Mahr

Our
Online Catalog



Product Catalog

Page III

Mahr Services

Page 496

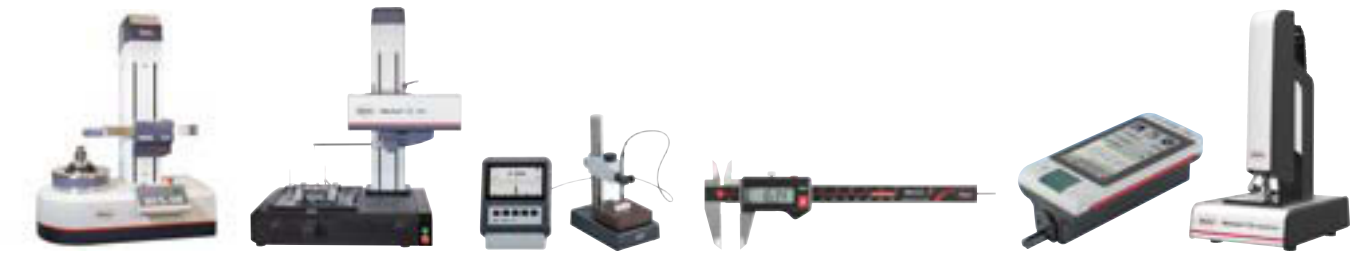
New Products

2020/2021

Page 511

Mahr | Production Metrology

Product Catalog





Solutions for your measurement challenges

Innovative solutions for every measuring task – that's what Mahr offers you.
All products combine proven precision and high efficiency to make your work as productive as possible.

Mahr | Product Catalog

Your global partner for **efficient quality assurance**

It's in our DNA

Mahr stands for maximum precision, modern technologies and a worldwide presence. As a manufacturer of innovative production metrology, we have been supporting our customers for more than 150 years, both in the measuring room and in production. This experience has made us experts in quality assurance for the automotive industry, mechanical engineering, aerospace, optics, and many other sectors. From manual calipers through to fully automated measuring stations: all of our products are built on the passion and expertise of our 2,000 plus employees worldwide.

Boosting productivity

As your global partner for quality assurance, we offer you products and solutions that combine proven precision with high efficiency. Short measuring times and high usability speed up your workflows. By strategically combining different measuring methods, we solve several tasks with only one system – and in one clamping. Innovative software tools and a wide variety of interfaces ensure that Mahr metrology meets the requirements of modern production. The productivity of your quality assurance is our goal.

Mahr



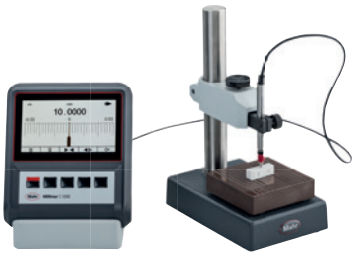




4 MarCal
Calipers

50 Digimar
Height Measuring Instruments

68 Micromar
Micrometers







232 Millimar
Electrical and Pneumatic
Length Measuring Instruments

312 MarStand
Measuring Tables, Measuring Tripods,
Radial Run-Out Gages

336 MaraMeter
Indicating
Measuring Instruments







506 Precimar
Precision Length Measurement

524 MarSurf
Surface Measuring Instruments

556 MarForm
Form Measuring Instruments



602 MarShaft
Shaft Measuring Instruments



118 MarTest
Test Indicators and Touch Probes



144 MarCator
Dial and Digital Indicators



208 Millimess
Digital and Dial Comparators



422 Multimar
Universal Measuring Instruments



456 MarConnect
Data Processing



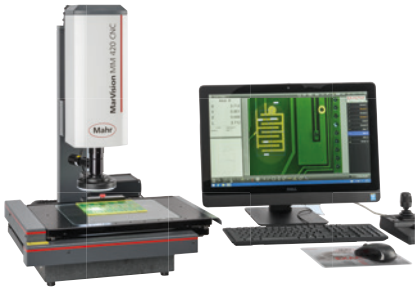
468 MarGage
Standards and Gage Blocks



568 MarGear
Gear Measuring Instruments



578 MarOpto
Measuring Instruments
for the Optical Industry



588 MarVision
Optical Measuring Instruments

614

MarSolution
Customized Metrology

Measurement solutions as individual as your measurement task - tailored to your requirements for operability, reliability and speed.

624

Mahr Services

A worldwide network of subsidiaries and agencies makes Mahr strong in the field of service. We offer product-supporting services and more.

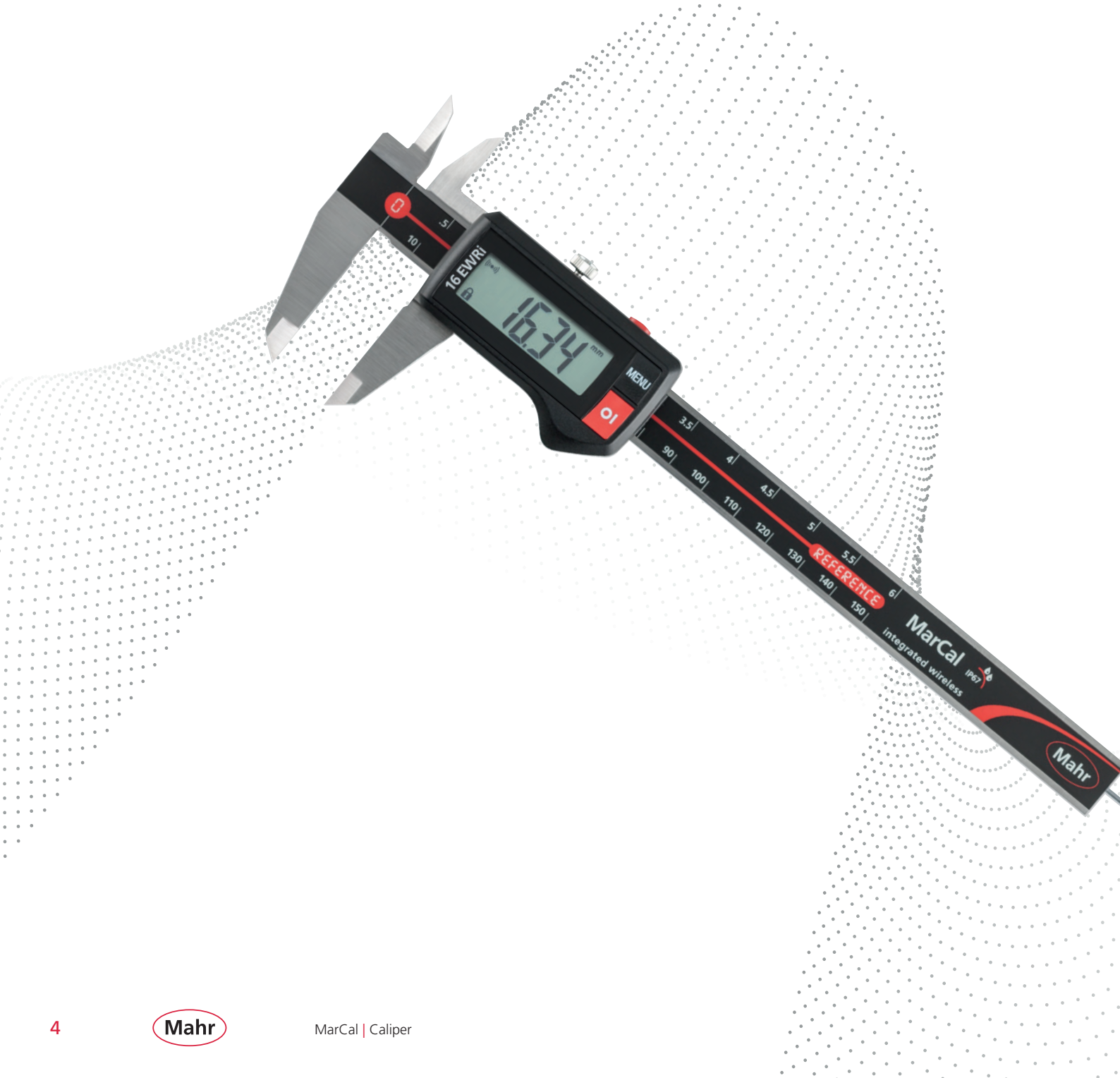
635

New Products

In this supplementary catalog section you will be able to find our newest product releases.

MarCal | Caliper

Calipers are some of the most important measuring instruments in production metrology due to their versatility and ease-of-use. Digital devices are simple to operate and easy to read.
In addition, they enable fast and uncomplicated data acquisition.



Overview MarCal Caliper 6

Calipers

MarCal 16 EWRi / 16 EWR 10
Waterproof Caliper with Digital Display

MarCal 16 ER 13
With Digital Display

MarCal 16 U 15
With Dial Face

MarCal 16 FN / 16 GN / 16 N / 16 DN 16
With Line Scale (Vernier)

Universal Calipers

MarCal 16 EWRi-V / 16 EWR-V / 18 EWR-V 18

Workshop Calipers

MarCal 18 EWR / 18 ESA 37
With Digital Display

MarCal 18 NA / 18 N / 18 DN 39
With Line Scale (Vernier)

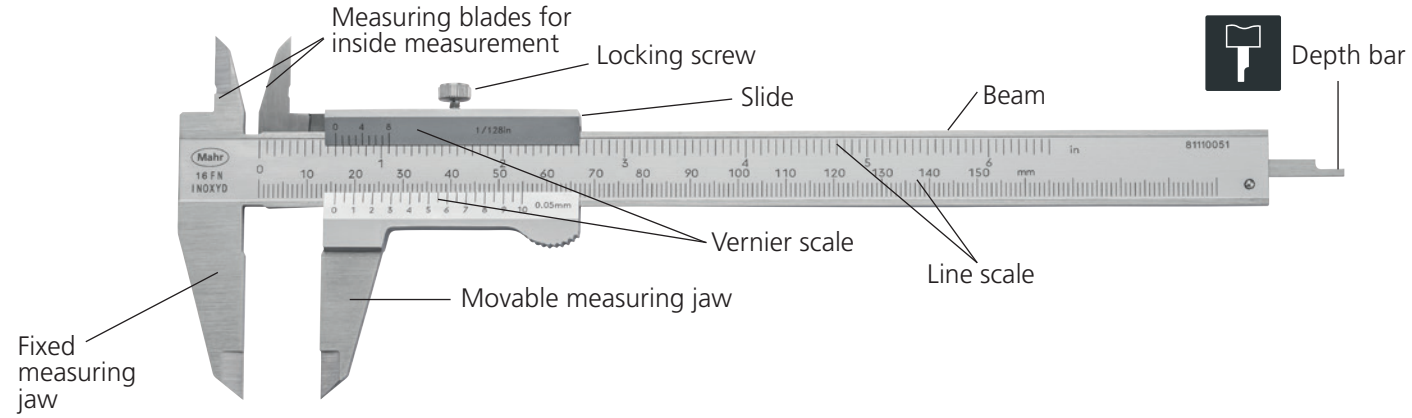
Digital Depth Gage

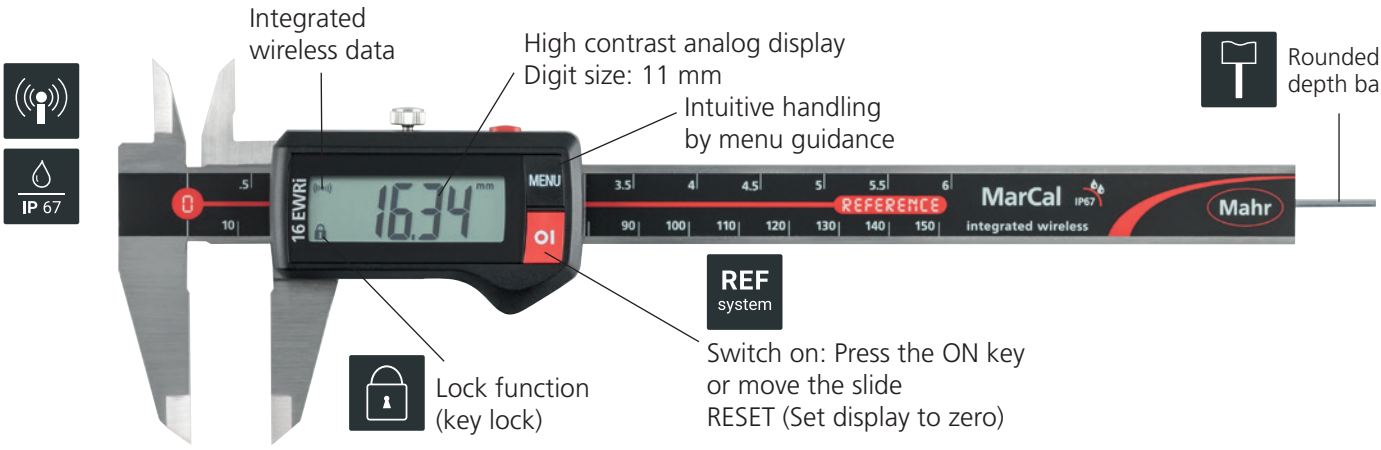
MarCal 30 EWRi / 30 EWR 42
Waterproof Caliper with Digital Display

MarCal 30 N 44
With Line Scale (Vernier)

MarCal 30 EWRi-D / 30 EWR-D / 30 EWRi-N / 30 EWR-N / 30 EWRi-U / 30 EWR-U 45
Special Depth Gage with Digital Display

MarCal | Terms

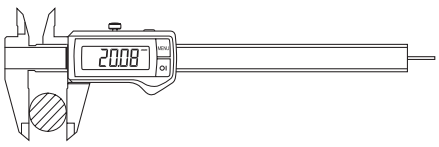




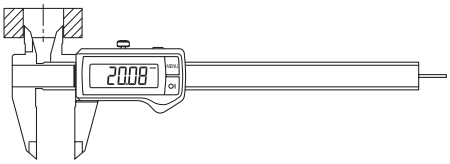
MarCal | Types of measurement

16 series calipers (e.g. 16 EWRi, 16 U, 16 FN) can be used to conduct 4 different types of measurements:

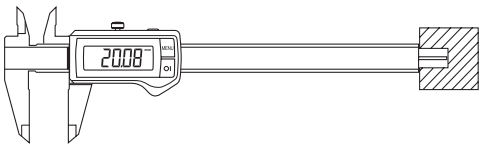
a) Outside measurement



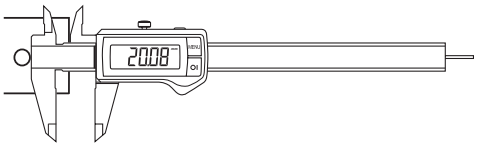
b) Inside measurement



c) Depth measurement



d) Step (Distance) measurement



Error limits G according to DIN 862

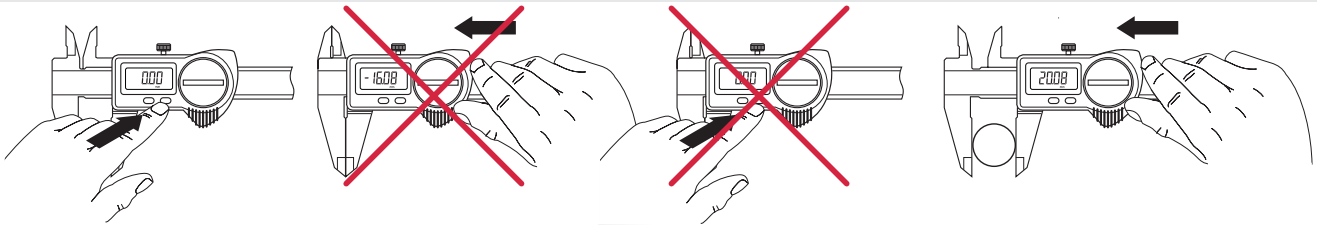
Measuring length	Error limits G in µm		
	Scale interval and/or vernier interval		Resolution
mm	0.1 and 0.05	0.02	0.01
50	50	20	20
100			
200		30	30
300			
400	60		
500	70		
600	80		
700	90	40	40
800	100		
900	110		
1000	120		
1200	140	50	—
1400	160	60	
1600	180		
1800	200		
2000	220		

MarCal - The innovative Reference System

All Mahr digital calipers with this REF system logo are equipped with the innovative Reference System. The zero position only has to be set once: after setting the zero position, the zero remains stored for all further measurements. Therefore, once the caliper is switched ON or the slide is moved the caliper is immediately ready for measurement. Once the caliper is initially set to zero, there is no need to reset to zero each time the caliper is turned on.

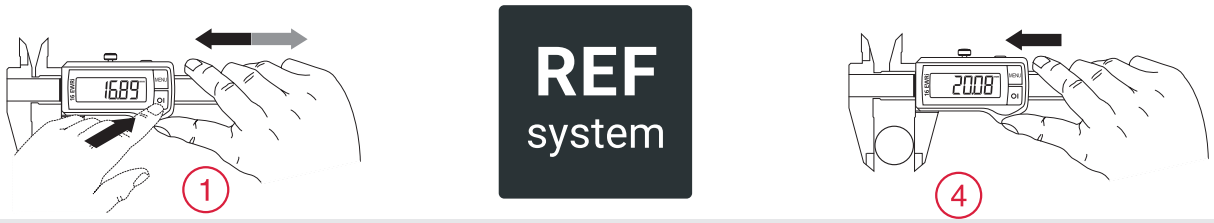
Conventional

① Switch ON ② Close the measuring jaws ③ Set to zero ④ Results of measurement



REF system

① Switch ON ② Results of measurement



Press the ON key or move the slide

IP Protection classes

First digit is the degree of protection according to IEC 60529 – against particles, contaminants and dusta

0	Not protected
1	Particles > 50.0 mm
2	Particles > 12.5 mm
3	Particles > 2.5 mm
4	Particles > 1.0 mm
5	Dust protected
6	Dust tight

Second digit is the degree of protection according to IEC 60529 (approximate) – against wet conditions (fluids)

0	Not protected
1	Falling water drops - vertical
2	Falling water drops - tilted < 15°
3	Spray water < 60°
4	Water splashing from all directions
5	Water jets from all directions
6	Powerful water jets
7	Temporary immersion in water
8	Continuous immersion in water

IP 67

Example
IP67 means that the product is dust tight and is protected against temporary immersion in water.

MarCal | The new Generation

Waterproof Digital Calipers with the Reference System and Integrated Wireless

Security due to the Reference Lock function

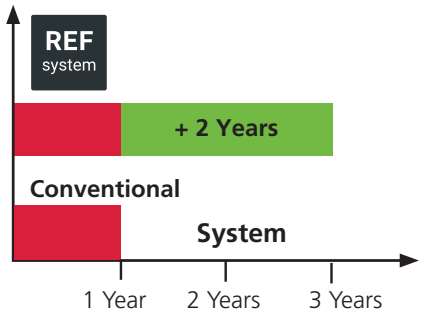
- Zero-position is secured
- Operating error is not possible

The digital caliper MarCal 16 EWRi Reference is equipped with a LOCK function. With this key lock, the zero position is secured and operating error is avoided.



Battery service life is 3 years

The new Reference System is extremely energy efficient because of its standby mode feature; almost no power is required, thus extending the life of the battery up to 3 years*.



** When Integrated Wireless is deactivated*

Superior quality of the guideways

Only MarCal calipers have lapped guideway surfaces, that guarantee an even and sensitive run of the slide. Additionally, the service life of the caliper increases, compared to a ground guideway due to the greater contact area on the guideway surface.



Surface of the guideway



Mahr
Lapped guideway

Competitor A
Ground guideway

Competitor B
Ground guideway

MarConnect Integrated Wireless

Wireless data transmission for the price of a data cable.
Mahr's Integrated Wireless, users have a new Integrated Wireless data transmission system for the price of a data cable. Data acquisition with digital calipers is now even simpler: simply transmit your measured data directly into Microsoft Office Excel® or any Windows program with a keyboard code.

Secure data transmission

With Integrated Wireless, your data will be transferred to the digital indicator, which is confirmed with a message in the digital indicator's display The message will show whether the sent data has been transferred correctly, and/or whether you are in the reception range of the i-Stick.





Ergonomic design

The handy non-slip thumb support of the MarCal 16 EWRi ensures, even in contaminated working conditions, trouble-free handling and therefore reliable measuring results.





The high-contrast display with 11 mm sized digits enables accurate, fatigue-free reading of the measurement results.

Excellent resistance against dust, coolant and lubricants

IP 67

Due to the outstanding protection against dust and water, the digital caliper MarCal 16 EWRi Reference delivers precise and secure results, even in the most difficult workshop conditions. The finished plastic components have an outstanding chemical resistance.

Code Initials	IP	International Protection
First digit	6	Dust-tight
Second digit	7	Protected against temporary immersion in water



MarCal 16 EWRi

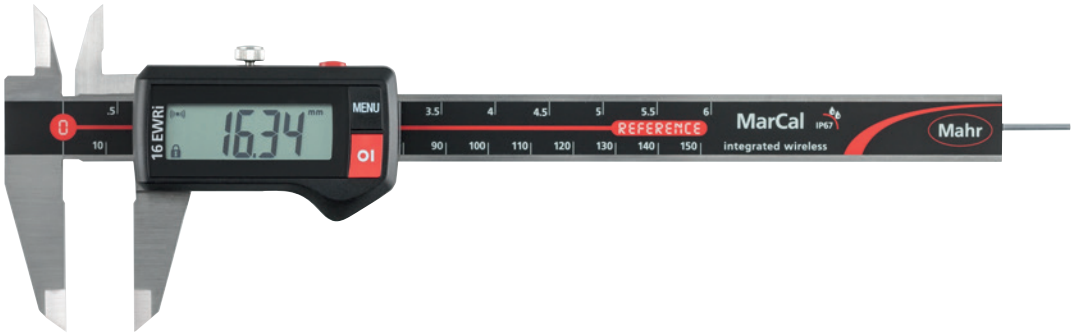
Digital Caliper

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- HOLD
  (storage of measured values)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- Reversal of counting direction
- mm/inch
- LOCK function (key lock)
- DATA (data transmission)

FEATURES

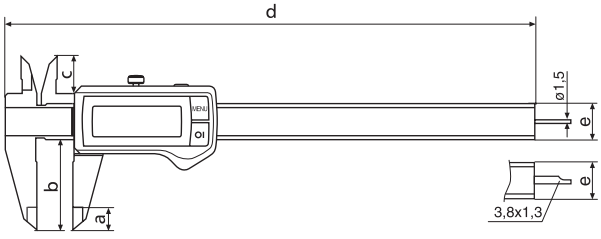
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated
- in the slide
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case



TECHNICAL DATA

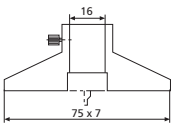
Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103400	16 EWRi	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	
4103401	16 EWRi	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	•
4103402	16 EWRi	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103403	16 EWRi	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103404	16 EWRi	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103405	16 EWRi	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103406	16 EWRi	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		
4103407	16 EWRi	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		•

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103400	10	40	16	235	16
4103401	10	40	16s	235	16
4103402	10	40	16	235	16
4103403	10	40	16	235	16
4103404	10	50	19	285	16
4103405	10	50	19	285	16
4103406	14	64	19	388	16
4103407	14	64	19	388	16



ACCESSORIES

Order no.	Product name	Type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102220	Receiver for instruments with integrated wireless	i-Stick
4102520	Battery 3 V, CR 2032	



16 Em



i-Stick

MarCal 16 EWR

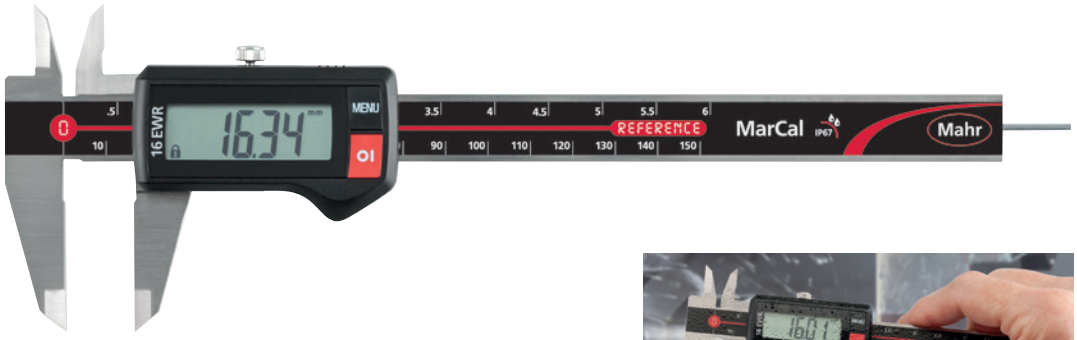
Digital Caliper

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- Reversal of counting direction
- mm/inch
- LOCK function (key lock)

FEATURES

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Digit height:** 11 mm
- **Data interface:** none
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

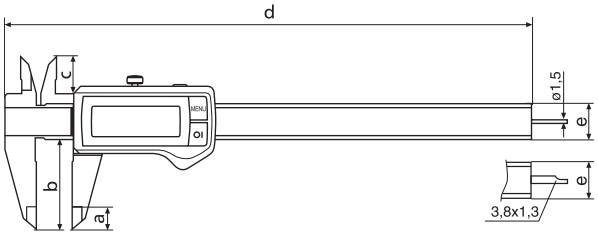




TECHNICAL DATA

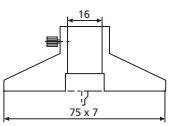
Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103300	16 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	
4103301	16 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	•
4103302	16 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103303	16 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103304	16 EWR	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103305	16 EWR	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103306	16 EWR	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		
4103307	16 EWR	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		•

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103300	10	40	16	235	16
4103301	10	40	16	235	16
4103302	10	40	16	235	16
4103303	10	40	16	235	16
4103304	10	50	19	285	16
4103305	10	50	19	285	16
4103306	14	64	19	388	16
4103307	14	64	19	388	16



ACCESSORIES

Order no.	Product name	Type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102520	Battery 3 V, CR 2032	



16 Em

MarCal 16 EWR

Digital Caliper

RS232C | Digimatic | IP 67 | REF system

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)
- DATA (data transmission via connection cable)

FEATURES

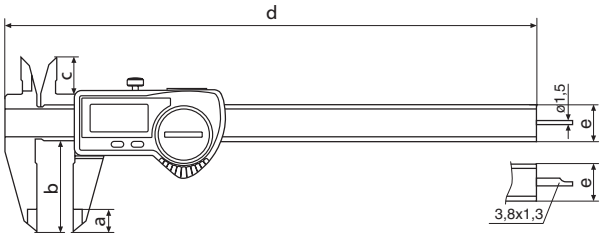
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case



TECHNICAL DATA

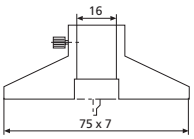
Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103064	16 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	
4103065	16 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	•
4103066	16 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103067	16 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103068	16 EWR	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103069	16 EWR	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103070	16 EWR	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		
4103071	16 EWR	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		•

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103064	10	40	16	235	16
4103065	10	40	16	235	16
4103066	10	40	16	235	16
4103067	10	40	16	235	16
4103068	10	50	19	285	16
4103069	10	50	19	285	16
4103070	14	64	19	388	16
4103071	14	64	19	388	16



ACCESSORIES

Order no.	Product name	Type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102357	16 EXu data connection cable USB (2 m)	16 EXu
4102410	Data connection cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd



16 Em

MarCal 16 ER

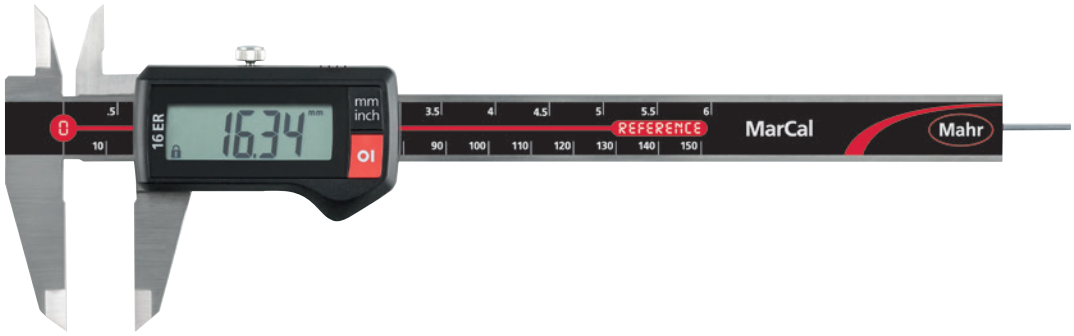
Digital Caliper

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)

FEATURES

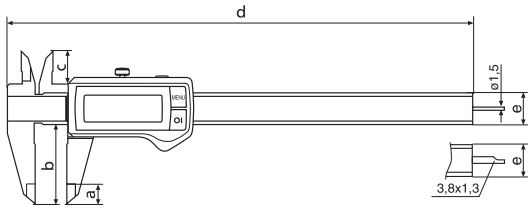
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Dirt wipers are integrated in the slide
- **Digit height:** 11 mm
- **Data interface:** none
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** None
- **Package contains:** instruction manual, battery, case



TECHNICAL DATA

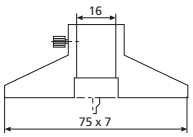
Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103010	16 ER	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	
4103011	16 ER	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	•
4103012	16 ER	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103013	16 ER	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103205	16 ER	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103206	16 ER	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103207	16 ER	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		
4103208	16 ER	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		•

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103010	10	40	16	235	16
4103011	10	40	16	235	16
4103012	10	40	16	235	16
4103013	10	40	16	235	16
4103205	10	50	19	285	16
4103206	10	50	19	285	16
4103207	14	64	19	388	16
4103208	14	64	19	388	16



ACCESSORIES

Order no.	Product name	Type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102520	Battery 3 V, CR 2032	



16 Em

MarCal 16 ER

Digital Caliper

RS232C | Digimatic | REF system

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)
- DATA (data transmission via connection cable)

FEATURES

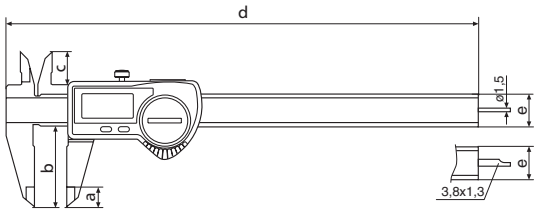
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Dirt wipers are integrated in the slide
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** None
- **Package contains:** instruction manual, battery, case



TECHNICAL DATA

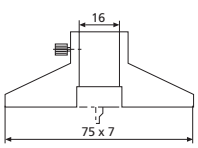
Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103014	16 ER	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	
4103015	16 ER	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round	•
4103016	16 ER	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103017	16 ER	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103018	16 ER	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	
4103019	16 ER	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•
4103020	16 ER	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		
4103021	16 ER	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard		•

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103014	10	40	16	235	16
4103015	10	40	16	235	16
4103016	10	40	16	235	16
4103017	10	40	16	235	16
4103018	10	50	19	285	16
4103019	10	50	19	285	16
4103020	14	64	19	388	16
4103021	14	64	19	388	16



ACCESSORIES

Order no.	Product name	Type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102357	16 EXu data connection cable USB (2 m)	16 EXu
4102410	Data connection cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd



16 Em

MarCal 16 U

Dial Caliper

SHOCK PROOF | DIN 862

FEATURES

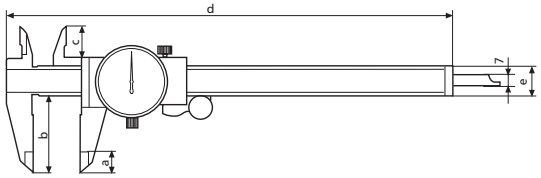
- Large, high contrast dial face
- Shockproof movement
- Zero setting through rotating the dial face and locking screw
- Satin chrome finished line scale
- Locking screw above
- Measuring surfaces made of steel
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Raised guideway for the protection of the scale
- **Package contains:** case



TECHNICAL DATA

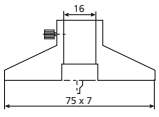
Order no.		4107005	4107107	4107900
Type			16 U	
Measuring range	mm		0 –150	
Measuring range inch	inch			0 –6″
Readings	mm	0.01	0.02	
Scale graduation value	inch			.0001″
Range per rev. in inches (text)	inch			.100″
Range per rev.	mm	1	2	
Error limit	mm		0.03	
Error limit inches (text)	inch			.0012″
Standard			DIN 862	Factory standard
Dial color			White	Black
Depth rod			rectangular	
Friction wheel			•	

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4107005	10	40	16.5	234	16
4107107	10	40	16.5	234	16
4107900	10	40	16.5	234	16



ACCESSORIES

Order no.	Product name	Type
4102020	Depth bridge (75 x 7 mm)	16 Em
4100302	Synthetic leather pouch, black for pocket slide caliper 150 mm	



16 Em

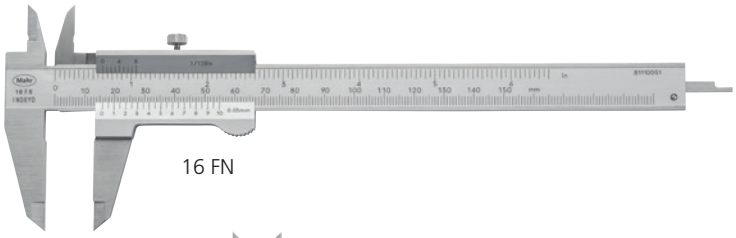
MarCal 16 FN / 16 GN

Caliper with Analog Display

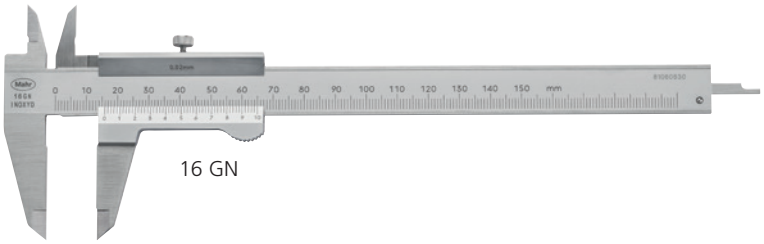
DIN 862

FEATURES

- Vernier and scale have a satin chrome finish for glare free reading
- Locking screw above
- Measuring surfaces made of steel
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Raised guideway for the protection of the scale
- **Package contains:** thread table, case



16 FN

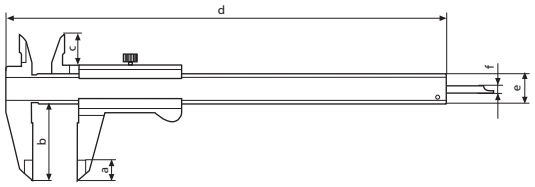


16 GN

TECHNICAL DATA

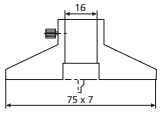
Order no.	Type	Measuring range	Measuring range inch	Vernier value	Vernier value	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm	inch	mm	inch		
4100400	16 FN	0 –150	0 –6″	0.05	1/128″	0.05	.002″	DIN 862	rectangular
4100401	16 FN	0 –200	0 –8″	0.05	1/128″	0.05	.002″	DIN 862	rectangular
4100402	16 FN	0 –300	0 –12″	0.05	1/128″	0.05	.002″	DIN 862	rectangular
4100420	16 FN	0 –150		0.05		0.05		DIN 862	rectangular
4100421	16 FN	0 –200		0.05		0.05		DIN 862	rectangular
4100422	16 FN	0 –300		0.05		0.05		DIN 862	rectangular
4100650	16 GN	0 –150		0.02		0.05		Factory standard	rectangular
4100651	16 GN	0 –200		0.02		0.05		Factory standard	rectangular
4100652	16 GN	0 –300		0.02		0.05		Factory standard	rectangular

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4100400	10	40	16	228	16	3.8
4100401	14	50	19	290	17	3.8
4100402	16	64	23	404	20	4.8
4100420	10	40	16	228	16	3.8
4100421	14	50	19	290	17	3.8
4100422	16	64	23	404	20	4.8
4100650	10	40	16	228	16	3.8
4100651	14	50	19	290	17	3.8
4100652	16	64	23	404	20	4.8



ACCESSORIES

Order no.	Product name	Type
4100302	Synthetic leather pouch, black for pocket slide caliper 150 mm	
4102020	Depth bridge (75 x 7 mm)	16 Em



16 Em

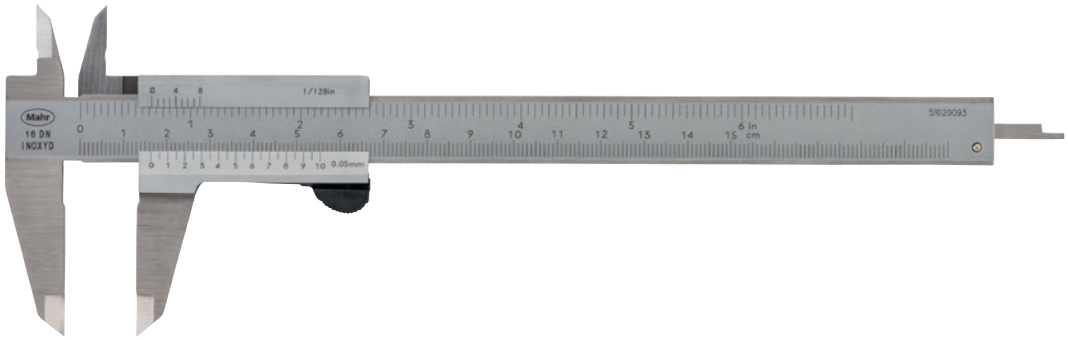
MarCal 16 DN

Caliper with Analog Display

DIN 862

FEATURES

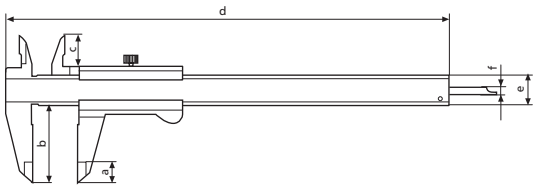
- Vernier and scale have a satin chrome finish for glare free reading
- Thumb clamp
- Measuring surfaces made of steel
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Raised guideway for the protection of the scale
- **Package contains:** thread table, case



TECHNICAL DATA

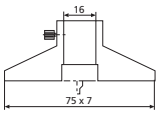
Order no.	Type	Measuring range	Measuring range inch	Vernier value	Vernier value	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm	inch	mm	inch		
4100600	16 DN	0 –150	0 –6″	0.05	1/128″	0.05	.002″	DIN 862	rectangular

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4100600	10	40	16	228	16	3.8



ACCESSORIES

Order no.	Product name	Type
4100302	Synthetic leather pouch, black for pocket slide caliper 150 mm	
4102020	Depth bridge (75 x 7 mm)	16 Em



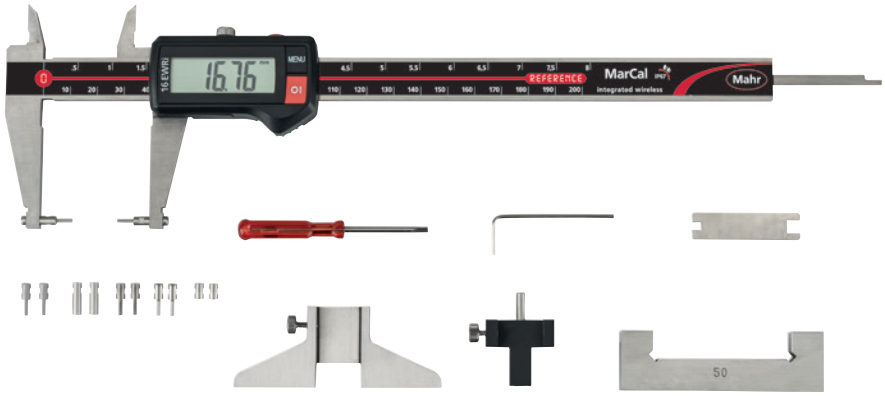
16 Em

MarCal 16 EWRi-V

Digital Universal Caliper

FUNCTIONS

- AUTO-ON / OFF
- ON/OFF
- DATA (data transmission via connection cable)
- HOLD (storage of measured values)
- PRESET (for entering a numerical value)
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)



FEATURES

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case, Setting gage for inside measurement 16 Eel, measuring force device 16 Ec, depth measuring bridge 16 Em, anvils for outside measurement 16 Eea 1–3, anvils for inside measurement 16Eei 1–3

Application:

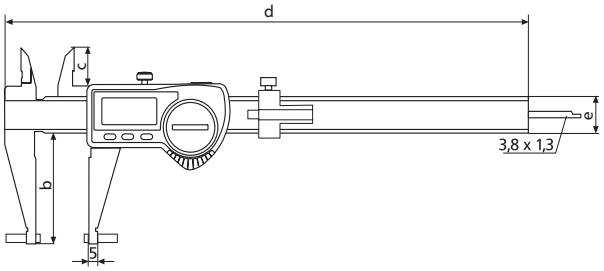
- Can be used as standard calipers (four measuring directions) with standard accessories for measuring recesses, grooves, etc.
- Can be used with special accessories for measuring threads, bores and gears



TECHNICAL DATA

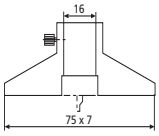
Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod	Incl. accessories
		mm	inch	mm/inch	mm	inch			
4118907	16 EWRi-V	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•

Order no.	b	c	d	e
	mm	mm	mm	mm
4118907	48	16.5	285	16

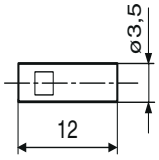


ACCESSORIES

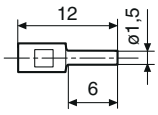
Order no.	Quantity unit	Product name	Type
4102020		Depth bridge (75 x 7 mm)	16 Em
4118810	Piece	Anvil for outside measurement (3.5 x 12 mm)	16 Eea 1
4118811	Piece	Anvil for outside measurement (1.5 x 6 mm)	16 Eea 2
4118812	Piece	Anvil for outside measurement (3.5 x 6 mm)	16 Eea 3
4118813	Piece	Anvil for inside measurement (3.5 x 6 mm)	16 Eei 1
4118814	Piece	Anvil for inside measurement (1.5 x 6 mm)	16 Eei 2
4118815	Piece	Anvil for inside measurement (3.5 x 6 mm)	16 Eei 3
4118816	Piece	Anvil for inside measurement (4 x 2.5 mm)	16 Eei 4
4118817		Setting gage for inside measurement (50 mm)	16 Eel
4118818		Measuring force device	16 Ec
4879602	Piece	Screws M2x8	
4118819		Mounting attachment for thread anvils 844 TG/844Tr and ball anvils 844 Tk	16 Eab
4102220		Receiver for instruments with integrated wireless	i-Stick
4102520		Battery 3 V, CR 2032	



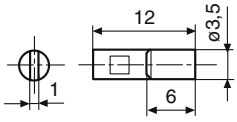
16 Em



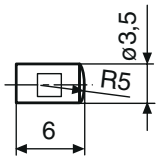
16 Eea 1



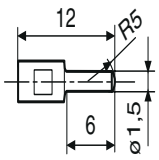
16 Eea 2



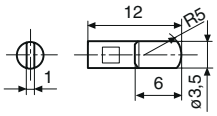
16 Eea 3



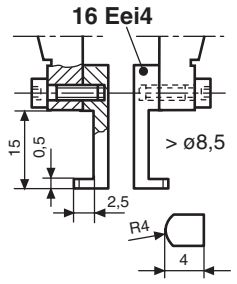
16 Eei 1



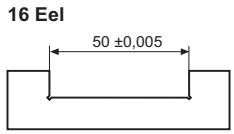
16 Eei 2



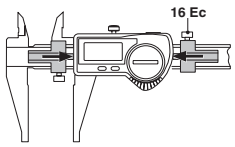
16 Eei 3



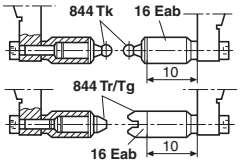
16 Eei 4



16 Eel



16 Ec



16 Eab

MarCal 16 EWR-V

Digital Universal Caliper

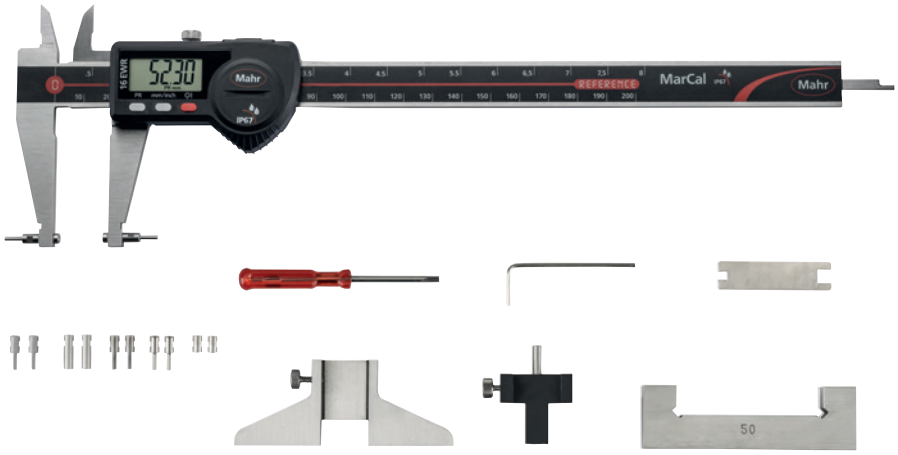
RS232C | Digimatic | IP 67 | REF system

FUNCTIONS

- AUTO-ON / OFF
- DATA (data transmission via connection cable)
- ON/OFF
- PRESET (for entering a numerical value)
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)

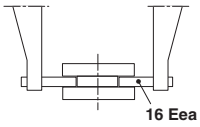
FEATURES

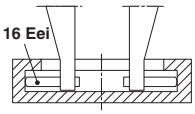
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic, wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case, Setting gage for inside measurement 16 Eel, measuring force device 16 Ec, depth measuring bridge 16 Em, anvils for outside measurement 16 Eea 1–3, anvils for inside measurement 16Eei 1–3, 4118808 without measuring anvils, adjustment bridge and measuring force equipment



Application:

- Can be used as a standard caliper (four types of measurements) with standard accessories to measure recesses, grooves, etc.
- Can be used with additional accessories to measure threads, bores and serration

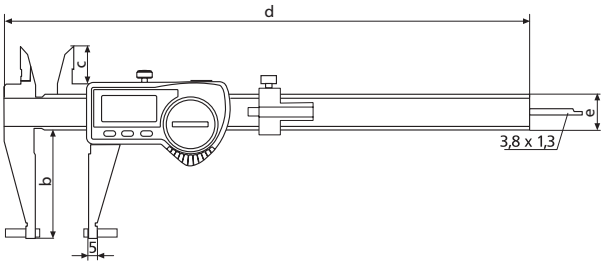




TECHNICAL DATA

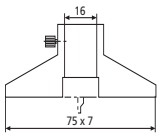
Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod	Incl. accessories
		mm	inch	mm/inch	mm	inch			
4118807	16 EWR-V	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	DIN 862	rectangular	•

Order no.	b	c	d	e
	mm	mm	mm	mm
4118807	48	16.5	285	16

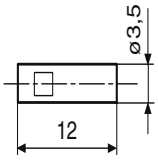


ACCESSORIES

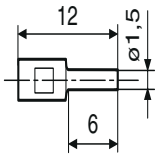
Order no.	Quantity unit	Product name	Type
4118810	Piece	Anvil for outside measurement (3.5 x 12 mm)	16 Eea 1
4118811	Piece	Anvil for outside measurement (1.5 x 6 mm)	16 Eea 2
4118812	Piece	Anvil for outside measurement (3.5 x 6 mm)	16 Eea 3
4118813	Piece	Anvil for inside measurement (3.5 x 6 mm)	16 Eei 1
4118814	Piece	Anvil for inside measurement (1.5 x 6 mm)	16 Eei 2
4118815	Piece	Anvil for inside measurement (3.5 x 6 mm)	16 Eei 3
4118816	Piece	Anvil for inside measurement (4 x 2.5 mm)	16 Eei 4
4118817		Setting gage for inside measurement (50 mm)	16 Eel
4118818		Measuring force device	16 Ec
4879602	Piece	Screws M2x8	
4118819		Mounting attachment for thread anvils 844 TG/844Tr and ball anvils 844 Tk	16 Eab
4102020		Depth bridge (75 x 7 mm)	16 Em
4102357		16 EXu data connection cable USB (2 m)	16 EXu
4102915		Digimatic data cable (2 m)	16 EWd
4102410		Data connection cable RS232C (2 m)	16 EXr
4102520		Battery 3 V, CR 2032	



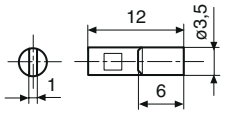
16 Em



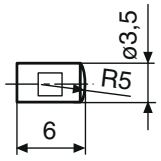
16 Eea 1



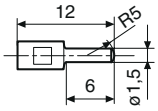
16 Eea 2



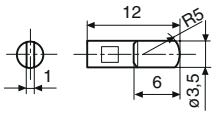
16 Eea 3



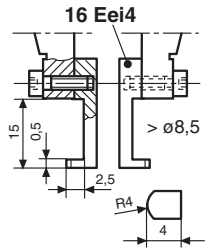
16 Eei 1



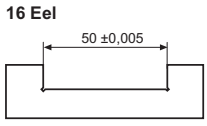
16 Eei 2



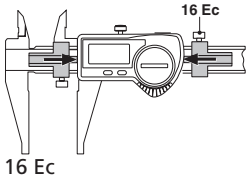
16 Eei 3



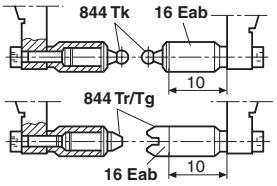
16 Eei 4



16 Eel



16 Ec



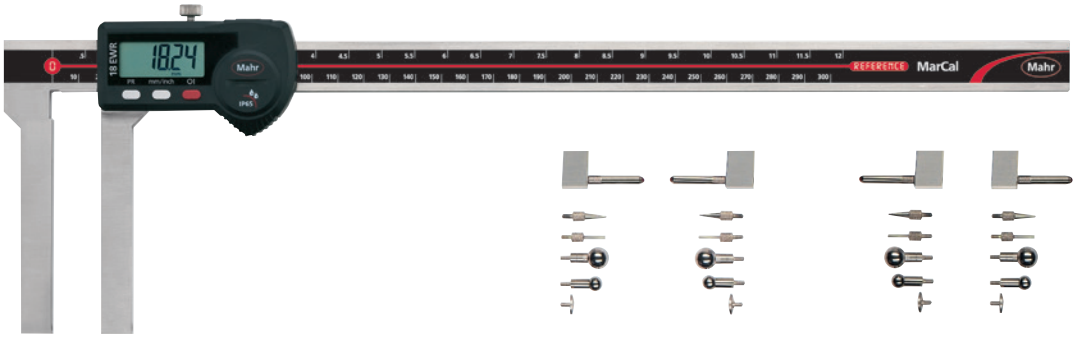
16 Eab

MarCal 18 EWR-V

Digital Universal Caliper

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- mm/inch
- LOCK function (key lock)
- DATA (data transmission via connection cable)



FEATURES

- High contrast analog display
- Locking screw above
- Immediate measurements due to the Reference System
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- Slide and beam made of hardened stainless steel
- Measuring faces for outside measurement
- Thread M2.5 measuring jaws to accommodate measuring anvils for internal and external measurements
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm (300 mm), 12.5 mm (500mm)
- **Data interface:** USB, Opto RS232C, Digimatic, wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 65
- **Package contains:** battery, case, instruction manual, anvils

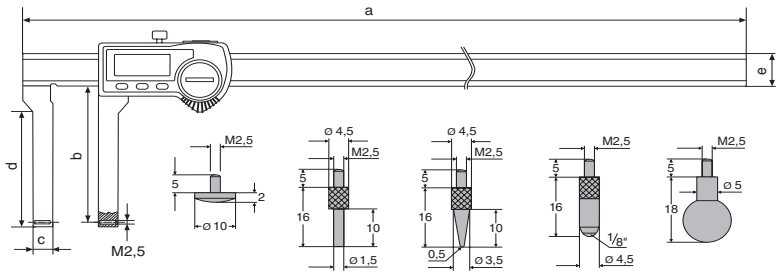
Application:

- For inner and outer measurements of recesses, grooves, etc.
- Individual adjustment by means of measuring anvils with M2.5 thread

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard
		mm	inch	mm/inch	mm	inch	
4112722	18 EWR-V	0 –300	0 –12″	0.01 / .0005″	0.06	.0025″	Factory standard
4112723	18 EWR-V	0 –500	0 –20″	0.01 / .0005″	0.08	.003″	Factory standard

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4112722	410	90	12	75.5	20
4112723	680	100	16	81	25



ACCESSORIES

Order no.	Product name	Quantity unit	Type
4102230	Receiver		e-Stick
4102231	Transmitter for e-Stick		16 EWe
4102357	16 EXu data connection cable USB (2 m)		16 EXu
4102410	Data connection cable RS232C (2 m)		16 EXr
4102520	Battery 3 V, CR 2032		
4102915	Digimatic data cable (2 m)		16 EWd
4112050	Replacement measuring anvil: Spherical plate Ø 10.0 mm	Piece	
4112051	Replacement measuring anvil: Cylindrical stylus Ø 1.5 mm x 10 mm	Piece	
4112052	Replacement measuring anvil: Tip, radius 0.5 mm x 10 mm	Piece	
4112053	Replacement measuring anvil: Sphere diameter 1/8″ length 16 mm	Piece	
4112054	Replacement measuring anvil: Ball dia. 7.0 mm	Piece	
4112055	Replacement measuring anvil: Sphere Ø 10.0 mm	Piece	



16 EWe



e-Stick

MarCal 16 EWRi-C / 16 EWR-C

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-C

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 16 EWR-C

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 16 EWRI-C

- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

FEATURES 16 EWR-C

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years



16 EWRi-C



16 EWR-C

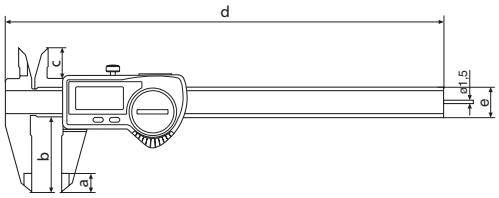
Application:

Outer measuring surfaces made of ceramic, for measuring hard materials

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103372	16 EWRi-C	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round
4103072	16 EWR-C	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103372	10	40	16	235	16
4103072	10	40	16	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-C**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-C**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-C**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-C, 16 EWRi-C**	Battery 3 V, CR 2032	
4102915	**16 EWR-C**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-H / 16 EWR-H

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-H

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 16 EWR-H

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 16 EWRI-H

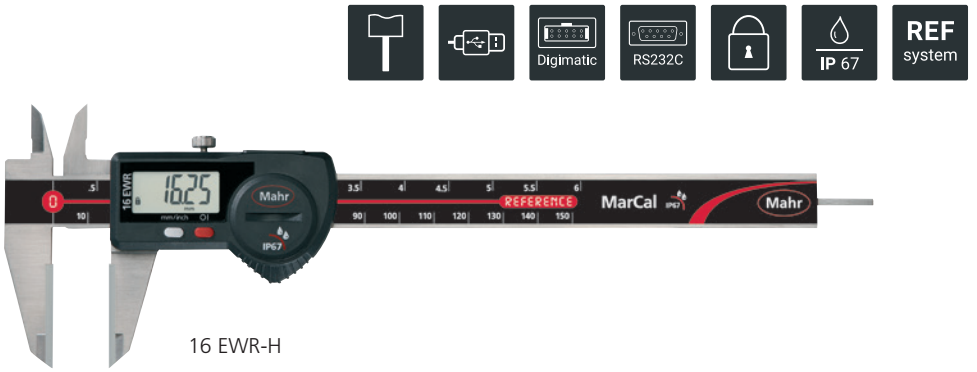
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

FEATURES 16 EWR-H

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years



16 EWRi-H



16 EWR-H

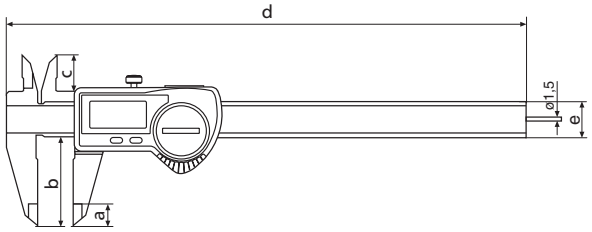
Application:

Outer measuring surfaces made of carbide, for measuring hard materials

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103373	16 EWRi-H	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round
4103073	16 EWR-H	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	DIN 862	round

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103373	10	40	16	235	16
4103073	10	40	16	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-H**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-H**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-H**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-H, 16 EWRi-H**	Battery 3 V, CR 2032	
4102915	**16 EWR-H**	Digimatic data cable (2 m)	16 EWd



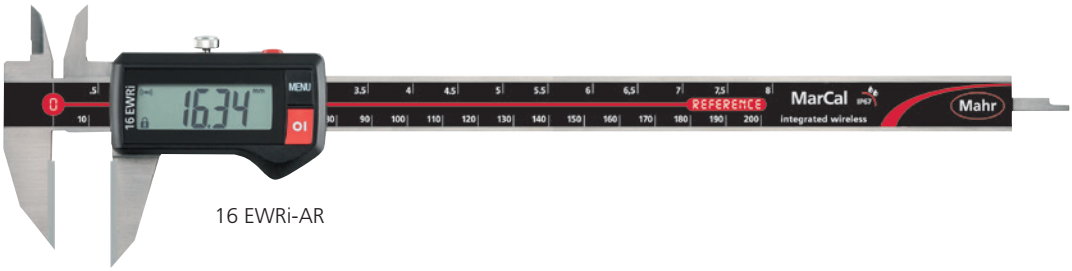
i-Stick

MarCal 16 EWRi-AR / 16 EWR-AR

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-AR

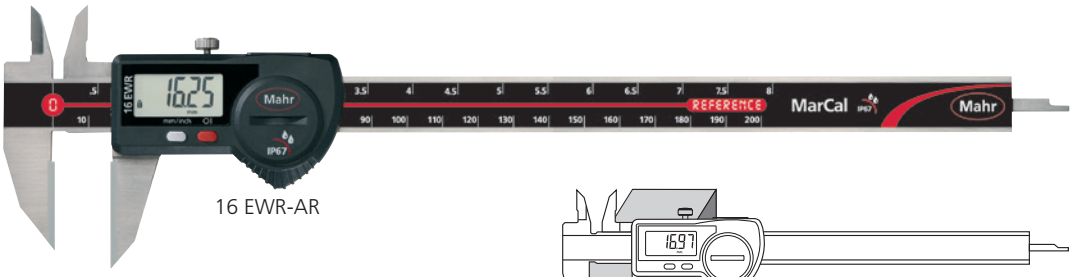
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)



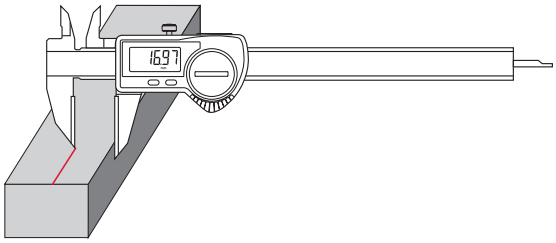
16 EWRi-AR

FUNCTIONS 16 EWR-AR

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide



16 EWR-AR



Application:

- Outer measuring surfaces made of carbide
- For marking out workpieces

FEATURES 16 EWRI-AR

- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

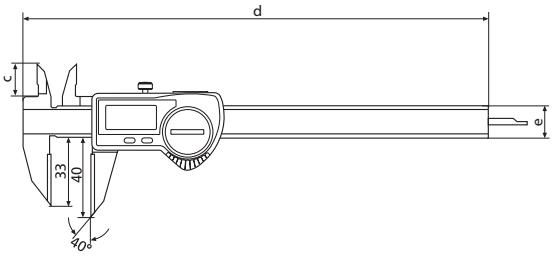
FEATURES 16 EWR-AR

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103382	16 EWRi-AR	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	Factory standard	rectangular
4103082	16 EWR-AR	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	Factory standard	rectangular

Order no.	c	d	e
	mm	mm	mm
4103382	16.5	285	16
4103082	16.5	285	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-AR**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-AR**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-AR**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-AR, 16 EWRi-AR**	Battery 3 V, CR 2032	
4102915	**16 EWR-AR**	Digimatic data cable (2 m)	16 EWd



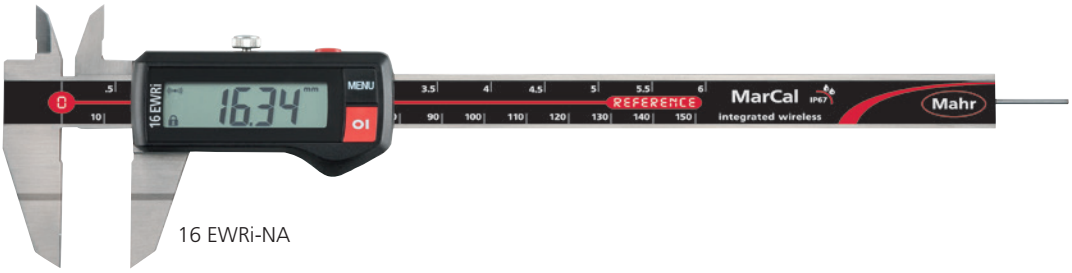
i-Stick

MarCal 16 EWRi-NA / 16 EWR-NA

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-NA

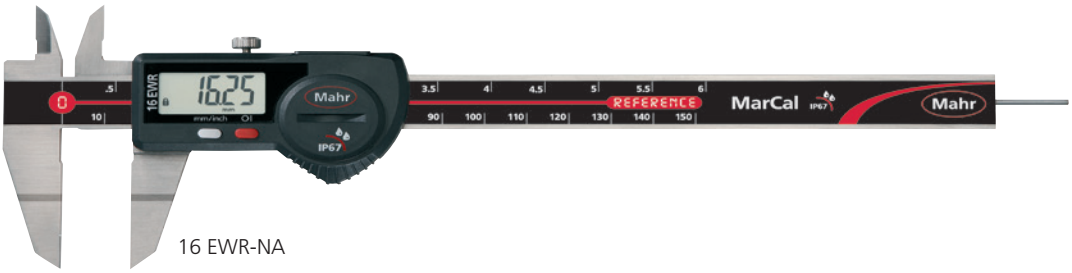
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)



16 EWRi-NA

FUNCTIONS 16 EWR-NA

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via
  connection cable)



16 EWR-NA

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside
  measurements
- Slide and beam made of
  hardened stainless steel
- Step measuring function
- Immediate measurements
  due to the Reference System
- Raised guideway for the
  protection of the scale
- Excellent resistance against dust,
  coolants and lubricants
- Dirt wipers are integrated
  in the slide

FEATURES 16 EWRI-NA

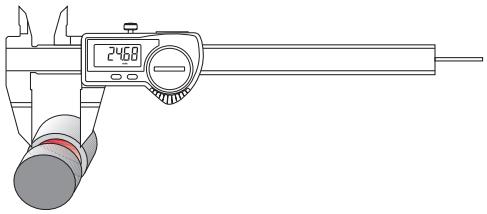
- SoftwareMarCom Professional
  free download: www.mahr.com/
  marcom (only for Mahr data
  cables and wireless systems with
  USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated
  wireless
- **Energy supply:** Battery life
  approx. 3 years (approx. 0.5 in
  wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery,
  instruction manual, case

FEATURES 16 EWR-NA

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto
  RS232C, Digimatic
- **Energy supply:** Battery life
  approx. 3 years

Application:

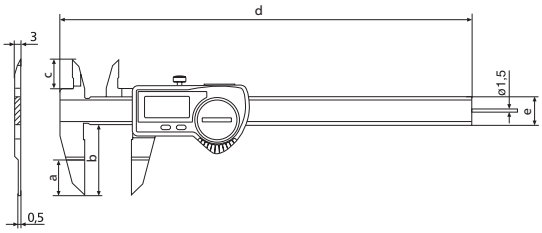
For measuring keyseats



TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103374	16 EWRi-NA	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard	round
4103074	16 EWR-NA	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard	round

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103374	20	40	16.5	235	16
4103074	20	40	16.5	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-NA**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-NA**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-NA**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-NA, 16 EWRi-NA**	Battery 3 V, CR 2032	
4102915	**16 EWR-NA**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-S / 16 EWR-S

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-S

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 16 EWR-S

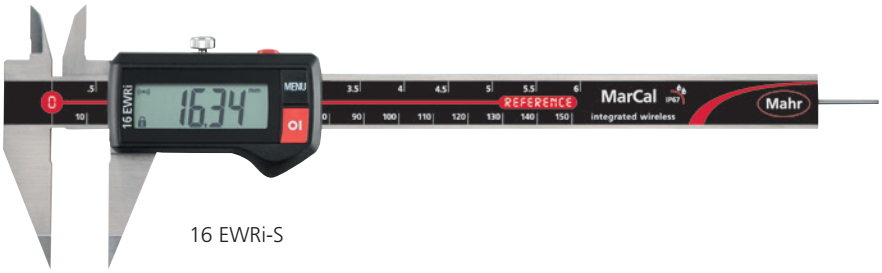
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 16 EWRI-S

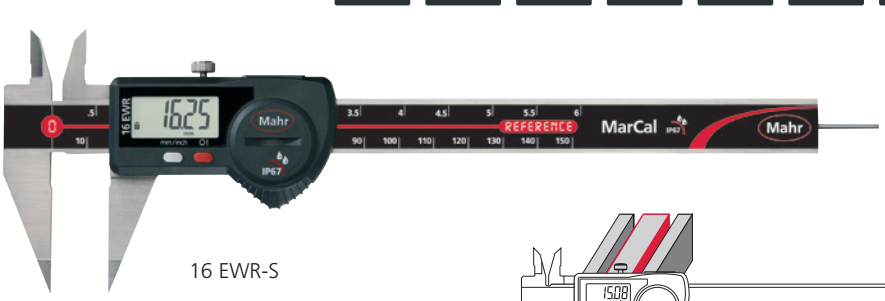
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

FEATURES 16 EWR-S

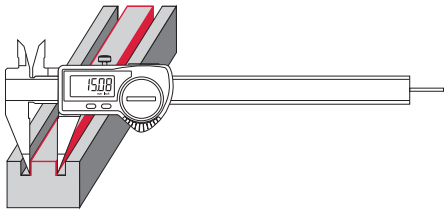
- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years



16 EWRi-S



16 EWR-S



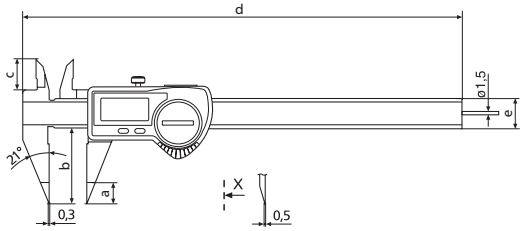
Application:

With pointed jaws e.g. for measuring distances between grooves

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103375	16 EWRi-S	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard	round
4103075	16 EWR-S	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard	round

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103375	10	40	16.5	235	16
4103075	10	40	16.5	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-S**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-S**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-S**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-S, 16 EWRi-S**	Battery 3 V, CR 2032	
4102915	**16 EWR-S**	Digimatic data cable (2 m)	16 EWd



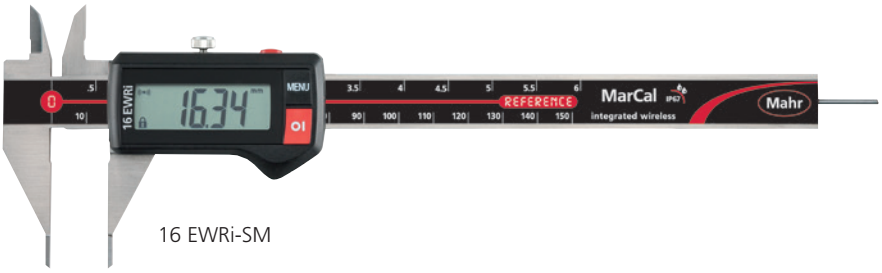
i-Stick

MarCal 16 EWRi-SM / 16 EWR-SM

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-SM

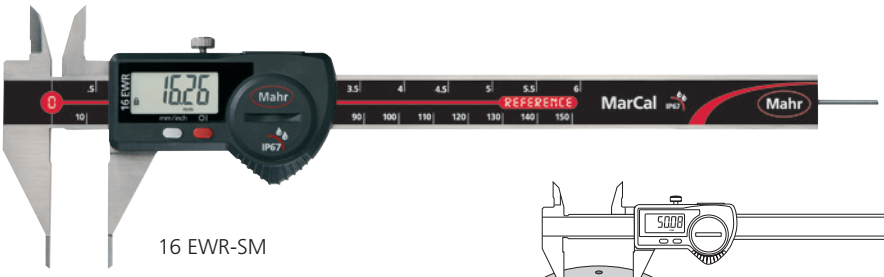
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)



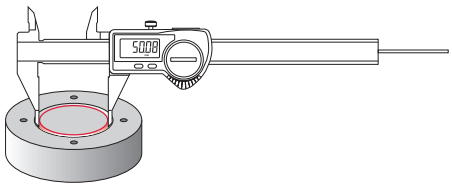
16 EWRi-SM

FUNCTIONS 16 EWR-SM

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via
  connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside
  measurements
- Slide and beam made of
  hardened stainless steel
- Step measuring function
- Immediate measurements
  due to the Reference System
- Raised guideway for the
  protection of the scale
- Excellent resistance against dust,
  coolants and lubricants
- Dirt wipers are integrated
  in the slide



16 EWR-SM



Application:

With pointed jaws e.g. for measuring distances between grooves

FEATURES 16 EWRI-SM

- SoftwareMarCom Professional
  free download: www.mahr.com/
  marcom (only for Mahr data
  cables and wireless systems with
  USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated
  wireless
- **Energy supply:** Battery life
  approx. 3 years (approx. 0.5 in
  wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery,
  instruction manual, case

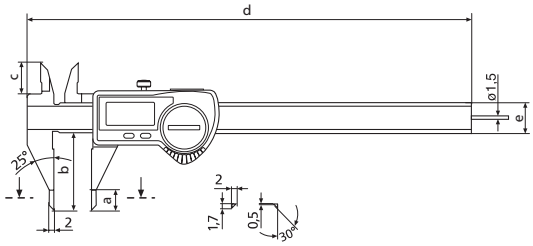
FEATURES 16 EWR-SM

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto
  RS232C, Digimatic
- **Energy supply:** Battery life
  approx. 3 years

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103376	16 EWRi-SM	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard	round
4103076	16 EWR-SM	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard	round

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103376	10	40	16.5	235	16
4103076	10	40	16.5	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-SM**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-SM**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-SM**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-SM, 16 EWRi-SM**	Battery 3 V, CR 2032	
4102915	**16 EWR-SM**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-VS / 16 EWR-VS

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-VS

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 16 EWR-VS

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 16 EWRI-VS

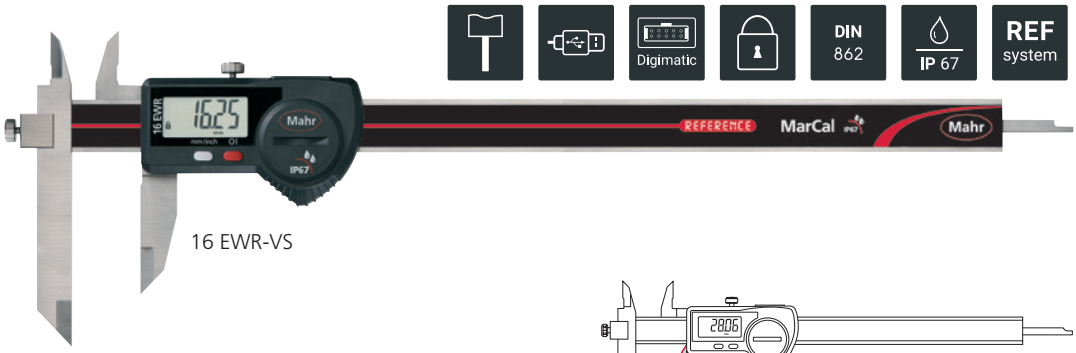
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

FEATURES 16 EWR-VS

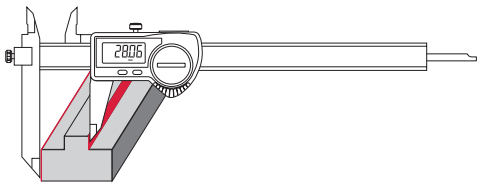
- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years



16 EWRi-VS



16 EWR-VS



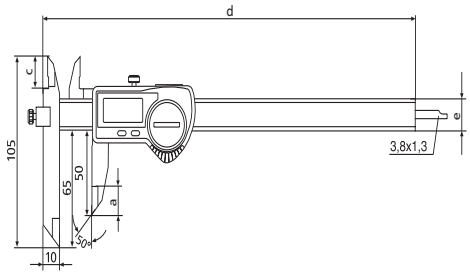
Application:

With moving jaws for measuring stepped workpieces

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103383	16 EWRi-VS	0 –200	0 –8″	0.01 / .0005″	0.04	.0015″	Factory standard	rectangular
4103083	16 EWR-VS	0 –200	0 –8″	0.01 / .0005″	0.04	.0015″	Factory standard	rectangular

Order no.	a	c	d	e
	mm	mm	mm	mm
4103383	14	18	278	16
4103083	14	18	278	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-VS**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-VS**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-VS**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-VS, 16 EWRi-VS**	Battery 3 V, CR 2032	
4102915	**16 EWR-VS**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-BA / 16 EWR-BA

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-BA

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 16 EWR-BA

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 16 EWRI-BA

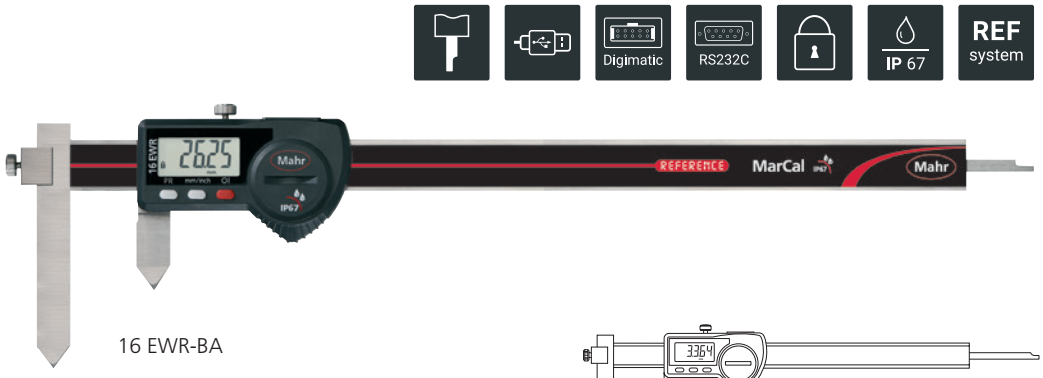
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

FEATURES 16 EWR-BA

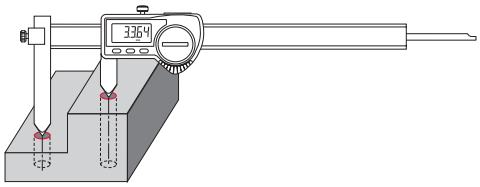
- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years



16 EWRi-BA



16 EWR-BA



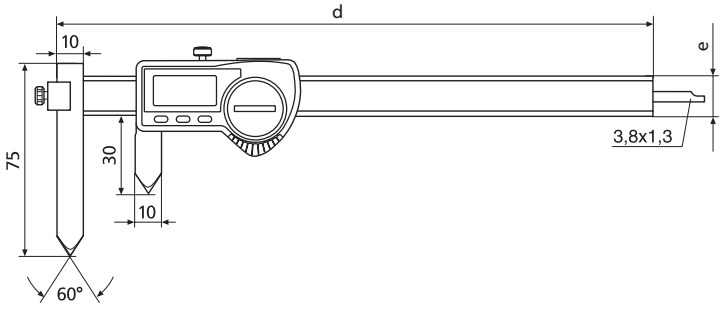
Application:

For measuring the distance between bores

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103384	16 EWRi-BA	10 –210	0.4 –8.3"	0.01 / .0005"	0.04	.0015"	Factory standard	rectangular
4103084	16 EWR-BA	10 –210	0.4 –8.3"	0.01 / .0005"	0.04	.0015"	Factory standard	rectangular

Order no.	d	e
	mm	mm
4103384	278	16
4103084	278	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-BA**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-BA**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-BA**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-BA, 16 EWRi-BA**	Battery 3 V, CR 2032	
4102915	**16 EWR-BA**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-SA / 16 EWR-SA

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-SA

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 16 EWR-SA

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 16 EWRI-SA

- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

FEATURES 16 EWR-SA

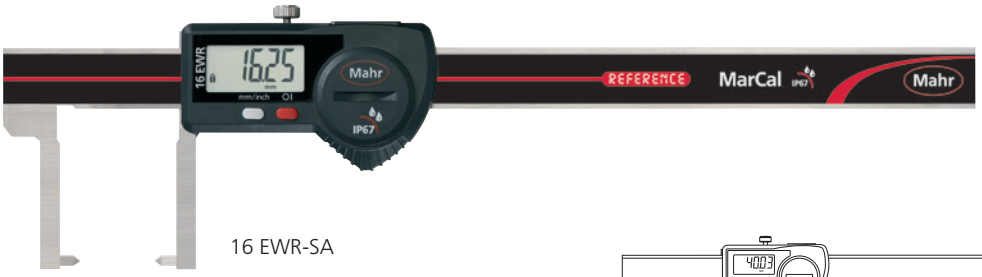
- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years

#ID | IP 67 | REF system

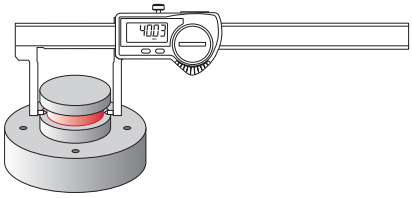


16 EWRi-SA

RS232C | Digimatic | IP 67 | REF system



16 EWR-SA



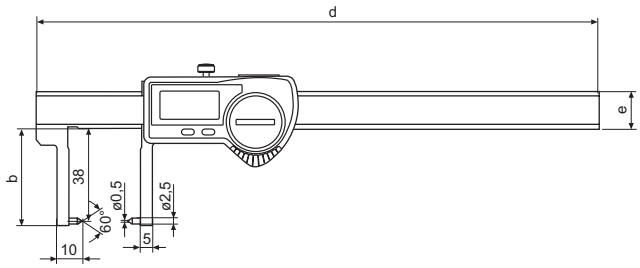
Application:

Inward-angled measuring tips for measuring wall thicknesses and recesses on shafts

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103377	16 EWRi-SA	0 – 140	0 – 6″	0.01 / .0005″	0.03	.001″	Factory standard	none
4103077	16 EWR-SA	0 – 140	0 – 6″	0.01 / .0005″	0.03	.001″	Factory standard	none

Order no.	b	d	e
	mm	mm	mm
4103377	40	235	16
4103077	40	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-SA**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-SA**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-SA**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-SA, 16 EWRi-SA**	Battery 3 V, CR 2032	
4102915	**16 EWR-SA**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-AA / 16 EWR-AA

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-AA

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 16 EWR-AA

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 16 EWRI-AA

- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

FEATURES 16 EWR-AA

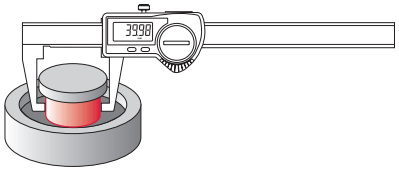
- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years



16 EWRi-AA



16 EWR-AA



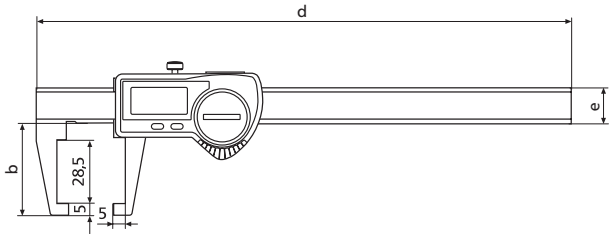
Application:

Inward-angled measuring surfaces for measuring wall thicknesses and recesses on shafts

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103379	16 EWRi-AA	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard	none
4103079	16 EWR-AA	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard	none

Order no.	b	d	e
	mm	mm	mm
4103379	40	235	16
4103079	40	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	16 EWRi-AA	Receiver for instruments with integrated wireless	i-Stick
4102357	16 EWR-AA	16 EXu data connection cable USB (2 m)	16 EXu
4102410	16 EWR-AA	Data connection cable RS232C (2 m)	16 EXr
4102520	16 EWR-AA, 16 EWRi-AA	Battery 3 V, CR 2032	
4102915	16 EWR-AA	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-SI / 16 EWR-SI

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-SI

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)



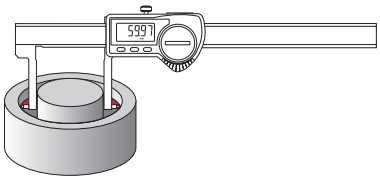
16 EWRi-SI

FUNCTIONS 16 EWR-SI

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide



16 EWR-SI



Application:

Outward-angled measuring tips for measuring recesses in bores

FEATURES 16 EWRI-SI

- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

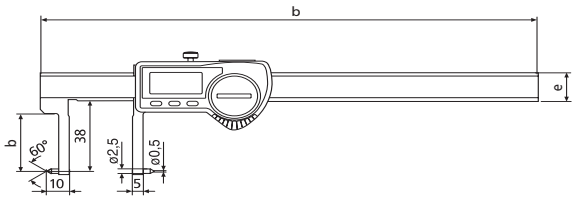
FEATURES 16 EWR-SI

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103378	16 EWRi-SI	20 –170	0.8 –6.7″	0.01 / .0005″	0.03	.001″	Factory standard	none
4103078	16 EWR-SI	20 –170	0.8 –6.7″	0.01 / .0005″	0.03	.001″	Factory standard	none

Order no.	b	d	e
	mm	mm	mm
4103378	28	235	16
4103078	28	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-SI**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-SI**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-SI**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-SI, 16 EWRi-SI**	Battery 3 V, CR 2032	
4102915	**16 EWR-SI**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-AI / 16 EWR-AI

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-AI

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 16 EWR-AI

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 16 EWRI-AI

- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

FEATURES 16 EWR-AI

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years

#ID | IP 67 | REF system

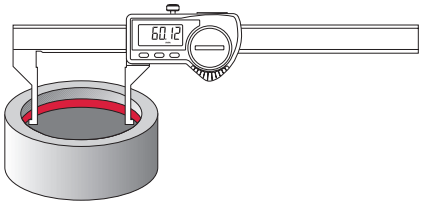


16 EWRi-AI

RS232C | Digimatic | IP 67 | REF system



16 EWR-AI



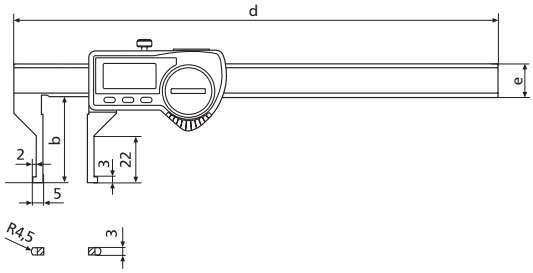
Application:

Outward-angled measuring surfaces for measuring recesses in bores

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103380	16 EWRi-AI	10 –160	0.4 –6.3"	0.01 / .0005"	0.03	.001"	Factory standard	none
4103080	16 EWR-AI	10 –160	0.4 –6.3"	0.01 / .0005"	0.03	.001"	Factory standard	none

Order no.	b	d	e
	mm	mm	mm
4103380	40	235	16
4103080	40	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-AI**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-AI**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-AI**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-AI, 16 EWRi-AI**	Battery 3 V, CR 2032	
4102915	**16 EWR-AI**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-RW / 16 EWR-RW

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-RW

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)



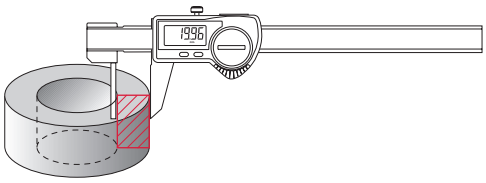
16 EWRi-RW

FUNCTIONS 16 EWR-RW

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via
  connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of
  hardened stainless steel
- Immediate measurements
  due to the Reference System
- Raised guideway for the
  protection of the scale
- Excellent resistance against dust,
  coolants and lubricants
- Dirt wipers are integrated
  in the slide



16 EWR-RW



Application:

Measurement of wall thicknesses

FEATURES 16 EWRI-RW

- SoftwareMarCom Professional
  free download: www.mahr.com/
  marcom (only for Mahr data
  cables and wireless systems with
  USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated
  wireless
- **Energy supply:** Battery life
  approx. 3 years (approx. 0.5 in
  wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery,
  instruction manual, case

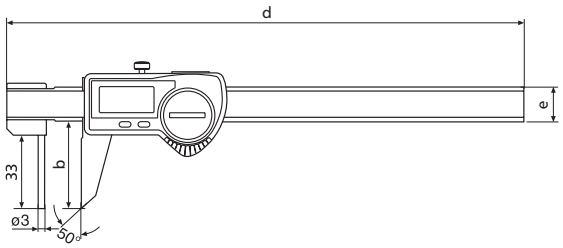
FEATURES 16 EWR-RW

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto
  RS232C, Digimatic
- **Energy supply:** Battery life
  approx. 3 years

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103381	16 EWRi-RW	0 –150	0 –6″	0.01 / .0005″	0.05	.002″	Factory standard	none
4103081	16 EWR-RW	0 –150	0 –6″	0.01 / .0005″	0.05	.002″	Factory standard	none

Order no.	b	d	e
	mm	mm	mm
4103381	40	235	16
4103081	40	235	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-RW**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-RW**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-RW**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-RW, 16 EWRi-RW**	Battery 3 V, CR 2032	
4102915	**16 EWR-RW**	Digimatic data cable (2 m)	16 EWd



i-Stick

MarCal 16 EWRi-LI / 16 EWR-LI

Digital Caliper for Special Applications

FUNCTIONS 16 EWRI-LI

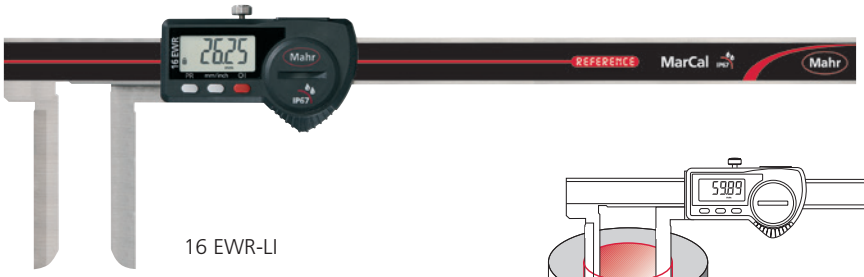
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)



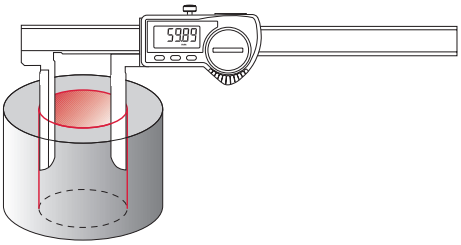
16 EWRi-LI

FUNCTIONS 16 EWR-LI

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide



16 EWR-LI



Application:

With long inner blades

FEATURES 16 EWRI-LI

- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case

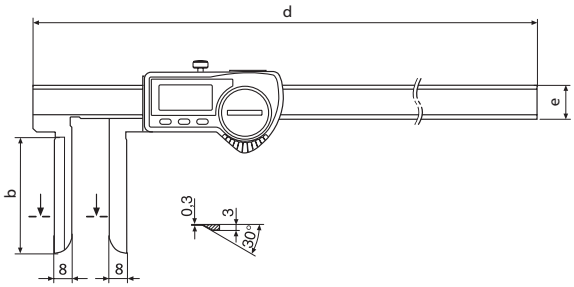
FEATURES 16 EWR-LI

- **Digit height:** 8.5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4103385	16 EWRi-LI	10 –200	0.4 –8″	0.01 / .0005″	0.05	.002″	Factory standard	none
4103085	16 EWR-LI	10 –200	0.4 –8″	0.01 / .0005″	0.05	.002″	Factory standard	none

Order no.	b	d	e
	mm	mm	mm
4103385	60	285	16
4103085	60	285	16



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	**16 EWRi-LI**	Receiver for instruments with integrated wireless	i-Stick
4102357	**16 EWR-LI**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**16 EWR-LI**	Data connection cable RS232C (2 m)	16 EXr
4102520	**16 EWR-LI, 16 EWRi-LI**	Battery 3 V, CR 2032	
4102915	**16 EWR-LI**	Digimatic data cable (2 m)	16 EWd



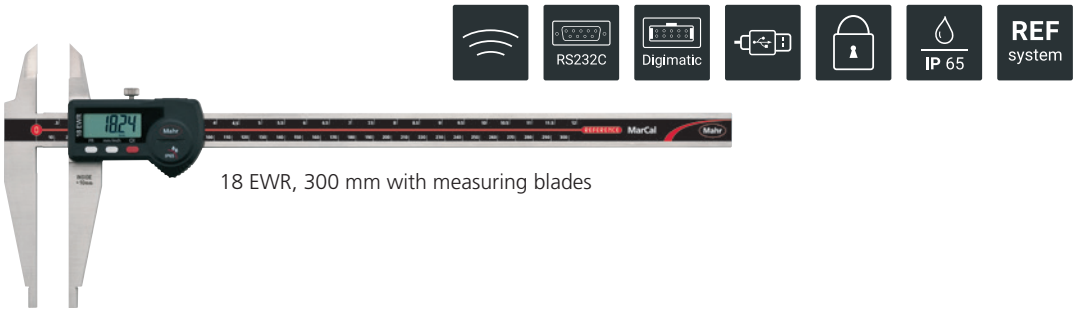
i-Stick

MarCal 18 EWR

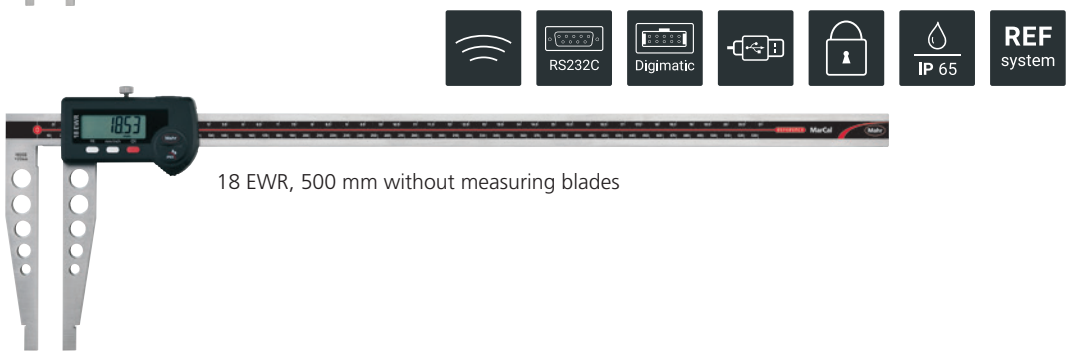
Digital Workshop Caliper

FUNCTIONS 18 EWR

- AUTO-ON / OFF
- DATA (data transmission via connection cable)
- ON/OFF
- PRESET (for entering a numerical value)
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)
- High contrast analog display
- Locking screw above
- Rounded measuring blades for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the
- protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide



18 EWR, 300 mm with measuring blades

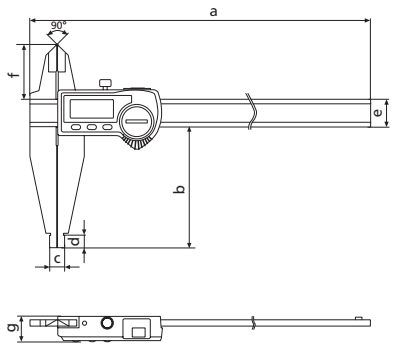


18 EWR, 500 mm without measuring blades

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Measuring blades for outside measurements	Error limit	Error limit inches (text)	Standard	Weight
		mm	inch	mm/inch		mm	inch		kg
4112704	18 EWR	0 –300	0 –12″	0.01 / .0005″	•	0.03	.001″	Factory standard	0.45
4112712	18 EWR	0 –500	0 –20″	0.01 / .0005″	•	0.04	.0015″	Factory standard	1.10
4112714	18 EWR	0 –750	0 –30″	0.01 / .0005″	•	0.05	.002″	Factory standard	1.35
4112716	18 EWR	0 –1000	0 –40″	0.01 / .0005″	•	0.06	.0025″	Factory standard	2.20
4112705	18 EWR	0 –300	0 –12″	0.01 / .0005″		0.03	.001″	Factory standard	0.44
4112713	18 EWR	0 –500	0 –20″	0.01 / .0005″		0.04	.0015″	Factory standard	1.00
4112715	18 EWR	0 –750	0 –30″	0.01 / .0005″		0.05	.002″	Factory standard	1.28
4112717	18 EWR	0 –1000	0 –40″	0.01 / .0005″		0.06	.0025″	Factory standard	2.10

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4112704	410	90	10	10	20	40
4112712	650	150	20	20	25	55
4112714	905	150	20	20	25	55
4112716	1165	150	20	20	30	60
4112705	410	90	10	10	20	
4112713	650	150	20	20	25	
4112715	905	150	20	20	25	
4112717	1165	150	20	20	30	



ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102230	**18 EWR**	Receiver	e-Stick
4102231	**18 EWR**	Transmitter for e-Stick	16 EWe
4102357	**18 EWR**	16 EXu data connection cable USB (2 m)	16 EXu
4102410	**18 EWR**	Data connection cable RS232C (2 m)	16 EXr
4102520	**18 EWR**	Battery 3 V, CR 2032	
4102915	**18 EWR**	Digimatic data cable (2 m)	16 EWd



16 EWe



e-Stick

MarCal 18 ESA

Digital Workshop Caliper

REF system

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- HOLD
  (storage of measured values)
- PRESET (enter anumerical value)
  from range 500 mm

FEATURES

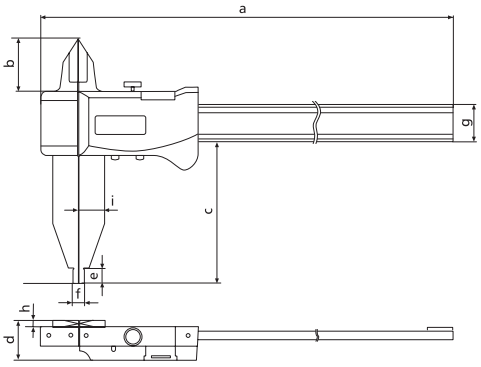
- High contrast analog display
- Locking screw above
- Rounded measuring blades for inside measurements
- Prisma guideway for a more smooth and even movement
- Measuring surfaces made of steel
- Measuring blades for outside measurements
- To reduce the overall weight the slide and beam are made from aluminum and are coated with a hard anodized surface coating (1100 HV)
- Dirt wipers are integrated in the slide
- **Digit height:** 6 mm (300mm), 10,5 mm
- **Data interface:** Opto RS232C (only 300 mm version)
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** None
- **Package contains:** battery, instruction manual, case



TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Measuring blades for outside measure-ments	Error limit	Error limit inches (text)	Standard	Weight
		mm	inch	mm/inch		mm	inch		kg
4112620	18 ESA	0 –300	0 –12″	0.01 / .0005″	•	0.04	.0015″	Factory standard	0.50
4112621	18 ESA	0 –500	0 –20″	0.01 / .0005″	•	0.05	.002″	Factory standard	1.40
4112622	18 ESA	0 –800	0 –32″	0.01 / .0005″	•	0.07	.0025″	Factory standard	1.60
4112623	18 ESA	0 –1000	0 –40″	0.01 / .0005″	•	0.08	.003″	Factory standard	1.80

Order no.	a	b	c	d	e	f	g	h	i
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4112620	450	33	90	17.5	10	10	25	4.5	17
4112621	726	42	150	20.7	15	20	31.9	6	29
4112622	1026	42	150	20.7	15	20	31.9	6	29
4112623	1225	42	150	20.7	15	20	31.9	6	29



ACCESSORIES

Order no.	Product name	Type
4102330	Opto USB Adapter cable RS232-USB (0.2 m)	Opto USB
4102510	Data connection cable RS232C (2 m)	16 ESv
4102520	Battery 3 V, CR 2032	

MarCal 18 NA

Workshop Calipers

FEATURES

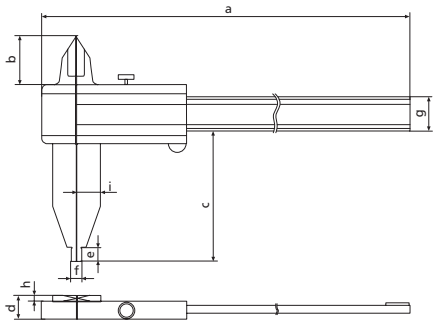
- **To reduce the overall weight the slide and beam are made from aluminum and are coated with a hard anodized surface coating (1100 HV)**
- Vernier and scale have a satin chrome finish for glare free reading
- Parallax free reading
- Locking screw above
- Prisma guideway for a more smooth and even movement
- Measuring surfaces made of steel
- Measuring blades for outside measurements
- **Package contains:** up to 1000 mm delivered with a case, over 1000 mm individually packed



TECHNICAL DATA

Order no.	Type	Measuring range	Vernier value	Measuring blades for outside measurements	Error limit	Standard	Weight
		mm	mm		mm		kg
4112300	18 NA	0 –300	0.02	•	0.04	Factory standard	0.50
4112301	18 NA	0 –500	0.02	•	0.05	Factory standard	1.40
4112302	18 NA	0 –800	0.02	•	0.07	Factory standard	1.60
4112303	18 NA	0 –1000	0.02	•	0.08	Factory standard	1.75
4112304	18 NA	0 –1500	0.02	•	0.16	Factory standard	2.10
4112305	18 NA	0 –2000	0.02	•	0.16	Factory standard	2.50

Order no.	a	b	c	d	e	f	g	h	i
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4112300	450	33	90	17.5	10	10	25	4.5	17
4112301	726	42	150	20.7	15	20	31.9	6	29
4112302	1026	42	150	20.7	15	20	31.9	6	29
4112303	1226	42	150	20.7	15	20	31.9	6	29
4112304	1760	85	200	25	15	30	48.1	6	40
4112305	2260	85	200	25	15	30	48.1	6	40



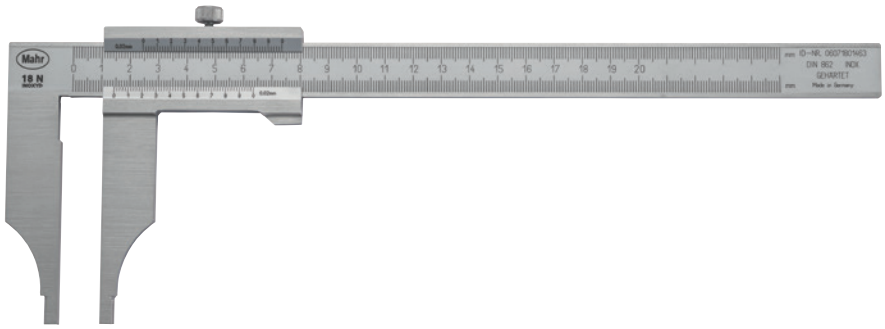
MarCal 18 N

Workshop Calipers

DIN 862

FEATURES

- Vernier and scale have a satin chrome finish for glare free reading
- Locking screw above
- Rounded measuring blades for inside measurements
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Raised guideway for the protection of the scale
- **Package contains:** up to 1000 mm delivered with a case, over 1000 mm individually packed



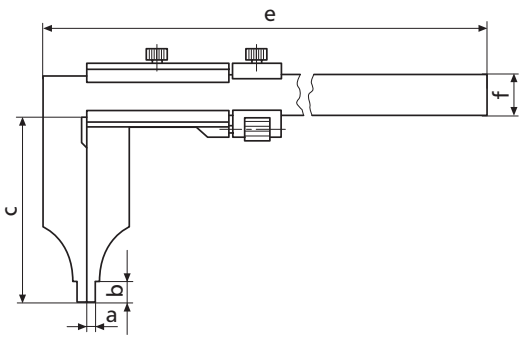
Application:

With two mm scales and vernier scales to directly read external and internal dimensions
- Lower scale for external dimensions
- Upper scale for internal dimensions

TECHNICAL DATA

Order no.	Type	Measuring range	Vernier value	Error limit	Standard
		mm	mm	mm	
4112200	18 N	0 –200	0.02	0.05	Factory standard
4112201	18 N	0 –300	0.02	0.05	Factory standard
4112210	18 N	0 –500	0.05	0.07	DIN 862
4112211	18 N	0 –800	0.05	0.1	DIN 862
4112212	18 N	0 –1000	0.05	0.12	DIN 862
4112213	18 N	0 –1500	0.05	0.18	DIN 862
4112214	18 N	0 –2000	0.05	0.22	DIN 862

Order no.	a	b	c	e	f
	mm	mm	mm	mm	mm
4112200	5	10	80	310	20
4112201	5	10	90	410	20
4112210	10	19	150	675	25
4112211	10	19	150	985	30
4112212	10	19	150	1185	30
4112213	15	19	200	1760	40
4112214	15	19	200	2270	45



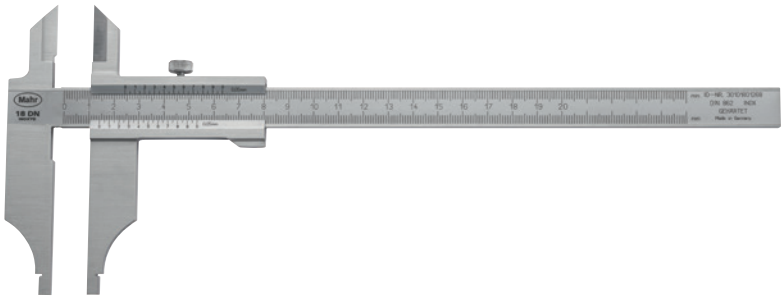
MarCal 18 DN

Workshop Calipers

DIN 862

FEATURES

- Vernier and scale have a satin chrome finish for glare free reading
- Locking screw above
- Rounded measuring blades for inside measurements
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Raised guideway for the protection of the scale
- **Package contains:** up to 1000 mm delivered with a case, over 1000 mm individually packed



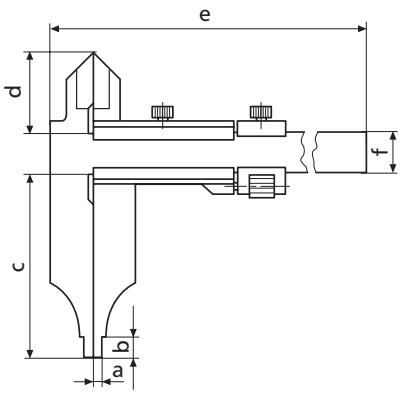
Application:

With two mm scales and vernier scales to directly read external and internal dimensions
- Lower scale for external dimensions
- Upper scale for internal dimensions

TECHNICAL DATA

Order no.	Type	Measuring range	Vernier value	Measuring blades for outside measurements	Error limit	Standard
		mm	mm		mm	
4113200	18 DN	0 –200	0.05	•	0.05	DIN 862
4113201	18 DN	0 –300	0.05	•	0.05	DIN 862
4113202	18 DN	0 –500	0.05	•	0.07	DIN 862
4113203	18 DN	0 –800	0.05	•	0.1	DIN 862
4113204	18 DN	0 –1000	0.05	•	0.12	DIN 862
4113205	18 DN	0 –1500	0.05	•	0.18	DIN 862
4113206	18 DN	0 –2000	0.05	•	0.22	DIN 862

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4113200	5	10	80	40	310	20
4113201	5	10	90	40	410	20
4113202	10	19	150	60	675	25
4113203	10	19	150	65	985	30
4113204	10	19	150	67	1185	30
4113205	15	19	200	86	1760	40
4113206	25	19	200	96	2270	45



MarCal 30 EWRi / 30 EWR

Digital Depth Gage

FUNCTIONS 30 EWRI

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- PRESET
  (for entering a numerical value)
- LOCK function (key lock)
- HOLD
  (storage of measured values)
- Reversal of counting direction
- DATA (data transmission)

FUNCTIONS 30 EWR

- AUTO-ON / OFF
- DATA (data transmission via
  connection cable)
- ON/OFF
- PRESET
  (for entering a numerical value)
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces
  made of steel
- Slide and beam made of
  hardened stainless steel
- Immediate measurements
  due to the Reference System
- Raised guideway for the
  protection of the scale
- Excellent resistance against dust,
  coolants and lubricants
- Dirt wipers are integrated
  in the slide



30 EWRi

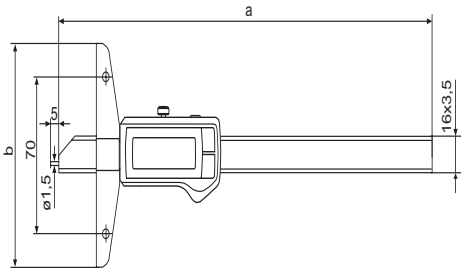


30 EWR

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard
		mm	inch	mm/inch	mm	inch	
4126755	30 EWRi	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard
4126754	30 EWRi	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	Factory standard
4126756	30 EWRi	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard
4126757	30 EWRi	0 –500	0 –20″	0.01 / .0005″	0.05	.002″	Factory standard
4126700	30 EWR	0 –150	0 –6″	0.01 / .0005″	0.03	.001″	Factory standard
4126699	30 EWR	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	Factory standard
4126701	30 EWR	0 –300	0 –12″	0.01 / .0005″	0.04	.0015″	Factory standard
4126702	30 EWR	0 –500	0 –20″	0.01 / .0005″	0.05	.002″	Factory standard

Order no.	a	b
	mm	mm
4126755	234	100
4126754	284	100
4126756	384	150
4126757	584	150
4126700	234	100
4126699	284	100
4126701	384	150
4126702	584	150

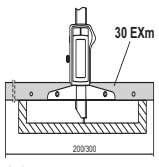




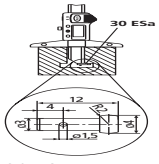
i-Stick

ACCESSORIES

Order no.	For measuring instrument	Quantity unit	Product name	Type
4102220	**30 EWRi**		Receiver for instruments with integrated wireless	i-Stick
4102357	**30 EWR**		16 EXu data connection cable USB (2 m)	16 EXu
4102410	**30 EWR**		Data connection cable RS232C (2 m)	16 EXr
4102520	**30 EWRi, 30 EWR**		Battery 3 V, CR 2032	
4102915	**30 EWR**		Digimatic data cable (2 m)	16 EWd
4125611	**30 EWRi, 30 EWR**	Piece	Anvil (4 mm)	30 ESa
4126510	**30 EWRi, 30 EWR**		Cross beam extension (300 mm)	30 EXm
4126511	**30 EWRi, 30 EWR**		Cross beam extension (200 mm)	30 EXm



30 EXm



30 ESa

MarCal 30 EWRi

Digital Depth Gage

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- PRESET
  (for entering a numerical value)
- LOCK function (key lock)
- HOLD
  (storage of measured values)
- Reversal of counting direction
- DATA (data transmission)

FEATURES

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, case



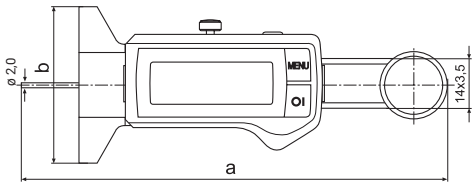
Application:

- Small, handy, practical
- Ideal for mobile use in manufacturing and inspection and on site
- For small measuring depths in bores, grooves, channels, etc.

