger of breakages and even injuries if machines and tools are used for applications other than their intended uses.	* Always conform to the regulations specified for intended use.

Closing Notes

The content of this pamphlet covers only basic instructions for precautionary measures. For more details, please refer to the specific instruction manual and catalogue of the respective tools or contact us directly.
Sumitomo Electric Hardmetal Corp. shall not be liable for any injuries sustained from any unauthorised modifications made to the original tool specifications.

SUMITOMO
CARBIDE - CBN - DIAMOND

SUMITOMO ELECTRIC HARDMETAL
WORLDWIDE LOCATIONS



EUROPE

Sales

DEU **Sumitomo Electric Hartmetall GmbH**
GBR **Sumitomo Electric Hardmetal Ltd.**
TUR **SumiSertmetal Ticaret ve Sanayi Limited Şirketi**

Production

DEU **Sumitomo Electric Hartmetallfabrik GmbH**
with European Design and Engineering Center
CZE **Sumitomo Electric Hartmetallfabrik GmbH, organizační složka.**

ASIA

Sales

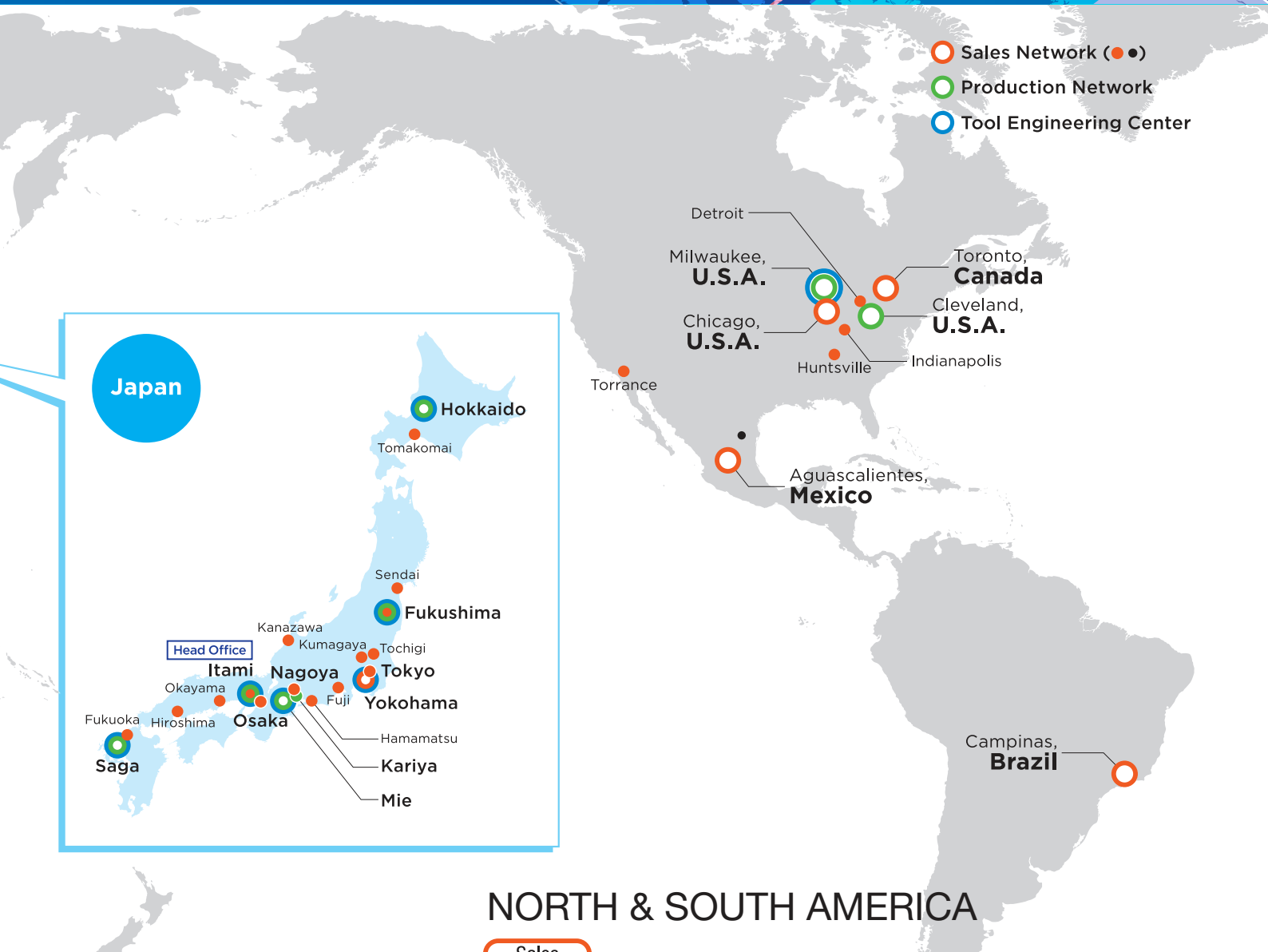
JPN **Sumitomo Electric Industries, Ltd.**
IDN **PT. Sumitomo Electric Hardmetal**
SGP **Sumitomo Electric Hardmetal Asia**
THA **Sumitomo Electric Hardmetal**
CHN **Sumitomo Electric Hardmetal**
PHL **SEI (Philippines) Inc.**
AUS **SEI Carbide Australia Pty Ltd**
IND **Motherson Techno Tools Ltd.**
CHN **Superior Engineering Tool Trading**
TWN **Taiwan Hong-Yu Precision Tool**

Production

JPN **Sumitomo Electric Hardmetal**
with Itami Tool Engineering Center
IDN **PT.Sumiden Hardmetal Manu**
with Indonesian Tool Engineering Center
THA **Sumitomo Electric Hardmetal**
with Thailand Tool Engineering Center
CHN **Sumitomo Electric Hardmetal**
with China Tool Engineering Center
IND **Motherson Techno Tools Ltd.**
with Motherson Tool Engineering Center

We are strengthening our gloabl postion with high-quality products and services, while contributing technology to market demands around the world

SUMITOMO ELECTRIC GROUP



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USA **Sumitomo Electric Carbide, Inc.**
CAN **Sumicarbide Canada, Inc.**
MEX **Sumitomo Electric Hardmetal de Mexico, S.A. de C.V.**
BRA **Sumitomo Electric Hardmetal do Brasil Ltda.**

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with Americas Tool Engineering Center
USA **Sumitomo Electric Carbide Manufacturing, Inc. (Ohio)**

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(Thailand) Ltd.
Trading (Shanghai) Co., Ltd.

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