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard	Depth rod
		mm	inch	mm/inch	mm	inch		
4126751	30 EWRi	0 –25	0 –1″	0.01 / .0005″	0.02	.0008″	Factory standard	round

Order no.	a	b
	mm	mm
4126751	129	48



ACCESSORIES

Order no.	Product name	Type
4102220	Receiver for instruments with integrated wireless	i-Stick
4102520	Battery 3 V, CR 2032	



i-Stick

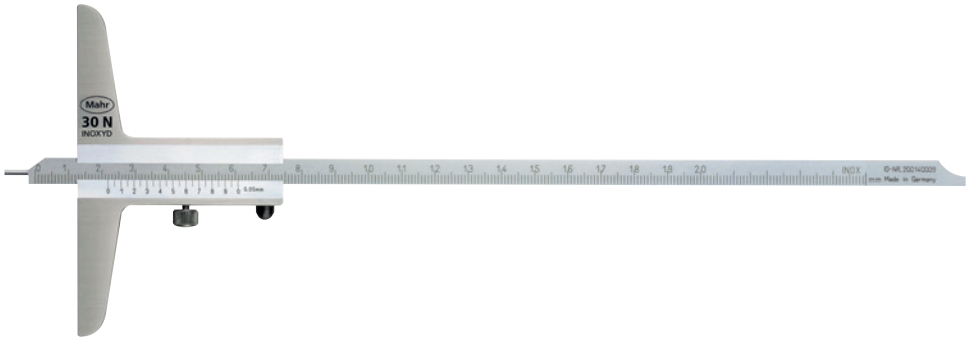
MarCal 30 N

Depth Gage

DIN 862

FEATURES

- Vernier and scale have a satin chrome finish for glare free reading
- Locking screw below
- Hardened measuring pin
- Measuring surfaces made of steel
- Interchangeable beams
- **Package contains:** case



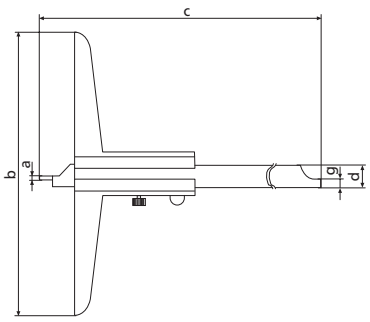
Application:
cInterchangeable measuring rail with 2 different measuring surfaces

- Straight rod: for conventional depth measurements
- Stylus: for measurements in narrow grooves, small bores or uneven surfaces

TECHNICAL DATA

Order no.	Type	Measuring range	Vernier value	Error limit	Standard
		mm	mm	mm	
4127200	30 N	0 –80	0.05	0.05	DIN 862
4127300	30 N	0 –150	0.05	0.05	DIN 862
4127301	30 N	0 –200	0.05	0.05	DIN 862
4127201	30 N	0 –300	0.05	0.05	DIN 862
4127202	30 N	0 –500	0.05	0.07	DIN 862

Order no.	a	b	c	d	g
	mm	mm	mm	mm	mm
4127200	1	50	140	8	
4127300	1.5	100	235	8	3.5
4127301	1.5	100	285	8	3.5
4127201	2	150	390	12	4
4127202	2	150	590	12	4



MarCal 30 EWRi-D / 30 EWR-D

Digital Depth Gage

FUNCTIONS 30 EWRI-D

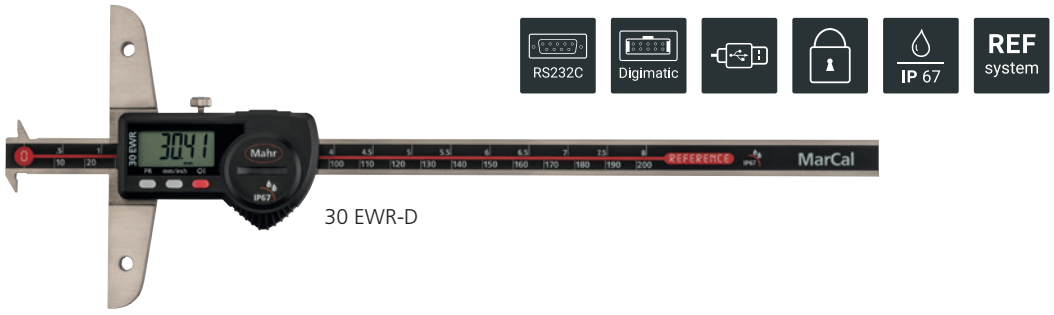
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)



30 EWRi-D

FUNCTIONS 30 EWR-D

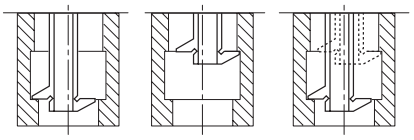
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission via
  connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of
  steel
- Slide and beam made of h
  ardened stainless steel
- Immediate measurements
  due to the Reference System
- Raised guideway for the
  protection of the scale
- Excellent resistance against dust,
  coolants and lubricants
- Dirt wipers are integrated
  in the slide



30 EWR-D

Application:

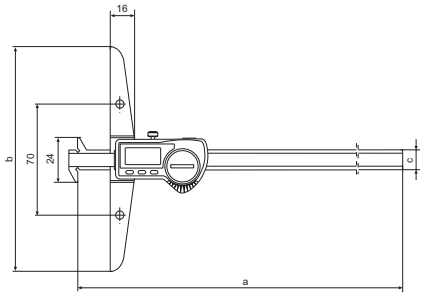
Measuring groove widths and distances between grooves



TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard
		mm	inch	mm/inch	mm	inch	
4126533	30 EWRi-D	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	Factory standard
4126534	30 EWRi-D	0 –300	0 –12″	0.01 / .0005″	0.04	.001″	Factory standard
4126523	30 EWR-D	0 –200	0 –8″	0.01 / .0005″	0.03	.001″	Factory standard
4126524	30 EWR-D	0 –300	0 –12″	0.01 / .0005″	0.04	.001″	Factory standard

Order no.	a	b	c
	mm	mm	mm
4126533	281	100	12
4126534	381	150	12
4126523	281	100	12
4126524	381	150	12

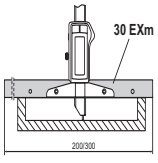


ACCESSORIES

Order no.	For measuring instrument	Product name	Type
4102220	30 EWRi-D	Receiver for instruments with integrated wireless	i-Stick
4102357	30 EWR-D	16 EXu data connection cable USB (2 m)	16 EXu
4102410	30 EWR-D	Data connection cable RS232C (2 m)	16 EXr
4102520	30 EWRi-D, 30 EWR-D	Battery 3 V, CR 2032	
4102915	30 EWR-D	Digimatic data cable (2 m)	16 EWd
4126510	30 EWRi-D, 30 EWR-D	Cross beam extension (300 mm)	30 EXm
4126511	30 EWRi-D, 30 EWR-D	Cross beam extension (200 mm)	30 EXm



i-Stick



30 EXm

MarCal 30 EWRi-N / 30 EWR-N

Digital Depth Gage

FUNCTIONS 30 EWRI-N

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)

FUNCTIONS 30 EWR-N

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of
- hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide

FEATURES 30 EWRI-N

- **Digit height:** 11mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, anvils 30 Ent (1mm), 902 (4mm) and 903 (4mm), case

FEATURES 30 EWR-N

- **Digit height:** 8.5mm
- **Data interface:** USB, RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years



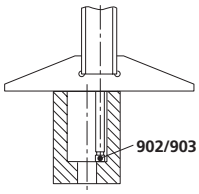
30 EWRi-N

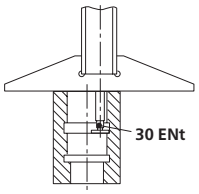


30 EWR-N

Application:

Measuring groove widths and distances between grooves

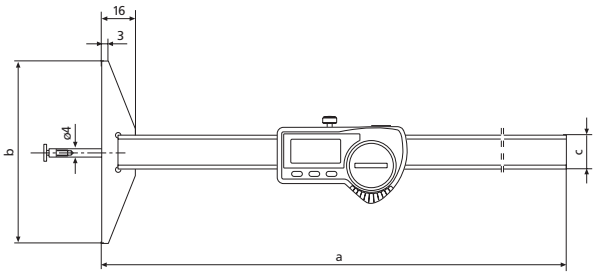




TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range inch	Numerical increment	Error limit	Error limit inches (text)	Standard
		mm	inch	mm/inch	mm	inch	
4126532	30 EWRi-N	0 –100	0 –4″	0.01 / .0005″	0.03	.001″	Factory standard
4126513	30 EWR-N	0 –100	0 –4″	0.01 / .0005″	0.03	.001″	Factory standard

Order no.	a	b	c
	mm	mm	mm
4126532	268	85	16
4126513	268	85	16

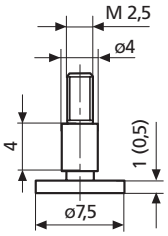


ACCESSORIES

Order no.	For measuring instrument	Quantity unit	Product name	Type
4102220	30 EWRi-N		Receiver for instruments with integrated wireless	i-Stick
4102357	30 EWR-N		16 EXu data connection cable USB (2 m)	16 EXu
4102410	30 EWR-N		Data connection cable RS232C (2 m)	16 EXr
4102520	30 EWR-N, 30 EWRi-N		Battery 3 V, CR 2032	
4102915	30 EWR-N		Digimatic data cable (2 m)	16 EWd
4126310	30 EWR-N, 30 EWRi-N	Piece	Disc type anvil (7.5 x 0.5 mm)	30 ENt
4882022	30 EWR-N, 30 EWRi-N	Piece	Disc type anvil (7.5 x 1 mm)	30 ENt



i-Stick



30 ENt

MarCal 30 EWR-U / 30 EWRi-U

Digital Depth Gage

FUNCTIONS 30 EWR-U:

- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission via connection cable)

FUNCTIONS 30 EWRI-U:

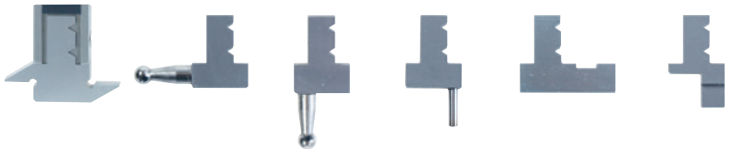
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET
  (for entering a numerical value)
- DATA (data transmission)
- HOLD
  (storage of measured values)
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces
  made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide





Application:

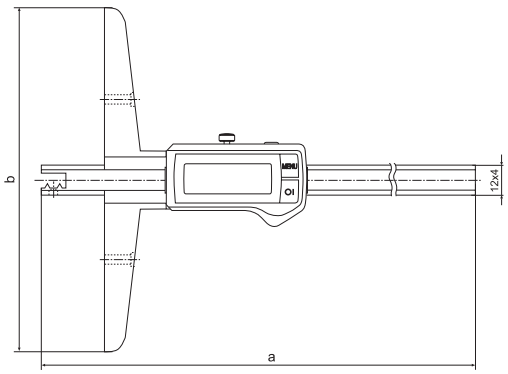
- Measuring groove widths and distances between grooves (with standard 30 Ud anvil with twin hook)
- **This depth gage can also be adapted to other measuring applications with the extensive range of optional accessories (anvils and adjustable measuring bridges)**



TECHNICAL DATA

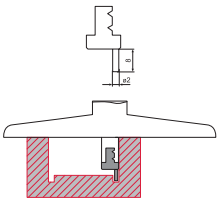
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard
		mm	inch	mm/inch	mm	inch	
4126623	30 EWR-U	0 –300	0 –12″	0.01 / .0005″	0.04	0.0016″	Factory standard
4126624	30 EWR-U	0 –500	0 –20″	0.01 / .0005″	0.05	0.002″	Factory standard
4126603	30 EWRi-U	0 –300	0 –12″	0.01 / .0005″	0.04	0.0016″	Factory standard
4126604	30 EWRi-U	0 –500	0 –20″	0.01 / .0005″	0.05	0.002″	Factory standard

Order no.	a	b	c
	mm	mm	mm
4126623	385	150	16
4126624	585	150	16
4126603	385	150	16
4126604	585	150	16

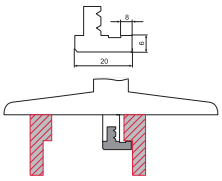


ACCESSORIES

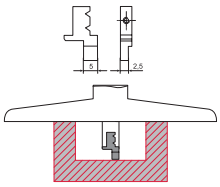
Order no.	For measuring instrument	Product name	Quantity unit	Product type
4102220	30 EWRi-U	Receiver for instruments with integrated wireless		i-Stick
4102357	30 EWR-U	16 EXu data connection cable USB (2 m)		16 EXu
4102410	30 EWR-U	Data connection cable RS232C (2 m)		16 EXr
4102520	30 EWRi-U, 30 EWR-U	Battery 3 V, CR 2032		
4102915	30 EWR-U	Digimatic data cable (2 m)		16 EWd
4126630	30 EWRi-U, 30 EWR-U	Interchangeable anvil with twin hook. For width and distance measurements of recesses, grooves and offsets.	Piece	30 EUd
4126631	30 EWRi-U, 30 EWR-U	Interchangeable anvil with ball insert, Ø 4 mm, angled. For distance measurements in lateral recesses and grooves.	Piece	30 EUw
4126632	30 EWRi-U, 30 EWR-U	Interchangeable anvil with ball insert, Ø 4 mm, straight. For depth measurements in narrow front recesses and grooves and concave measuring points.	Piece	30 EUg
4126633	30 EWRi-U, 30 EWR-U	Interchangeable anvil with measuring pin, Ø 2 x 8 mm. Suitable for all conventional depth measurements and for contacting in small bores and confined spaces.	Piece	30 EUb
4126634	30 EWRi-U, 30 EWR-U	Interchangeable anvil with measuring hook. For width and distance measurements of wide recesses and offsets.	Piece	30 EUh
4126635	30 EWRi-U, 30 EWR-U	Interchangeable anvil with chisel edge for straight measuring rod. For conventional measuring tasks with straight measuring rod.	Piece	30 EUs
4126641	30 EWRi-U, 30 EWR-U	Adjustable measuring bridge 300 mm including fittings. For broad-based support on large workpieces and for offset measurement outside the center of a large bore, e.g. measuring on a gearbox flange.	Piece	30 EUm
4126642	30 EWRi-U, 30 EWR-U	Adjustable measuring bridge 400 mm including fittings. For broad-based support on large workpieces and for offset measurement outside the center of a large bore, e.g. measuring on a gearbox flange.	Piece	30 EUm



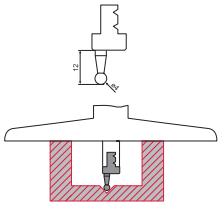
30 EUb



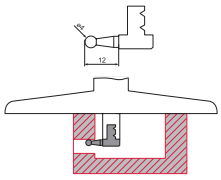
30 EUh



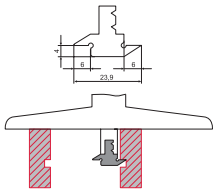
30 EUs



30 EUg



30 EUw



30 EUd



30 EUm



i-Stick

Digimar | Height Measuring Instruments

Whether it's simply scribing a workpiece or completing complex measurements in two dimensions – Digimar guarantees a maximum of both flexibility and quality. Our motorized height measuring instruments are simple to operate and provide a high level of measuring convenience and reliability.



Overview Height Measuring Instruments 50

Motorized Height Measuring Instruments

Digimar 817 CLM 54
Height Measuring Instrument

Digimar 816 CL 55
Height Measuring Instrument

Accessories for 817 CLM and 816 CL 56

Manual Height Measuring Instruments

Digimar 814 N 63
With Cast Base

Digimar 814 G 65
With Granite Table Plate

Height Measuring and Scribing Instrument

Digimar 814 SR 67
Height Measuring and Scribing Instrument

Digimar 817 CLM Quick Height

Height measuring instrument Digimar 817 CLM with the innovative Quick Mode. Fast measurements with the highest accuracy. Extensive measurement and evaluation options with maximum ease of use.

The Best Solution for Every Measuring Task

QUICK MODE

Fast measurement "by hand"
Extremely simple operation thanks to "Quick Mode", the innovative solution from Mahr (patent pending).

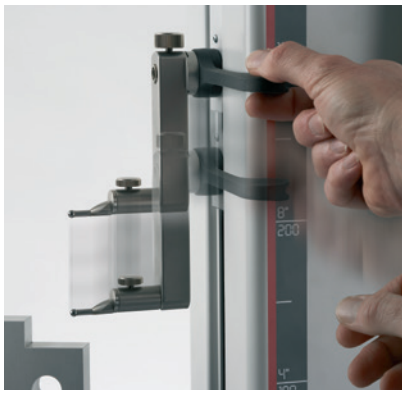


Fig. 1: Move the measuring slide manually in the direction of the measuring object.



Fig. 2: The motor starts the measuring process automatically.

Measuring with Keypad (short keys) at the Base

Ideal for measuring large workpieces with air bearings.

Using the buttons built into the base, the user can easily move the measuring slide to the desired position and start the measurement. This makes it easier to measure large workpieces that cannot be moved or positioned. The user can leave both hands on the measuring device (air bearing key and quick keys) and measure the workpiece completely.



Highest Accuracy and Reliability

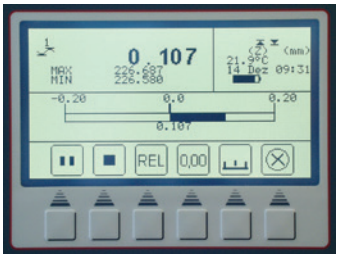
- High-precision incremental measuring system with dual-reading head system, insensitive to scale contamination
- Robust stainless steel guide column
- Measuring carriage guided in precision ball bearings
- Temperature compensation via integrated temperature sensor



Ergonomic Operating and Display Element



- Can be freely positioned with swivel arm



- Large, backlit display
- Self-explanatory operator guidance via icons

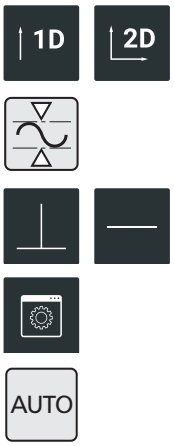


Convenient operation of all measurement functions via function keys with clear symbols.



Universal Measuring Possibilities

- Extensive measuring functions in 1D and 2D
- Dynamic measurement functions with analog display
- Automatic perpendicularity and straightness measurement (with accessories)
- Automated measuring sequences (measuring programs)
- Autofunction for chain measurements and distance measurement



Extensive Evaluation Possibilities

- Data transfer to PC via RS232 or USB (via adapter) e.g. in MS Excel via MarCom software
- Storage of measured values on integrated USB memory (recognized by the PC as a removable drive) or USB flash drive
- Extensive statistical evaluation



Digimar 817 CLM

Height Measuring Instrument

FEATURES

Functions

- Top or bottom contacting
- Web width or distances between grooves, including center of web or groove
- Bore or shaft diameter, including center of bore or shaft
- Bore reversing point (up or down)
- Shaft reversing point (up or down)
- Calculating distances or symmetry
- Dynamic measuring functions
- Perpendicularity measurement
- Straightness measurement
- Measurement in 2D mode
- Measuring programs
- Statistical evaluation
- Measuring data processing
- Large and clearly defined function keys
- Easy to read background lit graphic LCD display
- Operator guidance with self-explanatory icons / pictograms
- Operator prompts and menus are available in several languages
- Possible to set additional zero points on a work piece
- Additional measurement instruments with Opto RS232 interface can be connected
- Secure the future due to software update potential
- Automatic Stand-by switch mode
- Selectable Auto-off function, without loss of measured values
- Excellent accuracy and reliabilty due to the optical incremental measurement system with the double reader head
- Dynamic probing system enabling high repeatability
- Air bearings system for light and smooth movement
- Precise measuring head on stainless steel guideways
- Motorized measuring carriage simplifies measurement runs
- Probe constant remains after the instrument is switched off
- Integrated rechargeable battery with a long operating time span for power source independent measurement
- Temperature compensation with an integrated temperature sensor
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Package contains:** height measuring instrument including operating and display unit, carrier 817h1, probe K6/51, setting block 817 eb, instruction manual, power source, USB cable, protection cover, calibration certificate



TECHNICAL DATA

Order no.		4429010	4429011	4429012
Product type			817 CLM	
Measuring range	mm	0 –350	0 –600	0 –1000
Measuring range	inch	0 –14″	0 –24″	0 –40″
Application range from	mm		170	
Application range up to	mm	520	770	1170
Resolution	mm		0.01, 0.005, 0.001, 0.0005, 0.0001	
Resolution	inch		.001″, .0005″, .0001″, .00005″, .00001″	
Error limit	µm		(1.8+L/600) L in mm	
Repeatability bores	µm		1	
Repeatability planes	µm		0.5	
Perpendicularity error in µm	µm	5	6	10
Operating time max.	h		10	
Measuring force	N		1.0 +/–0.2 N	
Relative humidity non-condensing	%		65	
Working temperature	°C		20	
Operating temperature	°C		10 –40	
Product weight	kg	25.00	30.00	35.00
Data interface			USB, RS232C, Wireless	
Standard			Factory standard	

ACCESSORIES

Order no.	Product name	Product type
7024634	Data connection cable RS232C (3 m)	
4102333	817 USB Adapter cable RS232-USB (0.2 m)	817 USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick
4221525	Surface plate made from granite, 1000 x 630 mm	107 G
4221573	Stand, 1000 x 630 mm	107 Ug
4221526	Surface plate made from granite, 1200 x 800 mm	107 G
4221574	Stand, 1200 x 800 mm	107 Ug



RS232 e;
RS232 f;
817 f



e-Stick



107 Ug

Digimar 816 CL

Height Measuring Instrument

FEATURES

Basic measuring functions

- Top or bottom contacting
- Web width or distances between grooves, including center of web or groove
- Bore or shaft diameter, including center of bore or shaft
- Bore reversing point (up or down)
- Shaft reversing point (up or down)
- Calculating distances or symmetry
- Dynamic measuring functions
- Measuring program
- Measuring data processing

Operating and display unit

- Easy to read backlit graphic LCD
- Clear function keys
- Language-neutral operator guidance with self-explanatory symbols
- Possible to set additional zero points
- Memory can store up to 99 measured values
- Excellent accuracy and reliabilty due to the optical incremental measurement system with the double reader head
- Dynamic probing system enabling high repeatability
- Air bearings system for light and smooth movement
- Precise measuring head on stainless steel guideways
- Motorized measuring carriage simplifies measurement runs
- Temperature compensation with an integrated temperature sensor
- Probe constant remains after the instrument is switched off
- Integrated rechargeable battery with a long operating time span for power source independent measurement
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Package contains:** height measuring instrument incl. operating and display unit, carrier 817h1, probe K6/51, setting block 817 eb, instruction manual, power source, protection cover, calibration certificate



TECHNICAL DATA

Order no.		4429030	4429031
Product type		816 CL	
Measuring range	mm	0 –350	0 – 600
Measuring range	inch	0 –14″	0 –24″
Application range from	mm	170	
Application range up to	mm	520	770
Resolution	mm	0.01, 0.001	
Resolution	inch	.00005″, .0001″	
Error limit	µm	(2.8+L/300) L in mm	
Repeatability bores	µm	3	
Repeatability planes	µm	2	
Perpendicularity error in µm	µm	15	20
Operating time max.	h	10	
Measuring force	N	1.0 +/–0.2 N	
Relative humidity non-condensing	%	65	
Working temperature	°C	20	
Operating temperature	°C	10 –40	
Product weight	kg	25.00	30.00
Data interface		Opto RS232C, USB, Wireless	
Standard		Factory standard	

ACCESSORIES

Order no.	Product name	Product type
4346023	2000 USB Data connection cable USB (2 m)	2000 USB
4346020	Data connection cable RS232C (2 m)	2000 r
4102232	Transmitter for e-Stick	2000 e
4102230	Receiver	e-Stick
4221526	Surface plate made from granite, 1200 x 800 mm	107 G
4221574	Stand, 1200 x 800 mm	107 Ug
4221525	Surface plate made from granite, 1000 x 630 mm	107 G
4221573	Stand, 1000 x 630 mm	107 Ug



2000 e



e-Stick



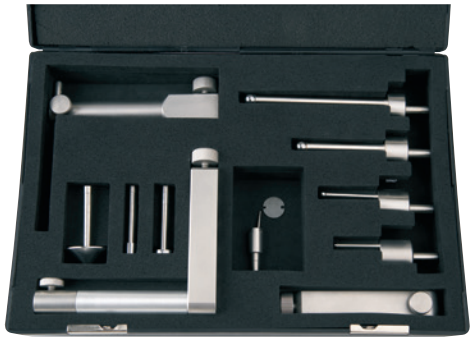
107 Ug

Digimar 817 ts1

Probe Set

FEATURES

- Large accessory kit
- Packaged in a practical plastic case
- Consisting of:
  - Depth probe
  - Carrier with extended holder
  - Disc measuring probe for grooves, etc.
  - Conical measuring probe
  - Cylindrical measuring probe
  - Holder for test indicator styli with M2 thread
  - Carrier including 4 spherical probes with shaft diameter 8 mm
- **Package contains:** case

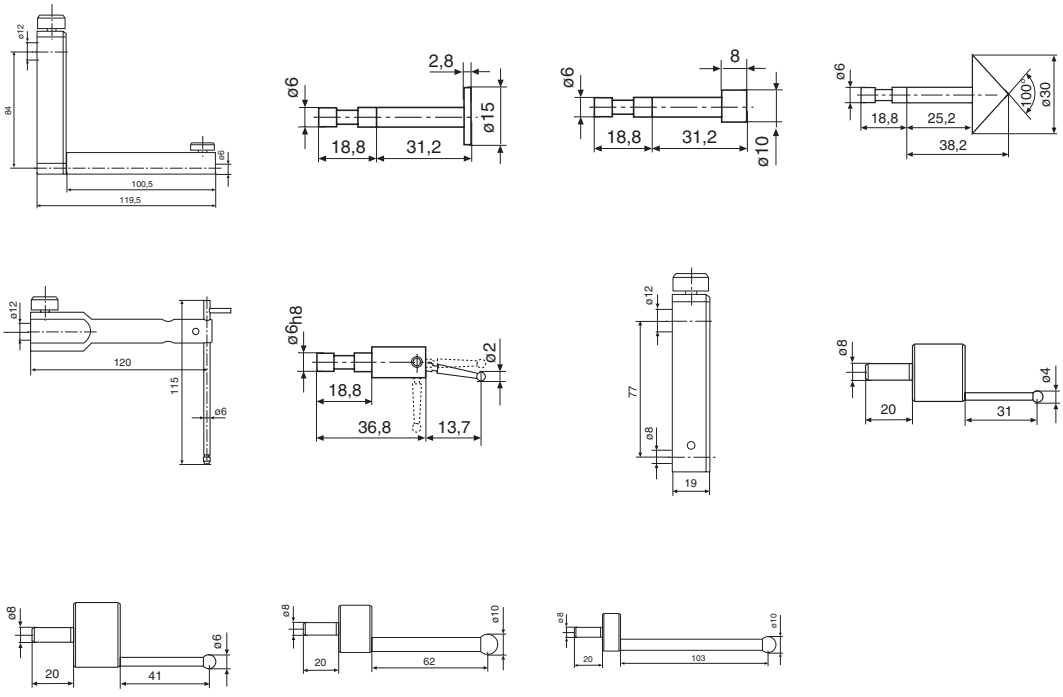


TECHNICAL DATA

Order no.	Product type
4429019	817 ts1

COMPONENTS INCLUDED IN SET

Order no.	Product name	Product type
4429219	Carrier for a probe, mounting hole 6 mm, a = 100.5 mm, b = 119.5 mm, c = 84 mm	817 h2
4429226	Disc probe ø 15 mm	S15/31.2
4429227	Cylindrical probe ø 10 mm	Z10/31.2
4429228	Taper probe	MKe 30
4429221	Depth probe inc. Holder	TMT 120
4429256	Probe with M2 threads for 3 styli positions (0°/10°/90°), incl. styli 800 ts ø 2.0 mm	KM 2
4429220	Carrier for probes 817 CLM, mounting hole 8 mm	817 h4
7023813	Probe with mount, ø 4.0 mm	K 4/30
7023816	Probes with mount, ø 6 mm	K 6/40
7023810	Probes with mount, ø 10.0 mm	K 10/60
7023615	Probes with mount, ø 10.0 mm	K 10/100



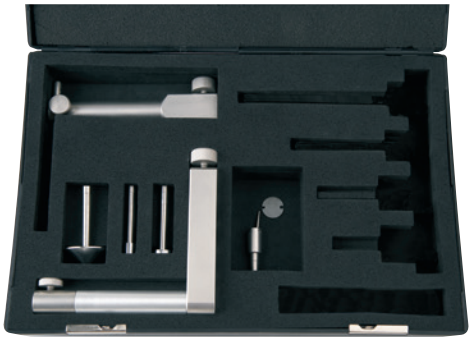
Digimar 817 ts2

Probe Set

FEATURES

- Small accessory kit
- Packaged in a practical plastic case
- Consisting of:
  - Depth probe
  - Carrier with extended holder
  - Disc measuring probe for grooves, etc.
  - Conical measuring probe
  - Cylindrical measuring probe
  - Holder for test indicator styli with M2 thread

- **Package contains:** case

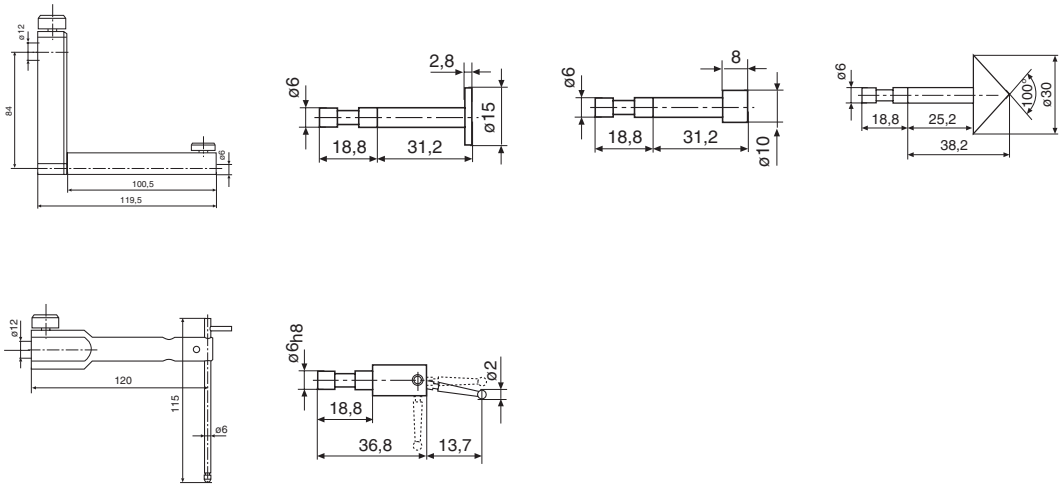


TECHNICAL DATA

Order no.	Product type
4429018	817 ts2

COMPONENTS INCLUDED IN SET

Order no.	Product name	Product type
4429219	Probe carrier, mounting hole 6 mm, a = 100.5 mm, b = 119.5 mm, c = 84 mm	817 h2
4429226	Disc probe ø 15 mm	S15/31.2
4429227	Cylindrical probe ø 10 mm	Z10/31.2
4429228	Taper probe	MKe 30
4429221	Depth probe including holder	TMT 120
4429256	Probe with M2 threads for 3 styli positions (0°/10°/90°), incl. styli 800 ts ø 2.0 mm	KM 2



Digimar 817 ts3

Universal Probe Set

FEATURES

- Accessory kit for small parts and delicate grooves, recesses and bores
- Packaged in a practical wooden case
- Suitable for 817 h4 carriers with 8 mm mounting bore (4429220)
- Consisting of:
  - Base with 8 mm holding shaft
  - Depth probe
  - Probe shoe for grooves and recesses
  - Spherical measuring probe
  - Conical measuring probe
  - Extension
  - Adapter for M2.5 measuring anvils

- **Package contains:** case

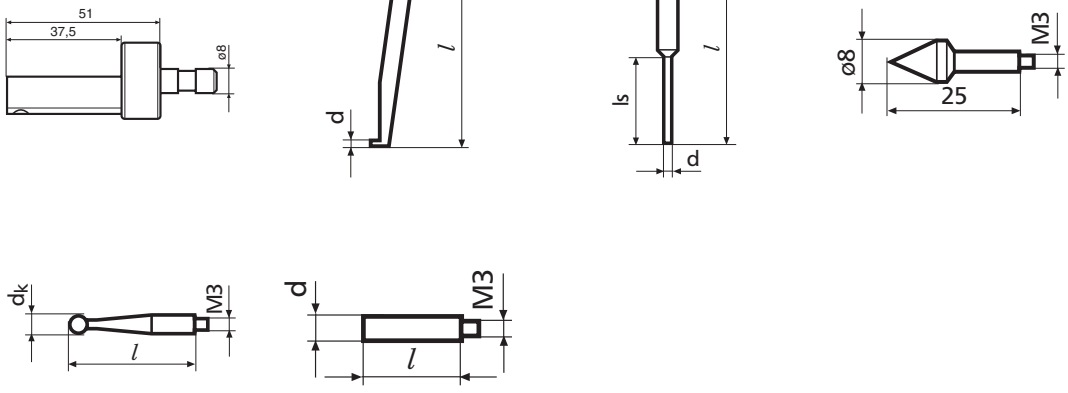


TECHNICAL DATA

Order no.	Product type
7034000	817 ts3

COMPONENTS INCLUDED IN SET

Order no.	Product name	Product type
3015917	Probe carrier	Gk/8
3015918	Measuring crook, d = 0.5 mm, l = 78 mm	TS 0.5/78
3015919	Probe pin/tip, d = 1.2 mm, l = 75 mm, ls = 15.5 mm	T 1.2/75
3015920	Taper probe	MKe 8
3022000	Spherical probe, d_k = 3.0 mm, l = 24 mm	K3/24
3022001	Spherical probe, d_k = 2.0 mm, l = 24 mm	K2/24
3022002	Spherical probe, d_k = 1.0 mm, l = 24 mm	K1/24
3015888	Extension M3 - M2.5, d = 4 mm, l = 20 mm	V/M2.5
3015921	Extension M3 - M3, d = 4 mm, l = 20 mm	V/M3



Digimar 817 h1 / 817 h2 / 817 h5

Probe Carriers

FEATURES

- Carrier for probes with 6 mm holding shaft
- Used for measurements at increased measuring depth (817 h2)
- Pivoting (817 h5) e.g. for aligning a cylindrical measuring probe

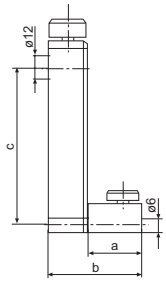




TECHNICAL DATA

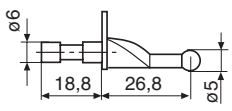
Order no.	Product type
4429154	817 h1
4429219	817 h2
4429454	817 h5

Order no.	a	b	c	Mounting hole
	mm	mm	mm	
4429154	27.5	46.5	84	6 mm
4429219	100.5	119.5	84	6 mm
4429454	35	54	86	6 mm

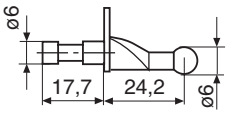


ACCESSORIES

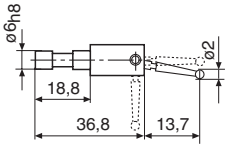
Order no.	Product name	Product type
4301865	Mounting shaft ø 6 mm	800 a6
4429158	Spherical probe, ø 5.0 mm	K5/51
4429226	Disc probe ø 15 mm	S15/31.2
4429227	Cylindrical probe ø 10 mm	Z10/31.2
4429228	Taper probe	MKe 30
4429254	Spherical probe for 817 CLM, ø 6 mm	K6/51
4429256	Probe with M2 threads for 3 styli positions (0°/10°/90°), including styli 800 ts ø 2.0 mm	KM 2
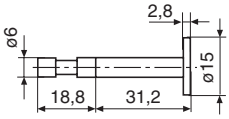


K5/51



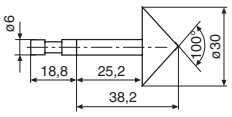
K6/51



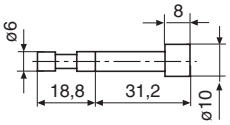
KM 2



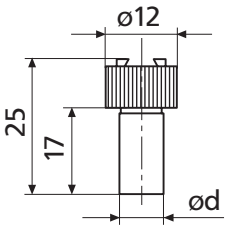
S15/31.2



MKe 30



Z10/31.2



800 a6

Digimar 817 h4

Probe Carriers 817 CLM

FEATURES

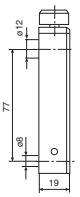
- Carrier for measuring anvils with 8 mm holding shaft and weighing 102 g
- Suitable for the CXt2 universal measuring probe set
- Compatible with Digimar CX1 and CX2 probes weighing 102 g



TECHNICAL DATA

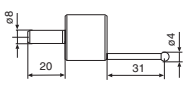
Order no.	Product type
4429220	817 h4

Order no.	Mounting hole
4429220	8 mm

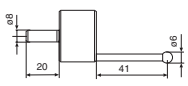


ACCESSORIES

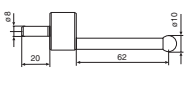
Order no.	Product name	Product type
3015888	Extension M3 - M2.5, d = 4 mm, l = 20 mm	V/M2.5
3015917	Probe carrier	Gk/8
3015918	Measuring crook, d = 0.5 mm, l = 78 mm	TS 0.5/78
3015919	Probe pin/tip, d = 1.2 mm, l = 75 mm, ls = 15.5 mm	T 1.2/75
3015920	Taper probe	MKe 8
3015921	Extension M3 - M3, d = 4 mm, l = 20 mm	V/M3
3022000	Spherical probe, d_k = 3.0 mm, l = 24 mm	K3/24
3022001	Spherical probe, d_k = 2.0 mm, l = 24 mm	K2/24
3022002	Spherical probe, d_k = 1.0 mm, l = 24 mm	K1/24
7023615	Probes with mount, ø 10.0 mm	K 10/100
7023810	Probes with mount, ø 10.0 mm	K 10/60
7023813	Probe with mount, ø 4.0 mm	K 4/30
7023816	Probes with mount, ø 6 mm	K 6/40



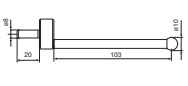
K 4/30



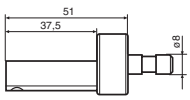
K 6/40



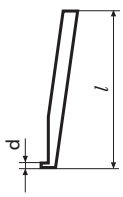
K 10/60



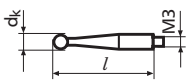
K 10/100



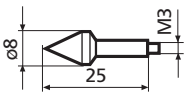
Gk/8



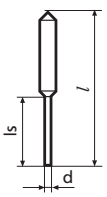
TS 0.5/78



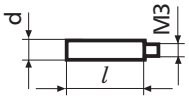
K3/24; K2/24; K1/24



MKe 8



T 1.2/75



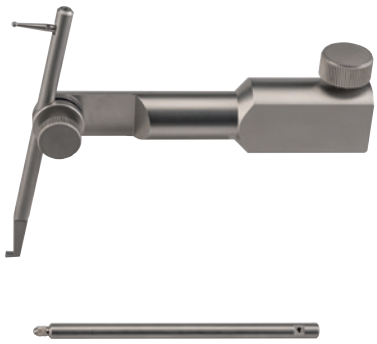
V/M2.5;V/M3

Digimar TMT 120 / TMT 120 S

Depth Probe including Holder

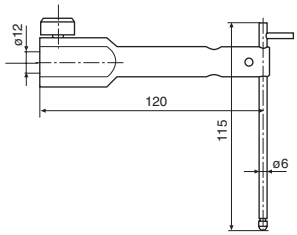
FEATURES

- Depth probe and carrier for measurements in vertical bores and recesses
- Interchangeable depth probe
- M2 and M2.5 connecting threads for measuring anvils
- M2.5 spherical contact point 901 H
- pivoting (TMT 120 S only)
- Second depth probe with probe shoe for groove measurement (TMT 120 S only)
- M2 stylus 800 ts with 2 mm ball (TMT 120 S only)

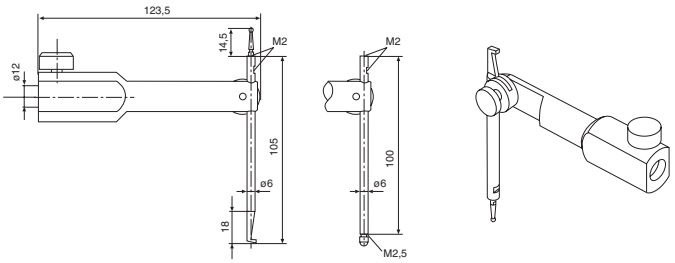


TECHNICAL DATA

Order no.	Product type
4429221	TMT 120
4429421	TMT 120 S



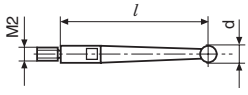
TMT 120



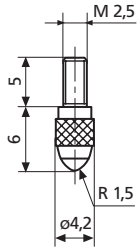
TMT 120 S

ACCESSORIES

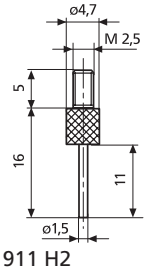
Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4360001	Standard contact point, steel, r = 1.5 mm	901
4360002	Standard contact point, carbide, r = 1.5 mm	901 H
4360003	Standard contact point, ruby, r = 1.5 mm	901 R
4360241	Pin contact point, carbide, l = 11 mm, measuring surface ø 1.5 mm	911 H2



800 t



901



911 H2

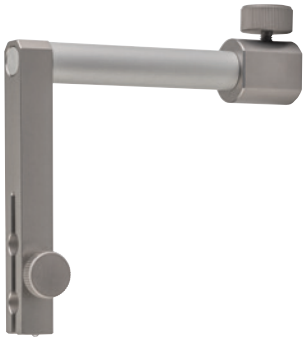
For additional pins see MarTest and MarCator

Digimar 817 h3

Carrier for Checking Perpendicularity

FEATURES

- Carrier for perpendicularity measurement
- Suitable for analog and digital dial indicators
- Ideal with P1514H measuring probe (817 CLM only)

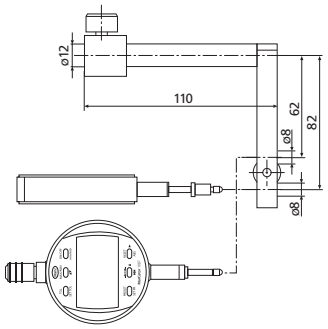




TECHNICAL DATA

Order no.	Product type
4429206	817 h3

Order no.	Mounting hole
4429206	8 mm



ACCESSORIES

Order no.	Product name	Product type
4102410	Data connection cable RS232C (2 m)	16 EXr
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4426810	Incremental probe for Digimar 817 CLM	P1514 H



1086 R

Digimar 814 N

Height Measuring and Scribing Instrument

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- Selectable resolution
- DATA (data transmission)

FEATURES

- Large, easy to read digital display
- Measuring and display unit are incorporated in the measuring head
- Data transmission via Opto RS232 C interface
- Digital preset
- Zero setting in any position
- MAX, mIN and MAX-MIN functions
- Enter tolerance limit for 1 characteristic
- Switch between mm/inch
- High accuracy
- Incremental inductive measuring system
- Measuring head with a ball bush guide
- Resistance free measuring system
- Easy to operate due to the hand crank on the side of the measuring head
- Constant measuring force; acting upwards or downwards as required
- Measuring head can be locked in position, ideal for scribing tasks
- With fine adjustment
- Power source independent due to being battery operated
- Universal application due to broad range of accessories
- **Package contains:** height measuring instrument including operating and display unit, caliper arm 814t, spherical probe 814 m, 8 mm, battery, instruction manual, protection cover, test certificate



Application:

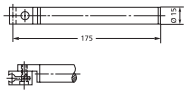
- For measuring heights and distances between bores, surfaces and edges
- For selecting and marking out workpieces

TECHNICAL DATA

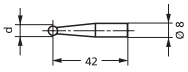
Order no.		4426540	4426542
Product type		814 N	
Measuring range	mm	0 –320	0 –620
Measuring range	inch	0 –12.6″	0 –24.4″
Resolution	mm	0.001, 0.01	
Resolution	inch	.00005″, .0005″	
Error limit	µm	20	30
Perpendicularity error in µm	µm	20	30
Operating time max.	h	2000	
Measuring force	N	3	
Working temperature	°C	20	
Operating temperature	°C	5 –40	
Product weight	kg	6.20	10.50
Data interface		Opto RS232C, Wireless	
Standard		Factory standard	

ACCESSORIES

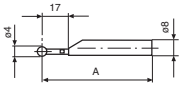
Order no.	Product name	Product type
4426510	Probe arm 150 mm, mounting hole 8 mm	814 t
4426525	Spherical probe, ball diameter 2.0 mm	814 m
4426526	Spherical probe, ball diameter 3.0 mm	814 m
4426512	Spherical probe, ball diameter 4.0 mm	814 m
4426527	Spherical probe, ball diameter 5.0 mm	814 m
4426511	Spherical probe, ball diameter 6 mm	814 m
4426528	Spherical probe, ball diameter 7 mm	814 m
4426509	Spherical probe, ball diameter 8.0 mm	814 m
4426498	Spherical probe ruby ball, ø = 4.0 mm	817 CI-r
4426513	Disc probe	814 s
4426514	Probe holder	814 h
4426515	Scriber for height gage 814 G	814 a
4426516	Holder	814 kh
4426071	Measuring taper 0–15 mm	817 ks1
4426072	Measuring taper 14–20 mm	817 ks2
4426073	Measuring taper 18–24 mm	817 ks3
4426074	Measuring taper 23–30 mm	817 ks4
4426517	Two direction probe, ø = 4.0 mm	814 u
4426518	Interchangeable probe arm, ø = 2.0 mm	814 ua
4426434	Holder with connection thread M2.5 / M1.6 / M1.4	817 CI-am
4426433	Stylus with exchangeable measuring pin	817 CI-sa
4426435	Stylus with parallel measuring faces	817 CI-p
4426616	Dust cover for 0–320 mm	
4426619	Dust cover for 0–620 mm	
4102510	Data connection cable RS232C (2 m)	16 ESv
4102235	Transmitter for e-Stick	1082 e
4102230	Receiver	e-Stick
4102330	Opto USB Adapter cable RS232-USB (0.2 m)	Opto USB
4102520	Battery 3 V, CR 2032	



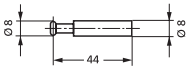
814 t



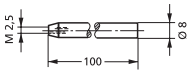
814 m



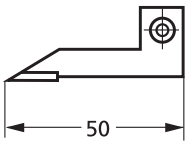
817 CI-r



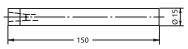
814 s



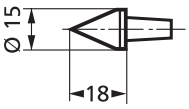
814 h



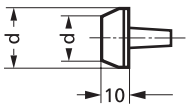
814 a



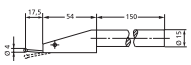
814 kh



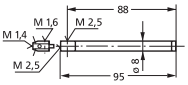
817 ks1



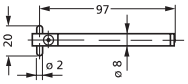
817 ks2; 817 ks3; 817 ks4



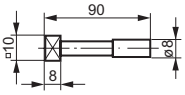
814 u



817 CI-am



817 CI-sa



817 CI-p



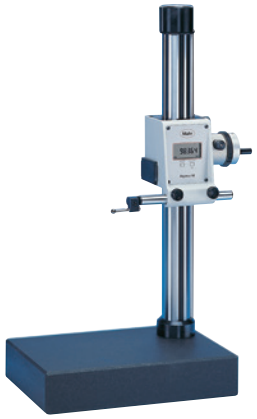
e-Stick

Digimar 814 G

Height Measuring and Scribing Instrument

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- Selectable resolution
- DATA (data transmission)



FEATURES

- Large, easy to read digital display
- Measuring and display unit are incorporated in the measuring head
- Data transmission via Opto RS232 C interface
- Digital preset
- Zero setting in any position
- MAX, mIN and MAX-MIN functions
- Enter tolerance limit for 1 characteristic
- Switch between mm/inch
- High accuracy
- Incremental inductive measuring system
- Measuring head with a ball bush guide
- Resistance free measuring system
- Easy to operate due to the hand crank on the side of the measuring head
- Constant measuring force; acting upwards or downwards as required
- Measuring head can be locked in position, ideal for scribing tasks
- With fine adjustment
- Power source independent due to being battery operated
- Universal application due to broad range of accessories
- **Package contains:** height measuring instrument including operating and display unit, caliper arm 814 t, spherical probe 814 m, 8 mm, battery, instruction manual, protection cover, test certificate

Application:

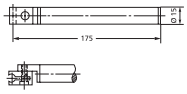
- For measuring heights and distances between bores, surfaces and edges
- For selecting and marking out workpieces

TECHNICAL DATA

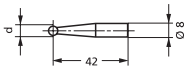
Order no.		4426541	4426543
Product type		814 G	
Measuring range	mm	0 –320	0 –620
Measuring range	inch	0 –12.6″	0 –24.4″
Resolution	mm	0.001, 0.01	
Resolution	inch	.00005″, .0005″	
Error limit	µm	20	30
Perpendicularity error in µm	µm	20	30
Operating time max.	h	2000	
Measuring force	N	3	
Working temperature	°C	20	
Operating temperature	°C	5 –40	
Product weight	kg	14.00	18.30
Plate size	mm	200 x 300	
Data interface:		Opto RS232C, Wireless	
Standard		Factory standard	

ACCESSORIES

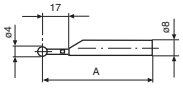
Order no.	Product name	Product type
4426510	Probe arm 150 mm, mounting hole 8 mm	814 t
4426525	Spherical probe, ball diameter 2.0 mm	814 m
4426526	Spherical probe, ball diameter 3.0 mm	814 m
4426512	Spherical probe, ball diameter 4.0 mm	814 m
4426527	Spherical probe, ball diameter 5.0 mm	814 m
4426511	Spherical probe, ball diameter 6 mm	814 m
4426528	Spherical probe, ball diameter 7 mm	814 m
4426509	Spherical probe, ball diameter 8.0 mm	814 m
4426498	Spherical probe ruby ball, ø = 4.0 mm	817 CI-r
4426513	Disc probe	814 s
4426514	Probe holder	814 h
4426515	Scriber for height gage 814 G	814 a
4426516	Holder	814 kh
4426071	Measuring taper 0–15 mm	817 ks1
4426072	Measuring taper 14–20 mm	817 ks2
4426073	Measuring taper 18–24 mm	817 ks3
4426074	Measuring taper 23–30 mm	817 ks4
4426517	Two direction probe, ø = 4.0 mm	814 u
4426518	Interchangeable probe arm, ø = 2.0 mm	814 ua
4426434	Holder with connection thread M2.5 / M1.6 / M1.4	817 CI-am
4426433	Stylus with exchangeable measuring pin	817 CI-sa
4426435	Stylus with parallel measuring faces	817 CI-p
4426616	Dust cover for 0–320 mm	
4426619	Dust cover for 0–620 mm	
4102510	Data connection cable RS232C (2 m)	16 ESv
4102235	Transmitter for e-Stick	1082 e
4102230	Receiver	e-Stick
4102330	Opto USB Adapter cable RS232-USB (0.2 m)	Opto USB
4102520	Battery 3 V, CR 2032	



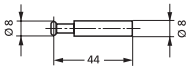
814 t



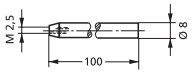
814 m



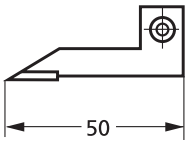
817 CI-r



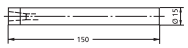
814 s



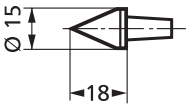
814 h



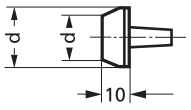
814 a



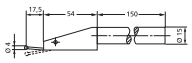
814 kh



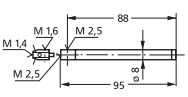
817 ks1



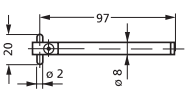
817 ks2; 817 ks3; 817 ks4



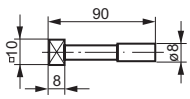
814 u



817 CI-am



817 CI-sa



817 CI-p



e-Stick

Digimar 814 SR

Height Measuring and Scribing Instrument

REF system | ABS system | Digimatic | RS232C

FUNCTIONS

- RESET (set display to zero)
- mm/inch
- ABS (switch between relative and absolute measurement)
- Lock/Unlock
- PRESET (for entering a numerical value)
- DATA (data transmission via connection cable)
- AUTO-ON / OFF

FEATURES

- Battery life up to 3 years
- Max. measuring speed 1.5 m/s (60"/s)
- MarConnect Data output: choose either
  - USB
  - OPTO RS232C
  - Digimatic
- High contrast liquid crystal display with 12 mm sized digits
- Sturdy heavy-duty base, easy to handle
- Hardened and lapped contact surface which produce both a smooth and even movement
- Slide and beam made of hardened stainless steel
- Hand crank for positioning and measuring
- Fine adjustment
- Locking screw
- Interchangeable scriber point, carbide tipped
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Package contains:** scriber, battery, carton, instruction manual



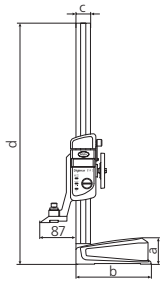
Application:

- Scribing and marking of work pieces
- Measuring heights and distances

TECHNICAL DATA

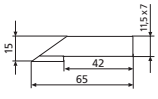
Order no.		4426100	4426101
Product type		814 SR	
Measuring range	mm	0 –350	0 – 600
Measuring range	inch	0 –14"	0 –24"
Resolution	mm	0.01	
Resolution	inch	.0005"	
Error limit	µm	40	50
Operating time max.	h	4000	
Operating temperature	°C	10 – 40	
Product weight	kg	7.00	8.00
Data interface		Opto RS232C, Digimatic, USB, Wireless	
Standard		Factory standard	

Order no.	a	b	c	d
	mm	mm	mm	mm
4426100	62	180	35	580
4426101	62	180	35	835

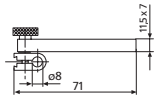


ACCESSORIES

Order no.	Product name	Product type
4123867	Measuring/Scriber point, carbide tipped	814 SRs
4123041	Holder for test indicators	27 Sp
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102520	Battery 3 V, CR 2032	



814 SRs



27 Sp



e-Stick



16 EWe

Micromar | Micrometers

Micrometers fall alongside calipers with regards to the most frequently used hand-held measuring instruments. With their precision ground spindle, carbide-tipped measuring faces and robust frame construction, the modern micrometer from the Micromar series ensures maximum precision and a long working life. Our mechanical micrometers are extremely reliable and easy to read due to the scales' satin chrome finish, thus ensuring accuracy and user comfort. Our digital micrometers unite the highly renowned mechanical precision from Mahr with most modern electronics. These digital micrometers offer simple operation with an error free reading, as well as problem-free data of the determined parameters to an external evaluation instrument. Micromar 40 EWR, the newest generation of waterproof digital micrometers, ensures that even in the most difficult workshop conditions, precise and reliable results are obtained. One of Mahr's specialties would be the micrometer with a dial comparator. The device's built-in dial comparator, stationary anvil and constant measuring force result in rapid measurements and highly precise serial measurements.



Overview Micromar Micrometers 68

Micrometers

Micromar 40 EWRi / 40 EWR / 40 ER 72
With Digital Display

Micromar 40 EWRi-L / 40 EWR-L 76
With Digital Display

Micromar 40 A / 40 SA 78
With Dial Display

Micromar 40 F / 40 FC / 40 T / 40 TS 82
Micrometer with Dial Comparator

Micromar 40 EWRi-V / 40 EWR-V 87
With Digital Display

Micromar 40 SM 94
With Disc-Type Measuring Surfaces

Depth Micrometers

Micromar 40 EWRi-S / 40 EWR-S 95
With Blade-Type Measuring Surfaces

Micromar 40 EWRi-B / 40 EWR-B 97
With Reduced Measuring Surfaces Ø 3 mm

Micromar 40 EWRi-R / 40 EWR-R 99
With Spherical Anvil

Micromar 40 EWRi-K / 40 EWR-K 101
For Measuring Crimp Heights

Inside Micrometers

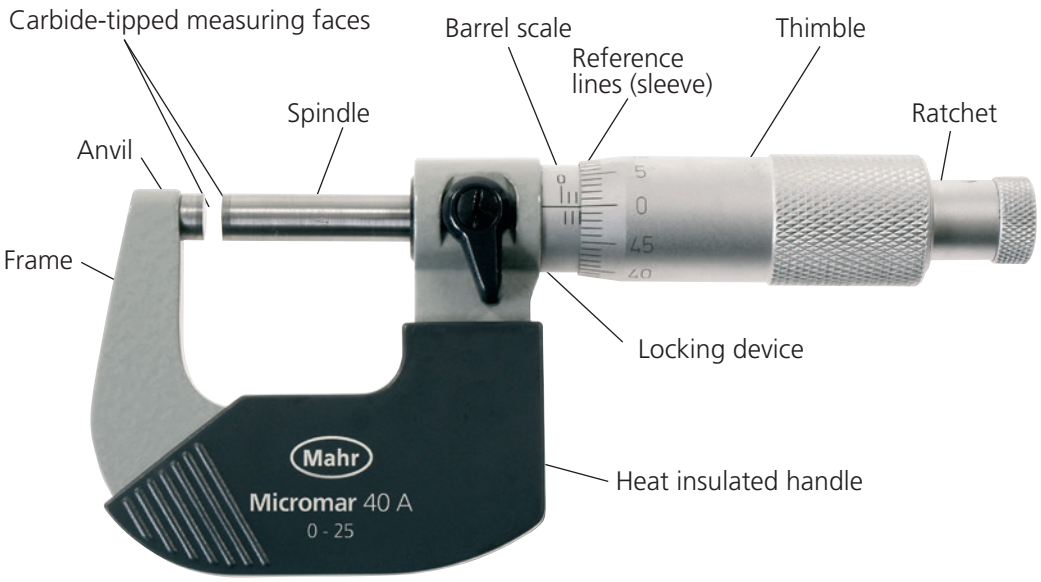
Micromar 44 F / 44 CM 103
Inside Micrometers with 2-Point Contact

Micromar 44 A / 44 AS / 44 EWR / 844 A / 844 AS 105
Self-Centering Inside Micrometer / Measuring Pistol

Micromar Individual Elements 114
for 44 A / 44 EWR / 844 A

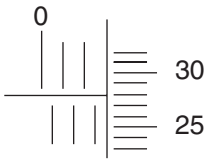
Micromar 45 T 117
With Dial Display

Micromar | Design Features



Reading example:

Micrometer with 0.01 mm divisions



Sleeve	2.5
Thimble	0.28
Measuring result	2.78 mm

Micromar | Types of Micrometers

Mahr Micrometers are available with the following means of indication:

a) Digital micrometer with digital display



b) Mechanical micrometer with scale and dial



c) Mechanical micrometer with scale



Error limits G according to DIN 863-1

Measuring range mm			Error limit G µm	Measuring force N
0	–	25	4	5 – 10
25	–	50	4	5 – 10
50	–	75	5	5 – 10
75	–	100	5	5 – 10
100	–	125	6	5 – 10
125	–	150	6	5 – 10
150	–	175	7	5 – 10
175	–	200	7	5 – 10
200	–	225	8	5 – 10
225	–	250	8	5 – 10
250	–	275	9	5 – 10
275	–	300	9	5 – 10
300	–	325	10	5 – 10
325	–	350	10	5 – 10
350	–	375	11	5 – 10
375	–	400	11	5 – 10
400	–	425	12	5 – 10
425	–	450	12	5 – 10
450	–	475	13	5 – 10
475	–	500	13	5 – 10

Micromar | Digital Micrometer Micromar 40 EWRi
Micrometers with Integrated Wireless

With the digital waterproof Micrometer **Micromar** 40 EWRi, precise and reliable results are obtained even in the most difficult conditions.



Integrated wireless offers you much more freedom. Whether at the measuring workspace, for inspections inside or on the machine, in the case of large workpieces, you get fully autonomous measuring without limits by a cable.

The high-contrast display with 10 mm high digits enables accurate, fatigue-free reading of the measurement results.

The **Reference Lock Function** prevents operating error caused by accidental usage of the operating buttons.

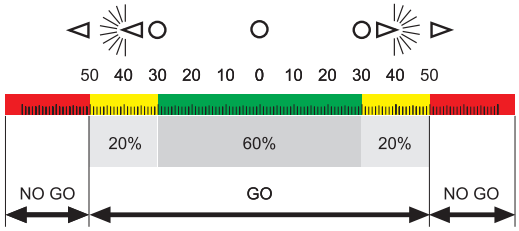
Stainless steel, hardened spindle



Sturdy hard lacquered steel frame

ABS **Absolute Function**: Micrometer can be set in any position to 0.000 mm / .0000" without the reference to the preset value being lost

Tolerance function with warning limits:



Hold:
Freezes the measured value after the measurement. Practical function for measuring tasks, where the display is not visible, i.e. measurements in the machine.

The **ergonomically formed and thermally insulated handle** as well as the integrated ratchet in the thimble ensures both trouble free handling and accurate measurement results.



Protection class IP65 in accordance to IEC 60529, the waterproof measuring system FPS (Fluid Protected measuring System) with a sealed housing.



Micromar 40 EWRi

Digital Micrometer Set

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (tolerance and warning limits)
- HOLD (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

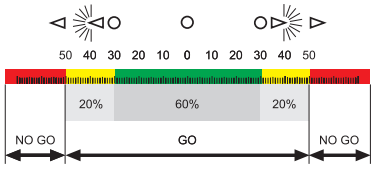
FEATURES

- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in Wireless mode)
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting values, case



40 EWRi

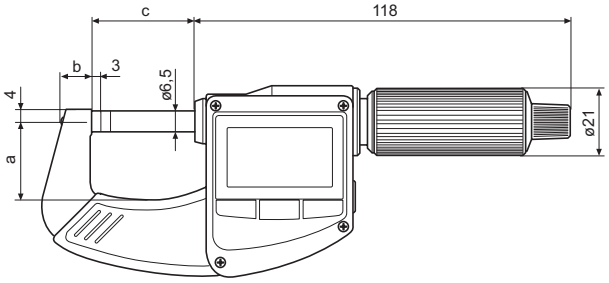




TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Parallelism deviation	Flatness deviation	Spindle thread pitch	Measuring force	Standard	Number of micrometers
		mm	inch	mm/inch	µm	µm	µm	mm	N		
4157100	40 EWRi	0 –25	0 –1″	0.001 / .00005″	2	2	0.6	0.5	5 –10	Factory standard	
4157101	40 EWRi	25 –50	1 –2″	0.001 / .00005″	2	2	0.6	0.5	5 –10	Factory standard	
4157102	40 EWRi	50 –75	2 –3″	0.001 / .00005″	3	3	0.6	0.5	5 –10	Factory standard	
4157103	40 EWRi	75 –100	3 –4″	0.001 / .00005″	3	3	0.6	0.5	5 –10	Factory standard	
4157104	40 EWRi	100 –125	4 –5″	0.001 / .00005″	6	3	0.6	0.5	5 –10	DIN 863–1	
4157105	40 EWRi	125 –150	5 –6″	0.001 / .00005″	6	3	0.6	0.5	5 –10	DIN 863–1	
4157106	40 EWRi	150 –175	6 –7″	0.001 / .00005″	7	4	0.6	0.5	5 –10	DIN 863–1	
4157107	40 EWRi	175 –200	7 –8″	0.001 / .00005″	7	4	0.6	0.5	5 –10	DIN 863–1	
4157115	40 EWRi	0 –100	0 –4″	0.001 / .00005″				0.5	5 –10	Factory standard	4

Order no.	a	b	c
	mm	mm	mm
4157115			
4157100	24	9.5	32
4157101	36	11	57
4157102	45	13	82
4157103	57	13	107
4157104	73	13	132
4157105	82	13	157
4157106	95	13	182
4157107	106	13	207



ACCESSORIES

Order no.	Product name	Type
4102220	Receiver for instruments with Integrated Wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



41 H



i-Stick

Micromar 40 EWR

Digital Micrometer

TOL | ABS | Digimatic | #ID | IP 65 | REF system

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (tolerance and warning limits)
- HOLD (storage of measured values)
- DATA (data transmission via connection cable)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

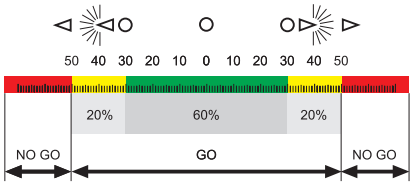
FEATURES

- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** MarConnect (bidirectional), USB, Digimatic
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case



40 EWR

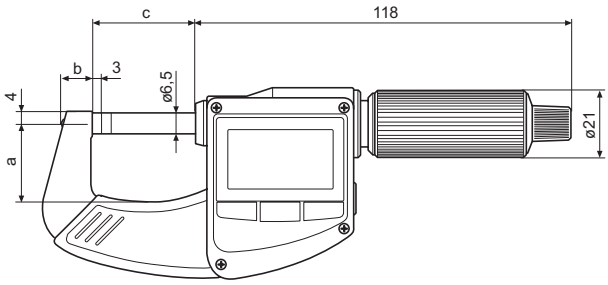




TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Parallelism deviation	Flatness deviation	Spindle thread pitch	Measuring force	Standard	Number of micrometers
		mm	inch	mm/inch	µm	µm	µm	mm	N		
4157000	40 EWR	0 –25	0 –1″	0.001 / .00005″	2	2	0.6	0.5	5 –10	Factory standard	
4157001	40 EWR	25 –50	1 –2″	0.001 / .00005″	2	2	0.6	0.5	5 –10	Factory standard	
4157002	40 EWR	50 –75	2 –3″	0.001 / .00005″	3	3	0.6	0.5	5 –10	Factory standard	
4157003	40 EWR	75 –100	3 –4″	0.001 / .00005″	3	3	0.6	0.5	5 –10	Factory standard	
4157004	40 EWR	100 –125	4 –5″	0.001 / .00005″	6	3	0.6	0.5	5 –10	DIN 863–1	
4157005	40 EWR	125 –150	5 –6″	0.001 / .00005″	6	3	0.6	0.5	5 –10	DIN 863–1	
4157006	40 EWR	150 –175	6 –7″	0.001 / .00005″	7	4	0.6	0.5	5 –10	DIN 863–1	
4157007	40 EWR	175 –200	7 –8″	0.001 / .00005″	7	4	0.6	0.5	5 –10	DIN 863–1	
4157015	40 EWR	0 –100	0 –4″	0.001 / .00005″				0.5	5 –10	Factory standard	4

Order no.	a	b	c
	mm	mm	mm
4157000	24	9.5	32
4157001	36	11	57
4157002	45	13	82
4157003	57	13	107
4157004	73	13	132
4157005	82	13	157
4157006	95	13	182
4157007	106	13	207
4157015			



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Digimatic data cable (2 m)	DK-D1
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 ER

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- mm/inch
- HOLD
  (storage of measured values)
- LOCK function (key lock)

FEATURES

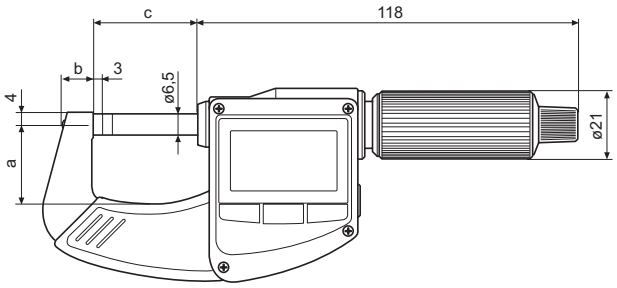
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- **Digit height:** 10 mm
- **IP protection category:** IP 40
- **Package contains:** instruction manual, battery, case



TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	µm	mm	N	
4157010	40 ER	0 –25	0 –1″	0.001 / .00005″	2	0.5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4157010	24	9.5	32



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 EWR

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET
  (for entering a numerical value)
- LOCK function (key lock)
- HOLD
  (storage of measured values)

FEATURES

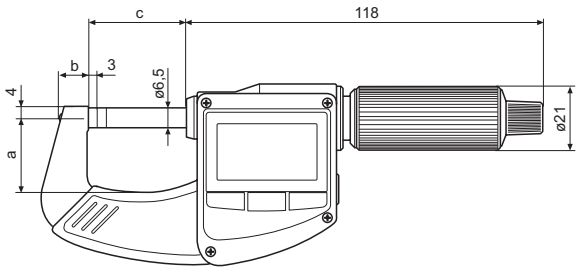
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Digit height:** 10 mm
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case



TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	µm	mm	N	
4157011	40 EWR	0 –25	0 –1″	0.001 / .00005″	2	0.5	5 –10	Factory standard
4157012	40 EWR	25 –50	1 –2″	0.001 / .00005″	2	0.5	5 –10	Factory standard
4157013	40 EWR	50 –75	2 –3″	0.001 / .00005″	3	0.5	5 –10	Factory standard
4157014	40 EWR	75 –100	3 –4″	0.001 / .00005″	3	0.5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4157011	24	9.5	32
4157012	36	11	57
4157013	45	13	82
4157014	57	13	107



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 EWRi-L

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (tolerance and warning limits)
- HOLD (storage of measured values)
- DATA (data transmission via connection cable)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

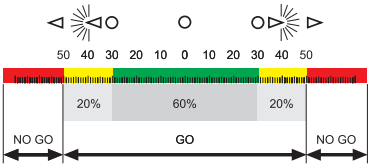
FEATURES

- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 2 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case



Application:

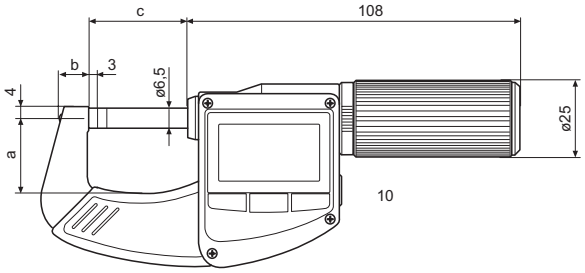
- Avoiding workpiece damage: The non-rotating spindle has a touching contact, which prevents scratch marks on sensitive and finely machined surfaces
- Ideal for measuring thin metal foils without twisting and bending them
- Thread flank measurement by using thread wires: Both wire holders always remain in the engaged position with the non-rotating spindle



TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Parallelism deviation	Flatness deviation	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	µm	µm	µm	mm	N	
4157120	40 EWRi-L	0 –25	0 –1″	0.001 / .00005″	2	2	0.6	5	5 –10	Factory standard
4157121	40 EWRi-L	25 –50	1 –2″	0.001 / .00005″	2	2	0.6	5	5 –10	Factory standard
4157122	40 EWRi-L	50 –75	2 –3″	0.001 / .00005″	3	3	0.6	5	5 –10	Factory standard
4157123	40 EWRi-L	75 –100	3 –4″	0.001 / .00005″	3	3	0.6	5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4157120	24	9.5	32
4157121	36	11	57
4157122	45	13	82
4157123	57	13	107



ACCESSORIES

Order no.	Product name	Product type
4102220	Receiver for instruments with integrated wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



41 H



i-Stick

Micromar 40 EWR-L

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN
  (for entering a numerical value)
- LOCK function (key lock)
- TOL
  (tolerance and warning limits)
- HOLD
  (storage of measured values)
- DATA (data transmission via connection cable)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

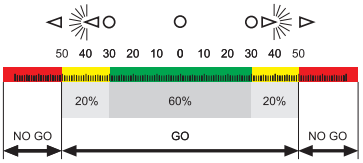
FEATURES

- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** MarConnect (bidirectional), USB, Digimatic
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** battery, instruction manual, setting standard (measuring range of 25–50 mm), case



Application:

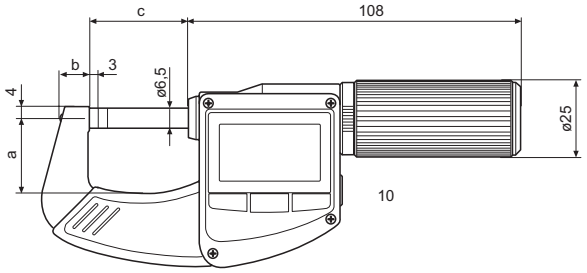
- Avoiding workpiece damage: The non-rotating spindle has a touching contact, which prevents scratch marks on sensitive and finely machined surfaces
- Ideal for measuring thin metal foils without twisting and bending them
- Thread flank measurement by using thread wires: Both wire holders always remain in the engaged position with the non-rotating spindle



TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Parallelism deviation	Flatness deviation	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	µm	µm	µm	mm	N	
4157020	40 EWR-L	0 –25	0 –1″	0.001 / .00005″	2	2	0.6	5	5 –10	Factory standard
4157021	40 EWR-L	25 –50	1 –2″	0.001 / .00005″	2	2	0.6	5	5 –10	Factory standard
4157022	40 EWR-L	50 –75	2 –3″	0.001 / .00005″	3	3	0.6	5	5 –10	Factory standard
4157023	40 EWR-L	75 –100	3 –4″	0.001 / .00005″	3	3	0.6	5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4157020	24	9.5	32
4157021	36	11	57
4157022	45	13	82
4157023	57	13	107



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Digimatic data cable (2 m)	DK-D1
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 A

Micrometer

FEATURES

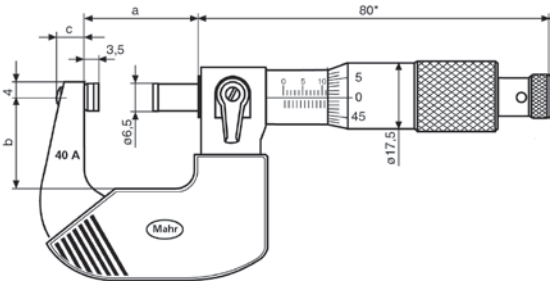
- Operating and display units with satin chrome finish
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide-tipped
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- **Package contains:** setting standard (measuring range of 25–50 mm), instruction manual, case



TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Error limit	Spindle thread pitch	Standard
		mm	mm	µm	mm	
4134000	40 A	0 –25	0.01	4	0.5	DIN 863–1
4134001	40 A	25 –50	0.01	4	0.5	DIN 863–1
4134002	40 A	50 –75	0.01	5	0.5	DIN 863–1
4134003	40 A	75 –100	0.01	5	0.5	DIN 863–1
4134004	40 A	100 –125	0.01	6	0.5	DIN 863–1
4134005	40 A	125 –150	0.01	6	0.5	DIN 863–1
4134006	40 A	150 –175	0.01	7	0.5	DIN 863–1
4134007	40 A	175 –200	0.01	7	0.5	DIN 863–1

Order no.	a	b	c
	mm	mm	mm
4134000	31	25.5	7
4134001	56	34.5	12
4134002	81	47.5	12
4134003	106	58.5	13
4134004	131	71.5	13
4134005	156	83.5	13
4134006	182	95.5	13
4134007	207	108.5	13



ACCESSORIES

Order no.	Product name	Product type
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 SA

Micrometer

FEATURES

- Operating and display units with satin chrome finish
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide-tipped
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- **Package contains:** instruction manual, setting values 25 mm / 75 mm, case



TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Spindle thread pitch	Standard	Number of micrometers
		mm	mm	mm		
4134050	40 SA	0 –100	0.01	0.5	DIN 863–1	4
4134051	40 SA	100 –200	0.01	0.5	DIN 863–1	4

ACCESSORIES

Order no.	Product name	Product type
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 A

Micrometer

FEATURES

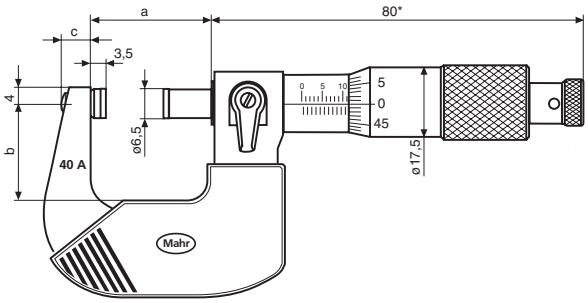
- Operating and display units with satin chrome finish
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide-tipped
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- **Package contains:** instruction manual, setting standard (from measuring range 1–2″), case



TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Error limit	Micrometer pitch	Standard
		inch	inch	inch	inch	
4134900	40 A	0 –1″	.0001″	.00016″	.025″	Factory standard
4134901	40 A	1 –2″	.0001″	.00016″	.025″	Factory standard
4134902	40 A	2 –3″	.0001″	.0002″	.025″	Factory standard
4134903	40 A	3 –4″	.0001″	.0002″	.025″	Factory standard
4134904	40 A	4 –5″	.0001″	.00024″	.025″	Factory standard
4134905	40 A	5 –6″	.0001″	.00024″	.025″	Factory standard
4134906	40 A	6 –7″	.0001″	.00028″	.025″	Factory standard
4134907	40 A	7 –8″	.0001″	.00028″	.025″	Factory standard

Order no.	a	b	c
	mm	mm	mm
4134900	31	25.5	7
4134901	56	34.5	12
4134902	81	47.5	12
4134903	106	58.5	13
4134904	131	71.5	13
4134905	156	83.5	13
4134906	182	95.5	13
4134907	207	108.5	13



ACCESSORIES

Order no.	Product name	Product type
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 AS

Micrometer

FEATURES

- Operating and display units with satin chrome finish
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide-tipped
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- **Package contains:** instruction manual, setting values 1″ / 3″, case



TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Micrometer pitch	Standard
		inch	inch	inch	
4134960	40 AS	0 –4″	.0001″	.025″	Factory standard
4134961	40 AS	4 –8″	.0001″	.025″	Factory standard

ACCESSORIES

Order no.	Product name	Product type
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 F / 40 FC

Micrometer with integrated Dial Comparator

FEATURES

- Operating and display units with satin chrome finish
- Dial comparator is integrated in frame
- Adjustable tolerance markers
- Chrome plated steel frame, heat insulated
- Retraction of the movable anvil ensures maximum wear resistance
- Spindle and anvil are carbide-tipped
- Stainless spindle is hardened throughout and ground
- Locking device
- Constant measuring force
- **Package contains:** instruction manual, case



Application:

- Quick check of diameter of cylindrical parts (shafts, bolts, shanks)
- Thickness and length measurements
- Particularly suitable for exact series components

TECHNICAL DATA

Order no.		4150000	4150001	4150200	4150201
Product type		40 F		40 FC	
Measuring range	mm	0 –25	25 –50	0 –25	25 –50
Measuring surface		carbide		ceramic	
Graduation value	mm	0.01			
Error limit	µm	2			
Parallelism deviation	µm	1			
Flatness deviation	µm	0.2			
Spindle thread pitch	mm	0.5			
Measuring force	N	9			
Standard		Factory standard			
Dial comparator measuring range	µm	± 65			
Graduation value	µm	1			
Error limit G_e	µm	1			

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4150000	149	100	16	71	32
4150001	174	125	30	85	56
4150200	149	100	16	71	32
4150201	174	125	30	85	56

ACCESSORIES

Order no.	Product name	Product type
4158000	Stand, for holding outside micrometers	41 H
4159400	Setting gage, flat (25 mm)	43 A



43 A



41 H

Micromar 40 F

Micrometer with Integrated Dial Comparator

FEATURES

- Operating and display units with satin chrome finish
- Dial comparator is integrated in frame
- Adjustable tolerance markers
- Chrome plated steel frame, heat insulated
- Retraction of the movable anvil ensures maximum wear resistance
- Spindle and anvil are carbide-tipped
- Stainless spindle is hardened throughout and ground
- Locking device
- Constant measuring force
- **Package contains:** instruction manual, case



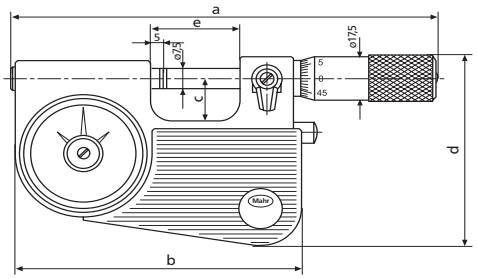
Application:

- Quick check of diameter of cylindrical parts (shafts, bolts, shanks)
- Thickness and length measurements
- Particularly suitable for exact series components

TECHNICAL DATA

Order no.		4150900	4150901
Product type		40 F	
Measuring range	inch	0 –1″	1 –2″
Graduation value	inch	.0001″	
Error limit	inch	.00008″	
Parallelism deviation	inch	.00008″	
Flatness deviation	inch	.00001″	
Micrometer pitch	inch	.025″	
Measuring force	N	9	
Standard		Factory standard	
Dial comparator measuring range	inch	± .0025″	
Dial comparator scale graduation value	inch	.00005″	
Error limit G_e	inch	.00005″	

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4150900	149	100	16	71	32
4150901	174	125	30	85	56



ACCESSORIES

Order no.	Product name	Product type
4158000	Stand, for holding outside micrometers	41 H
4159940	Setting gage, flat (1 inch)	43 A



41 H

Micromar 40 T

Micrometer with Integrated Dial Comparator

DIN 863-3

FEATURES

- Operating and display units with satin chrome finish
- Retraction of the movable anvil ensures maximum wear resistance
- Constant measuring force
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Locking device
- **Package contains:** instruction manual, case



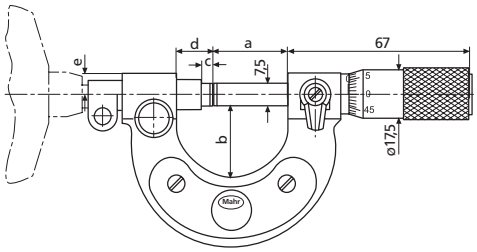
Application:

- Quick check of diameter of cylindrical parts (shafts, bolts, shanks)
- Thickness and length measurements
- Particularly suitable for exact series components

TECHNICAL DATA

Order no.		4154000	4154001	4154002	4154003	4154004
Product type		40 T				
Measuring range	mm	0 –25	25 –50	50 –100	100 –150	150 –200
Graduation value	mm	0.01				
Error limit	µm	2				
Parallelism deviation	µm	2				
Flatness deviation	µm	0.2				
Spindle thread pitch	mm	0.5				
Measuring force	N	6.5			7.5	
Standard		DIN 863–3				
Indicating instrument (included in package)		Millimess 1003				
Dial comparator measuring range	µm	± 50				
Graduation value	µm	1				
Error limit G_e	µm	1				

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4154000	27	28	4	11	8
4154001	52	40	4	11	8
4154002	76	65	5.5	30	8
4154003	127	87	5.5	30	8
4154004	177	112	5.5	30	8



ACCESSORIES

Order no.	Product name	Product type
4158000	Stand, for holding outside micrometers	41 H
4159400	Setting gage, flat (25 mm)	43 A
4159401	Setting gage, flat (50 mm)	43 A
4159402	Setting gage, flat (75 mm)	43 A
4159403	Setting gage, flat (100 mm)	43 A
4159404	Setting gage, flat (125 mm)	43 A
4159405	Setting gage, flat (150 mm)	43 A
4159406	Setting gage, flat (175 mm)	43 A

43 A



41 H

Micromar 40 TS

Precision Bench Micrometer

DIN 863-3

FEATURES

- Operating and display units with satin chrome finish
- Rugged steel frame, can be inclined up to 45° from the sturdy base
- Retraction of the movable anvil ensures maximum wear resistance
- Height adjustable stop
- Constant measuring force
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Locking device
- **Package contains:** instruction manual

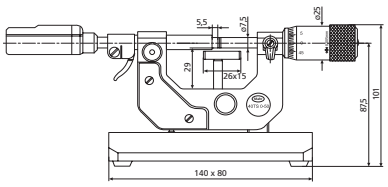


Application:

- Quick check of diameter of cylindrical parts (shafts, bolts, shanks)
- Thickness and length measurements
- Particularly suitable for exact series components

TECHNICAL DATA

Order no.		4154030	4154031
Product type		40 TS	
Measuring range	mm	0 –50	
Graduation value	mm	0.005	
Error limit	µm	2	
Parallelism deviation	µm	2	
Flatness deviation	µm	0.2	
Spindle thread pitch	mm	0.5	
Measuring force	N	6.5	
Standard		DIN 863–3	
Indicating instrument (included in package)		Millimess 1003	Without readout
Dial comparator measuring range	µm	± 50	±
Graduation value	µm	1	
Error limit G_e	µm	1	



ACCESSORIES

Order no.	Product name	Product type
4335000	Millimess 0.5 µm, ± 25 µm	1002
4334000	Millimess 1 µm, ± 50 µm	1003
4333000	Millimess 5 µm, ± 130 µm	1004
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337663	Digital indicator, 0.0005 mm, 12.5 mm	1087 Ri
4337660	Digital indicator, 0.0005 mm, 12.5 mm	1087 R
4154035	Wooden case	
4159400	Setting gage, flat (25 mm)	43 A



1002



1003



1004



1086 Ri



1086 R;1086 R-HR;1086 ZR



1087 Ri



1087 R;1087 R-HR;1087 ZR



43 A

Micromar 40 TS

Precision Bench Micrometer

FEATURES

- Operating and display units with satin chrome finish
- Rugged steel frame, can be inclined up to 45° from the sturdy base
- Retraction of the movable anvil ensures maximum wear resistance
- Height adjustable stop
- Constant measuring force
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Locking device
- **Package contains:** dial comparator 1003 Z, instruction manual

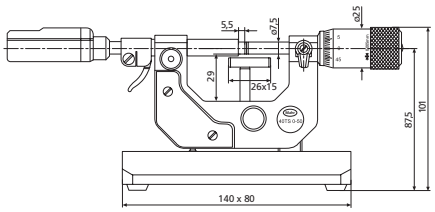


Application:

- Quick check of diameter of cylindrical parts (shafts, bolts, shanks)
- Thickness and length measurements
- Particularly suitable for exact series components

TECHNICAL DATA

Order no.		4154930	4154931
Product type		40 TS	
Measuring range	inch	0 –2″	
Graduation value	inch	.00025″	
Error limit	inch	.00008″	
Parallelism deviation	inch	.00008″	
Flatness deviation	inch	.00001″	
Micrometer pitch	inch	.025″	
Measuring force	N	6.5	
Indicating instrument (included in package)		Millimess 1003 Z	Without readout
Dial comparator measuring range	inch	± .0025″	
Dial comparator scale graduation value	inch	.00005″	
Error limit G_e	inch	.00005″	



ACCESSORIES

Order no.	Product name	Product type
4335005	Millimess 0.5 µm, ± 25 µm	1002 T
4335900	Millimess .00002″, ± .0010″	1002 Z
4334000	Millimess 1 µm, ± 50 µm	1003
4334900	Millimess .00005″, ± .0020″	1003 Z
4333000	Millimess 5 µm, ± 130 µm	1004
4333900	Millimess .0001″, ± .0050″	1004 Z
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337663	Digital indicator, 0.0005 mm, 12.5 mm	1087 Ri
4337660	Digital indicator, 0.0005 mm, 12.5 mm	1087 R
4154035	Wooden case	
4159940	Setting gage, flat (1 inch)	43 A


1003 Z;1002 Z


1003


1004


1004 Z


1086 Ri


1086 R;1086 R-HR;1086 ZR


1087 Ri


1087 R;1087 R-HR;1087 ZR

Micromar 40 EWRi-V

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN
  (for entering a numerical value)
- LOCK function (key lock)
- TOL
  (tolerance and warning limits)
- HOLD
  (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface
  (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- High contrast analog display
- Stainless spindle is hardened throughout and ground
- With mounting bores for measuring anvils with a shaft Ø 3.5 mm
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **IP protection category:** IP 65
- Scope of deliveryFor each pair of measuring anvils:
  - 40 Ef flat Ø 6.5 mm
  - 40 Ea offset Ø2 x 4 mm
  - 40 Et plate Ø 11.3 mm
  - 40 Eb spherical R=5 mm
  - 40 Ep tapered 60 °
    Ø 0.3 –5.5 mm
  - 40 Es blade 0.75 x 4 mm
- **Package contains:** instruction manual, battery, case



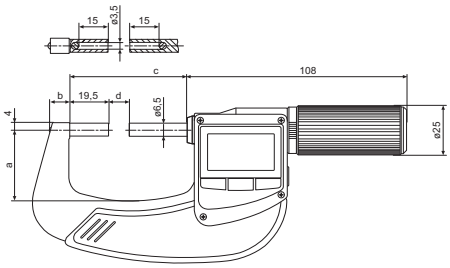
Application:

Universal adjustment to different workpiece and measurement situations using individual interchangeable measuring anvils.
Thread flanks and spherical measuring anvils (optional accessories) can also be used.

TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Spindle thread pitch	Measuring force	Standard	Incl. accessories
		mm	inch	mm/inch	µm	mm	N		
4157150	40 EWRi-V	0 –25	0 –1"	0.001 / .00005"	4	5	5 –10	DIN 863–3	•

Order no.	a	b	c	Mounting hole
	mm	mm	mm	
4157150	32	11.5	57	For measuring anvils with a shaft diameter 3.5 x 15.5 mm

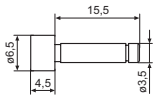


ACCESSORIES

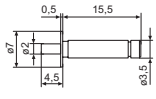
Order no.	Product name	Type
4102220	Receiver for instruments with Integrated Wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4151794	Plane measuring anvil (6.5 mm)	40 Ef
4151795	Measuring anvil with reduced measuring surface (2.3 x 2 mm)	40 Ea
4151796	Measuring anvil plate (11.3 mm)	40 Et
4151797	Measuring anvil with convex measuring surface (6.5 mm)	40 Er
4151798	Measuring anvil with tip (60°)	40 Ep
4151799	Measuring anvil with blade (7 x 0.75 mm)	40 Es
4158000	Stand, for holding outside micrometers	41 H
4173210	Anvil flat, hardened steel, Ø 7.5 mm	40 Za
4511190	Anvil flat, carbide tipped, Ø 7.5 mm	40 Za



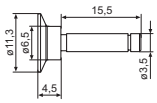
i-Stick



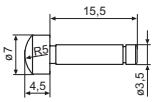
40 Ef



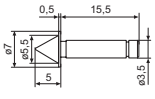
40 Ea



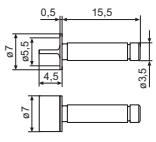
40 Et



40 Er



40 Ep



40 Es



41 H

Micromar 40 EWR-V

Digital Micrometer

TOL | ABS | Digimatic | #ID | IP 65 | REF system

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (tolerance and warning limits)
- HOLD (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- High contrast analog display
- Stainless spindle is hardened throughout and ground
- With mounting bores for measuring anvils with a shaft Ø 3.5 mm
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** MarConnect (bidirectional), USB, Digimatic
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 65
- Scope of deliveryFor each pair of measuring anvils:
  - 40 Ef flat Ø 6.5 mm
  - 40 Ea offset Ø2 x 4 mm
  - 40 Et plate Ø 11.3 mm
  - 40 Eb spherical R=5 mm
  - 40 Ep tapered 60 ° Ø 0.3 –5.5 mm
  - 40 Es blade 0.75 x 4 mm
- **Package contains:** instruction manual, battery, case



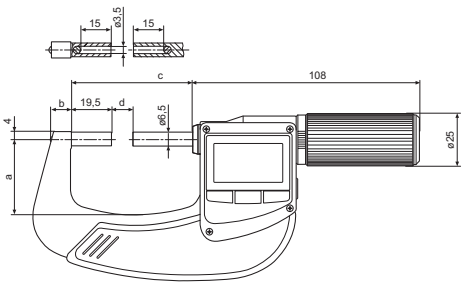
Application:

Universal adjustment to different workpiece and measurement situations using individual interchangeable measuring anvils.
Thread flanks and spherical measuring anvils (optional accessories) can also be used.

TECHNICAL DATA

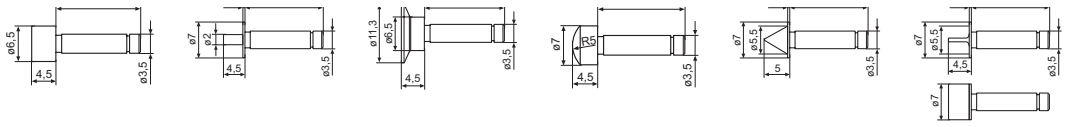
Order no.	Product type	Measuring range		Resolution	Error limit	Spindle thread pitch	Measuring force	Standard	Incl. accessories
		mm	inch	mm/inch	µm	mm	N		
4157050	40 EWR-V	0 –25	0 –1"	0.001 / .00005"	4	5	5 –10	DIN 863–3	•

Order no.	a	b	c	Mounting hole
	mm	mm	mm	
4157050	32	11.5	57	For measuring anvils with a shaft diameter 3.5 x 15.5 mm



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Digimatic data cable (2 m)	DK-D1
4151794	Plane measuring anvil (6.5 mm)	40 Ef
4151795	Measuring anvil with reduced measuring surface (2.3 x 2 mm)	40 Ea
4151796	Measuring anvil plate (11.3 mm)	40 Et
4151797	Measuring anvil with convex measuring surface (6.5 mm)	40 Er
4151798	Measuring anvil with tip (60°)	40 Ep
4151799	Measuring anvil with blade (7 x 0.75 mm)	40 Es
4158000	Stand, for holding outside micrometers	41 H
4173210	Anvil flat, hardened steel	40 Za
4511190	Anvil flat, carbide-tipped	40 Za



40 Ef | 40 Ea | 40 Et | 40 Er | 40 Ep | 40 Es



41 H

Micromar 40 EWRi-V

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN
  (for entering a numerical value)
- LOCK function (key lock)
- TOL
  (tolerance and warning limits)
- HOLD
  (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface
  (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- With mounting bores for measuring anvils with a shaft Ø 3.5 mm
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case



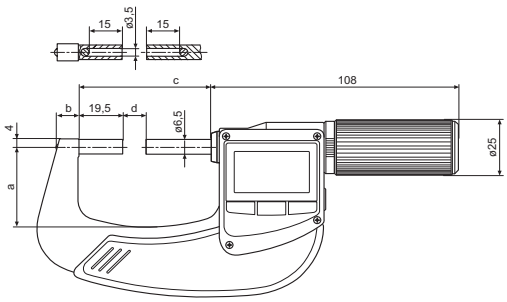
Application:

For measuring thread flanks and gear diameters using quick-change measuring anvils.

TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	µm	mm	N	
4157145	40 EWRi-V	0 –25	0 –1″	0.001 / .00005″	4	5	5 –10	DIN 863–3
4157146	40 EWRi-V	25 –50	1 –2″	0.001 / .00005″	4	5	5 –10	DIN 863–3
4157147	40 EWRi-V	50 –75	2 –3″	0.001 / .00005″	6	5	5 –10	DIN 863–3
4157148	40 EWRi-V	75 –100	3 –4″	0.001 / .00005″	6	5	5 –10	DIN 863–3

Order no.	a	b	c	Mounting hole
	mm	mm	mm	
4157145	32	11.5	57	For measuring anvils with a shaft diameter 3.5 x 15.5 mm
4157146	44	13.5	82	For measuring anvils with a shaft diameter 3.5 x 15.5 mm
4157147	57	15.5	107	For measuring anvils with a shaft diameter 3.5 x 15.5 mm
4157148	73	17	132.5	For measuring anvils with a shaft diameter 3.5 x 15.5 mm



ACCESSORIES

Order no.	Product name	Type
4102220	Receiver for instruments with Integrated Wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H
4173210	Anvil flat, hardened steel, Ø 7.5 mm	40 Za
4175000	Setting gage (25 mm) metric / UST 60°	43 Z
4175001	Setting gage (50 mm) metric / UST 60°	43 Z
4175002	Setting gage (75 mm) metric / UST 60°	43 Z
4175100	Setting gage (25 mm) Whitworth 55°	43 Z
4175101	Setting gage (50 mm) Whitworth 55°	43 Z
4175102	Setting gage (75 mm) Whitworth 55°	43 Z
4511190	Anvil flat, carbide tipped, Ø 7.5 mm	40 Za



i-Stick



41 H

Micromar 40 EWR-V

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (tolerance and warning limits)
- HOLD (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- With mounting bores for measuring anvils with a shaft Ø 3.5 mm
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** MarConnect (bidirectional), USB, Digimatic
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case



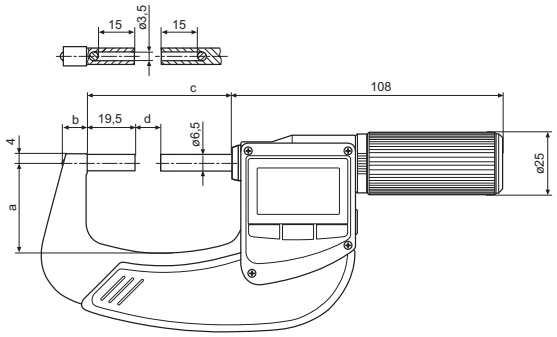
Application:

For measuring thread flanks and gear diameters using quick-change measuring anvils.

TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	µm	mm	N	
4157045	40 EWR-V	0 –25	0 –1"	0.001 / .00005"	4	5	5 –10	DIN 863–3
4157046	40 EWR-V	25 –50	1 –2"	0.001 / .00005"	4	5	5 –10	DIN 863–3
4157047	40 EWR-V	50 –75	2 –3"	0.001 / .00005"	6	5	5 –10	DIN 863–3
4157048	40 EWR-V	75 –100	3 –4"	0.001 / .00005"	6	5	5 –10	DIN 863–3

Order no.	a	b	c	Mounting hole
	mm	mm	mm	
4157045	32	11.5	57	For measuring anvils with a shaft diameter 3.5 x 15.5 mm
4157046	44	13.5	82	For measuring anvils with a shaft diameter 3.5 x 15.5 mm
4157047	57	15.5	107	For measuring anvils with a shaft diameter 3.5 x 15.5 mm
4157048	73	17	132.5	For measuring anvils with a shaft diameter 3.5 x 15.5 mm



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Digimatic data cable (2 m)	DK-D1
4158000	Stand, for holding outside micrometers	41 H
4173210	Anvil flat, hardened steel	40 Za
4175000	Setting gage (25 mm) metric / UST 60°	43 Z
4175001	Setting gage (50 mm) metric / UST 60°	43 Z
4175002	Setting gage (75 mm) metric / UST 60°	43 Z
4175100	Setting gage (25 mm) Whitworth 55°	43 Z
4175101	Setting gage (50 mm) Whitworth 55°	43 Z
4175102	Setting gage (75 mm) Whitworth 55°	43 Z
4511190	Anvil flat, carbide-tipped	40 Za



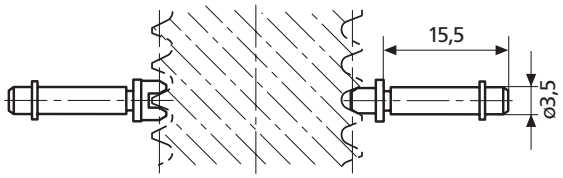
41 H

Micromar Thread anvils

Digital Micrometer

FEATURES

- Wear-resistant special steel, hardened. With cylindrical mounting shank and retainer ring for rotatable mounting in the bore of the measuring spindle and anvil.
- Pair comprises V-anvil and cone
- **With a pitch of 0.2 –0.45 mm, the V-anvil bridges 3 turns.**It should therefore be set with 715 E thread adjustment pins, otherwise with 43 Z setting standards.

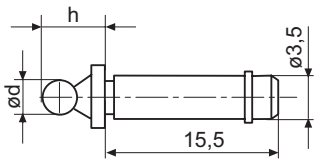


ACCESSORIES

Thread pitch in mm	Taper Order no.	V-anvil Order no.
Pitch diameter. external thread Metric 60°		
0.2	4173407	4173007
0.25	4173408	4173008
0.3	4173409	4173009
0.35	4173410	4173010
0.4	4173411	4173011
0.45	4173412	4173012
0.5 –0.7	4173400	4173000
0.7 –1	4173401	4173001
1.25 –2	4173402	4173002
2 –3.5	4173403	4173003
3.5 –5	4173404	4173004
5 –7	4173405	4173005
7 –9	4173406	4173006
Trapezoid 30°		
1	4173650	4173250
1.5	4173651	4173251
2	4173652	4173252
3	4173653	4173253
4	4173654	4173254
5	4173655	4173255
6	4173656	4173256
7	4173657	4173257
8	4173658	4173258
9	4173659	4173259
10	4173660	4173260
12	4173661	4173261
14	4173662	4173262
16	4173663	4173263
18	4173664	4173264
20	4173665	4173265

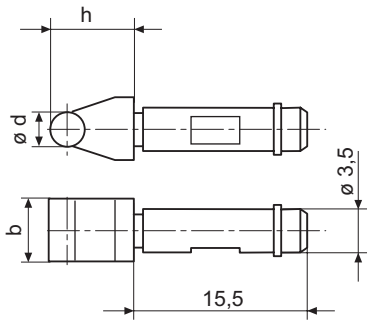
Thread pitch in TPI	Taper Order no.	V-anvil Order no.
Pitch diameter. external thread UST 60°		
60 –48	4173513	4173113
48 –40	4173514	4173114
40 –32	4173515	4173115
32 –24	4173516	4173116
24 –18	4173517	4173117
18 –14	4173518	4173118
14 –10	4173519	4173119
10 –7	4173520	4173120
7 –4.5	4173521	4173121
4.5 –3	4173522	4173122
Whitworth 55 °		
40 –32	4173443	4173043
32 –24	4173444	4173044
24 –18	4173445	4173045
18 –14	4173446	4173046
14 –10	4173447	4173047
10 –7	4173448	4173048
7 –4.5	4173449	4173049
4.5 –3	4173450	4173050
3 –2.5	4179409	4179408

Ball Contact



Order no.	d mm	h mm
4179150	0.5	5
4179151	0.551	5.1
4179152	0.62	5.1
4179153	0.623	5.1
4179154	0.63	5.1
4179155	0.722	5.2
4179156	0.862	5.4
4179157	0.895	5.4
4179158	0.965	5.5
4170550	1	5.5
4179159	1.1	5.6
4179160	1.118	5.6
4170551	1.25	5.8
4179161	1.125	5.6
4179162	1.35	5.9
4179163	1.372	5.9
4179164	1.385	5.9
4170552	1.5	6
4179165	1.524	6
4179166	1.54	6
4179167	1.6	6.1
4179168	1.65	6.2
4179169	1.7	6.2
4170553	1.75	6.3
4179170	1.782	6.3
4179171	1.8	6.3
4179172	1.829	6.3
4179173	1.9	6.4
4170554	2	6.5
4170568	2.032	6.5
4170569	2.2	6.7
4170564	2.25	6.8
4179174	2.284	6.8

Order no.	d mm	h mm
4179175	2.386	6.9
4179176	2.438	6.9
4170556	2.5	7
4179177	2.667	7.2
4179178	2.704	7.2
4179179	2.713	7.2
4179180	2.721	7.2
4179181	2.743	7.2
4170565	2.75	7.3
4170557	3	7.5
4179182	3.048	7.5
4170570	3.2	7.7
4170566	3.25	7.8
4179183	3.4	7.9
4170558	3.5	8
4179184	3.658	8.2
4170571	3.7	8.2
4170559	4	8.5
4170560	4.5	9
4179185	4.835	9.3
4170561	5	9.5
4179186	5.25	9.8
4179187	5.486	10
4170562	5.5	10
4170563	6	10.5
4179188	6.096	10.6
4179189	6.35	10.9
4170567	6.5	11
4170572	7	11.5
4170573	8	12.5
4170574	9	13.5
4170575	10	14.5



Order no.	B mm	b mm	d mm	h mm
4510200	5.00	5	1	5.5
4510201	5.00	5	1.25	5.8
4510202	5.00	5	1.5	6
4510203	5.00	5	1.75	6.3
4510204	5.50	5	2	6.5
4510206	5.50	5.5	2.5	7
4510207	5.50	5.5	3	7.5
4510208	5.50	5.5	3.5	8
4510209	5.50	5.5	4	8.5
4510210	5.50	5.5	4.5	9
4510211	6.00	6	5	9.5
4510212	6.00	6	5.5	10
4510213	6.00	6	6	10.5

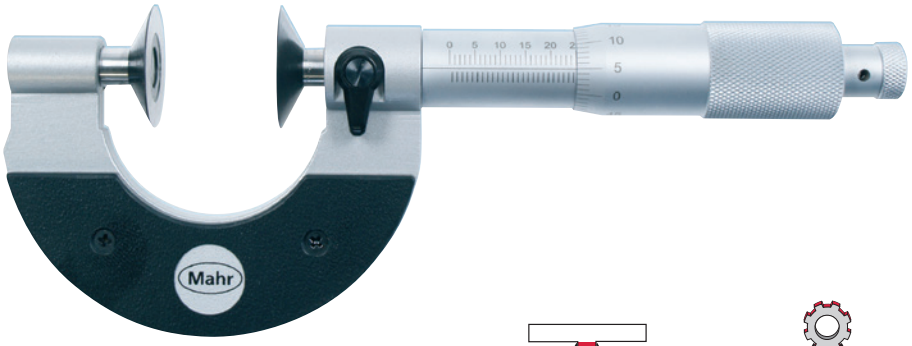
Micromar 40 SM

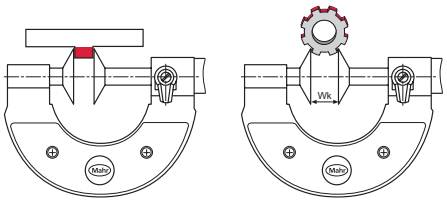
Micrometer

DIN 863-3

FEATURES

- Operating and display units with satin chrome finish
- Maximum stability
- Stainless spindle is hardened throughout and ground
- Disc-type anvils are hardened and lapped
- Chrome plated steel frame, heat insulated
- Rapid drive with integrated ratchet
- Locking device
- **Package contains:** instruction manual, case





Application:

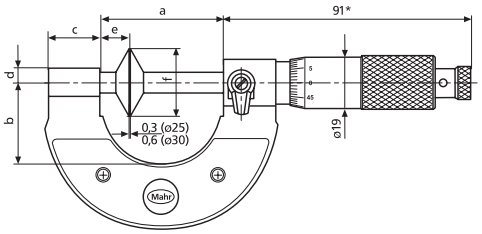
For the measurement of:

- Tooth spans Wk as of module 0.8 as indirect determination of tooth thickness on spur gears with straight and helical teeth
- Shoulders on shafts
- Undercut dimensions
- Registers
- Soft materials such as rubber, cardboard, felt, etc.

TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Error limit	Parallelism deviation	Flatness deviation	Spindle thread pitch	Measuring force	Standard
		mm	mm	µm	µm	µm	mm	N	
4134600	40 SM	0 –25	0.01	4	4	0.6	0.5	5 –10	DIN 863–3
4134601	40 SM	25 –50	0.01	4	4	0.6	0.5	5 –10	DIN 863–3
4134602	40 SM	50 –75	0.01	5	4	0.6	0.5	5 –10	DIN 863–3
4134603	40 SM	75 –100	0.01	5	4	0.6	0.5	5 –10	DIN 863–3
4134604	40 SM	100 –125	0.01	6	5	0.6	0.5	5 –10	DIN 863–3
4134605	40 SM	125 –150	0.01	6	5	0.6	0.5	5 –10	DIN 863–3
4134606	40 SM	150 –175	0.01	7	5	0.6	0.5	5 –10	DIN 863–3
4134607	40 SM	175 –200	0.01	7	5	0.6	0.5	5 –10	DIN 863–3

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4134600	45	30.5	18.1	6	11	25
4134601	70	35	18.1	6	11	25
4134602	95	48	18.1	6	11	25
4134603	120	59.5	18.1	6	11	25
4134604	145	71	18.1	6	11	30
4134605	170	83	18.1	6	11	30
4134606	195	96	18.1	6	11	30
4134607	220	108	18.1	6	11	30



ACCESSORIES

Order no.	Product name	Product type
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 EWRi-S

Digital Micrometer

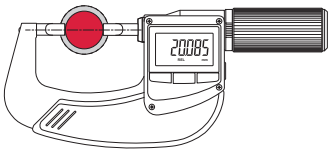
FUNCTIONS

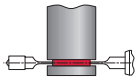
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN
  (for entering a numerical value)
- LOCK function (key lock)
- TOL
  (tolerance and warning limits)
- HOLD
  (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface
  (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- With blade-type measuring surfaces
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case







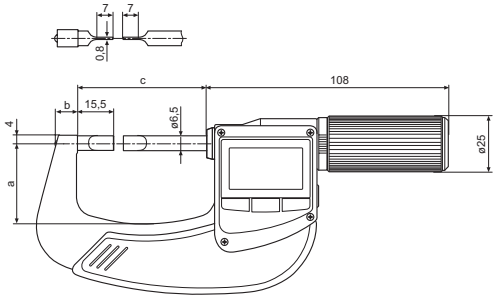
Application:

For measuring recesses, grooves, etc.

TECHNICAL DATA

Order no.	Product type	Measuring range		Measuring surface	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch		mm/inch	µm	mm	N	
4157141	40 EWRi-S	0 –25	0 –1″	hardened steel	0.001 / .00005″	4	5	5 –10	DIN 863–3
4157142	40 EWRi-S	25 –50	1 –2″	hardened steel	0.001 / .00005″	4	5	5 –10	DIN 863–3
4157143	40 EWRi-S	50 –75	2 –3″	hardened steel	0.001 / .00005″	4	5	5 –10	DIN 863–3
4157144	40 EWRi-S	75 –100	3 –4″	hardened steel	0.001 / .00005″	4	5	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4157141	32	11.5	57
4157142	44	13.5	82
4157143	57	15.5	107
4157144	73	17	132.5



ACCESSORIES

Order no.	Product name	Type
4102220	Receiver for instruments with Integrated Wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



i-Stick



41 H

Micromar 40 EWR-S

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (tolerance and warning limits)
- HOLD (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

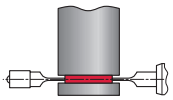
FEATURES

- With blade-type measuring surfaces
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** MarConnect (bidirectional), USB, Digimatic
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case



Application:

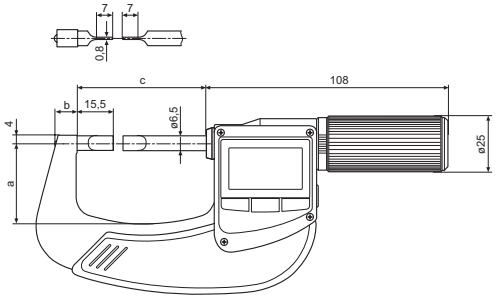
For measuring recesses, grooves, etc.



TECHNICAL DATA

Order no.	Product type	Measuring range		Measuring surface	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch		mm/inch	µm	mm	N	
4157041	40 EWR-S	0 –25	0 –1″	hardened steel	0.001 / .00005″	4	5	5 –10	DIN 863–3
4157042	40 EWR-S	25 –50	1 –2″	hardened steel	0.001 / .00005″	4	5	5 –10	DIN 863–3
4157043	40 EWR-S	50 –75	2 –3″	hardened steel	0.001 / .00005″	4	5	5 –10	DIN 863–3
4157044	40 EWR-S	75 –100	3 –4″	hardened steel	0.001 / .00005″	4	5	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4157041	32	11.5	57
4157042	44	13.5	82
4157043	57	15.5	107
4157044	73	17	132.5



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Digimatic data cable (2 m)	DK-D1
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 EWRi-B

Digital Micrometer

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN
  (for entering a numerical value)
- LOCK function (key lock)
- TOL
  (tolerance and warning limits)
- HOLD
  (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface
  (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- Reduced measuring surfaces Ø 3 mm
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case



Application:

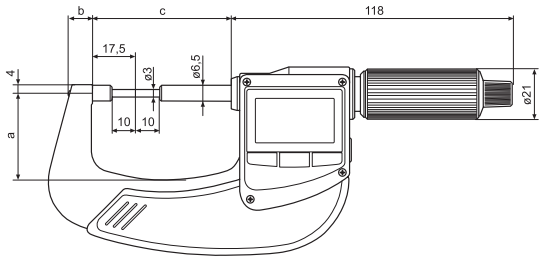
For measuring grooves, spline shafts, recesses, etc.

TECHNICAL DATA

Order no.	Product type	Measuring range		Measuring surface	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch		mm/inch	µm	mm	N	
4157132	40 EWRi-B	0 –25	0 –1″	carbide	0.001 / .00005″	4	0.5	5 –10	DIN 863–3
4157133	40 EWRi-B	25 –50	1 –2″	carbide	0.001 / .00005″	4	0.5	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4157132	32	11.5	57
4157133	44	13.5	82

40 EWR(i)-B



ACCESSORIES

Order no.	Product name	Product type
4102220	Receiver for instruments with integrated Wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



i-Stick



41 H

Micromar 40 EWR-B

Digital Micrometer

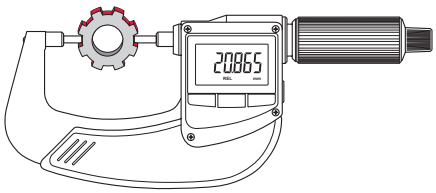
FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN
  (for entering a numerical value)
- LOCK function (key lock)
- TOL
  (tolerance and warning limits)
- HOLD
  (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface
  (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- Reduced measuring surfaces Ø 3 mm
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** MarConnect (bidirectional), USB, Digimatic
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case





Application:

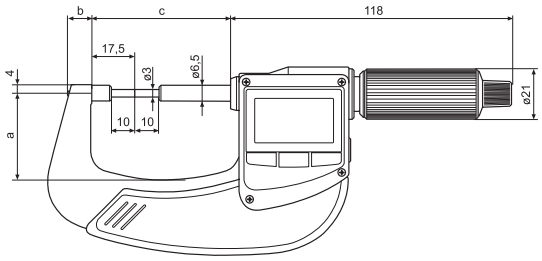
For measuring grooves, spline shafts, recesses, etc.

TECHNICAL DATA

Order no.	Product type	Measuring range		Measuring surface	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch		mm/inch	µm	mm	N	
4157032	40 EWR-B	0 –25	0 –1″	carbide	0.001 / .00005″	4	0.5	5 –10	DIN 863–3
4157033	40 EWR-B	25 –50	1 –2″	carbide	0.001 / .00005″	4	0.5	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4157032	32	11.5	57
4157033	44	13.5	82

40 EWR(i)-B



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Digimatic data cable (2 m)	DK-D1
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 EWRi-R

Digital Micrometer

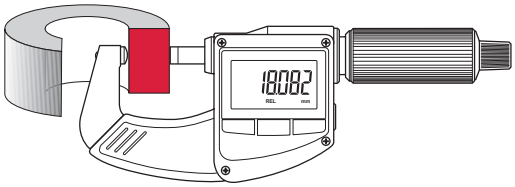
FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN
  (for entering a numerical value)
- LOCK function (key lock)
- TOL
  (tolerance and warning limits)
- HOLD
  (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface
  (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- **Measuring surfaces: spherical anvil, planar spindle**
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case





Application:

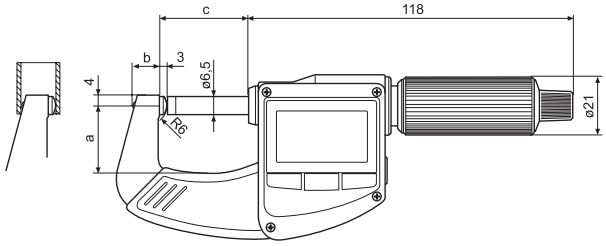
For measuring the thickness of pipe walls

TECHNICAL DATA

Order no.	Product type	Measuring range		Measuring surface	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch		mm/inch	µm	mm	N	
4157130	40 EWRi-R	0 –25	0 –1″	carbide	0.001 / .00005″	4	0.5	5 –10	DIN 863–3
4157131	40 EWRi-R	25 –50	1 –2″	carbide	0.001 / .00005″	4	0.5	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4157130	23	9.5	31.5
4157131	32	11.5	57

40 EWR(i)-R



ACCESSORIES

Order no.	Product name	Type
4102220	Receiver for instruments with Integrated Wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



i-Stick



41 H

Micromar 40 EWR-R

Digital Micrometer

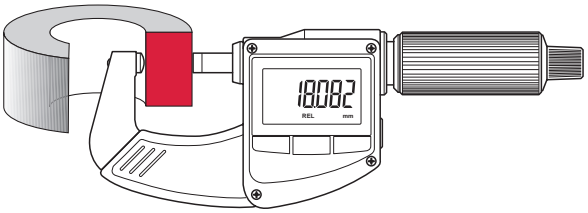
FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (tolerance and warning limits)
- HOLD (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- Measuring surfaces: spherical anvil, planar spindle
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** MarConnect (bidirectional), USB, Digimatic
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, setting standard (measuring range of 25–50 mm), case





Application:

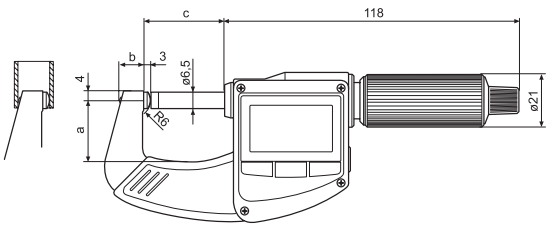
For measuring the thickness of pipe walls

TECHNICAL DATA

Order no.	Product type	Measuring range		Measuring surface	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch		mm/inch	µm	mm	N	
4157030	40 EWR-R	0 –25	0 –1″	carbide	0.001 / .00005″	4	0.5	5 –10	DIN 863–3
4157031	40 EWR-R	25 –50	1 –2″	carbide	0.001 / .00005″	4	0.5	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4157030	23	9.5	31.5
4157031	32	11.5	57

40 EWR(i)-R



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Digimatic data cable (2 m)	DK-D1
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 40 EWRi-K

Digital Micrometer

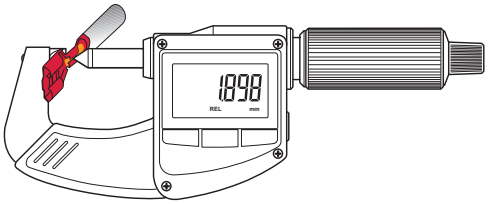
FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN
  (for entering a numerical value)
- LOCK function (key lock)
- TOL
  (tolerance and warning limits)
- HOLD
  (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface
  (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- Measuring surfaces: Anvil with narrow web, pointed spindle
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, case





Application:

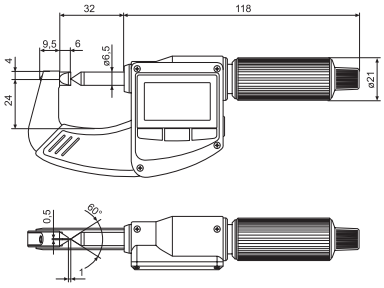
For measuring crimp heights

TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range	Measuring surface	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch		mm/inch	µm	mm	N	
4157140	40 EWRi-K	0 –20	0 –0.8"	carbide	0.001 / .00005"	4	0.5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4157140	23	9.5	31.5

40 EWR(i)-K



ACCESSORIES

Order no.	Product name	Type
4102220	Receiver for instruments with Integrated Wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H



i-Stick



41 H

Micromar 40 EWR-K

Digital Micrometer

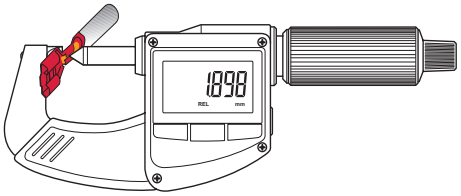
FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (tolerance and warning limits)
- HOLD (storage of measured values)
- DATA (data transmission)
- Bi-directional data interface (external input option of characteristic values and setting of individual lock functions by software MarCom)

FEATURES

- Measuring surfaces: Anvil with narrow web, pointed spindle
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** MarConnect (bidirectional), USB, Digimatic
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Package contains:** instruction manual, battery, case





Application:

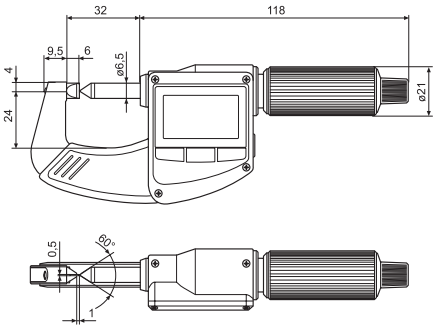
For measuring crimp heights on crimp contacts and end splices

TECHNICAL DATA

Order no.	Product type	Measuring range		Measuring surface	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch		mm/inch	µm	mm	N	
4157040	40 EWR-K	0 –20	0 –0.8″	carbide	0.001 / .00005″	4	0.5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4157040	23	9.5	31.5

40 EWR(i)-K



ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Digimatic data cable (2 m)	DK-D1
4158000	Stand, for holding outside micrometers	41 H



41 H

Micromar 44 F

Inside Micrometer

DIN 863-4

FEATURES

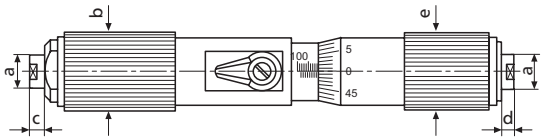
- Operating and display units with satin chrome finish
- Rigid, lightweight tubular construction
- Stainless spindle is hardened throughout and ground
- Measuring faces spherically lapped, one measuring face adjustable
- Measuring range of 100–125 mm with heat insulators and a locking device
- **Package contains:** case



TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Error limit	Spindle thread pitch	Standard
		mm	mm	µm	mm	
4163000	44 F	30 –40	0.01	4	0.5	DIN 863–4
4163001	44 F	40 –50	0.01	4	0.5	DIN 863–4
4163002	44 F	50 –70	0.01	5	0.5	DIN 863–4
4163003	44 F	70 –100	0.01	5	0.5	DIN 863–4
4163004	44 F	100 –125	0.01	6	0.5	DIN 863–4
4163005	44 F	125 –150	0.01	6	0.5	DIN 863–4
4163006	44 F	150 –175	0.01	7	0.5	DIN 863–4
4163007	44 F	175 –200	0.01	7	0.5	DIN 863–4

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4163000	7	12.5	2	4	12.6
4163001	7	12.5	2.5	4.5	12.6
4163002	7	13.5	2.5	4.5	13.6
4163003	7	13.5	4.5	4.5	14
4163004	8	20	4.5	4.5	20
4163005	8	20	8	8	20
4163006	8	20	8	8	20
4163007	8	20	8	8	20



ACCESSORIES

Order no.	Product name	Product type
4710050	Adjustment ring DIN 2250 C (30 mm)	355 E
4710060	Adjustment ring DIN 2250 C (40 mm)	355 E
4710070	Adjustment ring DIN 2250 C (50 mm)	355 E
4710090	Adjustment ring DIN 2250 C (70 mm)	355 E
4710120	Adjustment ring DIN 2250 C (100 mm)	355 E
4710121	Adjustment ring DIN 2250 C (125 mm)	355 E
4710122	Adjustment ring DIN 2250 C (175 mm)	355 E



355 E

Micromar 44 Cm / 44 Cms 1 / 44 Cms 2 / 44 Cms 3 / 44 Cms 4

Measuring Head

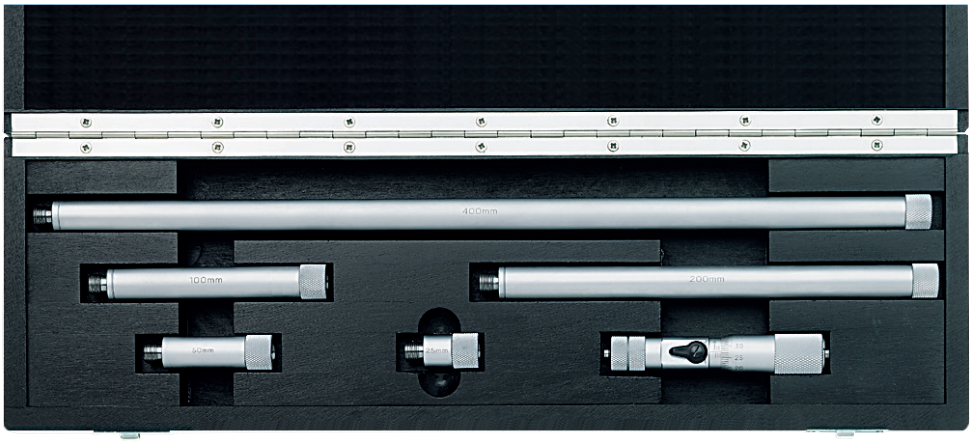
DIN 863-4

FEATURES

- Operating and display units with satin chrome finish
- Rigid, lightweight tubular construction
- Stainless spindle is hardened throughout and ground
- Locking device
- Carbide-tipped spherical measuring faces
- Interchangeable extension 44 Cv contains cylindrical gage rods that are spring mounted in protective sleeves for the extension of the measuring range
- Protection sleeves have a satin chrome finish

Scope of delivery

- Measuring head 44 Cm, measuring range of 100–150 mm with extensions 44 Cv, case



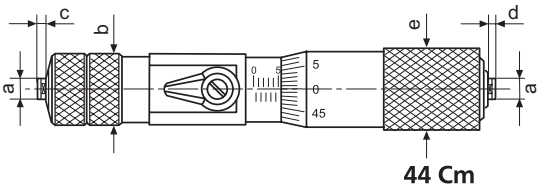
Application:

For measuring large inside diameters

TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Extensions 44 Cv	Error limit	Error limit	Spindle thread pitch	Standard
		mm	mm		µm	µm	mm	
4168001	44 Cm	100 –125	0.01		6	4+(l/100)µm l= length of the combination in mm	0.5	DIN 863–4
4168020	44 Cms 1	100 –150	0.01	25 mm		4+(l/100)µm l= length of the combination in mm	0.5	DIN 863–4
4168021	44 Cms 2	100 –300	0.01	25 mm 50 / 100 mm		4+(l/100)µm l= length of the combination in mm	0.5	DIN 863–4
4168022	44 Cms 3	100 –500	0.01	25 / 50 mm 100 / 200 mm		4+(l/100)µm l= length of the combination in mm	0.5	DIN 863–4
4168023	44 Cms 4	100 –900	0.01	25 / 50 mm 100 / 200 mm 400 mm		4+(l/100)µm l= length of the combination in mm	0.5	DIN 863–4

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4168001	5	16	2	2	18
4168020	5	16	2	2	18
4168021	5	16	2	2	18
4168022	5	16	2	2	18
4168023	5	16	2	2	18



44 Cm

ACCESSORIES

Order no.	Product name	Product type
4167030	Individual extension (25 mm)	44 Cv
4167031	Individual extension (50 mm)	44 Cv
4167032	Individual extension (100 mm)	44 Cv
4167033	Individual extension (200 mm)	44 Cv
4167034	Individual extension (400 mm)	44 Cv
4167035	Individual extension (800 mm)	44 Cv
4168016	Wood case for two extensions 44Cv 800mm	
4168160	Case for 44 Cms	

Micromar 44 A

Self-Centering Inside Micrometer

DIN 863-4

FEATURES

- Operating and display units with satin chrome finish
- Stainless spindle is hardened throughout and ground
- Rapid drive with integrated ratchet
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide-tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight
- **Package contains:** instruction manual, allen key, key for replacing measuring heads (from 30 mm), case



Application:

For measuring:

- Through holes
- Blind holes
- Centering shoulders

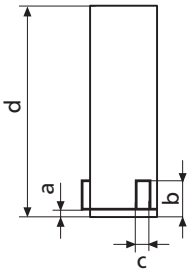
TECHNICAL DATA

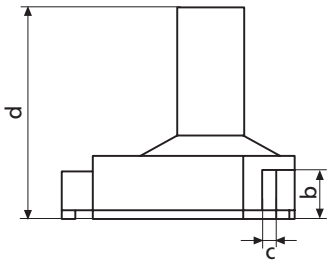
Order no.	Product type	Measuring range	Graduation value	Error limit	Spindle thread pitch	Standard	Measuring depth	Measuring depth with extension
		mm	mm	µm	mm		mm	mm
4190310	44 A	6 –8	0.001	4	0.5	DIN 863–4	58	133
4190311	44 A	8 –10	0.001	4	0.5	DIN 863–4	58	133
4190312	44 A	10 –12	0.001	4	0.5	DIN 863–4	58	133
4190313	44 A	12 –16	0.001	4	0.5	DIN 863–4	64	139
4190314	44 A	16 –20	0.001	4	0.5	DIN 863–4	64	139
4190315	44 A	20 –25	0.005	4	0.5	DIN 863–4	68	218
4190316	44 A	25 –30	0.005	4	0.5	DIN 863–4	68	218
4190317	44 A	30 –40	0.005	4	0.5	DIN 863–4	76	226
4190319	44 A	40 –50	0.005	4	0.5	DIN 863–4	76	226
4190320	44 A	50 –60	0.005	5	0.5	DIN 863–4	79	229
4190321	44 A	60 –70	0.005	5	0.5	DIN 863–4	79	229
4190012	44 A	70 –85	0.005	5	0.5	DIN 863–4	97	247
4190013	44 A	85 –100	0.005	5	0.5	DIN 863–4	97	247
4190014	44 A	100 –125	0.005	6	0.5	DIN 863–4	132	282
4190015	44 A	125 –150	0.005	6	0.5	DIN 863–4	132	282
4190016	44 A	150 –175	0.005	7	0.5	DIN 863–4	132	282
4190017	44 A	175 –200	0.005	7	0.5	DIN 863–4	132	282

Micromar 44 A

Self-Centering Inside Micrometer

Order no.	a	b	c	d
	mm	mm	mm	mm
4190310	1.5	4	1.5	58
4190311	1.8	4.3	1.5	58
4190312	1.8	4.3	1.5	58
4190313		6.5	4	64
4190314		6.5	4	64
4190315		9	4	68
4190316		9	4	68
4190317		15	5	76
4190319		15	5	76
4190320		18	5	79
4190321		18	5	79
4190012		23	7	97
4190013		23	7	97
4190014		27	7	132
4190015		27	7	132
4190016		27	7	132
4190017		27	7	132



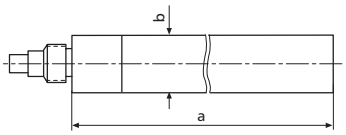


ACCESSORIES

Order no.	Product name	Product type
4710026	Adjustment ring DIN 2250 C (8 mm)	355 E
4710030	Adjustment ring DIN 2250 C (10 mm)	355 E
4710032	Adjustment ring DIN 2250 C (12 mm)	355 E
4710036	Adjustment ring DIN 2250 C (16 mm)	355 E
4710040	Adjustment ring DIN 2250 C (20 mm)	355 E
4710045	Adjustment ring DIN 2250 C (25 mm)	355 E
4710050	Adjustment ring DIN 2250 C (30 mm)	355 E
4710060	Adjustment ring DIN 2250 C (40 mm)	355 E
4710070	Adjustment ring DIN 2250 C (50 mm)	355 E
4710080	Adjustment ring DIN 2250 C (60 mm)	355 E
4710105	Adjustment ring DIN 2250 C (85 mm)	355 E
4710121	Adjustment ring DIN 2250 C (125 mm)	355 E
4710122	Adjustment ring DIN 2250 C (175 mm)	355 E
4190090	Extensions 75 mm, (6 –12 mm)	44 Av
4190091	Extensions 75 mm, (12 –20 mm)	44 Av
4190092	Extensions 150 mm, (20 –30 mm)	44 Av
4190093	Extensions 150 mm, (30 –200 mm)	44 Av



355 E



44 Av

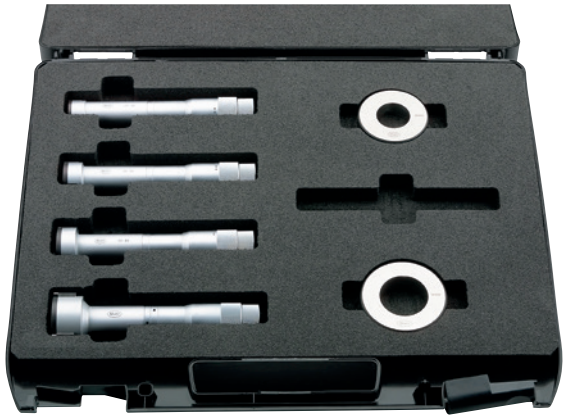
Micromar 44 AS

Self-Centering Inside Micrometer Set

DIN 863-4

FEATURES

- Operating and display units with satin chrome finish
- Stainless spindle is hardened throughout and ground
- Rapid drive with integrated ratchet
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide-tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight
- **Package contains:** instruction manual, setting rings, key for replacing measuring heads (from 30 mm), allen key, case



Application:

For measuring:

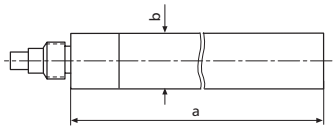
- Through holes
- Blind holes
- Centering shoulders

TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Error limit	Standard	Number of micrometers	Setting rings
		mm	mm	µm			
4190350	44 AS	6 –12	0.001	4	DIN 863–4	3	8 mm, 10 mm
4190351	44 AS	12 –20	0.001	4	DIN 863–4	2	16 mm
4190352	44 AS	20 –50	0.005	4	DIN 863–4	4	25 mm, 40 mm
4190353	44 AS	50 –100	0.005	5	DIN 863–4	4	60 mm, 85 mm

ACCESSORIES

Order no.	Product name	Product type
4190090	Extensions 75 mm, (6 –12 mm)	44 Av
4190091	Extensions 75 mm, (12 –20 mm)	44 Av
4190092	Extensions 150 mm, (20 –30 mm)	44 Av
4190093	Extensions 150 mm, (30 –200 mm)	44 Av



44 Av

Micromar 44 EWR

Digital Self-Centering Inside Micrometer

RS232C | Digimatic | ABS | IP 52 | REF system

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (for entering a numerical value)
- DATA (data transmission via connection cable)
- LOCK function (key lock)

FEATURES

- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide-tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 52
- **Package contains:** basic units 44 EWg, measuring head 44 Ak, instruction manual, battery, case



Application:

For measuring:

- Through holes
- Blind holes
- Centering shoulders

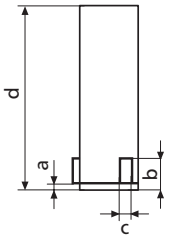
TECHNICAL DATA

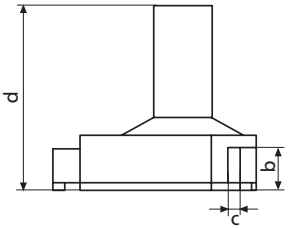
Order no.	Product type	Measuring range		Resolution	Error limit	Standard	Measuring depth	Measuring depth with extension
		mm	inch	mm/inch	µm		mm	mm
4191120	44 EWR	6 –8	.25 –.3125″	0.001 / .00005″	4	DIN 863–4	58	133
4191121	44 EWR	8 –10	.3125 –.4″	0.001 / .00005″	4	DIN 863–4	58	133
4191122	44 EWR	10 –12	.4 –.4725″	0.001 / .00005″	4	DIN 863–4	58	133
4191123	44 EWR	12 –16	.4725 –.625″	0.001 / .00005″	4	DIN 863–4	64	139
4191124	44 EWR	16 –20	.625 –.775″	0.001 / .00005″	4	DIN 863–4	64	139
4191125	44 EWR	20 –25	.775 –1″	0.001 / .00005″	4	DIN 863–4	68	218
4191126	44 EWR	25 –30	1 –1.2″	0.001 / .00005″	4	DIN 863–4	68	218
4191127	44 EWR	30 –40	1.2 –1.6″	0.001 / .00005″	4	DIN 863–4	76	226
4191129	44 EWR	40 –50	1.6 –2″	0.001 / .00005″	4	DIN 863–4	76	226
4191130	44 EWR	50 –60	2 –2.35″	0.001 / .00005″	5	DIN 863–4	79	229
4191131	44 EWR	60 –70	2.35 –2.75″	0.001 / .00005″	5	DIN 863–4	79	229
4191032	44 EWR	70 –85	2.75 –3.35″	0.001 / .00005″	5	DIN 863–4	97	247
4191033	44 EWR	85 –100	3.35 –4″	0.001 / .00005″	5	DIN 863–4	97	247
4191034	44 EWR	100 –125	4 –4.9″	0.001 / .00005″	6	DIN 863–4	132	282
4191035	44 EWR	125 –150	4.9 –5.9″	0.001 / .00005″	6	DIN 863–4	132	282
4191036	44 EWR	150 –175	5.9 –6.9″	0.001 / .00005″	7	DIN 863–4	132	282
4191037	44 EWR	175 –200	6.9 –7.9″	0.001 / .00005″	7	DIN 863–4	132	282

Micromar 44 EWR

Digital Self-Centering Inside Micrometer

Order no.	a	b	c	d
	mm	mm	mm	mm
4191120	1.5	4	1.5	58
4191121	1.8	4.3	1.5	58
4191122	1.8	4.3	1.5	58
4191123		6.5	4	64
4191124		6.5	4	64
4191125		9	4	68
4191126		9	4	68
4191127		15	5	76
4191129		15	5	76
4191130		18	5	79
4191131		18	5	79
4191032		23	7	97
4191033		23	7	97
4191034		27	7	132
4191035		27	7	132
4191036		27	7	132
4191037		27	7	132





ACCESSORIES

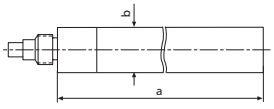
Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4102231	16 EWe transmitter for e-Stick	16 EWe
4102410	Data connection cable RS232C (2 m)	16 EXr
4102357	16 EXu data connection cable USB (2 m)	16 EXu
4710026	Adjustment ring DIN 2250 C (8 mm)	355 E
4710030	Adjustment ring DIN 2250 C (10 mm)	355 E
4710032	Adjustment ring DIN 2250 C (12 mm)	355 E
4710036	Adjustment ring DIN 2250 C (16 mm)	355 E
4710040	Adjustment ring DIN 2250 C (20 mm)	355 E
4710045	Adjustment ring DIN 2250 C (25 mm)	355 E
4710050	Adjustment ring DIN 2250 C (30 mm)	355 E
4710060	Adjustment ring DIN 2250 C (40 mm)	355 E
4710070	Adjustment ring DIN 2250 C (50 mm)	355 E
4710080	Adjustment ring DIN 2250 C (60 mm)	355 E
4710105	Adjustment ring DIN 2250 C (85 mm)	355 E
4710121	Adjustment ring DIN 2250 C (125 mm)	355 E
4710122	Adjustment ring DIN 2250 C (175 mm)	355 E
4190090	Extensions 75 mm, (6 –12 mm)	44 Av
4190091	Extensions 75 mm, (12 –20 mm)	44 Av
4190092	Extensions 150 mm, (20 –30 mm)	44 Av
4190093	Extensions 150 mm, (30 –200 mm)	44 Av
4102230	e-Stick receiver	e-Stick



16 EWe



e-Stick



44 Av



355 E

Micromar 44 EWR

Digital Self-Centering Inside Micrometer Sets

RS232C | Digimatic | ABS | IP 52 | REF system

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- PRESET (for entering a numerical value)
- mm/inch
- LOCK function (key lock)
- DATA (data transmission via connection cable)

FEATURES

- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide-tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 52
- **Package contains:** basic units 44 EWg, measuring heads 44 Ak, setting rings, battery, instruction manual, case



Application:

- Through holes
- Blind holes
- Centering shoulders

TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Error limit	Standard	Number of measuring heads 44 Ak	Setting rings
		mm	inch	mm/inch	µm			
4191160	44 EWR	6 –12	.25 –.4725"	0.001 / .00005"	4	DIN 863–4	3	8 mm, 10 mm
4191161	44 EWR	12 –20	.4725 –.775"	0.001 / .00005"	4	DIN 863–4	2	16 mm
4191162	44 EWR	20 –50	.775 –2"	0.001 / .00005"	4	DIN 863–4	4	25 mm, 40 mm
4191163	44 EWR	50 –100	2 –4"	0.001 / .00005"	5	DIN 863–4	4	60 mm, 85 mm

ACCESSORIES

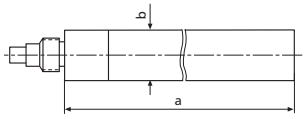
Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4102357	16 EXu data connection cable USB (2 m)	16 EXu
4102410	Data connection cable RS232C (2 m)	16 EXr
4102231	16 EWe transmitter for e-Stick	16 EWe
4102230	e-Stick receiver	e-Stick
4190090	Extensions 75 mm, (6 –12 mm)	44 Av
4190091	Extensions 75 mm, (12 –20 mm)	44 Av
4190092	Extensions 150 mm, (20 –30 mm)	44 Av
4190093	Extensions 150 mm, (30 –200 mm)	44 Av



16 EWe



e-Stick



44 Av

Micromar 844 A

Self-Centering Inside Measuring Pistol

FEATURES

- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide-tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight
- Measuring value indication is always easy to read when using an electronic dial indicator with a rotatable display
- **Package contains:** excludes indicator, basic units 844 Ag, measuring head 44 Ak, instruction manual, case



Application:

For measuring:

- through holes
- blind holes
- centering shoulders

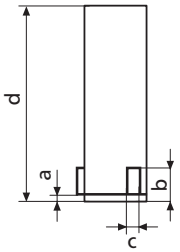
TECHNICAL DATA

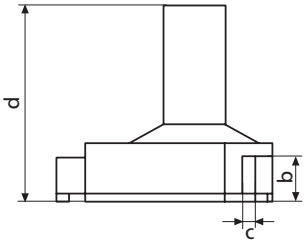
Order no.	Product type	Measuring range		Error limit	Standard	Measuring depth	Measuring depth with extension
		mm	inch	µm		mm	mm
4487700	844 A	6 –8	.25 –.3125″	3	Factory standard	58	133
4487701	844 A	8 –10	.3125 –.4″	3	Factory standard	58	133
4487702	844 A	10 –12	.4 –.4725″	3	Factory standard	58	133
4487703	844 A	12 –16	.4725 –.625″	3	Factory standard	64	139
4487704	844 A	16 –20	.625 –.775″	3	Factory standard	64	139
4487705	844 A	20 –25	.775 –1″	3	Factory standard	68	218
4487706	844 A	25 –30	1 –1.2″	3	Factory standard	68	218
4487707	844 A	30 –40	1.2 –1.6″	3	Factory standard	76	226
4487709	844 A	40 –50	1.6 –2″	3	Factory standard	76	226
4487710	844 A	50 –60	2 –2.35″	4	Factory standard	79	229
4487711	844 A	60 –70	2.35 –2.75″	4	Factory standard	79	229
4487612	844 A	70 –85	2.75 –3.35″	4	Factory standard	97	247
4487613	844 A	85 –100	3.35 –4″	4	Factory standard	97	247
4487614	844 A	100 –125	4 –4.9″	5	Factory standard	132	282
4487615	844 A	125 –150	4.9 –5.9″	5	Factory standard	132	282
4487616	844 A	150 –175	5.9 –6.9″	6	Factory standard	132	282
4487617	844 A	175 –200	6.9 –7.9″	6	Factory standard	132	282

Micromar 844 A

Self-Centering Inside Measuring Pistol

Order no.	a	b	c	d
	mm	mm	mm	mm
4487700	1.5	4	1.5	58
4487701	1.8	4.3	1.5	58
4487702	1.8	4.3	1.5	58
4487703		6.5	4	64
4487704		6.5	4	64
4487705		9	4	68
4487706		9	4	68
4487707		15	5	76
4487709		15	5	76
4487710		18	5	79
4487711		18	5	79
4487612		23	7	97
4487613		23	7	97
4487614		27	7	132
4487615		27	7	132
4487616		27	7	132
4487617		27	7	132





ACCESSORIES

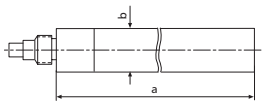
Order no.	g	Product name	Type
4337621		Digital indicator, 0.0005 mm, 25 mm	1086 R
4337625		Digital indicator, 0.0005 mm, 25 mm	1086 Ri
4102915		Digimatic data cable (2 m)	16 EWd
4102410		Data connection cable RS232C (2 m)	16 EXr
4102357		16 EXu Data connection cable USB (2 m)	16 EXu
4710026		Adjustment ring DIN 2250 C (8 mm)	355 E
4710030		Adjustment ring DIN 2250 C (10 mm)	355 E
4710036		Adjustment ring DIN 2250 C (16 mm)	355 E
4710040		Adjustment ring DIN 2250 C (20 mm)	355 E
4710050		Adjustment ring DIN 2250 C (30 mm)	355 E
4710060		Adjustment ring DIN 2250 C (40 mm)	355 E
4710080		Adjustment ring DIN 2250 C (60 mm)	355 E
4710105		Adjustment ring DIN 2250 C (85 mm)	355 E
4710121		Adjustment ring DIN 2250 C (125 mm)	355 E
4710122		Adjustment ring DIN 2250 C (175 mm)	355 E
4190090	M5x0.5	Extensions 75 mm, (6 –12 mm)	44 Av
4190091	M5x0.5	Extensions 75 mm, (12 –20 mm)	44 Av
4190092	M12x1	Extensions 150 mm, (20 –30 mm)	44 Av
4190093	M12x1	Extensions 150 mm, (30 –200 mm)	44 Av
4102220		Receiver for instruments with Integrated Wireless	i-Stick



1086 R;1086 R-HR;1086 ZR



1086 Ri



44 Av



355 E



i-Stick

Micromar 844 AS

Self-centering Measuring Pistol

FEATURES

- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide-tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight
- Measuring value indication is always easy to read when using an electronic dial indicator with a rotatable display
- **Package contains:** instruction manual, setting rings, key for replacing measuring heads (from 30 mm), case



Application:

For measuring:

- Through holes
- Blind holes
- Centering shoulders

TECHNICAL DATA

Order no.	Product type	Measuring range		Resolution	Standard	Number of measuring heads 44 Ak	Indicating instrument (included in package)	Setting rings
		mm	inch	mm/inch				
4487750	844 AS	6 –12	.25 –.4725"		Factory standard	3	Without	8 mm, 10 mm
4487751	844 AS	12 –20	.4725 –.775"		Factory standard	2	Without	16 mm
4487752	844 AS	20 –50	.775 –2"		Factory standard	4	Without	25 mm, 40 mm
4487753	844 AS	50 –100	2 –4"		Factory standard	4	Without	60 mm, 85 mm
4487760	844 AS	6 –12	.25 –.4725"	0.0005 / .00002"	Factory standard	3	MarCator 1086 R	8 mm, 10 mm
4487761	844 AS	12 –20	.4725 –.775"	0.0005 / .00002"	Factory standard	2	MarCator 1086 R	16 mm
4487762	844 AS	20 –50	.775 –2"	0.0005 / .00002"	Factory standard	4	MarCator 1086 R	25 mm, 40 mm
4487763	844 AS	50 –100	2 –4"	0.0005 / .00002"	Factory standard	4	MarCator 1086 R	60 mm, 85 mm

ACCESSORIES

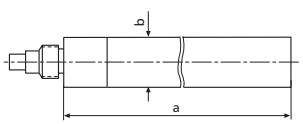
Order no.	Product name	Product type
4102357	16 EXu data connection cable USB (2 m)	16 EXu
4102410	Data connection cable RS232C (2 m)	16 EXr
4102915	Digimatic data cable (2 m)	16 EWd
4102231	16 EWe transmitter for e-Stick	16 EWe
4102230	e-Stick receiver	e-Stick
4190090	Extensions 75 mm, (6 –12 mm)	44 Av
4190091	Extensions 75 mm, (12 –20 mm)	44 Av
4190092	Extensions 150 mm, (20 –30 mm)	44 Av
4190093	Extensions 150 mm, (30 –200 mm)	44 Av



16 EWe



e-Stick



44 Av

Micromar 44 EWg

Basic Unit

FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- PRESET (for entering a numerical value)
- mm/inch
- LOCK function (key lock)
- DATA (data transmission via connection cable)

FEATURES

Threaded connection for changing the measuring head

- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 52
- **Package contains:** instruction manual, battery, case



TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range	Resolution
		mm	inch	mm/inch
4190106	44 EWg	6 –20	.25 –.775"	0.001 / .00005"
4190107	44 EWg	20 –100	.775 –4.0"	0.001 / .00005"
4190108	44 EWg	100 –200	4.0 –7.9"	0.001 / .00005"

ACCESSORIES

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4102357	16 EXu data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4190330	Measuring head, 6 –8 mm	44 Ak
4190331	Measuring head, 8 –10 mm	44 Ak
4190332	Measuring head, 10 –12 mm	44 Ak
4190333	Measuring head, 12 –16 mm	44 Ak
4190334	Measuring head, 16 –20 mm	44 Ak
4190335	Measuring head, 20 –25 mm	44 Ak
4190336	Measuring head, 25 –30 mm	44 Ak
4190337	Measuring head, 30 –40 mm	44 Ak
4190339	Measuring head, 40 –50 mm	44 Ak
4190340	Measuring head, 50 –60 mm	44 Ak
4190341	Measuring head, 60 –70 mm	44 Ak
4190042	Measuring head, 70 –85 mm	44 Ak
4190043	Measuring head, 85 –100 mm	44 Ak
4190044	Measuring head, 100 –125 mm	44 Ak
4190045	Measuring head, 125 –150 mm	44 Ak
4190046	Measuring head, 150 –175 mm	44 Ak
4190047	Measuring head, 175 –200 mm	44 Ak

Micromar 844 Ag

Basic Instrument Measuring Pistol

FEATURES

- Threaded connection for changing the measuring head
- Any indicating instrument with an 8 mm mounting shank can be used
- Scope of delivery Model 6–100 mm: includes adapter for 6–20 mm
- **Package contains:** instruction manual, case



TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range
		mm	inch
4487635	844 Ag	6 –100	.25 –4.0"
4487633	844 Ag	20 –100	.775 –4.0"
4487634	844 Ag	100 –200	4.0 –7.9"

ACCESSORIES

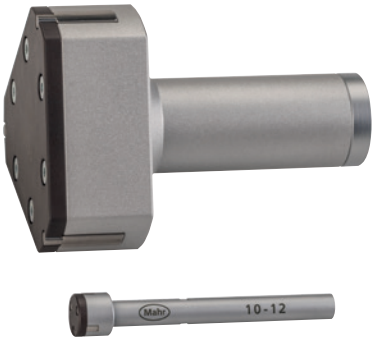
Order no.	Product name	Product type
4190330	Measuring head, 6 –8 mm	44 Ak
4190331	Measuring head, 8 –10 mm	44 Ak
4190332	Measuring head, 10 –12 mm	44 Ak
4190333	Measuring head, 12 –16 mm	44 Ak
4190334	Measuring head, 16 –20 mm	44 Ak
4190335	Measuring head, 20 –25 mm	44 Ak
4190336	Measuring head, 25 –30 mm	44 Ak
4190337	Measuring head, 30 –40 mm	44 Ak
4190339	Measuring head, 40 –50 mm	44 Ak
4190340	Measuring head, 50 –60 mm	44 Ak
4190341	Measuring head, 60 –70 mm	44 Ak
4190042	Measuring head, 70 –85 mm	44 Ak
4190043	Measuring head, 85 –100 mm	44 Ak
4487410	Adapter for 844 Ag 6–20 mm	844 Aga
4190044	Measuring head, 100 –125 mm	44 Ak
4190045	Measuring head, 125 –150 mm	44 Ak
4190046	Measuring head, 150 –175 mm	44 Ak
4190047	Measuring head, 175 –200 mm	44 Ak

Micromar 44 Ak

Measuring Head

FEATURES

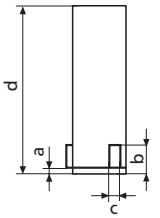
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide-tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight

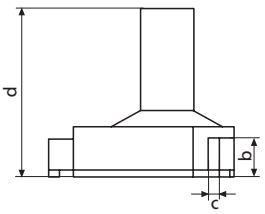


TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range
		mm	inch
4190330	44 Ak	6 –8	.25 –.3125″
4190331	44 Ak	8 –10	.3125 –.4″
4190332	44 Ak	10 –12	.4 –.4725″
4190333	44 Ak	12 –16	.4725 –.625″
4190334	44 Ak	16 –20	.625 –.775″
4190335	44 Ak	20 –25	.775 –1″
4190336	44 Ak	25 –30	1 –1.2″
4190337	44 Ak	30 –40	1.2 –1.6″
4190339	44 Ak	40 –50	1.6 –2″
4190340	44 Ak	50 –60	2 –2.35″
4190341	44 Ak	60 –70	2.35 –2.75″
4190042	44 Ak	70 –85	2.75 –3.35″
4190043	44 Ak	85 –100	3.35 –4″
4190044	44 Ak	100 –125	4 –4.9″
4190045	44 Ak	125 –150	4.9 –5.9″
4190046	44 Ak	150 –175	5.9 –6.9″
4190047	44 Ak	175 –200	6.9 –7.9″

Order no.	a	b	c	d
	mm	mm	mm	mm
4190330	1.5	4	1.5	58
4190331	1.8	4.3	1.5	58
4190332	1.8	4.3	1.5	58
4190333		6.5	4	64
4190334		6.5	4	64
4190335		9	4	68
4190336		9	4	68
4190337		15	5	76
4190339		15	5	76
4190340		18	5	79
4190341		18	5	79
4190042		23	7	97
4190043		23	7	97
4190044		27	7	132
4190045		27	7	132
4190046		27	7	132
4190047		27	7	132





Micromar 45 T

Depth Micrometer

FEATURES

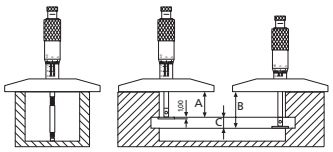
- Operating and display units with satin chrome finish
- Stainless spindle is hardened throughout and ground
- Rapid drive with integrated ratchet
- **Package contains:** extensions 25 mm and 50 mm, case





Application:

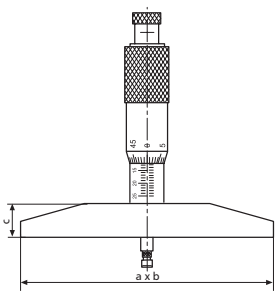
- Depth measurement
- Measuring the space between grooves and groove widths in conjunction with a disc anvil 45 Tm



TECHNICAL DATA

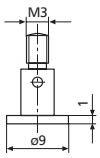
Order no.	Product type	Measuring range	Graduation value	Error limit	Spindle thread pitch	Standard
		mm	mm	µm	mm	
4180000	45 T	0 –100	0.01	5	0.5	Factory standard

Order no.	a	b	c
	mm	mm	mm
4180000	100	16	13



ACCESSORIES

Order no.	Product name	Product type
4180001	Extension (25 mm)	45 Tv
4180002	Extension (50 mm)	45 Tv
4180003	Extension (100 mm)	45 T
4180011	Disc anvil (9 x 1 mm)	45 Tm



45 Tm

MarTest | Test Indicators and Touch Probes

Dial test indicators from Mahr are ideal for delicate measuring tasks. Their sensitive measuring mechanism ensures maximum security and precision. The display has a hardened mineral glass panel and seal to protected it in harsh workshop conditions.



Overview of Test Indicators and Touch Probes 118

Test Indicators with Scale Display

MarTest 800 SA / 800 SGA / 800 S / 800 SG / 800 SR 122
Standard Model

MarTest 800 SGB / 800 SL / 800 SGL 123
Test Indicator

MarTest 800 SM / 800 SGM / 800 SRM / 800 SGE 124
With long Stylus

MarTest 800 V / 800 VGM 129
Vertical Model

MarTest 800 H 133
Horizontal Model

Digital Test Indicators

MarTest 800 EW / 800 EWL 135
Digital Test Indicator

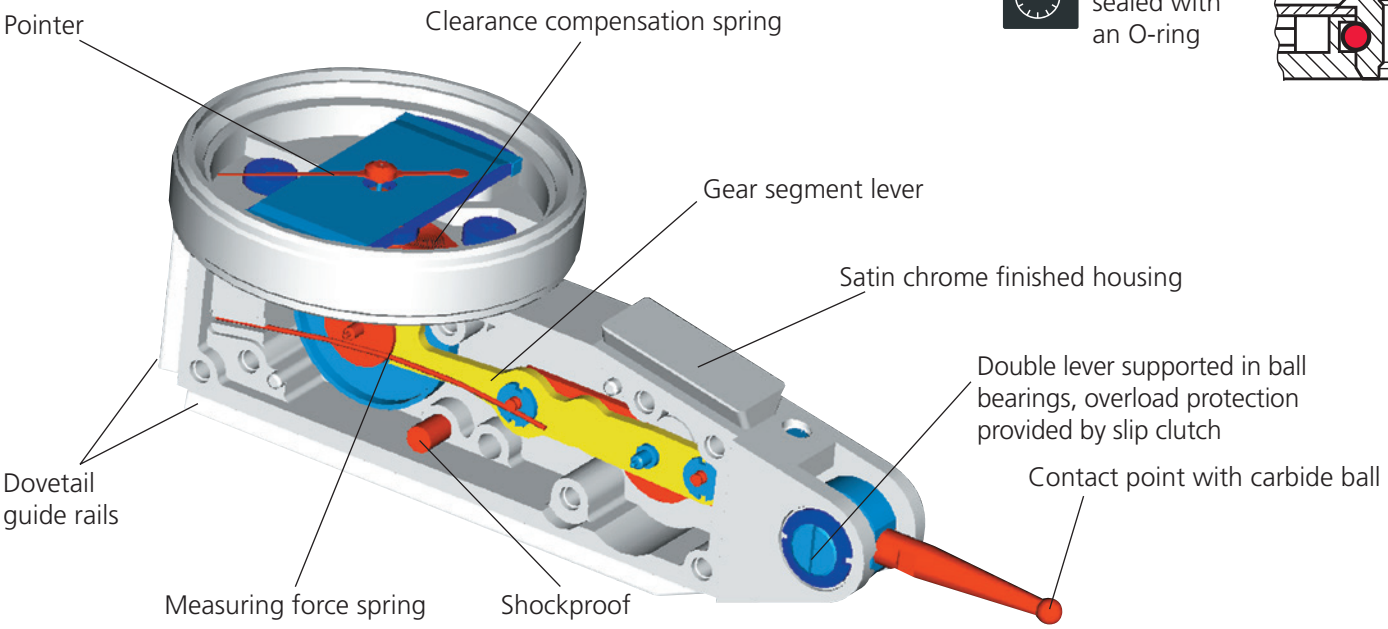
Accessories: Mounts, Measuring and Centering Arms, Measuring Stands 136

3D Touch Probes

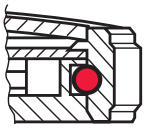
MarTest 802 EW 142
Digital 3D Touch Probe

MarTest 802 NW 143
Mechanical 3D Touch Probe

MarTest | Terms



Dial face is sealed with an O-ring



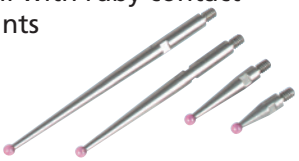
SHOCK PROOF

Mechanism
- Shockproof
- Anti-magnetic
- Movement bearings are jeweled with 8 precious stones

Styli with carbide contact points



Styli with ruby contact points

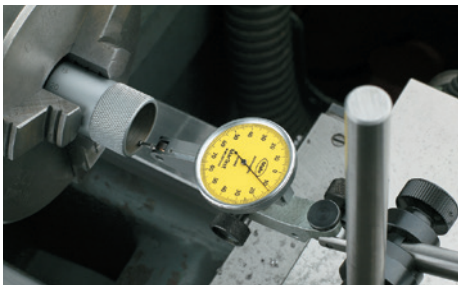


MarTest | Applications

Concentricity of a shaft



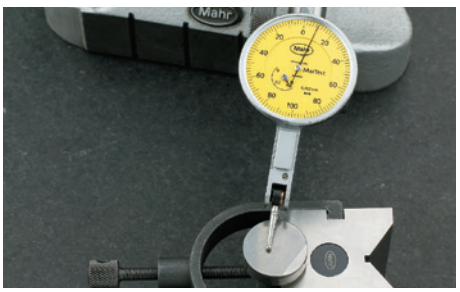
Concentricity of a sleeve



Centering of a bore



Aligning a surface



Testing parallelism

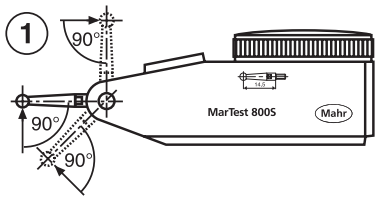


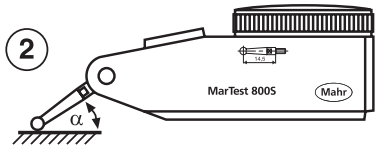
MarTest | Avoiding Measuring Errors

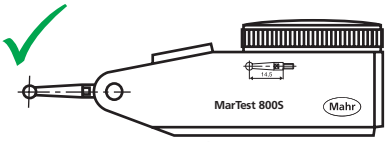
For accurate measurements the axis of the contact point must be perpendicular to the measuring direction (fig. 1). If this is not possible, it is necessary to multiply the reading on the dial with a correction factor, which depends on angle α (fig. 2). The correction factor is negligible for angles below 15°.

Angle α	15°	30°	45°	60°
Corr. factor	0.96	0.87	0.70	0.50

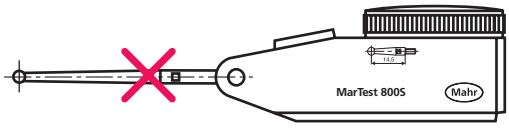
Example:
Angle α: 30° (estimated)
Reading on dial: 0.38 mm
Meas. values: 0.38 x 0.87 = 0.33 mm







l = 14.5



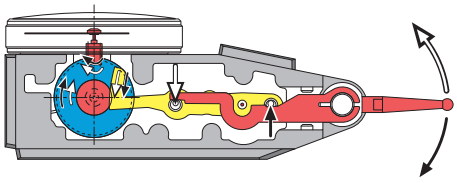
l = 41.2

Please use only the provided measuring insert length for the type of device (e.g. 800 S)



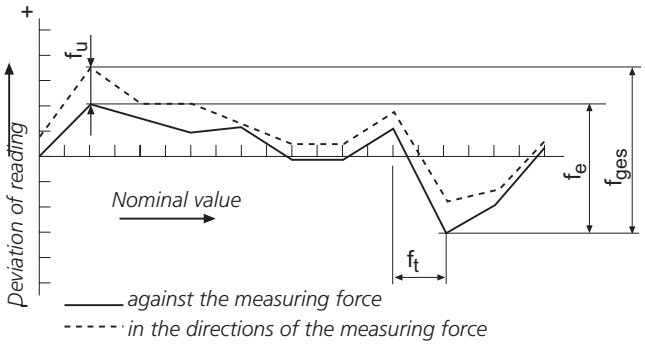
MarTest | Automatic Switch of Measuring Direction

Measurement in both directions is possible without switch. The pointer moves clockwise. This guarantees clear and errorless reading.



functional description

MarTest | Metrological Characteristics



MarTest | Versions

Standard Model
800 S



800 EW

IP 65

Extra Long Styli
800 SL



800 EWL

IP 65

Higher Resolution
800 SM



Larger Measuring Range
800 SR



Horizontal Model
800 H



Vertical Model
800 V



MarTest 800 S / 800 S-R / 800 SG / 800 SG-R / 800 SR / 800 SA / 800 SGA

SHOCK PROOF | DIN 2270

Test Indicator

FEATURES

Standard model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a8



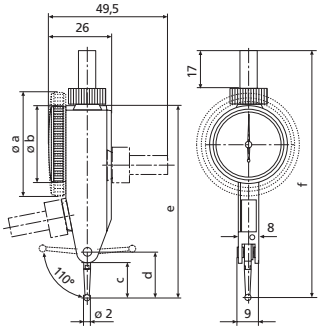
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

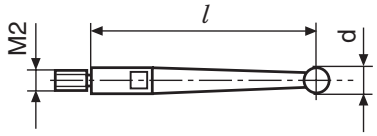
Order no.		4305200	4305205	4307200	4307205	4307250	4301200	4301250
Product type		800 S	800 S-R	800 SG	800 SG-R	800 SR	800 SA	800 SGA
Measuring range	mm	± 0.4				± 0.8	± 0.25	
Graduation value	mm	0.01						
Measuring surface		carbide	ruby	carbide	ruby	carbide		
Scale diameter	mm	28		38			28	38
Type of dial face		40–0–40					25–0–25	
Dial color		Yellow						
Measuring force	N	0.15					0.1	
Range per rev.	mm	0.8					0.5	
Deviation range f_e	µm	10					5	
Total deviation range f_{ges}	µm	13				14	8	
Hysteresis f_u	µm	3				4	3	
Partial measuring span f_t	µm	5						
Repeatability f_w	µm	3						
Standard		DIN 2270				Factory standard		

Order no.	a	b	c	d	e	f	Measuring anvil length
	mm	mm	mm	mm	mm	mm	mm
4305200		30	13.6	17.8	75	99	14.5
4305205		30	13.6	17.8	75	99	14.5
4307200	40.5		13.6	17.8	75	99	14.5
4307205	40.5		13.6	17.8	75	99	14.5
4307250	40.5		13.6	17.8	75	99	14.5
4301200		30	13.6	17.8	75	99	14.5
4301250	40.5		13.6	17.8	75	99	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 800 SGB / 800 SL / 800 SGL

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

With long stylus, for measurements at poorly accessible measuring points

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a6 (800 SA/SGA/SGB), mounting shaft 800a8



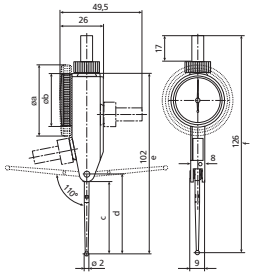
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

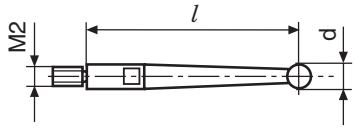
Order no.		4301300	4306200	4306250
Product type		800 SGB	800 SL	800 SGL
Measuring range	mm	± 0.5	± 0.25	
Graduation value	mm		0.01	
Measuring surface			carbide	
Scale diameter	mm	38	28	38
Type of dial face		50–0–50	25–0–25	
Dial color			Yellow	
Measuring force	N		0.07	
Range per rev.	mm	1	0.5	
Deviation range f_e	µm		10	
Total deviation range f_{ges}	µm		13	
Hysteresis f_u	µm	4	5	
Partial measuring span f_t	µm		5	
Repeatability f_w	µm		3	
Standard			Factory standard	

Order no.	a	b	c	d	e	f	Measuring anvil length
	mm	mm	mm	mm	mm	mm	mm
4301300	40.5		31.4	35.7	93	117	32.3
4306200		30	40.3	44.6	102	126	41.24
4306250	40.5		40.3	44.6	102	126	41.24



ACCESSORIES

Order no.	Product name	Product type
4301851	Stylus ø 1.0 mm, carbide, l = 32.3 mm	800 tb
4301850	Stylus ø 2.0 mm, carbide, l = 32.3 mm	800 tb
4301852	Stylus ø 3.0 mm, carbide, l = 32.3 mm	800 tb
4309052	Stylus ø 2.0 mm, ruby, l = 32.3 mm	800 tbr
4305868	Spanner	
4306851	Stylus ø 1.0 mm, carbide, l = 41.24 mm	800 tl
4306850	Stylus ø 2.0 mm, carbide, l = 41.24 mm	800 tl
4306853	Stylus ø 3.0 mm, carbide, l = 41.24 mm	800 tl
4309053	Stylus ø 2.0 mm, ruby, l = 41.24 mm	800 tlr



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 800 SM / 800 SGM / 800 SGM-R / 800 SRM

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

For high-precision measurements

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a8



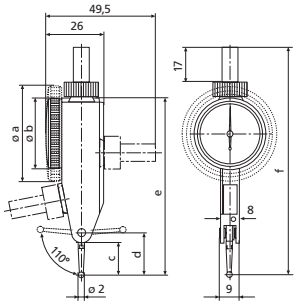
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

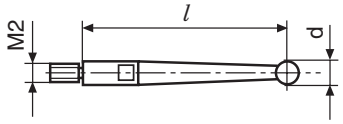
Order no.		4308150	4308200	4308205	4308250
Product type		800 SM	800 SGM	800 SGM-R	800 SRM
Measuring range	mm	± 0.1			± 0.2
Graduation value	mm	0.002			
Measuring surface		carbide		ruby	carbide
Scale diameter	mm	28	38		
Type of dial face		100–0–100			
Dial color		Yellow			
Measuring force	N	0.15			
Range per rev.	mm	0.2			
Deviation range f_e	µm	3			
Total deviation range f_{ges}	µm	4			5
Hysteresis f_u	µm	2			3
Partial measuring span f_t	µm	2			
Repeatability f_w	µm	1.5			
Standard		DIN 2270			Factory standard

Order no.	a	b	c	d	e	f	Measuring anvil length
	mm	mm	mm	mm	mm	mm	mm
4308150		30	13.6	17.8	75	99	14.5
4308200	40.5		13.6	17.8	75	99	14.5
4308205	40.5		13.6	17.8	75	99	14.5
4308250	40.5		13.6	17.8	75	99	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 800 SGE

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

For high-precision measurements

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a8



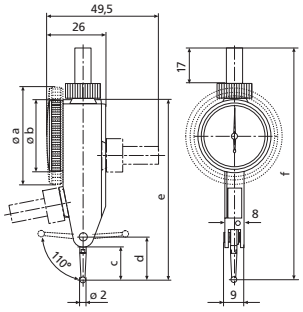
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

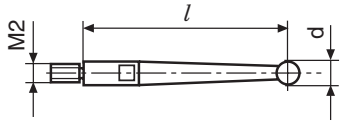
Order no.		4308220
Product type		800 SGE
Measuring range	mm	± 0.07
Graduation value	mm	0.001
Measuring surface		carbide
Scale diameter	mm	38
Type of dial face		70–0–70
Dial color		Yellow
Measuring force	N	0.2
Range per rev.	mm	0.14
Deviation range f_e	µm	3
Total deviation range f_{ges}	µm	4
Hysteresis f_u	µm	2
Partial measuring span f_t	µm	2
Repeatability f_w	µm	1.5
Standard		Factory standard

Order no.	a	c	d	e	f	Measuring anvil length
	mm	mm	mm	mm	mm	mm
4308220	40.5	8.3	12.5	70	94	9.15



ACCESSORIES

Order no.	Product name	Product type
4308851	Stylus ø 1.0 mm, carbide, l = 9.1 mm	800 te
4308850	Stylus ø 2.0 mm, carbide, l = 9.1 mm	800 te
4308852	Stylus ø 3.0 mm, carbide, l = 9.1 mm	800 te
4309050	Stylus ø 2.0 mm, ruby, l = 9.1 mm	800 ter
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 801 SM / 801 SGM / 801 SRM / 801 SGE

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

For high-precision measurements

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a3/8



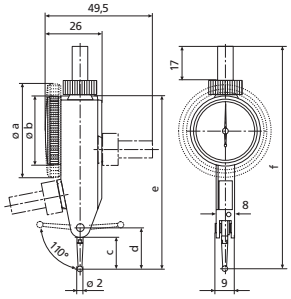
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

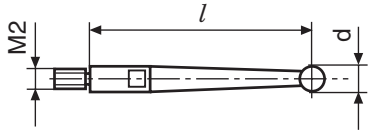
Order no.		4308960	4308970	4308980	4308985
Product type		801 SM	801 SGM	801 SRM	801 SGE
Measuring range	inch	± .004″		± .008″	± .004″
Graduation value	inch	.0001″			.00005″
Scale diameter	inch	1.1″	1.5″		
Type of dial face		4–0–4			
Dial color		Green			
Measuring force	N	0.15			
Range per rev.	inch	.008″			
Deviation range f_e	inch	.00012″			.0004″
Total deviation range f_{ges}	inch	.00016″		.0002″	.0005″
Hysteresis f_u	inch	.00008″		.00012″	
Partial measuring span f_t	inch	.00008″			.0002″
Repeatability f_w	inch	.0001″			
Standard		Factory standard			

Order no.	a	b	c	d	e	f	Measuring anvil length
	mm	mm	mm	mm	mm	mm	mm
4308960		30	13.6	17.8	75	99	14.5
4308970	40.5		13.6	17.8	75	99	14.5
4308980	40.5		13.6	17.8	75	99	14.5
4308985	40.5		13.6	17.8	75	99	14.5



ACCESSORIES

Order no.	Product name	Product type
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 801 S / 801 S1 / 801 SG / 801 SR / 801 SGI

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

Standard model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a3/8



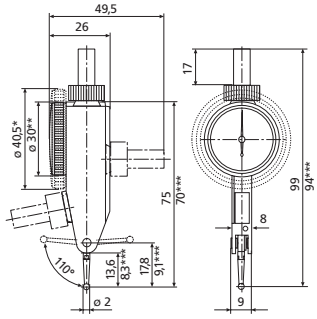
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

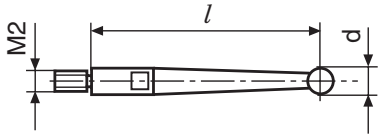
Order no.		4305950	4305960	4307950	4307960	4307970
Product type		801 S	801 S1	801 SG	801 SR	801 SGI
Measuring range	mm					± 0.3
Measuring range	inch		± .015″		± .030″	± .015″
Graduation value	mm					0.01
Graduation value	inch			.0005″		
Scale diameter	inch	1.1″	1.5″	1.1″	1.5″	
Type of dial face				15–0–15		
Dial color				Green		
Measuring force	N			0.15		
Range per rev.	mm					0.6
Range per rev.	inch			.03″		
Deviation range f_e	inch			.0004″		
Total deviation range f_{ges}	inch			.0005″		
Hysteresis f_u	inch		.00012″		.0002″	.00012″
Partial measuring span f_t	inch			.0002″		
Repeatability f_w	inch			.0001″		
Standard				Factory standard		

Order no.	a	b	c	d	e	f	Measuring anvil length
	mm	mm	mm	mm	mm	mm	mm
4305950		30	13.6	17.8	75	99	14.5
4305960		30	13.6	17.8	75	99	14.5
4307950	40.5		13.6	17.8	75	99	14.5
4307960	40.5		13.6	17.8	75	99	14.5
4307970	40.5		13.6	17.8	75	99	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 801 SL / 801 SGL

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

With long stylus, for measurements at poorly accessible measuring points

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a3/8



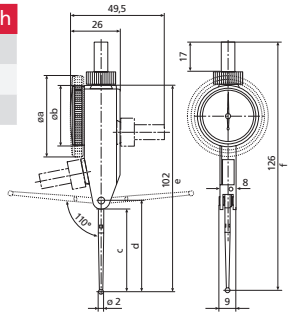
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

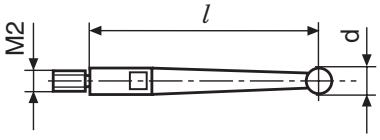
Order no.		4306950	4306960
Product type		801 SL	801 SGL
Measuring range	inch	± .010″	
Graduation value	inch	.0005″	
Scale diameter	inch	1.1″	1.5″
Type of dial face		10–0–10	
Dial color		Green	
Measuring force	N	0.07	
Range per rev.	inch	.02″	
Deviation range f_e	inch	.0004″	
Total deviation range f_{ges}	inch	.0005″	
Hysteresis f_u	inch	.0002″	
Partial measuring span f_t	inch	.0002″	
Repeatability f_w	inch	.0001″	
Standard		Factory standard	

Order no.	a	b	c	d	e	f	Measuring anvil length
	mm	mm	mm	mm	mm	mm	mm
4306950		30	40.3	44.6	102	126	41.24
4306960	40.5		40.3	44.6	102	126	41.24



ACCESSORIES

Order no.	Product name	Product type
4306851	Stylus ø 1.0 mm, carbide, l = 41.24 mm	800 tl
4306850	Stylus ø 2.0 mm, carbide, l = 41.24 mm	800 tl
4306853	Stylus ø 3.0 mm, carbide, l = 41.24 mm	800 tl
4309053	Stylus ø 2.0 mm, ruby, l = 41.24 mm	800 tlr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 800 V

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

Vertical model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a8



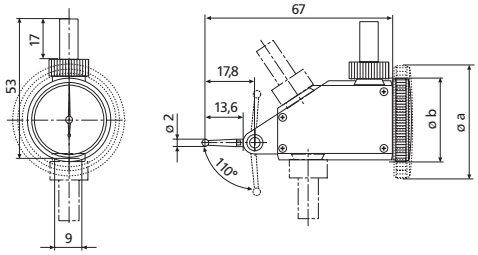
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

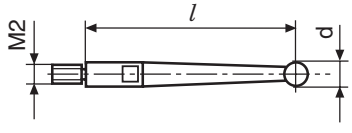
Order no.		4302200
Product type		800 V
Measuring range	mm	± 0.4
Graduation value	mm	0.01
Measuring surface		carbide
Scale diameter	mm	28
Type of dial face		40–0–40
Dial color		Yellow
Measuring force	N	0.2
Range per rev.	mm	0.8
Deviation range f_e	µm	10
Total deviation range f_{ges}	µm	13
Hysteresis f_u	µm	3
Partial measuring span f_t	µm	5
Repeatability f_w	µm	3
Standard		DIN 2270

Order no.	b	Measuring anvil length
	mm	mm
4302200	30	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 801 V

Test Indicator

SHOCK PROOF

FEATURES

Vertical model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a3/8



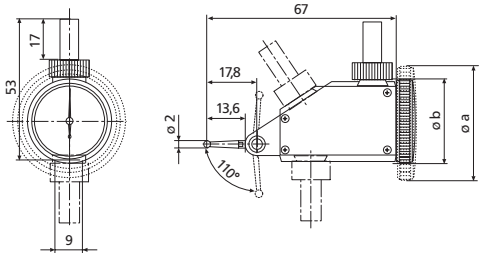
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

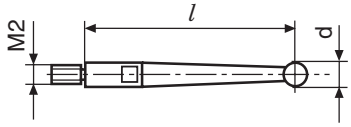
Order no.		4302950
Product type		801 V
Measuring range	inch	± .015″
Graduation value	inch	.0005″
Measuring surface		carbide
Scale diameter	inch	1.1″
Type of dial face		15–0–15
Dial color		Green
Measuring force	N	0.2
Range per rev.	inch	.03″
Deviation range f_e	inch	.0004″
Total deviation range f_{ges}	inch	.0005″
Hysteresis f_u	inch	.00012″
Partial measuring span f_t	inch	.0002″
Repeatability f_w	inch	.0001″
Standard		Factory standard

Order no.	b	Measuring anvil length
	mm	mm
4302950	30	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 800 VGM

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

Vertical model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a8



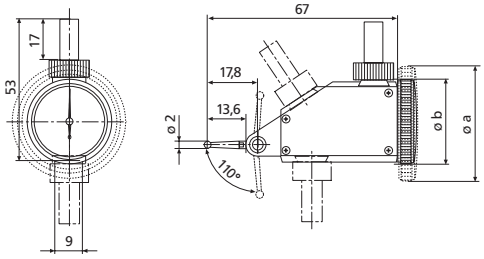
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

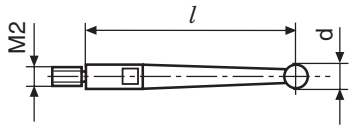
Order no.		4302250
Product type		800 VGM
Measuring range	mm	± 0.1
Graduation value	mm	0.002
Measuring surface		carbide
Scale diameter	mm	38
Type of dial face		100–0–100
Dial color		Yellow
Measuring force	N	0.25
Range per rev.	mm	0.2
Deviation range f_e	µm	3
Total deviation range f_{ges}	µm	4
Hysteresis f_u	µm	2
Partial measuring span f_t	µm	2
Repeatability f_w	µm	1.5
Standard		DIN 2270

Order no.	a	Measuring anvil length
	mm	mm
4302250	40.5	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 801 VGM

Test Indicator

SHOCK PROOF

FEATURES

Vertical model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a3/8



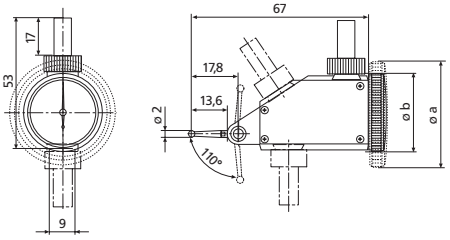
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

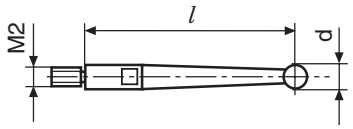
Order no.		4302960
Product type		801 VGM
Measuring range	inch	± .004″
Graduation value	inch	.0001″
Measuring surface		carbide
Scale diameter	inch	1.5″
Type of dial face		4–0–4
Dial color		Green
Measuring force	N	0.25
Range per rev.	inch	.008″
Deviation range f_e	inch	.00012″
Total deviation range f_{ges}	inch	.00016″
Hysteresis f_u	inch	.00008″
Partial measuring span f_t	inch	.00008″
Repeatability f_w	inch	.0001″
Standard		Factory standard

Order no.	a	Measuring anvil length
	mm	mm
4302960	40.5	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 800 H

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

Horizontal model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a8



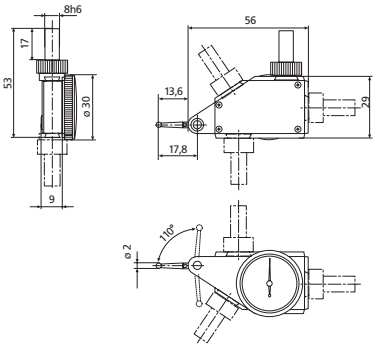
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

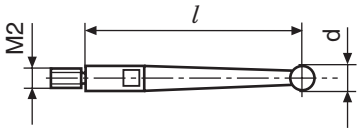
Order no.		4303200
Product type		800 H
Measuring range	mm	± 0.4
Graduation value	mm	0.01
Measuring surface		carbide
Scale diameter	mm	28
Type of dial face		40–0–40
Dial color		Yellow
Measuring force	N	0.25
Range per rev.	mm	0.8
Deviation range f_e	µm	10
Total deviation range f_{ges}	µm	13
Hysteresis f_u	µm	3
Partial measuring span f_t	µm	5
Repeatability f_w	µm	3
Standard		DIN 2270

Order no.	Measuring anvil length
	mm
4303200	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 801 H

Test Indicator

SHOCK PROOF | DIN 2270

FEATURES

Horizontal model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection:
  - against cracking, scratching or damage caused by hot shavings
  - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- **Package contains:** case, instruction manual, spanner for changing the styli, stylus dia. ø 2 mm, mounting shaft 800a3/8



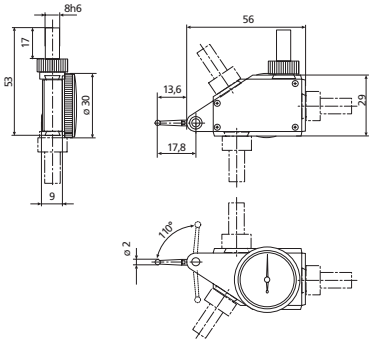
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

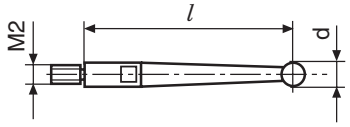
Order no.		4303950
Product type		801 H
Measuring range	inch	± .015″
Graduation value	inch	.0005″
Measuring surface		carbide
Scale diameter	inch	1.1″
Type of dial face		15–0–15
Dial color		Green
Measuring force	N	0.25
Range per rev.	inch	.03″
Deviation range f_e	inch	.0004″
Total deviation range f_{ges}	inch	.0005″
Hysteresis f_u	inch	.00012″
Partial measuring span f_t	inch	.0002″
Repeatability f_w	inch	.0001″
Standard		Factory standard

Order no.	Measuring anvil length
	mm
4303950	14.5



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4305868	Spanner	



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 800 EW / 800 EWL

Digital Test Indicator

SHOCK PROOF | MAX MIN | IP 65 | RS232C

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity

FEATURES

- Inductive measuring system
- Battery life approx. 2 years
- Operating unit is protected against coolants and lubricants, protection class IP65
- Combined analog and digital display
- Operating and display unit (bezel) can be rotated through 360°
- Satin chrome finished housing with 3 dovetail guideways
- Shockproof
- Movement bearings are jeweled
- Automatic matching to sensing direction
- Anti-magnetic
- Double lever supported in ball bearings
- Overload protection provided by slip clutch

- **Data interface:** Opto RS232C, USB
- **IP protection category:** IP 65
- **Package contains:** mounting shaft 800a8, spanner for changing the styli, stylus dia. ø 2 mm, case
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



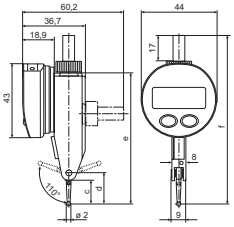
Application:

- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

TECHNICAL DATA

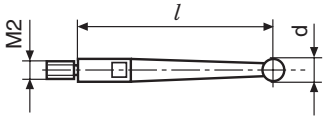
Order no.		4305120	4306120
Product type		800 EW	800 EWL
Measuring range	mm	± 0.4	± 0.25
Measuring range	inch	± .015″	± .010″
Resolution	mm	0.001	
Resolution	inch	.00005″	
Measuring force	N	0.13	0.07
Deviation range f_e	µm	10	
Total deviation range f_{ges}	µm	13	
Hysteresis f_u	µm	5	7
Partial measuring span f_t	µm	5	
Repeatability f_w	µm	3	
Standard		Factory standard	

Order no.	c	d	e	f	Mounting shaft	Measuring anvil length
	mm	mm	mm	mm	mm	mm
4305120	13.6	17.8	75	99	8	14.5
4306120	40.3	44.6	102	126	8	41.24



ACCESSORIES

Order no.	Product name	Product type
4305870	Stylus ø 1.0 mm, carbide, l = 14.5 mm	800 ts
4305850	Stylus ø 2.0 mm, carbide, l = 14.5 mm	800 ts
4305871	Stylus ø 3.0 mm, carbide, l = 14.5 mm	800 ts
4102520	Battery 3 V, CR 2032	
4305122	Data connection cable RS232C (2 m)	800 EWr
4305121	800 EWu Data connection cable USB (2 m)	800 EWu
4309051	Stylus ø 2.0 mm, ruby, l = 14.5 mm	800 tsr
4306850	Stylus ø 2.0 mm, carbide, l = 41.24 mm	800 tl
4306851	Stylus ø 1.0 mm, carbide, l = 41.24 mm	800 tl
4306853	Stylus ø 3.0 mm, carbide, l = 41.24 mm	800 tl
4309053	Stylus ø 2.0 mm, ruby, l = 41.24 mm	800 tlr



800 tb;800 tbr;800 te;800 ter;800 tl;800 tlr;800 ts;800 tsr;801 tl

MarTest 800 a4 / 800 a6 / 800 a8 / 800 a3/8 / 800 a1/4”

Mounting Shaft

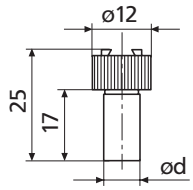
FEATURES

- Clamping shafts on the housing can be moved on dovetail guide rails
- Clamping in any position with milled nut (no tools required)



TECHNICAL DATA

Order no.	Mounting shaft	Mounting shaft	Product type
	mm	inch	
4305885	4		800 a4
4301865	6		800 a6
4305865	8		800 a8
4305875		.375”	800 a3/8
4305895		.25”	800 a1/4”



MarTest 800 h1

Holder

FEATURES

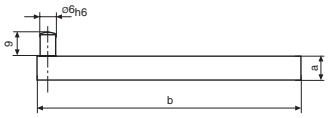
- Used for holding dial test indicator measuring devices on machine tools in conjunction with the 800k universal clamp



TECHNICAL DATA

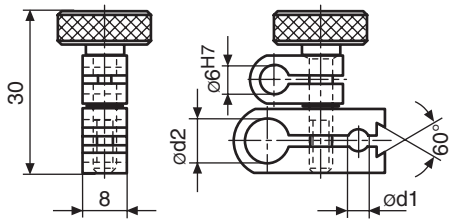
Order no.	Product type
4305888	800 h1

Order no.	Cross-section	a	b
	mm	mm	mm
4305888	9x9	9	100



ACCESSORIES

Order no.	Product name	Product type
4305891	Universal clamp, ø d1 = 4 mm, ø d2 = 8 mm, dovetail clamp	800 k8



800 k8;800 k3/8"

MarTest 800 hs8

Universal Holder with Dovetail Clamp

FEATURES

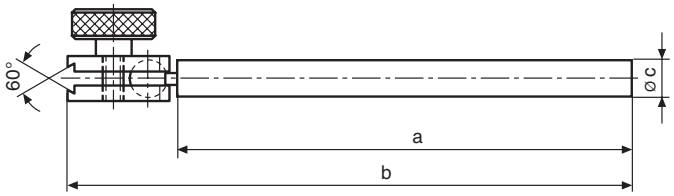
- For aligning and centering work pieces on machine tools
- Pivoting holding clamp for dovetail



TECHNICAL DATA

Order no.	Product type
4305886	800 hs8

Order no.	a	b	c
	mm	mm	mm
4305886	100	124	8



MarTest 801 v

Measuring and Centering Arm

FEATURES

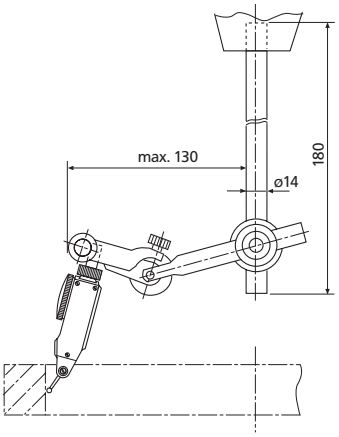
- For aligning and centering work pieces on machine tools
- Pivoting holding clamp with integrated precision adjustment
- Stainless steel struts



TECHNICAL DATA

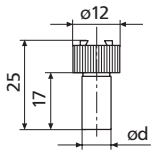
Order no.	Product type
4309070	801 v

Order no.	Mounting hole	Swivel range of mounting clamp
		°
4309070	8 mm	180



ACCESSORIES

Order no.	Product name
4305865	Mounting shaft ø 8 mm



800 a6;800 a8;800 a3/8;800 a4;800 a1/4"

MarTest 801 p

Measuring Stand

FEATURES

Perfect for measurements with small dial indicators and dial test indicator measuring devices

- Pivoting holder with Ø 8 and Ø 4 mm mount and dovetail profile for dial test indicator measuring devices
- Stainless steel column
- Base with V-groove



TECHNICAL DATA

Order no.	Product type
4309090	801 p

Order no.	Base surface	Column diameter	Height	Mounting hole	V-angle
		mm	mm		°
4309090	65 x 40 mm	8	150	4 and 8 mm	140

MarTest 800 b

Universal Centering Support Frame

FEATURES

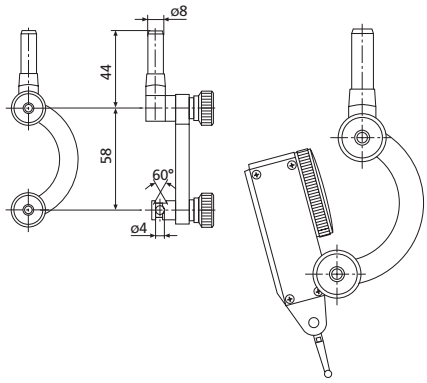
- For aligning and centering work pieces on machine tools
- Pivoting holding clamp



TECHNICAL DATA

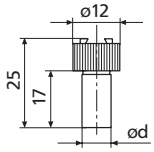
Order no.	Product type
4305893	800 b

Order no.	Mounting hole
4305893	4 mm



ACCESSORIES

Order no.	Product name	Product type
4305885	Mounting shaft ø 4 mm	800 a4



800 a6;800 a8;800 a3/8;800 a4;800 a1/4"

MarTest 802 EW

Digital 3D Touch Probe

IP 65

FUNCTIONS

- **Functions:**
- ON/OFF
- Auto OFF after 2 hours

FEATURES

Excellent readability thanks to combined display:
- bar graph for dynamic path information
- digital display for exact readings

- Can be controlled independently of a machine tool
- Large working range in all axes (X, Y, Z) prevents damage to the stylus by contacting errors
- Compact metal housing and long probe arm
- Shockproof movement
- **IP protection category:** IP 65
- **Package contains:** battery, instruction manual, stylus 802 EWt



Application:

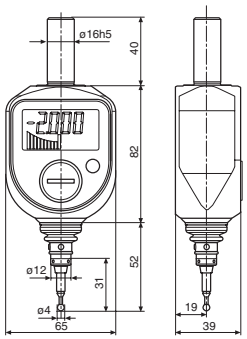
Can be used on milling and CNC machines to

- determine the zero position on workpieces
- determine the center of bores
- determine and correct the alignment of a workpiece and for the measurement of
- lengths
- depths

TECHNICAL DATA

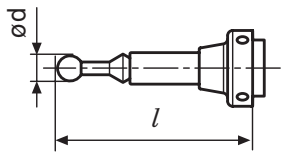
Order no.		4304300
Product type		802 EW
Resolution	mm	0.005
Working areas, X-, Y-, Z-axis		–2 to 4 mm
Repeatability at zero point, uni-directional	inch	± 0.005 mm
Standard		Factory standard

Order no.	Mounting shaft
	mm
4304300	16



ACCESSORIES

Order no.	Product name	Product type
4304320	Stylus ø 4.0 mm, l = 31 mm	802 EWt
4102520	Battery 3 V, CR 2032	



802 EWt;802 NWt

MarTest 802 NW

Mechanical 3D Touch Probe

IP 67

FEATURES

- Large, high contrast dial face
- Can be controlled independently of a machine tool
- Large working range in all axes (X, Y, Z) prevents damage to the stylus by contacting errors
- Compact metal housing and long probe arm
- High accuracy and linearity
- Shockproof and waterproof, ideal for the use on a machine with a tool changer
- **IP protection category:** IP 67
- **Package contains:** battery, instruction manual, stylus 802 EWt



Application:

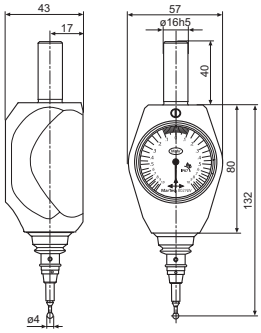
Can be used on milling and CNC machines to

- determine the zero position on workpieces
- determine the center of bores
- determine and correct the alignment of a workpiece and for the measurement of
- lengths
- depths

TECHNICAL DATA

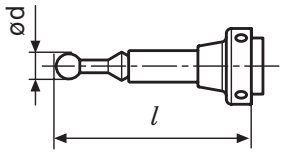
Order no.		4304311
Product type		802 NW
Graduation value	mm	0.01
Working areas, X-, Y-, Z-axis		6.6 mm
Repeatability at zero point, uni-directional	inch	± 0.01mm
Standard		Factory standard

Order no.	Mounting shaft
	mm
4304311	16



ACCESSORIES

Order no.	Product name	Product type
4304320	Stylus ø 4.0 mm, l = 31 mm	802 EWt
4304321	Stylus ø 6 mm, l = 56.6 mm	802 NWt



802 EWt;802 NWt

MarCator | Dial and Digital Indicators

Whether mechanical or digital, dial indicators rank as some of the most commonly used measuring probes. MarCator dial indicators offer accurate measuring results, simple controls and a rugged construction for use on the shop floor.



Overview MarCator Digital and Dial Indicators 144

Digital Indicators

MarCator 1075 R 148
Standard Versions with Numeric Display

MarCator 1086 R / 1086 WR / 1086 Ri / 1086 WRi / 1086 R-HR 149
With dynamic Measuring Functions and Tolerance Display

MarCator 1087 R / 1087 Ri / 1087 R-HR 156
With combined analog and digital Display

MarCator 1087 BR / 1087 BRi 159
For 2-Point Comparison Gages

Mechanical Dial Indicators

MarCator 803 S / 803 A / 805 A 161
Small Dial Indicators

MarCator 810 S / 810 A / 810 AT / 810 SV / 810 AU 162
Standard Versions

MarCator 810 SM / 810 SRM / 810 AX 163
Safety Dial Indicator with Scale Division 0.001 mm / 0.1 mm

MarCator 810 SW / 803 SW 165
Water protected Version (IP54)

MarCator 810 SB / 803 SB 166
Version with limited Measuring Range

MarCator 810 AG 167
Large Dial Indicators

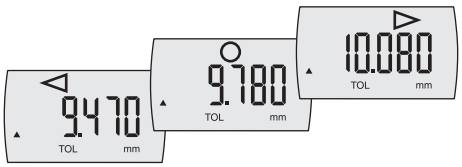
Measuring Inserts and Accessories for Dial Indicators and Dial Comparators 168

MarCator | Digital and Dial Indicators
Digital Dial Indicators with Reference System and Integrated Wireless

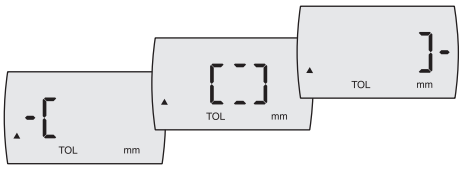
With MarCator 1086 Ri and 1087 Ri, Mahr sets standards in the dial gage product segment:
With the Reference System, MarCator indicators are immediately ready for measurement, as the zero position once set remains stored for all further measurements. And if you need to document your data, Integrated Wireless, the integrated energy-efficient radio system, offers you the optimal solution for transferring the measured values to the PC.

Clear display

Tolerance display with measured value display. Display of the current value and the indicated tolerance.



Tolerance display without measured value display. Tolerance overrange or underrange is indicated exclusively by symbols.





Universal SPC interface

- **Integrated Wireless**
  Radio interface at the price of a cable
- **USB**
  No interface box necessary! Simple and cost-effective installation of multipoint measuring systems via USB hubs
- **Digimatic**
  For connection to a digimatic compatible evaluation unit
- **Mahr Opto RS232C**
  For direct connection to a COM port on the PC

Absolute function:

ABS Dial gage can be set to 0.000 in any position without losing reference to the preset value

High operating reliability

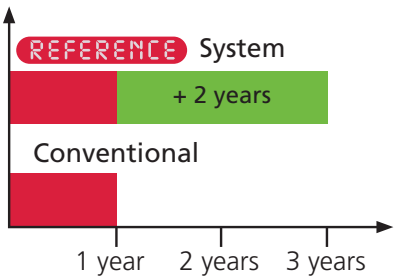
Lock function prevents unintentional key operation. All keys or individual functions can be locked.
If a locked key is pressed, "LOC" appears in the numeric display.

IP protection class IP54 (optional)
- Protective cap at the end of the measuring pin
- Rubber bellows on measuring pin
- Sealed battery compartment

Code Letters	IP	International Protection
First numeral	5	Dust protection (from harmful dust deposits)
Second numeral	4	Protection against water splash in all directions

3-year battery life

The Reference System is particularly energy-efficient. Since almost no energy is required when the system is idle, **battery life is increased to 3 years*.**



**When wireless transmission is deactivated*

One-Time Zeroing

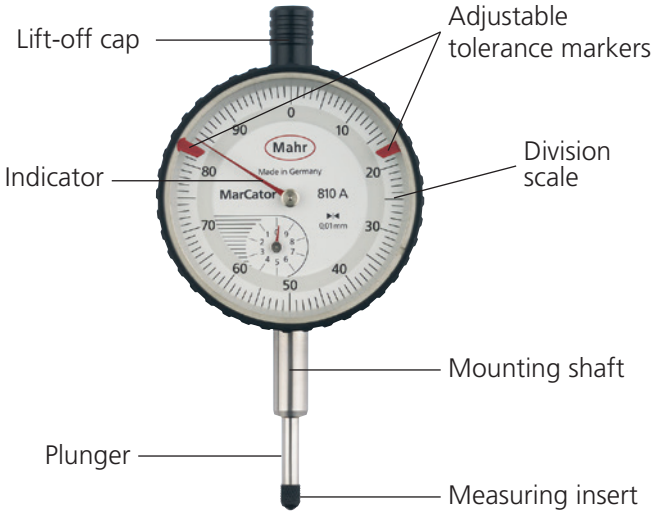
REFERENCE The digital indicators 1075 R, 1086 R(i) and 1087 R(i) are equipped with the innovative Reference System. Once the zero position has been set, it remains stored for all further measurements. This means that the instrument is immediately ready for measurement after pressing the ON button or simply by moving the measuring bolt. The need to reset the instrument to zero again after switching it on is no longer necessary like it is with conventional dial gages.

MarConnect Integrated Wireless – Wireless Transmission at the Price of a Cable

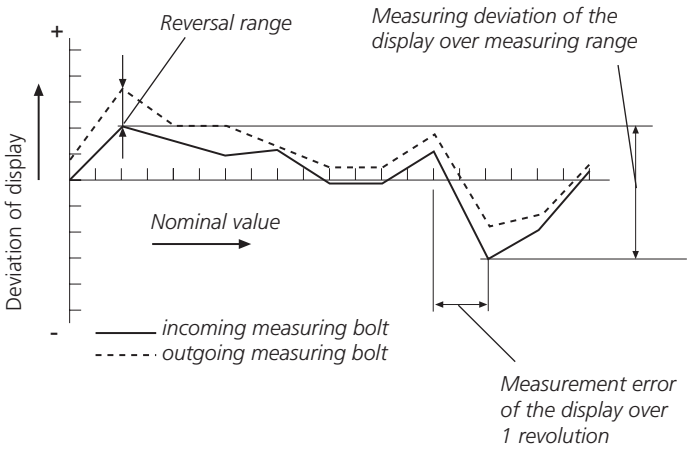
MarConnect integrated wireless

With Integrated Wireless, the integrated radio system from Mahr, you get wireless transmission at the price of a cable. Data acquisition with indicators is now even easier: Transfer your measurement data simply and without annoying cables directly into Microsoft Office Excel® or via keyboard code into any Windows program.

MarCator | Terms

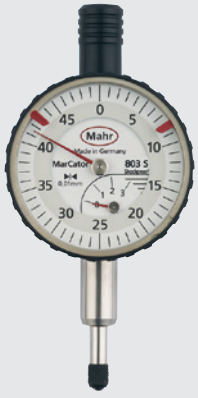


Metrological Characteristics

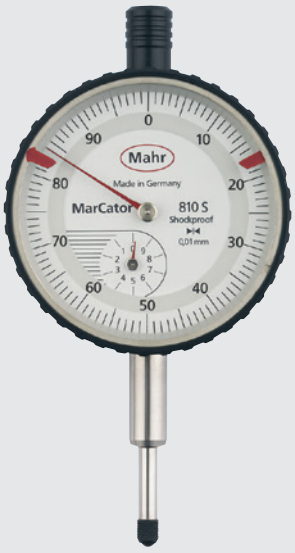


MarCator | Models

Small dial indicator 803 S



Dial indicator 810 S



Digital indicator 1075 R



Digital indicator 1087 Ri



MarCator 1075 R

Digital Indicator

RS232C | Digimatic | IP 52 | REF system

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- DATA (data transmission via connection cable)
- LOCK function (key lock)
- AUTO-ON / OFF

FEATURES

- High contrast LCD
- Hermetically sealed protective measuring spindle cap
- Mounting shank and measuring spindle are both made of hardened stainless steel
- **Digit height:** 12 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 52
- **Package contains:** battery, instruction manual



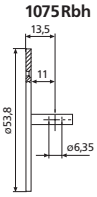
Application:

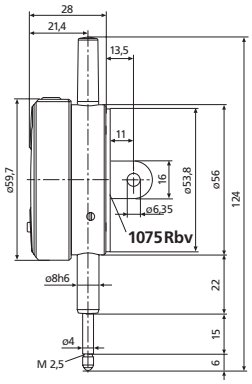
Simple measuring function for **static measurements** such as lengths, distances and length differences

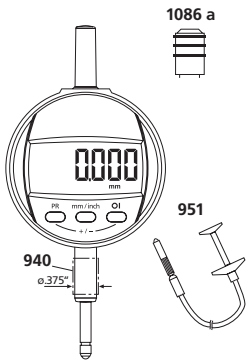
TECHNICAL DATA

Order no.		4336010	4336020	4336030
Product type			1075 R	
Measuring span	mm		12.5	
Measuring span	inch		.5"	
Resolution	mm	0.01	0.005	0.001
Resolution	inch	.0005"	.0001"	.00005"
Error limit	mm	0.02	0.015	0.005
Measuring force	N		0.5 –1	
Standard			Factory standard	
Protective measuring spindle cap			•	

Order no.	Mounting shaft
	mm
4336010	8
4336020	8
4336030	8







ACCESSORIES

Order no.	Product name	Product type
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4310103	Adapter bush (.375" / 8 mm)	940
4372000	Cable release (250 mm)	951
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337320	Lift-off cap, complete 12.5 / 25 mm	
4336041	Lug back, horizontal	1075 Rbh
4336042	Lug back, vertical	1075 Rbv
4102520	Battery 3 V, CR 2032	

MarCator 1086 R / 1086 ZR

Digital Indicator

RS232C | Digimatic | ABS | TOL | IP 42 | REF system

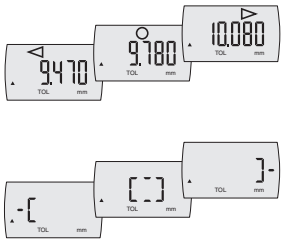
FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery





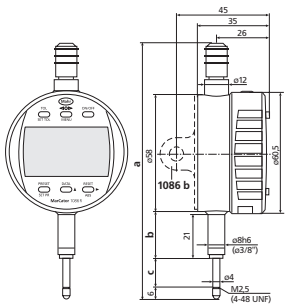
Application:

Comprehensive measuring function for **static measurements** such as lengths, distances and length differences

TECHNICAL DATA

Order no.		4337620	4337621	4337622	4337623	4337650	4337651
Type		1086 R				1086 ZR	
Measuring span	mm	12.5	25	50	100	12.5	25
Measuring span inch	inch	.5″	1″	2″	4″	.5″	1″
Numerical increment	mm	0.0005, 0.001, 0.002, 0.005, 0.01					
Numerical increment	inch	.00002″, .00005″, .0001″, .0002″, .0005″					
Error limit	mm	0.004		0.007	0.008	0.004	
Error limit over 50 graduations	mm	0.002					
Repeatability	mm	0.001					
Measuring force	N	0.65 –0.9	0.65 –1.15	1.25 –2.7	1.8 –3.5	0.65 –0.9	0.9 –1.15
Standard		Factory standard					

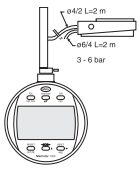
Order no.	a	b	c	Mounting shaft	Mounting shaft
	mm	mm	mm	mm	inch
4337620	126.3	23	13.5	8	
4337621	153.4	26.8	26.5	8	
4337622	267.3	40	52	8	
4337623	420.3	91	103	8	
4337650	126.3	23	13.5		.375″
4337651	153.4	26.8	26.5		.375″



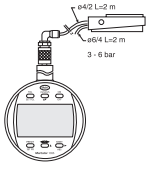
ACCESSORIES



1085 a



1082 p



1082 p

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336311	Cable release (12.5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4310103	Adapter bush (.375″ / 8 mm)	940
4884464	Battery 3 V, type CR 2450	
4336230	Pneumatic lifting (50 + 100 mm)	1082 p

MarCator 1086 R

Digital Indicator

RS232C | Digimatic | ABS | TOL | IP 42 | REF system

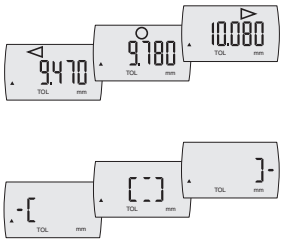
FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery





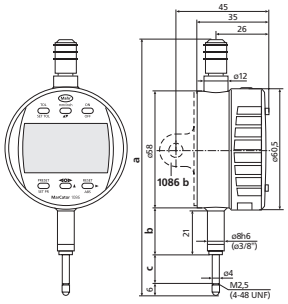
Application:

Comprehensive measuring function for **static measurements** such as lengths, distances and length differences

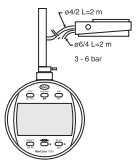
TECHNICAL DATA

Order no.		4337130	4337131	4337132	4337133
Product type		1086 R			
Measuring span	mm	12.5	25	50	100
Measuring span	inch	.5″	1″	2″	4″
Resolution	mm	0.01			
Resolution	inch	.0005″			
Error limit	mm	0.02			
Error limit over 50 graduations	mm	0.02			
Repeatability	mm	0.01			
Measuring force	N	0.65 –0.9	0.65 –1.15	1.25 –2.7	1.6 –3.5
Standard		Factory standard			
Lifting protection cap		•			

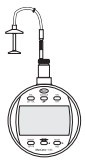
Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337130	126.3	23	13.5	8
4337131	153.4	26.8	26.5	8
4337132	267.3	40	52	8
4337133	420.3	91	103	8



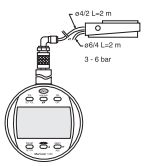
ACCESSORIES



1082 p



1085 a



1082 p

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4336311	Cable release (12.5 + 25 mm)	1085 a
4310103	Adapter bush (.375″ / 8 mm)	940
4884464	Battery 3 V, type CR 2450	
4336230	Pneumatic lifting (50 + 100 mm)	1082 p

MarCator 1086 WR

Digital Indicator

REF system | ABS | TOL | IP 54 | RS232C | Digimatic

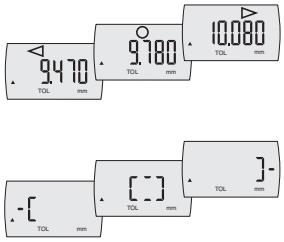
FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Protection cap on the end of measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 54
- **Package contains:** instruction manual, battery





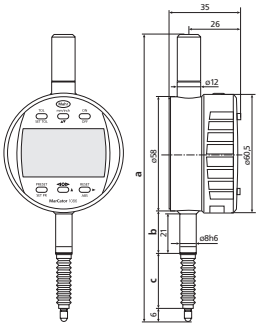
Application:

Comprehensive measuring function for **static measurements** such as lengths, distances and length differences

TECHNICAL DATA

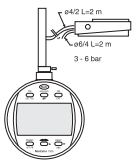
Order no.		4337640	4337641
Product type		1086 WR	
Measuring span	mm	12.5	25
Measuring span	inch	.5"	1"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01	
Resolution	inch	.00002", .00005", .0001", .0002", .0005"	
Error limit	mm	0.004	
Error limit over 50 graduations	mm	0.002	
Repeatability	mm	0.001	
Measuring force	N	0.65 –1.4	1 –2.25
Standard		Factory standard	
Protective measuring spindle cap		•	

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337640	144.3	21	28.5	8
4337641	193.2	24.8	50	8





1085 a



1082 p

ACCESSORIES

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336311	Cable release (12.5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4337472-E	Rubber bellows (12.5 mm)	
4310103	Adapter bush (.375" / 8 mm)	940
4884464	Battery 3 V, type CR 2450	
4337474-E	Rubber bellows (25 mm)	

MarCator 1086 Ri

Digital Indicator

RS232C | Digimatic | ABS | TOL | IP 42 | REF system

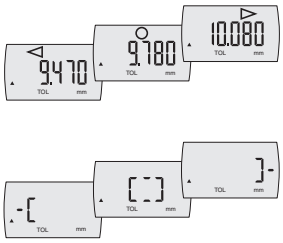
FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- Integrated wireless transmitter
- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery





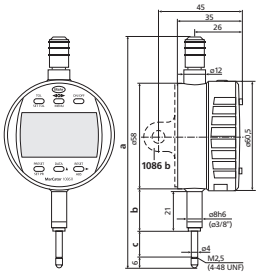
Application:

Comprehensive measuring function for **static measurements** such as lengths, distances and length differences

TECHNICAL DATA

Order no.		4337624	4337625	4337626	4337627	4337628
Product type		1086 Ri				
Measuring span	mm	12.5	25	50	100	25
Measuring span	inch	.5"	1"	2"	4"	1"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01				
Resolution	inch	.00002", .00005", .0001", .0002", .0005"				
Error limit	mm	0.004		0.007	0.008	0.004
Error limit over 50 graduations	mm	0.002				
Repeatability	mm	0.001				
Measuring force	N	0.65 –0.9	0.65 –1.15	1.25 –2.7	1.8 –3.5	0 –0
Standard		Factory standard				
Lifting protection cap		•				

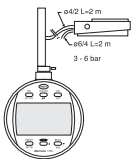
Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337624	126.3	23	13.5	8
4337625	153.4	26.8	26.5	8
4337626	267.3	40	52	8
4337627	420.3	91	103	8
4337628	153.4	26.8	26.5	8



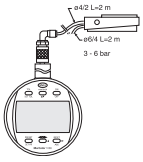
ACCESSORIES



1085 a



1082 p



1082 p

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102220	Receiver for instruments with integrated wireless	i-Stick
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336311	Cable release (12.5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4310103	Adapter bush (.375" / 8 mm)	940
4884464	Battery 3 V, type CR 2450	
4336230	Pneumatic lifting (50 + 100 mm)	1082 p

MarCator 1086 Ri

Digital Indicator

RS232C | Digimatic | ABS | TOL | IP 42 | REF system

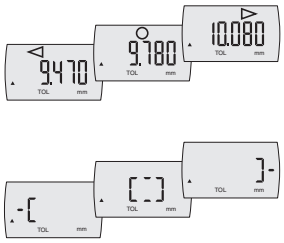
FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- Integrated wireless transmitter
- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery





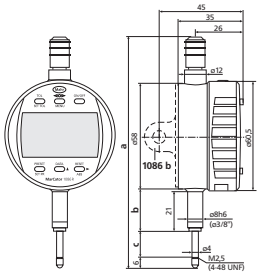
Application:

Comprehensive measuring function for **static measurements** such as lengths, distances and length differences

TECHNICAL DATA

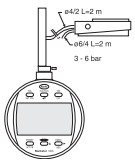
Order no.		4337134	4337135
Product type		1086 Ri	
Measuring span	mm	12.5	25
Measuring span	inch	.5"	1"
Resolution	mm	0.01	
Resolution	inch	.0005"	
Error limit	mm	0.02	
Error limit over 50 graduations	mm	0.02	
Repeatability	mm	0.01	
Measuring force	N	0.65 –0.9	0.65 –1.15
Standard		Factory standard	
Lifting protection cap		•	

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337134	126.3	23	13.5	8
4337135	153.4	26.8	26.5	8





1085 a



1082 p

ACCESSORIES

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102220	Receiver for instruments with integrated wireless	i-Stick
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4310103	Adapter bush (.375" / 8 mm)	940
4336311	Cable release (12.5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4884464	Battery 3 V, type CR 2450	

MarCator 1086 WRi

Digital Indicator

RS232C | Digimatic | ABS | TOL | IP 54 | REF system

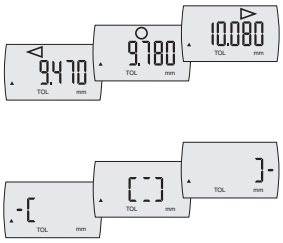
FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- Integrated wireless transmitter
- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **IP protection category:** IP 54
- **Package contains:** instruction manual, battery





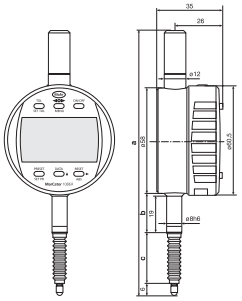
Application:

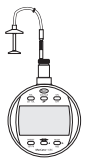
Comprehensive measuring function for **static measurements** such as lengths, distances and length differences

TECHNICAL DATA

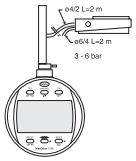
Order no.		4337142	4337143
Product type		1086 WRi	
Measuring span	mm	12.5	25
Measuring span	inch	.5"	1"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01	
Resolution	inch	.00002", .00005", .0001", .0002", .0005"	
Error limit	mm	0.004	
Error limit over 50 graduations	mm	0.002	
Repeatability	mm	0.001	
Measuring force	N	0.65 –1.4	1 –2.25
Standard		Factory standard	
Protective measuring spindle cap		•	

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337142	144.3	21	28.5	8
4337143	193.2	24.8	50	8





1085 a



1082 p

ACCESSORIES

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102220	Receiver for instruments with integrated wireless	i-Stick
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336311	Cable release (12.5 + 25 mm)	1085 a
4310103	Adapter bush (.375" / 8 mm)	940
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4337472-E	Rubber bellows (12.5 mm)	
4884464	Battery 3 V, type CR 2450	
4337474-E	Rubber bellows (25 mm)	

MarCator 1086 R-HR

Digital Indicator

RS232C | Digimatic | ABS | TOL | IP 42 | REF system

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery



Application:

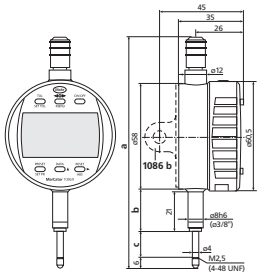
High-resolution model: **Resolution 0.1 µm**

Extensive measuring functions for **static measurements** e.g. lengths, distances and length differences

TECHNICAL DATA

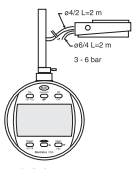
Order no.		4337697	4337698
Type		1086 R-HR	
Measuring span	mm	12.5	25
Measuring span inch	inch	.5"	1"
Numerical increment	mm	0.0001, 0.0005, 0.001, 0.002, 0.005, 0.01	
Numerical increment	inch	.00001", .00002", .00005", .0001", .0002", .0005"	
Error limit	mm	0.0018	0.0024
Error limit over 50 graduations	mm	0.0005	
Repeatability	mm	0.0005	
Measuring force	N	0.65 –0.9	0.65 –1.15
Standard		Factory standard	
Lifting protection cap		•	

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337697	126.3	23	13.5	8
4337698	153.4	26.8	26.5	8





1085 a



1082 p

ACCESSORIES

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336311	Cable release (12.5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4310103	Adapter bush (.375" / 8 mm)	940
4884464	Battery 3 V, type CR 2450	

MarCator 1087 R / 1087 ZR

Digital Indicator

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Immediate measurements due to the Reference System
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- **Digit height:** 8.5 mm
- **Data interface:** Opto RS232C, Digimatic, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery



Application:

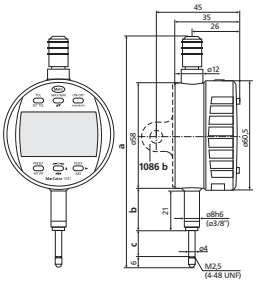
Comprehensive measuring functions for:

- **Static measurements** such as lengths, distances and length differences
- **Dynamic measurements** such as radial runout, straightness and flatness via MAX / MIN / MAX-MIN functions

TECHNICAL DATA

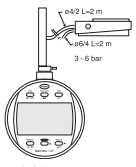
Order no.		4337660	4337661	4337666	4337670	4337671
Product type			1087 R		1087 ZR	
Measuring span	mm	12.5	25	50	12.5	25
Measuring span	inch	.5"	1"	2"	.5"	1"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01				
Resolution	inch	.00002", .00005", .0001", .0002", .0005"				
Graduation values	mm	0.0005, 0.001, 0.002, 0.005, 0.01				
Range of analog display	mm	± 0.01, ± 0.02, ± 0.04, ± 0.1, ± 0.2				
Error limit	mm	0.004		0.007	0.004	
Error limit over 50 graduations	mm	0.002				
Repeatability	mm	0.001				
Measuring force	N	0.65 –0.9	0.65 –1.15	1.25 –2.7	0.65 –0.9	0.65 –1.15
Standard		Factory standard				
Lifting protection cap		•				

Order no.	a	b	c	Mounting shaft	Mounting shaft
	mm	mm	mm	mm	inch
4337660	126.3	23	13.5	8	
4337661	153.4	26.8	26.5	8	
4337666	267.3	40	52	8	
4337670	126.3	23	13.5		.375"
4337671	153.4	26.8	26.5		.375"



ACCESSORIES

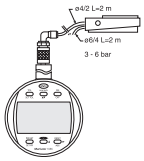
Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4336311	Cable release (12.5 + 25 mm)	1085 a
4310103	Adapter bush (.375" / 8 mm)	940
4884464	Battery 3 V, type CR 2450	
4336230	Pneumatic lifting (50 + 100 mm)	1082 p



1082 p



1085 a



1082 p

MarCator 1087 Ri

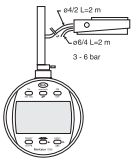
Digital Indicator

FUNCTIONS

- 0 (set the analog display to zero)
- ABS (display can be set to zero without losing reference to preset)
- AUTO-ON / OFF
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)
- MAX/MIN memory for searching the reversal point
- ON/OFF
- PRESET (for entering a numerical value)
- RANGE (switch the measuring range and resolution)
- RESET (set display to zero)
- TIR (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- Reversal of counting direction
- mm/inch

FEATURES

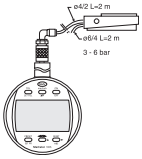
- Integrated wireless transmitter
- High-contrast LCD display
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Clamping shaft and measuring pin made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 8.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **Energy supply:** Battery operation
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery



1082 p



1085 a



1082 p



Application:

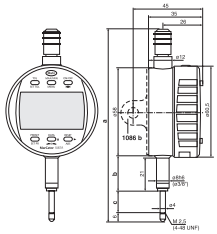
Comprehensive measuring functions for:

- **Static measurements** such as lengths, distances and length differences
- **Dynamic measurements** such as radial runout, straightness and flatness via MAX / MIN / MAX-MIN functions

TECHNICAL DATA

Order no.		4337663	4337665	4337667
Product type		1087 Ri		
Measuring span	mm	12.5	25	50
Measuring span	inch	.5"	1"	2"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01		
Resolution	inch	.00002", .00005", .0001", .0002", .0005"		
Graduation values	mm	0.0005, 0.001, 0.002, 0.005, 0.01		
Range of analog display	mm	± 0.01, ± 0.02, ± 0.04, ± 0.1, ± 0.2		
Error limit	mm	0.004		0.007
Error limit over 50 graduations	mm	0.002		
Repeatability	mm	0.001		
Measuring force	N	0.65 –0.85	0.65 –0.9	1.25 –2.7
Standard		Factory standard		
Lifting protection cap		•		

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337663	126.3	23	13.5	8
4337665	153.4	26.8	26.5	8
4337667	267.3	40	52	8



ACCESSORIES

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102220	Receiver for instruments with integrated wireless	i-Stick
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4336311	Cable release (12.5 + 25 mm)	1085 a
4310103	Adapter bush (.375" / 8 mm)	940
4884464	Battery 3 V, type CR 2450	
4336230	Pneumatic lifting (50 + 100 mm)	1082 p

MarCator 1087 R-HR

Digital Indicator

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Immediate measurements due to the Reference System
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- **Digit height:** 8.5 mm
- **Data interface:** Opto RS232C, Digimatic, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery



Application:

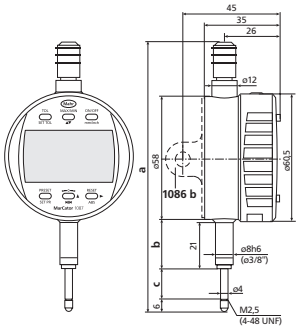
High-resolution model: **Resolution 0.1 µm**

Extensive measuring functions for:
- Static measurements e.g. lengths, distances and length differences
- Dynamic measurements e.g. radial run-out, straightness and flatness, by means of MAX / MIN / MAX-MIN functions

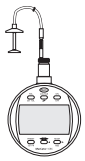
TECHNICAL DATA

Order no.		4337695	4337696
Type		1087 R-HR	
Measuring span	mm	12.5	25
Measuring span inch	inch	.5"	1"
Numerical increment	mm	0.0001, 0.0005, 0.001, 0.002, 0.005, 0.01	
Numerical increment	inch	.00001", .00002", .00005", .0001", .0002", .0005"	
Range of analog display	mm	± 0.002, ± 0.01, ± 0.02, ± 0.04, ± 0.1, ± 0.2	
Error limit	mm	0.0018	0.0024
Error limit over 50 graduations	mm	0.0005	
Repeatability	mm	0.0005	
Measuring force	N	0.65 –0.9	0.65 –1.15
Standard		Factory standard	
Lifting protection cap		•	

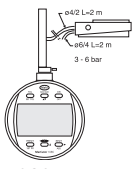
Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337695	126.3	23	13.5	8
4337696	153.4	26.8	26.5	8



ACCESSORIES



1085 a



1082 p

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
4336311	Cable release (12.5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12.5 + 25 mm)	1082 p
4310103	Adapter bush (.375" / 8 mm)	940
4884464	Battery 3 V, type CR 2450	

MarCator 1087 BR

Digital Indicator

RS232C | USB | ABS | MAX MIN | TOL | IP 42 | REF system

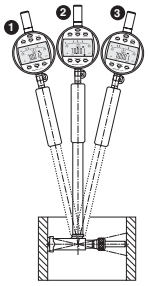
FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- Reversal of counting direction
- TOL (enter tolerance limit values)
- START/STOP search for reversal point
- MAX/MIN memory for searching the reversal point
- ABS (display can be set to zero without losing reference to preset)
- 0 (set the analog display to zero)
- DATA (data transmission via connection cable)
- Factor (adjustable)

FEATURES

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Immediate measurements due to the Reference System
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Protection cap on the end of measuring spindle
- **Digit height:** 8.5 mm
- **Data interface:** Opto RS232C, Digimatic, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery





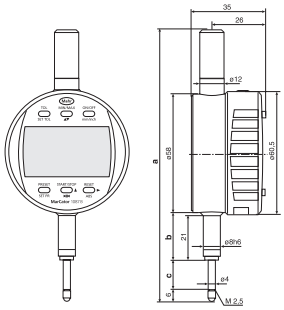
Application:

- In measurements with a 2-point bore gage the reversing point can be calculated automatically during oscillation. Then a PRESET value can be assigned.
- The ACTUAL value measured is saved by the MIN or MAX function and is shown on the display.
- The 1087 BR model can process 64 measured values per second, for fast measuring movements combined with measuring certainty.

TECHNICAL DATA

Order no.		4337662
Product type		1087 BR
Measuring span	mm	12.5
Measuring span	inch	.5"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"
Graduation values	mm	0.0005, 0.001, 0.002, 0.005, 0.01
Range of analog display	mm	± 0.01, ± 0.02, ± 0.04, ± 0.1, ± 0.2
Error limit	mm	0.004
Error limit over 50 graduations	mm	0.002
Repeatability	mm	0.001
Measuring force	N	0.65 –0.9
Standard		Factory standard
Protective measuring spindle cap		•

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337662	126.3	23	13.5	8



ACCESSORIES

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4310103	Adapter bush (.375" / 8 mm)	940
4884464	Battery 3 V, type CR 2450	

MarCator 1087 BRi

Digital Indicator

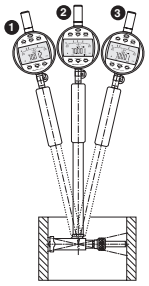
FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- PRESET (enter anumerical value) from range 500 mm
- Reversal of counting direction
- TOL (enter tolerance limit values)
- START/STOP search for reversal point
- MAX/MIN memory for searching the reversal point
- ABS (display can be set to zero without losing reference to preset)
- 0 (set the analog display to zero)
- DATA (data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual key lock)

FEATURES

- Integrated wireless transmitter
- High-contrast LCD display
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Clamping shaft and measuring pin made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Digit height:** 8.5 mm
- **Data interface:** Opto RS232C, Digimatic, USB, Integrated wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Package contains:** instruction manual, battery





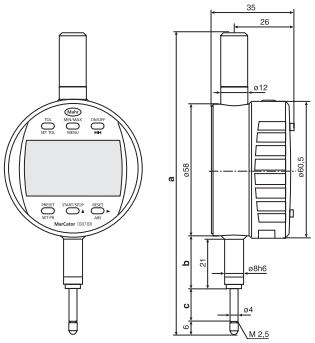
Application:

- In measurements with a 2-point bore gage the reversing point can be calculated automatically during oscillation. Then a PRESET value can be assigned.
- The ACTUAL value measured is saved by the MIN or MAX function and is shown on the display.
- The 1087 BRi model can process 64 measured values per second, for fast measuring movements combined with measuring certainty.

TECHNICAL DATA

Order no.		4337664
Product type		1087 BRi
Measuring span	mm	12.5
Measuring span	inch	.5"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"
Graduation values	mm	0.0005, 0.001, 0.002, 0.005, 0.01
Range of analog display	mm	± 0.01, ± 0.02, ± 0.04, ± 0.1, ± 0.2
Error limit	mm	0.004
Error limit over 50 graduations	mm	0.002
Repeatability	mm	0.001
Measuring force	N	0.65 –0.9
Standard		Factory standard
Protective measuring spindle cap		•

Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337664	126.3	23	13.5	8



ACCESSORIES

Order no.	Product name	Product type
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4102220	Receiver for instruments with integrated wireless	i-Stick
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data connection cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4310103	Adapter bush (.375" / 8 mm)	940
4884464	Battery 3 V, type CR 2450	

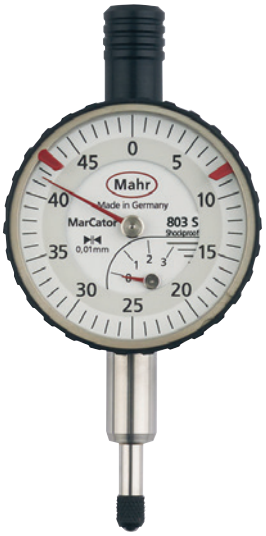
MarCator 803 S / 803 A / 805 A

Small Dial Indicators

DIN 878

FEATURES

- Shockproof movement
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- **Package contains:** case



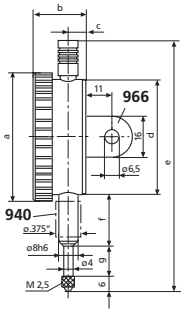
Application:

To be used on all smaller indicating measuring instruments, or due to a confined space a smaller indicating instrument is required

TECHNICAL DATA

Order no.		4324000	4324050	4324060
Product type		803 S	803 A	805 A
Measuring span	mm	3		5
Graduation value	mm	0.01		
Type of dial face		0 –50	0 –50	0 –100
Range per rev.	mm	0.5		1
Error limit, measuring range	µm	10		12
Error limit, 1 revolution	µm	9		10
Error limit, 1/2 revolution	µm	8		9
Error limit, 1/10 revolution	µm	5		
Repeatability f_w	µm	3		
Hysteresis f_u	µm	3		
Overtravel	mm	0.1		
Measuring force incoming measuring pin		0.7 –1.1		
Standard		DIN 878		
Shockproof movement		•		
Lifting protection cap		•		
Dial color		White		

Order no.	a	b	c	d	e	f	g	Mounting shaft	Scale diameter
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4324000	40	20.6	6.8	37	80	15.5	5.5	8	34
4324050	40	20.6	6.8	37	83	15	8	8	34
4324060	40	20.6	6.8	37	83	15	8	8	34



ACCESSORIES

Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940
4375020	Lug back, vertical, for 803	966
4375021	Lug back, horizontal, for 803	967

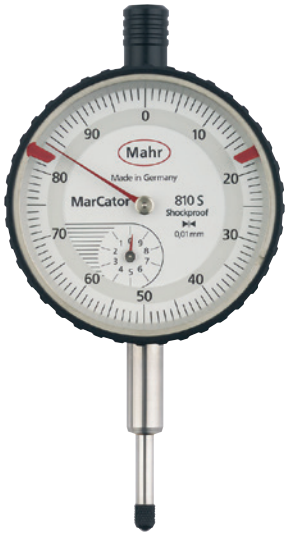
MarCator 810 S / 810 A / 810 AT / 810 SV / 810 AU

Dial Indicator

DIN 878

FEATURES

- Shockproof movement
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- **Package contains:** case



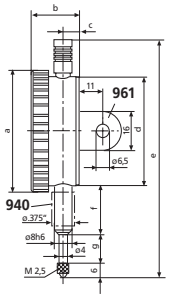
Application:

The measuring pin is retracted by spring, contacting and the measuring force are triggered manually (by hand) by touching the button on the upper sleeve

TECHNICAL DATA

Order no.		4311000	4311050	4311060	4321000	4329050
Product type		810 S	810 A	810 AT	810 SV	810 AU
Measuring span	mm	10			40	10
Graduation value	mm	0.01				
Type of dial face		0 –100		100 –0	0 –100	100 –0
Range per rev.	mm	1				
Error limit, measuring range	µm	15			25	15
Error limit, 1 revolution	µm	10			15	10
Error limit, 1/2 revolution	µm	9			10	9
Error limit, 1/10 revolution	µm	5				
Repeatability f_w	µm	3				5
Hysteresis f_u	µm	3			6	5
Overtravel	mm	0.1		0.8	0.1	
Measuring force incoming measuring pin		0.7 –1.3			0.8 –1.8	-
Standard		DIN 878			Factory standard	
Shockproof movement		•			•	
Lifting protection cap		•				
Reverse measuring force direction						•
Dial color		White				

Order no.	a	b	c	d	e	f	g	Mounting shaft	Scale diameter
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4311000	58	23	7.5	52	112	21	16	8	50
4311050	58	23	7.5	52	112	22	15	8	50
4311060	58	23	7.5	52	112	22	15	8	50
4321000	58	24.2	8.7	52	169	22	45	8	50
4329050	58	23	7.5	52	112	22	4.5	8	50



ACCESSORIES

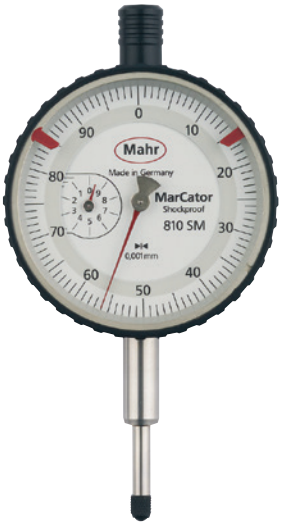
Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940
4373020	Splash proof cap (58 mm)	955
4375010	Lug back, vertical, for 810	961
4375011	Lug back, horizontal, for 810	962

MarCator 810 SM / 810 SRM

Dial Indicator

FEATURES

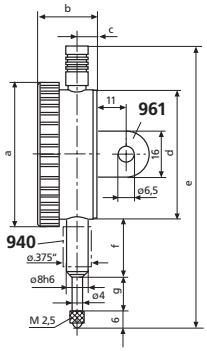
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precise mechanism with a combined gear lever transmission
- High accuracy with a minimum span of error
- **Package contains:** case



TECHNICAL DATA

Order no.		4311070	4311080
Product type		810 SM	810 SRM
Measuring span	mm	1	5
Graduation value	mm	0.001	
Type of dial face		0–100	0–100–0
Range per rev.	mm	0.1	0.2
Error limit, measuring range	µm	4	10
Error limit, 1 revolution	µm	3	5
Error limit, 1/2 revolution	µm	2	3
Error limit, 1/10 revolution	µm	1	2
Repeatability f_w	µm	1.5	3
Hysteresis f_u	µm	1.5	3
Overtravel	mm	4	0.1
Measuring force incoming measuring pin		1.3 –1.8	1.2 –1.7
Standard		Factory standard	
Shockproof movement		•	
Lifting protection cap		•	

Order no.	a	b	c	d	e	f	g	Mounting shaft	Scale diameter
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4311070	58	23	8.5	52	111.5	22	15	8	50
4311080	58	23	7.5	52	111.5	22	15	8	50



ACCESSORIES

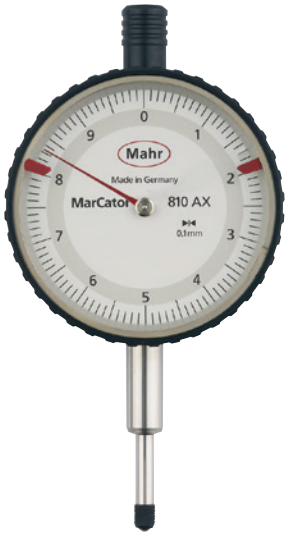
Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940
4373020	Splash proof cap (58 mm)	955
4375010	Lug back, vertical, for 810	961
4375011	Lug back, horizontal, for 810	962

MarCator 810 AX

Dial Indicator

FEATURES

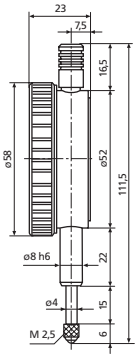
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- **Package contains:** case



TECHNICAL DATA

Order no.		4331000
Product type		810 AX
Measuring span	mm	10
Graduation value	mm	0.1
Type of dial face		0 –10
Range per rev.	mm	10
Error limit, measuring range	µm	50
Error limit, 1 revolution	µm	50
Error limit, 1/2 revolution	µm	30
Error limit, 1/10 revolution	µm	15
Repeatability f_w	µm	15
Hysteresis f_u	µm	15
Overtravel	mm	0.5
Measuring force incoming measuring pin		0.7 –1.3
Standard		Factory standard
Lifting protection cap		•
Dial color		White

Order no.	Mounting shaft	Scale diameter
	mm	mm
4331000	8	50



ACCESSORIES

Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940
4373020	Splash proof cap (58 mm)	955
4375010	Lug back, vertical, for 810	961
4375011	Lug back, horizontal, for 810	962

MarCator 810 SW / 803 SW

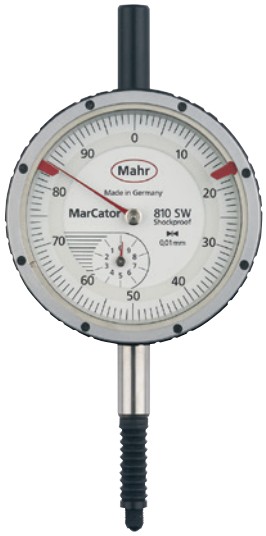
Water- and dust-resistant Dial Indicator

DIN 878 | IP 54

FEATURES

- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Precision gears and pinions
- Hermetically sealed upper protective measuring spindle cap, bezel and transparent dial cover; sealed with O-rings
- Measuring spindle sealed with rubber sleeve, thus preventing contamination by liquids and impurities

- **IP protection category:** IP 54
- **Package contains:** case



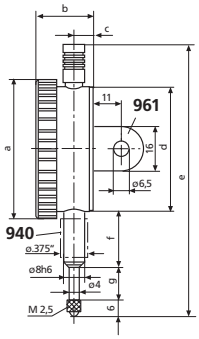
Application:

At the place of measurement where the dial indicator is exposed to extreme contamination or moisture

TECHNICAL DATA

Order no.		4315000	4326000
Product type		810 SW	803 SW
Measuring span	mm	10	3
Graduation value	mm	0.01	
Type of dial face		0 –100	0 –50
Range per rev.	mm	1	0.5
Error limit, measuring range	µm	15	10
Error limit, 1 revolution	µm	10	9
Error limit, 1/2 revolution	µm	9	8
Error limit, 1/10 revolution	µm	5	
Repeatability f_w	µm	3	
Hysteresis f_u	µm	3	
Overtravel	mm	0.1	
Measuring force incoming measuring pin		0.7 –1.6	0.7 –1.7
Standard		DIN 878	
Shockproof movement		•	
Protective measuring spindle cap		•	
Dial color		White	

Order no.	a	b	c	d	e	f	g	Mounting shaft
	mm	mm	mm	mm	mm	mm	mm	mm
4315000	61	24.2	7.9	52	127.6	22	22.1	8
4326000	44	21.6	7.1	37	86	15	11	8



ACCESSORIES

Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940
4375010	Lug back, vertical, for 810	961
4375011	Lug back, horizontal, for 810	962
4375020	Lug back, vertical, for 803	966
4375021	Lug back, horizontal, for 803	967

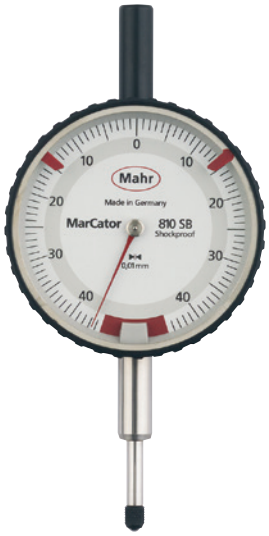
MarCator 810 SB / 803 SB

Safety Dial Indicator

DIN 878

FEATURES

- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Hermetically sealed protective measuring spindle cap
- Limited measuring range for error free readings
- Large overtravel (ca. 9 mm) for easier insertion of test items in measuring devices
- Precision gears and pinions
- **Package contains:** case



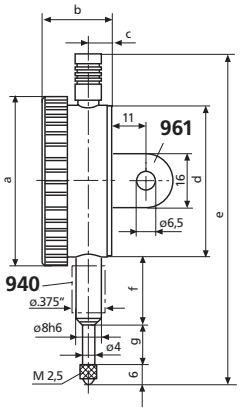
Application:

For safety reasons, the indication range of these dial indicators is limited to just under one pointer rotation.
This prevents the risk of measuring errors arising from possible additional pointer rotations.

TECHNICAL DATA

Order no.		4317000	4324250
Product type		810 SB	803 SB
Measuring span	mm	0.8	0.4
Graduation value	mm	0.01	
Type of dial face		40 –0 –40	20 –0–20
Range per rev.	mm	0.8	
Error limit, measuring range	µm	7	
Error limit, 1/2 revolution	µm	6	
Error limit, 1/10 revolution	µm	5	
Repeatability f_w	µm	3	
Hysteresis f_u	µm	3	
Overtravel	mm	9	4.5
Measuring force incoming measuring pin		0.9 –1.1	0.7 –1.1
Standard		DIN 878	
Shockproof movement		•	
Protective measuring spindle cap		•	
Dial color		White	

Order no.	a	b	c	d	e	f	g	Mounting shaft
	mm	mm	mm	mm	mm	mm	mm	mm
4317000	58	23	7.5	52	120	22	15	8
4324250	44	21.6	6.8	37	83	15.5	8	8



ACCESSORIES

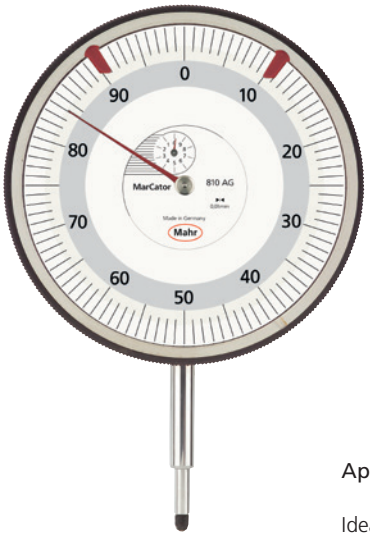
Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940
4375010	Lug back, vertical, for 810	961
4375011	Lug back, horizontal, for 810	962
4375020	Lug back, vertical, for 803	966
4375021	Lug back, horizontal, for 803	967

MarCator 810 AG

Large Dial Indicator

FEATURES

- Large, high contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions



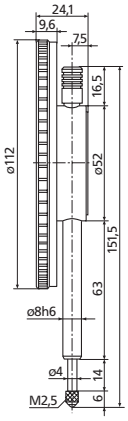
Application:

Ideal for long reading distance and in poorly lit conditions

TECHNICAL DATA

Order no.		4322000
Product type		810 AG
Measuring span	mm	10
Graduation value	mm	0.01
Type of dial face		0 –100
Range per rev.	mm	1
Error limit, measuring range	µm	17
Error limit, 1 revolution	µm	15
Error limit, 1/2 revolution	µm	10
Error limit, 1/10 revolution	µm	5
Repeatability f_w	µm	3
Hysteresis f_u	µm	5
Overtravel	mm	0.1
Measuring force incoming measuring pin		1.3 –2.2
Standard		Factory standard
Lifting protection cap		•
Dial color		White

Order no.	Mounting shaft	Scale diameter
	mm	mm
4322000	8	112



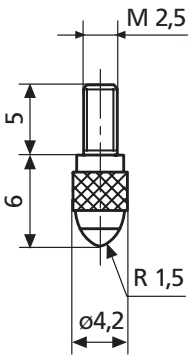
ACCESSORIES

Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940

MarCator 901 / 901 H / 901 R

Standard Contact Point

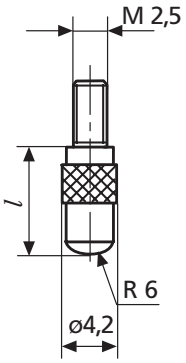
Order no.	Product type	l mm	Measurement surface radius mm	Measuring surface
4360001	901	6	1.5	steel
4360002	901 H	6	1.5	carbide
4360003	901 R	6	1.5	ruby



MarCator 902 / 902 H

Spherical Contact Point

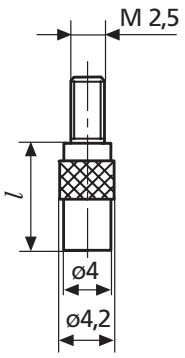
Order no.	Product type	l mm	Measuring surface ø mm	Measurement surface radius mm	Measuring surface
4360007	902	4	4	6	steel
4360008	902	5	4	6	steel
4360009	902	6	4	6	steel
4360010	902	8	4	6	steel
4360011	902	10	4	6	steel
4360012	902	12	4	6	steel
4360013	902	15	4	6	steel
4360014	902	20	4	6	steel
4360015	902	25	4	6	steel
4360016	902	30	4	6	steel
4360017	902	35	4	6	steel
4360018	902	50	4	6	steel
4360019	902	40	4	6	steel
4360020	902	75	4	6	steel
4360026	902	45	4	6	steel
4360029	902	95	4	6	steel
4360031	902	55	4	6	steel
4360035	902	65	4	6	steel
4360036	902	85	4	6	steel
4360040	902 H	8	4	6	carbide
4360041	902 H	10	4	6	carbide
4360042	902 H	12	4	6	carbide
4360043	902 H	15	4	6	carbide
4360044	902 H	20	4	6	carbide
4360045	902 H	25	4	6	carbide
4360046	902 H	30	4	6	carbide
4360047	902 H	35	4	6	carbide
4360048	902 H	50	4	6	carbide
4360049	902 H	40	4	6	carbide
4360050	902 H	45	4	6	carbide



MarCator 903 / 903 H

Flat Contact Point

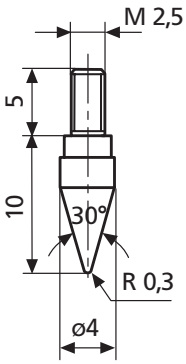
Order no.	Product type	l mm	Measuring surface ø mm	Measuring surface
4360070	903	4	4	steel
4360071	903	6	4	steel
4360072	903	8	4	steel
4360073	903	10	4	steel
4360074	903	12	4	steel
4360075	903	15	4	steel
4360076	903	20	4	steel
4360077	903	25	4	steel
4360300	903	30	4	steel
4360078	903	35	4	steel
4360079	903	50	4	steel
4360101	903 H	6	4	carbide
4360102	903 H	8	4	carbide
4360103	903 H	10	4	carbide
4360104	903 H	12	4	carbide
4360105	903 H	15	4	carbide
4360106	903 H	20	4	carbide
4360107	903 H	25	4	carbide
4360110	903 H	30	4	carbide
4360108	903 H	35	4	carbide
4360111	903 H	40	4	carbide
4360310	903	40	4	steel
4360109	903 H	50	4	carbide



MarCator 904 / 904 H

Conical Contact Point

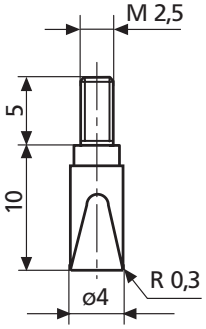
Order no.	Product type	l mm	Measurement surface radius mm	Angle α °	Measuring surface
4360130	904	10	0.3	30	steel
4360131	904 H	10	0.3	30	carbide



MarCator 905 / 905 H

Wedge Shaped Contact Points

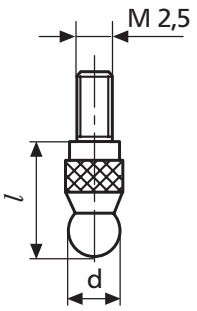
Order no.	Product type	l mm	Measuring surface ø mm	Measurement surface radius mm	Measuring surface
4360140	905	10	4	0.3	steel
4360141	905 H	10	4	0.3	carbide



MarCator 906 H

Ball Contact Points

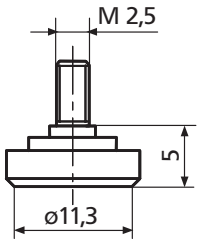
Order no.	Product type	d mm	l mm	Measuring surface
4360150	906 H	1	8.5	carbide
4360151	906 H	1.25	8.5	carbide
4360152	906 H	1.5	8.5	carbide
4360153	906 H	1.75	8.5	carbide
4360154	906 H	2	8.5	carbide
4360155	906 H	2.5	8.5	carbide
4360156	906 H	3	8.5	carbide
4360157	906 H	3.5	8.5	carbide
4360158	906 H	4	8.5	carbide
4360159	906 H	4.5	8.5	carbide
4360160	906 H	5	9	carbide
4360161	906 H	5.5	9	carbide
4360162	906 H	6	9	carbide
4360163	906 H	6.35	9	carbide
4360164	906 H	6.5	10	carbide
4360165	906 H	7	10	carbide
4360166	906 H	7.5	11	carbide
4360167	906 H	8	11	carbide
4360168	906 H	8.5	12	carbide
4360169	906 H	9	12	carbide
4360170	906 H	10	13	carbide



MarCator 907 / 907 H

Flat Contact Plates

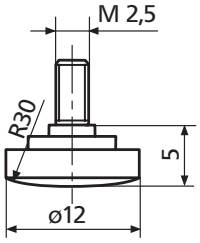
Order no.	Product type	l mm	Measuring surface cm²	Measuring surface ø mm	Measuring surface
4360200	907	5	1	11.3	steel
4360201	907 H	5		7	carbide



MarCator 908 / 908 H

Spherical Contact Plates, Steel

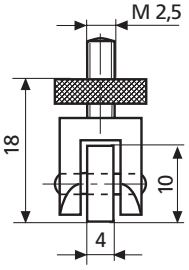
Order no.	Product type	l mm	Measuring surface ø mm	Measurement surface radius mm	Measuring surface
4360210	908	5	12	30	steel
4360211	908 H	5	12	30	carbide



MarCator 909 A / 909 B

Measuring Rollers

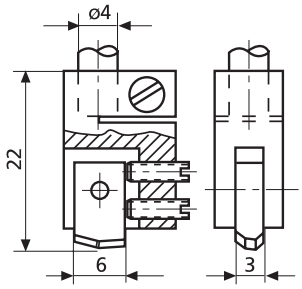
Order no.	Product type	l mm	Measurement surface radius mm	Radial run-out deviation µm	Measuring surface
4360220	909 A	18		3	steel
4360221	909 B	18	5	3	steel



MarCator 910 H

Measuring Attachment

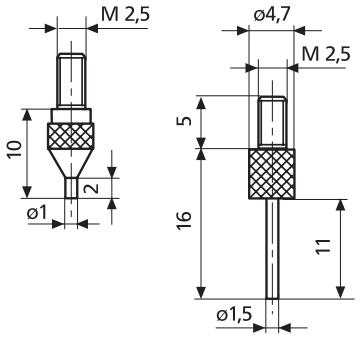
Order no.	Product type	l mm	Measuring surface
4360230	910 H	22	carbide



MarCator 911 H1 / 911 H2 / 911

Pin Contact Point

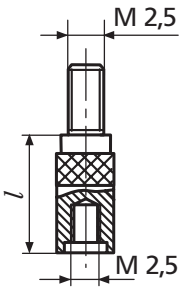
Order no.	Product type	l mm	Measuring surface ø mm	Measuring surface
4360240	911 H1	2	1	carbide
4360241	911 H2	11	1.5	carbide
4360280	911	15	1.5	steel
4360281	911	20	1.5	steel
4360282	911	25	1.5	steel
4360283	911	30	1.5	steel
4360284	911	35	1.5	steel
4360285	911	40	1.5	steel
4360286	911	50	1.5	steel



MarCator 912

Measuring Spindle Extension

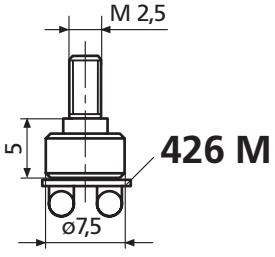
Order no.	Product type	d mm	l mm
4360250	912	4	10
4360251	912	4	15
4360252	912	4	20
4360253	912	4	25
4360254	912	4	35
4360255	912	4	50
4360256	912	4	75
4360257	912	4	100



MarCator 913

Flat Contact Point

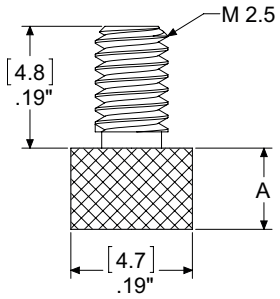
Order no.	Product type	Measuring surface ø mm
4360400	913	7.5



MarCator EAL–1016-W1 / EAL–1016-W2 / EAL–1016-W3 / EAL–1016-W4 / EAL–1016-W5

Flat Contact Point

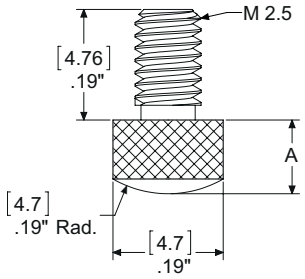
Order no.	Product type	Dimension A mm	Length mm	Measuring surface	Number
2208646	EAL–1016-W1	6	6	hardened steel	1
2208647	EAL–1016-W2	10	10	hardened steel	1
2208648	EAL–1016-W3	15	15	hardened steel	1
2208649	EAL–1016-W4	20	20	hardened steel	1
2208650	EAL–1016-W5	25	25	hardened steel	1



MarCator EPT–1037-W1 / EPT–1037-W2 / EPT–1037-W3 / EPT–1037-W4 / EPT–1037-W5 / EPT–1037-W6

Radiused Surface Contact Point

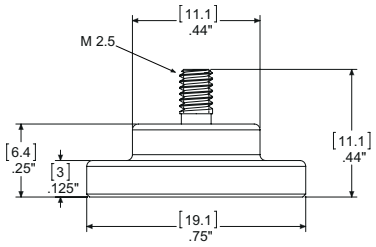
Order no.	Product type	Dimension A mm	Length mm	Measurement surface radius mm	Measuring surface	Number
2216191	EPT–1037-W1	6	6	4.6	hardened steel	1
2216192	EPT–1037-W2	10	10	4.6	hardened steel	1
2216193	EPT–1037-W3	12	15	4.6	hardened steel	1
2216194	EPT–1037-W4	15	20	4.6	hardened steel	1
2216195	EPT–1037-W5	20	25	4.6	hardened steel	1
2216196	EPT–1037-W6	25	12	4.6	hardened steel	1



MarCator EAL–1020-W1 / EAL–1020-W2 / EAL–1020-W3 / EAL–1020-W4 / EAL–1021

Wide Face Contact Point

Order no.	Product type	Dimension A mm	B mm	Measuring surface	Number
2208654	EAL–1020-W1	9.04	6.35	hardened steel	1
2208655	EAL–1020-W2	12.7	9.50	hardened steel	1
2208656	EAL–1020-W3	15.6	12.70	hardened steel	1
2208657	EAL–1020-W4	18.6	15.90	hardened steel	1
2208658	EAL–1021	9.04	6.35	carbide tipped	1



MarCator AD–185

Thread Adapter, M2.5 male to #4–48 female Threads

Order no.	Product type
2201833	AD–185

MarCator 941 G

Straight Holder

FEATURES

For measuring devices and in combination with standard measuring instruments, where the measuring instrument has to be moved away.

- **Package contains:** contact point 901



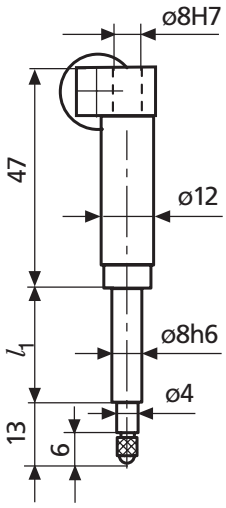
Application:

- For all types of measuring devices
- To be used in conjunction with a dial indicator or an inductive probe
- To position the measuring instrument at a certain angle

TECHNICAL DATA

Order no.	Length l1	Transmission	Product type
	mm		
4365000	25	3 mm	941 G
4365001	50	3 mm	941 G
4365002	75	3 mm	941 G

Order no.	Length l1
	mm
4365000	25
4365001	50
4365002	75



MarCator 941 W

Angular Holder

FEATURES

For measuring devices and in combination with standard measuring instruments, where tilting of the measuring instrument is required.

- **Package contains:** contact point 901, contact point 903 (l = 10 mm)



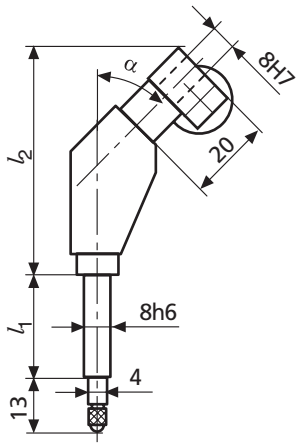
Application:

- For all types of measuring devices
- To be used in conjunction with a dial indicator or an inductive probe
- To be positioned (tilted) at the measurement direction and also at a certain distance or angle

TECHNICAL DATA

Order no.	Length l1	Length l2	Transmission	Product type
	mm	mm		
4365010	25	53.7	3 mm	941 W
4365011	50	53.7	3 mm	941 W
4365020	25	49.3	3 mm	941 W
4365021	50	49.3	3 mm	941 W
4365022	75	49.3	3 mm	941 W
4365030	25	34.5	3 mm	941 W
4365031	50	34.5	3 mm	941 W
4365032	75	34.5	3 mm	941 W

Order no.	Angle α	Length l1	Length l2
	°	mm	mm
4365010	45	25	53.7
4365011	45	50	53.7
4365020	60	25	49.3
4365021	60	50	49.3
4365022	60	75	49.3
4365030	90	25	34.5
4365031	90	50	34.5
4365032	90	75	34.5



MarCator 943

Sensor Level

FEATURES

- Integrated lifting device
- Interchangeable contact point
- **Package contains:** contact point 901

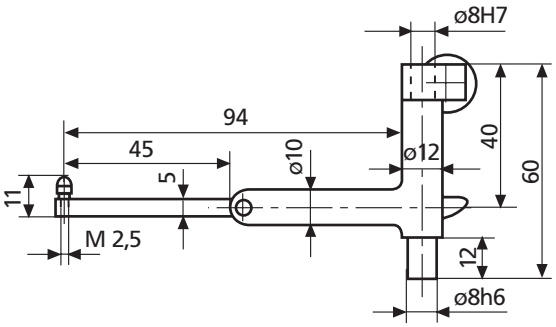


Application:

- For testing concentricity in bore holes as well as difficult to reach outside diameters
- To be inserted in a measuring stand with a lifting device

TECHNICAL DATA

Order no.	Error limit	Transmission	Product type
4367000	1% of measuring path	+/–1mm	943



MarCator 837

Depth gage for Dial Indicators

FEATURES

- Large measuring bridge hardened and chrome plated surface
- Plan grinded Measuring surface
- Holder for dial indicators with Ø 8 mm shank
- **Package contains:** depth measuring bridge, contact point 902 (l = 12 mm), excludes indicator



TECHNICAL DATA

Order no.	4494010	4494011	4494012
Product type		837	

ACCESSORIES

Order no.	Product name	Product type
4311060	Dial indicator, 0.01 mm, 10 mm	810 AT
4336010	Digital indicator, 0.01 mm, 12.5 mm	1075 R
4337131	Digital indicator, 0.01 mm, 25 mm	1086 R
4360015	Spherical contact point, steel, l = 25 mm, r = 6 mm	902
4360017	Spherical contact point, steel, l = 35 mm, r = 6 mm	902
4360026	Spherical contact point, steel, l = 45 mm, r = 6 mm	902
4360031	Spherical contact point, steel, l = 55 mm, r = 6 mm	902
4360035	Spherical contact point, steel, l = 65 mm, r = 6 mm	902
4360020	Spherical contact point, steel, l = 75 mm, r = 6 mm	902
4360036	Spherical contact point, steel, l = 85 mm, r = 6 mm	902
4360029	Spherical contact point, steel, l = 95 mm, r = 6 mm	902



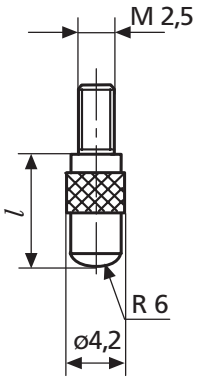
810 AT



1075 R



1086 R;1086 ZR



902;902 H

Dial Indicators per ANSI/AGD

You get more with Mahr Dial Indicators

- Proven for the most demanding applications
- Superior design and serviceability
- Unmatched customer and technical support
- Catalog and customized styles
- Full range of accessories to suit virtually every need
- Unit construction and removable movement save repair/cleaning time and maintenance costs
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminate slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pull back spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- Many models employ stainless steel stem for added durability

How to order

How to order your dial indicator and accessories

1. Select the type of Indicator you require. Check the specialized types as well as regular ANSI/AGD models.
2. Choose the model best suited to the magnification, range and viewing needs of your job.
3. Accessories are important because they greatly increase the speed, efficiency and convenience of obtaining desired results. Mahr's wide selection of dial indicator accessories are shown in this catalog.
4. Our customers have many options; they are not restricted to the normally furnished equipment mentioned above. A wide choice of optionally available points, backs or dial arrangements can be specified at little or no extra cost. We maintain the most extensive stock of indicators and gages for dimensional measurement available anywhere. Items which are in stock are normally shipped within five working days. If you need them sooner, inquire when ordering. We can often make next-day deliveries.

   Understandably, some of the items in this catalog are not always in stock or are special order items, which take a little longer to ship.

If you need help in determining what Indicators right for your application, just ask us. Contact Mahr:

1-800-333-4243

One of our experienced professionals will give you courteous, professional advice that can save you time and money.

Replacement indicators

Although Mahr dial indicators are known for their lifetime service, it is not uncommon to change an indicator back, contact point, dial or to even add an accessory to suit your latest application.

When ordering a replacement dial indicator for a specific application, always verify the configuration of the indicator.

Ordering a replacement using the standard model number shown on your indicator may not provide you with the configuration or accessories you desire.



Dial Indicators per ANSI/AGD

Selecting a dial indicator

Since modern manufacturing involves a wide range of tolerances. choosing a dial indicator might be difficult, especially since the number of indicators available is so vast. The following guidelines were prepared to assist you in selecting the right model for your application.

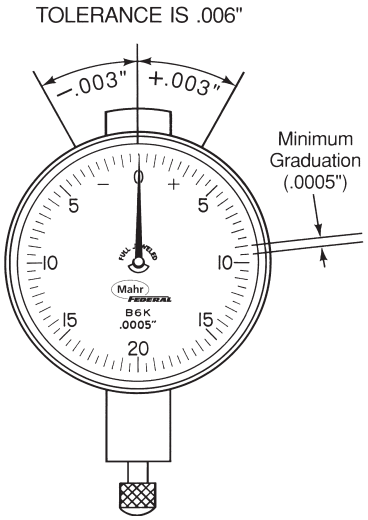
Consider four characteristics when selecting a dial indicator:

- **Minimum Graduation Value** — value of the smallest graduations marked on the dial. From several different values available from Mahr, select the one which is closest to 10% of the tolerance spread of the work you are measuring. This assures that the tolerance will span about ten divisions of the dial.
- **Size** — represents the bezel diameter. Make your selection on the basis of space available for the indicator and the distance from which it will be viewed. The Indicator photograph shown on the first page of each ANSI/AGD Group is full scale. Simply place the page which illustrates the Indicator at the expected viewing distance, and choose the size that offers you the best readability and is the proper size for your fixture. Mahr's "C" size bezels (ANSI/AGD Group 2), which have a diameter of 2-1/4", are the most popular.
- **Range per Revolution** — represents the distance the spindle travels with one complete revolution of the dial hand. From the dials available in the size and minimum graduation value you choose, select the range per revolution which allows the tolerance spread to occupy 1/10 to 1/4 of the dial.
- **Total Range** — the maximum distance over which the indicator spindle can travel. Usually, this represents 2-1/2 revolutions of the hand, which is adequate for most needs. Sometimes, however, this may not be adequate for your application and a special total range may be necessary.

Copies of the current ANSI Standard for Dial Indicators (ANSI B89.1.1 0-1987) are available from:

The American Society of Mechanical Engineers
ASME Order Desk
22 Law Drive
Fairfield, NJ 07007
(973)882-1167

If your tolerance spread is .006" (±.003"), then, the most suitable minimum graduation value is .0005".

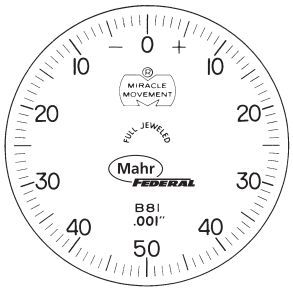


Your tolerance spread is .006". You have chosen an ANSI/AGD Group 2 (Mahr "C" Size) dial with a minimum graduation value of .0005". Mahr offers four indicator types in this size and minimum graduation value. Of these, type C5M has a range per revolution of .030" which is about midway between your tolerance extremes.

You selected a C5M indicator. Your total range, however, needs to be at least .200" so the spindle can clear the lip of your part. But, the longest range available in the C5M indicator you need is only .075".
Special ranges up to .400" are available for this indicator type. Select the closest range for your application (for Model C5M, you would select .250").

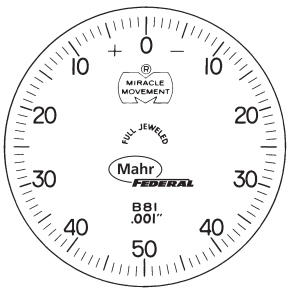
If the range you need is not listed under the "Special Ranges" category, contact Mahr. Chances are we can supply the range you need.

Dial Types



1. Balanced (+) on right.
Normally furnished on all Group 0, 1, 3 and 4 ANSI/AGD indicators only, unless otherwise specified. Indicates an increasing value when contact is depressed as in comparison type OD. snap and bench thickness gages.

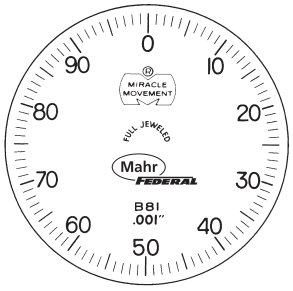
Note: If Revolution Counter models are ordered, counter dial numbered counterclockwise.



2. Balanced (+) on left.
Indicates decreasing values when contact is depressed as in comparison bore* and depth gages.

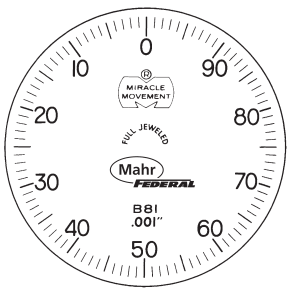
Note: With Revolution Counter models, counter dial numbered clockwise.

** Will vary as dictated by motion transfer design.*



3. Continuous clockwise.
Normally furnished on Long and Extra Long Range Indicators, unless otherwise specified. Indicates an increasing value when contact is depressed as in direct-reading thickness gages.

Note: With Revolution Counter models, counter dial numbered counterclockwise.



4. Continuous counterclockwise.
Indicates a decreasing value when contact is depressed as in direct reading slot, recess or hole depth measurements.

Note: If Revolution Counter models are ordered, counter dial numbered clockwise

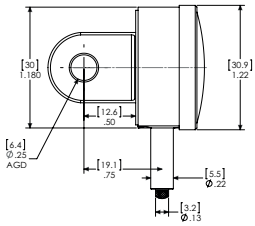
MarCator A1/2Q / A3Q / A6Q

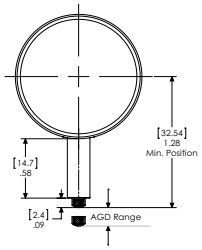
Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- Normally furnished: balanced dial with + on right; centered vertical lug back; regular contact point PT–43, .09″ radiused, .093″ long
- Optional dials: balanced with + on left; continuous clockwise; continuous counterclockwise
- Order by part number and specify dial style desired.For other dial styles or special requirements, call Mahr







Application:

Where available space prohibits the use of longer dial indicators

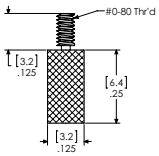
TECHNICAL DATA

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch		inch	inch			
2011089	A1/2Q	.010″	.0001″	0–2–0	.004″	± .0001″	ANSI	0	Green
2011093	A3Q	.050″	.0005″	0–10–0	.020″	± .0005″	ANSI	0	Green
2011095	A6Q	.100″	.001″	0–20–0	.040″	± .001″	ANSI	0	Green

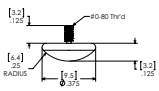
Order no.	Mounting shaft	Scale diameter
	inch	inch
2011089	.22″	1.25″
2011093	.22″	1.25″
2011095	.22″	1.25″

ACCESSORIES

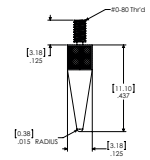
Order no.	Product name	Product type
2202329	Contact point, flat	AL–61
2204777	Flat back	BK–32
2204778	Lug back	BK–37
2204779	Post back 7/32″	BK–38
2204785	Adjustable back	BK–45
2204809	Screw type back 1/4–28	BK–88
2205082	Split bushing .218″ x .374″ x .5″	BU–112
2225757	Contact point, spherical	PT–118
2225758	Contact point, taper	PT–119
2225801	Contact point, spherical, A = 1/4″	PT–204
2225802	Contact point, spherical, A = 3/8″	PT–205
2225804	Contact point, spherical, A = 1/2″	PT–207
2225805	Contact point, spherical, A = 5/8″	PT–208
2225806	Contact point, spherical, A = 3/4″	PT–209
2225808	Contact point, spherical, A = 7/8″	PT–210
2225809	Contact point, spherical, A = 1″	PT–211
2225925	Contact point, spherical, A = 3/32″ (normally furnished)	PT–43



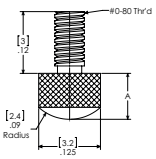
AL–61



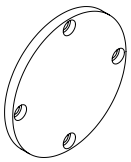
PT–118



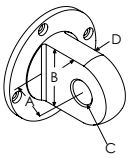
PT–119



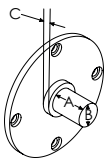
PT–43; PT–204; PT–205; PT–207; PT–208; PT–209; PT–210; PT–211



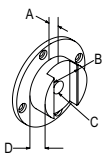
BK–32



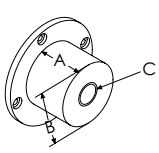
BK–37



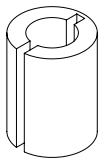
BK–38



BK–45



BK–88



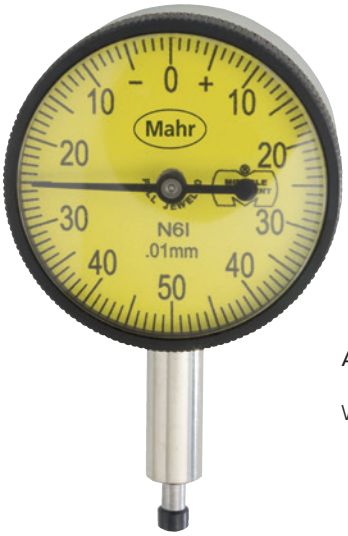
BU–112

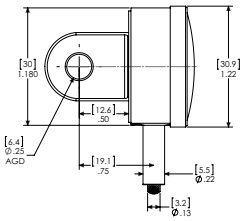
MarCator N1/2O / N3I / N6I

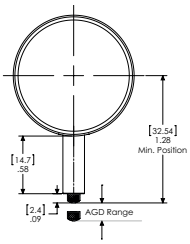
Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- Normally furnished: balanced dial with + on right; centered vertical lug back; regular contact point PT–43, .09" radiused, .093" long
- Optional dials: balanced with + on left; continuous clockwise; continuous counterclockwise
- Order by part number and specify dial style desired.For other dial styles or special requirements, call Mahr







Application:

Where available space prohibits the use of longer dial indicators

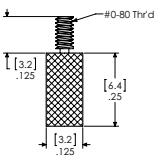
TECHNICAL DATA

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm		mm	mm			
2011743	N1/2O	0.25	0.002	0–5–0	0.1	± 0.002	ANSI	0	Yellow
2011745	N3I	1.25	0.005	0–25–0	0.5	± 0.005	ANSI	0	Yellow
2011759	N6I	2.5	0.01	0–50–0	1	± 0.01	ANSI	0	Yellow

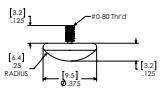
Order no.	Mounting shaft inches (text)	Scale diameter inches (text)
	inch	inch
2011743	.22"	1.22"
2011745	.22"	1.22"
2011759	.22"	1.22"

ACCESSORIES

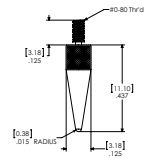
Order no.	Product name	Product type
2202329	Contact point, flat	AL–61
2204777	Flat back	BK–32
2204778	Lug back	BK–37
2204779	Post back 7/32"	BK–38
2204785	Adjustable back	BK–45
2204809	Screw type back 1/4–28	BK–88
2205082	Split bushing .218" x .374" x .5"	BU–112
2225757	Contact point, spherical	PT–118
2225758	Contact point, taper	PT–119
2225801	Contact point, spherical, A = 1/4"	PT–204
2225802	Contact point, spherical, A = 3/8"	PT–205
2225804	Contact point, spherical, A = 1/2"	PT–207
2225805	Contact point, spherical, A = 5/8"	PT–208
2225806	Contact point, spherical, A = 3/4"	PT–209
2225808	Contact point, spherical, A = 7/8"	PT–210
2225809	Contact point, spherical, A = 1"	PT–211
2225925	Contact point, spherical, A = 3/32" (normally furnished)	PT–43



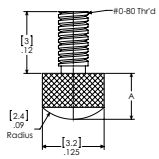
AL–61



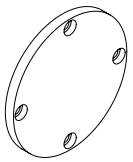
PT–118



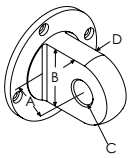
PT–119



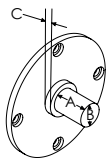
PT–43; PT–204; PT–205; PT–207; PT–208; PT–209; PT–210; PT–211



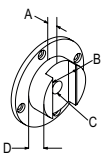
BK–32



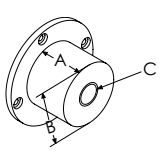
BK–37



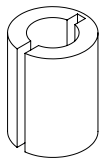
BK–38



BK–45



BK–88



BU–112

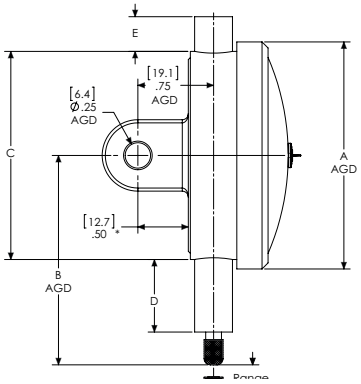
MarCator

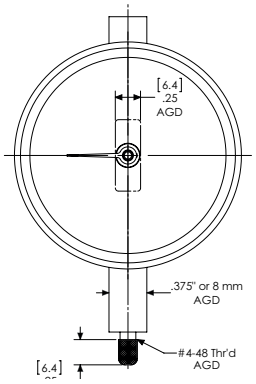
Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pull back spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr





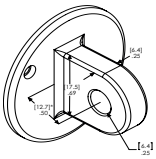


TECHNICAL DATA

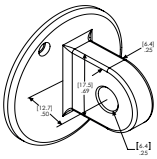
Order no.	Product type	Measu-ring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2011000	12I	.025"	.0001"	0–5–0		.010"	±.0001"	ANSI	1	Green
2011001	12I-RC	.025"	.0001"	0–10	•	.010"	±.0001"	ANSI	1	Green
2011004	12Q	.025"	.00025"	0–5–0		.010"	±.00025"	ANSI	1	Green
2011005	12Q-RC	.025"	.00025"	0–10	•	.010"	±.00025"	ANSI	1	Green
2011106	B3K	.050"	.00025"	0–10–0		.020"	±.00025"	ANSI	1	Green
2011107	B3K-RC	.050"	.00025"	0–20	•	.020"	±.00025"	ANSI	1	Green
2011110	B3Q	.050"	.0005"	0–10–0		.020"	±.0005"	ANSI	1	Green
2011111	B3Q-RC	.050"	.0005"	0–20	•	.020"	±.0005"	ANSI	1	Green
2011118	B5M	.075"	.0005"	0–15–0		.030"	±.0005"	ANSI	1	Green
2011119	B5M-RC	.075"	.0005"	0–30	•	.030"	±.0005"	ANSI	1	Green
2011123	B6K	.100"	.0005"	0–20–0		.040"	±.0005"	ANSI	1	Green
2011124	B6K-RC	.100"	.0005"	0–40	•	.040"	±.0005"	ANSI	1	Green
2011133	B7I	.125"	.0005"	0–25–0		.050"	±.0005"	ANSI	1	Green
2011134	B7I-RC	.125"	.0005"	0–50	•	.050"	±.0005"	ANSI	1	Green
2011114	B3W	.050"	.001"	0–10–0		.020"	±.001"	ANSI	1	Green
2011115	B3W-RC	.050"	.001"	0–20	•	.020"	±.001"	ANSI	1	Green
2011128	B6Q	.100"	.001"	0–20–0		.040"	±.001"	ANSI	1	Green
2011129	B6Q-RC	.100"	.001"	0–40	•	.040"	±.001"	ANSI	1	Green
2011137	B7O	.125"	.001"	0–25–0		.050"	±.001"	ANSI	1	Green
2011138	B7O-RC	.125"	.001"	0–50	•	.050"	±.001"	ANSI	1	Green
2011141	B8I	.250"	.001"	0–50–0		.100"	±.001"	ANSI	1	Green
2011142	B8I-RC	.250"	.001"	0–100	•	.100"	±.001"	ANSI	1	Green

MarCator

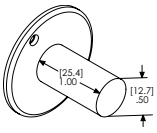
Dial Indicator



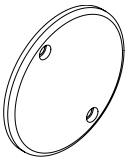
BK–1600



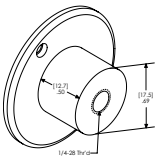
BK–1601



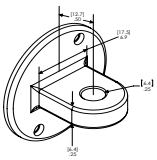
BK–1634



BK–1660



BK–1661



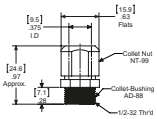
BK–19



LR–46; LR–48



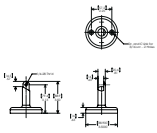
AD–138



AD–87



BU–80



BA–1051

Order no.	Scale diameter	Mounting shaft
	inch	inch
2011000	1.75″	.375″
2011001	1.75″	.375″
2011004	1.75″	.375″
2011005	1.75″	.375″
2011106	1.75″	.375″
2011107	1.75″	.375″
2011110	1.75″	.375″
2011111	1.75″	.375″
2011118	1.75″	.375″
2011119	1.75″	.375″
2011123	1.75″	.375″
2011124	1.75″	.375″
2011133	1.75″	.375″
2011134	1.75″	.375″
2011114	1.75″	.375″
2011115	1.75″	.375″
2011128	1.75″	.375″
2011129	1.75″	.375″
2011137	1.75″	.375″
2011138	1.75″	.375″
2011141	1.75″	.375″
2011142	1.75″	.375″

ACCESSORIES

Order no.	Product name	Product type	ANSI/ AGD Group
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded bushing .625″ long .500″ OD with 5/16–32 internal thread	AD–62	
2201854	Split collet OD is 17.45 mm/ .687″; requires 1/2–32 threaded hole	AD–87	
2203132	Mounting bracket with adjusting knob	AT–115	1
2203155	Mounting bracket with hex socket adjust	AT–27	1
2203163	Brake attachment, dust cap mount (option), range limited to 6.35 mm/ .250″ for group 1 and to 12 mm/ .500″ for group 2–4 indicators	AT–81	
2203183	Brake attachment (option)	AT-A–7-W1	1
2204603	Base for indicators with lug back	BA–1051	
2204756	Vertical lug back, centered, 1/4″ hole	BK–1600	1
2204757	Vertical lug back, offset, 1/4″ hole	BK–1601	1
2204758	Adjustable back 1/4″–20 thread	BK–1633	1
2204759	Post back 1/2″	BK–1634	1
2204760	Flat back	BK–1660	1
2204761	Screw type back 1/4–28	BK–1661	1
2204771	Horizontal lug back 1/4″ hole	BK–19	1
2204811	Rack back used on AT–27 and AT–115	BK–92	1
2205081	Split bushing, for use with protective housing .375″ stem hole X .687″ OD	BU–111	
2205127	Split bushing with shoulder 8 mm stem hole X .375″ OD	BU–197	
2205195	Split bushing, with counterbore, .375″ stem hole x .500″ OD	BU–80	
2205200	Split bushing without counterbore, .375″ stem hole x .50″ OD	BU–94	
2206230	Rane limiting caps, adjustable up to 9.52 mm / .375″	CS–123	
2219994	Rubber bellows for shank Ø .375″	GU–2	
2220156	Tolerance hands w/screw on bezel (option)	HD–59	1
2220539	OX-bow lifting lever	LR–40	
2220542	Lifting lever, left hand	LR–46	1
2220543	Lifting lever, right hand	LR–47	1
2235806	Tap 1/2 –32	V–892	

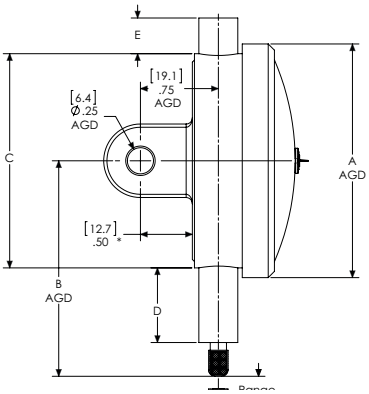
MarCator O1I / O1I-RC / O3I / O3I-RC / O6I / O6I-RC / O8I / O8I-RC

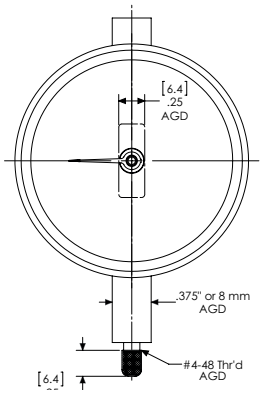
Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pull back spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr



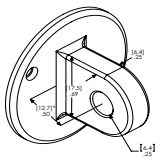




TECHNICAL DATA

Order no.	Product type	Measu-ring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2011765	O1I	0.5	0.002	0–10–0		0.2	± 0.004	ANSI	1	Yellow
2011767	O1I-RC	0.5	0.002	0–20	•	0.2	± 0.004	ANSI	1	Yellow
2011770	O3I	1.25	0.005	0–25–0		0.5	± 0.005	ANSI	1	Yellow
2011772	O3I-RC	1.25	0.005	0–50	•	0.5	± 0.005	ANSI	1	Yellow
2011775	O6I	2.5	0.01	0–50–0		1	± 0.010	ANSI	1	Yellow
2011776	O6I-RC	2.5	0.01	0–100	•	1	± 0.010	ANSI	1	Yellow
2011779	O8I	6.25	0.025	0–125–0		2.5	± 0.025	ANSI	1	Yellow
2011780	O8I-RC	6.25	0.025	0–250	•	2.5	± 0.025	ANSI	1	Yellow

Order no.	Scale diameter	Mounting shaft
	mm	inch
2011765	45	.375″
2011767	45	.375″
2011770	45	.375″
2011772	45	.375″
2011775	45	.375″
2011776	45	.375″
2011779	45	.375″
2011780	45	.375″



BK–1600

ACCESSORIES

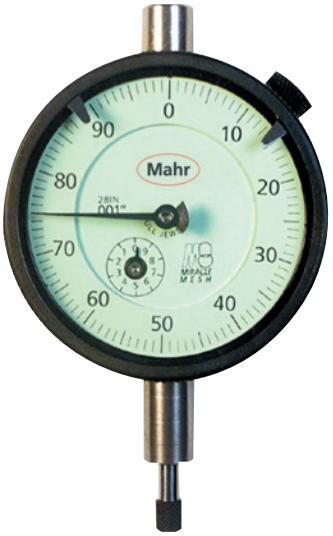
Order no.	Product name	Product type	ANSI/ AGD Group
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded bushing .625″ long .500″ OD with 5/16–32 internal thread	AD–62	
2201854	Split collet OD is 17.45 mm/.687″; requires 1/2–32 threaded hole	AD–87	
2203132	Mounting bracket with adjusting knob	AT–115	1
2203155	Mounting bracket with hex socket adjust	AT–27	1
2203163	Brake attachment, dust cap mount (option), range limited to 6.35 mm/.250″ for group 1 and to 12 mm/.500″ for group 2–4 indicators	AT–81	
2203183	Brake attachment (option)	AT-A–7-W1	1
2204603	Base for indicators with lug back	BA–1051	
2204756	Vertical lug back, centered, 1/4″ hole	BK–1600	1
2204757	Vertical lug back, offset, 1/4″ hole	BK–1601	1
2204758	Adjustable back 1/4″–20 thread	BK–1633	1
2204759	Post back 1/2″	BK–1634	1
2204760	Flat back	BK–1660	1
2204761	Screw type back 1/4–28	BK–1661	1
2204771	Horizontal lug back 1/4″ hole	BK–19	1
2204811	Rack back used on AT–27 and AT–115	BK–92	1
2205081	Split bushing, for use with protective housing .375″ stem hole X .687″ OD	BU–111	
2205127	Split bushing with shoulder 8 mm stem hole X .375″ OD	BU–197	
2205195	Split bushing, with counterbore, .375″ stem hole x .500″ OD	BU–80	
2205200	Split bushing without counterbore, .375″ stem hole x .50″ OD	BU–94	
2206230	Rane limiting caps, adjustable up to 9.52 mm/ .375″	CS–123	
2219994	Rubber bellows for shank Ø .375″	GU–2	
2220156	Tolerance hands w/screw on bezel (option)	HD–59	1
2220539	OX-bow lifting lever	LR–40	
2220542	Lifting lever, left hand	LR–46	1
2220543	Lifting lever, right hand	LR–47	1
2235806	Tap 1/2 –32	V–892	

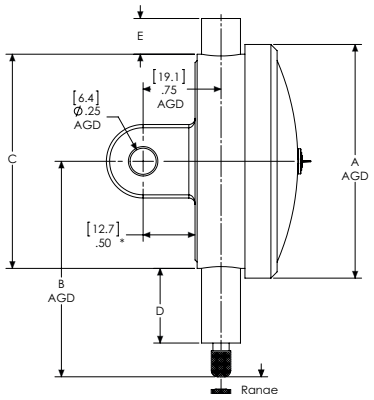
MarCator

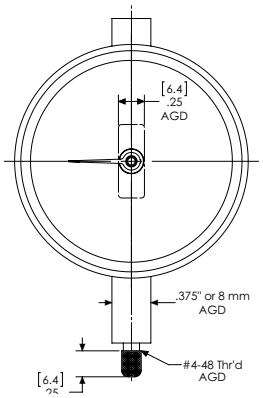
Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pull back spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr







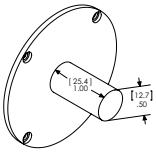
TECHNICAL DATA

Order no.	Product type	Measu-ring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2011157	C1/2K	.010"	.00005"	0–2–0		.004"	±.0001"	ANSI	2	Green
2011158	C1/2K-RC	.010"	.00005"	0–4	•	.004"	±.0001"	ANSI	2	Green
2011161	C1K	.020"	.0001"	0–4–0		.008"	±.0001"	ANSI	2	Green
2011162	C1K-RC	.020"	.0001"	0–8	•	.008"	±.0001"	ANSI	2	Green
2015781	22I	.025"	.0001"	0–5–0		.010"	±.0001"	ANSI	2	Green
2014761	22IN-RC	.025"	.0001"	0–10	•	.010"	±.0001"	ANSI	2	Green
2015782	22QN	.025"	.00025"	0–5–0		.010"	±.00025"	ANSI	2	Green
2014791	22QN-RC	.025"	.00025"	0–10	•	.010"	±.00025"	ANSI	2	Green
2015783	23K	.050"	.00025"	0–10–0		.020"	±.00025"	ANSI	2	Green
2014808	23K-RC	.050"	.00025"	0–20	•	.020"	±.00025"	ANSI	2	Green
2015784	23Q	.050"	.0005"	0–10–0		.020"	±.0005"	ANSI	2	Green
2014810	23Q-RC	.050"	.0005"	0–20	•	.020"	±.0005"	ANSI	2	Green
2015786	25M	.075"	.0005"	0–15–0		.030"	±.0005"	ANSI	2	Green
2014811	25M-RC	.075"	.0005"	0–30	•	.030"	±.0005"	ANSI	2	Green
2015787	26K	.100"	.0005"	0–20–0		.040"	±.0005"	ANSI	2	Green
2014812	26K-RC	.100"	.0005"	0–40	•	.040"	±.0005"	ANSI	2	Green
2015790	27I	.125"	.0005"	0–25–0		.050"	±.0005"	ANSI	2	Green
2014814	27I-RC	.125"	.0005"	0–50	•	.050"	±.0005"	ANSI	2	Green
2015785	23W	.050"	.001"	0–10–0		.020"	±.001"	ANSI	2	Green
2014809	23W-RC	.050"	.001"	0–20	•	.020"	±.001"	ANSI	2	Green
2015789	26Q	.100"	.001"	0–20–0		.040"	±.001"	ANSI	2	Green
2014813	26Q-RC	.100"	.001"	0–40	•	.040"	±.001"	ANSI	2	Green
2015791	27O	.125"	.001"	0–25–0		.050"	±.001"	ANSI	2	Green
2014815	27O-RC	.125"	.001"	0–50	•	.050"	±.001"	ANSI	2	Green
2015792	28IN	.250"	.001"	0–50–0		.100"	±.001"	ANSI	2	Green
2011049	28IN-RC	.250"	.001"	0–100	•	.100"	±.001"	ANSI	2	Green

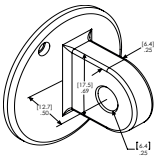
MarCator

Dial Indicator

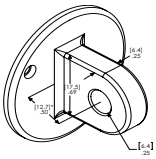




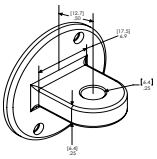
BK–2093



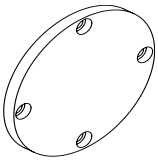
BK–2168



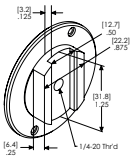
BK–383



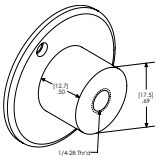
BK–400



BK–470



BK–531



BK–692



HD–57



HG–100



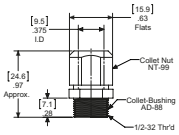
LR–46; LR–48



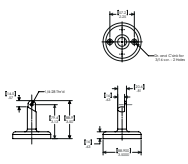
AD–138



BU–80



AD–87



BA–1051

Order no.	Scale diameter	Mounting shaft
	inch	inch
2011157	2.25″	.375″
2011158	2.25″	.375″
2011161	2.25″	.375″
2011162	2.25″	.375″
2015781	2.25″	.375″
2014761	2.25″	.375″
2015782	2.25″	.375″
2014791	2.25″	.375″
2015783	2.25″	.375″
2014808	2.25″	.375″
2015784	2.25″	.375″
2014810	2.25″	.375″
2015786	2.25″	.375″

Order no.	Scale diameter	Mounting shaft
	inch	inch
2014811	2.25″	.375″
2015787	2.25″	.375″
2014812	2.25″	.375″
2015790	2.25″	.375″
2014814	2.25″	.375″
2015785	2.25″	.375″
2014809	2.25″	.375″
2015789	2.25″	.375″
2014813	2.25″	.375″
2015791	2.25″	.375″
2014815	2.25″	.375″
2015792	2.25″	.375″
2011049	2.25″	.375″

ACCESSORIES

Order no.	Product name	Product type	ANSI/ AGD Group
2014804	Magnetic maximum hand w/snap on bezel (option)		2
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201843	Adaptor Bushing 0.275″ ID to 0.375″ OD	AD–58	
2201846	Threaded bushing .625″ long .500″ OD with 5/16–32 internal thread	AD–62	
2201854	Split collet OD is 17.45 mm/ .687″; requires 1/2–32 threaded hole	AD–87	
2203133	Mounting bracket with adjusting knob for AGD 2	AT–116	2
2203163	Brake attachment, dust cap mount (option), range limited to 6.35 mm/ .250″ for group 1 and to 12 mm/ .500″ for group 2–4 indicators	AT–81	
2203184	Brake attachment (option)	AT-A–7-W2	2
2204603	Base for indicators with lug back	BA–1051	
2204772	Post back 1/2″ Dia.	BK–2093	2
2204773	Vertical lug, offset 1/4″ hole	BK–2168	2
2204780	Vertical lug back, centered 1/4″ hole	BK–383	2
2204782	Horizontal lug back, centered, 1/4″ hole	BK–400	2
2204786	Flat back for AGD 2	BK–470	2
2204790	Adjustable back 1/4–20 thread	BK–531	2
2204802	Screw type back 1/4–28	BK–692	2
2204812	Rack back used on AT–116 and AT–28	BK–93	2
2205081	Split bushing, for use with protective housing .375″ stem hole X .687″ OD	BU–111	
2205195	Split bushing, with counterbore, .375″ stem hole x .500″ OD	BU–80	
2205200	Split bushing without counterbore, .375″ stem hole x .50″ OD	BU–94	
2205222	Tolerance hands w/snap on bezel (option)	BZ–2503	2
2206230	Rane limiting caps, adjustable up to 9.52 mm / .375″	CS–123	
2219994	Rubber bellows for shank Ø .375″	GU–2	
2220154	Tolerance hands w/screw on bezel (option)	HD–57	2
2220177	Protective housing for AGD 2 models with rangers up to 6.35 mm/ .250″	HG–100	2
2220178	Protective housing for AGD 2 models with rangers up to 25 mm/ 1″	HG–101	2
2220539	OX-bow lifting lever	LR–40	
2220544	Lifting lever to lift probe manually (left)	LR–48	2
2220545	Lifting lever to lift probe manually (right)	LR–49	2
2235806	Tap 1/2 –32	V–892	

MarCator P1/2I / P1/2I-RC / P1I / P1I-RC / 23I / 23IM-RC / 26I / 26IM-RC / 28IM / 28IM-RC

Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr



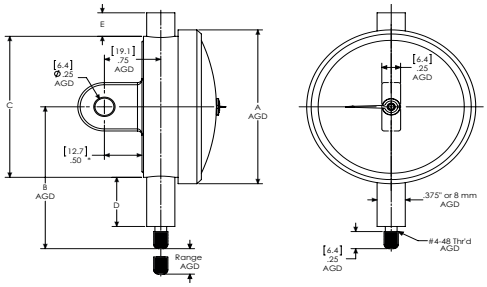
TECHNICAL DATA

Order no.	Product type	Measu-ring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2011810	P1/2I	0.25	0.001	0–5–0		0.1	± 0.002	ANSI	2	Yellow
2011812	P1/2I-RC	0.25	0.001	0–10	•	0.1	± 0.002	ANSI	2	Yellow
2011815	P1I	0.5	0.002	0–10–0		0.2	± 0.004	ANSI	2	Yellow
2011817	P1I-RC	0.5	0.002	0–20	•	0.2	± 0.004	ANSI	2	Yellow
2015793	23I	1.25	0.005	0–25–0		0.5	± 0.005	ANSI	2	Yellow
2014817	23IM-RC	1.25	0.005	0–50	•	0.5	± 0.005	ANSI	2	Yellow
2015794	26I	2.5	0.01	0–50–0		1	± 0.010	ANSI	2	Yellow
2014818	26IM-RC	2.5	0.01	0–100	•	1	± 0.010	ANSI	2	Yellow
2015795	28IM	5	0.02	0–100–0		2	± 0.020	ANSI	2	Yellow
2014819	28IM-RC	5	0.02	0–200	•	2	± 0.020	ANSI	2	Yellow

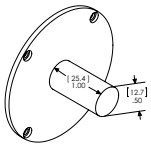
MarCator P1/2I / P1/2I-RC / P1I / P1I-RC / 23I / 23IM-RC / 26I / 26IM-RC / 28IM / 28IM-RC

Dial Indicator

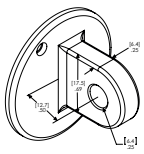
Order no.	Scale diameter	Mounting shaft
	mm	inch
2011810	57	.375"
2011812	57	.375"
2011815	57	.375"
2011817	57	.375"
2015793	57	.375"
2014817	57	.375"
2015794	57	.375"
2014818	57	.375"
2015795	57	.375"
2014819	57	.375"



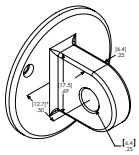




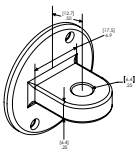
BK–2093;
BK–664; BK–17



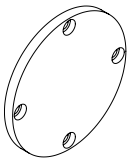
BK–1601;
BK–2168;
BK–545; BK–4



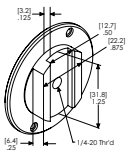
BK–1600;
BK–383;
BK–431; BK–3



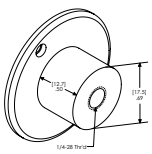
BK–19;
BK–400;
BK–109



BK–32;
BK–470;
BK–473; BK–5



BK–531;
BK–10; BK–18



BK–1661;
BK–692;
BK–177; BK–16



HD–57;HD–53



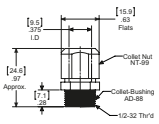
HG–100



LR–46; LR–48;
LR–50; LR–68



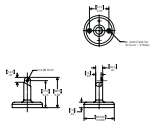
AD–138



AD–87



BU–80



BA–1051

ACCESSORIES

Order no.	Product name	Product type	ANSI/ AGD Group
2014804	Magnetic maximum hand w/snap on bezel (option)		2
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split collet OD is 17.45 mm/ .687"; requires 1/2–32 threaded hole	AD–87	
2203133	Mounting bracket with adjusting knob for AGD 2	AT–116	2
2203156	Mounting bracket with hex socket adjustable	AT–28	2
2203163	Brake attachment, dust cap mount (option), range limited to 6.35 mm/ .250" for group 1 and to 12 mm/ .500" for group 2–4 indicators	AT–81	
2203184	Brake attachment (option)	AT-A–7-W2	2
2204603	Base for indicators with lug back	BA–1051	
2204772	Post back 1/2" Dia.	BK–2093	2
2204773	Vertical lug, offset 1/4" hole	BK–2168	2
2204780	Vertical lug back, centered 1/4" hole	BK–383	2
2204782	Horizontal lug back, centered, 1/4" hole	BK–400	2
2204786	Flat back for AGD 2	BK–470	2
2204790	Adjustable back 1/4–20 thread	BK–531	2
2204802	Screw type back 1/4–28	BK–692	2
2204812	Rack back used on AT–116 and AT–28	BK–93	2
2205081	Split bushing, for use with protective housing .375" stem hole X .687" OD	BU–111	
2205195	Split bushing, with counterbore, .375" stem hole x .500" OD	BU–80	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU–94	
2205222	Tolerance hands w/snap on bezel (option)	BZ–2503	2
2206230	Rane limiting caps, adjustable up to 9.52 mm / .375"	CS–123	
2219994	Rubber bellows for shank Ø .375"	GU–2	
2220154	Tolerance hands w/screw on bezel (option)	HD–57	2
2220177	Protective housing for AGD 2 models with rangers up to 6.35 mm/ .250"	HG–100	2
2220178	Protective housing for AGD 2 models with rangers up to 25 mm/ 1"	HG–101	2
2220539	OX-bow lifting lever	LR–40	
2220544	Lifting lever to lift probe manually (left)	LR–48	2
2220545	Lifting lever to lift probe manually (right)	LR–49	2
2235806	Tap 1/2 –32	V–892	

MarCator

Dial Indicator

FEATURES

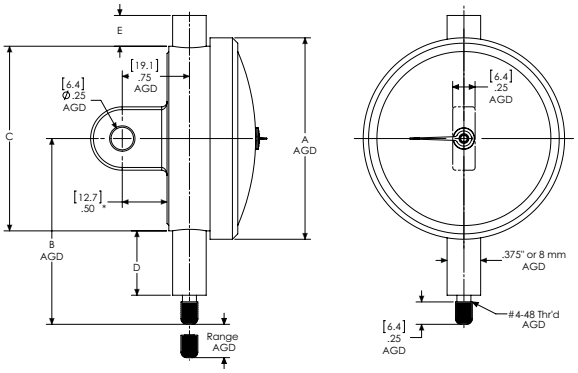
- Outstanding quality due to a well thought out design, use of high quality materials, and the precision engineered mechanism's guarantee
- The concentric "Speed Read" pointer (on 1.0" and .500" models) allows easy and safe reading of this dial indicator
- Spindle and stem are made of resistant stainless steel
- Supplied with: lug back and tolerance hands



TECHNICAL DATA

Order no.	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
	inch	inch			inch	inch			
2016005	.250"	.001"	0–100	•	.100"	±.001"	ANSI	2	Green
2016004	.500"	.001"	0–100	•	.100"	±.001"	ANSI	2	Green
2016002	1.000"	.001"	0–100	•	.100"	±.001"	ANSI	2	Green

Order no.	Mounting shaft	Scale diameter
	inch	inch
2016005	.375"	2.25"
2016004	.375"	2.25"
2016002	.375"	2.25"



ACCESSORIES

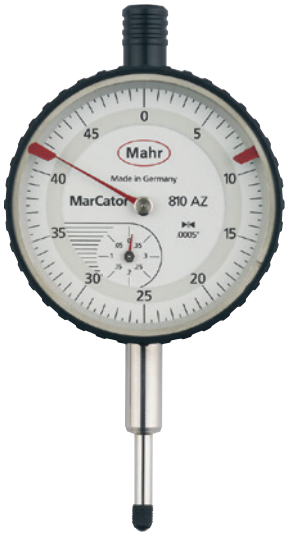
Order no.	Product name
2016007	Lug back
2016008	Screw back
2016009	Post back
2016010	Adjustable back
2247145	Flat back

MarCator 810 AZ / 803 AZ

Dial Indicator

FEATURES

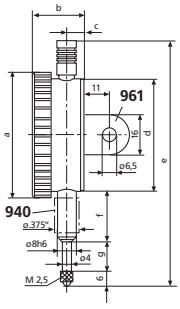
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- **Package contains:** adapter bush 940, 8 mm to 3/8", case



TECHNICAL DATA

Order no.		4311900	4324900
Product type		810 AZ	803 AZ
Measuring span	inch	.400"	.120"
Graduation value	inch	.0005"	
Type of dial face		0–50	0 –20
Range per rev.	inch	.05"	.02"
Error limit	inch	.0005"	.0004"
Error limit, 1/10 revolution inches (text)	inch	.0002"	
Repeatability f_w	inch	.00012"	
Hysteresis f_u	inch	.00012"	
Free stroke inches (text)	inch	.004"	.008"
Measuring force incoming measuring pin		0.9 –1.5	0.7 –1.1
Standard		Factory standard	
Lifting protection cap		•	
Dial color		White	

Order no.	a	b	c	d	e	f	g	Mounting shaft	Mounting shaft	Scale diameter
	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch
4311900	58	23	7.5	52	111.5	22	15	8	.375"	1.97"
4324900	40	20.6	6.8	37	83	15.5	8	8	.375"	1.4"



ACCESSORIES

Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940
4373020	Splash proof cap (58 mm)	955
4375010	Lug back, vertical, for 810	961
4375011	Lug back, horizontal, for 810	962
4375020	Lug back, vertical, for 803	966
4375021	Lug back, horizontal, for 803	967

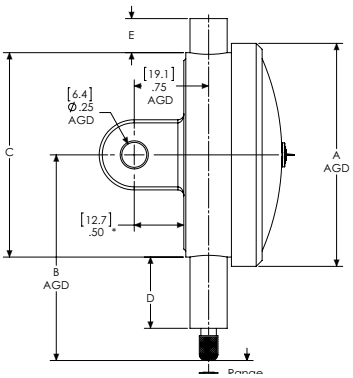
MarCator

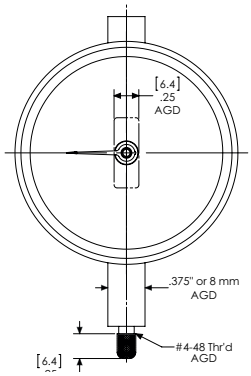
Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pull back spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr



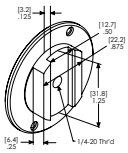




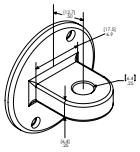
TECHNICAL DATA

Order no.	Product type	Measu-ring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2011226	D1K	.020"	.0001"	0–4–0		.008"	±.0001"	ANSI	3	Green
2011227	D1K-RC	.020"	.0001"	0–8	•	.008"	±.0001"	ANSI	3	Green
2011050	32I	.025"	.0001"	0–5–0		.010"	±.0001"	ANSI	3	Green
2011051	32I-RC	.025"	.0001"	0–10	•	.010"	±.0001"	ANSI	3	Green
2011054	32Q	.025"	.00025"	0–5–0		.010"	±.00025"	ANSI	3	Green
2011055	32Q-RC	.025"	.00025"	0–10	•	.010"	±.00025"	ANSI	3	Green
2011230	D3K	.050"	.00025"	0–10–0		.020"	±.00025"	ANSI	3	Green
2011231	D3K-RC	.050"	.00025"	0–20	•	.020"	±.00025"	ANSI	3	Green
2011242	D5G	.075"	.00025"	0–15–0		.030"	±.00025"	ANSI	3	Green
2011243	D5G-RC	.075"	.00025"	0–30	•	.030"	±.00025"	ANSI	3	Green
2011234	D3Q	.050"	.0005"	0–10–0		.020"	±.0005"	ANSI	3	Green
2011235	D3Q-RC	.050"	.0005"	0–20	•	.020"	±.0005"	ANSI	3	Green
2011246	D5M	.075"	.0005"	0–15–0		.030"	±.0005"	ANSI	3	Green
2011247	D5M-RC	.075"	.0005"	0–30	•	.030"	±.0005"	ANSI	3	Green
2011250	D6K	.100"	.0005"	0–20–0		.040"	±.0005"	ANSI	3	Green
2011251	D6K-RC	.100"	.0005"	0–40	•	.040"	±.0005"	ANSI	3	Green
2011258	D7I	.125"	.0005"	0–25–0		.050"	±.0005"	ANSI	3	Green
2011259	D7I-RC	.125"	.0005"	0–50	•	.050"	±.0005"	ANSI	3	Green
2011238	D3W	.050"	.001"	0–10–0		.020"	±.001"	ANSI	3	Green
2011239	D3W-RC	.050"	.001"	0–20	•	.020"	±.001"	ANSI	3	Green
2011254	D6Q	.100"	.001"	0–20–0		.040"	±.001"	ANSI	3	Green
2011255	D6Q-RC	.100"	.001"	0–40	•	.040"	±.001"	ANSI	3	Green
2011262	D7O	.125"	.001"	0–25–0		.050"	±.001"	ANSI	3	Green
2011263	D7O-RC	.125"	.001"	0–50	•	.050"	±.001"	ANSI	3	Green
2011266	D8I	.250"	.001"	0–50–0		.100"	±.001"	ANSI	3	Green
2011267	D8I-RC	.250"	.001"	0–100	•	.100"	±.001"	ANSI	3	Green

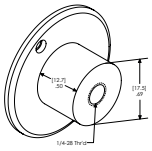




BK–10



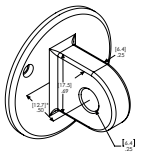
BK–109



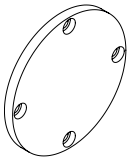
BK–177

Order no.	Scale diameter	Mounting shaft
	inch	inch
2011226	2.75″	.375″
2011227	2.75″	.375″
2011050	2.75″	.375″
2011051	2.75″	.375″
2011054	2.75″	.375″
2011055	2.75″	.375″
2011230	2.75″	.375″
2011231	2.75″	.375″
2011242	2.75″	.375″
2011243	2.75″	.375″
2011234	2.75″	.375″
2011235	2.75″	.375″
2011246	2.75″	.375″
2011247	2.75″	.375″

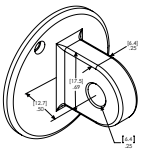
Order no.	Scale diameter	Mounting shaft
	inch	inch
2011250	2.75″	.375″
2011251	2.75″	.375″
2011258	2.75″	.375″
2011259	2.75″	.375″
2011238	2.75″	.375″
2011239	2.75″	.375″
2011254	2.75″	.375″
2011255	2.75″	.375″
2011262	2.75″	.375″
2011263	2.75″	.375″
2011266	2.75″	.375″
2011267	2.75″	.375″



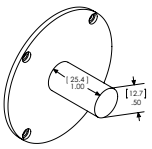
BK–431



BK–473



BK–545



BK–664



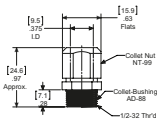
LR–50; LR–68



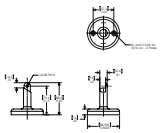
AD–138



BU–80



AD–87



BA–1051

ACCESSORIES

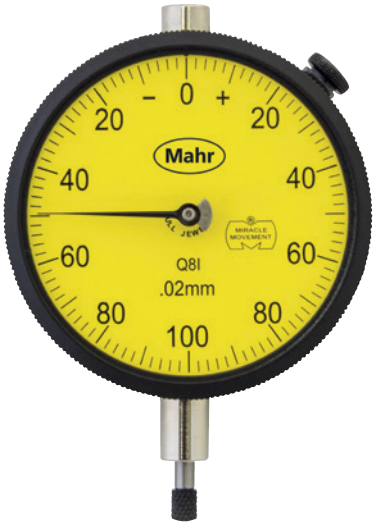
Order no.	Product name	Product type	ANSI/ AGD Group
2011341	Magnetic maximum hand (option)		3
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded bushing .625″ long .500″ OD with 5/16–32 internal thread	AD–62	
2201854	Split collet OD is 17.45 mm/ .687″; requires 1/2–32 threaded hole	AD–87	
2203163	Brake attachment, dust cap mount (option), range limited to 6.35 mm/ .250″ for group 1 and to 12 mm/ .500″ for group 2–4 indicators	AT–81	
2203185	Brake attachment (option)	AT-A–7-W3	3
2204603	Base for indicators with lug back	BA–1051	
2204730	Adjustable back with 1/4–20 thread	BK–10	3
2204734	Horizontal lug back, centered	BK–109	3
2204763	Screw type back 1/4–28	BK–177	3
2204784	Vertical lug back, centered	BK–431	3
2204787	Flat back	BK–473	3
2204791	Vertical lug back, offset	BK–545	3
2204799	Post back 1/2″ dia.	BK–664	3
2205081	Split bushing, for use with protective housing .375″ stem hole X .687″ OD	BU–111	
2205127	Split bushing with shoulder 8 mm stem hole X .375″ OD	BU–197	
2205195	Split bushing, with counterbore, .375″ stem hole x .500″ OD	BU–80	
2205200	Split bushing without counterbore, .375″ stem hole x .50″ OD	BU–94	
2206230	Rane limiting caps, adjustable up to 9.52 mm / .375″	CS–123	
2219994	Rubber bellows for shank Ø .375″	GU–2	
2220539	OX-bow lifting lever	LR–40	
2220546	Lifting lever to lift probe manually (left)	LR–50	3
2220547	Lifting lever to lift probe manually (right)	LR–51	3
2235806	Tap 1/2 –32	V–892	

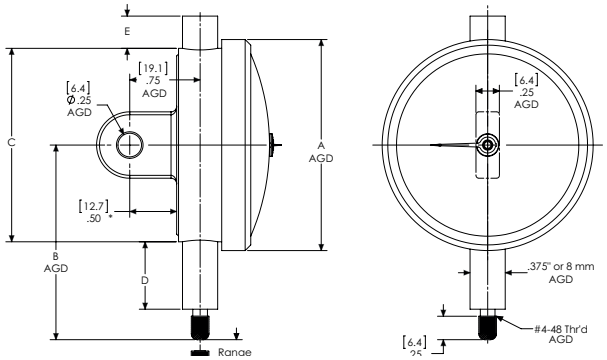
MarCator Q1I / Q1I-RC / Q3I / Q3I-RC / Q6I / Q6I-RC / Q8I / Q8I-RC

Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pull back spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr





TECHNICAL DATA

Order no.	Product type	Measu-ring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2011867	Q1I	0.5	0.002	0–10–0		0.2	± 0.004	ANSI	3	Yellow
2011868	Q1I-RC	0.5	0.002	0–20	•	0.2	± 0.004	ANSI	3	Yellow
2011871	Q3I	1.25	0.005	0–25–0		0.5	± 0.005	ANSI	3	Yellow
2011872	Q3I-RC	1.25	0.005	0–50	•	0.5	± 0.005	ANSI	3	Yellow
2011875	Q6I	2.5	0.01	0–50–0		1	± 0.010	ANSI	3	Yellow
2011876	Q6I-RC	2.5	0.01	0–100	•	1	± 0.010	ANSI	3	Yellow
2011879	Q8I	5	0.02	0–100–0		2	± 0.020	ANSI	3	Yellow
2011880	Q8I-RC	5	0.02	0–200	•	2	± 0.020	ANSI	3	Yellow

MarCator Q1I / Q1I-RC / Q3I / Q3I-RC / Q6I / Q6I-RC / Q8I / Q8I-RC

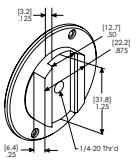
Dial Indicator

Order no.	Scale diameter	Mounting shaft
	mm	inch
2011867	70	.375″
2011868	70	.375″
2011871	70	.375″
2011872	70	.375″
2011875	70	.375″
2011876	70	.375″
2011879	70	.375″
2011880	70	.375″

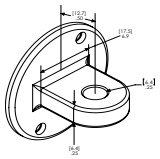
ACCESSORIES

Order no.	Product name	Product type	ANSI/ AGD Group
2011341	Magnetic maximum hand (option)		3
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded bushing .625″ long .500″ OD with 5/16–32 internal thread	AD–62	
2201854	Split collet OD is 17.45 mm/ .687″; requires 1/2–32 threaded hole	AD–87	
2203163	Brake attachment, dust cap mount (option), range limited to 6.35 mm/ .250″ for group 1 and to 12 mm/ .500″ for group 2–4 indicators	AT–81	
2203185	Brake attachment (option)	AT-A–7-W3	3
2204603	Base for indicators with lug back	BA–1051	
2204730	Adjustable back with 1/4–20 thread	BK–10	3
2204734	Horizontal lug back, centered	BK–109	3
2204763	Screw type back 1/4–28	BK–177	3
2204784	Vertical lug back, centered	BK–431	3
2204787	Flat back	BK–473	3
2204791	Vertical lug back, offset	BK–545	3
2204799	Post back 1/2″ dia.	BK–664	3
2205081	Split bushing, for use with protective housing .375″ stem hole X .687″ OD	BU–111	
2205127	Split bushing with shoulder 8 mm stem hole X .375″ OD	BU–197	
2205195	Split bushing, with counterbore, .375″ stem hole x .500″ OD	BU–80	
2205200	Split bushing without counterbore, .375″ stem hole x .50″ OD	BU–94	
2206230	Rane limiting caps, adjustable up to 9.52 mm / .375″	CS–123	
2219994	Rubber bellows for shank Ø .375″	GU–2	
2220539	OX-bow lifting lever	LR–40	
2220546	Lifting lever to lift probe manually (left)	LR–50	3
2220547	Lifting lever to lift probe manually (right)	LR–51	3
2235806	Tap 1/2 –32	V–892	

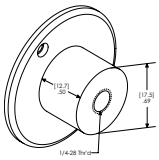




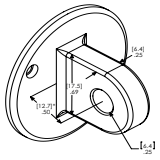
BK–10



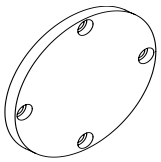
BK–109



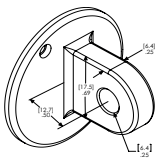
BK–177



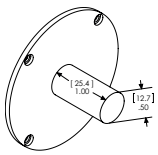
BK–431



BK–473



BK–545



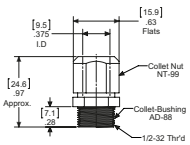
BK–664



LR–50; LR–68



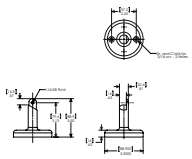
AD–138



AD–87



BU–80



BA–1051

MarCator 42IQ / 28IQN / 28ISN / D8IS / 29I / D8IT / E8IU

Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Normally furnished: continuous clockwise dial; centered vertical lug back; regular contact point, .18″ radiused, .250″ long
- Long Range Models: include (1) revolution counter (except C9I without revolution counter). Extra Long Range Models: include (2) revolution counters
- For other dial styles or special requirements - call Mahr

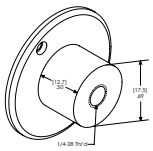


TECHNICAL DATA

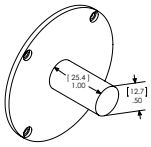
Order no.	Type	Measuring span inch	Scale graduation value	Type of dial face	Rev. counter	Range per rev. in inches (text)	Error limit inches (text)	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2014699	28IQN	.500″	.001″	0–100	•	.100″	± .001″	ANSI	2	Green
2014698	28ISN	1.000″	.001″	0–100	•	.100″	± .001″	ANSI	2	Green
2011270	D8IS	1.000″	.001″	0–100	•	.100″	± .001″	ANSI	3	Green
2014816	29I	1.000″	.01″	0–1000		1.000″	± .010″	ANSI	2	Green
2011272	D8IT	2.000″	.001″	0–100	•	.100″	± .001″ for first 1″ of travel	ANSI	3	Green

Order no.	Mounting shaft inches (text)	Scale diameter inches (text)
	inch	inch
2014699	.375″	2.25″
2014698	.375″	2.25″
2011270	.375″	2.75″
2014816	.375″	2.25″
2011272	.375″	2.75″

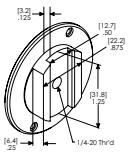
ACCESSORIES



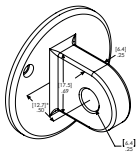
BK–692;
BK–177



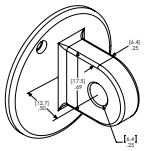
BK–664



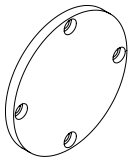
BK–531; BK–10



BK–383;
BK–431



BK–2168;
BK–545



BK–470;
BK–473



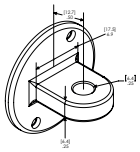
HD–57;HD–53



LR–48; LR–50



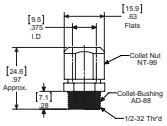
AD–138



BK–400;
BK–109



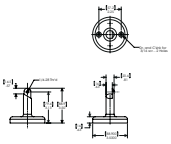
BU–80



AD–87



BK–400;
BK–109



BA–1051



HG–100

Order no.	Product name	Type	ANSI/ AGD Group
2011341	Magnetic maximum hand (option)	2011341	3
2014804	Magnetic maximum hand w/snap on bezel (option)	2014804	2
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split collet OD is 17.45 mm/ .687"; requires 1/2–32 threaded hole	AD–87	
2203133	Mounting bracket with adjusting knob for AGD 2	AT–116	2
2203156	Mounting bracket with hex socket adjustable	AT–28	2
2203163	Brake attachment, dust cap mount (option), range limited to 2235806 Tap 1/2 – 32/ .250" for group 1 and to 12 mm/ .500" for group 2–4 indicators	AT–81	
2203184	Brake attachment (option)	AT-A–7-W2	2
2203185	Brake attachment (option)	AT-A–7-W3	3
2204603	Base for indicators with lug back	BA–1051	
2204730	Adjustable back with 1/4–20 thread	BK–10	3
2204734	Horizontal lug back, centered	BK–109	3
2204763	Screw type back 1/4–28	BK–177	3
2204772	Post back 1/2" dia.	BK–2093	2
2204773	Vertical lug, offset 1/4" hole	BK–2168	2
2204780	Vertical lug back, centered 1/4" hole	BK–383	2
2204782	Horizontal lug back, centered, 1/4" hole	BK–400	2
2204784	Vertical lug back, centered	BK–431	3
2204786	Flat back for AGD 2	BK–470	2
2204787	Flat back	BK–473	3
2204790	Adjustable back 1/4–20 thread	BK–531	2
2204791	Vertical lug back, offset	BK–545	3
2204799	Post back 1/2" dia.	BK–664	3
2204802	Screw type back 1/4–28	BK–692	2
2204812	Rack back used on AT–116 and AT–28	BK–93	2
2205081	Split bushing, for use with protective housing .375" stem hole X .687" OD	BU–111	
2205127	Split bushing with shoulder 8 mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole x .500" OD	BU–80	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU–94	
2205222	Tolerance hands w/snap on bezel (option)	BZ–2503	2
2206230	Rane limiting caps, adjustable up to 9.52 mm / .375"	CS–123	
2219994	Rubber bellows for shank Ø .375"	GU–2	
2220154	Tolerance hands w/screw on bezel (option)	HD–57	2
2220177	Protective housing for AGD 2 models with rangers up to 6.35 mm/ .250"	HG–100	2
2220178	Protective housing for AGD 2 models with rangers up to 25 mm/ 1"	HG–101	2
2220539	OX-bow lifting lever	LR–40	
2220544	Lifting lever to lift probe manually (left)	LR–48	2
2220545	Lifting lever to lift probe manually (right)	LR–49	2
2220546	Lifting lever to lift probe manually (left)	LR–50	3
2220547	Lifting lever to lift probe manually (right)	LR–51	3
2235806	Tap 1/2 –32	V–892	

MarCator SP6IS / SQ6IS / Q8IT / R8IU

Dial Indicator

FEATURES

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy
- Balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Normally furnished: continuous clockwise dial; centered vertical lug back; regular contact point, .18" radiused, .250" long
- Long Range Models: include (1) revolution counter (except C9I without revolution counter). Extra Long Range Models: include (2) revolution counters
- For other dial styles or special requirements - call Mahr

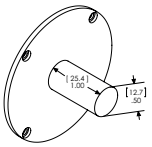


TECHNICAL DATA

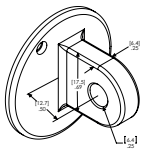
Order no.	Type	Measuring span	Readings	Type of dial face	Rev. counter	Range per rev.	Error limit in mm (text)	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2012381	SP6IS	25	0.01	0–100	•	1	± 0.02	ANSI	2	Yellow
2012384	SQ6IS	25	0.01	0–100	•	1	± 0.02	ANSI	3	Yellow
2011883	Q8IT	50	0.025	0–25	•	2.5	± 0.025 for first 25 mm of travel	ANSI	3	Yellow

Order no.	Mounting shaft inches (text)	Scale diameter
	inch	mm
2012381	.375"	57
2012384	.375"	70
2011883	.375"	70

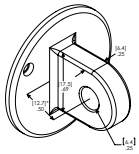




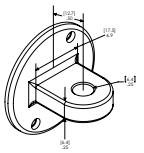
BK–2093;
BK–664



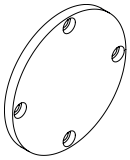
BK–2168;
BK–545



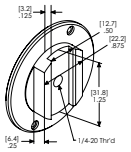
BK–383;
BK–431



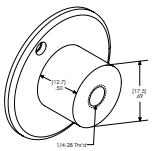
BK–400;
BK–109



BK–470;
BK–473



BK–531; BK–10



BK–692;
BK–177



HD–57;HD–53



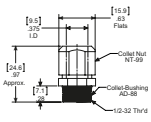
HG–100



LR–48; LR–50



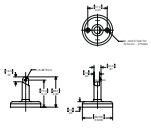
AD–138



AD–87



BU–80



BA–1051

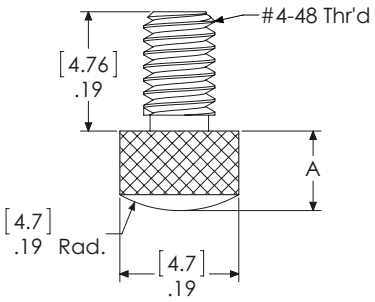
ACCESSORIES

Order no.	Product name	Product type	ANSI/ AGD Group
2011341	Magnetic maximum hand (option)		3
2014804	Magnetic maximum hand w/snap on bezel (option)		2
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split collet OD is 17.45 mm/ .687"; requires 1/2–32 threaded hole	AD–87	
2203133	Mounting bracket with adjusting knob for AGD 2	AT–116	2
2203156	Mounting bracket with hex socket adjustable	AT–28	2
2203163	Brake attachment, dust cap mount (option), range limited to 6.35 mm/ .250" for group 1 and to 12 mm/ .500" for group 2–4 indicators	AT–81	
2203184	Brake attachment (option)	AT-A–7-W2	2
2203185	Brake attachment (option)	AT-A–7-W3	3
2204603	Base for indicators with lug back	BA–1051	
2204730	Adjustable back with 1/4–20 thread	BK–10	3
2204734	Horizontal lug back, centered	BK–109	3
2204763	Screw type back 1/4–28	BK–177	3
2204772	Post back 1/2" dia.	BK–2093	2
2204773	Vertical lug, offset 1/4" hole	BK–2168	2
2204780	Vertical lug back, centered 1/4" hole	BK–383	2
2204782	Horizontal lug back, centered, 1/4" hole	BK–400	2
2204784	Vertical lug back, centered	BK–431	3
2204786	Flat back for AGD 2	BK–470	2
2204787	Flat back	BK–473	3
2204790	Adjustable back 1/4–20 thread	BK–531	2
2204791	Vertical lug back, offset	BK–545	3
2204799	Post back 1/2" dia.	BK–664	3
2204802	Screw type back 1/4–28	BK–692	2
2204812	Rack back used on AT–116 and AT–28	BK–93	2
2205081	Split bushing, for use with protective housing .375" stem hole X .687" OD	BU–111	
2205127	Split bushing with shoulder 8 mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole x .500" OD	BU–80	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU–94	
2205222	Tolerance hands w/snap on bezel (option)	BZ–2503	2
2206230	Rane limiting caps, adjustable up to 9.52 mm / .375"	CS–123	
2219994	Rubber bellows for shank Ø .375"	GU–2	
2220154	Tolerance hands w/screw on bezel (option)	HD–57	2
2220177	Protective housing for AGD 2 models with rangers up to 6.35 mm/ .250"	HG–100	2
2220178	Protective housing for AGD 2 models with rangers up to 25 mm/ 1"	HG–101	2
2220539	OX-bow lifting lever	LR–40	
2220544	Lifting lever to lift probe manually (left)	LR–48	2
2220545	Lifting lever to lift probe manually (right)	LR–49	2
2220546	Lifting lever to lift probe manually (left)	LR–50	3
2220547	Lifting lever to lift probe manually (right)	LR–51	3
2235806	Tap 1/2 –32	V–892	

MarCator

Standard Measuring Anvil

Order no.	Product type	Dimension A	Measuring surface	Number	Set contents
2225870	PT–225	1/8″	hardened steel	1	
2225867	PT–223	1/4″	hardened steel	1	
2225904	PT–35	1/4″	carbide tipped	1	
2225902	PT–317	1/4″	diamond	1	
2225973	PT–563	3/8″	hardened steel	1	
2225763	PT–14	1/2″	hardened steel	1	
2225974	PT–564	5/8″	hardened steel	1	
2225901	PT–31	3/4″	hardened steel	1	
2225799	PT–201	7/8″	hardened steel	1	
2225885	PT–232	1″	hardened steel	1	
2225900	PT–305	1–1/8″	hardened steel	1	
2225975	PT–565	1–1/4″	hardened steel	1	
2225888	PT–239	1–3/8″	hardened steel	1	
2225933	PT–50	1–1/2″	hardened steel	1	
2225887	PT–235	1–5/8″	hardened steel	1	
2225890	PT–241	1–3/4″	hardened steel	1	
2225738	PT–100	1–7/8″	hardened steel	1	
2225934	PT–51	2″	hardened steel	1	
2225891	PT–243	2–1/8″	hardened steel	1	
2225986	PT–696	2–1/4″	hardened steel	1	
2225739	PT–101	2–3/8″	hardened steel	1	
2225892	PT–245	2–1/2″	hardened steel	1	
2225740	PT–102	2–5/8″	hardened steel	1	
2225976	PT–566	2–3/4″	hardened steel	1	
2225893	PT–247	2–7/8″	hardened steel	1	
2225765	PT–155	3″	hardened steel	1	
2225756	PT–116	1/8″ –1″	hardened steel	8	1/8 –1″ in increments of 1/8″
2225755	PT–115	1/8″ –3″	hardened steel	24	1/8 –3″ in increments of 1/8″



MarCator AL–19 / AL–673 / AL–51 / AL–20 / AL–21 / AL–22 / AL–23 / AL–24 / AL–25 / AL–55

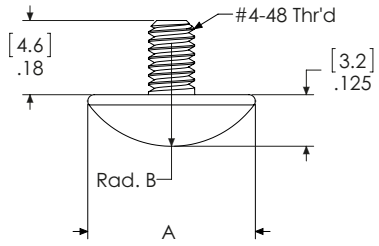
Plane measuring anvil

Order no.	Product type	Dimension A	Measuring surface	Number	Set contents
2202280	AL–19	1/8″	hardened steel	1	
2202337	AL–673	1/4″	hardened steel	1	
2202322	AL–51	1/4″	carbide tipped	1	
2202281	AL–20	3/8″	hardened steel	1	
2202283	AL–21	1/2″	hardened steel	1	
2202284	AL–22	5/8″	hardened steel	1	
2202285	AL–23	3/4″	hardened steel	1	
2202286	AL–24	7/8″	hardened steel	1	
2202287	AL–25	1″	hardened steel	1	
2202327	AL–55	1/8″ –1″	hardened steel	8	1/8 –1″ in increments of 1/8″

MarCator PT–227 / PT–120 / PT–619

Spherical Disk Type Anvil

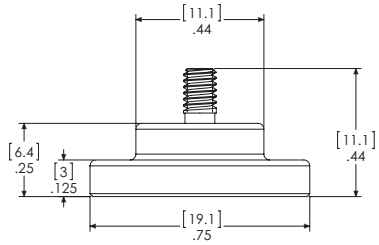
Order no.	Product type	Dimension A	Dimension B	Measuring surface	Number	
2225880	PT–227	.375″	.250″	hardened steel	1	
2225760	PT–120	.375″	.250″	carbide tipped	1	
2225983	PT–619	.500″	.375″	hardened steel	1	

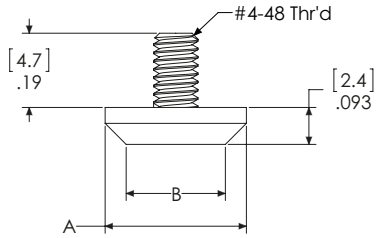


MarCator AL–291 / AL–502 / AL–1730 / AL–1510 / AL–520 / AL–44

Disk type anvil

Order no.	Product type	Dimension A	Dimension B	Measuring surface	Number
2202291	AL–291			hardened steel	1
2202321	AL–502	.356″	.250″	hardened steel	1
2202257	AL–1730	.356″	.250″	carbide tipped	1
2202256	AL–1510	.500″	.375″	hardened steel	1
2202324	AL–520	.615″	.500″	hardened steel	1
2202315	AL–44	.731″	.625″	hardened steel	1

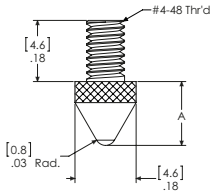




MarCator PT–233 / PT–229 / PT–181 / PT–182 / PT–253 / PT–183 / PT–230 / PT–231

Conical measuring anvil

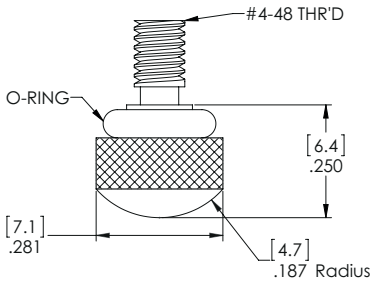
Order no.	Product type	Dimension A	Measuring surface	Number	
2225886	PT–233	3/16″	hardened steel	1	
2225881	PT–229	7/16″	hardened steel	1	
2225778	PT–181	7/16″	carbide tipped	1	
2225779	PT–182	3/4″	carbide tipped	1	
2225894	PT–253	1″	hardened steel	1	
2225780	PT–183	1″	carbide tipped	1	
2225883	PT–230	1–7/16″	hardened steel	1	
2225884	PT–231	2″	hardened steel	1	



MarCator PT–2263

Measuring Anvil with Shock Protection

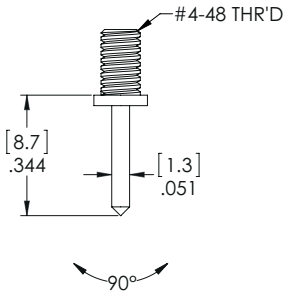
Order no.	Product type	Length	Measuring surface	Number
2225875	PT–2263	.25"	hardened steel	1



MarCator PT–2265

Conical Measuring Anvil

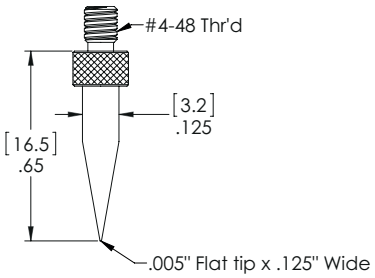
Order no.	Product type	Angle α °	Measuring surface	Number
2225876	PT–2265	90	hardened steel	1



MarCator PT–2266

Conical Measuring Anvil, leveled

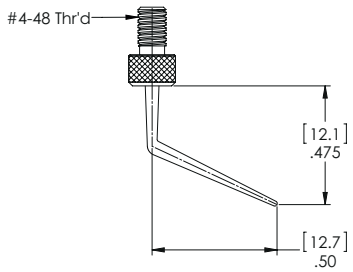
Order no.	Product type	Measuring surface	Number
2225877	PT–2266	hardened steel	1



MarCator PT–2267

Offset Measuring Anvil

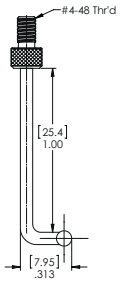
Order no.	Product type	Measuring surface	Number
2225878	PT–2267	hardened steel	1



MarCator PT–2268

Angled Measuring Anvil

Order no.	Product type	Measuring surface	Number
2225879	PT–2268	hardened steel	1



MarCator

Adaptor #4–48 male to M2.5 female Threads

Order no.	Number
2236519	1

MarCator AT–25 / AT–26

Auxiliary Plunger 57 mm/ 2.25″ long

FEATURES

For extending reach of all ANSI/ AGD type and perpendicular indicators with .375″ diameter stems and ranges up to 6.35 mm/ .250″ range. Attaches to indicator stem by integral split collet. Body is 12 mm/ .500″ O.D.



TECHNICAL DATA

Order no.	Mounting hole	Length	Length	Product type
	inch	mm	inch	
2203153	3/8″	57	2.25″	AT–25
2203154	3/8″	104	4″	AT–26

ACCESSORIES

Order no.	Product name	Product type
2225781	Spherical contact point, 8–32 thread, for AT–26	PT–184

MarCator AT–7293 / AT–7294

Hole Attachment, 47.50 mm / 1.87″ long

FEATURES

For ANSI/AGD type and perpendicular indicators with .375″ diameter stems. For measuring internal surfaces.



TECHNICAL DATA

Order no.	Mounting hole	Length	Length	Product type
	inch	mm	inch	
2203160	3/8″	47.5	1.87″	AT–7293
2203161	3/8″	25	1″	AT–7294

MarCator A–9 / AT–24

Angle Attachment for Ranges up to 3.05 mm / .120”

FEATURES

For ANSI/AGD type and perpendicular indicators (.375” diameter stems). For making measurements at right angle to spindle movement.





Application:

for ranges up to 3.05 mm / .120”

TECHNICAL DATA

Order no.	Mounting hole	Product type
	inch	
2201391	3/8”	A–9
2203152	3/8”	AT–24

ACCESSORIES

Order no.	Product name	Product type
2232596	Replacement spring for right angle attachment A–9	SP–56

MarCator 400B–3 / 400B–4

Mobile Dial Calibrator

FEATURES

- For checking and calibrating dial indicators, test indicators, digital indicators, and LVDT inductive probes
- Large micrometer style wheel has widely spaced graduations for easy setting and viewing
- Adjustable crosshair provides exact on-the-mark setting
- Anvil uses tungsten carbide for maximum wear resistance
- Indicator clamped in line with micrometer spindle for direct contact measurement
- **Data interface:** none
- **Package contains:** adapter bushing AD–58, split bushing BU–112, split bushing BU–197





Application:

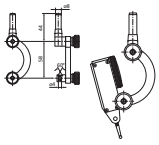
Portable dial calibrator

TECHNICAL DATA

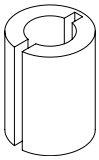
Order no.	Product type	Measuring span	Measuring span	Graduation value	Graduation value	Range per rev.	Range per rev.	Error limit	Error limit
		mm	inch	mm	inch	mm	inch	mm	inch
2050665	400B–3		1.000″		.0001″		.0025″		.00005″
2050666	400B–4	25		0.002		0.05		0.001	

ACCESSORIES

Order no.	Product name	Product type
4305893	Universal centering support frame	800 b
2201843	Adaptor bushing 0.275″ ID to 0.375″ OD	AD–58
2205127	Split bushing with shoulder 8 mm stem hole X .375″ OD	BU–197
2205082	Split bushing .218″ x .374″ x .5″	BU–112



800 b



BU–112

Millimess | Digital and Dial Comparators

Millimess dial comparators differ from conventional dial indicators through more precise components, greater accuracy and a much improved hysteresis. Millimess dial comparators are especially suitable for radial run-out, straightness and flatness measurements as well as for comparative measurements. Other outstanding advantages include its easy handling, reliable readability and absolute shock resistance of the measuring mechanism.



Overview Millimess Digital and Dial Comparators 208

Millimess µMaxµm II 212
Inductive Digital Comparator

Millimess Maxµm III 215
Inductive Digital Comparator

Mechanical Dial Comparators

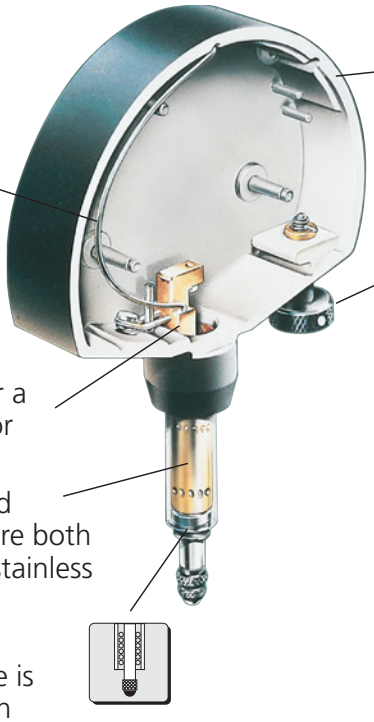
Millimess 1002 / 1002 T / 1003 / 1003 T 224
Mechanical Dial Comparator

Millimess 1004 / 1004 T /1003 XL / 1003 XLT 225
Mechanical Dial Comparator

Millimess 1000 A / 1000 B 227
Mechanical Dial Comparator

Millimess 1050 / 1050 T / 1010 / 1010 T 228
Mechanical Dial Comparator

Millimess 1110 N / 1110 NT / 1150 N / 1150 NT 230
Mechanical Dial Comparator with Limit Contacts



Box type protective housing

Constant measuring force

Lockable fine adjustment screw

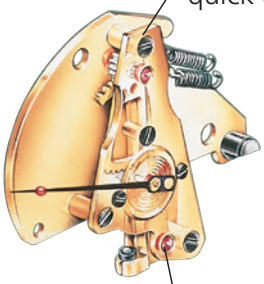
Measuring spindle can be retracted with either a screw in cable release or with a lifting knob.

Mounting shank and measuring spindle are both made of hardened stainless steel

Measuring spindle is mounted in a high precision ball guide (Types 1000 / 1002 / 1003 / 1004) for minimal hystersis

Resistant to lateral forces (side play) acting on the measuring spindle

Self contained movement, which is quick and easy to remove and replace



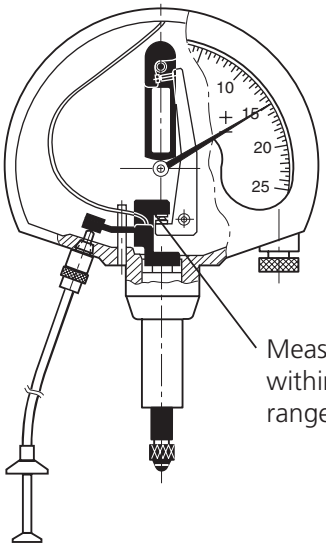
Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions



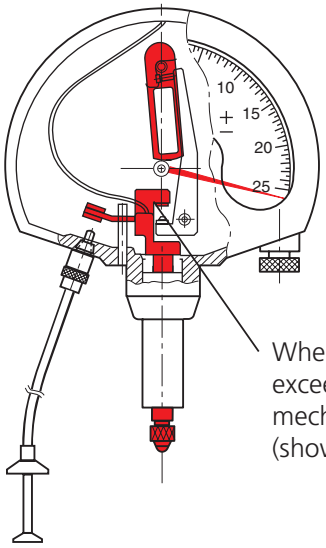
Easy to read scale

Adjustable tolerance markers

Millimess | Shockproof Mechanism



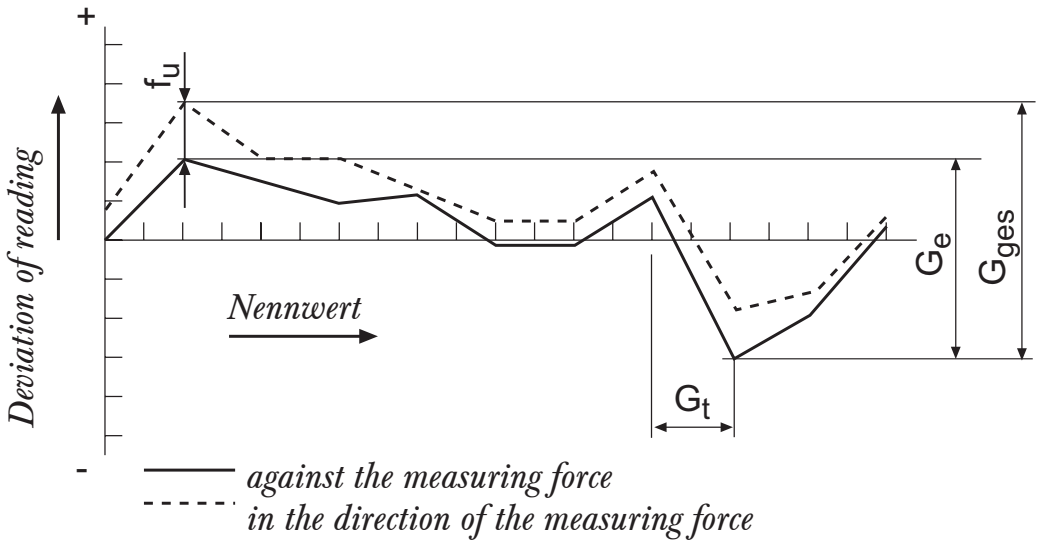
Measuring spindle within the measuring range



SHOCK PROOF

When the measuring range is exceeded, the movement will be mechanically decoupled (shown in red)

Millimess | Metrological characteristics



Millimess | Versions



Inductive Digital Comparator



Mechanical Dial Comparator



Mechanical Dial Comparator with limit contacts

Millimess µMaxµm II

Inductive Digital Comparator

IP 54 | RS232C | Digimatic

FUNCTIONS

- ON/OFF
- PRESET (for entering a numerical value)
- RESET (set display to zero)
- Selectable resolution
- Reversal of counting direction
- <0> (tolerance GO / NO GO display mode)
- mm/inch

FEATURES

- Inductive absolute measuring system
- Large, high contrast display with numerical and scale display
- Control and display unit rotatable through 270°
- Zero point setting is retained even after switching off the dial indicator
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery operation
- **Package contains:** instruction manual, battery



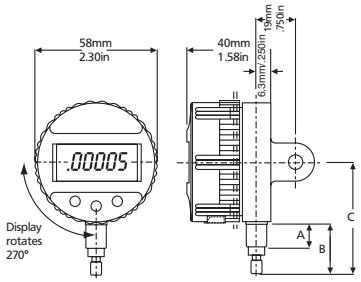
Application:

For static measurements

TECHNICAL DATA

Order no.		2034101	2034103	2034105	2034107
Product type		µMaxµm II			
Measuring range	mm	±1			
Measuring range	inch	± .040"			
Partial measuring range	mm	± 0.5			
Partial measuring range	inch	± .020"			
Resolution	mm	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02			
Resolution	inch	.00001", .00002", .00005", .0001", .0002", .0005", .001"			
Error limit	µm	± 5			
Error limit	inch	± .0002"			
Error limit in partial measuring range	µm	± 1.25			
Error limit in partial measuring range	inch	± .00005"			
Standard		Factory standard			
Measuring force	N	0.8 –1.1			
IP protection category:		IP 54			

Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	inch	inch	mm	mm	mm	mm	inch
2034101	.46"	.95"	2.11"	11.7	24.1	53.6		.375"
2034103	1.5"	2.25"	3.41"	38	57.2	86.6		.375"
2034105	.46"	.95"	2.11"	11.7	24.1	53.6	8	
2034107	1.5"	2.25"	3.41"	38	57.2	86.6	8	



ACCESSORIES



e-Stick



2000 e

Order no.	Product name	Product type
2210555	Lug back	EBK–1010
2210556	Back panel with cylindrical holder, Ø = .5", l = 1"	EBK–1012
2210557	Back panel with threaded bore 1/4–28, Ø = 11/16", l = .5"	EBK–1013
2210558	Back panel with rack	EBK–1014
2210559	Back panel with adjustable holder	EBK–1016
2210561	Flat back panel	EBK–1018
2212878	Splash guard cover	ECV–1307-W2
2232570	Measuring force springs 0.35N	SP–351
2201833	Thread adapter, M2.5 male to #4–48 female threads	AD–185
4310103	Adapter bushing (.375" / 8 mm)	940
4346023	2000 USB Data connection cable USB (2 m)	2000 USB
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data connection cable RS232C (2 m)	2000 r
4102230	e-Stick Receiver	e-Stick
4102232	2000 e Transmitter for e-Stick	2000 e

Millimess µMaxµm II

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- ABS (display can be set to zero without losing reference to preset)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- Factor (adjustable)
- HOLD (storage of measured values)

FEATURES

- Inductive absolute measuring system
- Large, high contrast display with numerical and scale display
- Control and display unit rotatable through 270°
- Zero point setting is retained even after switching off the dial indicator
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery operation
- **Package contains:** instruction manual, battery



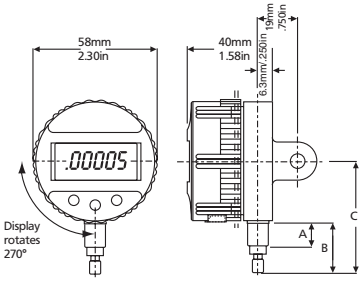
Application:

For static and dynamic measurements

TECHNICAL DATA

Order no.		2034201	2034203	2034205	2034207
Product type		µMaxµm II			
Measuring range	mm	±1			
Measuring range	inch	± .040"			
Partial measuring range	mm	± 0.5			
Partial measuring range	inch	± .020"			
Resolution	mm	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02			
Resolution	inch	.00001", .00002", .00005", .0001", .0002", .0005", .001"			
Error limit	µm	± 5			
Error limit	inch	± .0002"			
Error limit in partial measuring range	µm	± 1.25			
Error limit in partial measuring range	inch	± .00005"			
Standard		Factory standard			
Measuring force	N	0.8 –1.1			
IP protection category:		IP 54			

Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	inch	inch	mm	mm	mm	mm	inch
2034201	.46"	.95"	2.11"	11.7	24.1	53.6		.375"
2034203	1.5"	2.25"	3.41"	38	57.2	86.6		.375"
2034205	.46"	.95"	2.11"	11.7	24.1	53.6	8	
2034207	1.5"	2.25"	3.41"	38	57.2	86.6	8	



ACCESSORIES



2000 e



e-Stick

Order no.	Product name	Product type
2210555	Lug back	EBK–1010
2212878	Splash guard cover	ECV–1307-W2
4310103	Adapter bushing (.375" / 8 mm)	940
4346023	2000 USB Data connection cable USB (2 m)	2000 USB
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data connection cable RS232C (2 m)	2000 r
4102232	2000 e Transmitter for e-Stick	2000 e
4102230	e-Stick Receiver	e-Stick
2210556	Back panel with cylindrical holder, Ø = .5", l = 1"	EBK–1012
2210557	Back panel with threaded bore 1/4–28, Ø = 11/16", l = .5"	EBK–1013
2210561	Flat back panel	EBK–1018
2210559	Back panel with adjustable holder	EBK–1016
2210558	Back panel with rack	EBK–1014
2232570	Measuring force springs 0.35N	SP–351

Millimess µMaxµm II

Inductive Digital Comparator

MAX MIN | ABS | IP 54 | RS232C | Digimatic

FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- ABS (display can be set to zero without losing reference to preset)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- Factor (adjustable)
- HOLD (storage of measured values)

FEATURES

- Inductive absolute measuring system
- Large, high contrast display with numerical and scale display
- Control and display unit rotatable through 270°
- Zero point setting is retained even after switching off the dial indicator
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery operation
- **Package contains:** instruction manual, battery



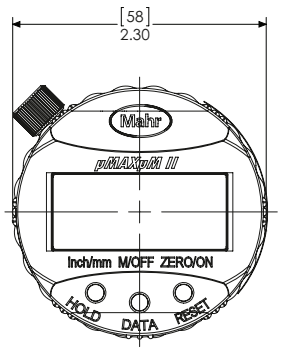
Application:

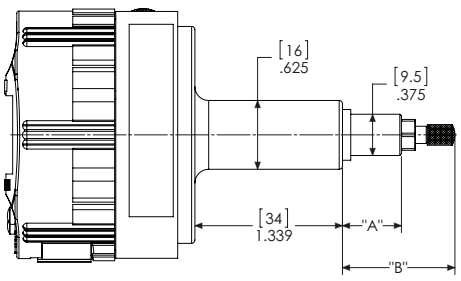
- Vertical design with perpenticular measuring spindle
- For static and dynamic measurements

TECHNICAL DATA

Order no.		2034401
Product type		µMaxµm II
Measuring range	mm	±1
Measuring range	inch	± .040"
Partial measuring range	mm	± 0.5
Partial measuring range	inch	± .020"
Resolution	mm	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02
Resolution	inch	.00001", .00002", .00005", .0001", .0002", .0005", .001"
Error limit	µm	± 5
Error limit	inch	± .0002"
Error limit in partial measuring range	µm	± 1.25
Error limit in partial measuring range	inch	± .00005"
Standard		Factory standard
Measuring force	N	0.8 –1.1
IP protection category:		IP 54

Order no.	a	b	c	a	b	Mounting shaft
	inch	inch	inch	mm	mm	inch
2034401	.46"	.95"	2.11"	11.7	24.1	.375"





ACCESSORIES

Order no.	Product name	Product type
2212878	Splash guard cover	ECV–1307-W2
2232570	Measuring force springs 0.35N	SP–351
2201833	Thread adapter, M2.5 male to #4–48 female threads	AD–185
4310103	Adapter bushing (.375" / 8 mm)	940
4346023	2000 USB Data connection cable USB (2 m)	2000 USB
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data connection cable RS232C (2 m)	2000 r

Millimess Maxµm III

Inductive Digital Comparator

MAX MIN | TOL | ABS system | IP 54

FUNCTIONS

- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)

FEATURES

- Large, high contrast digital, analog and fan display for better readability while testing flatness and concentricity as well as for searching the reversal point in bores
- Interchangeable dials
- Inductive absolute measuring system
- Metal cast housing with robust buttons
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Energy supply:** Battery life approx. 4000 hrs.
- **Package contains:** interchangeable dials, battery, instruction manual

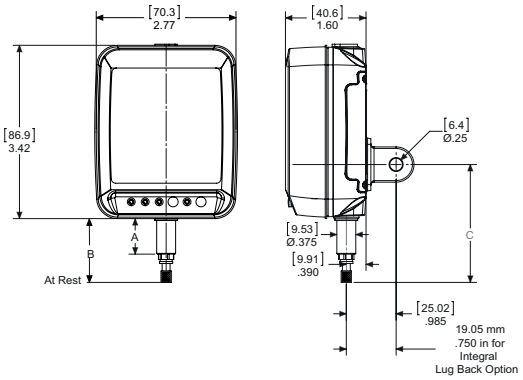




TECHNICAL DATA

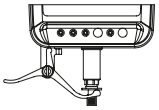
Order no.		2033101	2033103	2033105	2033107	2033102	2033104	2033106	2033108
Product type		Maxµm III							
Measuring range	mm	±1				±1.99			
Measuring range	inch	± .040"				± .100"			
Partial measuring range	mm	± 0.199							
Partial measuring range	inch	± .0199"							
Resolution	mm	0.0005, 0.001, 0.005				0.001, 0.005			
Resolution	inch	.00002", .00005", .0001", .0005"				.0001", .0005"			
Error limit	µm	± 10				± 14			
Error limit	inch	± .0004"				± .0007"			
Error limit in partial measuring range	µm	± 1							
Error limit in partial measuring range	inch	± .0001"							
Standard		Factory standard							
Overtravel	mm	0.8				1.3			
Measuring force	N	0.8 –1.1							
Range of analog display	mm	± 5, ± 25, ± 50				± 25, ± 50			
Data output Maxµm		No output							
IP protection category:		IP 54							

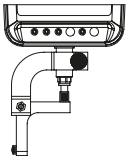
Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	inch	inch	mm	mm	mm	mm	inch
2033101	.670"	1.42"	2.50"	17	36	63.5		.375"
2033103	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033105	.670"	1.42"	2.50"	17	36	63.5	8	
2033107	1.5"	2.25"	3.33"	38	57	84.6	8	
2033102	.87"	1.84"	2.87"	22	47	73		.375"
2033104	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033106	.87"	1.84"	2.87"	22	47	73	8	
2033108	1.5"	2.25"	3.33"	38	57	84.6	8	

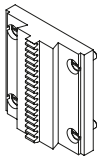


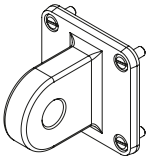
ACCESSORIES

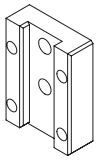
Order no.	Product name	Product type
2239138	Battery for Maxµm III Type CR 123A	
2209094	Lifting lever, left	EAS–1903
2210406	Right angle attachment - spring type (± .187" range)	EAT–1034-W1
2210407	Right angle attachment - spring type (± .060" range)	EAT–1035-W1
2210551	Back panel with rack	EBK–1005
2236895	Mounting block for back panel with rack	
2210552	Back panel with eyelets	EBK–1006
2210553	Back panel with adjustable holder	EBK–1007
2212877	Dust cover	ECV–1307-W1
2239040	Set of 3 inch and 3 metric scale overlay	
2217907	Spare screws for back panels	ESW–1252


EAS–1903


EAT–1034-W1;
EAT–1035-W1


EBK–1005


EBK–1006


EBK–1007

Millimess Maxµm III

Inductive Digital Comparator

MAX MIN | TOL | ABS system | IP 54 | Digimatic | RS232C

FUNCTIONS

- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)

FEATURES

- Large, high contrast digital, analog and fan display for better readability while testing flatness and concentricity as well as for searching the reversal point in bores
- Interchangeable dials
- Inductive absolute measuring system
- Metal cast housing with robust buttons
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Data interface:** RS232C, Digimatic, USB
- **Energy supply:** Battery life approx. 4000 hrs.
- **Package contains:** interchangeable dials, battery, instruction manual

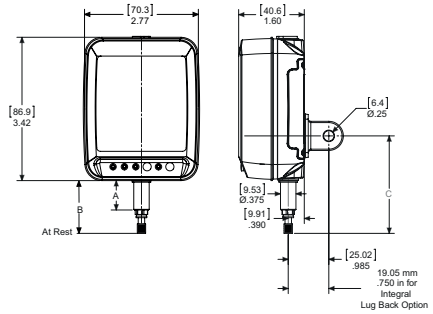




TECHNICAL DATA

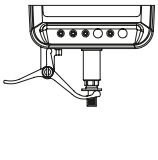
Order no.		2033111	2033113	2033115	2033117	2033112	2033114	2033116	2033118
Product type		Maxµm III							
Measuring range	mm	±1				±1.99			
Measuring range	inch	± .040"				± .100"			
Partial measuring range	mm	± 0.199							
Partial measuring range	inch	± .0199"							
Resolution	mm	0.0005, 0.001, 0.005				0.001, 0.005			
Resolution	inch	.00002", .00005", .0001", .0005"				.0001", .0005"			
Error limit	µm	± 10				± 14			
Error limit	inch	± .0004"				± .0007"			
Error limit in partial measuring range	µm	± 1							
Error limit in partial measuring range	inch	± .0001"							
Standard		Factory standard							
Overtravel	mm	0.8				1.3			
Measuring force	N	0.8 –1.1							
Range of analog display	mm	± 5, ± 25, ± 50				± 25, ± 50			
Data output Maxµm		Data output 6 pin (E2)							
IP protection category:		IP 54							

Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	inch	inch	mm	mm	mm	mm	inch
2033111	.670"	1.42"	2.50"	17	36	63.5		.375"
2033113	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033115	.670"	1.42"	2.50"	17	36	63.5	8	
2033117	1.5"	2.25"	3.33"	38	57	84.6	8	
2033112	.87"	1.84"	2.87"	22	47	73		.375"
2033114	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033116	.87"	1.84"	2.87"	22	47	73	8	
2033118	1.5"	2.25"	3.33"	38	57	84.6	8	

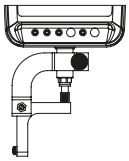


ACCESSORIES

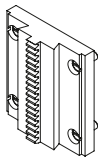
Order no.	Product name	Product type
2239138	Battery for Maxµm III Type CR 123A	
2209094	Lifting lever, left	EAS–1903
2210406	Right angle attachment - spring type (± .187" range)	EAT–1034-W1
2210407	Right angle attachment - spring type (± .060" range)	EAT–1035-W1
2210551	Back panel with rack	EBK–1005
2236895	Mounting block for back panel with rack	
2210552	Back panel with eyelets	EBK–1006
2210553	Back panel with adjustable holder	EBK–1007
2212877	Dust cover	ECV–1307-W1
2217907	Spare screws for back panels	ESW–1252
2239035	Digimatic data cable (2 m) (D, E1)	
2239036	Data cable RS232C (2 m) (D, E1)	
2121428	USB data cable (2 m) (E1)	
2200362	Foot switch for send data (Maxµm) or dynamic reset/zeroing (832), 1,5m / 5 ft cable	300–50
2240545	Maxµm III, unlock setup & unlock calibration key, (D, E1)	
2239040	Set of 3 inch and 3 metric scale overlay	



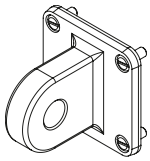
EAS–1903



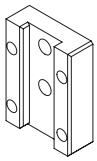
EAT–1034-W1;
EAT–1035-W1



EBK–1005



EBK–1006



EBK–1007

Millimess Maxµm III

Inductive Digital Comparator

FUNCTIONS

- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)

FEATURES

- Large, high contrast digital, analog and fan display for better readability while testing flatness and concentricity as well as for searching the reversal point in bores
- Interchangeable dials
- Inductive absolute measuring system
- Metal cast housing with robust buttons
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Data interface:** RS232C, USB
- **Energy supply:** Battery life approx. 4000 hrs.
- **Package contains:** interchangeable dials, battery, instruction manual

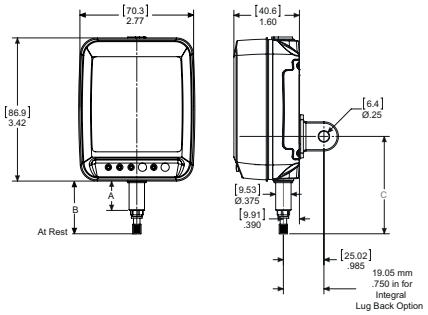




TECHNICAL DATA

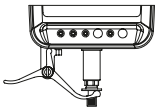
Order no.		2033121	2033123	2033125	2033127	2033122	2033124	2033126	2033128
Product type		Maxµm III							
Measuring range	mm	±1				±1.99			
Measuring range	inch	± .040"				± .100"			
Partial measuring range	mm	± 0.199							
Partial measuring range	inch	± .0199"							
Resolution	mm	0.0005, 0.001, 0.005				0.001, 0.005			
Resolution	inch	.00002", .00005", .0001", .0005"				.0001", .0005"			
Error limit	µm	± 10				± 14			
Error limit	inch	± .0004"				± .0007"			
Error limit in partial measuring range	µm	± 1							
Error limit in partial measuring range	inch	± .0001"							
Standard		Factory standard							
Overtravel	mm	0.8				1.3			
Measuring force	N	0.8 –1.1							
Range of analog display	mm	± 5, ± 25, ± 50				± 25, ± 50			
Data output Maxµm		Data output 10 pin (E2)							
IP protection category:		IP 54							

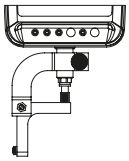
Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	inch	inch	mm	mm	mm	mm	inch
2033121	.670"	1.42"	2.50"	17	36	63.5		.375"
2033123	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033125	.670"	1.42"	2.50"	17	36	63.5	8	
2033127	1.5"	2.25"	3.33"	38	57	84.6	8	
2033122	.87"	1.84"	2.87"	22	47	73		.375"
2033124	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033126	.87"	1.84"	2.87"	22	47	73	8	
2033128	1.5"	2.25"	3.33"	38	57	84.6	8	

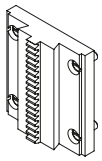


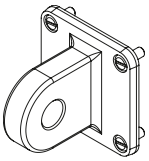
ACCESSORIES

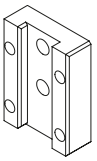
Order no.	Product name	Product type
2239138	Battery for Maxµm III Type CR 123A	
2209094	Lifting lever, left	EAS–1903
2210406	Right angle attachment - spring type (± .187" range)	EAT–1034-W1
2210407	Right angle attachment - spring type (± .060" range)	EAT–1035-W1
2210551	Back panel with rack	EBK–1005
2236895	Mounting block for back panel with rack	
2210552	Back panel with eyelets	EBK–1006
2210553	Back panel with adjustable holder	EBK–1007
2212877	Dust cover	ECV–1307-W1
2217907	Spare screws for back panels	ESW–1252
2239037	Digimatic data cable (2 m) (E2)	
2239038	Data connection cable RS232C (2 m) (E2)	
2200362	Foot switch for send data (Maxµm) or dynamic reset/zeroing (832), 1,5m / 5 ft cable	300–50
2239040	Set of 3 inch and 3 metric scale overlay	
2240547	Maxµm III, unlock setup & unlock calibration key, (E2)	
2209924	Hand switch for Hold/Reset	EAS–2867
2209925	Foot switch for Hold/Reset	EAS–2868
2121428	USB data cable (2 m) (E1)	


EAS–1903


EAT–1034-W1;
EAT–1035-W1


EBK–1005


EBK–1006


EBK–1007

Millimess Maxµm III

Display Unit

Digimatic | RS232C | IP 54 | MAX MIN | TOL | ABS system

FUNCTIONS

- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)





FEATURES

- Large, high contrast digital, analog and fan display for better readability while testing flatness and concentricity as well as for searching the reversal point in bores
- Interchangeable dials
- Inductive absolute measuring system
- Metal cast housing with robust buttons
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Data interface:** none
- **Energy supply:** Battery operation, Battery life approx. 4000 hrs.
- **Package contains:** interchangeable dials, battery, instruction manual

TECHNICAL DATA

Order no.		2033001	2033011	2033021
Product type		Maxµm III		
Measuring range	mm	Depending on probe type		
Standard		Factory standard		
Measuring force	N	-		
Data output Maxµm		without data ouput	Data output 6-pin (D, E1)	Data output 10 pin (E2)
IP protection category:		IP 54		

ACCESSORIES

Order no.	Product name	Product type
2239138	Battery for Maxµm III Type CR 123A	
2212877	Dust cover	ECV–1307-W1
2239040	Set of 3 inch and 3 metric scale overlay	
2217907	Spare screws for back panels	ESW–1252
2240545	Maxµm III, unlock setup & unlock calibration key, (D, E1)	
2239035	Digimatic data cable (2 m) (D, E1)	
2239036	Data cable RS232C (2 m) (D, E1)	
2240547	Maxµm III, unlock setup & unlock calibration key (E2)	
2239037	Digimatic data cable (2 m) (E2)	
2239038	Data connection cable RS232C (2 m) (E2)	
2121428	USB data cable (2 m) (E1)	

Millimess Maxµm III

Digital Probe

FEATURES

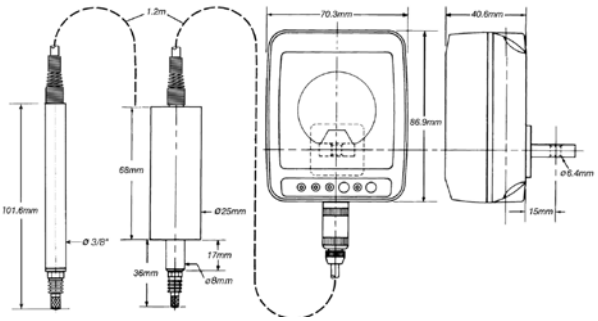
- Maxum transducers are available as replacement parts - refer to part price list for part numbers and pricing
- Maxum III remote indicating units are sold without digital transducer
- Any digital transducer may be used with a Maxum III remote indicating unit
- For alternate cable lengths, extension cables or special indicator options - call Mahr's Technical Assistance Group
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



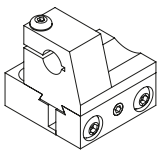
TECHNICAL DATA

Order no.		2033091 2033093 2033095 2033097 2033092 2033094 2033096 2033098
Product type		Maxµm III
Measuring range	mm	± 1,00 / ± 1,99
Measuring range	inch	± .040" / ± .100"
Partial measuring range	mm	± 0.199
Partial measuring range	inch	± .199
Resolution	mm	0.0005, 0.001, 0.005 / 0.001, 0.005
Resolution	inch	.00002", .00005", .0001", .0005" / .0001", .0005"
Error limit	µm	± 10 / ± 14
Error limit	inch	± .0004" / ± .0007"
Error limit in partial measuring range	µm	± 1
Error limit in partial measuring range	inch	± .0001"
Standard		Factory standard
Measuring force	N	0.8 –1.1

Order no.	a	a	Mounting shaft	Mounting shaft
	inch	mm	mm	inch
2033091	.670"	17		.375"
2033093	1.50"	38		.375"
2033095	.670"	17	8	
2033097	1.50"	38	8	
2033092	.670"	17		.375"
2033094	1.50"	38		.375"
2033096	.670"	17	8	
2033098	1.50"	38	8	



ACCESSORIES



EAD–1007-W1;
EAD–1007-W2

Order no.	Product type
2201628	AAD–91
2208615	EAD–1007-W1
2208616	EAD–1007-W2
2236895	

Millimess Maxµm III

Digital Probe

FEATURES

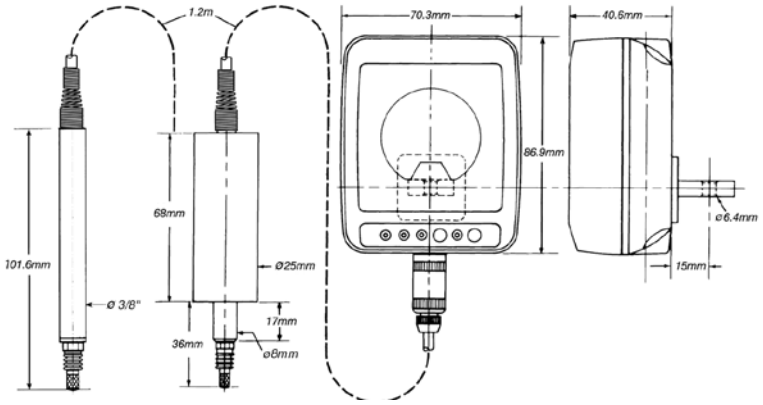
- Maxum transducers are available as replacement parts - refer to part price list for part numbers and pricing
- Maxum III remote indicating units are sold without digital transducer
- Any digital transducer may be used with a Maxum III remote indicating unit
- For alternate cable lengths, extension cables or special indicator options - call Mahr's Technical Assistance Group
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



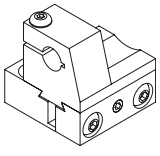
TECHNICAL DATA

Order no.		2033099
Product type		Maxµm III
Measuring range	mm	± 1,00
Measuring range	inch	± .040"
Partial measuring range	mm	± 0.199
Partial measuring range	inch	± .199
Resolution	mm	0.0005, 0.001, 0.005
Resolution	inch	.00002", .00005", .0001", .0005"
Error limit	µm	± 10
Error limit	inch	± .0004"
Error limit in partial measuring range	µm	± 1
Error limit in partial measuring range	inch	± .0001"
Standard		Factory standard
Measuring force	N	0.8 –1.1

Order no.	a	a	Mounting shaft
	inch	mm	inch
2033099	3.25"	82.5	.375"



ACCESSORIES



EAD–1007-W1;
EAD–1007-W2

Order no.	Product type
2201628	AAD–91
2208615	EAD–1007-W1
2208616	EAD–1007-W2
2236895	

Millimess 1003 / 1003 T / 1002 / 1002 T

Mechanical Dial Comparator

IP 54 | DIN 879-1

FEATURES

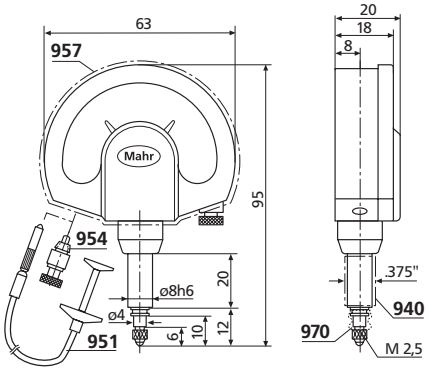
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions
- Box type protective housing
- Constant measuring force
- Measuring spindle can be retracted with either a screw in cable release or with a lifting knob
- **Package contains:** case



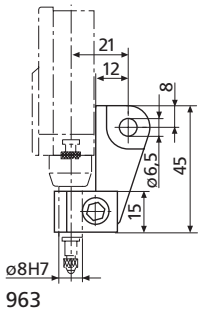
TECHNICAL DATA

Order no.		4334000	4334005	4334102	4334103	4335000	4335005
Product type		1003	1003 T	1002	1003	1002	1002 T
Measuring range	µm	± 50		± 25	± 50	± 25	
Graduation value	µm	1		0.5	1	0.5	
Type of dial face		50–0–50		25–0–25	50–0–50	25–0–25	
Error limit G_e	µm	1		0.5	1	0.5	
Error limit G_{ges}	µm	1.2		0.6	1.2	0.6	
Error limit G_t	µm	0.7		0.4	0.7	0.4	
Hysteresis f_u	µm	0.5		0.3	0.5	0.3	
Repeatability f_w	µm	0.5		0.3	0.5	0.3	
Standard		DIN 879–1		Factory standard	DIN 879–1	Factory standard	
Overtravel	mm	2.8					
Measuring force	N	1					
Scale diameter	mm	50					
Dial color		Yellow		White		Yellow	
IP protection category:		IP 54					IP 54

Order no.	Mounting shaft	Scale diameter
	mm	mm
4334000	8	50
4334005	8	50
4334102	8	50
4334103	8	50
4335000	8	50
4335005	8	50



ACCESSORIES



963

Order no.	Product name	Product type
4310103	Adapter bushing (.375" / 8 mm)	940
4372000	Cable release (250 mm)	951
4372030	Lifting knob	954
4373030	Splash guard cover	957
4334786	Rubber bellows	970
4375002	Lug back to mount on mounting shank 8h6 mm	963

Millimess 1004 / 1004 T / 1003 XL / 1003 XLT

Mechanical Dial Comparator

IP 54

FEATURES

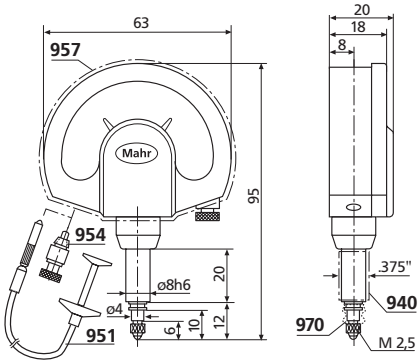
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions
- Box type protective housing
- Constant measuring force
- Measuring spindle can be retracted with either a screw in cable release or with a lifting knob
- **Package contains:** case

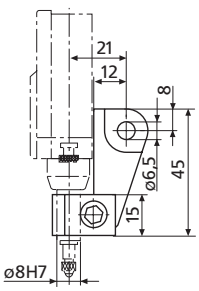


TECHNICAL DATA

Order no.		4333000	4333005	4334001	4334006
Product type		1004	1004 T	1003 XL	1003 XLT
Measuring range	µm	± 130			
Graduation value	µm	5		2	
Type of dial face		130–0–130			
Error limit G_e	µm	3.5		2	
Error limit G_{ges}	µm	4		2.4	
Error limit G_t	µm	3		1.4	
Hysteresis f_u	µm	1			
Repeatability f_w	µm	1			
Standard		Factory standard			
Overtravel	mm	2.5			
Measuring force	N	1			
Scale diameter	mm	50			
Dial color		White		Yellow	
IP protection category:		IP 54		IP 54	

Order no.	Mounting shaft	Scale diameter
	mm	mm
4333000	8	50
4333005	8	50
4334001	8	50
4334006	8	50





963

ACCESSORIES

Order no.	Product name	Product type
4310103	Adapter bushing (.375" / 8 mm)	940
4372000	Cable release (250 mm)	951
4372030	Lifting knob	954
4373030	Splash guard cover	957
4334786	Rubber bellows	970
4375002	Lug back to mount on mounting shank 8h6 mm	963

Millimess 1003

Mechanical Dial Comparator

DIN 879-1

FEATURES

- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions
- Box type protective housing
- Constant measuring force
- Measuring spindle can be retracted with either a screw in cable release or with a lifting knob
- **Package contains:** case



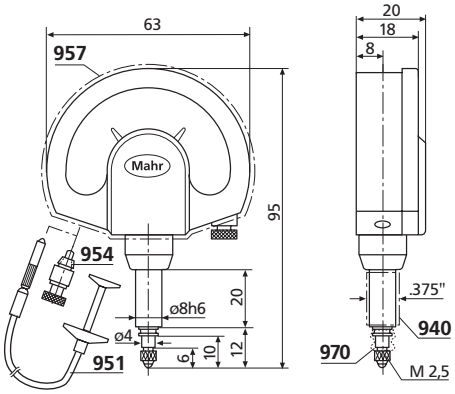
Application:

- Models with reduced / increased measuring force
- for measurements on thin walled, soft materials or delicate surfaces

TECHNICAL DATA

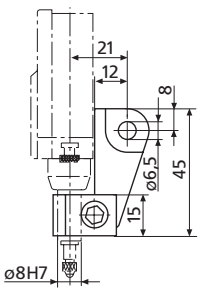
Order no.		4334075	4334070	4334050	4334076	4334071	4334010	4334011
Product type		1003						
Measuring range	µm	± 50						
Graduation value	µm	1						
Type of dial face		50–0–50						
Error limit G_e	µm	1						
Error limit G_{ges}	µm	1.2						
Error limit G_t	µm	0.7						
Hysteresis f_u	µm	0.5						
Repeatability f_w	µm	0.5						
Standard		DIN 879–1					Factory standard	
Overtravel	mm	2.8						
Measuring force	N	0.3	0.4	0.5	0.6	0.7	2	3
Scale diameter	mm	50						
Dial color		Yellow						

Order no.	Mounting shaft	Scale diameter
	mm	mm
4334075	8	50
4334070	8	50
4334050	8	50
4334076	8	50
4334071	8	50
4334010	8	50
4334011	8	50



ACCESSORIES

Order no.	Product name	Product type
4310103	Adapter bushing (.375" / 8 mm)	940
4372000	Cable release (250 mm)	951
4372030	Lifting knob	954
4373030	Splash guard cover	957
4334786	Rubber bellows	970
4375002	Lug back to mount on mounting shank 8h6 mm	963



963

Millimess 1000 A / 1000 B

Mechanical Dial Comparator

FEATURES

- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions
- Box type protective housing
- Constant measuring force
- Measuring spindle can be retracted with either a screw in cable release or with a lifting knob
- **Package contains:** cable release, case



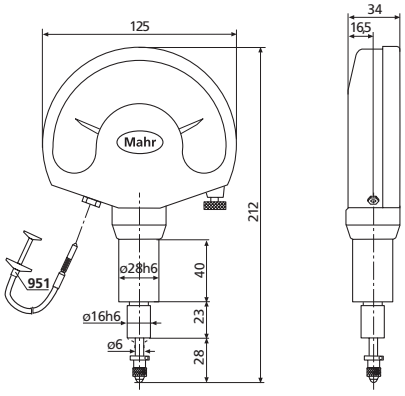
Application:

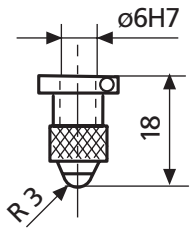
- Very clear, reliable and fatigue-free readings due to extra-large display.
- Ideal for test stations at which high volume production parts are measured or where the display can only be read from a distance.
- For use in a stable measuring table. We recommend: MarStand 824 GT measuring table
- M2.5 thread on end of measuring pin for optional standard anvils

TECHNICAL DATA

Order no.		4338100	4339100
Product type		1000 A	1000 B
Measuring range	µm	± 120	± 50
Graduation value	µm	1	
Type of dial face		120–0–120	50–0–50
Error limit G_e	µm	1.5	
Error limit G_{ges}	µm	2	
Error limit G_t	µm	0.7	
Hysteresis f_u	µm	1	
Repeatability f_w	µm	0.5	
Standard		Factory standard	
Overtravel	mm	4	
Measuring force	N	3.5	
Scale diameter	mm	110	
Dial color		Yellow	

Order no.	Mounting shaft	Scale diameter
	mm	mm
4338100	28	110
4339100	28	110





ACCESSORIES

Order no.	Product name	Product type
4362001	Contact point, Steel ball	921
4362002	Contact point, Ruby ball	921 R
4372000	Cable release (250 mm)	951
4338008	Rubber bellows for 1000 A/B	

Millimess 1010 / 1010 T / 1050 / 1050 T

Mechanical Dial Comparator

IP 54

FEATURES

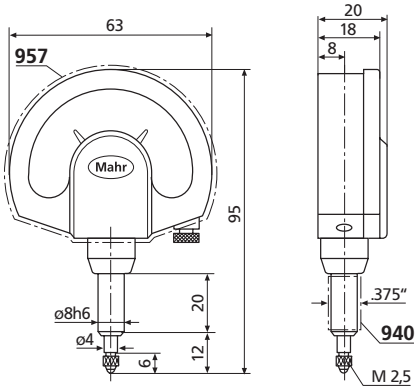
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions
- Box type protective housing
- Constant measuring force
- Measuring spindle can be retracted with either a screw in cable release or with a lifting knob
- **Package contains:** case



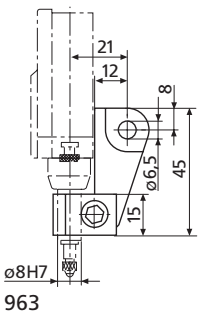
TECHNICAL DATA

Order no.		4332000	4332005	4330000	4330005
Product type		1010	1010 T	1050	1050 T
Measuring range	mm	±0.25		±1.5	
Graduation value	mm	0.01		0.05	
Type of dial face		25–0–25		15–0–15	
Error limit G_e	µm	7		35	
Error limit G_{ges}	µm	8		40	
Error limit G_t	µm	4		24	
Hysteresis f_u	µm	2		10	
Repeatability f_w	µm	2		10	
Standard		Factory standard			
Overtravel	mm	2.5		0.3	
Measuring force	N	1			
Scale diameter	mm	50			
Dial color		White			
IP protection category:		IP 54			

Order no.	Mounting shaft	Scale diameter
	mm	mm
4332000	8	50
4332005	8	50
4330000	8	50
4330005	8	50



ACCESSORIES



963

Order no.	Product name	Product type
4310103	Adapter bushing (.375" / 8 mm)	940
4372000	Cable release (250 mm)	951
4372030	Lifting knob	954
4373030	Splash guard cover	957
4375002	Lug back to mount on mounting shank 8h6 mm	963

Millimess 1002 Z/1002 ZT/1003 Z/1003 ZT/1004 Z/1004 ZT/1010 Z/1010 ZT

IP 54

Mechanical Dial Comparator

FEATURES

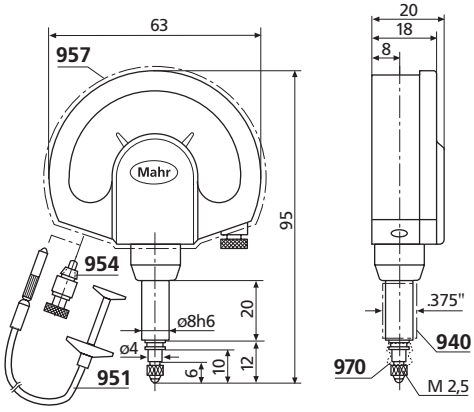
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions
- Box type protective housing
- Constant measuring force
- Measuring spindle can be retracted with either a screw in cable release or with a lifting knob
- **Package contains:** case, adapter bush 940, 8 mm to 3/8"



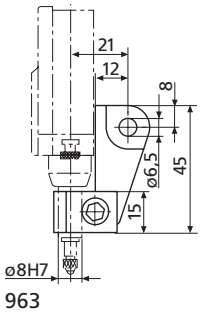
TECHNICAL DATA

Order no.		4335900	4335905	4334900	4334905	4333900	4333905	4332900	4332905
Product type		1002 Z	1002 ZT	1003 Z	1003 ZT	1004 Z	1004 ZT	1010 Z	1010 ZT
Measuring range	inch	± .0010"		± .0020"		± .0050"		± .0100"	
Graduation value	inch	.00002"		.00005"		.0001"		.0005"	
Type of dial face		.001"–0–.001"		.002"–0–.002"		.005"–0–.005"		.01"–0–.01"	
Error limit G_e	inch	.00002"		.00005"		.0001"		.00035"	
Error limit G_{ges}	inch	.00003"		.00006"		.00012"		.0004"	
Error limit G_t	inch	.000014"		.000035"		.00005"		.00025"	
Hysteresis f_u	inch	.00001"		.000025"		.00003"		.0001"	
Repeatability f_w	inch	.00001"		.000025"		.00003"		.0001"	
Standard		Factory standard							
Overtravel	mm							2.5	
Measuring force	N	1							
Scale diameter	mm	50							
Dial color		White							
IP protection category:			IP 54		IP 54		IP 54		IP 54

Order no.	Mounting shaft	Scale diameter
	mm	mm
4335900	8	50
4335905	8	50
4334900	8	50
4334905	8	50
4333900	8	50
4333905	8	50
4332900	8	50
4332905	8	50



ACCESSORIES



963

Order no.	Product name	Product type
4310103	Adapter bushing (.375" / 8 mm)	940
4372000	Cable release (250 mm)	951
4372030	Lifting knob	954
4373030	Splash guard cover	957
4334786	Rubber bellows	970
4375002	Lug back to mount on mounting shank 8h6 mm	963

Millimess 1110 N / 1110 NT

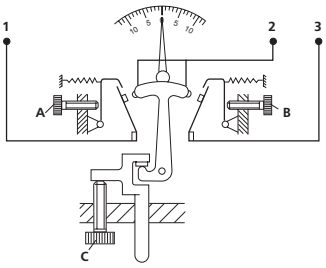
Mechanical Dial Comparator with Limit Contacts

IP 54

FEATURES

- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions
- Box type protective housing
- Constant measuring force
- Adjustable limit contacts made from high grade precious metal
- Limit contacts are particularly well protected against vibration and mechanical overload
- **Package contains:** case, instruction manual, adjusting knob 953, connection cable 1,2 m





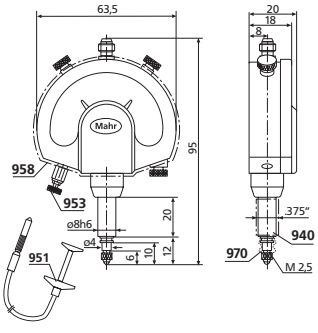
Application:

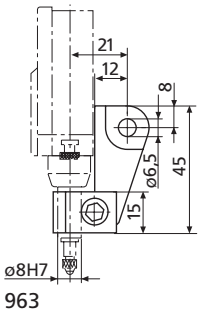
- Can be applied, for example, as tolerance control or as a precision contacter in automatic control systems

TECHNICAL DATA

Order no.		4343100	4343105
Product type		1110 N	1110 NT
Measuring range	mm	±0.25	
Graduation value	mm	0.01	
Type of dial face		25–0–25	
Error limit G_e	µm	6.5	
Error limit G_{ges}	µm	12	
Error limit G_t	µm	5	
Hysteresis f_u	µm	3.5	
Repeatability f_w	µm	3.5	
Standard		Factory standard	
Overtravel	mm	2.5	
Measuring force	N	2	
Scale diameter	mm	50	
Dial color		White	
IP protection category:			IP 54
Maximum switching capacity	mW	240	
Maximum switching voltage	V	24	
Maximum switching current	mA	100	
Switching accuracy with non-inductive load of 10 mA/24 V	µm	1.5	

Order no.	Mounting shaft	Scale diameter
	mm	mm
4343100	8	50
4343105	8	50





ACCESSORIES

Order no.	Product name	Product type
4372000	Cable release (250 mm)	951
4372020	Setting knob for setting the limit contacts without an additional setting standard	953
4372030	Lifting knob	954
4373031	Splash guard cover	958
4310103	Adapter bushing (.375" / 8 mm)	940
4334786	Rubber bellows	970
4375002	Lug back to mount on mounting shank 8h6 mm	963
4345694	Connection cable (5 m), axial	
4345695	Connection cable (1.2 m), axial	

Millimess 1150 N / 1150 NT

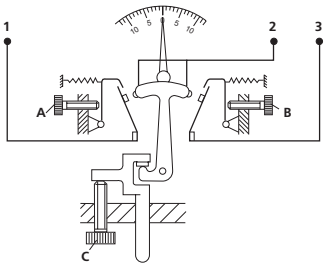
Mechanical Dial Comparator with Limit Contacts

IP 54

FEATURES

- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions
- Box type protective housing
- Constant measuring force
- Adjustable limit contacts made from high grade precious metal
- Limit contacts are particularly well protected against vibration and mechanical overload
- **Package contains:** case, instruction manual, adjusting knob 953, connection cable 1.2 m





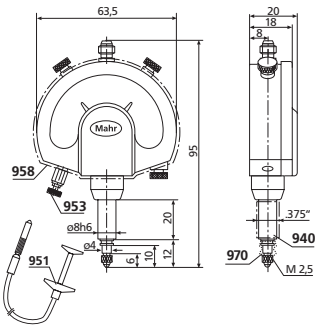
Application:

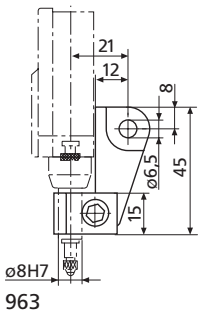
- Can be applied, for example, as tolerance control or as a precision contacter in automatic control systems

TECHNICAL DATA

Order no.		4342100	4342105
Product type		1150 N	1150 NT
Measuring range	mm	±1.5	
Graduation value	mm	0.05	
Type of dial face		15–0–15	
Error limit G_e	µm	35	
Error limit G_{ges}	µm	60	
Error limit G_t	µm	25	
Hysteresis f_u	µm	17	
Repeatability f_w	µm	17	
Standard		Factory standard	
Overtravel	mm	0.3	
Measuring force	N	1.5	
Scale diameter	mm	50	
Dial color		White	
IP protection category:			IP 54
Maximum switching capacity	mW	240	
Maximum switching voltage	V	24	
Maximum switching current	mA	100	
Switching accuracy with non-inductive load of 10 mA/24 V	µm	7	

Order no.	Mounting shaft	Scale diameter
	mm	mm
4342100	8	50
4342105	8	50



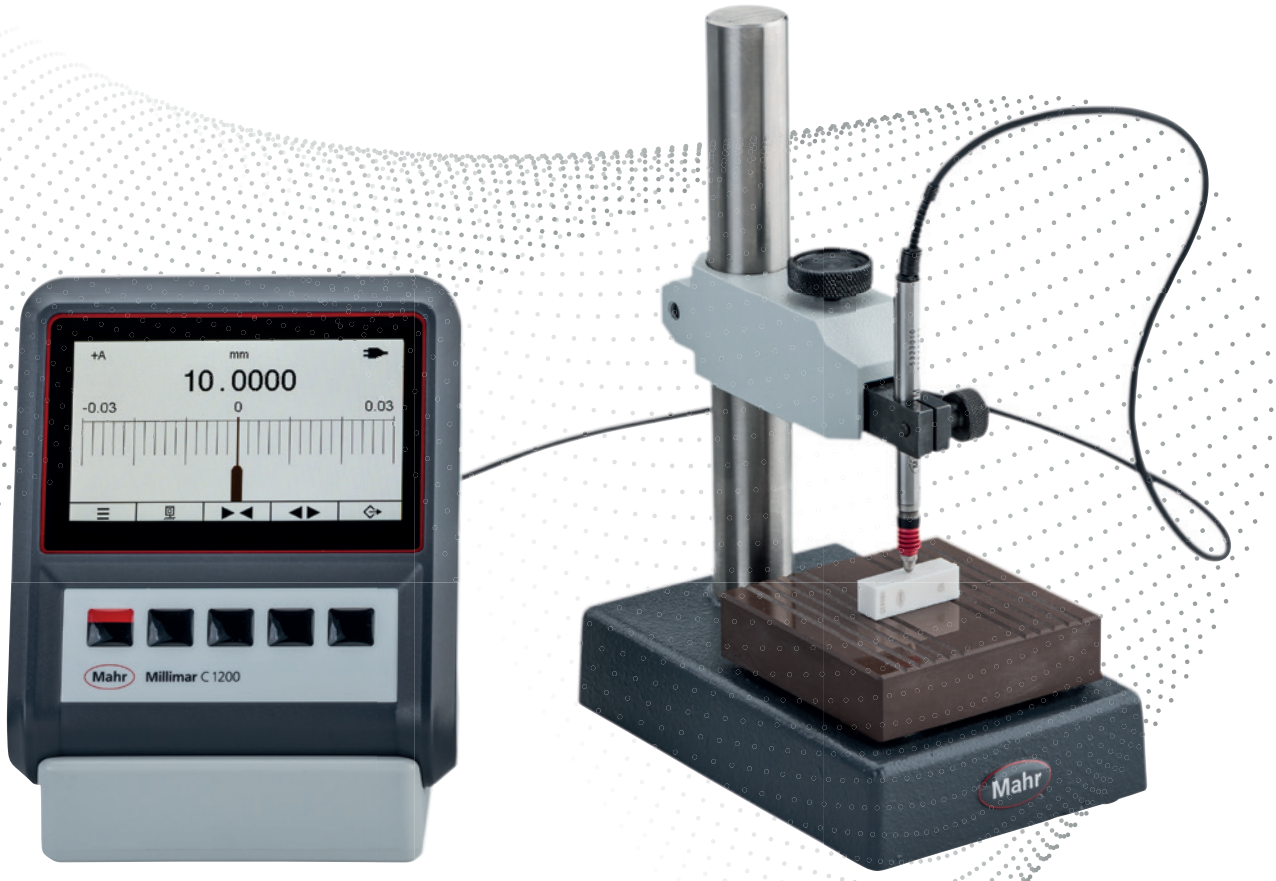


ACCESSORIES

Order no.	Product name	Product type
4372000	Cable release (250 mm)	951
4372020	Setting knob for setting the limit contacts without an additional setting standard	953
4372030	Lifting knob	954
4373031	Splash guard cover	958
4310103	Adapter bushing (.375" / 8 mm)	940
4334786	Rubber bellows	970
4375002	Lug back to mount on mounting shank 8h6 mm	963
4345694	Connection cable (5 m), axial	
4345695	Connection cable (1.2 m), axial	

Millimar | Electrical and Pneumatic Length Measuring Instruments

The requirements for electrical length measuring instruments are just as varied as their applications. Excellent reliability, precision and simple operation are called for. Millimar measuring instruments fulfill all these requirements. These products are rugged, versatile and attractively priced.



Overview Millimar Electronic Length Measuring Instruments 232

Millimar C 1200 / C 1208 / C 1216 / C 1240 240
Compact Length Measuring Unit

Millimar 1901 TA 248
Amplfier with Analog Output

Millimar S 1840 M / S 1840 F 249
Compact Column Amplifier

Millimar C 1700 PC 250
Gaging Computer

Millimar Cockpit 12 251
Measurement Software

Millimar N 1700 Modules 256
For Evaluation of Measurement Probes

Millimar P2001 / P2004 / P2010 / P2104 258
Inductive Probes

Millimar P1300 268
Inductive Probe

Millimar 1301 / 1303 / 1304 K / 1318 / 1340 272
Inductive Probes

Millimar EHE-2048 / EHE-2050 / EHE-2052 / EHE-2056 276
Inductive Probes

Millimar EGH-2011 280
Inductive Probe

Millimar EHE-2049 / EHE-2053 282
Inductive Probe

Overview Millimar Standard Elements 284

Overview Millimar Air Gaging Metrology 288

Millimar C1208 PE / C1245 PE / S1840 PE 298
Compact Length Measuring Instruments

Millimar µDimensionair II® 302
Mobile Pneumatic Length Measuring Instrument

Millimar DP50 / DP20 304
Jet Plug Gage

Millimar DR50 / DR20 308
2-Jet Air Ring Gage

Millimar AAT–19 311

Millimar | Evaluation units



C 1200



N1700 Modules

Cockpit Software

Millimar | Inductive probes



P1300 M

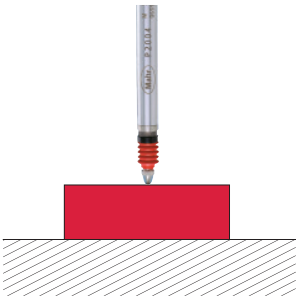


P2004 M

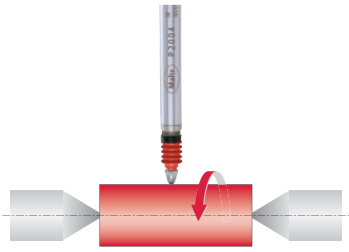
Single measurement with one probe

- Indicating instrument instantly displays the measured value.
- Used for all kinds of direct measurements on cylindrical and flat workpieces
- Applied in the same way as with digital / dial indicators, digital / dial comparators or test indicators

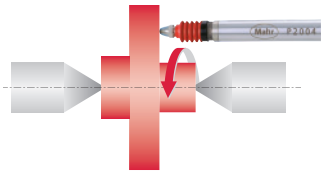
Thickness measurement



Radial run-out



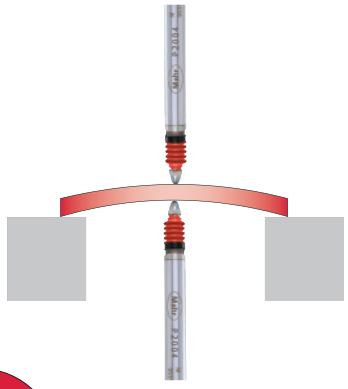
Axial run-out

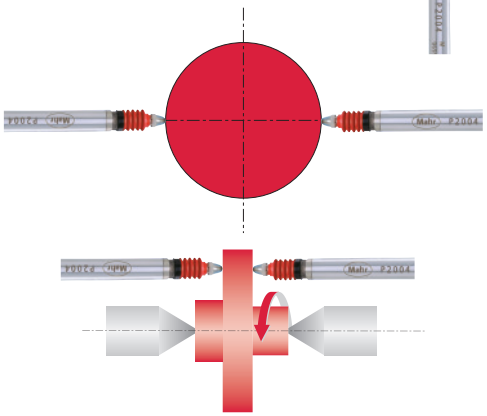


Sum measurement with 2 probes

Indicates the sum of deviation (total composite error) acquired from 2 probes irrespective of the form, support and concentricity deviation.

Thickness measurement

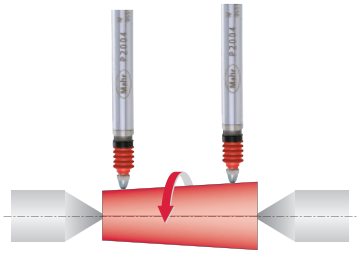




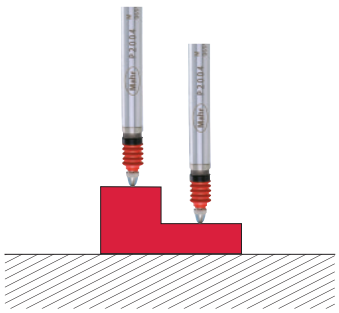
Difference measurement with 2 probes

Shows the difference between the measured values acquired by 2 probes irrespective of the absolute dimension of the test piece. This is particularly suitable for dimensional comparison of two test points.

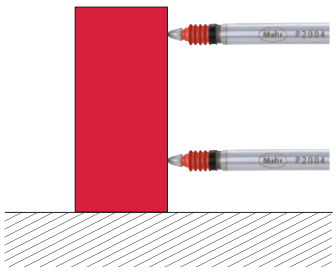
Form measurement of wedges, cones



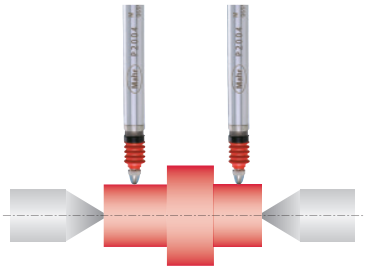
Height difference between 2 steps



Perpendicularity measurement



Concentricity measurement on 2 shaft diameters



Millimar | Electrical Length Measuring Instruments
Inductive Probe Program

Millimar – P2000 Series



P2001 P2004 P2010 A P2104 A

- Available in all prominent compatibilities (Available in various type compatibilities)
- Wide product spectrum measuring ranges from 1 to 10 mm plus models with a compressed air (pneumatic) lifter or vacuum retraction
- With rotary stroke bearings (except P2001)
- High linearity over the total measuring range
- Excellent electromagnetic shielding (EMC)
- All probes (except P2001) can be easily converted from axial to radial by mounting a slip-on cap, included in the scope of supply

Page 258-267

Millimar – P1300 Series (Mahr half-bridge)

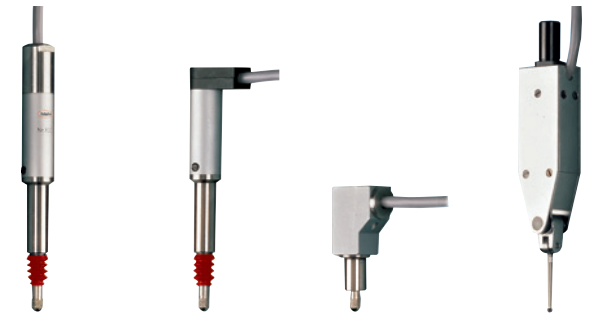


P1300 A P1300 B

- Available in Mahr and Tesa compatibilities
- Well-proven and established Mahr half-bridge technology
- Easy to service: cable and probe can be seperated via the plug-in connector
- Simple to change to pneumatic lifting
- Measuring spindle runs in rotary stroke bearings

Page 268-271

Millimar – 1301 / 1303 / 1304 K / 1318 (Mahr-LVDT)



1301 1303 1304 K 1318

- Extremely robust in all operating conditions; measuring system is offset to guide and mounting shank
- Excellent clamping characteristics
- Measuring spindle runs in rotary stroke bearings (except 1318)
- Measuring spindle can be lifted with a cable release (1301/1303)
- Gaging pressure is less than 4g / .14 oz in either direction, with a change of less than 0.1 g per 25 µm / .0001" of contact travel and linearity of 0.1% over the full range ±0.250 mm ± .010", also clutch-mounted contact swivels through 280° arc for easy positioning (EHE-Series)

Page 272-274

Millimar – 1340 Mahr High Precision Probe



1340

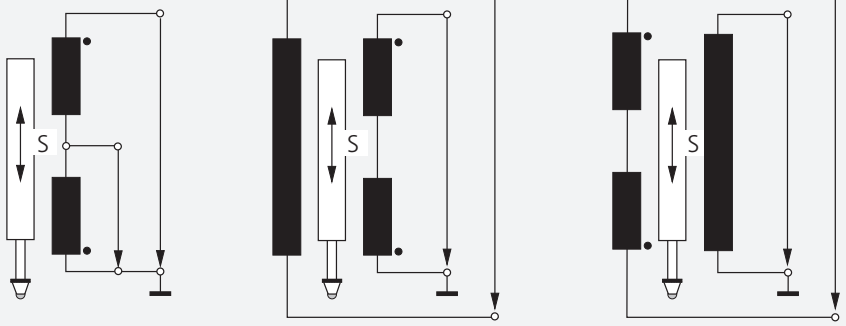
- To obtain the best results, use in conjunction with Millitron C1240M
- Unprecedented measuring accuracy and minimum linearity error < 0.01 %, i.e. 0.4 µm over the total measuring range

Page 275

General Technical Data of Inductive Probes

The measuring principle of inductive probes is based on the change of position of the magnet's conductive core moving within a coil system. Generally, this is distinguished between a half-bridge and LVDT's.

The Mahr P2000 series of probes applies a high linear, patented VLDT transducer which is similar to an LVDT transducer. This also operates according to a differential transformer principle.



Half-bridge HB
(Differential Choke Coil)

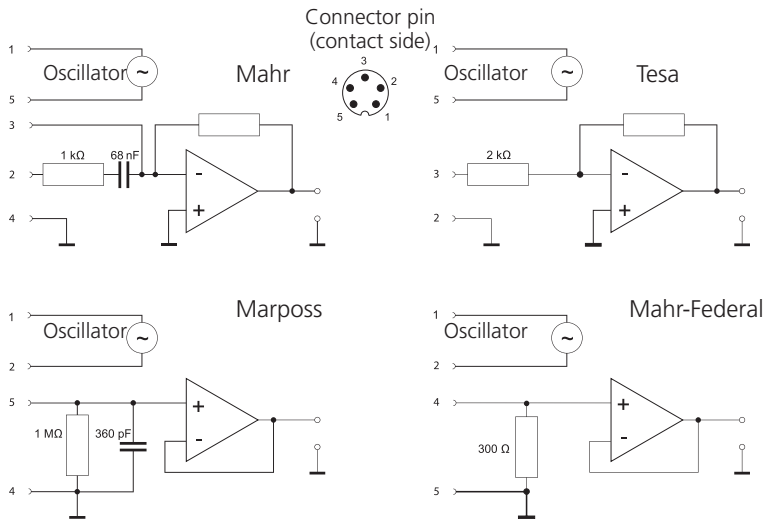
LVDT
(Linear Variable
Differential Transducer)

VLDT
(Very Linear
Differential Transducer)

Electrical specification of various compatibilities

		Type	Mahr	Tesa	Marposs	Mahr-Federal
Carrier frequency	KHz		19.4	13	7.5	5
Sensitivity	mV / V / mm	P2001 P2004 P2104	192	73.75	115	78.74
		P1300	192	73.75	—	—
		1301 1303 1304 K 1318	192	—	—	—
		P2010	19.2	29.5	11.5	7.874
Amplitude	V_{eff}		5	3	3.5	2

Schematic drawings of Mahr input amplifiers according to the various compatibilities



Millimar 830M

Compact Amplifier

FEATURES

- Battery operates more than 8 hours under full load
- Choice of power modules for 120 or 240 VAC operation
- ±2 Volt analog output
- Conforms to CE Standards
- Dual input - for single or differential modes
- Normal/Reverse transducer setting
- Selectable ranges in either inch or metric units
- Calibration adjustments for each input
- Convenient, front-mounted controls
- Tilt base provides stable support and easy adjustment for best viewing angle
- **Package contains:** instruction manual, power source



TECHNICAL DATA

Order no.		2121702	2121706	2121707
Product type		830M		
Range of analog display	µm	± 100, ± 20, ± 10		
Range of analog display	inch	± .004", ± .001", ± .0002"		
Graduation value	µm	5, 1, 0.5		
Graduation value	inch	200 µ", 50 µ", 10 µ"		
Probe inputs		2		
Compatibility		Mahr		
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B		
Response time analog display	s	0.5		
Response time analog output	s	0.015		
Data interface		none		
Analog output		± 2 Vdc	± 2 VDC	± 2 Vdc
Energy supply		110 V / 60 Hz	230 V / 50 Hz, Power source	240 V /50 Hz (UK)
Power supply connection		120 V	220 V (EU)	240 V (UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2121702	148	5.8"	165	6.5"	190	7.5"
2121706	148	5.8"	165	6.5"	190	7.5"
2121707	148	5.8"	165	6.5"	190	7.5"

ACCESSORIES

Order no.	Product name	Product type
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY-1015
2224530	Analog output connector	PRT-2380
2214166	Battery eliminator for 110 V models	EKT-1237-W1
2211068	Battery charger 120 V	EBY-1016
2214167	Battery eliminator for 220 V models	EKT-1237-W2
2211071	Battery charger (EU) 220 V	EBY-1019
2211072	Battery charger (UK) 240 V	EBY-1020

Millimar 830 F

Compact Amplifier

FEATURES

- Battery operates more than 8 hours under full load
- Choice of power modules for 120 or 240 VAC operation
- ±2 Volt analog output
- Conforms to CE Standards
- Dual input - for single or differential modes
- Normal/Reverse transducer setting
- Selectable ranges in either inch or metric units
- Calibration adjustments for each input
- Convenient, front-mounted controls
- Tilt base provides stable support and easy adjustment for best viewing angle
- **Package contains:** instruction manual, power source



TECHNICAL DATA

Order no.		2121700	2121704	2121705	2121703	2121710	2121711	2121701	2121708	2121709
Product type		830F								
Range of analog display	µm	± 100, ± 20, ± 10			± 200, ± 50, ± 10					
Range of analog display	inch	± .004", ± .001", ± .0002"			± .004", ± .001", ± .0001"			± .01", ± .002", ± .0004"		
Range of analog display	arcsec							± 1000 arcsec, ± 200 arcsec, ± 20 arcsec		
Graduation value	µm	5, 1, 0.5			10, 2.5, 0.5					
Graduation value	inch	200 µ", 50 µ", 10 µ"			200 µ", 50 µ", 5 µ"			500 µ", 100 µ", 20 µ"		
Graduation value	arcsec							50, 10, 1		
Probe inputs		2								
Compatibility		Federal								
Response time analog display	s	0.5								
Response time analog output	s	0.015								
Data interface		none								
Analog output		± 2 VDC								
Energy supply		110 V / 60 Hz	230 V / 50 Hz, Power source	240 V /50 Hz (UK)	110 V / 60 Hz	230 V / 50 Hz, Power source	240 V /50 Hz (UK)	110 V / 60 Hz	230 V / 50 Hz, Power source	240 V /50 Hz (UK)
Power supply connection		120 V	220 V (EU)	240 V (UK)	120 V	220 V (EU)	240 V (UK)	120 V	220 V (EU)	240 V (UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2121700	148	5.8"	165	6.5"	190	7.5"
2121704	148	5.8"	165	6.5"	190	7.5"
2121705	148	5.8"	165	6.5"	190	7.5"
2121703	148	5.8"	165	6.5"	190	7.5"
2121710	148	5.8"	165	6.5"	190	7.5"
2121711	148	5.8"	165	6.5"	190	7.5"
2121701	148	5.8"	165	6.5"	190	7.5"
2121708	148	5.8"	165	6.5"	190	7.5"
2121709	148	5.8"	165	6.5"	190	7.5"

ACCESSORIES

Order no.	Product name	Product type
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY-1015
2224530	Analog output connector	PRT-2380
2214166	Battery eliminator for 110 V models	EKT-1237-W1
2211068	Battery charger 120 V	EBY-1016
2214167	Battery eliminator for 220 V models	EKT-1237-W2
2211071	Battery charger (EU) 220 V	EBY-1019
2211072	Battery charger (UK) 240 V	EBY-1020

Millimar C 1200

Compact Amplifier

FUNCTIONS

- ON/OFF
- mm/inch
- Reversal of counting direction
- Selectable measuring range
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- PRESET (for entering a numerical value)
- Selectable resolution
- Factor (adjustable)
- DATA (data transmission)
- Menu interlock



FEATURES

- High-resolution, high-contrast color display
- Fully adjustable display for ideal viewing angle
- Extremely easy to operate
- Suitable for power source or battery operation
- Suitable for mobile use with battery operation
- Compact housing
- Suitable for wall mounting
- **Package contains:** power source, instruction manual
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)

TECHNICAL DATA

Order no.		5312010
Product type		C 1200
Range of digital display	µm	± 5000
Range of digital display	inch	± .19"
Range of analog display	µm	± 5000, ± 2000, ± 1000, ± 300, ± 100, ± 30, ± 10, ± 3
Range of analog display	inch	± .19", ± .07", ± .03", ± .01", ± .003", ± .001", ± .0003", ± .0001"
Resolution	µm	0.1
Resolution	inch	.000005"
Graduation value	µm	500, 200, 100, 20, 10, 2, 1, 0.2
Graduation value	inch	.019", .007", .002", .001", .0002", .0001", .00002", .00001"
Display		TFT color display, 110 mm (4.3"), 480 x 272 pixels
Probe inputs		1
Compatibility		Mahr
Measuring combination		+A, -A
Features		1
Test steps		1
Dynamic functions		Max, Min, Max-Min
Configuration		Keyboard
Data transmission rate	Hz	30
Error limit, digital display		0.3 % (min. 0.2 µm)
Error limit, analog display		0.25 % of the full scale / 0.3% of the indicated value
Data interface		Opto RS232C, USB, Digimatic, wireless
Energy supply		Power source, 230 V/115 V; 50/60 Hz, battery operation
IP protection category		IP 42

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5312010	150	5.9"	170	6.69"	130	5.12"

ACCESSORIES

Order no.	Product name	Product type
4346023	2000 USB Data connection cable USB (2 m)	2000 USB
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data connection cable RS232C (2 m)	2000 r
4102232	2000 e Transmitter for e-Stick	2000 e
4102230	e-Stick Receiver	e-Stick



2000 e



e-Stick

Millimar 832 M

Compact Amplifier

RS232C

FEATURES

- Dynamics – simultaneously computes the minimum, maximum, TIR, nominal and actual gagehead signal for dynamic measurement capability
- Multi-range – three selectable ranges in inch or metric units
- Message center – display provides a simple "menu driven" setup procedure in English, French or Spanish
- RS-232 output – for communicating with data collection devices
- Two gagehead input – independent reading for providing the capability of summing diameter reading, matching clearances, runout and parallelism
- Angular units – selectable arc seconds or millirads for angular measurement applications (see Electronic Levels)
- User selectable password for full lockout capability or individual key lockout in both setup and gaging modes
- **Package contains:** instruction manual, power source



TECHNICAL DATA

Order no.		2004000	2004001	2004002	2004003	2004004
Product type		832 M				
Range of digital display	µm	± 2000, ± 200, ± 20				
Range of digital display	inch	± .100", ± .010", ± .001"				
Range of digital display	arcsec	± 1000 arcsec, ± 200 arcsec				
Range of digital display	rad	± 5 mrad, ± 1 mrad				
Resolution	µm	1, 0.1, 0.02				
Resolution	inch	.0001", .00001", .000001"				
Resolution	arcsec	1 arcsec, 0.1 arcsec				
Resolution	rad	0.005 mrad, 0.0005 mrad				
Graduation value	µm	0.1, 0.01, 0.001				
Graduation value	inch	.005", .0005", .00005"				
Graduation value	arcsec	50, 10				
Tolerance display		5 LEDs				
Probe inputs		2				
Compatibility		Mahr				
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B				
Features		2				
Dynamic functions		Max, Min, TIR, Nominal				
Classification		5				
Response time control outputs	s	0.042				
Response time analog output	s	0.042				
Data interface:		RS-232C				
Control inputs		3, Hold/Resume, Reset/Zero, Send Data				
Control outputs		5 opto-coupled outputs				
Analog output		± 5 V dc				
Energy supply:		110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	Rechargeable battery, 10 h at full load or 120 VAC / 240 VAC 50-60 Hz via AC adapter		
Power supply connection		120 VAC	220 / 240 VAC (EU/UK)	120 VAC	220 VAC (EU)	240 VAC

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004000	254	10"	143	5.63"	168	6.63"
2004001	254	10"	143	5.63"	168	6.63"
2004002	254	10"	143	5.63"	168	6.63"
2004003	254	10"	143	5.63"	168	6.63"
2004004	254	10"	143	5.63"	168	6.63"

ACCESSORIES

Order no.	Product name	Product type
2212852	Oil splashguard storage cover non-transparent	ECV-1276
2212858	Oil splashguard cover transparent	ECV-1285
2211464	Foot switch for hold/measure 3 m / 10 ft cable	ECB-1857
2211465	Footswitch for Dynamic Reset (15 pin connector)	ECB-1858
2211466	Foot switch for data transmit, 3 m / 10 ft	ECB-1859
2200362	Foot switch for send data (Maxμm) or dynamic reset/zeroing (832), 1.5 m / 5 ft cable	300-50
2211462	Push button for dynamic reset/zeroing, 1.5 m / 5 ft cable	ECB-1855
2211467	Push button for data transmit, 1.5 m / 5 ft cable	ECB-1860
2211481	Push button for measurement hold/measure/data transmit, 3 m / 10 ft	ECB-1868
2214163	Control box with 5 relays (120 V)	EKT-1236-W3
2214164	Control box with 5 relays (220 V)	EKT-1236-W4
2214165	Control box with 5 relays (240 V)	EKT-1236-W5
2212333	Connector, 5 pin (probe to amplifier)	ECN-1690
2212335	5 pin Amphenol connector for Millimar 832	ECN-1692
2212336	Phone plug male connector for Reset / Data	ECN-1693
2212339	9 pin RS-232 connector - male (digital output)	ECN-1695-W1
2212340	15 pin connector - male (digital I/O)	ECN-1695-W2
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY-1015
2010000	Plug in power supply (832 units with 3 pin connector), 120 VAC	
2120315	Battery charger for 832 Amp with 3 pin connector, 120 VAC	EBY-1028
2010001	Power supply module (832 Amp with 3 pin connector), 220/240 VAC	
2120316	Battery charger for 832 Amp with 3 pin connector, 220 VAC European connector	EBY-1029
2120317	Battery charger for 832 Amp with 3 pin connector, 240 VAC UK connector	EBY-1030

Millimar 832 F

Compact Amplifier

RS232C

FEATURES

- Dynamics – simultaneously computes the minimum, maximum, TIR, nominal and actual gagehead signal for dynamic measurement capability
- Multi-range – three selectable ranges in inch or metric units
- Message center – display provides a simple "menu driven" setup procedure in English, French or Spanish
- RS-232 output – for communicating with data collection devices
- Two gagehead input – independent reading for providing the capability of summing diameter reading, matching clearances, runout and parallelism
- Angular units – selectable arcseconds or millirads for angular measurement applications
  (see Electronic Levels)
- User selectable password for full lockout capability or individual key lockout in both setup and gaging modes
- **Package contains:** instruction manual, power source



TECHNICAL DATA

Order no.		2004005	2004006	2004007	2004008	2004009
Product type		832 F				
Range of digital display	µm	± 2000, ± 200, ± 20				
Range of digital display	inch	± .100", ± .010", ± .001"				
Range of digital display	arcsec	± 1000 arcsec, ± 200 arcsec				
Range of digital display	rad	± 5 mrad, ± 1 mrad				
Resolution	µm	1, 0.1, 0.02				
Resolution	inch	.0001", .00001", .000001"				
Resolution	arcsec	1 arcsec, 0.1 arcsec				
Resolution	rad	0.005 mrad, 0.0005 mrad				
Graduation value	µm	0.1, 0.01, 0.001				
Graduation value	inch	.005", .0005", .00005"				
Graduation value	arcsec	50, 10				
Tolerance display		5 LEDs				
Probe inputs		2				
Compatibility		Federal				
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B				
Features		2				
Dynamic functions		Max, Min, TIR, Nominal				
Classification		5				
Response time control outputs	s	0.042				
Response time analog output	s	0.042				
Data interface:		RS-232C				
Control inputs		3, Hold/Resume, Reset/Zero, Send Data				
Control outputs		5 opto-coupled outputs				
Analog output		± 5 V dc				
Energy supply:		110 V / 60 Hz, Power source	Power source, 230 V / 50 Hz	Rechargeable battery, 10 h at full load or 120 VAC / 240 VAC 50-60 Hz via AC adapter		
Power supply connection		120 VAC	220 / 240 VAC (EU/UK)	120 VAC	220 VAC (EU)	220 / 240 VAC (EU/UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004005	254	10"	143	5.63"	168	6.63"
2004006	254	10"	143	5.63"	168	6.63"
2004007	254	10"	143	5.63"	168	6.63"
2004008	254	10"	143	5.63"	168	6.63"
2004009	254	10"	143	5.63"	168	6.63"

ACCESSORIES

Order no.	Product name	Product type
2212852	Oil splashguard storage cover non-transparent	ECV-1276
2212858	Oil splashguard cover transparent	ECV-1285
2211464	Foot switch for hold/measure 3 m / 10 ft cable	ECB-1857
2211465	Footswitch for Dynamic Reset (15 pin connector)	ECB-1858
2211466	Foot switch for data transmit, 3 m / 10 ft	ECB-1859
2200362	Foot switch for send data (Maxμm) or dynamic reset/zeroing (832), 1.5m / 5 ft cable	300-50
2211462	Push button for dynamic reset/zeroing, 1.5 m / 5 ft cable	ECB-1855
2211467	Push button for data transmit, 1.5 m / 5 ft cable	ECB-1860
2211481	Push button for measurement hold/measure/data transmit, 3 m / 10 ft	ECB-1868
2214163	Control box with 5 relays (120 V)	EKT-1236-W3
2214164	Control box with 5 relays (220 V)	EKT-1236-W4
2214165	Control box with 5 relays (240 V)	EKT-1236-W5
2212333	Connector, 5 pin (probe to amplifier)	ECN-1690
2212335	5 pin Amphenol connector for Millimar 832	ECN-1692
2212336	Phone plug male connector for Reset / Data	ECN-1693
2212339	9 pin RS232 connector - male (digital output)	ECN-1695-W1
2212340	15 pin connector - male (digital I/O)	ECN-1695-W2
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY-1015
2010000	Plug in power supply (832 units with 3 pin connector), 120 VAC	
2120315	Battery charger for 832 Amp with 3 pin connector, 120 VAC	EBY-1028
2010001	Power supply module (832 Amp with 3 pin connector), 220/240 VAC	
2120316	Battery charger for 832 Amp with 3 pin connector, 220 VAC European connector	EBY-1029
2120317	Battery charger for 832 Amp with 3 pin connector, 240 VAC UK connector	EBY-1030

Millimar C 1208 M / C 1216 M / C 1216 F / C1240 M

Compact Amplifier

FEATURES

- Favorites: the SELECT button allows you to access frequently used settings directly
- Static measurements - ± A, ±B and all combinations
- Dynamic measurements - Max, Min, Max-Min, Max+Min, Average
- Auto-detect mode - up to 2 gages can be connected (inductive probe)
- Programmable via built-in key-board or RS-232 interface using MS Windows configuration software
- Backlit LCD for analog display and two line digital display
- 5 three color status lamps for warning and tolerance limits
- Up to 2 features can be displayed simultaneously
- Extra 0.01 µm resolution for a measuring range of ±200 µm (C 1216, C 1240 only)
- 2 inputs for inductive probes (compatible with either Mahr/ Mahr Federal probes)
- RS-232 interface
- 3 digital inputs for measuring start, master measurement, send measurement value, etc.
- 3 digital outputs for good, reject, rework, measuring time, etc.
- Analog output (C 1216, C 1240 only)
- Programmable analog output Voltage (max. ± 5 V) (C 1216, C 1240 only)
- Also compatible with Millimar 1340 high-precision probe (C 1240 only)
- **Package contains:** instruction manual, power source
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



TECHNICAL DATA

Order no.		5312080	5312160	5312162	5312163
Product type		C 1208 M	C 1216 M	C 1216 F	C 1240 M
Scale reading		Pointer, 61 graduations			
Digital display		7 digit LCD, 7 segments			
Range of digital display	µm	± 2000, ± 10000	± 200, ± 2000, ± 10000		
Range of analog display	µm	± 3, ± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related			
Range of analog display	inch	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .3", ± .1", tolerance related			
Resolution	µm	0.1	0.01, 0.1		
Resolution	inch	.000005"	.000005", .000001"		
Display		Background lit LCD,115 mm x 70 mm			
Tolerance display		5 LEDs, 3 colors			
Measuring range, inductive probe	µm	± 2000	± 200, ± 2000		
Probe inputs		2			
Compatibility		Mahr		Federal	Mahr, Mahr 1340
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B			
Features		2			
Programs		2			
Test steps		1			
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Mean			
Configuration		PC, keyboard			
Zero setter		Zero setting at any point			
Response time digital display	s	0.1			
Response time analog display	s	0.1			
Response time control outputs	s	0.02			
Response time analog output	s	0.02			
Response time measuring value memory	s	0.01			
Data transmission rate	Hz	40			
Error limit, digital display		0.3 % (min. 0.2 µm)			
Error limit, analog display		2.5% (10 x analog display)			
Error limit, analog output		0.5 %			
Temperature coefficient	µm/°C	0.005			
Data interface:		RS-232C, wireless			
Control inputs		3 optocoupler inputs, 24 V, 10 mA			
Control outputs		3 optocoupler outputs, 24 V, 100 mA			
Analog output		max. ± 5 V, sensitivity adjustable			
Energy supply:		Power source, 230 V/115 V; 50/60 Hz			
IP protection category:		IP 42			

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5312080	165	6.5"	205	8.07"	160	6.29"
5312160	165	6.5"	205	8.07"	160	6.29"
5312162	165	6.5"	205	8.07"	160	6.29"
5312163	165	6.5"	205	8.07"	160	6.29"

ACCESSORIES

Order no.	Product name	Product type
5318430	Control unit with 3 push buttons	
5330955	Foot switch for input 1	
5330956	Foot switch for input 2	
5330957	Foot switch for input 3	
7032401	25 pin connector, non-wired for I/O port	
3025712	Keypad dust cover	
7024634	Data connection cable RS-232C (3 m)	
4102331	Millimar - USB Adapter cable RS-232-USB (0.2 m)	Millimar - USB
4102233	RS-232 e Transmitter for e-Stick	RS-232 e
4102230	e-Stick Receiver	e-Stick



RS232 e;RS232 f;817 f



e-Stick

Millimar 1901 TA

Amplifier with Analog Output

IP 54

FEATURES

- Output voltage – ± 10 V (optional: ± 5 V / 0 V to 10 V) at end of measuring range (output Voltage can be set using jumpers)
- There is also an output signal available in the form of a current of ± 5 mA at the end of the measuring range
- Supply voltage – 24 VDC
- The housing of the 1901 TA is designed to fit inside the machine room
- Connection – One input for Mahr-compatible inductive probes
- **Package contains:** 3 pin socket plug for analog output, 3 pin coupling bushing for power supply, instruction manual

Application:

- The measuring amplifier 1901 TA is to be used in connection with an inductive probe for measurement control processes
- Provides the inductive probe with an AC Voltage and converts the carrier fequency signal into output Voltage



TECHNICAL DATA

Order no.		5319011
Product type		1901 TA
Display		No display, amplifier with analog output
Measuring range, inductive probe	µm	± 125, ± 250, ± 500, ± 1000, ± 2000
Probe inputs		1
Compatibility		Mahr
Features		1
Response time analog output	s	0.01
Data transmission rate	Hz	90
Error limit, analog output		+/–0.3 %
Analoge output		• 1 output voltage: at end of range +/–10 V, option: +/–5 V / 0-10 V • 1 current output: at end of range +/–5mA
Energy supply		24 V =
IP protection category		IP 54

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5319011	100	3.93″	170	6.69″	43	1.69″

Millimar S 1840 M / S 1840 F

Compact Column Amplifier

RS232C | IP 42 | MAX MIN | TOL

FEATURES

- Easy-to-read 3-color analog display
- Measurement in conjunction with inductive probes (e. g. Mahr P2004) or electronic plug gages, etc.
- 2 inputs for inductive probes (compatible with probes from Mahr, Federal)
- Extensive calculation of input signals - ±A, ±B and all combinations
- Dynamic measurements - Max, Min, Max-Min, Average
- Programmable either via the integrated keypad or the RS-232 interface by means of MS - Windows® configuration software
- Programmable warning and tolerance limits (exceeding the limit causes the color to change from yellow to red)
- Backlit, two-line LCD for displaying measured values, help texts and units of measurement
- 1 analog output
- 3 digital inputs (e.g. measurement start, master measurement)
- 3 digital outputs for good – reject – rework, measuring time
- **Package contains:** instruction manual, power source
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



TECHNICAL DATA

Order no.		5318400	5318402
Product type		S 1840 M	S 1840 F
Scale reading		± .0003; .001; .003; .01; .03; .1; .3 inch	
Digital display		7 point LCD, 7 segment	
Range of digital display	µm	± 2000, ± 10000	
Range of analog display	µm	± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related	
Range of analog display	inch	± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related	
Resolution	µm	0.01, 0.1	
Display		101 LED elements, 3 colors	
Tolerance display		via color changes in the analog display	
Measuring range, inductive probe	µm	± 200, ± 2000	
Probe inputs		2	
Compatibility		Mahr	Federal
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B	
Features		2	
Programs		2	
Test steps		1	
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Mean	
Configuration		PC, keyboard	
Response time digital display	s	0.3	
Response time analog display	s	0.02	
Response time control outputs	s	0.02	
Response time analog output	s	0.02	
Response time measuring value memory	s	0.008	
Data transmission rate	Hz	40	
Error limit, digital display		0.3% (min. 0.2 µm)	
Error limit, analog display		1% (101 LEDs)	
Temperature coefficient	µm/°C	0.005	
Data interface		RS232C, Wireless	
Control inputs		3 optocoupler inputs, 24 V, 10 mA	
Control outputs		3 optocoupler outputs, 24 V, 100 mA	
Analog output		Max. +/–5V, sensitivity adjustable	max. +/–5V, sensitivity adjustable
Energy supply		Power source, 230 V/115 V; 50/60 Hz	
IP protection category		IP 42	

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5318400	144	5.67"	487	19.17"	47	1.85"
5318402	144	5.67"	487	19.17"	47	1.85"

ACCESSORIES

Order no.	Product name	Product type
5330901	Base Plate for up to 3 columns	
5330902	Wall mounting	
5318430	Control unit with 3 push buttons	
5330955	Foot switch for input 1	
5330956	Foot switch for input 2	
5330957	Foot switch for input 3	
7032401	25 pin connector, non-wired for I/O port	
7024634	Data connection cable RS232C (3 m)	
4102331	Millimar - USB Adapter cable RS232-USB (0.2 m)	Millimar - USB
4102233	RS232 e transmitter for e-Stick	RS232 e
4102230	e-Stick receiver	e-Stick



RS232 e; RS232 f;817 f

e-Stick

Millimar C 1700 PC

Gaging Computer

FEATURES

- Interactive, touch-capable software
- Simple and intuitive user interface
- User-friendly setup of measuring tasks
- Simple operation via predefined formulas for most common features
- Management of measuring tasks
- Assignment of pictures or drawings per measuring task
- Static and dynamic measurements
- Supported by graphical control elements
- Live-indication of measuring values and features
- Digital and analog displays for simultaneous indication of up to 128 features
- Connection of Millimar N 1700 modules in combination with inductive probes as well as Mahr instruments with data interface
- Connection of Mahr instruments with Integrated Wireless
- Data export in MS-Excel or in qs-Stat format (dfq, dfx or dfd format)
- Password protected user levels (3 levels)
- Online help (operating instruction) integrated in Cockpit software
- **Package contains:** Millimar Cockpit software incl. 10.1" Touch-PC, preinstalled Windows 10 IoT Enterprise, Mahr license key, installation disk, recovery-Stick 16 GB, operating instructions (online help), power source, VESA 100 standard stand



Application:

Comfortable measuring computer with an smart and universell applicable software for complex measuring tasks in the production area



TECHNICAL DATA

Order no.		5312801
Length units		mm, µm, inch
Feature types		Length, angle, dimensionless
Angle units		degrees, radians
Product type		C 1700 PC
Range of analog display	µm	± 10000, ± 5000, ± 2000, ± 1000, ± 500, ± 200, ± 100, ± 50, ± 20, ± 10
Resolution	µm	0.01
Display		Vertical bar graph Horizontal bar graph Analog display or round scale Digital display Any combination of display types can be chosen for each feature
Tolerance display		Upper and lower tolerance limit (per feature) Upper and lower warning limit (per feature)
Compatibility		USB, Integrated wireless, Millimar N 1700
Measuring combination		Predefined formula templates for standard features Links entered via comprehensive formula editor
Features		128
Dynamic functions		MAX, MIN, MAX-MIN, MAX+MIN
Classification		max. 20 classes
Energy supply		100-240V ACDC active switching; 12V DC-Out
IP protection category		IP 65 (Front Panel)

Order no.	Depth	Height	Width
	mm	mm	mm
5312801	49.5	192	276



N 1704 I/O



N 1701 USB



N 1702 M



N 1701 PS



Cockpit



i-Stick

ACCESSORIES

Order no.	Product name	Compatibility	Range of analog display	Product type
			µm	
5312802	Software option: Measure History	USB, Integrated wireless, Millimar N 1700	± 10000, ± 5000, ± 2000, ± 1000, ± 500, ± 200, ± 100, ± 50, ± 20, ± 10	
5331130	USB connecting module			N 1701 USB
5331120	Module for inductive probes	Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT		N 1702 M
5331133	Power supply module			N 1701 PS
5331134	I/O module			N 1704 I/O
4102220	Receiver for instruments with integrated wireless			i-Stick
4102357	16 EXu Data connection cable USB (2 m)			16 EXu
4346023	2000 USB Data connection cable USB (2 m)			2000 USB
4102331	Millimar - USB Adapter cable RS232-USB (0.2 m)			Millimar - USB

Millimar Cockpit 12

Measuring Software

FEATURES

- Interactive touch-capable software
- Very simple and intuitive to use
- User-friendly creation of measuring tasks
- Access to predefined formula templates for maximum ease of use
- Management of measuring tasks (save and load function)
- Measuring task linked to images or drawings
- Static and dynamic recording of measuring values
- Supported by graphical operating elements
- Live visualization of measured values
- Simultaneous display of 128 digital or analog measurement values
- Connection of Millimar N 1700 modules in combination with inductive probes as well as Mahr measuring instruments with data interface
- Connection of Mahr measuring instruments via Integrated Wireless
- Data export to MS Excel or in qs-Stat format (dfq or dfx/dfd format)
- Password-protected user levels (3 levels)
- Online help (operating instructions) can be accessed directly from the software
- **Package contains:** Mahr license key, installation disk, operating instructions (online help)



Application:

Smart, universal software for complex measuring tasks in the manufacturing sector

TECHNICAL DATA

Order no.		5312804
Product type		Cockpit 12
Range of analog display	µm	± 10000, ± 5000, ± 2000, ± 1000, ± 500, ± 200, ± 100, ± 50, ± 20, ± 10
Resolution	µm	0.01
Display		Vertical bar graph Horizontal bar graph Analog display or round scale Digital display Any combination of display types can be chosen for each feature
Tolerance display		Upper and lower tolerance limit (per feature) Upper and lower warning limit (per feature)
Compatibility		USB, Integrated wireless, Millimar N 1700
Measuring combination		Predefined formula templates for standard features Links entered via comprehensive formula editor
Features		128
Classification		max. 20 classes



N 1704 I/O



N 1701 PS



N 1702 M



N 1701 USB



Cockpit



i-Stick

ACCESSORIES

Order no.	Product name	Compatibility	Range of analog display	Product type
			µm	
5312802	Software option: measure history	USB, Integrated wireless, Millimar N 1700	± 10000, ± 5000, ± 2000, ± 1000, ± 500, ± 200, ± 100, ± 50, ± 20, ± 10	
5331130	USB connecting module			N 1701 USB
5331120	Module for inductive probes	Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT		N 1702 M
5331133	Power supply module			N 1701 PS
5331134	I/O module			N 1704 I/O
4102220	Receiver for instruments with integrated wireless			i-Stick
4102357	16 EXu Data connection cable USB (2 m)			16 EXu
4346023	2000 USB Data connection cable USB (2 m)			2000 USB
4102331	Millimar - USB Adapter cable RS-232-USB (0.2 m)			Millimar - USB

Millimar N 1702 M / N 1704 M / N 1704 T / N 1704 U

Module for Inductive Probes

FEATURES

- Flexibly configurable RS-485 bus modules
- Powerful connection modules for evaluating measuring sensors (inductive/pneumatic)
- Synchronous data retrieval from multiple connected measuring probes
- Connection of N 1700 modules via USB interface to the smart, universal evaluation and configuration software Millimar Cockpit
- Connects all compatible probe types using one module
- Flexible and modular product combinations to tackle customer-specific measuring tasks
- Maximum theoretical bus data rate of 4189 values/s (depending on the number of connected channels)
- **Package contains:** instruction manual





Application:

Smart and flexible combination of measuring modules and software for solving customer-specific measuring tasks.

TECHNICAL DATA

Order no.		5331120	5331140	5331141	5331142
Product type		N 1702 M	N 1704 M	N 1704 T	N 1704 U
Storage temperature MAX	°C	60			
Resolution	µm	0.1			
Measuring range, inductive probe	µm	± 2000, ± 5000, ± 1000, ± 500			
Probe inputs		2	4		
Compatibility		Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT	Mahr, Mahr half-bridge, Mahr LVDT, Mahr VLDT	Tesa	Marposs
Configuration		Millimar Cockpit Software			
Data transmission rate	Hz	4189			
Error limit		0.3 % (min. 0.2 µm)			
Temperature coefficient	µm/°C	0.02			
Data interface		RS485			
Energy supply		+ 5V from N 1700 Bus			
IP protection category		IP 42			

Order no.	Depth	Height	Width
	mm	mm	mm
5331120	66	54.8	77
5331140	66	54.8	116.5
5331141	66	54.8	116.5
5331142	66	54.8	116.5

Millimar N 1702 M / N 1704 M / N 1704 T / N 1704 U

Module for Inductive Probes

ACCESSORIES

Order no.	Product description	Product type	g
5313010	Inductive probe	1301	
5313030	Inductive probe	1303	
5313049	Inductive probe	1304 K	
5313180	Inductive probe	1318	
5313400	Inductive probe	1340	
4400180	Inductive probe	P1300 MA	
4400182	Inductive probe	P1300 MA without cable	
4400181	Inductive probe	P1300 MB	
4400183	Inductive probe	P1300 MB without cable	
5323040	Inductive probe	P2001 M	
5323010	Inductive probe	P2004 M	M 2.5
5323020	Inductive probe	P2004 MA	M 2.5
5323030	Inductive probe	P2004 MB	M 2.5
5324010	Inductive probe	P2010 M	M 2.5
5324020	Inductive probe	P2010 MA	M 2.5
5324030	Inductive probe	P2010 MB	M 2.5
5324070	Inductive probe	P2104 MA	M 2.5
5324080	Inductive probe	P2104 MB	M 2.5
5331138	Extension cable, length 2 m	N 1700 RS485	
4400190	Inductive probe	P1300 TA	
4400192	Inductive probe	P1300 TA without cable	
4400191	Inductive probe	P1300 TB	
4400193	Inductive probe	P1300 TB without cable	
5323011	Inductive probe	P2004 T	M 2.5
5323021	Inductive probe	P2004 TA	M 2.5
5323031	Inductive probe	P2004 TB	M 2.5
5324021	Inductive probe	P2010 TA	M 2.5
5324031	Inductive probe	P2010 TB	M 2.5
5324071	Inductive probe	P2104 TA	M 2.5
5324081	Inductive probe	P2104 TB	M 2.5
5323013	Inductive probe	P2004 U	M 2.5
5323023	Inductive probe	P2004 UA	M 2.5
5323033	Inductive probe	P2004 UB	M 2.5
5324023	Inductive probe	P2010 UA	M 2.5
5324033	Inductive probe	P2010 UB	M 2.5
5324073	Inductive probe	P2104 UA	M 2.5
5324083	Inductive probe	P2104 UB	M 2.5


1301


1303


1304 K


1318


1340


P1300 MA


P1300 MA without cable;P1300 TA without cable


P1300 MB


P1300 MB without cable;P1300 TB without cable


P2001;P2001 USB;P2001 M;P2001 T;P2001 F


P2004;P2004 M;P2004 T;P2004 U;P2004 F


P2004 A;P2004 MA;P2004 TA;P2004 UA;P2004 FA


P2004 B;P2004 MB;P2004 TB;P2004 UB;P2004 FB

P2010;P2010 M


P2010 A;P2010 MA;P2010 TA;P2010 UA;P2010 FA


P2010 B;P2010 MB;P2010 TB;P2010 UB;P2010 FB


P2104 A;P2104 MA;P2104 TA;P2104 UA;P2104 FA


P2104 B;P2104 MB;P2104 TB;P2104 UB;P2104 FB


P1300 TA


P1300 TB

Millimar N 1701 PM-2500 / N 1701 PM-5000 / N 1701 PM-10000 / N 1701 PF-2500/5000 / N 1701 PF-2500/5000-4 / N 1701 PF-10000

Module for Pneumatic Gages

FEATURES

- Flexibly configurable RS485 bus modules
- Powerful connection modules for evaluating measuring sensors (inductive/pneumatic)
- Synchronous data retrieval from multiple connected measuring sensors
- Connection of N 1700 modules via USB interface to the smart, universal evaluation and configuration software Millimar Cockpit
- Flexible and modular product combinations to tackle customer-specific measuring tasks
- Maximum theoretical bus data rate of 4189 values/s (depending on the number of connected channels)
- **Package contains:** instruction manual



Application:

Smart and flexible combination of measuring modules and software for solving customer-specific measuring tasks.

TECHNICAL DATA

Order no.		5331155	5331156	5331157
Product type		N 1701 PF-2500/5000	N 1701 PF-2500/5000-4	N 1701 PF-10000
Magnification		2500:1, 5000:1		10000:1
Inputs for pneumatic measuring equipment		1		
Number of jets		1-3	4	1-3
Resolution	µm	0.1		
Compatibility		Mahr-Federal		
Configuration		Millimar Cockpit software		
Zero setter		Electrical		
Response time (Air)		≤ 0.3 seconds (with 1m / 3.3 ft hose)≤ 0.5 seconds (with 2 m / 6.6 ft hose)		≤ 0.5 seconds (with 1m / 3.3 ft hose) ≤ 0.7 seconds (with 2 m / 6.6 ft hose)
Data transmission rate	Hz	4189		
Error limit		± 0.8 µm in the range ± 38 µm and ± 0.5 µm in the range ± 25 µm		
Air pressure		2.1 bar / 30.4 psi ± 5 %		
Air consumption in l/h		1-2		
Data interface:		RS485		
Energy supply:		+ 5V from N 1700 Bus		

Order no.	Depth	Height	Width
	mm	mm	mm
5331150	66	50	90
5331151	66	50	90
5331152	66	50	90
5331155	66	50	90
5331156	66	50	90
5331157	66	50	90

ACCESSORIES

Order no.	Product name	Product type
5331138	Extension cable, length 2 m	N 1700 RS485
2258471	Air filter/precision pressure regulator kit	

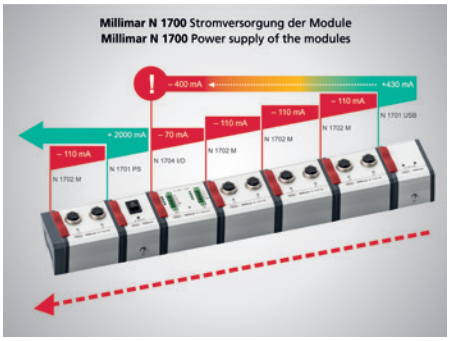
Millimar N 1701 PS

Power Supply Module

FEATURES

- Flexibel combination of RS485 bus modules
- Capable modules for the evaluation of measurings sensors
- Synchronous data enquiry of multiple connected sensors
- Ability to connect the N 1700 modules to the smart & universally applicable Millimar Cockpit Software
- Connection of all types of measuring sensors within the same compatibility
- Modular and customizable selection of product combinations for solving each customer specific measuring tasks
- Theoretical bus data rate of max. 4189 values per second (depending on the number of connected channels)
- **Package contains:** power source, instruction manual





Application:

Smart and flexible combination of measuring modules and software for solving customer-specific measuring tasks.

TECHNICAL DATA

Order no.	5331133
Product type	N 1701 PS
Configuration	Millimar Cockpit Software
Data interface	RS485
Energy supply	230 V/115 V; 50/60 Hz

Order no.	Depth	Height	Width
	mm	mm	mm
5331133	66	55	57

ACCESSORIES

Order no.	Product name	Product type
5331138	Extension cable, length 2 m	N 1700 RS485

Millimar N 1701 USB

USB Connecting Module

FEATURES

- Flexible combination of RS485 bus modules
- Capable modules for the evaluation of measurings sensors
- Synchronous data enquiry of multiple connected sensors
- Ability to connect the N 1700 modules to the smart & universally applicable Millimar Cockpit Software
- Connection of all types of measuring sensors within the same compatibility
- Modular and customizable selection of product combinations for solving each customer specific measuring tasks
- Theoretical bus data rate of max. 4189 values per second (depending on the number of connected channels)
- **Package contains:** end module, instruction manual, USB cable





Application:

Smart and flexible combination of measuring modules and software for solving customer-specific measuring tasks.

TECHNICAL DATA

Order no.	5331130
Product type	N 1701 USB
Configuration	Millimar Cockpit Software
Data interface	RS485

Order no.	Depth	Height	Width
	mm	mm	mm
5331130	66	54	54

ACCESSORIES

Order no.	Product name	Product type
5331138	Extension cable, length 2 m	N 1700 RS485
4102058	Foot switch to trigger data transmission	16 ESf

Millimar N 1704 I/O

I/O Module

FEATURES

- Flexible combination of RS485 bus modules
- Capable modules for the evaluation of measurings sensors
- Synchronous data enquiry of multiple connected sensors
- Ability to connect the N 1700 modules to the smart & universally applicable Millimar Cockpit Software
- Connection of all types of measuring sensors within the same compatibility
- Modular and customizable selection of product combinations for solving each customer specific measuring tasks
- Theoretical bus data rate of max. 4189 values per second (depending on the number of connected channels)
- **Package contains:** plug connectors, instruction manual



Application:

Smart and flexible combination of measuring modules and software for solving customer-specific measuring tasks.

TECHNICAL DATA

Order no.		5331134
Product type		N 1704 I/O
Configuration		Millimar Cockpit Software
Data interface		RS485
Control inputs		4 inputs, 10 –30 V
Control outputs		4 outputs 10 –30 V ESD protected, short-circuit proof

Order no.	Depth	Height	Width
	mm	mm	mm
5331134	66	54	77

ACCESSORIES

Order no.	Product name	Product type
5331138	Extension cable, length 2 m	N 1700 RS485

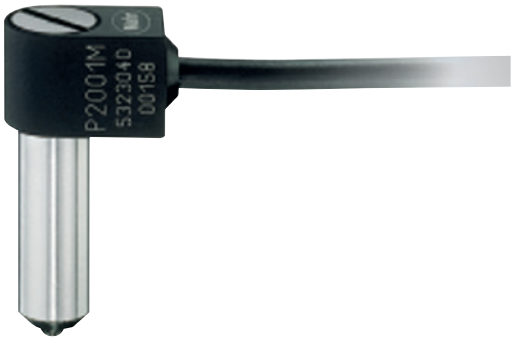
Millimar P2001 M / P2001 T / P2001 F

Inductive Probe

IP 40

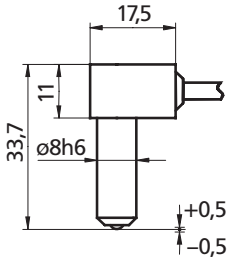
FEATURES

- Compact design
- Plain bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone



TECHNICAL DATA

Order no.		5323040
Product type		P2001 M
Measuring range	mm	± 0.5
Measuring range	inch	± .020"
Measuring force	N	0.75 N +/–0.15 N
Increase in measuring force	N/mm	0.1 N/mm
Sensitivity deviation	%	0.3
Repeatability f_w	µm	0.15
Repeatability f_w	inch	6 µ"
Hysteresis f_u	µm	0.2
Hysteresis f_u	inch	8 µ"
Linearity deviation within +/–0.1 mm	µm	0.6
Linearity deviation within +/–.0039"	inch	24 µ"
Linearity deviation within +/–0.5 mm	µm	1.5
Linearity deviation within +/–.020"	inch	60 µ"
IP protection category:		IP 40
Cable length	m	2.5
Temperature coefficient	µm/°C	0.15
Compatibility		Mahr VLDT



ACCESSORIES

Order no.	Product description	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M

Millimar P2004 M / P2004 T / P2004 U / P2004 F

Inductive Probe

IP 64

FFEATURES

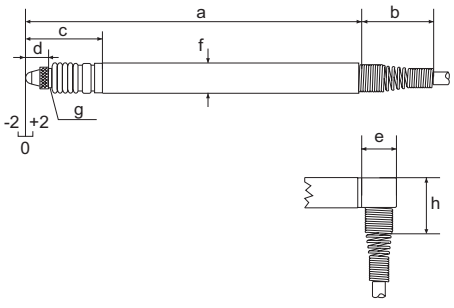
- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5323010	5323011	5323013	5323014
Product type		P2004 M	P2004 T	P2004 U	P2004 F
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+2.2 . . . 4.4			
Distance to upper stop	inch...inch	+ .09 ... .173"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch...inch	–.09 ... 0"			
Lifter / retraction		Standard model			
Measuring force	N	0.75 N +/–0.15 N			
Increase in measuring force	N/mm	0.2 N/mm			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.1			
Repeatability f_w	inch	4 µ"			
Hysteresis f_u	µm	0.5			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0.5 mm	µm	0.4			
Linearity deviation within +/–.020"	inch	16 µ"			
Linearity deviation within +/–1.0 mm	µm	1.5			
Linearity deviation within +/–.039"	inch	60 µ"			
Linearity deviation within +/–2.0 mm	µm	3			
Linearity deviation within +/–.079"	inch	120 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	Dimension f	a	b	c	d	e	f	h
		inch	mm	mm	mm	mm	mm	mm	mm
5323010	M 2.5		88.7	28	21.3	6	9.2	8	14
5323011	M 2.5		88.7	28	21.3	6	9.2	8	14
5323013	M 2.5		88.7	28	21.3	6	9.2	8	14
5323014	4/48 UNF	0.375	88.7	28	21.3	6	9.2		14



Millimar P2004 MA / P2004 TA / P2004 UA / P2004 FA

Inductive Probe

IP 64

FEATURES

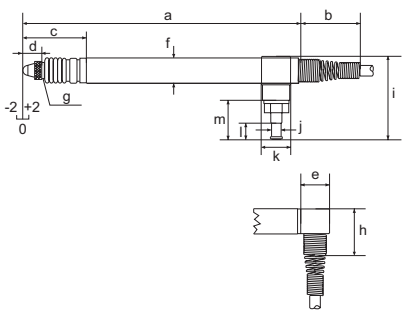
- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5323020	5323021	5323023	5323024
Product type		P2004 MA	P2004 TA	P2004 UA	P2004 FA
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+2.2 . . . 4.4			
Distance to upper stop	inch...inch	+ .09 ... .173"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch...inch	–.09 ... 0"			
Lifter / retraction		Vacuum lifter			
Measuring force	N	0.75 N +/–0.15 N			
Increase in measuring force	N/mm	0.2 N/mm			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.1			
Repeatability f_w	inch	4 µ"			
Hysteresis f_u	µm	0.5			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0.5 mm	µm	0.4			
Linearity deviation within +/–.020"	inch	16 µ"			
Linearity deviation within +/–1.0 mm	µm	1.5			
Linearity deviation within +/–.039"	inch	60 µ"			
Linearity deviation within +/–2.0 mm	µm	3			
Linearity deviation within +/–.079"	inch	120 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	Dimension f	j	k	l	m	a	b	c	d	e	f	h	i
		inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5323020	M 2.5		3.6	9	8.3	12.5	88.7	28	21.3	6	9.2	8	14	26.5
5323021	M 2.5		3.6	9	8.3	12.5	88.7	28	21.3	6	9.2	8	14	26.5
5323023	M 2.5		3.6	9	8.3	12.5	88.7	28	21.3	6	9.2	8	14	26.5
5323024	4/48 UNF	0.375	3.6	9	8.3	12.5	88.7	28	21.3	6	9.2		14	26.5



Millimar P2004 MB / P2004 TB / P2004 UB / P2004 FB

Inductive Probe

IP 64

FEATURES

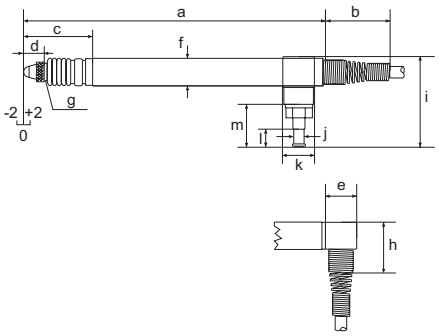
- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5323030	5323031	5323033	5323034
Product type		P2004 MB	P2004 TB	P2004 UB	P2004 FB
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+2.2 . . . 4.4			
Distance to upper stop	inch...inch	+ .09 ... .173"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch...inch	–.09 ... 0"			
Lifter / retraction		Compressed air retraction (max. 1 bar)			
Measuring force	N	Depending upon air pressure			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.1			
Repeatability f_w	inch	4 µ"			
Hysteresis f_u	µm	0.5			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0.5 mm	µm	0.4			
Linearity deviation within +/–.020"	inch	16 µ"			
Linearity deviation within +/–1.0 mm	µm	1.5			
Linearity deviation within +/–.039"	inch	60 µ"			
Linearity deviation within +/–2.0 mm	µm	3			
Linearity deviation within +/–.079"	inch	120 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	Dimension f	j	k	l	m	a	b	c	d	e	f	h	i
		inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5323030	M 2.5		3.6	9	8.3	12.5	88.7	28	21.3	6	9.2	8	14	26.5
5323031	M 2.5		3.6	9	8.3	12.5	88.7	28	21.3	6	9.2	8	14	26.5
5323033	M 2.5		3.6	9	8.3	12.5	88.7	28	21.3	6	9.2	8	14	26.5
5323034	4/48 UNF	0.375	3.6	9	8.3	12.5	88.7	28	21.3	6	9.2		14	26.5



Millimar P2010 M

Inductive Probe

IP 64

FEATURES

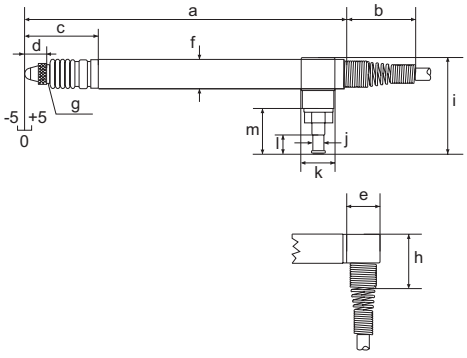
- Models with or without compressed air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5324010
Product type		P2010 M
Measuring range	mm	± 5
Measuring range	inch	± .197"
Distance to upper stop	mm...mm	+5.3
Distance to upper stop	inch...inch	+ .20"
Distance to lower stop	mm...mm	–5.3
Distance to lower stop	inch...inch	–.20"
Lifter / retraction		Standard model
Measuring force	N	0.75 N +/–0.15N
Increase in measuring force	N/mm	0.1 N/mm
Sensitivity deviation	%	0.3
Repeatability f_w	µm	0.2
Repeatability f_w	inch	8 µ"
Hysteresis f_u	µm	1
Hysteresis f_u	inch	40 µ"
Linearity deviation within +/–2.0 mm	µm	4
Linearity deviation within +/–.079"	inch	160 µ"
Linearity deviation within +/–5.0 mm	µm	20
Linearity deviation within +/–.197"	inch	200 µ"
IP protection category		IP 64
Cable length	m	2.5
Temperature coefficient	µm/°C	0.15
Compatibility		Mahr

Order no.	g	a	b	c	d	e	f	h
		mm	mm	mm	mm	mm	mm	mm
5324010	M 2.5	125.7	28	34	6	9.2	8	14



Millimar P2010 MA / P2010 TA / P2010 UA / P2010 FA

Inductive Probe

IP 64

FEATURES

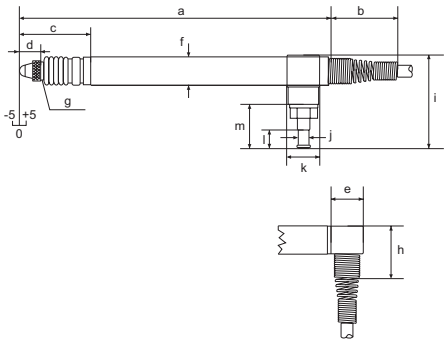
- Models with or without compressed air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5324020	5324021	5324023	5324024
Product type		P2010 MA	P2010 TA	P2010 UA	P2010 FA
Measuring range	mm	± 5			
Measuring range	inch	± .197"			
Distance to upper stop	mm...mm	+5.3			
Distance to upper stop	inch...inch	+ .20"			
Distance to lower stop	mm...mm	–5.3			
Distance to lower stop	inch...inch	–.20"			
Lifter / retraction		Vacuum lifter			
Measuring force	N	0.75 N +/–0.15 N			
Increase in measuring force	N/mm	0.1 N/mm			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	1			
Hysteresis f_u	inch	40 µ"			
Linearity deviation within +/–2.0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
Linearity deviation within +/–5.0 mm	µm	20			
Linearity deviation within +/–.197"	inch	200 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	Dimension f	j	k	l	m	a	b	c	d	e	f	h	i
		inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5324020	M 2.5		3.6	9	8.3	12.5	125.7	28	34	6	9.2	8	14	26.5
5324021	M 2.5		3.6	9	8.3	12.5	125.7	28	34	6	9.2	8	14	26.5
5324023	M 2.5		3.6	9	8.3	12.5	125.7	28	34	6	9.2	8	14	26.5
5324024	4/48 UNF	0.375	3.6	9	8.3	12.5	125.7	28	34	6	9.2		14	26.5



Millimar P2010 MB / P2010 TB / P2010 UB / P2010 FB

Inductive Probe

IP 64

FEATURES

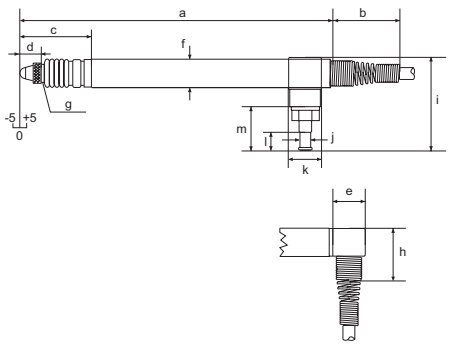
- Models with or without compressed air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5324030	5324031	5324033	5324034
Product type		P2010 MB	P2010 TB	P2010 UB	P2010 FB
Measuring range	mm	± 5			
Measuring range	inch	± .197"			
Distance to upper stop	mm...mm	+5.3			
Distance to upper stop	inch...inch	+ .20"			
Distance to lower stop	mm...mm	–5.3			
Distance to lower stop	inch...inch	–.20"			
Lifter / retraction		Compressed air retraction (max. 1 bar)			
Measuring force	N	Depending upon air pressure			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	1			
Hysteresis f_u	inch	40 µ"			
Linearity deviation within +/–2.0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
Linearity deviation within +/–5.0 mm	µm	20			
Linearity deviation within +/–.197"	inch	200 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	Dimension f	j	k	l	m	a	b	c	d	e	f	h	i
		inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5324030	M 2.5		3.6	9	8.3	12.5	125.7	28	34	6	9.2	8	14	26.5
5324031	M 2.5		3.6	9	8.3	12.5	125.7	28	34	6	9.2	8	14	26.5
5324033	M 2.5		3.6	9	8.3	12.5	125.7	28	34	6	9.2	8	14	26.5
5324034	4/48 UNF	0.375	3.6	9	8.3	12.5	125.7	28	34	6	9.2		14	26.5



Millimar P2104 MA / P2104 TA / P2104 UA / P2104 FA

Inductive Probe

IP 64

FEATURES

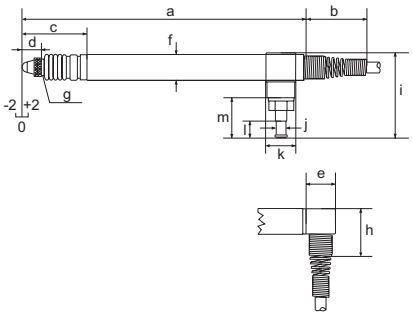
- Models with pneumatic lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap (included)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5324070	5324071	5324073	5324074
Product type		P2104 MA	P2104 TA	P2104 UA	P2104 FA
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+8.4 . . . 10.4			
Distance to upper stop	inch...inch	.33 ... .41"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch...inch	–.09 ... 0"			
Lifter / retraction		Vacuum lifter			
Measuring force	N	0.75 N +/–0.15 N			
Increase in measuring force	N/mm	0.1 N/mm			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	1			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0.5 mm	µm	0.5			
Linearity deviation within +/–.020"	inch	20 µ"			
Linearity deviation within +/–1.0 mm	µm	2			
Linearity deviation within +/–.039"	inch	80 µ"			
Linearity deviation within +/–2.0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	Dimension f	j	k	l	m	a	b	c	d	e	f	h	i
		inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5324070	M 2.5		3.6	9	8.3	12.5	128.7	28	37	6	9.2	8	14	26.5
5324071	M 2.5		3.6	9	8.3	12.5	128.7	28	37	6	9.2	8	14	26.5
5324073	M 2.5		3.6	9	8.3	12.5	128.7	28	37	6	9.2	8	14	26.5
5324074	4/48 UNF	0.375	3.6	9	8.3	12.5	128.7	28	37	6	9.2		14	26.5



Millimar P2104 MB / P2104 TB / P2104 UB / P2104 FB

Inductive Probe

IP 64

FEATURES

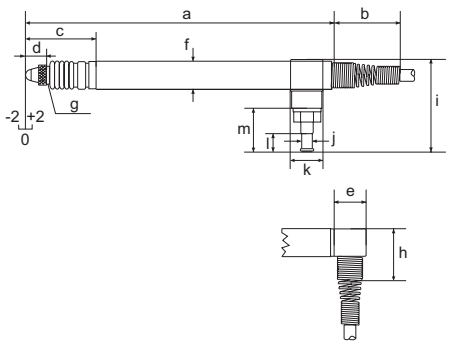
- Models with pneumatic lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap (included)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, cap for radial cable output, spanner for preliminary stroke setting



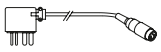
TECHNICAL DATA

Order no.		5324080	5324081	5324083	5324084
Product type		P2104 MB	P2104 TB	P2104 UB	P2104 FB
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+8.4 . . . 10.4			
Distance to upper stop	inch...inch	.33 ... .41"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch...inch	–.09 ... 0"			
Lifter / retraction		Compressed air retraction (max. 1 bar)			
Measuring force	N	Depending upon air pressure			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	1			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0.5 mm	µm	0.5			
Linearity deviation within +/–.020"	inch	20 µ"			
Linearity deviation within +/–1.0 mm	µm	2			
Linearity deviation within +/–.039"	inch	80 µ"			
Linearity deviation within +/–2.0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

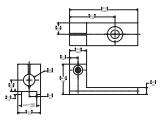
Order no.	g	Dimension f	j	k	l	m	a	b	c	d	e	f	h	i
		inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5324080	M 2.5		3.6	9	8.3	12.5	128.7	28	37	6	9.2	8	14	26.5
5324081	M 2.5		3.6	9	8.3	12.5	128.7	28	37	6	9.2	8	14	26.5
5324083	M 2.5		3.6	9	8.3	12.5	128.7	28	37	6	9.2	8	14	26.5
5324084	4/48 UNF	0.375	3.6	9	8.3	12.5	128.7	28	37	6	9.2		14	26.5



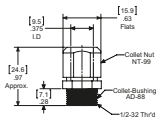
ACCESSORIES



ECB-1852



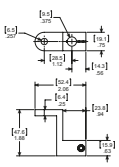
EAD-1029



AD-87



AD-138



AAD-66

Order no.	For measuring instrument	Product name	Compati-bility	Type
2201605	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Adapter, mounting bracket, L-bracket with 0.375" hole		AAD–66
2201801	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Split collet OD is 17,45 mm/ .687"; requires 1/2–32 threaded hole		AD–87
2208626	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Gagehead adapter cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5313419	P2004 MA, P2004 TA, P2004 FA, P2004 UA, P2010 TA, P2010 MA, P2010 UA, P2010 FA, P2104 UA, P2104 TA, P2104 MA, P2104 FA	Pneumatic foot switch for max. 4 probes		1340/1F
5313420	P2004 MA, P2004 TA, P2004 FA, P2004 UA, P2010 TA, P2010 MA, P2010 UA, P2010 FA, P2104 UA, P2104 TA, P2104 MA, P2104 FA	Pneumatic hand lifter for 1 probe		1340/1
5323130	P2004 MA, P2004 M, P2004 MB, P2010 MA, P2010 M, P2010 MB, P2104 MA, P2104 MB	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323131	P2004 T, P2004 TA, P2004 TB, P2010 TA, P2010 TB, P2104 TA, P2104 TB	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323134	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323140	P2004 MA, P2004 M, P2004 MB, P2010 MA, P2010 M, P2010 MB, P2104 MA, P2104 MB	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323141	P2004 T, P2004 TA, P2004 TB, P2010 TA, P2010 TB, P2104 TA, P2104 TB	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323144	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Extension cable 5 m (Federal)	Federal	C2050 F
5323150	P2004 MA, P2004 M, P2004 MB, P2010 MA, P2010 M, P2010 MB, P2104 MA, P2104 MB	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323151	P2004 T, P2004 TA, P2004 TB, P2010 TA, P2010 TB, P2104 TA, P2104 TB	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323154	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323160	P2004 MA, P2004 M, P2004 MB, P2010 MA, P2010 M, P2010 MB, P2104 MA, P2104 MB	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
5323161	P2004 T, P2004 TA, P2004 TB, P2010 TA, P2010 TB, P2104 TA, P2104 TB	Extension cable 10 m (Tesa)	Tesa	C2100 T
5323164	P2004 F, P2004 FA, P2004 FB, P2010 FA, P2010 FB, P2104 FA, P2104 FB	Extension cable 10 m (Federal)	Federal	C2100 F
7021546	P2004 MA, P2004 T, P2004 U, P2004 F, P2004 M, P2004 TA, P2004 FA, P2004 UA	Sealing bellows for probes with measuring spring		
7025505	P2004 MA, P2004 T, P2004 U, P2004 F, P2004 M, P2004 TA, P2004 FA, P2004 UA	Measuring spring 1.25 N		
7025579	P2004 MA, P2004 T, P2004 U, P2004 F, P2004 M, P2004 TA, P2004 FA, P2004 UA	Measuring spring 1.0 N		
7026827	P2004 MA, P2004 T, P2004 U, P2004 F, P2004 M, P2004 TA, P2004 FA, P2004 UA	Measuring spring 0.25 N		
7026828	P2004 MA, P2004 T, P2004 U, P2004 M, P2004 TA, P2004 FA, P2004 UA	Measuring spring 0.5 N		
7026849	P2004 MA, P2004 T, P2004 U, P2004 F, P2004 M, P2004 TA, P2004 FA, P2004 UA	Measuring spring 0.75 N		
7027758	P2010 TA, P2010 MA, P2010 UA, P2010 FA, P2010 M, P2104 UA, P2104 TA, P2104 MA, P2104 FA	Sealing bellows long for probes with measuring spring		
7028220	P2004 MB, P2004 TB, P2004 FB, P2004 UB	Sealing bellows for probes with air retraction		
7028221	P2010 MB, P2010 FB, P2010 TB, P2010 UB, P2104 MB, P2104 FB, P2104 TB, P2104 UB	Sealing bellows long for probes with air retraction		

Millimar P1300 MA / P1300 MA without cable

Inductive Probe

IP 64

FEATURES

- Mahr compatibility
- Well proven and established Mahr half-bridge technology
- Very easy to service: cables and probes can be separated via the plug in connector
- Easy to convert to pneumatic lifting
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, spanner for preliminary stroke setting, hose connector for compressed air

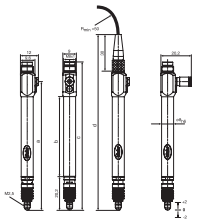


TECHNICAL DATA

Order no.		4400180	4400182
Product type		P1300 MA	P1300 MA without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Vacuum lifter (standard option)	
Measuring force	N	0.75 N +/–0.15 N	
Increase in measuring force	N/mm	0.3 N/mm	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	

Order no.		4400180	4400182
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0.5 mm	µm	0.4	
Linearity deviation within +/–.020"	inch	16 µ"	
Linearity deviation within +/–1.0 mm	µm	1.5	
Linearity deviation within +/–.039"	inch	60 µ"	
Linearity deviation within +/–2.0 mm	µm	3	
Linearity deviation within +/–.079"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Mahr half-bridge	

Order no.	a	b	c	d
	mm	mm	mm	mm
4400180	85.6	53.3	98.6	125
4400182	85.6	53.3	98.6	125



ACCESSORIES

Order no.	Product name
4885220	Cable 2.5 m
4885259	Cable 5 m
4885260	Cable 10 m
4885334	Cable 2.5 m, 90° offset
4885335	Cable 5 m 90° offset
4885336	Cable 10 m 90° offset
4400238	Hose connector 90° offset
7021546	Sealing bellows for probes with measuring spring
7026827	Measuring spring 0.25 N
7026828	Measuring spring 0.5 N
7026849	Measuring spring 0.75 N
7025579	Measuring spring 1.0 N
7025505	Measuring spring 1.25 N

Millimar P1300 MB / P1300 MB without cable

Inductive Probe

IP 64

FEATURES

- Mahr compatibility
- Well proven Mahr half-bridge technology
- Compressed air retraction
- Easy to service: cable and probe can be seperated via the plug in connector
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, spanner for preliminary stroke setting, hose connector for compressed air

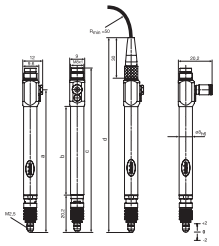


TECHNICAL DATA

Order no.		4400181	4400183
Product type		P1300 MB	P1300 MB without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Compressed air retraction (max. 1 bar)	
Measuring force	N	Depending upon air pressure	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	

Order no.		4400181	4400183
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0.5 mm	µm	0.4	
Linearity deviation within +/–.020"	inch	16 µ"	
Linearity deviation within +/–1.0 mm	µm	1.5	
Linearity deviation within +/–.039"	inch	60 µ"	
Linearity deviation within +/–2.0 mm	µm	3	
Linearity deviation within +/–.079"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Mahr half-bridge	

Order no.	a	b	c	d
	mm	mm	mm	mm
4400181	85.6	53.3	98.6	125
4400183	85.6	53.3	98.6	125



ACCESSORIES

Order no.	Product name
4885220	Cable 2.5 m
4885259	Cable 5 m
4885260	Cable 10 m
4885334	Cable 2.5 m, 90° offset
4885335	Cable 5 m 90° offset
4885336	Cable 10 m 90° offset
4400238	Hose connector 90° offset
7028220	Sealing bellows for probes with air retraction

Millimar P1300 TA / P1300 TA without cable

Inductive Probe

IP 64

FEATURES

- Tesa compatibility
- Tesa half-bridge technology
- Very easy to service; cables and probes can be separated via the plug-in connector
- Easy to convert to pneumatic lifting
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, spanner for preliminary stroke setting, hose connector for compressed air

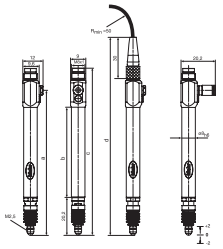


TECHNICAL DATA

Order no.		4400190	4400192
Product type		P1300 TA	P1300 TA without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Vacuum lifter (standard option)	
Measuring force	N	0.75 N +/–0.15 N	
Increase in measuring force	N/mm	0.3 N/mm	
Sensitivity deviation	%	0.3	

Order no.		4400190	4400192
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0.5 mm	µm	1	
Linearity deviation within +/–.020"	inch	40 µ"	
Linearity deviation within +/–1.0 mm	µm	3	
Linearity deviation within +/–.039"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Tesa	

Order no.	a	b	c	d
	mm	mm	mm	mm
4400190	94.2	61.9	107.2	133.6
4400192	94.2	61.9	107.2	133.6



ACCESSORIES

Order no.	Product name
4885220	Cable 2.5 m
4885259	Cable 5 m
4885260	Cable 10 m
4885334	Cable 2.5 m, 90° offset
4885335	Cable 5 m 90° offset
4885336	Cable 10 m 90° offset
4400238	Hose connector 90° offset
7021546	Sealing bellows for probes with measuring spring
7026827	Measuring spring 0.25 N
7026828	Measuring spring 0.5 N
7026849	Measuring spring 0.75 N
7025579	Measuring spring 1.0 N
7025505	Measuring spring 1.25 N

Millimar P1300 TB / P1300 TB without cable

Inductive Probe

IP 64

FEATURES

- Tesa compatibility
- Tesa half-bridge technology
- Compressed air retraction
- Easy to service: cable and probe can be seperated via the plug in connector
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** instruction manual, spanner for preliminary stroke setting, hose connector for compressed air

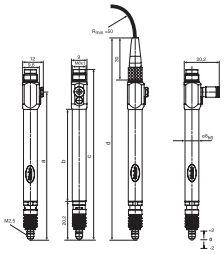


TECHNICAL DATA

Order no.		4400191	4400193
Product type		P1300 TB	P1300 TB without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Compressed air retraction (max. 1 bar)	
Measuring force	N	Depending upon air pressure	
Sensitivity deviation	%	0.3	

Order no.		4400191	4400193
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0.5 mm	µm	1	
Linearity deviation within +/–.020"	inch	40 µ"	
Linearity deviation within +/–1.0 mm	µm	3	
Linearity deviation within +/–.039"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Tesa	

Order no.	a	b	c	d
	mm	mm	mm	mm
4400191	94.2	61.9	107.2	133.6
4400193	94.2	61.9	107.2	133.6



ACCESSORIES

Order no.	Product name
4885220	Cable 2.5 m
4885259	Cable 5 m
4885260	Cable 10 m
4885334	Cable 2.5 m, 90° offset
4885335	Cable 5 m 90° offset
4885336	Cable 10 m 90° offset
4400238	Hose connector 90° offset
7028220	Sealing bellows for probes with air retraction

Millimar 1301 / 1303

Inductive Probe

IP 64

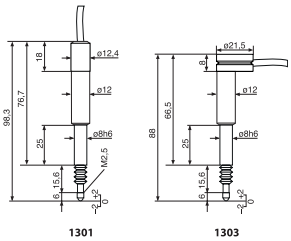
FEATURES

- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Measuring pin mounted in ball-bearing guide
- Measuring pin can be lifted using wire lifter
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Package contains:** spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5313010	5313030
Product type		1301	1303
Measuring range	mm	± 1	
Measuring range	inch	± .039"	
Distance to upper stop	mm...mm	+2.7	
Distance to upper stop	inch...inch	+ .106"	
Distance to lower stop	mm...mm	–1.1 . . . 0	
Distance to lower stop	inch...inch	–.043 ... 0"	
Lifter / retraction		Cable release	
Measuring force	N	0.75 N +/–0.15 N	
Increase in measuring force	N/mm	0.4 N/mm	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.2	
Hysteresis f_u	inch	8 µ"	
Linearity deviation within +/–0.5 mm	µm	0.5	
Linearity deviation within +/–.020"	inch	20 µ"	
Linearity deviation within +/–1.0 mm	µm	2	
Linearity deviation within +/–.039"	inch	80 µ"	
IP protection category		IP 64	
Cable length	m	1.5	
Temperature coefficient	µm/°C	0.09	
Compatibility		Mahr LVDT	



ACCESSORIES

Order no.	Product name	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2.5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7.5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10
5313990	Cable release with clamp for 1301 / 1303		1399

Millimar 1304 K

Inductive Probe

IP 62

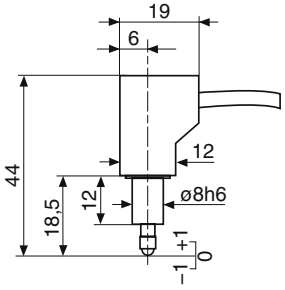
FEATURES

- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone



TECHNICAL DATA

Order no.		5313049
Product type		1304 K
Measuring range	mm	± 1
Measuring range	inch	± .039"
Distance to upper stop	mm...mm	+1.1
Distance to upper stop	inch...inch	+ .043"
Distance to lower stop	mm...mm	1.1
Distance to lower stop	inch...inch	–.043"
Measuring force	N	0.75 N +/–0.15 N
Increase in measuring force	N/mm	0.15 N/mm
Sensitivity deviation	%	1
Repeatability f_w	µm	0.15
Repeatability f_w	inch	6 µ"
Hysteresis f_u	µm	0.2
Hysteresis f_u	inch	8 µ"
Linearity deviation within +/–0.5 mm	µm	1
Linearity deviation within +/–.020"	inch	40 µ"
Linearity deviation within +/–1.0 mm	µm	4
Linearity deviation within +/–.039"	inch	160 µ"
IP protection category		IP 62
Cable length	m	1.5
Temperature coefficient	µm/°C	0.15
Compatibility		Mahr LVDT



ACCESSORIES

Order no.	Product name	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2.5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7.5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10

Millimar 1318

Inductive Probe

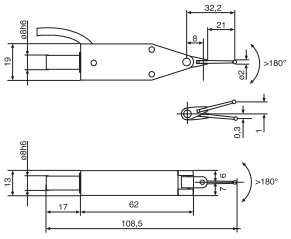
FEATURES

- Dial test indicator inductive probe
- Flexible probe adjustment to contact surface
- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone



TECHNICAL DATA

Order no.		5313180
Product type		1318
Measuring range	mm	–0.3 . . . 1
Measuring range	inch	–.12 ... + .39"
Distance to upper stop	mm...mm	+1.6
Distance to upper stop	inch...inch	+ .063"
Distance to lower stop	mm...mm	–0.37
Distance to lower stop	inch...inch	–.0146"
Measuring force	N	0.25 N +/–0.05 N
Increase in measuring force	N/mm	0.04 N/mm
Sensitivity deviation	%	0.5
Repeatability f_w	µm	0.03
Repeatability f_w	inch	1.2 µ"
Hysteresis f_u	µm	0.5
Hysteresis f_u	inch	20 µ"
Linearity deviation within +/–0.3 mm	µm	0.9
Linearity deviation within +/–.012"	inch	36 µ"
IP protection category:		IP 50
Cable length	m	1.5
Compatibility		Mahr LVDT



ACCESSORIES

Order no.	Product name	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2.5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7.5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10
7003901	Stylus ø 0.5 mm, carbide, l = 21 mm		
7003902	Stylus ø 1.0 mm, carbide, l = 21 mm		
3005223	Stylus ø 2.0 mm, carbide, l = 21 mm		
7003903	Stylus ø 3.0 mm, carbide, l = 21 mm		
8004231	Stylus ø 2.0 mm, ruby, l = 21 mm		

Millimar 1340

Inductive Probe

IP 64

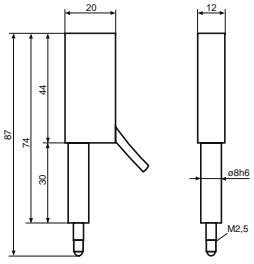
FEATURES

- Only for use in conjunction with the Millimar C 1240 M compact length measuring instrument
- Maximum measuring accuracy and minimum linearity deviation < 0.01 %, i.e. 0.4 µm over the entire measuring range
- Probe protected against dirt and moisture, can therefore be used close to production
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone



TECHNICAL DATA

Order no.		5313400
Product type		1340
Measuring range	mm	± 2
Measuring range	inch	± .079"
Distance to upper stop	mm...mm	+3
Distance to upper stop	inch...inch	+ .118"
Distance to lower stop	mm...mm	–2.2
Distance to lower stop	inch...inch	–.09"
Lifter / retraction		Vacuum lifter
Measuring force	N	0.75 N
Increase in measuring force	N/mm	0.08 N/mm
Sensitivity deviation	%	0.3
Repeatability f_w	µm	0.08
Repeatability f_w	inch	3.15 µ"
Hysteresis f_u	µm	0.08
Hysteresis f_u	inch	3.15 µ"
Linearity deviation within +/–1.0 mm	µm	0.15
Linearity deviation within +/–.039"	inch	6 µ"
Linearity deviation within +/–2.0 mm	µm	0.4
Linearity deviation within +/–.079"	inch	16 µ"
IP protection category		IP 64
Cable length	m	1.5
Temperature coefficient	µm/°C	0.6
Compatibility		Mahr 1340



ACCESSORIES

Order no.	Product name	Product type
5313420	Pneumatic hand lifter for 1 probe	1340/1
5313419	Pneumatic foot switch for max. 4 probes	1340/1F

Millimar EHE-2048

Inductive probe

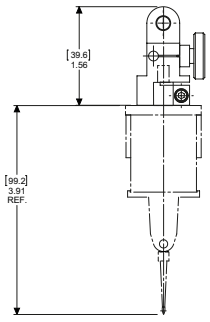
FEATURES

- Clutch mounted contact swivels through 280° arc for easy positioning
- Involute tip (normally furnished) automatically corrects for cosine error when finger is at an angle up to 20°. Simplifies "reach over" jobs.

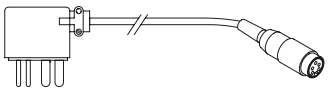


Application:

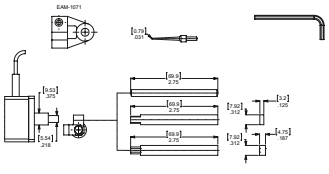
For use on test stands, surface plate work, or where light pressure is needed



EAT-1026



ECB-1852

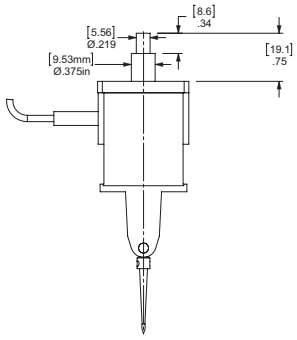


EAS-1333

TECHNICAL DATA

Order no.		2120417
Product type		EHE–2048
Probe type		Post bracket back, (BK–108) tamper-proof mounted
Measuring range	mm	± 0.25
Measuring range	inch	± .010"
Measuring force	N	0,04 N (.14 oz.) in either direction
Increase in measuring force	N/mm	0,001 N / 25µm
Repeatability f_w	µm	0.1
Repeatability f_w	inch	4 µ"
Linearity deviation within +/–0,250 mm		0.1% (over full range)
Linearity deviation within +/–.010"		0.1% (over full range)
Cable length	m	1.2
Compatibility		Federal

Order no.
2120417



ACCESSORIES

Order no.	Product name	Compatibility	Product type
2216178	Stylus ø 1.6 mm/.062", steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1004
2216180	Stylus ø 1.6 mm/.062" involute, steel, l = 27.6 mm/1.085", 1:1 ratio up to 20°, involute tip	Federal	EPT-1008
2216179	Stylus ø 0.787 mm/.031", carbide, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1007
2216184	Stylus ø 0.787 mm/.031", steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1013
2216217	Stylus ø 1.6 mm/.062", Sapphire, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1059-W1
2185448	Stylus ø 1.6 mm/.062", Sapphire, l = 122.8 mm/4.835", 4:1 ratio	Federal	EPT-1059-W4
2216218	Stylus ø 1.6 mm/.062", Sapphire, l = 59.3 mm/2.335", 2:1 ratio	Federal	EPT-1059-W2
2185449	Stylus ø 1.6 mm/.062", Sapphire, l = 154.6 mm/6.085", 5:1 ratio	Federal	EPT-1059-W5
2216219	Stylus ø 1.6 mm/.062", Sapphire, l = 91.1 mm/3.585", 4:1 ratio	Federal	EPT-1059-W3
2208685	Adaptor to mount EHE-2048 on model 2400 stand		EAM-1071
2208910	Accessories kit for EHE-2048. Includes EAM-1071, CP-116, EPT-1013,two rectangular holding bars and a holding rod		EAS-1333
2210400	Fine adjust attachememt for EHE-2048		EAT-1026
2206061	Clamp for mounting EHE-2048 on model 2300 stand		CP-116
2211459	Gagehead adapter cable. Adapts EHE-2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB-1852

Millimar EHE-2050

Inductive probe

FEATURES

- Clutch mounted contact swivels through 280° arc for easy positioning
- Involute tip (normally furnished) automatically corrects for cosine error when finger is at an angle up to 20°. Simplifies "reach over" jobs.



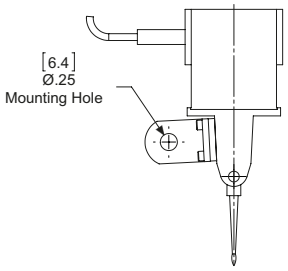
Application:

For use on test stands, surface plate work, or where light pressure is needed

TECHNICAL DATA

Order no.		2120419
Product type		EHE-2050
Probe type		Fixed nose mount (EAM-1045), tamper-proof mounted
Measuring range	mm	± 0.25
Measuring range	inch	± .010"
Measuring force	N	0.04 N (.14 oz.) in either direction
Increase in measuring force	N/mm	0.001 N / 25µm
Repeatability f_w	µm	0.1
Repeatability f_w	inch	4 µ"
Linearity deviation within +/–0.250 mm		0.1% (over full range)
Linearity deviation within +/–.010"		0.1% (over full range)
Cable length	m	1.2
Compatibility		Federal

Order no.
2120419



ACCESSORIES

Order no.	Product name	Compatibility	Product type
2216178	Stylus ø 1.6 mm/.062", steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1004
2216180	Stylus ø 1.6 mm/.062" involute, steel, l = 27.6 mm/1.085", 1:1 ratio up to 20°, involute tip	Federal	EPT-1008
2216179	Stylus ø 0.787 mm/.031", carbide, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1007
2216184	Stylus ø 0.787 mm/.031", steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1013
2216217	Stylus ø 1.6 mm/.062", sapphire, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1059-W1
2185448	Stylus ø 1.6 mm/.062", sapphire, l = 122.8 mm/4.835", 4:1 ratio	Federal	EPT-1059-W4
2216218	Stylus ø 1.6 mm/.062",sapphire, l = 59.3 mm/2.335", 2:1 ratio	Federal	EPT-1059-W2
2185449	Stylus ø 1.6 mm/.062", sapphire, l = 154.6 mm/6.085", 5:1 ratio	Federal	EPT-1059-W5
2216219	Stylus ø 1.6 mm/.062", sapphire, l = 91.1 mm/3.585", 4:1 ratio	Federal	EPT-1059-W3
2208685	Adaptor to mount EHE-2048 on model 2400 stand		EAM-1071

Millimar EHE-2052

Inductive probe

FEATURES

- Clutch mounted contact swivels through 280° arc for easy positioning
- Involute tip (normally furnished) automatically corrects for cosine error when finger is at an angle up to 20°. Simplifies "reach over" jobs.



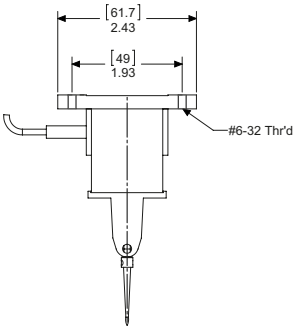
Application:

For use on test stands, surface plate work, or where light pressure is needed

TECHNICAL DATA

Order no.		2120420
Product type		EHE-2052
Probe type		Fixed back plate, (EPL-1140) tamper-proof mounted
Measuring range	mm	± 0.25
Measuring range	inch	± .010"
Measuring force	N	0.04 N (.14 oz.) in either direction
Increase in measuring force	N/mm	0.001 N / 25µm
Repeatability f_w	µm	0.1
Repeatability f_w	inch	4 µ"
Linearity deviation within +/–0.250 mm		0.1% (over full range)
Linearity deviation within +/–.010"		0.1% (over full range)
Cable length	m	1.2
Compatibility		Federal

Order no.
2120420



ACCESSORIES

Order no.	Product name	Compatibility	Product type
2216178	Stylus ø 1.6 mm/.062", steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1004
2216180	Stylus ø 1.6 mm/.062" involute, steel, l = 27.6 mm/1.085", 1:1 ratio up to 20°, involute tip	Federal	EPT-1008
2216179	Stylus ø 0.787 mm/.031", carbide, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1007
2216184	Stylus ø 0.787 mm/.031", steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1013
2216217	Stylus ø 1.6 mm/.062", Sapphire, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT-1059-W1
2185448	Stylus ø 1.6 mm/.062", Sapphire, l = 122.8 mm/4.835", 4:1 ratio	Federal	EPT-1059-W4
2216218	Stylus ø 1.6 mm/.062", Sapphire, l = 59.3 mm/2.335", 2:1 ratio	Federal	EPT-1059-W2
2185449	Stylus ø 1.6 mm/.062", Sapphire, l = 154.6 mm/6.085", 5:1 ratio	Federal	EPT-1059-W5
2216219	Stylus ø 1.6 mm/.062", Sapphire, l = 91.1 mm/3.585", 4:1 ratio	Federal	EPT-1059-W3
2208685	Adaptor to mount EHE-2048 on model 2400 stand		EAM-1071
2215585	Back plate mounting bracket for EHE-2052		EPL-1140

Millimar EHE-2056

Inductive probe

FEATURES

- Clutch mounted contact swivels through 280° arc for easy positioning
- Involute tip (normally furnished) automatically corrects for cosine error when finger is at an angle up to 20°. Simplifies “reach over” jobs.



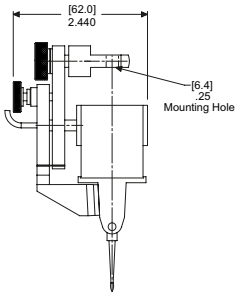
Application:

For use on test stands, surface plate work, or where light pressure is needed

TECHNICAL DATA

Order no.		2120422
Product type		EHE–2056
Probe type		Adjustable nose mount (EAT–1010), tamper-proof mounted. 3.8 mm /.150” fine adjustment for quick setup
Measuring range	mm	± 0.25
Measuring range	inch	± .010”
Measuring force	N	0,04 N (.14 oz.) in either direction
Increase in measuring force	N/mm	0,001 N / 25µm
Repeatability f_w	µm	0.1
Repeatability f_w	inch	4 µ”
Linearity deviation within +/–0,250 mm		0.1% (over full range)
Linearity deviation within +/–.010”		0.1% (over full range)
Cable length	m	1.2
Compatibility		Federal

Order no.
2120422



ACCESSORIES

Order no.	Product name	Compatibility	Product type
2216178	Stylus ø 1.6 mm/.062”, steel, l = 27.6 mm/1.085”, 1:1 ratio	Federal	EPT-1004
2216180	Stylus ø 1.6 mm/.062” involute, steel, l = 27.6 mm/1.085”, 1:1 ratio up to 20°, involute tip	Federal	EPT-1008
2216179	Stylus ø 0.787 mm/.031”, carbide, l = 27.6 mm/1.085”, 1:1 ratio	Federal	EPT-1007
2216184	Stylus ø 0.787 mm/.031”, steel, l = 27.6 mm/1.085”, 1:1 ratio	Federal	EPT-1013
2216217	Stylus ø 1.6 mm/.062”, Sapphire, l = 27.6 mm/1.085”, 1:1 ratio	Federal	EPT-1059-W1
2185448	Stylus ø 1.6 mm/.062”, Sapphire, l = 122.8 mm/4.835”, 4:1 ratio	Federal	EPT-1059-W4
2216218	Stylus ø 1.6 mm/.062”, Sapphire, l = 59.3 mm/2.335”, 2:1 ratio	Federal	EPT-1059-W2
2185449	Stylus ø 1.6 mm/.062”, Sapphire, l = 154.6 mm/6.085”, 5:1 ratio	Federal	EPT-1059-W5
2216219	Stylus ø 1.6 mm/.062”, Sapphire, l = 91.1 mm/3.585”, 4:1 ratio	Federal	EPT-1059-W3
2210399	Adjustable nose mounting bracket for EHE-2056		EAT-1010

Millimar EGH-2011

Inductive probe

FEATURES

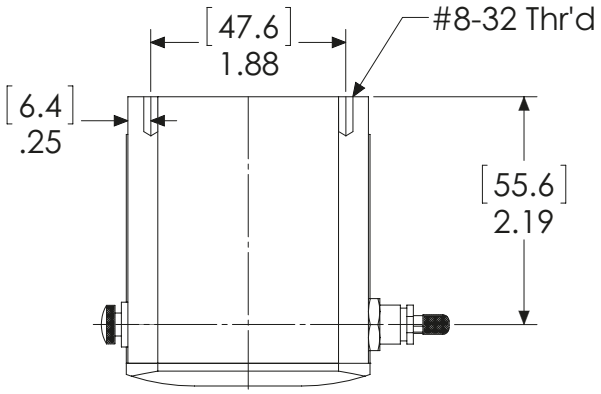
- Friction-free, straight line motion
- Adjustable pre-travel
- Gaging pressure provided by external spring, adjustable
- Contact points (PT-223 normally furnished)



TECHNICAL DATA

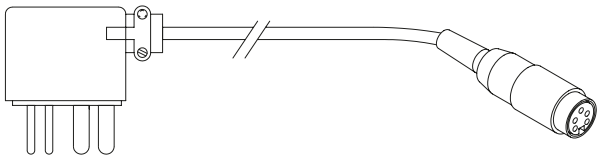
Order no.		2213259
Product type		EGH-2011
Probe type		Protective housing encloses head in tamper-proof mounting. Permits adjustment of both gaging pressure and pre-travel.
Measuring range	mm	± 0.25
Measuring range	inch	± .010"
Measuring force	N	Adjustable 0.85 –4N (3oz. –14 oz.)
Repeatability f_w	µm	0.01
Repeatability f_w	inch	.5 µ"
Linearity deviation within +/–0.250 mm		0.05% (over full range)
Linearity deviation within +/–.010"		0.05% (over full range)
Cable length	m	2.4
Compatibility		Federal

Order no.
2213259



ACCESSORIES

Order no.	Product type
2211459	ECB-1852



ECB-1852

Millimar EHE-2049

Inductive probe

FEATURES

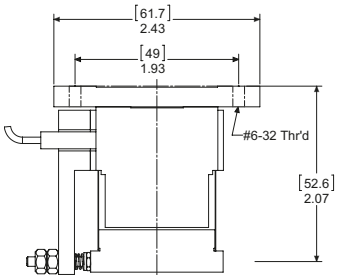
- Friction-free, straight line motion
- Adjustable pre-travel
- Gaging pressure provided by external spring, adjustable
- Contact points (PT-223 normally furnished)



TECHNICAL DATA

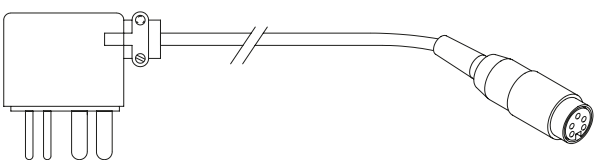
Order no.		2120418
Product type		EHE-2049
Probe type		Pressure spring mount, tamper-proof mounted. Permits setting pre-travel and provides ample gaging pressure regardless of gagehead position
Measuring range	mm	± 0.25
Measuring range	inch	± .010"
Measuring force	N	Adjustable 0.85 –4N (3oz. –14 oz.)
Repeatability f_w	µm	0.01
Repeatability f_w	inch	.5 µ"
Linearity deviation within +/–0.250 mm		0.05% (over full range)
Linearity deviation within +/–.010"		0.05% (over full range)
Cable length	m	2.4
Compatibility		Federal

Order no.
2120418



ACCESSORIES

Order no.	Product type
2211459	ECB-1852



ECB-1852

Millimar EHE-2053

Inductive probe

FEATURES

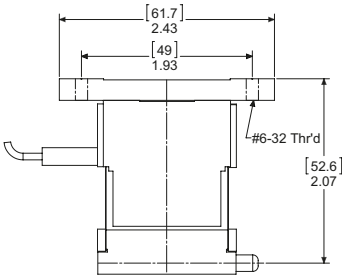
- Friction-free, straight line motion
- Adjustable pre-travel
- Gaging pressure provided by external spring, adjustable
- Contact points (PT-223 normally furnished)



TECHNICAL DATA

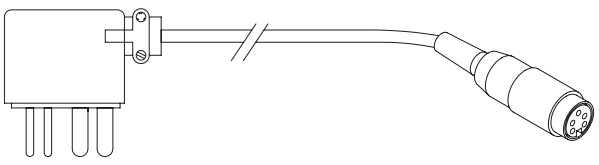
Order no.		2120421
Product type		EHE-2053
Probe type		Fixed back plate EPL-1140 (15.8 mm / 0.625" wide), tamper-proof mounted. Provides means of attachment for mounting on adjustable plates or slides in fixtures for continuous duty application.
Measuring range	mm	± 0.25
Measuring range	inch	± .010"
Measuring force	N	Adjustable 0.85 –4N (3oz. –14 oz.)
Repeatability f_w	µm	0.01
Repeatability f_w	inch	.5 µ"
Linearity deviation within +/–0.250 mm		0.05% (over full range)
Linearity deviation within +/–.010"		0.05% (over full range)
Cable length	m	2.4
Compatibility		Federal

Order no.
2120421



ACCESSORIES

Order no.	Product type
2211459	ECB-1852



ECB-1852

Millimar | Standard Elements

Modular

The use of Millimar standard elements allows multi-gage measuring devices to be designed and implemented for the widest possible range of workpieces, e.g. rotationally symmetrical and non-rotationally symmetrical parts.
Rotationally symmetrical workpieces can be mounted between centers or on prismatic supports, whereas non-rotationally symmetrical workpieces often require a special holder.

Versatile

The versatility of the Millimar standard elements means that the right solution can be provided, regardless of the measurement task at hand.
Whether it's a question of external, internal or length measurements, the Millimar standard elements will be able to meet your requirements, even in the case of complex workpiece geometries.
Thanks to the space saving design of the styli, a high number of measuring points can be inspected within a small area of the testpiece.
The pneumatic lifting mechanisms integrated into the measuring elements simplify the job of moving the testpiece into the measuring position and reduce the amount of wear on the stylus.

Flexible

The modular concept using Millimar standard elements is continued throughout the construction of the whole system.
A generous amount of travel in the stylus (up to 20 mm / 0.79") allows a high degree of flexibility in terms of the variety of testpieces that can be accommodated.

Precise

The Millimar standard elements are specially designed for use in the workshop and are manufactured using a rigorous process. This guarantees that the measuring devices give stable and reliable measurements.
For example, using styli fitted with two ball-bearing guides for supporting the moving part, it is possible to achieve measurement accuracy at the µm scale, if this is required due to the tolerances of the feature being measured.

Reliable

All components are long lasting and low maintenance thanks to the use of rust proof materials, the selection of appropriate heat treatments, and the use of a lifting mechanism to minimize the effects of friction acting on the styli when the workpiece is inserted.

Economical

Our systems can either be constructed by the customer from standard elements obtained from the catalog, or alternatively we can provide ready-built devices as turn-key solutions. Whichever option you choose, you can be sure that you are purchasing a system that is tailored to your specific requirements on the most favorable of terms.

Below are just a few examples of the many factors that contribute to the cost effectiveness of the Millimar standard elements:

- Reusability of standard elements: Once manufacture of a particular type of workpiece has ceased, all standard elements used in the test equipment can be reused for a different type of workpiece.
- A choice of different mechanisms for guiding the moving part of the stylus, according to the accuracy requirements of the measuring task (optimal price-performance ratio).
- Reduction in development and implementation time.
- Availability of the equipment: Our standard elements are manufactured under standard production conditions and are always available off the shelf and ready to use.



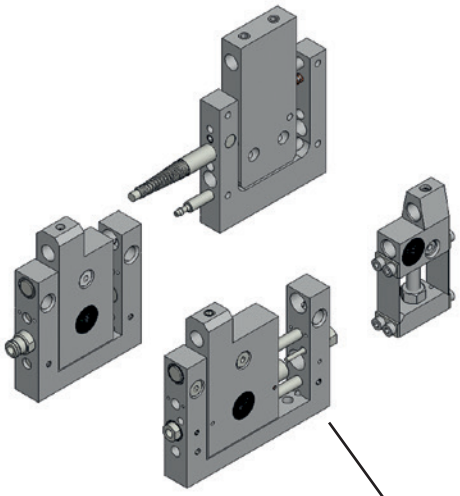
Detailed information can be found in the catalog –
Components for Length Metrology

or visit our online shop at
https://eshop.mahr.com

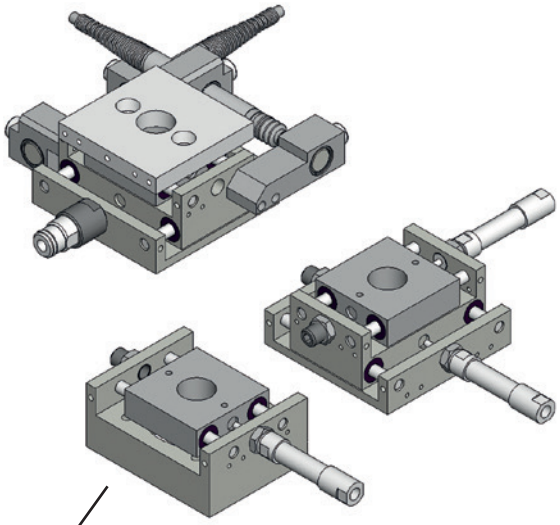


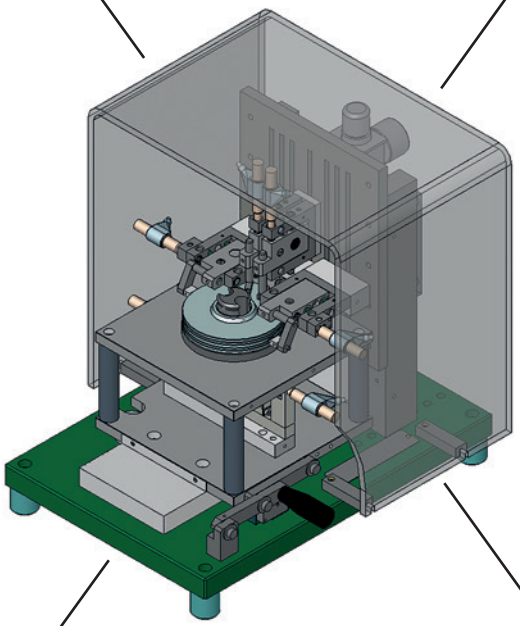
Millimar | Standard Elements

Gage module
Travel distance: 5 - 10 - 20 mm

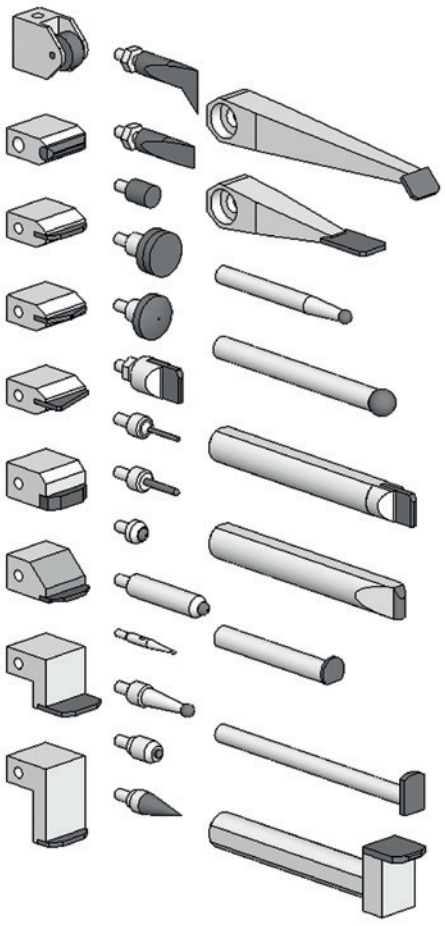


XY tables
Travel distance: 2.5 - 5 - 7 mm

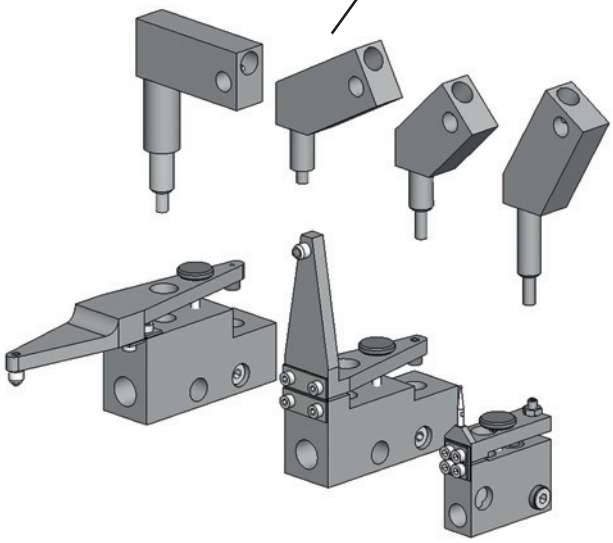




Styli



Angular adjustment
0 - 30 - 45 - 60 - 90°



Millimar EMD-832P-48-W1 / EMD-832P-48-W2

Electronic Levels - Differential Level System

RS232C

FEATURES

- Compare the orientation attitude of separate or adjacent horizontal surfaces
- Level systems are angular-linear compatible
- Sensing heads are interchangeable with Federal electrical spec.'s gageheads to accommodate linear measurements
- Fast response: quick response to slight angular changes permit taking fast and accurate measurements at various sensing head positions or taking dynamic position readings
- Resolution/Repeatability: Mahr Federal's Electronic Levels far exceed the sensitivity and accuracy of precision spirit levels with a resolution to 6 µin per foot (.1 arc second), compared to the spirit level's resolution of .0001" per foot. With repeatability at ±.1 arcsecond, Electronic Levels are ideal for ultra-high resolution profiling.
- Direct dimensional readout: multiplier feature permits operator to view displacement caused by the angular measurement of the level head; this is displayed as an inches per foot readout rather than arc seconds; eliminates readout confusion when switching from spirit levels to electronic levels
- Angular-linear compatible: sensing heads are easily interchangeable with Federal electrical spec.'s gageheads to accommodate linear measurements
- Electronic levels are much easier to use with an autocollimator or a laser based calibration system
- Performance is comparable and results are obtained without time consuming sight path alignments, cleaning of sensitive optical surfaces or hard to control environmental conditions
- The differential level system operates simultaneously with a single amplifier, permitting an immediate comparison between two surfaces
- Adjustable bases permit setup on surfaces that are out-of-level or square by as much as ± 1.5°
- **Package contains:** indicating instrument 832 F, 2 electronic level heads EGH-2103-W2 with 6m/20ft cable, 2 adjustable mounts EAT-1029, remote data entry handswitch with 6m / 20ft cable, power source, instruction manual, case

Application:

- Used to determine any deviation in the right angle relationship between a horizontal surface and the Earth's gravitational force (usually expressed as an angular or linear deviation from absolute level)



TECHNICAL DATA

Order no.		2120550	2120551
Product type		EMD-832P-48-W1	EMD-832P-48-W2
Range of digital display	µm	± 2000, ± 200, ± 20	
Range of digital display	inch	± .100", ± .010", ± .001"	
Range of digital display	arcsec	± 1000 arcsec, ± 200 arcsec	
Range of digital display	rad	± 1 mrad, ± 5 mrad	
Resolution	µm	1, 0.1, 0.02	
Resolution	inch	.0001", .00001", .000001"	
Resolution	arcsec	0.1 arcsec, 1 arcsec	
Resolution	rad	0.005 mrad, 0.0005 mrad	
Graduation value	arcsec	50, 10	
Tolerance display		LED 5 cllass	LED 5 class
Probe inputs		2	
Compatibility		Federal	
Dynamic functions		Max, Min, TIR, Nominal	
Classification		5	
Data interface		RS232C	
Control inputs		3	
Control outputs		5	
Analog output		±5VDC	
Energy supply		Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50-60 Hz via AC adapter	Battery operation, 230 V / 50 Hz
Power supply connection		120 VAC 50/60Hz	220 VAC 50/60Hz (EU)
Compatibility		Federal	

ACCESSORIES

Order no.	Product name	Compatibility	Product type
2120373	Electronic level gagehead with 2.5 m / 8 ft cable	Federal	EGH-2013-W1
2120374	Electronic level gagehead with 6 m / 20 ft cable	Federal	EGH-2013-W2
2120363	Surface plate certification software		EDD-1035
2120292	Adjustable leveling foot		EAT-1029
2120293	Magnetic base		EAT-1054
2120294	V-base 120° (102 mm / 4")		EAT-1055
2120295	Right angle attachment with 120° V- faces (152 mm / 6")		EAT-1056
2120296	Adjustable 3-pad base (50 –203 mm / 2 –8")		EAT-1057
2120297	3-pad base (50 mm / 2")		EAT-1058
2120298	3-pad base (102 mm / 4")		EAT-1059
2120299	3-pad base (152 mm / 6")		EAT-1060
2120300	Base (l= 320 mm / 12.625") with integrated 120° V ground base		EAT-1061
2120301	Spindle block (l= 19 mm / .750")		EAT-1062



EAT-1029; EGH-2013-W1; EGH-2013-W2



EAT-1054



EAT-1055



EAT-1056



EAT-1057



EAT-1058; EAT-1059; EAT-1060



EAT-1061



EAT-1062

Millimar EMD-832P-48-W1 / EMD-832P-48-W2

Electronic Levels - Differential Level System

RS232C

FEATURES

- Compare the orientation attitude of separate or adjacent horizontal surfaces
- Level systems are angular-linear compatible
- Sensing heads are interchangeable with Federal electrical spec.'s gageheads to accommodate linear measurements
- Fast response: quick response to slight angular changes permit taking fast and accurate measurements at various sensing head positions or taking dynamic position readings
- Resolution/Repeatability: Mahr Federal's Electronic Levels far exceed the sensitivity and accuracy of precision spirit levels with a resolution to 6 µin per foot (.1 arc second), compared to the spirit level's resolution of .0001" per foot. With repeatability at ±.1 arc second, Electronic Levels are ideal for ultra-high resolution profiling.
- Direct dimensional readout: multiplier feature permits operator to view displacement caused by the angular measurement of the level head; this is displayed as an inches per foot readout rather than arc seconds; eliminates readout confusion when switching from spirit levels to electronic levels
- Angular-linear compatible: sensing heads are easily interchangeable with Federal electrical spec.'s gageheads to accommodate linear measurements
- Electronic levels are much easier to use with an autocollimator or a laser based calibration system
- Performance is comparable and results are obtained without time consuming sight path alignments, cleaning of sensitive optical surfaces or hard to control environmental conditions
- The differential level system operates simultaneously with a single amplifier, permitting an immediate comparison between two surfaces
- Adjustable bases permit setup on surfaces that are out-of-level or square by as much as ± 1.5°
- **Package contains:** indicating instrument 832 F, 2 electronic level heads EGH-2103-W2 with 6m/20ft cable, 2 adjustable mounts EAT-1029, remote data entry handswitch with 6m/20ft cable, power source, instruction manual, case

Application:

- Used to determine any deviation in the right angle relationship between a horizontal surface and the earth's gravitational force (usually expressed as an angular or linear deviation from absolute level)



TECHNICAL DATA

Order no.		2120550	2120551
Product type		EMD-832P-48-W1	EMD-832P-48-W2
Range of digital display	µm	± 2000, ± 200, ± 20	
Range of digital display	inch	± .100", ± .010", ± .001"	
Range of digital display	arcsec	± 1000 arcsec, ± 200 arcsec	
Range of digital display	rad	± 1 mrad, ± 5 mrad	
Resolution	µm	1, 0.1, 0.02	
Resolution	inch	.0001", .00001", .000001"	
Resolution	arcsec	0.1 arcsec, 1 arcsec	
Resolution	rad	0.005 mrad, 0.0005 mrad	
Graduation value	arcsec	50, 10	
Tolerance display		LED 5 cllass	LED 5 class
Probe inputs		2	
Compatibility		Federal	
Dynamic functions		Max, Min, TIR, Nominal	
Classification		5	
Data interface		RS232C	
Control inputs		3	
Control outputs		5	
Analog output		±5VDC	
Energy supply		Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50-60 Hz via AC adapter	Battery operation, 230 V / 50 Hz
Power supply connection		120 VAC 50/60Hz	220 VAC 50/60Hz (EU)
Compatibility		Federal	

ACCESSORIES

Order no.	Product name	Compatibility	Product type
2120373	Electronic level gagehead with 2.5 m / 8 ft cable	Federal	EGH-2013-W1
2120374	Electronic level gagehead with 6 m / 20 ft cable	Federal	EGH-2013-W2
2120363	Surface plate certification software		EDD-1035
2120292	Adjustable leveling foot		EAT-1029
2120293	Magnetic base		EAT-1054
2120294	Vee base 120° (102 mm / 4")		EAT-1055
2120295	Right angle attachment with 120° vee faces (152 mm / 6")		EAT-1056
2120296	Adjustable 3-pad base (50 –203 mm / 2 –8")		EAT-1057
2120297	3-pad base (50 mm / 2")		EAT-1058
2120298	3-pad base (102 mm / 4")		EAT-1059
2120299	3-pad base (152 mm / 6")		EAT-1060
2120300	Base (l= 320 mm / 12.625") with integrated 120° vee ground base		EAT-1061
2120301	Spindle block (l= 19 mm / .750")		EAT-1062



EAT-1054



EAT-1062



EAT-1055



EAT-1056



EAT-1057



EAT-1058; EAT-1059; EAT-1060



EAT-1061



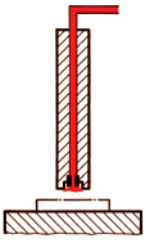
EAT-1029; EGH-2013-W1; EGH-2013-W2

Millimar | Air Gages

Precision begins at the Start of the Measuring Process

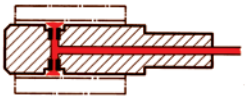
Air gages use the measuring effect of the change in pressure when a workpiece approaches a measuring jet. As the distance between jets and work surface decreases, the pressure increases while the velocity of flow and the respective volume flow decrease. The air measuring procedure has a realtively short but very linear measuring range.

1.



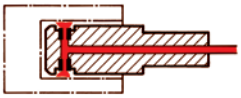
Thickness or wall thickness measurements with jet air gage.

2.



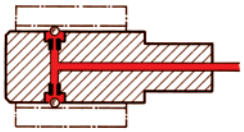
Diameter measurement of cylindrical through bores with jet air plug gage.

3.



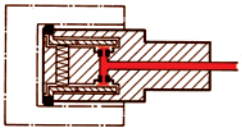
Diameter measurement of cylindrical blind bores with jet air plug gage.

4.



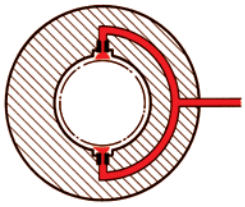
Diameter measurement of cylindrical through bores with ball contact plug gage.

5.



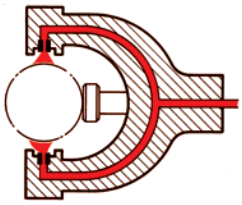
Diameter measurement of cylindrical blind bores with lever contact plug gage.

6.



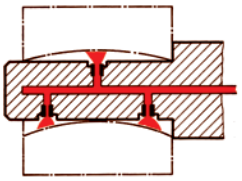
Diameter of thickness measurement with adjustable jet air caliper gage.

7.



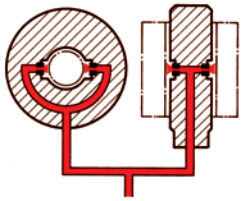
Diameter measurement of cylindrical shafts with jet air ring gage.

8.



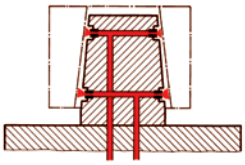
Straightness measurement of a cylindrical bore with special jet air plug gage.

9.



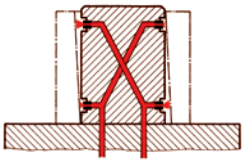
Mating measurement between bore and shaft with jet air plug gage and jet air ring gage.

10.



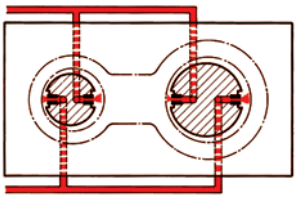
Taper pitch measurement of an inside taper with taper jet air plug gage measurement as per the differential measuring method.

11.



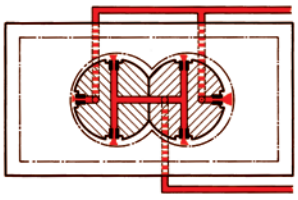
Measurement of a perpendicular position of a cylindrical bore to the front face with a special jet air plug gage measurement as per the differential measuring method.

12.



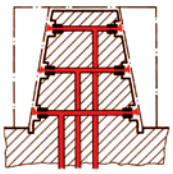
Measurement of hole distances of separated cylindrical bores with jet air plug gage measurement as per the differential measuring method.

13.



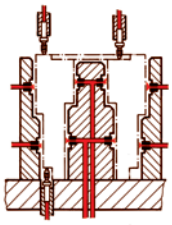
Measurement of hole distances of truncated cylindrical bores with jet air plug gages measurement as per the differential measuring method.

14.



Taper pitch measurement as well as form and diameter measurement of an inside taper with taper jet air plug gage.

15.



Multiple inside and outisde measurements with measuring jet air gages and contact probes in connection with a seven-column unit.

Metrology

Millimar evaluation units work according to the principle of determination of changes in air pressure; the pressure differential between two chambers is measured. While one of the two chambers provides a constant reference pressure, the pressure of the other chamber (measuring chamber) is determined by the distance of the measuring jet of an air measuring value recorder to the test specimen.
Millimar evaluation units have two connection points that are each directly connected to one of the two pressure chambers. Thus, the measuring value is measured directly, without any conversion via a Piezo pressure sensor, and is then digitalized. Magnifications from 2500:1 to 10000:1 are realized with exchangeable instrument jets.
Millimar measuring units must be supplied with constant air pressure through a pressure reducing valve. Measuring units with pressure reducing valves can be connected to all compressed air lines from 3.5 bar to 10 bar overpressure, whereby an air filter should be interconnected.
The air must be dry and oil free.

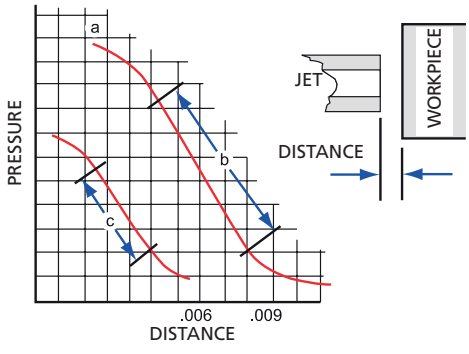


Metrological

- Universal, relilable, proven, especially high-performing
- All measuring methods: individual, total and differential measurements
- High accuracy, long-term stability, insensitive to environmental influences
- Up to 10000x magnification of the measuring values, large measuring ranges
- High measuring accuracy and reproducibility for the measuring results: depnding upon the magnification 0.5 µm to 20 µm
- Contact free measurements with measuring jets, no damage to the workpieces
- Reliable measurements of even uncleaned, oiled and lubricated workpieces, or workpieces with lapping paste. Measuring points are cleaned by the measuring air
- Linear display of the measuring values on a clear, large or long scale, easy and error-free reading of measuring results
- Measurement of diameters, distance between holes, tapers, eccentricities, alignment of bores, mating measurements, etc.
- Various measuring possibilities due to the corresponding adaption to existing measuring problems
- Airgage display unit for all applications
- Small, handy and easy to use
- Fully automatic working electrical units for measuring, control and sorting processes
- Measurement control unit for production machines
- Millimar single and multi-column units to set-up complete testing control units
- Due to their modularity and ability to be mounted close to each other, as well as their long-range scale readings, Millimar single and multi-column units can be set up as complete testing control systems
- Versatile measuring elements: jet air probes, jet air plugs gage, jet air ring gages, air caliper gages, angularity plug gages, angularity measuring rings, taper jet plug gages, taper jet ring gages and measuring units for mating parts for contact-free measurement
- Unusually long lifetime of the air measuring elements
- Robust model for the shop floor. Models for all applications.
- Special models for special tasks

General Technical Data of Air Gages

Air gaging is a measuring system that uses air pressure to determine the size of the measured part. The relationship between air pressure and distance of a restriction (workpiece) to the air escape (jets) can be plotted on a graph (line a).
As the distance between jets and work surface increases, the pressure decreases and the ratio becomes linear as represented by the straight section "B". This straight portion of the curve can be accurately calibrated, and represents the scale of the Dimensionair®. Compare its length with "C" on the other curve, which is the usable portion of other air gage scales. This longer linear scale gives the Dimensionair® its longer usable measuring range.



Millimar D-1250 / D-2500 / D-5000 / D-10000 / D-20000 / D-4000 / D-8000 / D-16000 / D-32000

Dimensionair Air Gages (Single Master System)

FEATURES

- Operated with regular workshop compressed air (40-125 psi)
- An internal pressure regulator keeps the measuring pressure within the calibrated range
- Zero offset of the instrument with just one setting standard and the zero adjuster
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout
- An integrated air filter removes dust and dirt particles from the air supply
- Equipment connection on the front of the device; hand tightening is sufficient for tight connections
- No recalibration required after changing the measuring equipment; measurement can be resumed immediately after setting the instrument to zero
- 4 models available, choice of mm or inches
- **Package contains:** adapter for pneumatic plug gages, Federal compatible, air filter, supply hose AHO-2



TECHNICAL DATA

Order no.		2095183	2095184	2095185	2095186	2095189	2095195	2095196	2095197	2095198
Type		D–1250	D–2500	D–5000	D–10000	D–20000	D–4000	D–8000	D–16000	D–32000
Magnification		1250:1	2500:1	5000:1	10000:1	20000:1	4000:1	8000:1	16000:1	32000:1
Tooling ID		100	50	20	10	5	50	20	10	5
Inputs for pneumatic measuring equipment		1								
Number of jets		1, 2, or 3								
Scale reading		Dial diameter 82.6 mm / 3.25″					Dial diameter 152.4 mm / 6″			
Range of analog display inches	inch	± .003″	± .0015″	± .00075″	± .0003″	± .00015″	± .0015″	± .00075″	± .0003″	± .00015″
Scale graduation value	inch	.0001″	.00005″	.00002″	.00001″	.000005″	.000025″	.00001″		.000005″
Display		Large analog scale with 2 tolerance markers								
Compatibility		Federal								
Features		1								
Air pressure		3 –10 bar / 40–125 psi								
Roughness surface parameters		Ra 100 µ″ / 2,54 µm	Ra 50 µ″ / 1,27 µm	Ra 20 µ″ / 0,50 µm	Ra 10 µ″ / 0,25 µm	Ra 5 µ″ / 0,12 µm	Ra 50 µ″ / 1,27 µm	Ra 20 µ″ / 0,50 µm	Ra 10 µ″ / 0,25 µm	Ra 5 µ″ / 0,12 µm
Workpiece tolerance		± .002″	± .001″	± .0005″	± .0002″	± .0001″	± .001″	± .0005″	± .0002″	± .0001″

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2095183	187	7.125″	197	7.75″	127	5″
2095184	187	7.125″	197	7.75″	127	5″
2095185	187	7.125″	197	7.75″	127	5″
2095186	187	7.125″	197	7.75″	127	5″
2095189	187	7.125″	197	7.75″	127	5″
2095195	187	7.125″	197	7.75″	127	5″
2095196	187	7.125″	197	7.75″	127	5″
2095197	187	7.125″	197	7.75″	127	5″
2095198	187	7.125″	197	7.75″	127	5″

ACCESSORIES

Order no.	Product name	Product type
2086965	Magnification kit, for calibrating pneumatic display units, Magnification: 1250:1	AMR-SPEC–136
2094182	Magnification kit, for calibrating pneumatic display units, Magnification: 1260:1	DP60
2201991	Particle filter, filter size 5µm	AFL–10
2201994	Oil and water separator trap	AFL–24
2201992	Replacement filter element for AFL–10 filter	AFL–21
2201993	Replacement filter element for AFL–24 filter	AFL–23
2086960	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2086961	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2086963	Magnification kit, for calibrating pneumatic display units, Magnification: 20000:1, 32000:1	AMR–15



AMR-SPEC-136;
D60;
AMR-12;
AMR-13;
AMR-14;
AMR-15



AFL-24

Millimar D-1250M / D-2500M / D-5000M / D-10000M / D-20000M / D-4000M / D-8000M / D-16000M / D-32000M

Dimensionair Air Gages (Single Master System)

FEATURES

- Operated with regular workshop compressed air (40-125 psi)
- An internal pressure regulator keeps the measuring pressure within the calibrated range
- Zero offset of the instrument with just one setting standard and the zero adjuster
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout
- An integrated air filter removes dust and dirt particles from the air supply
- Equipment connection on the front of the device; hand tightening is sufficient for tight connections
- No recalibration required after changing the measuring equipment; measurement can be resumed immediately after setting the instrument to zero
- 4 models available, choice of mm or inches
- **Package contains:** adapter for pneumatic plug gages, Federal compatible, air filter, supply hose AHO-2



TECHNICAL DATA

Order no.		2095190	2095191	2095192	2095193	2095194	2095199	2095200	2095201	2095202
Product type		D–1250M	D–2500M	D–5000M	D–10000M	D–20000M	D–4000M	D–8000M	D–16000M	D–32000M
Magnification		1250:1	2500:1	5000:1	10000:1	20000:1	4000:1	8000:1	16000:1	32000:1
Tooling ID		100	50	20	10	5	50	20	10	5
Inputs for pneumatic measuring equipment		1								
Number of jets		1, 2, or 3								
Scale reading		Dial diameter 82.6 mm / 3.25"					Dial diameter 152.4 mm / 6"			
Range of analog display	µm	± 76	± 38	± 19	± 7,6	± 3.8	± 38	± 19	± 7,6	± 3.8
Graduation value	µm	2	1	0,5	0,2	0,1	0,5	0,2		0,1
Display		Large analog scale with 2 tolerance markers								
Compatibility		Federal								
Features		1								
Air pressure		3 –10 bar / 40–125 psi								
Roughness surface parameters		Ra 100 µ" / / 2,54 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm
Workpiece tolerance		± 50 µm	± 25 µm	± 13,5 µm	± 5 µm	± 2,5 µm	± 25 µm	± 13.5 µm	± 5 µm	± 2,5 µm

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2095190	187	7.125"	197	7.75"	127	5"
2095191	187	7.125"	197	7.75"	127	5"
2095192	187	7.125"	197	7.75"	127	5"
2095193	187	7.125"	197	7.75"	127	5"
2095194	187	7.125"	197	7.75"	127	5"
2095199	187	7.125"	197	7.75"	127	5"
2095200	187	7.125"	197	7.75"	127	5"
2095201	187	7.125"	197	7.75"	127	5"
2095202	187	7.125"	197	7.75"	127	5"

ACCESSORIES

Order no.	Product name	Product type
2086963	Magnification kit, for calibrating pneumatic display units, Magnification: 20000:1, 32000:1	AMR-15
2009183	Particle filter, filter size 5µm	AFL-10
2201994	Oil and water separator trap	AFL-24
2201992	Replacement filter element for AFL-10 filter	AFL-21
2201993	Replacement filter element for AFL-24 filter	AFL-23
2086965	Magnification kit, for calibrating pneumatic display units, Magnification: 1250:1	AMR-SPEC-136
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR-12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR-13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR-14
2094182	Magnification kit, for calibrating pneumatic display units, Magnification: 1260:1	DP60



AMR-SPEC-136;
D60;
AMR-12;
AMR-13;
AMR-14;
AMR-15



AFL-24

Millimar

Dimensionair Air Gages (Single or Dual Master System)

FEATURES

- The center is operated with regular workshop compressed air (3-10 bar)
- Internal pressure regulators and differential pressure gages guarantee optimum stability over the entire operating range
- Measuring span and zero point can be set to adjust the measuring range to the interchangeable dial plates
- Interchangeable dial plates for easy, cost effective coverage of different measuring ranges
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout
- An integrated air filter removes dust and dirt particles from the air supply
- Equipment connection on the front of the device; adapters are available for virtually any equipment configuration
- **Package contains:** dial face (order no.: 2242662), adapter for pneumatic plug gages, Federal compatible, air filter, supply hose AHO-2



Application:

- Use in basic dual master air gage applications

TECHNICAL DATA

Order no.		2098125
Inputs for pneumatic measuring equipment		1
Scale reading		Standard diameter 82.6 mm / 3.25"
Range of analog display	inch	± .0015"
Graduation value	inch	.00005"
Display		Large analog scale with 2 tolerance markers
Compatibility		Federal
Features		1
Air pressure		3 –10 bar / 40-125 psi
Data interface		none

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2098125	187	7.125"	197	7.75"	127	5"

ACCESSORIES

Order no.	Product name	Compat-ibility	Magnifi-cation	Range of analog display	Range of analog display	Gradua-tion value	Gradua-tion value	Product type
				inch	µm	inch	µm	
2242760	Dial face		1260:1	± .003″		.0001″		
2242761	Dial face		1875:1	± .002″		.0001″		
2242662	Dial face		2500:1	± .0015″		.00005″		
2242763	Dial face		3750:1	± .001″		.00005″		
2242764	Dial face		5000:1	± .00076″		.00002″		
2242765	Dial face		7500:1	± .0005″		.00002″		
2242766	Dial face		10000:1	± .0003″		.00001″		
2242770	Dial face		1260:1		± 76		2	
2242771	Dial face		1875:1		± 50		2	
2242772	Dial face		2500:1		± 38		1	
2242773	Dial face		3750:1		± 25		1	
2242774	Dial face		5000:1		± 19		0,5	
2242776	Dial face		10000:1		± 7,6		0,2	
2086610	Adaptor 3/8–32 to 10/32, for Ø .109″ (2,77mm) up to .494″ (12,55mm)	Sheffield						AAD–313
2201587	Adaptor 3/8–32 to 1/2–20 for Ø .940″ (23,88mm) up to 5.500″ (139,7mm)	Sheffield						AAD–314
2201586	Adaptor 3/8–32 to 1/4–28 for Ø .494″ (12,55mm) up to .940″ (23,88mm)	Sheffield						AAD–312
2201515	Adaptor 3/8–32 to 10/32 with bleed for Ø .109″ (2,77mm) up to .494″ (12,55mm)	Sheffield						AAD–194
2201514	Adaptor 3/8–32 to 1/4–28 with bleed for Ø .494″ (12,55mm) up to .940″ (23,88mm)	Sheffield						AAD–193
2201516	Adaptor 3/8–32 to 1/2–20 with bleed for Ø .940″ (23,88mm) up to 5.500″ (139,7mm)	Sheffield						AAD–195
2201496	Adaptor 3/8–32 to 9/32–40	Federal	10000:1					AAD–165
2253424	Adaptor 3/8–32 to M10	Mahr						
2240623	Adaptor 3/8–32 to M12	Mahr						
2242767	Adaptor 3/8–32 to 1/8 barb							
2242777	Adapter 3/8–32 to setlock	Moore						
2254565	Adaptor 3/8–32 inside thread to M12x1 outside thread							
2009183	Particle filter, filter size 5µm							AFL–10
2201992	Replacement filter element for AFL–10 filter							AFL–21
2201993	Replacement filter element for AFL–24 filter							AFL–23
2201994	Oil and water separator trap							AFL–24
2094182	Magnification kit, for calibrating pneumatic display units, Magnification: 1260:1		1260:1					DP60
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	Federal	2500:1, 4000:1					AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	Federal	5000:1, 8000:1					AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	Federal	10000:1, 16000:1					AMR–14



AFL-24



AMR-SPEC-136;
D60;
AMR-12;
AMR-13;
AMR-14;
AMR-15

Millimar 832 PE/F1 / 832 PE/F2

Compact Length Measuring Instrument

RS232C

FEATURES

- Digital and analog display in one unit
- Large, high contrast digital display of the exact deviation from zero
- Analog display of measurement related information
- With its fixed ratio and controlled compressed air supply, the digital Dimensionair is a sturdy, reliable system for manufacturing environments
- Only one standard needed for zero offset; the instrument is precalibrated for the correct ratio
- Measuring ranges and resolutions for almost all measuring applications (including measuring equipment with 2, 3, 4 and 6 nozzles, air sensors and nozzle measuring probes, etc.)
- Suitable for dynamic measurement
- RS-232 output for communication with a data storage device, computer or printer, for statistical process control
- Master deviation – improved measurement with even more accurate automatic zero offset
- **Package contains:** power source, supply hose AHO-2, adapter for pneumatic plug gages, Federal compatible



TECHNICAL DATA

Order no.		2004100	2004112	2004106	2004118	2004103	2004115	2004109	2004121
Product type		832 PE/F1		832 PE/F2		832 PE/F1		832 PE/F2	
Magnification		1260:1, 2500:1, 5000:1				10000:1, 20000:1			
Tooling ID		60, 50, 20				10, 5			
Inputs for pneumatic measuring equipment		1		2		1		2	
Number of jets		1-3							
Range of digital display	µm	± 80, ± 40, ± 20				± 8, ± 4			
Range of digital display	inch	± .003", ± .0015", ± .00075"				± .0003", ± .00015"			
Resolution	µm	0.2				0.1			
Resolution	inch	.00001"				.000005"			
Graduation value	µm	4, 2, 1				0.4, 0.2			
Graduation value	inch	150 µ", 75 µ", 38 µ"				15 µ", 8 µ"			
Display		Display mode A (or A and B for 2 channel models only)							
Tolerance display		5 LEDs							
Compatibility		Federal							
Dynamic functions		Max, Min, Max-Min							
Statistical functions		Actual value, nominal value							
Response time digital display	s	0.43							
Response time (Air)		Approx. 1 s (depending on the hose length of the measuring equipment)							
Error limit		+/–1 digit							
Repeatability [µm]		±1 digit or ±1% of the indication range (whichever is greater)							
Data interface		RS232C							
Control outputs		5 TTL optocoupler outputs							
Analog output		±5 VDC at maximum amplitude of the selected measuring range for signal ±A, ±B							
Energy supply		110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004100	254	10"	197	7.75"	216	10.25"
2004112	254	10"	197	7.75"	216	10.25"
2004106	254	10"	197	7.75"	216	10.25"
2004118	254	10"	197	7.75"	216	10.25"
2004103	254	10"	197	7.75"	216	10.25"
2004115	254	10"	197	7.75"	216	10.25"
2004109	254	10"	197	7.75"	216	10.25"
2004121	254	10"	197	7.75"	216	10.25"

ACCESSORIES

Order no.	Product name	Product type
7024634	Data connection cable RS232C (3 m)	
2212852	Oil splashguard storage cover non-transparent	ECV-1276
2212858	Oil splashguard cover transparent	ECV-1285
2211464	Foot switch for hold/measure 3 m / 10 ft cable	ECB-1857
2211465	Footswitch for Dynamic Reset (15 pin connector)	ECB-1858
2211466	Foot switch for data transmit, 3 m / 10 ft	ECB-1859
2211462	Push button for dynamic reset/zeroing, 1.5 m / 5 ft cable	ECB-1855
2211467	Push button for data transmit, 1.5 m / 5 ft cable	ECB-1860
2211481	Push button for measurement hold/measure/data transmit, 3 m / 10 ft	ECB-1868
2214163	Control box with 5 relays (120 V)	EKT-1236-W3
2214165	Control box with 5 relays (240 V)	EKT-1236-W5
2010000	Plug in power supply (832 units with 3 pin connector), 120 VAC	
2010001	Power supply module (832 Amp with 3 pin connector), 220/240 VAC	
2212340	15 pin connector - male (digital I/O)	ECN-1695-W2
2212336	Phone plug male connector for Reset / Data	ECN-1693
2212339	9 pin RS232 connector - male (digital output)	ECN-1695-W1
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR-12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR-13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR-14
2009183	Particle filter, filter size 5µm	AFL-10
2201994	Oil and water seperator trap	AFL-24
2201992	Replacement filter element for AFL-10 filter	AFL-21
2201993	Replacement filter element for AFL-24 filter	AFL-23



AMR-SPEC-136;
D60;
AMR-12;
AMR-13;
AMR-14;
AMR-15



AFL-24

Millimar C 1208 PE/F

Compact Length Measuring Instrument

FEATURES

- When using pneumatic compact length measuring instruments, we recommend using a supply filter (see accessories)
- Favorites: the „SELECT" button allows you to access frequently used settings
- Static measurements ± A
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- 1-point or 2-point master measurement
- Programmable via the integrated keypad or the RS-232 interface with MS Windows® D1000S configuration software
- When using pneumatic compact length measuring instruments, we recommend using a supply filter (see accessories)
- Favorites: the "SELECT" button allows you to access frequently used settings
- Static measurements ± A
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- Auto-detect mode (automatic detection).
- A pneumatic measuring instrument can be connected (nozzle plug gage or nozzle ring gage)
- The instrument in use is automatically switched to the display
- 1-point or 2-point master measurement
- Programmable via the integrated keypad or the RS-232 interface with MS Windows® D1000S configuration software
- Backlit LCD for scale display and two line digital display
- 5 three color status lamps for warning and tolerance limits
- 1 input for pneumatic measuring equipment (compatible with Mahr / Federal electrical spec.)
- RS– 232 interface
- 3 digital inputs for measurement start, master measurement, measured value transfer
- 3 digital outputs for good, reject, rework, measuring time
- **Package contains:** instruction manual, power source
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



TECHNICAL DATA

Order no.		5312095	5312093
Product type		C1208 PE/F	
Magnification		2500:1, 5000:1	10000:1
Inputs for pneumatic measuring equipment		1	
Number of jets		1-3	
Scale reading		Pointer, 61 scale graduations	
Digital display		7 digit LCD, 7 segments	
Range of analog display	µm	± 3, ± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related	
Range of analog display	inch	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related	
Measuring span	µm	76	16
Display		Background illuminated LCD, 115 mm x 70 mm	
Tolerance display		5 LEDs, 3 color	
Compatibility		Federal	
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B	
Features		1	
Programs		1	
Test steps		1	
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Average	
Configuration		PC, keyboard	
Zero setter		Can be set to zero at any point	
Error limit, digital display		0.05 %	
Error limit, analog display		2% (decimal scale display)	
Temperature coefficient	µm/°C	0.005	
Air pressure		2.1 bar ± 5 %	
Air consumption in l/h		Approx. 1-2 m^3	
Data interface		RS232C, Wireless	
Control inputs		3 optocoupler inputs, 24 V, 10 mA	
Control outputs		3 optocoupler outputs, 24 V, 100 mA	
Energy supply		Power source, 230 V/115 V; 50/60 Hz	
IP protection category		IP 43	

Order no.	Depth	Height	Width
	mm	mm	mm
5312095	165	205	160
5312093	165	205	160

ACCESSORIES

Order no.	Product name	Product type
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR-12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR-13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR-14
2201994	Oil and water seperator trap	AFL-24
2201992	Replacement filter element for AFL-10 filter	AFL-21
2201993	Replacement filter element for AFL-24 filter	AFL-23
7024634	Data connection cable RS232C (3 m)	
4102331	Millimar - USB Adapter cable RS232-USB (0.2 m)	Millimar - USB
5318430	Control unit with 3 push buttons	
5330955	Foot switch for input 1	
5330956	Foot switch for input 2	
5330957	Foot switch for input 3	
2121236	Supply filter with adapter kit	
3025712	Keypad dust cover	
4102233	RS232 e transmitter for e-Stick	RS232 e
4102230	e-Stick receiver	e-Stick



AMR-SPEC-136; D60; AMR-12; AMR-13; AMR-14; AMR-15



AFL-24



RS232 e;RS232 f;817 f



e-Stick

Millimar S 1840 PE/F

Compact Column Measuring Instrument

FEATURES

- Measuring results can be determined and addressed at a glance
- Suitable for measurements with pneumatic measuring equipment
- Offers a wide range of functions for the combined evaluation of signals from static and dynamic measurements
- Measuring results are displayed with 101 three color LEDs if programmable warning and tolerance limits are exceeded, LED segments on display change color accordingly from green to yellow or red
- When using pneumatic compact amplifiers, it is recommended at all times to use both a pressure regulator and a supply filter (see accessories)
- Clear, three color analog light bar display of warning and tolerance limits
- Backlit, two line LCD for displaying measured values, help texts and units of measurement
- 1 channel
- RS-232 interface
- Analog output
- 3 digital inputs for measurement start, master measurement, etc.
- 3 digital outputs for good, reject, rework classification, measuring time, etc.
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- Can either be programmed via the integrated membrane keypad using the menu driven interface or via the configuration software for MS Windows®
- 1-point or 2-point master measurement
- Password block in setup mode
- **Package contains:** instruction manual, power source
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



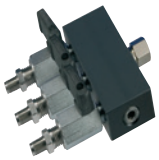
TECHNICAL DATA

Order no.		5318455	5318457
Product type		S1840 PE/F	
Magnification		2500:1	10000:1
Inputs for pneumatic measuring equipment		1	
Scale reading		± 10, 30, 100, 300, 1000, 3000, 10000 µm	
Digital display		7 digit LCD, 7 segments	
Range of analog display	inch	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related	
Display		101 LED elements, 3 color	
Tolerance display		Via color change of the analog display	
Measuring span	mm	76	16
Compatibility		Federal	
Measuring combination		+A, -A	
Features		1	
Programs		1	
Test steps		1	
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Average	
Configuration		PC, keyboard	
Zero setter		electrical	
Response time digital display	s	0.5	
Response time analog display	s	0.5	
Error limit		0.5 –1%	
Error limit, digital display		+/–1 place	
Error limit, analog display		1% (101 LEDs)	
Temperature coefficient	µm/°C	0.005	
Air pressure		2.1 bar ± 5%	
Air consumption in l/h		Approx. 1-2 m^3	
Data interface		RS232C, Wireless	
Control inputs		3 optocoupler inputs, 24 V, 10 mA	
Control outputs		3 optocoupler outputs, 24 V, 100 mA	
Analog output		1 V/mm	
Energy supply		Power source, 230 V/115 V; 50/60 Hz	
IP protection category		IP 43	

Order no.	Depth	Height	Width
	mm	mm	mm
5318455	144	487	47
5318457	144	487	47

ACCESSORIES

Order no.	Product name	Product type
2248282	2-way manifold - low mag	AAD-82
2248283	3-way manifold - low mag	AAD-83
2248284	4-way manifold - low mag	AAD-84
2248285	5-way manifold - low mag	AAD-85
2086960	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR-12
2086961	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR-13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR-14
5330914	Base foot with 1 pressure regulator	
5330915	Base foot with 2 pressure regulators	
5330916	Base foot with 3 pressure regulators	
2121236	Supply filter with adapter kit	
5318430	Control unit with 3 push buttons	
5330955	Foot switch for input 1	
5330956	Foot switch for input 2	
5330957	Foot switch for input 3	
7024634	Data connection cable RS232C (3 m)	
4102331	Millimar - USB Adapter cable RS232-USB (0.2 m)	Millimar - USB
4102233	RS232 e transmitter for e-Stick	RS232 e
4102230	e-Stick receiver	e-Stick



AAD-84;
AAD-85;
AAD-83;
AAD-82



AMR-SPEC-136;
D60;
AMR-12;
AMR-13;
AMR-14;
AMR-15



RS232 e;RS232 f;817 f



e-Stick

Millimar µDimensionair®II

Mobile pneumatic Length Measuring Instrument

FEATURES

- Affordable
- Versatile
- Innovative
- Robust
- No other pneumatic measuring system is a versatile as the µDimensionair, which can be used as a hand-held device, as a stationary table-top device or even directly on the machine tool. With its IP54 protection rating it is suitable for use in harsh workshop environments. The compressed air flowing out of the measuring equipment removes any contamination from the test piece to ensure reliable measuring results.
- Directly and clearly readable measuring results.
- With its fixed ratio and controlled compressed air supply, this sturdy, reliable measuring instrument is ideal for use in manufacturing environments.
- The µDimensionair II offers:
- Choice of setup with one standard or with Min/Max standards
- All other functions of the µMax-µm II digital dial comparator:
- Dynamic measurement: Min, Max, measuring span
- Multiplication factor and hold function („freeze“)
- Choice of data transfer with serial number
- MarConnect data output: USB, Opto RS-232C and Digimatic
- **Package contains:** instruction manual, supply hose AHO-2
- SoftwareMarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



Application:

Applications with pneumatic measuring equipment requiring mobile measurement and evaluation.

TECHNICAL DATA

Order no.		2103200
Product type		µDimensionair II®
Magnification		5000:1, 2500:1, 1260:1
Inputs for pneumatic measuring equipment		1
Digital display		Rotates through 270°
Storage temperature MAX	°C	60
Graduation value	µm	0.5, 1, 2
Graduation value	inch	.00002“, .00005“, .0001“
Display		Analog display with one line digital display
Tolerance display		Two - over / under (3 class)
Compatibility		Federal
Features		1
Programs		1
Test steps		1
Dynamic functions		MAX, MIN, MAX-MIN
Statistical functions		Difference, Nominal Average
Response time (Air)		Approx. 1 s
Error limit		± 1% of the total range
Air pressure		2.10 ± .01 bar
Repeatability [µm]		±1 numerical increment
Data interface		Digimatic, Opto RS232C, USB, Wireless
Energy supply		Battery operation, approx. 3000 h
IP protection category		IP 54

Order no.	Depth	Height	Length	Length (inch)	Width
	mm	mm	mm	inch	mm
2103200	60	3	100	4	70

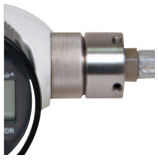
Millimar µDimensionair II®

Mobile pneumatic Length Measuring Instrument

ACCESSORIES

Order no.	Product name	Product type
2238020	Pressure regulator with filter	
2095924	Pressure meter	
2239307	Universal bench mount	
2237666	Standard plastic handle	
2240993	Shut off slide valve	
2241109	Table stand for µDimensionair®	
2240594	Swivel coupling adapter for rotating tooling	
2201994	Oil and water seperator trap	AFL-24
2237713	Connecting hose, 6 m	
2202076	Supply hose, 1.5 m	AHO-2
4102520	Battery 3 V, CR 2032	
4346023	2000 USB data connection cable USB (2 m)	2000 USB
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data connection cable RS232C (2 m)	2000 r




AFL-24

Millimar DP50 / DP20

2-Jet Blind Hole Air Plug HCC

FEATURES

- Calibrated ID tooling for the Dimensionair® Air Gaging Systems
- Tooling is interchangeable without adjusting system magnification.
- Federal Air Plugs have large clearance (see table below), allowing easy entrance into the hole being measured and a greater measuring range.
- Long life - wide clearance and hard chrome (optional) body extends life of the Air Plug.
- Deep, recessed jets - Air jets are recessed into the plug body, protecting them from damage.
- Large jet size eliminates clogging from dirt and oils.
- **Order information:** Please always state when ordering: Transmission ratio of the display unit (e.g. 2500:1), the nominal size to be measured and the specified workpiece tolerance



Application:

Measurement of blind holes

Super-blind Plugs

Blind Hole Air Plugs can be furnished to check shorter holes than listed above, and can be furnished to check closer to the bottom of a hole. Holes must be at least 2.79 mm/.110" long, and the distance from the end of the plug to the center-line of the jets can be as short as 2.16 mm/.075" for plugs below 6.34 mm/.250" or 2.16 mm/.095" for plugs above 6.34 mm/.250".

TECHNICAL DATA

Order no.	Type	Nominal value	Nominal size in inches	Model	Magnification	Measuring span	Compatibility	Clearance	Minimum bore length	Including handle
		mm	inch			µm		mm	mm	
2092961	DP50	3.937 –4.696	.1550 –.1849"	hardened steel	2500:1	38	Federal	0.027	6.35	
2092962	DP50	4.699 –6.312	.1850 –.2485"	hardened steel	2500:1	51	Federal	0.03	6.35	
2092963	DP50	6.314 –9.484	.2486 –.3734"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092964	DP50	9.487 –11.859	.3735 –.4669"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092965	DP50	11.862 –14.933	.4670 –.5879"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092966	DP50	14.935 –20.978	.5880 –.8259"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092967	DP50	20.980 –28.699	.08260 –1.1299"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092968	DP50	28.702 –37.691	1.1300 –1.4839"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092969	DP50	37.694 –44.193	1.4840 –1.7399"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092970	DP50	44.196 –63.751	1.7400 –2.5099"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092971	DP50	63.754 –76.299	2.5100 –3.0039"	hardened steel	2500:1	76	Federal	0.045	6.35	
2092972	DP50	76.302 –89.151	3.0040 –3.5099"	hardened steel	2500:1	76	Federal	0.071	6.35	•
2092973	DP50	89.154 –101.851	3.5100 –4.0099"	hardened steel	2500:1	76	Federal	0.071	6.35	•
2092974	DP50	101.854 –114.300	4.0100 –4.5000"	hardened steel	2500:1	76	Federal	0.071	6.35	•
2092991	DP20	3.937 –4.696	.1550 –.1849"	hardened steel	5000:1	19	Federal	0.013	6.35	
2092992	DP20	4.699 –6.312	.1850 –.2485"	hardened steel	5000:1	25	Federal	0.015	6.35	
2092993	DP20	6.314 –9.484	.2486 –.3734"	hardened steel	5000:1	38	Federal	0.023	6.35	
2092994	DP20	9.487 –11.859	.3735 –.4669"	hardened steel	5000:1	38	Federal	0.023	6.35	
2092995	DP20	11.862 –14.933	.4670 –.5879"	hardened steel	5000:1	38	Federal	0.023	6.35	
2092996	DP20	14.935 –20.978	.5880 –.8259"	hardened steel	5000:1	38	Federal	0.023	6.35	
2092997	DP20	20.980 –28.699	.08260 –1.1299"	hardened steel	5000:1	38	Federal	0.023	6.35	
2092998	DP20	28.702 –37.691	1.1300 –1.4839"	hardened steel	5000:1	38	Federal	0.023	6.35	
2092999	DP20	37.694 –44.193	1.4840 –1.7399"	hardened steel	5000:1	38	Federal	0.023	6.35	
2093000	DP20	44.196 –63.751	1.7400 –2.5099"	hardened steel	5000:1	38	Federal	0.023	6.35	
2093001	DP20	63.754 –76.299	2.5100 –3.0039"	hardened steel	5000:1	38	Federal	0.023	6.35	
2093002	DP20	76.302 –89.151	3.0040 –3.5099"	hardened steel	5000:1	38	Federal	0.071	6.35	•
2093003	DP20	89.154 –101.851	3.5100 –4.0099"	hardened steel	5000:1	38	Federal	0.071	6.35	•
2093004	DP20	101.854 –114.300	4.0100 –4.5000"	hardened steel	5000:1	38	Federal	0.071	6.35	•

Millimar DP50 / DP20

2-jet Blind Hole Air Plug HCC

Order no.	L_2	g	Nominal size	Nominal size	A	B
	mm		mm	inch	mm	mm
2092961	31.75	3/8"–32	3.937 –4.696	.1230 –.1339"	19.05	3.96
2092962	15.09	3/8"–32	4.699 –6.312	.1400 –.1849"	29.36	3.96
2092963	25.4	3/8"–32	6.314 –9.484	.1850 –.2485"	29.36	3.96
2092964	25.4	3/8"–32	9.487 –11.859	.2486 –.3734"	29.36	3.96
2092965	25.4	3/8"–32	11.862 –14.933	.3735 –.4919"	29.36	3.96
2092966	25.4	3/8"–32	14.935 –20.978	.4920 –.5389"	29.36	3.96
2092967	25.4	3/8"–32	20.980 –28.699	.5390 –.5879	29.36	3.96
2092968	25.4	3/8"–32	28.702 –37.691	.5880 –.8259"	29.36	3.96
2092969	25.4	3/8"–32	37.694 –44.193	.08260 –1.1299"	35.71	3.96
2092970	31.75	3/8"–32	44.196 –63.751	1.1300 –1.4839"	35.71	3.96
2092971	31.75	3/8"–32	63.754 –76.299	1.4840 –1.7399	35.71	3.96
2092972	31.75	3/8"–32	76.302 –89.151	1.7400 –2.5099	38.1	3.96
2092973	34.14	3/8"–32	89.154 –101.851	2.5100 –3.0039"	38.1	3.96
2092974	34.14	3/8"–32	101.854 –114.300	3.0040 –3.5099"	38.1	3.96
2092991	34.14	3/8"–32	3.937 –4.696	3.5100 –4.0990"	19.05	3.96
2092992	15.09	3/8"–32	4.699 –6.312	4.0991 –4.5000"	29.36	3.96
2092993	25.4	3/8"–32	6.314 –9.484	.1230 –.1339"	29.36	3.96
2092994	25.4	3/8"–32	9.487 –11.859	.1400 –.1849"	29.36	3.96
2092995	25.4	3/8"–32	11.862 –14.933	.1850 –.2485"	29.36	3.96
2092996	25.4	3/8"–32	14.935 –20.978	.2486 –.3734"	29.36	3.96
2092997	25.4	3/8"–32	20.980 –28.699	.3735 –.4919"	29.36	3.96
2092998	25.4	3/8"–32	28.702 –37.691	.4920 –.5389"	29.36	3.96
2092999	25.4	3/8"–32	37.694 –44.193	.5390 –.5879	35.71	3.96
2093000	31.75	3/8"–32	44.196 –63.751	.5880 –.8259"	35.71	3.96
2093001	31.75	3/8"–32	63.754 –76.299	.08260 –1.1299"	35.71	3.96
2093002	31.75	3/8"–32	76.302 –89.151	1.1300 –1.4839"	38.1	3.96
2093003	34.14	3/8"–32	89.154 –101.851	1.4840 –1.7399	38.1	3.96
2093004	34.14	3/8"–32	101.854 –114.300	1.7400 –2.5099	38.1	3.96

ACCESSORIES

Order no.	Product name	g	Product type
2237666	Standard plastic handle	3/8"–32	
2237873	Depth stop ring for Federal nozzle plug gage		
2239307	Universal bench mount	3-8"/32	
2240993	Shut off slide valve	3/8"–32	
2201954	Extension for nominal sizes from 9.487 to 12.494 mm, D = 9 mm, L = 51 mm	5/16"–32	AEX-1
2201963	Extension for nominal sizes from 9.487 to 12.494 mm, D = 9 mm, L = 102 mm	5/16"–32	AEX-2
2202010	Extension for nominal sizes up to 76.3 mm, D = 12 mm, L = 102 mm	3/8"–32	AHA-4
2202011	Extension for nominal sizes up to 76.3 mm, D = 12 mm, L = 51 mm	3/8"–32	AHA-5
2202074	Connecting hose, 0.9 m	3/8"–32	AHO-1
2202075	Connecting hose, 1.8 m	3/8"–32	AHO-10
2202094	Connecting hose, 1.5 m	3/8"–32	AHO-8





Millimar DP50 / DP20

Nozzle Through-Hole Pin

FEATURES

- Calibrated ID tooling for the Dimensionair® Air Gaging Systems
- Tooling is interchangeable without adjusting system magnification.
- Federal Air Plugs have large clearance (see table below), allowing easy entrance into the hole being measured and a greater measuring range.
- Long life - wide clearance and hard chrome (optional) body extends life of the Air Plug.
- Deep, recessed jets - Air jets are recessed into the plug body, protecting them from damage.
- Large jet size eliminates clogging from dirt and oils.
- **Order information:** Please always state when ordering: Transmission ratio of the display unit (e.g. 2500:1), the nominal size to be measured and the specified workpiece tolerance



Application:

Measurement of through holes

TECHNICAL DATA

Order no.	Type	Nominal value	Nominal size in inches	Model	Magnification	Measuring span	Compatibility	Clearance	Minimum bore length	Including handle
		mm	inch			µm		mm	mm	
2092945	DP50	3.124 –3.553	.1230 –.1339″	hardened steel	2500:1	25	Federal	0.015	4.75	
2092946	DP50	3.556 –4.696	.1400 –.1849″	hardened steel	2500:1	38	Federal	0.027	4.75	
2092947	DP50	4.699 –6.312	.1850 –.2485″	hardened steel	2500:1	51	Federal	0.03	4.75	
2092948	DP50	6.314 –9.484	.2486 –.3734″	hardened steel	2500:1	76	Federal	0.045	6.35	
2092949	DP50	9.487 –12.494	.3735 –.4919″	hardened steel	2500:1	76	Federal	0.045	6.35	
2092950	DP50	12.497 –13.688	.4920 –.5389″	hardened steel	2500:1	76	Federal	0.045	6.35	
2092951	DP50	13.691 –14.933	.5390 –.5879	hardened steel	2500:1	76	Federal	0.045	6.35	
2092952	DP50	14.935 –20.978	.5880 –.8259″	hardened steel	2500:1	76	Federal	0.045	6.35	
2092953	DP50	20.980 –28.699	.08260 –1.1299″	hardened steel	2500:1	76	Federal	0.045	6.35	
2092954	DP50	28.702 –37.691	1.1300 –1.4839″	hardened steel	2500:1	76	Federal	0.045	6.35	
2092955	DP50	37.694 –44.193	1.4840 –1.7399	hardened steel	2500:1	76	Federal	0.045	6.35	
2092956	DP50	44.196 –63.751	1.7400 –2.5099	hardened steel	2500:1	76	Federal	0.045	6.35	
2092957	DP50	63.754 –76.299	2.5100 –3.0039″	hardened steel	2500:1	76	Federal	0.045	6.35	
2092958	DP50	76.302 –89.151	3.0040 –3.5099″	hardened steel	2500:1	76	Federal	0.071	6.35	•
2092959	DP50	89.154 –104.115	3.5100 –4.0990″	hardened steel	2500:1	76	Federal	0.071	6.35	•
2092960	DP50	104.117 –114.300	4.0991 –4.5000″	hardened steel	2500:1	76	Federal	0.071	6.35	•
2092975	DP20	3.124 –3.553	.1230 –.1339″	hardened steel	5000:1	13	Federal	0.009	4.75	
2092976	DP20	3.556 –4.696	.1400 –.1849″	hardened steel	5000:1	19	Federal	0.013	4.75	
2092977	DP20	4.699 –6.312	.1850 –.2485″	hardened steel	5000:1	25	Federal	0.015	4.75	
2092978	DP20	6.314 –9.484	.2486 –.3734″	hardened steel	5000:1	38	Federal	0.023	6.35	
2092979	DP20	9.487 –12.494	.3735 –.4919″	hardened steel	5000:1	38	Federal	0.023	6.35	
2092980	DP20	12.497 –13.688	.4920 –.5389″	hardened steel	5000:1	38	Federal	0.023	6.35	
2092981	DP20	13.691 –14.933	.5390 –.5879	hardened steel	5000:1	38	Federal	0.023	6.35	
2092982	DP20	14.935 –20.978	.5880 –.8259″	hardened steel	5000:1	38	Federal	0.023	6.35	
2092983	DP20	20.980 –28.699	.08260 –1.1299″	hardened steel	5000:1	38	Federal	0.023	6.35	
2092984	DP20	28.702 –37.691	1.1300 –1.4839″	hardened steel	5000:1	38	Federal	0.023	6.35	
2092985	DP20	37.694 –44.193	1.4840 –1.7399	hardened steel	5000:1	38	Federal	0.023	6.35	
2092986	DP20	44.196 –63.751	1.7400 –2.5099	hardened steel	5000:1	38	Federal	0.023	6.35	
2092987	DP20	63.754 –76.299	2.5100 –3.0039″	hardened steel	5000:1	38	Federal	0.023	6.35	
2092988	DP20	76.302 –89.151	3.0040 –3.5099″	hardened steel	5000:1	38	Federal	0.071	6.35	•
2092989	DP20	89.154 –104.115	3.5100 –4.0990″	hardened steel	5000:1	38	Federal	0.071	6.35	•
2092990	DP20	104.117 –114.300	4.0991 –4.5000″	hardened steel	5000:1	38	Federal	0.071	6.35	•

Millimar DP50 / DP20

Nozzle Through-Hole Pin

Order no.	L_2	g	Nominal size	Nominal size	A	B
	mm		mm	inch	mm	mm
2092945	19.05	3/8"–32	3.124 –3.553	.1230 –.1339"	23.8	4.75
2092946	19.05	3/8"–32	3.556 –4.696	.1400 –.1849"	23.8	4.75
2092947	25.4	3/8"–32	4.699 –6.312	.1850 –.2485"	38.1	12.70
2092948	25.4	3/8"–32	6.314 –9.484	.2486 –.3734"	38.1	12.70
2092949	25.4	3/8"–32	9.487 –12.494	.3735 –.4919"	38.1	12.70
2092950	25.4	3/8"–32	12.497 –13.688	.4920 –.5389"	38.1	12.70
2092951	25.4	3/8"–32	13.691 –14.933	.5390 –.5879	38.1	12.70
2092952	25.4	3/8"–32	14.935 –20.978	.5880 –.8259"	41.28	15.88
2092953	25.4	3/8"–32	20.980 –28.699	.08260 –1.1299"	41.28	15.88
2092954	25.4	3/8"–32	28.702 –37.691	1.1300 –1.4839"	41.28	15.88
2092955	31.75	3/8"–32	37.694 –44.193	1.4840 –1.7399	50.8	19.05
2092956	31.75	3/8"–32	44.196 –63.751	1.7400 –2.5099	50.8	19.05
2092957	31.75	3/8"–32	63.754 –76.299	2.5100 –3.0039"	50.8	19.05
2092958	31.75	3/8"–32	76.302 –89.151	3.0040 –3.5099"	50.8	19.05
2092959	31.75	3/8"–32	89.154 –104.115	3.5100 –4.0990"	50.8	19.05
2092960	31.75	3/8"–32	104.117 –114.300	4.0991 –4.5000"	50.8	19.05
2092975	19.05	3/8"–32	3.124 –3.553	.1230 –.1339"	23.8	4.75
2092976	19.05	3/8"–32	3.556 –4.696	.1400 –.1849"	23.8	4.75
2092977	25.4	3/8"–32	4.699 –6.312	.1850 –.2485"	38.1	12.70
2092978	25.4	3/8"–32	6.314 –9.484	.2486 –.3734"	38.1	12.70
2092979	25.4	3/8"–32	9.487 –12.494	.3735 –.4919"	38.1	12.70
2092980	25.4	3/8"–32	12.497 –13.688	.4920 –.5389"	38.1	12.70
2092981	25.4	3/8"–32	13.691 –14.933	.5390 –.5879	38.1	12.70
2092982	25.4	3/8"–32	14.935 –20.978	.5880 –.8259"	41.28	15.88
2092983	25.4	3/8"–32	20.980 –28.699	.08260 –1.1299"	41.28	15.88
2092984	25.4	3/8"–32	28.702 –37.691	1.1300 –1.4839"	41.28	15.88
2092985	31.75	3/8"–32	37.694 –44.193	1.4840 –1.7399	50.8	19.05
2092986	31.75	3/8"–32	44.196 –63.751	1.7400 –2.5099	50.8	19.05
2092987	31.75	3/8"–32	63.754 –76.299	2.5100 –3.0039"	50.8	19.05
2092988	31.75	3/8"–32	76.302 –89.151	3.0040 –3.5099"	50.8	19.05
2092989	31.75	3/8"–32	89.154 –104.115	3.5100 –4.0990"	50.8	19.05
2092990	31.75	3/8"–32	104.117 –114.300	4.0991 –4.5000"	50.8	19.05

ACCESSORIES

Order no.	Product name	g	Product type
2237666	Standard plastic handle	3/8"–32	
2237873	Depth stop ring for Federal nozzle plug gage		
2239307	Universal bench mount	3-8"/32	
2240993	Shut off slide valve	3/8"–32	
2201954	Extension for nominal sizes from 9.487 to 12.494 mm, D = 9 mm, L = 51 mm	5/16"–32	AEX-1
2201963	Extension for nominal sizes from 9.487 to 12.494 mm, D = 9 mm, L = 102 mm	5/16"–32	AEX-2
2202010	Extension for nominal sizes up to 76.3 mm, D = 12 mm, L = 102 mm	3/8"–32	AHA-4
2202011	Extension for nominal sizes up to 76.3 mm, D = 12 mm, L = 51 mm	3/8"–32	AHA-5
2202074	Connecting hose, 0.9 m	3/8"–32	AHO-1
2202075	Connecting hose, 1.8 m	3/8"–32	AHO-10
2202094	Connecting hose, 1.5 m	3/8"–32	AHO-8





Millimar DR50 / DR20

2-Jet Air Ring Gage

FEATURES

- Mahr / Mahr Federal nozzle ring gages have a large clearance tolerance, making them easier to insert into the bore to be measured and allowing a greater measuring range
- Long service life: Thanks to a larger plug gage spacing and (optional) hard chrome-plated finish to the body, the nozzle plug gage has an extended service life
- The recessed measuring nozzles are located deep in the body of the plug gage, protecting them from damage
- Large nozzle dimensions prevent clogging with dirt and oil
- **Order information:** Please always state when ordering: Transmission ratio of the display unit (e.g. 2500:1), the nominal size to be measured and the specified workpiece tolerance



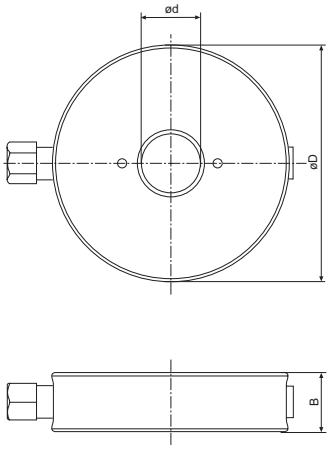
TECHNICAL DATA

Order no.	Product type	Nominal size	Nominal size	Model	Magnification	Measu-ring span
		mm	inch			µm
2093005	DR50	6.299 –7.592	.2480 –.3000	hardened steel	2500:1	76
2093006	DR50	7.595 –9.294	.3001 –.3650	hardened steel	2500:1	76
2093007	DR50	9.296 –13.002	.3651 –.5100	hardened steel	2500:1	76
2093008	DR50	13.005 –21.003	.5101 –.8250	hardened steel	2500:1	76
2093009	DR50	21.006 –25.400	.8251 –1.0000	hardened steel	2500:1	76
2093010	DR50	25.403 –38.351	1.0001 –1.5100	hardened steel	2500:1	76
2093011	DR50	38.354 –44.450	1.5101 –1.7500	hardened steel	2500:1	76
2093012	DR50	44.453 –50.797	1.75001 –2.0000	hardened steel	2500:1	76
2093013	DR50	50.800 –63.500	2.0001 –2.5000	hardened steel	2500:1	76
2093025	DR20	6.299 –7.592	.2480 –.3000	hardened steel	5000:1	38
2093026	DR20	7.595 –9.294	.3001 –.3650	hardened steel	5000:1	38
2093027	DR20	9.296 –13.002	.3651 –.5100	hardened steel	5000:1	38
2093028	DR20	13.005 –21.003	.5101 –.8250	hardened steel	5000:1	38
2093029	DR20	21.006 –25.400	.8251 –1.0000	hardened steel	5000:1	38
2093030	DR20	25.403 –38.351	1.0001 –1.5100	hardened steel	5000:1	38
2093031	DR20	38.354 –44.450	1.5101 –1.7500	hardened steel	5000:1	38
2093032	DR20	44.453 –50.797	1.75001 –2.0000	hardened steel	5000:1	38
2093033	DR20	50.800 –63.500	2.0001 –2.5000	hardened steel	5000:1	38

Millimar DR50 / DR20

2-Jet Air Ring Gage

Order no.	D	Nominal size	B
	mm	mm	mm
2093005	76.2	6.299 –7.592	25.40
2093006	76.2	7.595 –9.294	25.40
2093007	76.2	9.296 –13.002	25.40
2093008	76.2	13.005 –21.003	25.40
2093009	76.2	21.006 –25.400	25.40
2093010	101.6	25.403 –38.351	25.40
2093011	101.6	38.354 –44.450	25.40
2093012	127	44.453 –50.797	25.40
2093013	127	50.800 –63.500	25.40
2093025	76.2	6.299 –7.592	25.40
2093026	76.2	7.595 –9.294	25.40
2093027	76.2	9.296 –13.002	25.40
2093028	76.2	13.005 –21.003	25.40
2093029	76.2	21.006 –25.400	25.40
2093030	101.6	25.403 –38.351	25.40
2093031	101.6	38.354 –44.450	25.40
2093032	127	44.453 –50.797	25.40
2093033	127	50.800 –63.500	25.40

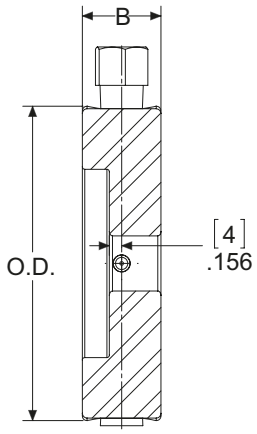


ACCESSORIES

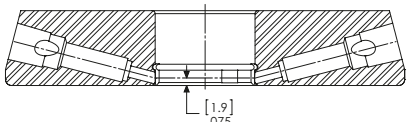
Order no.	Product name	g	Product type
2237666	Standard plastic handle	3/8"–32	
2239307	Universal bench mount	3-8"/32	
2240993	Shut off slide valve	3/8"–32	
2202074	Connecting hose, 0.9 m	3/8"–32	AHO-1
2202075	Connecting hose, 1.8 m	3/8"–32	AHO-10
2202094	Connecting hose, 1.5 m	3/8"–32	AHO-8



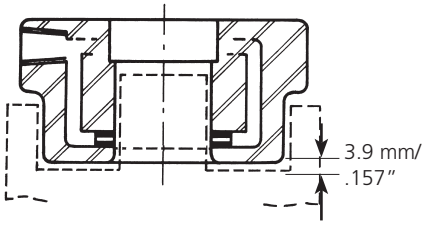
For applications where OD's need to be checked near a shoulder, or where part length is restricted, contact Mahr Federal for technical assistance about shoulder and Snout Type Air Rings.



Counterbore Type



Shoulder Type
(for 2500:1 & 4000:1
5000:1 & 8000:1 only)



Snout Types

Millimar DR50-3 / DR20-3

3-Nozzle Ring Gage

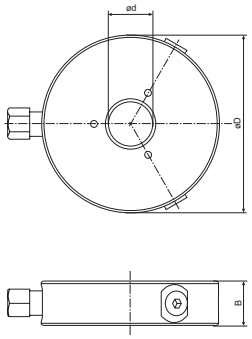
FEATURES

- Mahr / Mahr Federal nozzle ring gages have a large clearance tolerance, making them easier to insert into the bore to be measured and allowing a greater measuring range
- Long service life: Thanks to a larger plug gage spacing and (optional) hard chrome-plated finish to the body, the nozzle plug gage has an extended service life
- The recessed measuring nozzles are located deep in the body of the plug gage, protecting them from damage
- Large nozzle dimensions prevent clogging with dirt and oil
- **Order information:** Please always state when ordering: Transmission ratio of the display unit (e.g. 2500:1), the nominal size to be measured and the specified workpiece tolerance



TECHNICAL DATA

Order no.	Product type	Nominal size	Model	Magnification	Measuring span	Compatibility
		mm			µm	
2093015	DR50-3	6.299 –7.592	hardened steel	2500:1	76	Federal
2093016	DR50-3	7.595 –9.294	hardened steel	2500:1	76	Federal
2093017	DR50-3	9.296 –13.002	hardened steel	2500:1	76	Federal
2093018	DR50-3	13.005 –21.003	hardened steel	2500:1	76	Federal
2093019	DR50-3	21.006 –25.400	hardened steel	2500:1	76	Federal
2093020	DR50-3	25.403 –38.351	hardened steel	2500:1	76	Federal
2093021	DR50-3	38.354 –44.450	hardened steel	2500:1	76	Federal
2093022	DR50-3	44.453 –50.797	hardened steel	2500:1	76	Federal
2093023	DR50-3	50.800 –63.500	hardened steel	2500:1	76	Federal
2093035	DR20-3	6.299 –7.592	hardened steel	5000:1	38	Federal
2093036	DR20-3	7.595 –9.294	hardened steel	5000:1	38	Federal
2093037	DR20-3	9.296 –13.002	hardened steel	5000:1	38	Federal
2093038	DR20-3	13.005 –21.003	hardened steel	5000:1	38	Federal
2093039	DR20-3	21.006 –25.400	hardened steel	5000:1	38	Federal
2093040	DR20-3	25.403 –38.351	hardened steel	5000:1	38	Federal
2093041	DR20-3	38.354 –44.450	hardened steel	5000:1	38	Federal
2093042	DR20-3	44.453 –50.797	hardened steel	5000:1	38	Federal
2093043	DR20-3	50.800 –63.500	hardened steel	5000:1	38	Federal



Order no.	B	D	Nominal size
	mm	mm	mm
2093015	25.40	76.2	6.299 –7.592
2093016	25.40	76.2	7.595 –9.294
2093017	25.40	76.2	9.296 –13.002
2093018	25.40	76.2	13.005 –21.003
2093019	25.40	76.2	21.006 –25.400
2093020	25.40	101.6	25.403 –38.351
2093021	25.40	101.6	38.354 –44.450
2093022	25.40	127	44.453 –50.797
2093023	25.40	127	50.800 –63.500

Order no.	B	D	Nominal size
	mm	mm	mm
2093035	25.40	76.2	6.299 –7.592
2093036	25.40	76.2	7.595 –9.294
2093037	25.40	76.2	9.296 –13.002
2093038	25.40	76.2	13.005 –21.003
2093039	25.40	76.2	21.006 –25.400
2093040	25.40	101.6	25.403 –38.351
2093041	25.40	101.6	38.354 –44.450
2093042	25.40	127	44.453 –50.797
2093043	25.40	127	50.800 –63.500

ACCESSORIES





Order no.	Product name	g	Product type
2202074	Connecting hose, 0.9 m	3/8"–32	AHO-1
2202075	Connecting hose, 1.8 m	3/8"–32	AHO-10
2202094	Connecting hose, 1.5 m	3/8"–32	AHO-8
2237666	Standard plastic handle	3/8"–32	
2239307	Universal bench mount	3-8"/32	
2240993	Shut off slide valve	3/8"–32	

Millimar AAT-19 / AAT-20

Single Jet Probe

FEATURES

- Jet probes provide convenient modular gageheads for use in hand-held gages and for designing gage fixtures
- 9.5 mm / .375" bodies provide standardized mounting configurations
- Compact size allows easy access to hard-to-reach dimensions
- Jet probes are calibrated for instant use with Dimensionair® systems - just set zero and measure!
- Available in single-probe and matched-probe configurations
- Jet probes are similar to air probes, except they have an open jet at the end instead of a contacting spindle
- Ideal for measuring flatness of surfaces which cannot be touched, or for building into fixture designs where air gaging is called for
- Can be used with 2500:1, 5000:1 Dimensionair® (supplied singly or in matched pairs)
- Supplied with AHO-1 air hose, a zero setting valve, and hardware for mounting to the Dimensionair®



TECHNICAL DATA

Order no.	2086612	2086613
Product type	AAT-19	AAT-20
Magnification	2500:1	
Design	Single jet probe	Matched jet probe pair

MarStand | Measuring tables, measuring tripods, radial run-out gages

MarStand measuring stands, measuring tables and radial run-out gages offer high stability, the basis for precise measuring results. They offer the necessary support for your dial indicators, dial comparators, dial test indicator measuring devices and measuring probes.



Indicator Stand

MarStand 815 GN 314
Indicator Stand with Delta Base

MarStand 2400 315
Indicator stand with delta base

MarStand 815 MA / 815 MB / 815 MF / 815 P / 815 MG 316
Measuring Tripod with magnetic Base

Post & Support Arm Assemblies

MarStand 815 XMA / 815 XMB / 815 XMS / 815 XN / 815 XP 321
With Mounting Thread and / or T-Slot

Comparator Stands

MarStand 820 N 323
Small Steel Comparator Stand

MarStand 820 NC / 820 FC 324
Small Ceramic Comparator Stand

MarStand 820 NG / 820 FG 325
Small Comparator Stand, Plate made of Granite

MarStand 821 NG / 821 FG 326
Large Granite Comparator Stand

MarStand 824 NT / 824 FT / 824 GT 327
Heavy Measuring Table

Comparator Stand Systems

MarStand 827 328
Comparator Stand Plates

Surface Plates

MarStand 107 G 330
Surface Plate made from Granite

Radial Run-Out Gages

MarStand 818 333
Radial Run-Out Gage with Center Supports

MarStand 818 P 334
Center Bench with V-Support

MarStand 818 R 335
Center Bench with Roller Support

MarStand 815 GN

Indicator Stand with Delta Base

FEATURES

Indicator stand with delta base

- Sturdy base for stability and strength
- Convenient hand grip at the top of the base
- Structurally stable three-point support
- Stainless steel column and support arm
- Fine adjustment at support arm
- Display unit can be swiveled by ± 90°
- Easy to move without vibration
- Front of the base is ground to allow movement along edges and rulers
- **Package contains:** excludes indicator



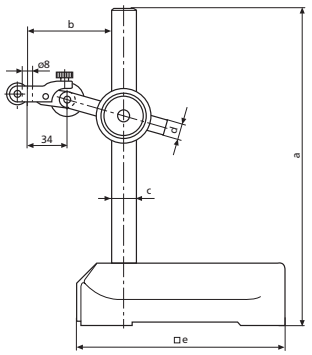
Application:

- For use on measuring and control plates

TECHNICAL DATA

Order no.		4413000	4413001	4413005	4413050	4413051	4413052
Product type		815 GN					
Fine adjustment range	mm	2					
Total height	mm	300	500	750	300	500	750
Total height	inch	12″	20″	30″	12″	20″	30″
Support arm reach (max.)	mm	185	200	230	185	200	230
Support arm reach (max.)	inch	7.28″	7.87″	9.06″	7.28″	7.87″	9.06″
Mounting hole			8H7			.375″	
Product weight	kg	4.20	9.00	10.00	4.20	9.00	10.00

Order no.	Base surface	a	b	c	d
	mm	mm	mm	mm	mm
4413000	150 x 150	300	185	18	14
4413001	190 x 180	500	200	25	18
4413005	190 x 180	750	230	35	25
4413050	150 x 150	300	185	18	14
4413051	190 x 180	500	200	25	18
4413052	190 x 180	750	230	35	25



MarStand 2400

Indicator Stand with Delta Base

FEATURES

Indicator stand with delta base

- A stable height stand for electronic measurement
- Fine adjustment in the base allows easy operator set up, even at high magnification
- Up to 3.8 mm / .150" adjustment when arms fully extended
- Collar has polymer bearings and metal to metal clamping
- Post is thermally heat-isolated from the base
- Arm lock is independent of the pivot lock
- Uses vertical lug mounting
- EHE–2056 Lever gagehead mounts directly to arm (as shown)
- EHE–2048 Lever gagehead requires an EAM–1071 adapter
- CP–83 Extra arm and swivel clamp assembly (allows mounting two lever gageheads on one stand)
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		2050462
Product type		2400
Fine adjustment		•
Fine adjustment range	mm	3.8
Fine adjustment range	inch	0.150"
Total height	mm	457
Total height	inch	18"
Support arm reach (max.)	mm	254
Support arm reach (max.)	inch	10"
Attachment		Uses vertical lug mounting

Order no.	Base surface	Column diameter	Column sdiameter	Column height
		inch	mm	
2050462	162 x 94 mm	1.25"	31.8	457 mm / 18 in

MarStand 815 MA

Measuring Tripod with Magnetic Base

FEATURES

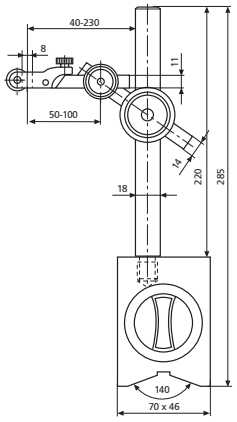
Measuring tripod with magnetic base

- Support arm with two joints
- Base has a powerful ON/OFF permanent magnet
- Magnetic force is active across:
  - Surfaces
  - V-shaped bottom
  - Front of base
- Post and support arm are made of stainless steel
- Support arm can be finely adjusted
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		4416000	4416050
Product type		815 MA	
Fine adjustment range	mm	2	
Total height	mm	285	
Total height	inch	11.2″	
Support arm reach (max.)	mm	230	
Support arm reach (max.)	inch	9.06″	
Mounting hole		8H7	.375″
V-Block for shaft diameter	mm	20 –100	
Magnetic force	N	450	
Product weight	kg	2.50	



ACCESSORIES

Order no.	Product name
4416001	Wooden case

MarStand 815 MB

Measuring Tripod with Magnetic Base

FEATURES

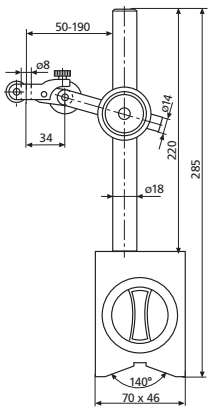
Measuring tripod with magnetic base

- Support arm with one joint
- Base has a powerful ON/OFF permanent magnet
- Magnetic force is active across:
  - Surfaces
  - V-shaped bottom
  - Front of base
- Post and support arm are made of stainless steel
- Support arm can be finely adjusted
- Indicating instrument can be rotated through ± 90°
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		4417000	4417050
Product type		815 MB	
Fine adjustment range	mm	2	
Total height	mm	285	
Total height	inch	11.2″	
Support arm reach (max.)	mm	190	
Support arm reach (max.)	inch	7.48″	
Mounting hole		8H7	.375″
V-Block for shaft diameter	mm	20 –100	
Magnetic force	N	450	
Product weight	kg	2.20	



ACCESSORIES

Order no.	Product name
4416001	Wooden case

MarStand 815 P

Measuring Tripod with Magnetic Base

FEATURES

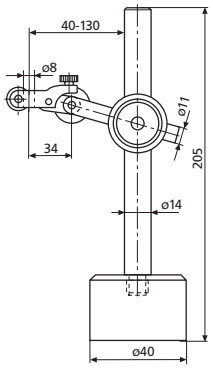
Measuring tripod with magnetic base

- Support arm has one joint
- Sturdy circular base with permanent magnet
- Post and support arm are made of stainless steel
- Support arm can be finely adjusted
- Indicating instrument can be rotated through ± 90°
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		4422000	4422050
Product type		815 P	
Fine adjustment range	mm	1.5	
Total height	mm	205	
Total height	inch	8″	
Support arm reach (max.)	mm	130	
Support arm reach (max.)	inch	5.12″	
Mounting hole		8H7	.375″
Product weight	kg	0.70	



MarStand 815 MG

Measuring Tripod with Magnetic Base

FEATURES

Measuring tripod with magnetic base

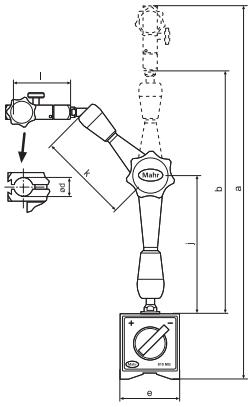
- 3D jointed arm, can reach any position within the operating range
- Easy positioning of all three joints with a securely fixed handle
- Maintenance-free mechanical clamping system
- Black anodized arm components made from high-quality light alloy
- Dial indicator holder with 8 mm mounting bore and dovetail for dial test indicator measuring devices
- Fitted with zero-play micro-precision adjuster
- Very powerful switching magnet
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		4420350	4420360	4420370
Product type			815 MG	
Fine adjustment			•	
Fine adjustment range	mm		5	
Total height	mm	222	310	390
Support arm reach (max.)	mm	130	200	280
Mounting hole			8H7	
V-Block for shaft diameter	mm		6 –120	
Magnetic force	N	300	800	

Order no.	Base surface	j	k	l	a	b	d
	mm	mm	mm	mm	mm	mm	mm
4420350	36 x 30 x 35	70	60	49	222	130	8
4420360	60 x 50 x 55	120	80	49	310	200	8
4420370	60 x 50 x 55	170	110	49	390	280	8



MarStand 815 MF

Measuring Tripod with Magnetic Base

FEATURES

Measuring tripod with magnetic base

- 3D jointed arm, can reach any position within the operating range
- Easy positioning of all three joints with a securely fixed handle
- **Very sturdy components, for excellent stability and accuracy**
- Maintenance-free mechanical clamping system
- Black anodized arm components made from high-quality light alloy
- Dial indicator holder with 8 mm mounting bore and dovetail for dial test indicator measuring devices
- **Fitted with zero-play micro-precision adjuster**
- Very easy to adjust, excellent repeatability
- **Ideal for measuring instruments with µm resolution**
- Very powerful switching magnet
- **Package contains:** excludes indicator



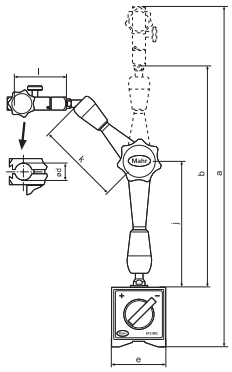
Application:

- Very sturdy components for excellent stability and accuracy
- **Special made for indicators and comparators with µm resolution**

TECHNICAL DATA

Order no.		4420385	4420386	4420387	4420388
Product type		815 MF			
Fine adjustment		•			
Fine adjustment range	mm	2			
Total height	mm	228	317	399	444
Support arm reach (max.)	mm	130	204	287	330
Mounting hole		8H7			
V-Block for shaft diameter	mm	6 –120			
Magnetic force	N	300	800		1000

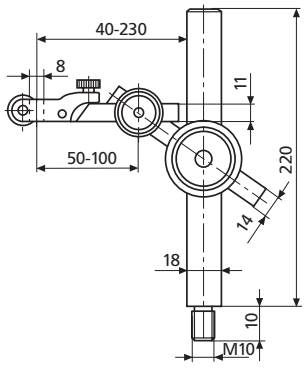
Order no.	Base surface	j	k	l	a	b	d
	mm	mm	mm	mm	mm	mm	mm
4420385	40 x 40 x 40	71	59	49	228	130	8
4420386	60 x 50 x 55	116	88	49	317	204	8
4420387	60 x 50 x 55	172	115	49	399	287	8
4420388	73 x 50 x 55	201	129	49	444	330	8

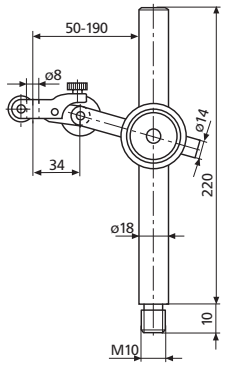


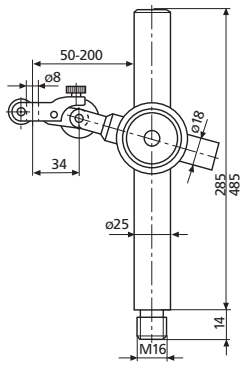
MarStand

Post and Support Assemblies

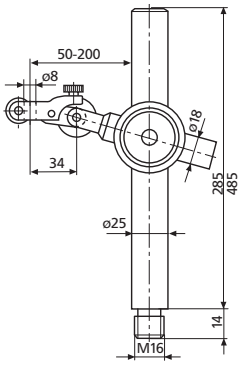
OVERVIEW

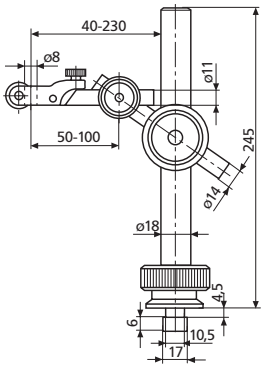


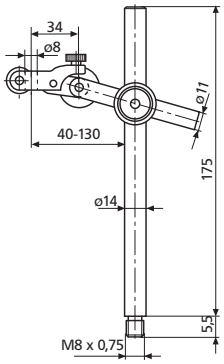




Product type	815 XMA	815 XMB	815 XMS 285
Order no.	4424005	4424006	4435011
Product features	• Sturdy design with mounting thread • Two joints • Post and support arm are made of stainless steel • With fine adjustment	• Sturdy design with mounting thread • One joint • Post and support arm are made of stainless steel • With fine adjustment	• Sturdy design with mounting thread • One joint • Post and support arm are made of stainless steel • With fine adjustment





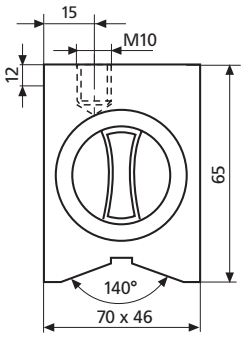


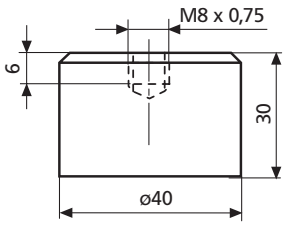
Product type	815 XMS 485	815 XN	815 XP
Order no.	4435015	4424000	4424015
Product features	• Exceptionally sturdy design with screw-in thread • One joint • Stainless steel column and cantilever arms • Precision adjuster	• Sturdy design for mounting in a T-slot • Two joints • Knurled nut for clamping • Post and support arm are made of stainless steel • With fine adjustment	• Sturdy design with mounting thread • One joint • Post and support arm are made of stainless steel • With fine adjustment

MarStand

Magnetic Base

OVERVIEW





Product type	815 YM	815 YP
Order no.	4425000	4425002
Product features	Standard model • Powerful permanent magnet can be switched on and off • Screw-in thread • Bottom with V-groove • End face is flat • Magnetic force 450N	Round version • Permanent magnet plus threaded mounting hole • Underside of the base is flat • Magnetic force 250N

MarStand 820 N

Small Steel Comparator Stand

FEATURES

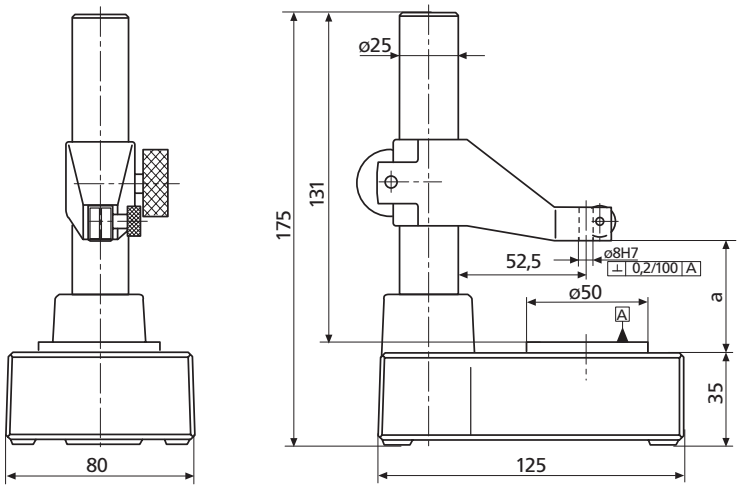
Small steel comparator stand

- Stable design
- Table plate made of hardened steel
- Rugged, ground stainless steel column
- Adjustable support arm for indicating instrument
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		4430000	4430018
Product type		820 N	820 N
Working range a	mm	0 –110	
Working range a	inch	0 –4.3″	
Grade		DIN 876/00	
Flatness tolerance		t_1 = 2(1 + L/1000) µm, L in mm	
Mounting hole		8H7	3/8″
Product weight	kg	2.60	



MarStand 820 NC / 820 FC

Small Ceramic Comparator Stand

FEATURES

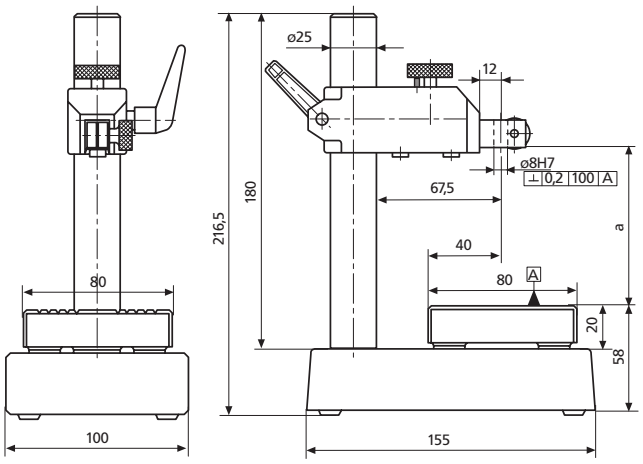
Small ceramic comparator stand

- Stable design
- Ceramic table plate (high hardness for lasting precision)
- Rugged, ground stainless steel column
- Adjustable support arm for indicating instrument
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		4432100	4432120	4433100	4433110
Product type		820 NC		820 FC	
Working range a	mm	0 –110			
Working range a	inch	0 –4.3″			
Fine adjustment				•	
Fine adjustment range	mm			0.4	
Grade		DIN 876/00			
Flatness tolerance		t_1 = 2(1 + L/1000) µm, L in mm			
Mounting hole		8H7	3/8″	8H7	3/8″
Product weight	kg	4.00			



MarStand 820 NG / 820 FG

Small Comparator Stand, Plate made of Granite

FEATURES

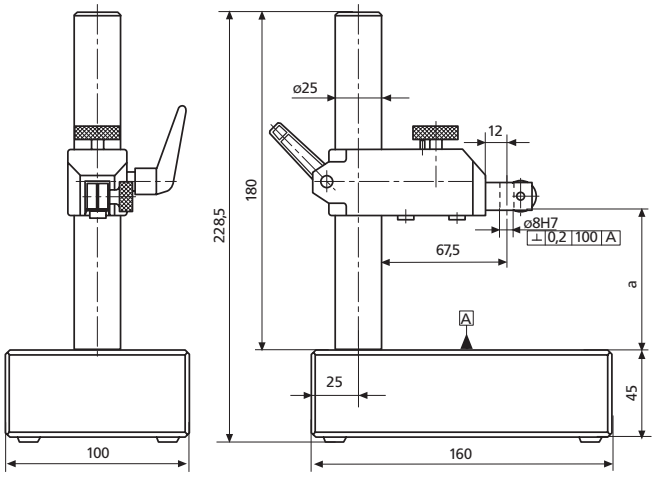
Small comparator stand, plate made of granite

- Stable design
- Table plate made of black granite, lapped
- Rugged, ground stainless steel column
- Adjustable support arm for indicating instrument
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		4430100	4430110	4431100	4431110
Product type		820 NG		820 FG	
Working range a	mm	0 –130			
Working range a	inch	0 –5.1″			
Fine adjustment				•	
Fine adjustment range	mm			0.4	
Grade		DIN 876/0			
Flatness tolerance		t_1 = 4(1 + L/1000) µm, L in mm			
Mounting hole		8H7	3/8″	8H7	3/8″
Product weight	kg	3.20			



MarStand 821 NG / 821 FG

Large Granite Comparator Stand

FEATURES

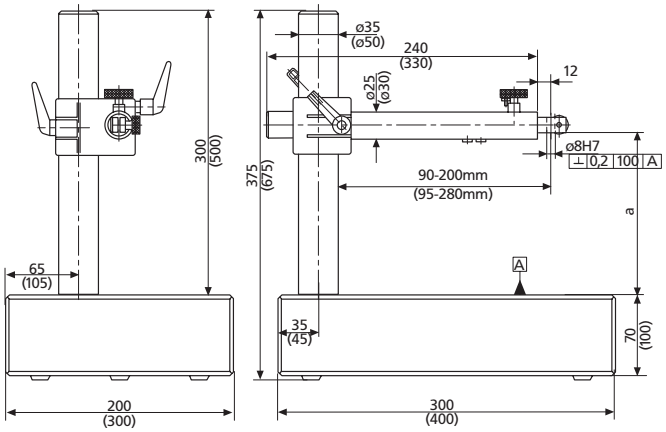
Large granite comparator stand

- Exceptionally stable design
- Table plate made of lapped black granite
- Heavy duty column and adjustable support arm for maximum stability
- Made of ground stainless steel
- Support arm fitted with fall brake
- **Package contains:** excludes indicator



TECHNICAL DATA

Order no.		4435100	4435101	4435110	4435111	4435150	4435151	4435160	4435161
Product type		821 NG	821 FG	821 NG	821 FG	821 NG	821 FG	821 NG	821 FG
Working range a	mm	0 –250		0 –430		0 –250		0 –430	
Working range a	inch	0 –10″		0 –17″		0 –10″		0 –17″	
Fine adjustment			•		•		•		•
Fine adjustment range	mm		0.4		0.4		0.4		0.4
Grade		DIN 876/0							
Flatness tolerance		t_1 = 4(1 + L/1000) µm, L in mm							
Mounting hole		8H7				3/8″			
Product weight	kg	15.80		48.00		15.80		48.00	



MarStand 824 NT / 824 FT / 824 GT

Heavy Measuring Table

FEATURES

Heavy measuring table

- Sturdy, T-shaped base made from special cast iron
- Extremely stable
- Heavy duty column and support arm for maximum stability
- Support arm locked against rotation and height adjustable via rack

Models:
824 NT - without fine adjustment
824 FT - with fine adjustment via parallel spring-loaded system
824 GT - specially designed for the large Millimess dial comparator, with fine adjustment via the adapter bushing

- **Package contains:** excludes indicator, without plate



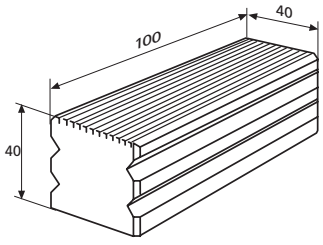


TECHNICAL DATA

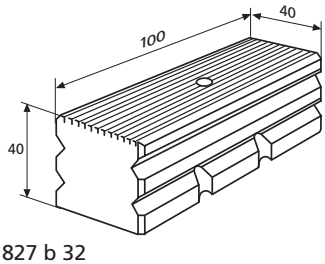
Order no.		4442100	4442105	4443100	4443105	4444200
Product type		824 NT		824 FT		824 GT
Working range a	mm	0 –210				0 –200
Working range a	inch	0 –8.2″				0 –8.0″
Fine adjustment				•		
Fine adjustment range	mm			0.4		3
Mounting hole		8H7	3/8″	8H7	3/8″	28H7
Product weight	kg	17.00		19.00		18.00

ACCESSORIES

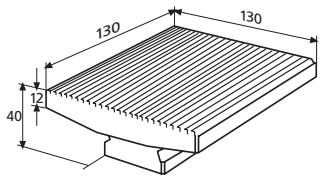
Order no.	Product name	Product type
4082731	Plate for single measurement (100 x 40 mm)	827 b 31
4082732	Plate for sum measurement (100 x 40 mm)	827 b 32
4082733	Plate for single measurement (130 x 130 mm)	827 b 33
4082734	Plate for sum measurement (130 x 130 mm)	827 b 34
4346111	941 G Holder Ø 28mm, length 100mm, range 3mm (with mount bore for indicators with shaft Ø 8mm)	941 G / Ø 28 mm



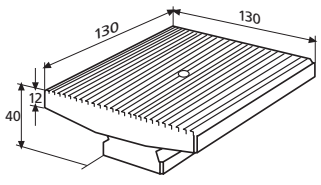
827 b 31



827 b 32



827 b 33

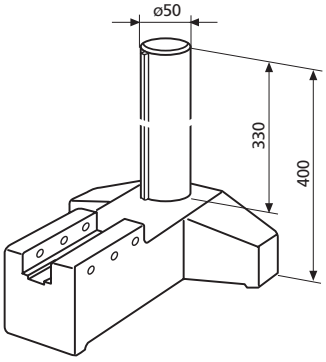


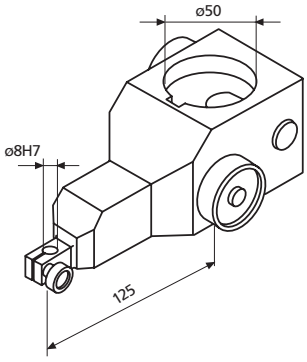
827 b 34

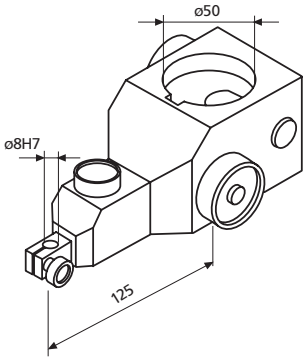
MarStand

Base with Post

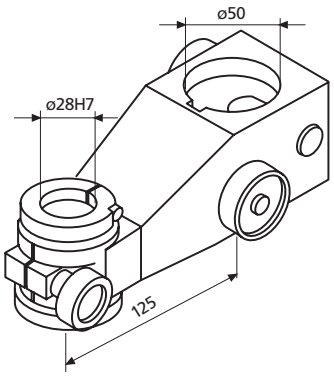
OVERVIEW

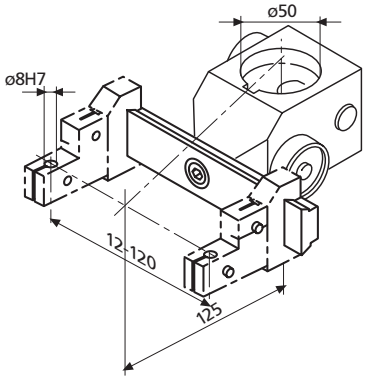


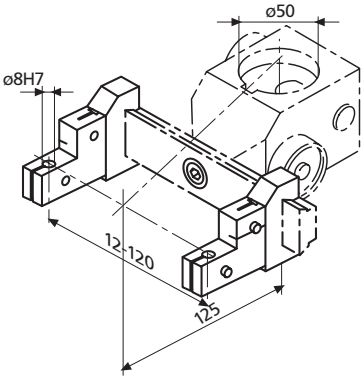




Product type	827 b 5	827 b 16	827 b 17
Order no.	4082705	4082716	4082717
Product features	• T-shaped base is made from a special cast iron • Post has chrome finish	• Rugged construction for exceptionally high bending resistance • Locked against rotation and height adjustable via rack	• Rugged construction for exceptionally high bending resistance • Locked against rotation and height adjustable via rack





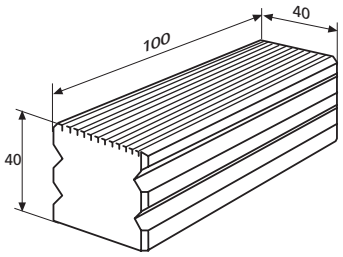


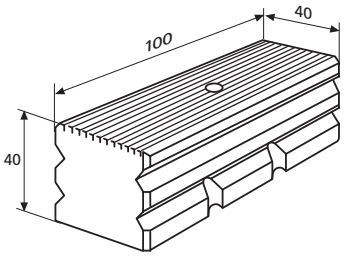
Product type	827 b 18	827 b 19	827 b 14
Order no.	4082718	4082719	4082714
Product features	• Rugged construction for exceptionally high bending resistance • Locked against rotation and height adjustable via rack	• Rugged construction for exceptionally high bending resistance • Locked against rotation and height adjustable via rack	• Probe holder, mounting hole 8 mm

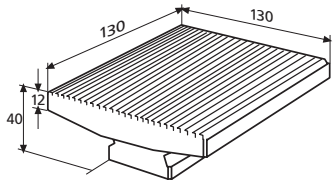
MarStand

Plate for Single Measurement

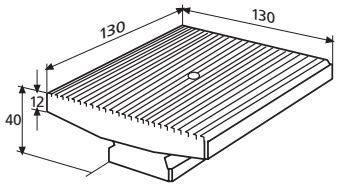
OVERVIEW

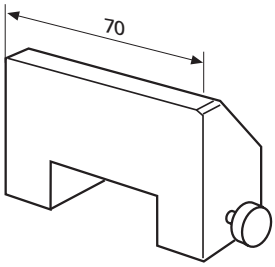


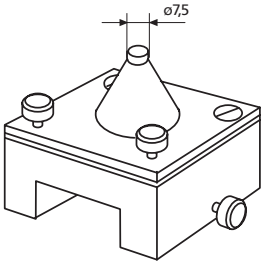




Product type	827 b 31	827 b 32	827 b 33
Order no.	4082731	4082732	4082733
Product features	• For single measurement • Hardened and lapped • Reversible • One measuring surface with longitudinal ribbing • Both sides face lapped	• For compound measurement • Hardened and lapped • With 8 mm mounting bore and clamping device for inductive probes • Measuring surface with longitudinal ribbing	• For single measurement • Hardened and lapped • Reversible • Large measuring surface with longitudinal ribbing • Both sides face lapped







Product type	827 b 34	827 b 35	827 b 36
Order no.	4082734	4082735	4082736
Product features	• For compound measurement • Hardened and lapped • With 8 mm mounting bore and clamping device for inductive probes • Large measuring surface with longitudinal ribbing	• Ensures that a workpiece is correctly positioned • To be attached to plates 827 b 31 and 827 b 32	• With adjustment screws for parallel alignment of 2 plan surfaces • Particularly suitable for mounting pin gages 426 M • To be attached to plates 827 b 31 and 827 b 32

MarStand 107 G

Surface Plate Made from Granite

FEATURES

- Made of choice fine grain black granite (Diabase)
- High density structure is extremely homogeneous
- Hardness 6–7 on the Mohs hardness scale
- Surface plate is lapped and has a satin matt finish to prevent glare
- 100 % corrosion proof
- Non-magnetic and non-conductive
- Measuring instruments and test equipment are easy to slide over surface



Application:

- For measuring tasks, layout work, touching up and lapping precision parts
- Recommended assembly (with optional accessories):
  - Up to 400 mm to be used on a workbench with adjustable plate supports 107 Asa
  - From 630 mm to be used with a stand 107 Us or cabinet 107 Ug

TECHNICAL DATA

Order no.		4221500	4221501	4221502	4221503	4221504	4221505	4221506	4221507	4221508
Product type		107 G								
Plate size	mm	400 x 250	400 x 400	630 x 400	630 x 630	800 x 500	1000 x 630	1200 x 800	1500 x 1000	2000 x 1000
Plate thickness	mm	60		80		100		150		200
Standard		DIN 876								
Tolerance class		00								
Flatness tolerance		$t_1 = 2(1 + L/1000)$ µm, L in mm								
Weight	kg	18	29	60	95	120	190	432	675	1200

ACCESSORIES

Order no.	Product name	Product type
4221560	Stand with cabinet, 630 x 400 mm	107 Us
4221570	Stand, 630 x 400 mm	107 Ug
4221069	Adjustable plate support	107 Asa
4221561	Stand with cabinet, 630 x 630 mm	107 Us
4221571	Stand, 630 x 630 mm	107 Ug
4221562	Stand with cabinet, 800 x 500 mm	107 Us
4221572	Stand, 800 x 500 mm	107 Ug
4221563	Stand with cabinet, 1000 x 630 mm	107 Us
4221573	Stand, 1000 x 630 mm	107 Ug
4221564	Stand with cabinet, 1200 x 800 mm	107 Us
4221574	Stand, 1200 x 800 mm	107 Ug
4221565	Stand with cabinet, 1500 x 1000 mm	107 Us
4221575	Stand, 1500 x 1000 mm	107 Ug
4221566	Stand with cabinet, 2000 x 1000 mm	107 Us
4221576	Stand, 2000 x 1000 mm	107 Ug



107 G;107 Us



107 Ug

MarStand 107 G

Surface Plate Made from Granite

FEATURES

- Made of choice fine grain black granite (Diabas)
- High density structure is extremely homogeneous
- Hardness 6–7 on the Mohs hardness scale
- Surface plate is lapped and has a satin matt finish to prevent glare
- 100 % corrosion proof
- Non-magnetic and non-conductive
- Measuring instruments and test equipment are easy to slide over surface



Application:

- For measuring tasks, layout work, touching up and lapping precision parts
- Recommended assembly (with optional accessories):
  - Up to 400 mm to be used on a workbench with adjustable plate supports 107 Asa
  - From 630 mm to be used with a stand 107 Us or cabinet 107 Ug

TECHNICAL DATA

Order no.		4221520	4221521	4221522	4221523	4221524	4221525	4221526	4221527	4221528
Product type		107 G								
Plate size	mm	400 x 250	400 x 400	630 x 400	630 x 630	800 x 500	1000 x 630	1200 x 800	1500 x 1000	2000 x 1000
Plate thickness	mm	60		80		100		150		200
Standard		DIN 876								
Tolerance class		0								
Flatness tolerance		$t_t = 4(1 + L/1000)$ µm, L in mm								
Weight	kg	18	29	60	95	120	190	432	675	1200

ACCESSORIES

Order no.	Product name	Product type
4221560	Stand with cabinet, 630 x 400 mm	107 Us
4221570	Stand, 630 x 400 mm	107 Ug
4221069	Adjustable plate support	107 Asa
4221561	Stand with cabinet, 630 x 630 mm	107 Us
4221571	Stand, 630 x 630 mm	107 Ug
4221562	Stand with cabinet, 800 x 500 mm	107 Us
4221572	Stand, 800 x 500 mm	107 Ug
4221563	Stand with cabinet, 1000 x 630 mm	107 Us
4221573	Stand, 1000 x 630 mm	107 Ug
4221564	Stand with cabinet, 1200 x 800 mm	107 Us
4221574	Stand, 1200 x 800 mm	107 Ug
4221565	Stand with cabinet, 1500 x 1000 mm	107 Us
4221575	Stand, 1500 x 1000 mm	107 Ug
4221566	Stand with cabinet, 2000 x 1000 mm	107 Us
4221576	Stand, 2000 x 1000 mm	107 Ug



107 G;107 Us



107 Ug

MarStand 107 G

Surface Plate Made from Granite

FEATURES

- Made of choice fine grain black granite (Diabas)
- High density structure is extremely homogeneous
- Hardness 6–7 on the Mohs hardness scale
- Surface plate is lapped and has a satin matt finish to prevent glare
- 100 % corrosion proof
- Non-magnetic and non-conductive
- Measuring instruments and test equipment are easy to slide over surface



Application:

- For measuring tasks, layout work, touching up and lapping precision parts
- Recommended assembly (with optional accessories):
  - Up to 400 mm to be used on a workbench with adjustable plate supports 107 Asa
  - From 630 mm to be used with a stand 107 Us or cabinet 107 Ug

TECHNICAL DATA

Order no.		4221540	4221541	4221542	4221543	4221544	4221545	4221546	4221547	4221548
Product type		107 G								
Plate size	mm	400 x 250	400 x 400	630 x 400	630 x 630	800 x 500	1000 x 630	1200 x 800	1500 x 1000	2000 x 1000
Plate thickness	mm	60		80		100		150		200
Standard		DIN 876								
Tolerance class		1								
Flatness tolerance		t_t = 10(1 + L/1000) µm, L in mm								
Weight	kg	18	29	60	95	120	190	432	675	1200

ACCESSORIES

Order no.	Product name	Product type
4221560	Stand with cabinet, 630 x 400 mm	107 Us
4221570	Stand, 630 x 400 mm	107 Ug
4221069	Adjustable plate support	107 Asa
4221561	Stand with cabinet, 630 x 630 mm	107 Us
4221571	Stand, 630 x 630 mm	107 Ug
4221562	Stand with cabinet, 800 x 500 mm	107 Us
4221572	Stand, 800 x 500 mm	107 Ug
4221563	Stand with cabinet, 1000 x 630 mm	107 Us
4221573	Stand, 1000 x 630 mm	107 Ug
4221564	Stand with cabinet, 1200 x 800 mm	107 Us
4221574	Stand, 1200 x 800 mm	107 Ug
4221565	Stand with cabinet, 1500 x 1000 mm	107 Us
4221575	Stand, 1500 x 1000 mm	107 Ug
4221566	Stand with cabinet, 2000 x 1000 mm	107 Us
4221576	Stand, 2000 x 1000 mm	107 Ug



107 G;107 Us



107 Ug

MarStand 818

Radial Run-Out Gage with Center Supports

FEATURES

Radial run-out gage with center supports**Unit composed of:**

- **Bench gage**

- Flatness of the surface is in accordance to DIN 876–2
- Two T-slots for tailstock and / or support arm

- **Support arm 818 XNB**
- Support arm with one joint
- With fine adjustment

- **Tailstocks**

- Both tailstocks can be relocated (slide into position)
- The tailstock on the right side has a retractable (spring actuated) precision aligned center
- The tailstocks have a peak of height of 75 mm with a 90° prism

- For workpieces without a center, utilizing support arms, the maximum diameter is 20 mm (0.79")
- **Package contains:** measuring bench, measuring arm 818 XNB, center supports, excludes indicator



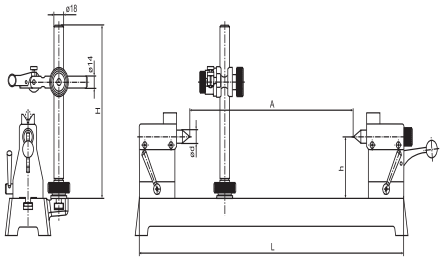
Application:

- Fast and easy radial run-out testing between tips
- When measuring a shaft between tips, the reference axis for the radial runout measurement is usually identical to the rotational axis during production. A minimal radial run-out deviation can therefore be expected during this test procedure.

TECHNICAL DATA

Order no.		4622200	4622201	4622202	4622203
Distance between centers	mm	0 –200	0 –350	0 –450	
Product type		818			
Height of centers	mm	50	75	100	150
T-groove width	mm	10H7		12H7	
Mounting hole		8H7			
Permitted height difference	mm	0.05			
Permitted lateral difference	mm	0.05			
Product weight	kg	8.00	12.00	35.00	38.00

Order no.	Column diameter	Dimension A	Dimension L	d	Structural dimensions (L x W) mm
	mm	mm	mm	mm	mm
4622200	18	200	350	16	350 x 110
4622201	18	350	500	16	500 x 110
4622202	18	450	700	22	700 x 180
4622203	18	450	700	22	700 x 180



ACCESSORIES

Order no.	Product name	Product type
4622210	V-support anvils in pairs, Diameter range 3 –15 mm, suitable for center height 50 / 75 mm	818 pe
4622275	Support Arm, Column height 205 mm, T-groove width 10 mm	818 XNB
4622220	Roller supports in pairs, Diameter range 3 –30 mm, T-groove width 10 mm	818 ab
4622215	V-support in pairs, Diameter range 5 –20 mm, T-groove width 10 mm	818 pb
4622276	Support Arm, Column height 260 mm, T-groove width 12 mm	818 XNB
4622211	V-support anvils in pairs, Diameter range 8 –45 mm, suitable for center height 100 mm	818 pe
4622277	Support Arm, Column height 360 mm, T-groove width 12 mm	818 XNB
4622221	Roller supports in pairs, Diameter range 4 –60 mm, T-groove width 12 mm	818 ab
4622216	V-support in pairs, Diameter range 5 –45 mm, T-groove width 12 mm	818 pb



818 pe



818 ab



818 pb

MarStand 818 P

Center Bench with V-Support

FEATURES

Center Bench with V-support**Unit composed of:**

- **Bench gage**
- Flatness of the surface is in accordance to DIN 876/1
- Two T-slots for tailstock and / or support arm
- **Support arm 818 XNB**
- Support arm with one joint
- with fine adjustment
- **V-supports**
- Both V-supports can be relocated (slide into position)
- **Package contains:** measuring bench, measuring arm 818 XNB, V-supports, excludes indicator



Application:

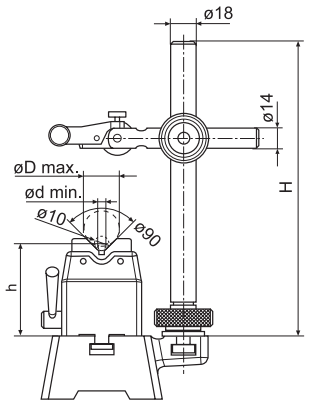
- Fast and easy radial run-out testing of V-blocks
- Perfect for parts without a central bore
- During this test procedure, the reference axis is formed by the cylindricity (circumferential surface) of an actual bearing point, e.g. at a transmission shaft. Possible roundness deviations of the cylindrical surface are included in the radial run-out measurement result in accordance with the V-angle.

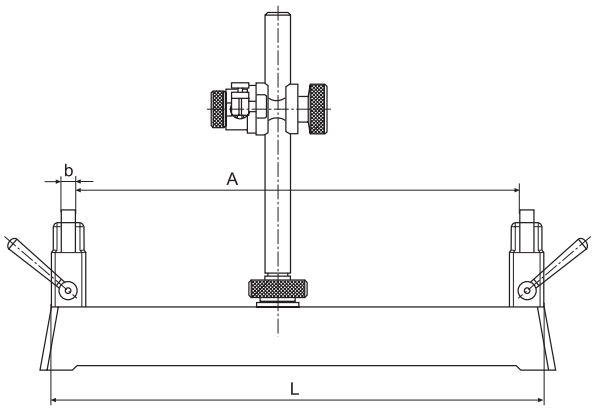
This test is thus more functional than measuring between the tips.

TECHNICAL DATA

Order no.		4622260	4622261	4622262
Product type			818 P	
Height of V-supports	mm		70	120
Diameter range	mm		5 –20	5 –45
T-groove width	mm		10H7	12H7
Mounting hole			8H7	
Permitted height difference	mm		0.05	
Permitted lateral difference	mm		0.05	
Product weight	kg	6.50	9.50	30.00

Order no.	Column diameter	Dimension A	D	Dimension L	b	d	Structural dimensions (L x W) mm
	mm	mm	mm	mm	mm	mm	mm
4622260	18	315	25	350	9.6	5	350 x 110
4622261	18	465	25	500	9.6	5	500 x 110
4622262	18	650	50	700	13.6	5	700 x 180





ACCESSORIES

Order no.	Product name	Product type
4622275	Support Arm, Column height 205 mm, T-groove width 10 mm	818 XNB
4622276	Support Arm, Column height 260 mm, T-groove width 12 mm	818 XNB
4622277	Support Arm, Column height 360 mm, T-groove width 12 mm	818 XNB

MarStand 818 R

Center Bench with Roller Support

FEATURES

Center bench with roller support
Unit composed of:

- **Bench gage**

- Flatness of the surface is in accordance to DIN 876/1
- Two T-slots for tailstock and / or support arm

- **Support Arm 818 XNB**

- Support arm with one joint
- With fine adjustment

- **Roller supports**

- Both Roller supports can be relocated (slide into position)
- **Package contains:** measuring bench, measuring arm 818 XNB, balancing supports, excludes indicator



Application:

- Fast and easy radial run-out testing of anti-friction bearing mounted rollers
- Perfect for smooth-running and seamless rotation of the workpiece, especially heavy parts without a central bore

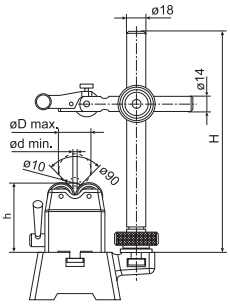
- During this test procedure, the reference axis is formed by the cylindricity (circumferential surface) of an actual bearing point, e.g. at a transmission shaft. Possible roundness deviations of this cylindrical surface can be included in the radial run-out measurement result in accordance with the surface angle.

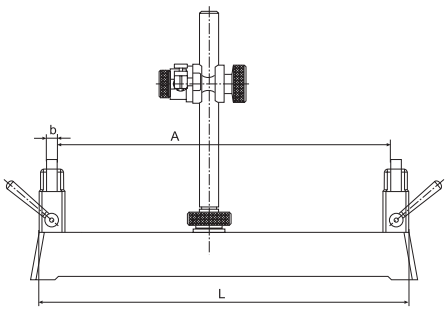
This test is thus more functional than measuring between the tips.

TECHNICAL DATA

Order no.		4622250	4622251	4622252
Product type			818 R	
Height of roller supports	mm		65	100
Height of V-supports	mm		65	100
Diameter range	mm		3 –30	4 –60
T-groove width	mm		10H7	12H7
Mounting hole			8H7	
Permitted height difference	mm		0.05	
Permitted lateral difference	mm		0.05	
Product weight	kg	6.50	9.50	30.00

Order no.	Column diameter	Dimension A	D	Dimension L	b	d	Structural dimensions (L x W) mm
	mm	mm	mm	mm	mm	mm	mm
4622250	18	315	25	350	8	3	350 x 110
4622251	18	465	25	500	8	3	500 x 110
4622252	18	650	50	700	12	5	700 x 180





ACCESSORIES

Order no.	Product name	Product type
4622275	Support Arm, Column height 205 mm, T-groove width 10 mm	818 XNB
4622276	Support Arm, Column height 260 mm, T-groove width 12 mm	818 XNB
4622277	Support Arm, Column height 360 mm, T-groove width 12 mm	818 XNB

MaraMeter | Indicating Measuring Instruments

MaraMeter is the ideal instrument series for high-precision measurements of inside and outside diameters on individual and serial parts. These indicating measuring instruments obtain the best results due to their constant measuring force, accurate transmission mechanisms and the high parallelism of their measuring surfaces. MaraMeter also offers compelling solutions for special measuring tasks.



Overview MaraMeter Indicating Measuring Instruments 336

Indicating Gages for a Dimensions, Indicating Snap Gages

MaraMeter 1000P / 300P / 301P 340
Indicating Snap Gage

MaraMeter 840 F / 840 FC / 840 FH / 840 FG / 840 FM 351
Indicating Snap Gage

MaraMeter 840 FS 358
For Precise Measurement of Large Dimensions

MaraMeter 840 E 359
For High-Precision Workpieces

MaraMeter 852 TS / 852 / 853 360
For Threads, Threading Tools, Toothing

Thickness Gages

MaraMeter 22 P / 57 B 367
With Digital and / or Analog Display

Caliper Gages

MaraMeter 838 TA / 838 TAZ / 838 EA / 838 TI / 383 TIZ / 838 EI 379
External and Internal Gage with Digital and Analog Display

MaraMeter EMD 75B-1 385
Gage for Depth Measurement Inspection

Indicating Measureing Instruments for Inside Dimensions

MaraMeter Dimentron Plug Inside Diameter Gages 388
Designed for high Production ID Gaging

MaraMeter 844 Dk / 844 Dkr / 844 Dks 398
Bore Plug Gages for Serial Parts

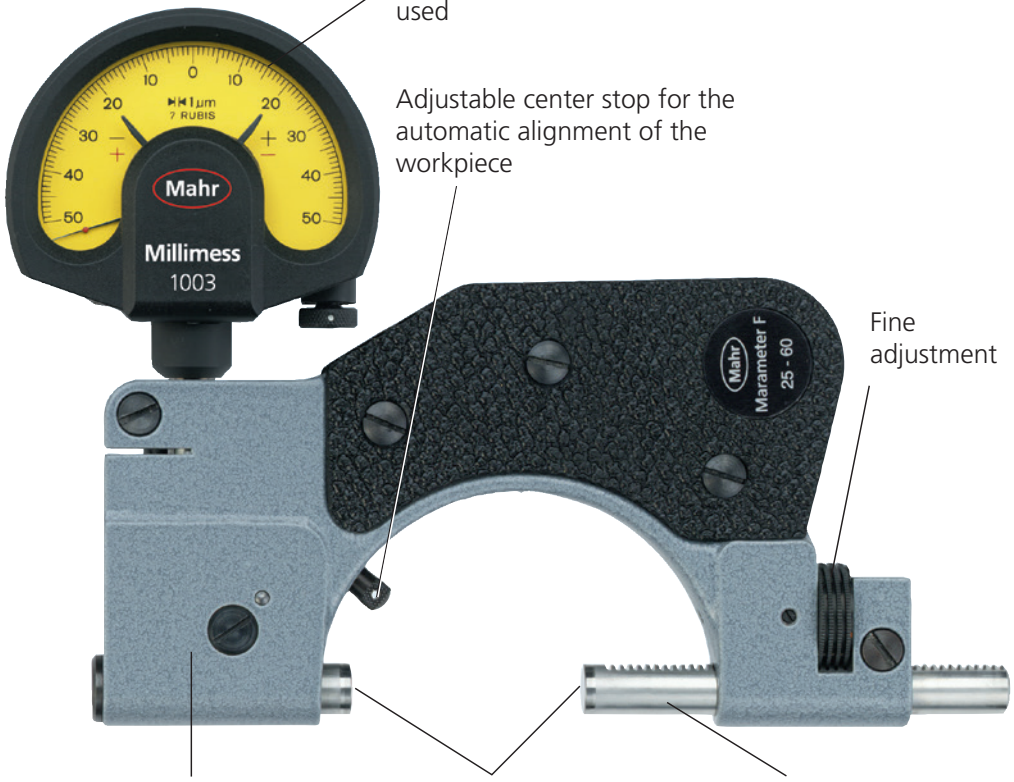
MaraMeter 844 K / 844 KH / 844 KS 406
Self-Centering Dial Bore Gage

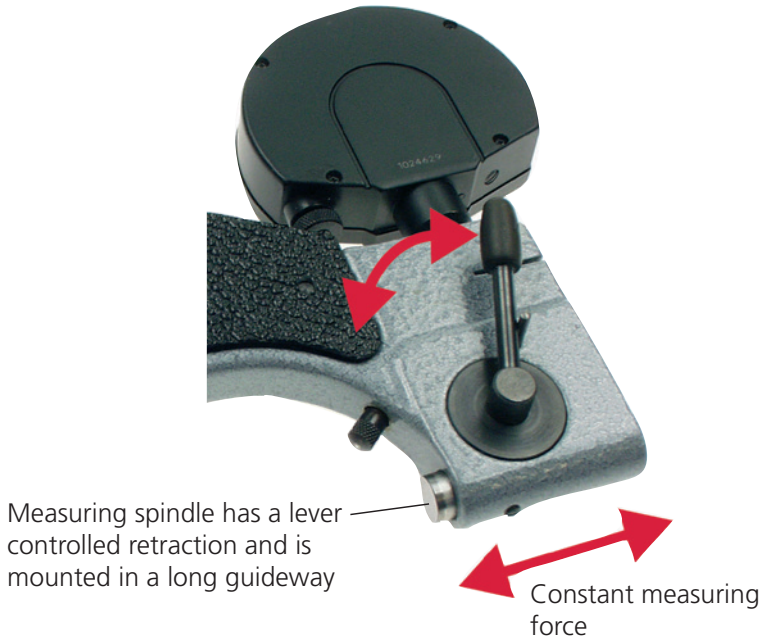
MaraMeter 844 N / 844 NH / 844 NR / 844 NB 412
Self-Centering Dial Bore Gage

MaraMeter 844 Zk / 844 z1 / 844 z2 418
Anvil for Internal Serration

MaraMeter | Indicating Snap Gages 840 F / 840 FC

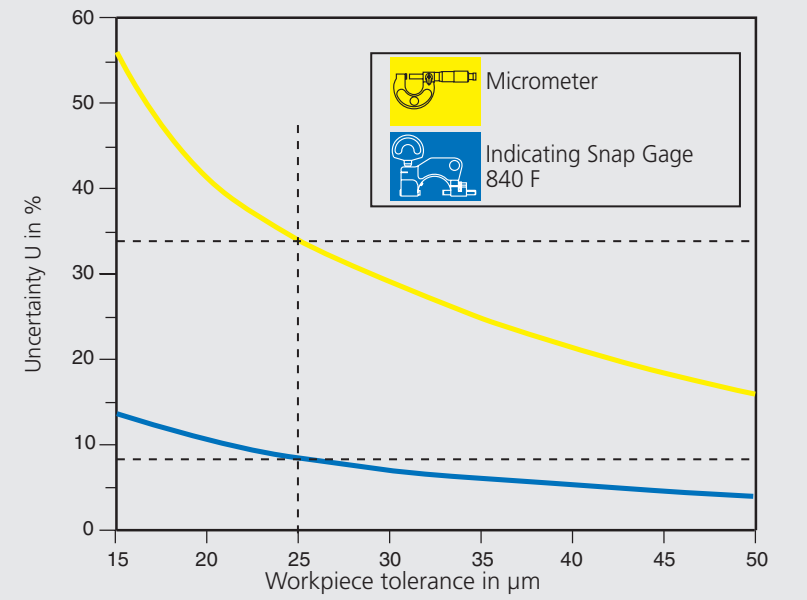
The Indicating Snap Gages **MaraMeter** 840 F / 840 FC are ideal for highly accurate and reliable results on cylindrical workpieces with a narrow tolerance.





- Reduced Measuring Uncertainity

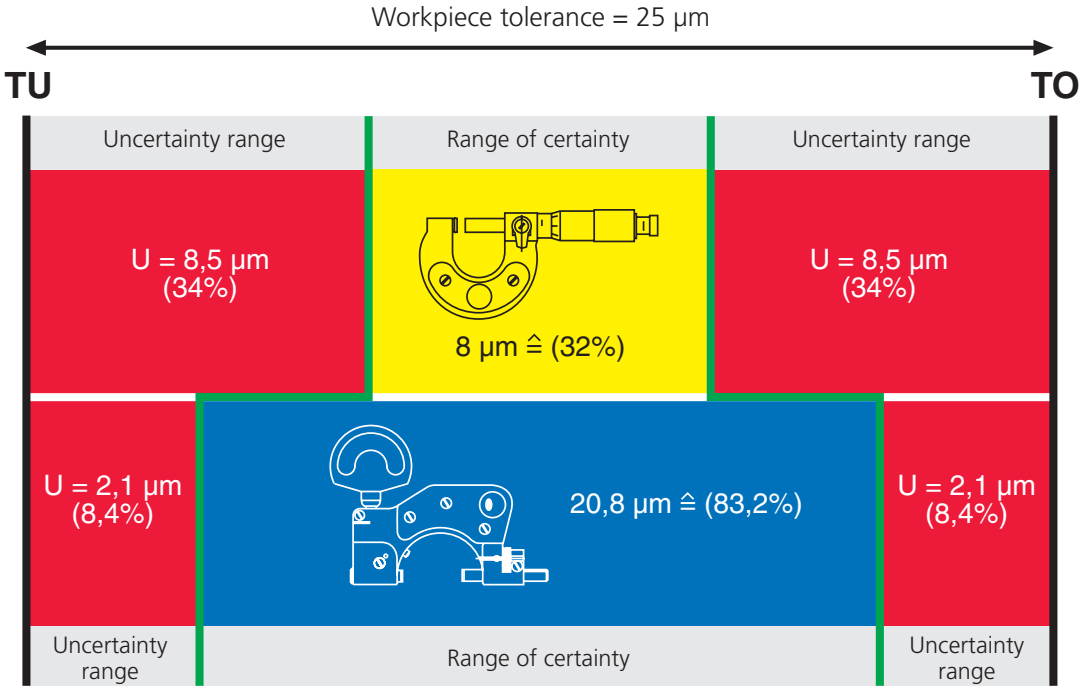
The MaraMeter Indicating Snap Gages have a notably reduced measuring uncertainty in comparison to a Micrometer.



Measuring Uncertainty U is dependent upon the tolerance of the workpiece

- Better utilization of the tolerance zone

Example: Workpiece tolerance 25 µm
The measured value in the uncertainty range can lie outside of the tolerance range, therefore the utilized tolerance of the Micrometer is reduced to only 32% (8 µm). With a MaraMeter Indicating Snap Gage 840 F, 83% (20.8 µm) of the workpiece tolerance can be utilized.



Advantage:

With the Indicating Snap Gage the tolerance zone can be used to a far greater extent, thus reducing the production costs.

MaraMeter 1000P–1 / 1000P–2 / 1000P–3 / 1000P–4 / 1000P–5 / 1000P–6 / 1000P–7

Indicating Snap Gage

FEATURES

- Flat lower anvil (reference) adjustable over a broad range
- Radiused upper anvil (sensitive) spring loaded to counter balance the weight of the gage
- Indicator can be rotated to read from front or rear of the gage
- Anvils are tungsten carbide for long life
- **Package contains:** includes indicator, insulating grip for ranges 44 –82 mm/1.75 –3.25″ and above



Application:

- The economical way to check outside diameters on the shop floor

TECHNICAL DATA

Order no.	Product type	Application range	Graduation value	Probe path	Indicating instrument (included in package)
		inch	inch	inch	
2050007	1000P–1	0 –1″	.0005″	.020″	IDS–179 Indicator (B5M)
2050011	1000P–2	.75 –2″	.0005″	.020″	IDS–179 Indicator (B5M)
2050015	1000P–3	1.75 –3.25″	.0005″	.020″	IDS–179 Indicator (B5M)
2050017	1000P–4	3 –4.5″	.0005″	.020″	IDS–179 Indicator (B5M)
2050019	1000P–5	4 –6″	.0005″	.020″	IDS–179 Indicator (B5M)
2050021	1000P–6	6 –8″	.0005″	.020″	IDS–179 Indicator (B5M)
2050023	1000P–7	8 –10″	.0005″	.020″	IDS–179 Indicator (B5M)

ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26

MaraMeter 1000P–1M / 1000P–2M / 1000P–3M / 1000P–4M / 1000P–5M / 1000P–6M / 1000P–7M

Indicating Snap Gage

FEATURES

- Flat lower anvil (reference) adjustable over a broad range
- Radiused upper anvil (sensitive) spring loaded to counter balance the weight of the gage
- Indicator can be rotated to read from front or rear of the gage
- Anvils are tungsten carbide for long life
- **Package contains:** includes indicator, insulating grip for ranges 44 –82 mm/1.75 –3.25" and above



Application:

- The economical way to check outside diameters on the shop floor

TECHNICAL DATA

Order no.	Product type	Application range	Graduation value	Measuring surface ø	Measuring span	Indicating instrument (included in package)
		mm	mm	mm	mm	
2050008	1000P–1M	0 –25	0.01	13	0.5	IDS–288 (O6I)
2050012	1000P–2M	19 –50	0.01	13	0.5	IDS–288 (O6I)
2050016	1000P–3M	44 –82	0.01	13	0.5	IDS–288 (O6I)
2050018	1000P–4M	76 –114	0.01	16	0.5	IDS–288 (O6I)
2050020	1000P–5M	102 –152	0.01	16	0.5	IDS–288 (O6I)
2050022	1000P–6M	152 –203	0.01	19	0.5	IDS–288 (O6I)
2050024	1000P–7M	203 –254	0.01	19	0.5	IDS–288 (O6I)

ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26

MaraMeter M–300P–1 / M–300P–2 / M–300P–3 / M–300P–4 / M–300P–5 / M–300P–6 / M–300P–7 / M–300P–8 / M–300P–9

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the range
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces ensuring precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Package contains:** allen key



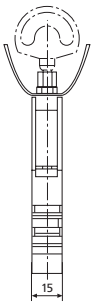
Application:

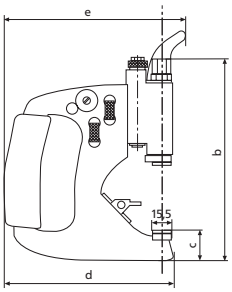
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range	Size of measuring surface	Measuring span		Indicating instrument (included in package)	Parallelism deviation	Measuring force
			mm		mm	inch		µm	N
2003100	-	M–300P–1	0 –25.4	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2003101	-	M–300P–2	25.4 –50.8	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2003102	-	M–300P–3	50.8 –76.2	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2003103	-	M–300P–4	76.2 –101.6	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2003104	-	M–300P–5	101.6 –127	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2003105	-	M–300P–6	127 –152.4	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2003106	-	M–300P–7	152.4 –177.8	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2003107	-	M–300P–8	177.8 –203.2	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2003108	-	M–300P–9	203.2 –228.6	15.5 x 15.5 mm	0.5	0.02	NONE	4	18

Order no.	a	b	b	c	c	d	d	e	e
	inch	mm	inch	mm	inch	mm	inch	mm	inch
2003100	1"	150	6"	29	1.16"	145	5.8"	158	6.3"
2003101	2"	175	7"	29	1.16"	141	5.6"	154	6.16"
2003102	3"	200	8"	29	1.16"	155	6.2"	167	6.7"
2003103	4"	226	9"	29	1.16"	167	6.7"	180	7.2"
2003104	5"	251	10"	29	1.16"	180	7.2"	193	7.7"
2003105	6"	278	11"	30	1.2"	203	8"	215	8.6"
2003106	7"	303	12"	30	1.2"	213	8.5"	226	9"
2003107	8"	329	13"	30	1.2"	231	9.2"	244	9.7"
2003108	9"	335	13.5"	30	1.2"	248	9.9"	261	10.4"





ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4332000	Millimess 0.01 mm, ±0.25 mm	1010
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127 mm / 5"	BA–71
2232441	Heavier force spring for EMD–30XP	SP–118
2232478	Lighter force spring for EMD–30XP	SP–192



1004



1086 R;1086 R-HR;1086 ZR



1086 Ri

MaraMeter OMI–300P–1 / OMI–300P–3 / OMI–300P–4 / OMI–300P–5 / OMI–300P–6 / OMI–300P–7 / OMI–300P–8 / OMI–300P–9

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the range
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces ensuring precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Package contains:** allen key



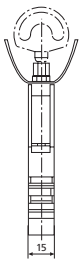
Application:

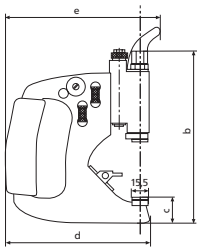
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range	Size of measuring surface	Measuring span		Indicating instrument (included in package)	Parallelism deviation	Measuring force
			mm		mm	inch		µm	N
2054281	-	OMI–300P–1	0 –25.4	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054287	-	OMI–300P–2	25.4 –50.8	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054288	-	OMI–300P–3	50.8 –76.2	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054294	-	OMI–300P–4	76.2 –101.6	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054295	-	OMI–300P–5	101.6 –127	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054296	-	OMI–300P–6	127 –152.4	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054297	-	OMI–300P–7	152.4 –177.8	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054298	-	OMI–300P–8	177.8 –203.2	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054299	-	OMI–300P–9	203.2 –228.6	15.5 x 15.5 mm	0.5	0.02	NONE	4	18

Order no.	a	a	b	b	c	c	d	d	e	e
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2054281	25.4	1"	150	6"	29	1.16"	145	5.8"	158	6.3"
2054287	50.8	2"	175	7"	29	1.16"	141	5.6"	154	6.16"
2054288	76.2	3"	200	8"	29	1.16"	155	6.2"	167	6.7"
2054294	101.6	4"	226	9"	29	1.16"	167	6.7"	180	7.2"
2054295	127	5"	251	10"	29	1.16"	180	7.2"	193	7.7"
2054296	152.4	6"	278	11"	30	1.2"	203	8"	215	8.6"
2054297	177.8	7"	303	12"	30	1.2"	213	8.5"	226	9"
2054298	203.2	8"	329	13"	30	1.2"	231	9.2"	244	9.7"
2054299	228.6	9"	335	13.5"	30	1.2"	248	9.9"	261	10.4"





ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127 mm / 5"	BA–71
2232441	Heavier force spring for EMD–30XP	SP–118
2232478	Lighter force spring for EMD–30XP	SP–192
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760

MaraMeter 300P–1M / 300P–2M / 300P–3M / 300P–4M / 300P–5M / 300P–6M

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the range
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces ensuring precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Package contains:** allen key



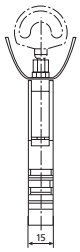
Application:

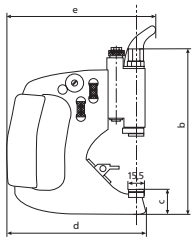
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range mm	Size of measuring surface	Measuring span		Indicating instrument (included in package)	Parallelism deviation	Measuring force
			mm		mm	inch		µm	N
2050496	-	300P–1M	0 –25.4	15.5 x 15.5 mm	0.5	0.02	IDS–206	4	18
2050498	-	300P–2M	25.4 –50.8	15.5 x 15.5 mm	0.5	0.02	IDS–206	4	18
2050510	-	300P–3M	50.8 –76.2	15.5 x 15.5 mm	0.5	0.02	IDS–206	4	18
2050513	-	300P–4M	76.2 –101.6	15.5 x 15.5 mm	0.5	0.02	IDS–206	4	18
2050515	-	300P–5M	101.6 –127	15.5 x 15.5 mm	0.5	0.02	IDS–206	4	18
2050517	-	300P–6M	127 – 152.4	15.5 x 15.5 mm	0.5	0.02	IDS–206	4	18
2050526	-	300P–7M	152.4 –177.8	15.5 x 15.5 mm	0.5	0.02	IDS–208	4	18

Order no.	a	b	c	d	e
	inch	inch	inch	inch	inch
2050496	1"	6"	1.16"	5.8"	6.3"
2050498	2"	7"	1.16"	5.6"	6.16"
2050510	3"	8"	1.16"	6.2"	6.7"
2050513	4"	9"	1.16"	6.7"	7.2"
2050515	5"	10"	1.16"	7.2"	7.7"
2050517	6"	11"	1.16"	7.7"	8.5"
2050526	7"	12"	1.2"	8.5"	9"





ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127 mm / 5"	BA–71
2232441	Heavier force spring for EMD–30XP	SP–118
2232478	Lighter force spring for EMD–30XP	SP–192
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760

MaraMeter 300P–1 / 300P–2 / 300P–3 / 300P–4 / 300P–5 / 300P–6 / 300P–7 / 300P–8 / 300P–9

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the range
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces ensuring precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Package contains:** allen key



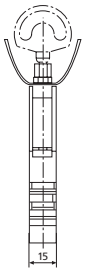
Application:

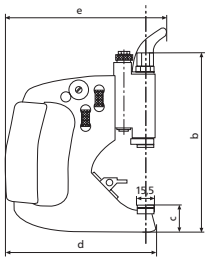
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range	Size of measuring surface	Measuring span		Indicating instrument (included in package)	Parallelism deviation	Measuring force
			mm		mm	inch		µm	N
2050485	-	300P–1	0 –25.4	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12I)	4	18
2050497	-	300P–2	25.4 –50.8	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12I)	4	18
2050499	-	300P–3	50.8 –76.2	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12I)	4	18
2050511	-	300P–4	76.2 –101.6	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12I)	4	18
2050514	-	300P–5	101.6 –127	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12I)	4	18
2050516	-	300P–6	127 –152.4	15.5 x 15.5 mm	0.5	0.02	IDT–106 Indicator (22I)	4	18
2050518	-	300P–7	152.4 –177.8	15.5 x 15.5 mm	0.5	0.02	IDT–106 Indicator (22I)	4	18
2050527	-	300P–8	177.8 –203.2	15.5 x 15.5 mm	0.5	0.02	IDT–106 Indicator (22I)	4	18
2050529	-	300P–9	203.2 –228.6	15.5 x 15.5 mm	0.5	0.02	IDT–106 Indicator (22I)	4	18

Order no.	a	a	b	b	c	c	d	d	e	e
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2050485	25.4	1"	150	6"	29	1.16"	145	5.8"	158	6.3"
2050497	50.8	2"	175	7"	29	1.16"	141	5.6"	154	6.16"
2050499	76.2	3"	200	8"	29	1.16"	155	6.2"	167	6.7"
2050511	101.6	4"	226	9"	29	1.16"	167	6.7"	180	7.2"
2050514	127	5"	251	10"	29	1.16"	180	7.2"	193	7.7"
2050516	152.4	6"	278	11"	30	1.2"	203	8"	215	8.6"
2050518	177.8	7"	303	12"	30	1.2"	213	8.5"	226	9"
2050527	203.2	8"	329	13"	30	1.2"	231	9.2"	244	9.7"
2050529	228.6	9"	335	13.5"	30	1.2"	248	9.9"	261	10.4"





ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127 mm / 5"	BA–71
2232441	Heavier force spring for EMD–30XP	SP–118
2232478	Lighter force spring for EMD–30XP	SP–192
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760

MaraMeter EDI–300P–1 / EDI–300P–2 / EDI–300P–3 / EDI–300P–4 / EDI–300P–5 / EDI–300P–6 / EDI–300P–7 / EDI–300P–8 / EDI–300P–9

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the range
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces ensuring precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Package contains:** allen key



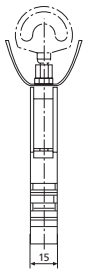
Application:

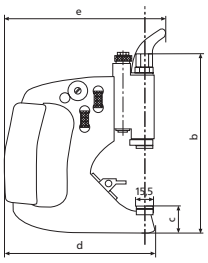
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range mm	Size of measuring surface	Measuring span		Indicating instrument (included in package)	Parallelism deviation	Measuring force
			mm		mm	inch		µm	N
2051658	-	EDI–300P–1	0 –25.4	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18
2051664	-	EDI–300P–2	25.4 –50.8	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18
2051666	-	EDI–300P–3	50.8 –76.2	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18
2051668	-	EDI–300P–4	76.2 –101.6	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18
2051669	-	EDI–300P–5	101.6 –127	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18
2051670	-	EDI–300P–6	127 –152.4	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18
2051671	-	EDI–300P–7	152.4 –177.8	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18
2051672	-	EDI–300P–8	177.8 –203.2	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18
2051673	-	EDI–300P–9	203.2 –228.6	15.5 x 15.5 mm	0.5	0.02	2034201 µMaxum-II Indicator	4	18

Order no.	a	a	b	b	c	c	d	d	e	e
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2051658	25.4	1"	150	6"	29	1.16"	145	5.8"	158	6.3"
2051664	50.8	2"	175	7"	29	1.16"	141	5.6"	154	6.16"
2051666	76.2	3"	200	8"	29	1.16"	155	6.2"	167	6.7"
2051668	101.6	4"	226	9"	29	1.16"	167	6.7"	180	7.2"
2051669	127	5"	251	10"	29	1.16"	180	7.2"	193	7.7"
2051670	152.4	6"	278	11"	30	1.2"	203	8"	215	8.6"
2051671	177.8	7"	303	12"	30	1.2"	213	8.5"	226	9"
2051672	203.2	8"	329	13"	30	1.2"	231	9.2"	244	9.7"
2051673	228.6	9"	335	13.5"	30	1.2"	248	9.9"	261	10.4"





ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127 mm / 5"	BA–71
2232478	Lighter force spring for EMD–30XP	SP–192
2232441	Heavier force spring for EMD–30XP	SP–118
2243295	Lighter force spring for EDI–30XP	2243295
2243297	Heavier force spring for EDI–30XP	2243297
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760

MaraMeter EMD–300P–1D / EMD–300P–2D / EMD–300P–3D / EMD–300P–4D / EMD–300P–5D / EMD–300P–6D / EMD–300P–7D / EMD–300P–8D / EMD–300P–9D

RS232C Digimatic

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the range
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces ensuring precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Data interface:** Digimatic, RS232C, USB
- **Energy supply:** Battery operation
- **Package contains:** allen key



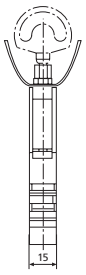
Application:

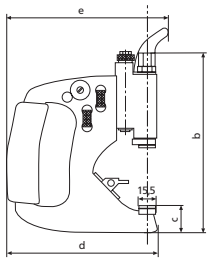
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range	Size of measuring surface	Measuring span		Indicating instrument (included in package)	Parallelism deviation	Measuring force
			mm		mm	inch		µm	N
2051730	-	EMD–300P–1D	0 –25.4	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18
2051734	-	EMD–300P–2D	25.4 –50.8	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18
2051758	-	EMD–300P–3D	50.8 –76.2	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18
2051762	-	EMD–300P–4D	76.2 –101.6	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18
2051766	-	EMD–300P–5D	101.6 –127	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18
2051770	-	EMD–300P–6D	127 –152.4	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18
2051774	-	EMD–300P–7D	152.4 –177.8	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18
2051778	-	EMD–300P–8D	177.8 –203.2	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18
2051782	-	EMD–300P–9D	203.2 –228.6	15.5 x 15.5 mm	0.5	0.02	2033119 Maxum-III	4	18

Order no.	a	a	b	b	c	c	d	d	e	e
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2051730	25.4	1"	150	6"	29	1.16"	145	5.8"	158	6.3"
2051734	50.8	2"	175	7"	29	1.16"	141	5.6"	154	6.16"
2051758	76.2	3"	200	8"	29	1.16"	155	6.2"	167	6.7"
2051762	101.6	4"	226	9"	29	1.16"	167	6.7"	180	7.2"
2051766	127	5"	251	10"	29	1.16"	180	7.2"	193	7.7"
2051770	152.4	6"	278	11"	30	1.2"	203	8"	215	8.6"
2051774	177.8	7"	303	12"	30	1.2"	213	8.5"	226	9"
2051778	203.2	8"	329	13"	30	1.2"	231	9.2"	244	9.7"
2051782	228.6	9"	335	13.5"	30	1.2"	248	9.9"	261	10.4"





ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127 mm / 5"	BA–71
2232478	Lighter force spring for EMD–30XP	SP–192
2232441	Heavier force spring for EMD–30XP	SP–118
2243295	Lighter force spring for EDI–30XP	2243295
2243297	Heavier force spring for EDI–30XP	2243297
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760

MaraMeter 301P

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the rang
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces that ensure lasting precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Package contains:** allen key



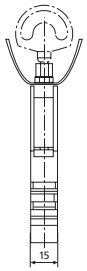
Application:

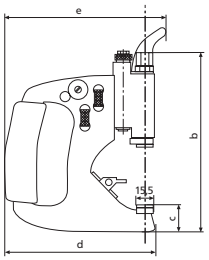
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range	Size of measuring surface	Measuring span	Parallelism deviation	Measuring force
			mm		mm	µm	N
2003110	•	301 P	0 –25.4	15.5 x 15.5 mm	0.5	4	18
2003111	•	301 P	25.4 –50.8	15.5 x 15.5 mm	0.5	4	18
2003112	•	301 P	50.8 –76.2	15.5 x 15.5 mm	0.5	4	18
2003113	•	301 P	76.2 –101.6	15.5 x 15.5 mm	0.5	4	18
2003114	•	301 P	101.6 –127	15.5 x 15.5 mm	0.5	4	18
2003115	•	301 P	127 –152.4	15.5 x 15.5 mm	0.5	4	18
2003116	•	301 P	152.4 –177.8	15.5 x 15.5 mm	0.5	4	18
2003117	•	301 P	177.8 –203.2	15.5 x 15.5 mm	0.5	4	18
2003118	•	301 P	203.2 –228.6	15.5 x 15.5 mm	0.5	4	18

Order no.	b	c	d	e
	mm	mm	mm	mm
2003110	150	29	145	158
2003111	175	29	141	154
2003112	200	29	155	167
2003113	226	29	167	180
2003114	251	29	180	193
2003115	278	30	203	215
2003116	303	30	213	226
2003117	329	30	231	244
2003118	335	30	248	261





ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4332000	Millimess 0.01 mm, ±0.25 mm	1010
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri



1004



1086 R;1086 R-HR;1086 ZR



1086 Ri

MaraMeter OMI–301P–1 / OMI–301P–2 / OMI–301P–3 / OMI–301P–4 / OMI–301P–6 / OMI–301P–7 / OMI–301P–8 / OMI–301P–9

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the rang
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces that ensure lasting precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Package contains:** allen key



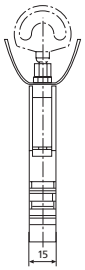
Application:

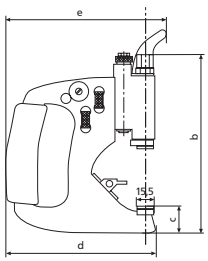
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range	Size of measuring surface	Measuring span		Indicating instrument (included in package)	Parallelism deviation	Measuring force
			mm		mm	inch		µm	N
2054300	•	OMI–301P–1	0 –25.4	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054306	•	OMI–301P–2	25.4 –50.8	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054307	•	OMI–301P–3	50.8 –76.2	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054313	•	OMI–301P–4	76.2 –101.6	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054314	•	OMI–301P–5	101.6 –127	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054315	•	OMI–301P–6	127 –152.4	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054316	•	OMI–301P–7	152.4 –177.8	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054317	•	OMI–301P–8	177.8 –203.2	15.5 x 15.5 mm	0.5	0.02	NONE	4	18
2054318	•	OMI–301P–9	203.2 –228.6	15.5 x 15.5 mm	0.5	0.02	NONE	4	18

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
2054300	25.4	150	29	145	158
2054306	50.8	175	29	141	154
2054307	76.2	200	29	155	167
2054313	101.6	226	29	167	180
2054314	127	251	29	180	193
2054315	152.4	278	30	203	215
2054316	177.8	303	30	213	226
2054317	203.2	329	30	231	244
2054318	228.6	335	30	248	261







1086 Ri



1086 R;1
086 R-HR;
1086 ZR



1004

ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4332000	Millimess 0.01 mm, ±0.25 mm	1010
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri

MaraMeter 301P–1 / 301P–2 / 301P–3 / 301P–4 / 301P–5 / 301P–6 / 301P–7 / 301P–8 / 301P–9

Indicating Snap Gage

FEATURES

- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment
- All Series 300P snap gages are fully adjustable with positive position locking at any point within the rang
- 0.50 mm / .020" movement of sensitive contact
- Snap gages available over a wide range of sizes, styles, and readout configurations
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces that ensure lasting precision that lasts
- Indicator can be rotated to read from front or rear of the gage
- All adjustments accomplished using a single hex wrench (furnished)
- **Package contains:** allen key



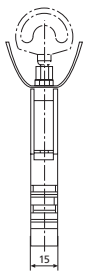
Application:

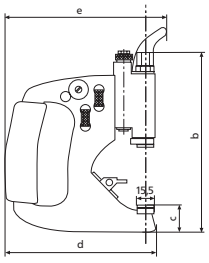
- For rapid measurements of cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements

TECHNICAL DATA

Order no.	Lifting lever	Product type	Application range mm	Size of measuring surface	Measuring span		Indicating instrument (included in package)	Parallelism deviation	Measuring force
			mm		mm	inch		µm	N
2050562	•	301P–1	0 –25.4	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18
2050574	•	301P–2	25.4 –50.8	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18
2050576	•	301P–3	50.8 –76.2	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18
2050588	•	301P–4	76.2 –101.6	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18
2050590	•	301P–5	101.6 –127	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18
2050592	•	301P–6	127 –152.4	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18
2050594	•	301P–7	152.4 –177.8	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18
2050596	•	301P–8	177.8 –203.2	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18
2050598	•	301P–9	203.2 –228.6	15.5 x 15.5 mm	0.5	0.02	IDT–102 Indicator (12l)	4	18

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
2050562	25.4	150	29	145	158
2050574	50.8	175	29	141	154
2050576	76.2	200	29	155	167
2050588	101.6	226	29	167	180
2050590	127	251	29	180	193
2050592	152.4	278	30	203	215
2050594	177.8	303	30	213	226
2050596	203.2	329	30	231	244
2050598	228.6	335	30	248	261





ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4332000	Millimess 0.01 mm, ±0.25 mm	1010
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri



1004



1086 R;
1086 R-HR;
1086 ZR



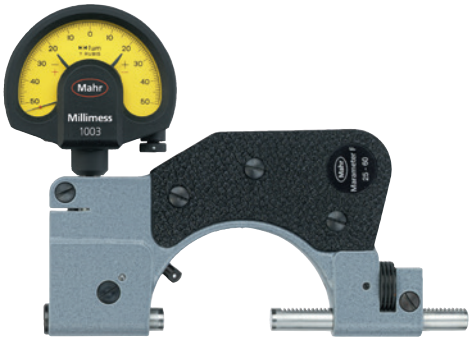
1086 Ri

MaraMeter 840 F

Indicating Snap Gage

FEATURES

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Measuring spindle and anvil are made of hardened stainless steel with carbide tipped measuring faces
- Adjustable centering stop for surface centering
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Package contains:** flat contact point 903 (steel), instruction manual, wooden case, excludes indicator



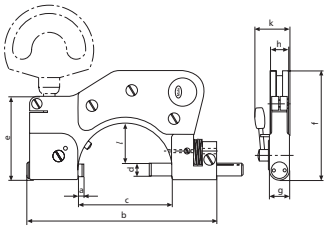
Application:

- For cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements
- Universally applicable and extremely versatile
  - Each instrument spans a broad measuring range
  - Any dimension and fit can be very quickly and easily adjusted

TECHNICAL DATA

Order no.	Product type	Application range	Application range in inch	Measuring span	Parallelism deviation	Flatness deviation	Repeatability f_w	Measuring force	Frame size
		mm		mm	µm	µm	µm	N	
4450000	840 F	0 –25	0 –1″	2	1	0.2	0.5	7.5	1
4450001	840 F	25 –60	1 –2.36″	2	2	0.2	0.5	7.5	2
4450002	840 F	50 –100	2 –4″	2.5	2	0.2	1	7.5	3
4450003	840 F	100 –150	4 –6″	2.5	2	0.2	1	9	4
4450004	840 F	150 –200	6 –8″	2.5	2	0.2	1	9	5

Order no.	k	l	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4450000	23	14	5	97	34	8	54	65	12	13
4450001	25	30	5	140	68	9	60	77	13	13
4450002	28	54	6.5	193	110	10	60	103	14	13
4450003	31	81	6.5	258	162	12	70	141	16	12
4450004	31	106	6.5	316	212	12	75	171	16	12



ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4450020	Base, for stationary application	840 Ff
4450050	Holder, frame size 1	840 Fk/1
4450051	Holder, frame size 2	840 Fk/2
4450052	Holder, frame size 3	840 Fk/3
4450053	Holder, frame size 4 + 5	840 Fk/4



1004



1003



1002



1086 R;1086 R-HR;1086 ZR



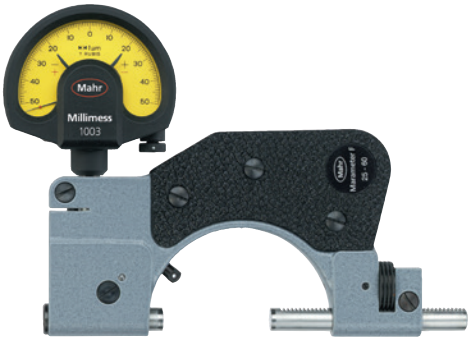
1086 Ri

MaraMeter 840 FC

Indicating Snap Gage

FEATURES

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Measuring spindle and anvil spindle are both made of hardened stainless steel, ceramic measuring faces
- Adjustable centering stop for surface centering
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces in connection with ceramic measuring faces
- **Package contains:** flat contact point 903 (steel), instruction manual, wooden case, excludes indicator



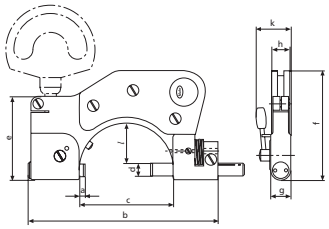
Application:

- For cylindrical parts such as shafts, bolts and spindles
- For thickness and length measurements
- Universally applicable and extremely versatile
  - Each instrument spans a broad measuring range
  - Any dimension and fit can be very quickly and easily adjusted

TECHNICAL DATA

Order no.	Measuring surface	Product type	Application range	Application range in inch	Measuring span	Parallelism deviation	Flatness deviation	Repeatability f_w	Measuring force	Frame size
			mm		mm	µm	µm	µm	N	
4450100	ceramic	840 FC	0 –25	0 –1″	2	1	0.2	1	7.5	1
4450101	ceramic	840 FC	25 –60	1 –2.36″	2	2	0.2	1	7.5	2

Order no.	k	l	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4450100	23	14	5	97	34	8	54	65	12	13
4450101	25	30	5	140	68	9	60	77	13	13



ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4450020	Base, for stationary application	840 Ff
4450050	Holder, frame size 1	840 Fk/1
4450051	Holder, frame size 2	840 Fk/2


1004


1003


1002


1086 R;1086 R-HR;1086 ZR

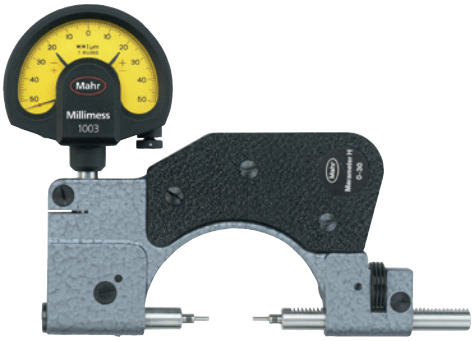

1086 Ri

MaraMeter 840 FH

Indicating Snap Gage

FEATURES

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Measuring and anvil spindle have precision tapered bores for mounting interchangeable anvils (with accessory 40 He)
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Package contains:** flat contact point 903 (steel), spanner DIN 902–3.5, wooden case, excludes indicator



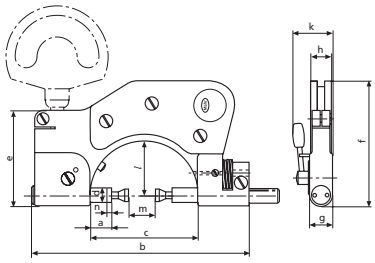
Application:

- For cylindrical parts such as shafts, bolts and spindles
- Universally applicable
- A wide variety of measurement problems can be solved with the broad range of interchangeable anvils

TECHNICAL DATA

Order no.	Product type	Application range	Application range in inch	Measuring span	Repeatability f_w	Measuring force	Frame size
		mm		mm	µm	N	
4451000	840 FH	0 –30	0 –1.18″	2	1	7.5	2
4451005	840 FH	30 –80	1.18 –3″	2.5	1	7.5	3

Order no.	k	l	n	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4451000	25	34	2	12.5	140	68	9	60	77	13	13
4451005	28	59	2.5	7.5	193	110	10	60	103	13	13



MaraMeter 840 FH

Indicating Snap Gage



1004



1003



1002



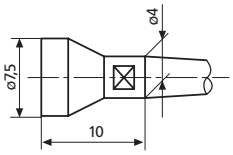
1086 R;
1086 R-HR;
1086 ZR



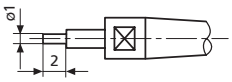
1086 Ri

ACCESSORIES

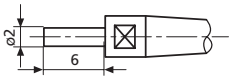
Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4880210	Spanner for 840 FH, to loosen anvils	
4450051	Holder, frame size 2	840 Fk/2
4450020	Base, for stationary application	840 Ff
4152036	Measuring anvils, flat faces, carbide version	40 He 0H
4152011	Measuring anvils, recessed flat faces	40 He 1
4152033	Measuring anvils, offset end faces, carbide	40 He 1H
4152012	Measuring anvils, recessed flat faces	40 He 2
4152031	Measuring anvils, stepped flat faces, carbide version	40 He 2H
4152013	Measuring anvils, disc type measuring surfaces	40 He 3
4152014	Measuring anvils, disc type anvils with V-groove	40 He 4
4152015	Measuring anvils, Blade type anvils	40 He 5
4152016	Measuring anvils, offset blades	40 He 6
4152017	Measuring anvils, recessed blades	40 He 7
4152018	Measuring anvils, recessed flat faces with V-grooves on sleeve	40 He 8
4152019	Measuring anvils, recessed flat faces with slip on support table	40 He 9
4152020	Measuring anvils, with centered bores	40 He 10
4152021	Measuring anvils, with tips	40 He 11
4450052	Holder, frame size 3	840 Fk/3



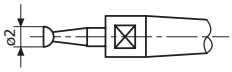
40 He 0H



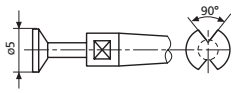
40 He 1;40 He 1H



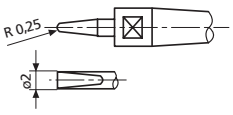
40 He 2;
40 He 2H



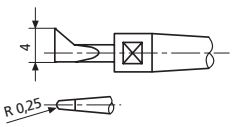
40 He 3



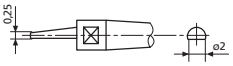
40 He 4



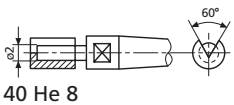
40 He 5



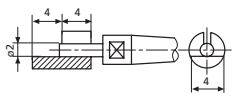
40 He 6



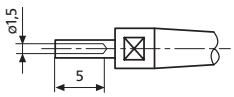
40 He 7



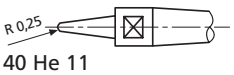
40 He 8



40 He 9



40 He 10



40 He 11

MaraMeter 840 FG

Indicating Snap Gage

FEATURES

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Measuring spindle and anvil spindle have an M 2.5 connection thread, thus enabling the use of interchangeable anvils that are also used in dial indicators and dial comparators
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Package contains:** flat contact point 903 (steel), wooden case, excludes indicator



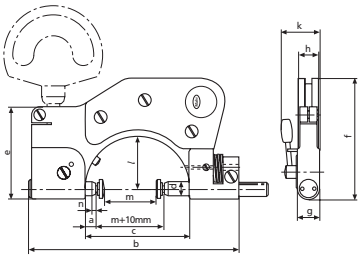
Application:

- For cylindrical parts such as shafts, bolts and spindles
- Universally applicable
- A wide variety of measurement problems can be solved with the broad range of interchangeable anvils

TECHNICAL DATA

Order no.	Product type	Application range mm	Application range in inch	Measuring span	Repeatability f_w	Measuring force	Frame size
		mm		mm	µm	N	
4454000	840 FG	0 –50	0 –2″	2	1	7.5	2
4454001	840 FG	40 –90	1.57 –3.57″	2.5	1	7.5	3

Order no.	k	l	n	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4454000	25	34	2	5	140	68	9	60	77	13	13
4454001	28	59	2.5	6.5	193	110	10	60	103	14	13



MaraMeter 840 FG

Indicating Snap Gage



1004



1003



1002



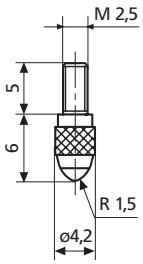
1086 R;
1086 R-HR;
1086 ZR



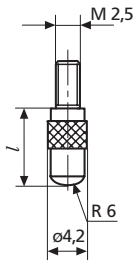
1086 Ri

ACCESSORIES

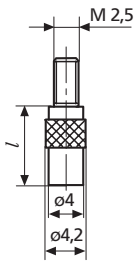
Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4450051	Holder, frame size 2	840 Fk/2
4450020	Base, for stationary application	840 Ff
4360002	Standard contact point, carbide, r = 1.5 mm	901 H
4360041	Spherical contact point, carbide, l = 10 mm, r = 6 mm	902 H
4360043	Spherical contact point, carbide, l = 15 mm, r = 6 mm	902 H
4360044	Spherical contact point, carbide, l = 20 mm, r = 6 mm	902 H
4360101	Flat contact point, carbide, l = 6 mm	903 H
4360103	Flat contact point, carbide, l = 10 mm	903 H
4360105	Flat contact point, carbide, l = 15 mm	903 H
4360106	Flat contact point, carbide, l = 20 mm	903 H
4360131	Conical contact point, carbide, r = 0.3 mm	904 H
4360150	Ball contact points, carbide, l = 8.5 mm, d = 1.0 mm	906 H
4360151	Ball contact points, carbide, l = 8.5 mm, d = 1.25 mm	906 H
4360152	Ball contact points, carbide, l = 8.5 mm, d = 1.5 mm	906 H
4360153	Ball contact points, carbide, l = 8.5 mm, d = 1.75 mm	906 H
4360154	Ball contact points, carbide, l = 8.5 mm, d = 2.0 mm	906 H
4360155	Ball contact points, carbide, l = 8.5 mm, d = 2.5 mm	906 H
4360156	Ball contact points, carbide, l = 8.5 mm, d = 3.0 mm	906 H
4360157	Ball contact points, carbide, l = 8.5 mm, d = 3.5 mm	906 H
4360158	Ball contact points, carbide, l = 8.5 mm, d = 4.0 mm	906 H
4360159	Ball contact points, carbide, l = 8.5 mm, d = 4.5 mm	906 H
4360160	Ball contact points, carbide, l = 9 mm, d = 5.0 mm	906 H
4360161	Ball contact points, carbide, l = 9 mm, d = 5.5 mm	906 H
4360162	Ball contact points, carbide, l = 9 mm, d = 6 mm	906 H
4360163	Ball contact points, carbide, l = 9 mm, d = 6.35 mm	906 H
4360164	Ball contact points, carbide, l = 10 mm, d = 6.5 mm	906 H
4360165	Ball contact points, carbide, l = 10 mm, d = 7 mm	906 H
4360166	Ball contact points, carbide, l = 11 mm, d = 7.5 mm	906 H
4360167	Ball contact points, carbide, l = 11 mm, d = 8.0 mm	906 H
4360168	Ball contact points, carbide, l = 12 mm, d = 8.5 mm	906 H
4360169	Ball contact points, carbide, l = 12 mm, d = 9.0 mm	906 H
4360170	Ball contact points, carbide, l = 13 mm, d = 10.0 mm	906 H
4360200	Flat contact plates, steel, measuring surface ø 11.3 mm	907
4360201	Flat contact plates, carbide, measuring surface ø 7 mm	907 H
4360210	Spherical contact plates, steel, steel, measuring surface ø 12 mm	908
4360211	Spherical contact plates, steel, carbide, measuring surface ø 12 mm	908 H
4360240	Pin contact point, carbide, l = 2 mm, measuring surface ø 1 mm	911 H1
4450052	Holder, frame size 3	840 Fk/3



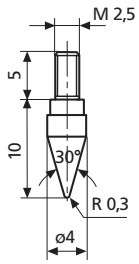
901; 901 H;
901 R



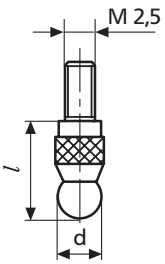
902; 902 H



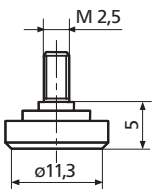
903; 903 H



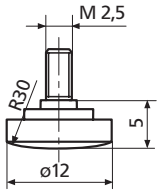
904; 904 H



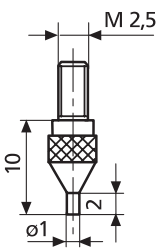
906 H



907



908 H



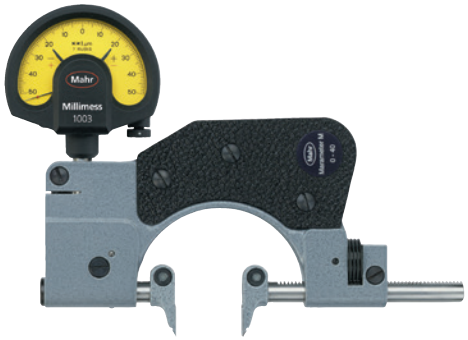
911 H1

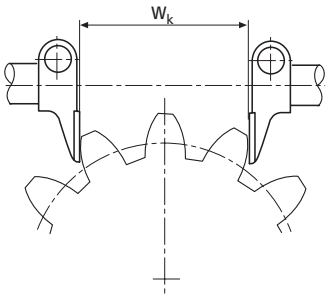
MaraMeter 840 FM

Indicating Snap Gage

FEATURES

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Measuring spindle and anvil spindle made of hardened stainless steel; with extending carbide-tipped measuring jaws
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces in conjunction with carbide-tipped measuring faces
- **Package contains:** flat contact point 903 (steel), instruction manual, wooden case, excludes indicator





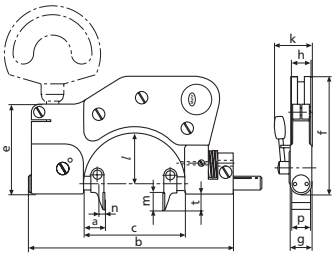
Application:

- For inspection of diameters of small hubs, registers and shoulders on shafts
- Can be used to inspect tooth span Wk and reference-free tooth thickness on spur gears having straight and helical teeth
- Universally applicable and extremely versatile, each instrument offers long measuring range within its adjustable range

TECHNICAL DATA

Order no.	Product type	Application range	Application range in inch	Base tangent lengths starting from module m	Size of measuring surface	Measuring span	Parallelism deviation	Flatness deviation	Repeatability f_w	Measuring force	Frame size
		mm				mm	µm	µm	µm	N	
4452000	840 FM	0 –40	0 –1.57″	0.5	12 x 12 mm	2	2	0.5	1	7.5	2
4452001	840 FM	40 –80	1.57 –3″	0.5	12 x 12 mm	2.5	3	0.5	1	7.5	3
4452002	840 FM	80 –130	3 –5″	1	15 x 17 mm	2.5	3	0.5	1	9	4
4452003	840 FM	130 –180	5 –7″	1	15 x 17 mm	2.5	3	0.5	1	9	5

Order no.	k	l	m	p	t	a	b	c	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4452000	25	34	12	12	11	14	140	68	60	77	13	13
4452001	28	59	12	12	11	14	193	110	60	103	14	13
4452002	31	87	17	15	17	19	258	162	70	141	16	20
4452003	31	112	17	15	17	15	316	212	75	171	16	20





1004



1003



1002



1086 R;1086 R-HR;1086 ZR



1086 Ri

ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4450020	Base, for stationary application	840 Ff
4450051	Holder, frame size 2	840 Fk/2
4450052	Holder, frame size 3	840 Fk/3
4450053	Holder, frame size 4 + 5	840 Fk/4

MaraMeter 840 FS

Indicating Snap Gage

FEATURES

- Rugged, forged steel frame with heat insulators
- Both spindles are made of hardened stainless steel and mounted in long guideways
- Carbide tipped measuring faces slightly chamfered at the front to facilitate positioning
- Projects over width of frame for measurement of narrow registers or when measuring directly at shoulders
- Adjustable centering stop for surface centering
- Straight transfer of spindle movement to indicator; ensures the weight of the gage rests on the anvil spindle
- Direct indication and evaluation of measurement results
- Constant measuring force as a result of built-in spring, eliminating user influence
- **Package contains:** wooden case, allen key, excludes indicator



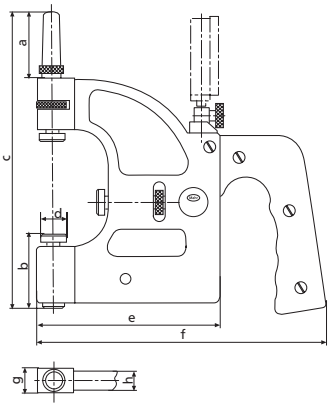
Application:

- For all kinds of cylindrical workpieces, whether directly on a machine tool or production control
- Universally applicable and extremely versatile
  - Each instrument spans a broad measuring range
  - Any dimension and fit can be very quickly and easily adjusted

TECHNICAL DATA

Order no.	Product type	Application range	Application range	Measuring span	Parallelism deviation	Flatness deviation	Repeatability f_w	Measuring force	Product weight
		mm	inch	mm	µm	µm	µm	N	kg
4455000	840 FS	10 –30	.39 –1.18″	0.7	3	0.5	1	13.5	0.60
4455001	840 FS	30 –60	1.18 –2.36″	0.7	3	0.5	1	13.5	0.90
4455002	840 FS	60 –100	2.36 –4″	0.7	3	0.5	1	13.5	1.30
4455003	840 FS	100 –150	4 –6″	0.7	3	0.5	1	15	1.70
4455004	840 FS	150 –200	6 –8″	0.7	3	0.5	1	15	2.00
4455005	840 FS	200 –250	8 –10″	0.7	3	0.5	1	15	2.20
4455006	840 FS	250 –300	10 –12″	0.7	3	0.5	1	15	2.50
4455007	840 FS	300 –350	12 –14″	0.7	4	0.5	1	15	3.30
4455008	840 FS	350 –400	14 –16″	0.7	4	0.5	1	15	3.30
4455009	840 FS	400 –450	16 –18″	0.7	4	0.5	1	15	4.30
4455010	840 FS	450 –500	18 –20″	0.7	4	0.5	1	15	4.70

Order no.	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm
4455000	37	46	154	18	87	161	17	15
4455001	45	51	199	18	122	196	17	15
4455002	56	62	260	22	154	228	20	18
4455003	71	62	335	22	189	263	20	18
4455004	71	62	385	22	214	288	20	18
4455005	71	62	436	22	248	322	20	18
4455006	71	62	487	22	280	354	20	18
4455007	71	62	537	22	310	384	20	18
4455008	71	62	587	22	350	424	20	18
4455009	71	62	637	22	380	454	20	18
4455010	71	62	687	22	410	484	20	18





1004



1003



1002



1086 R;
1086 R-HR;
1086 ZR



1086 Ri

ACCESSORIES

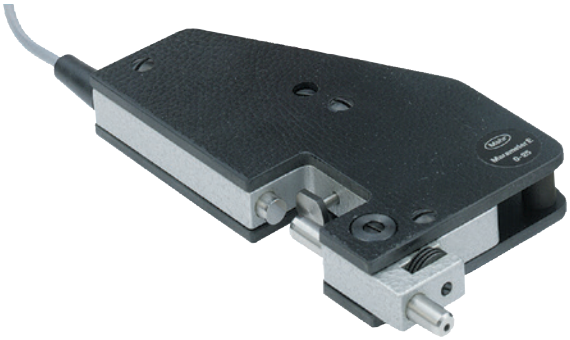
Order no.	Product name	Product type
4335000	Millimess 0.5 µm, ± 25 µm	1002
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4333000	Millimess 5 µm, ± 130 µm	1004
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri

MaraMeter 840 E

Indicating Snap Gage

FEATURES

- Extremely accurate due to the straight transfer of spindle movement to the inductive measuring system according to the Abbe principle
- Universally applicable and extremely versatile
  - Each instrument spans a broad measuring range
  - Any dimension and fit can be very quickly and easily adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Package contains:** wooden case, excludes indicator



Application:

- For ultra-accurate measurements on precision components (diameter, thickness and length measurements)

TECHNICAL DATA

Order no.	Readings/ Selectable resolution down to	Product type	Applica-tion range	Measuring surface ø	Measuring span	Parallelism deviation	Repeatabil-ity f_w	Measuring force	Frame size
	µm		mm	mm	mm	µm	µm	N	
4453000	0.01	840 E	0 –25	7.5	0.5	0.3	0.1	4.5	1

ACCESSORIES

Order no.	Product name	Product type
5312010	Compact amplifier	C 1200
5312080	Compact amplifier	C 1208 M
5312160	Compact amplifier	C 1216 M
4450020	Base, for stationary application	840 Ff



C1200;C 1200



C 1208 M;
C1240 M;
C 1208 F;
C 1216 M;
C 1216 F

MaraMeter 852 TS / 852 TSZ

Indicating Bench Snap Gage

FEATURES

- Rugged steel frame can be inclined up to 45° from the sturdy base
- Measuring spindle and anvil are made of hardened stainless steel with mounting bore for insertion of interchangeable anvils
- Height adjustable stop
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- **Package contains:** plan carbide anvils dia. 3.5 mm

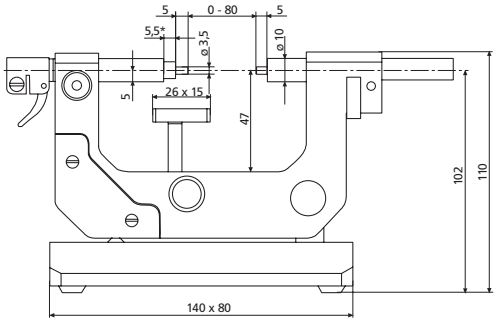
Application:

- Perfect ergonomic design as base can be inclined ensuring it is easy to read and the operator has free hands
- For rapid measurements of cylindrical parts (shafts, bolts and shanks)
- Thickness and length measurements
- For determining the pitch diameter of external threads (optionally with thread flank measuring anvils)
- For gears (optionally with sphere or roller measuring anvils)
- Particularly suited for exact series measurements



TECHNICAL DATA

Order no.		4510030	4510031	4510035
Product type		852 TS		852 TSZ
Application range mm	mm	0 –80		
Application range in inch		0 –3.15″		
Measuring span	mm	1.2		
Indicating instrument (included in package)		Millimess 1003	without	
Parallelism deviation	µm	2		
Flatness deviation	µm	0.3		
Mounting hole		8 mm		3/8″
Measuring force	N	7.5		



ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri



1004



1003



1002



1086 R;
1086 R-HR;
1086 ZR



1086 Ri

MaraMeter 852

Indicating Thread Snap Gage

FEATURES

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Measuring spindle and anvil are made of hardened stainless steel with mounting bore for insertion of interchangeable anvils
- Adjustable center stop for automatic alignment
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Package contains:** flat contact point 903 (steel), wooden case, excludes indicator



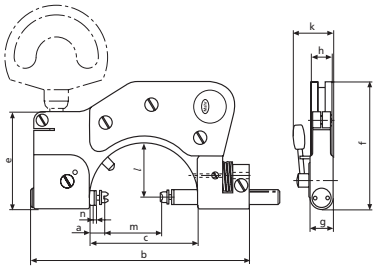
Application:

- For measuring pitch, root and outside diameters of all kinds of external threads as well as serrations
- Universally applicable and extremely versatile; each instrument spans a broad measuring range

TECHNICAL DATA

Order no.		4510000	4510001	4510002	4510003
Product type		852			
Application range	mm	0 –45	45 –85	85 –140	140 –190
Application range in inch		0 –1.77″	1.77 –3.34″	3.34 –5.51″	5.51 –7.48″
Measuring span	mm	2	2.5		
Repeatability f_w	µm	1			
Measuring force	N	7.5		9	
Frame size		2	3	4	5

Order no.	k	l	a	b	c	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4510000	25	34	13	140	68	60	77	13	13
4510001	28	59	8	193	11	60	103	14	13
4510002	31	87	10	258	162	70	141	16	12
4510003	31	112	6	316	212	75	171	16	12



ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4450051	Holder, frame size 2	840 Fk/2
4450020	Base, for stationary application	840 Ff
4173210	Anvil flat, hardened steel	40 Za
4511190	Anvil flat, carbide tipped	40 Za
4450052	Holder, frame size 3	840 Fk/3
4450053	Holder, frame size 4 + 5	840 Fk/4


1004


1003


1002


1086 R;
1086 R-HR;
1086 ZR


1086 Ri

MaraMeter Thread Anvils

Indicating Thread Snap Gage

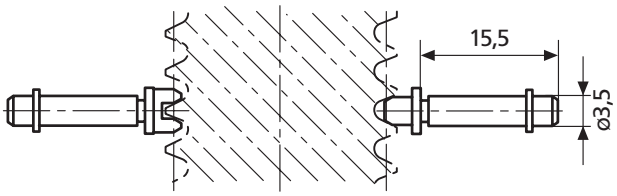
FEATURES

- For pitch diameters
- Wear-resistant special steel, hardened
- With cylindrical mounting shank and retainer ring for rotatable mounting in the bore of the dial comparator snap gage
- Pair comprises V-anvil and cone
- With a pitch of 0.2 –0.45 mm, the V-anvil bridges 3 turns. It should therefore be set with 715 E thread adjustment pins, otherwise with 43 Z setting standards.
- For pitch diameters
- Wear-resistant special steel, hardened
- With cylindrical holding shaft and circlip for rotatable mounting in the bore of the dial comparator snap gage

ACCESSORIES

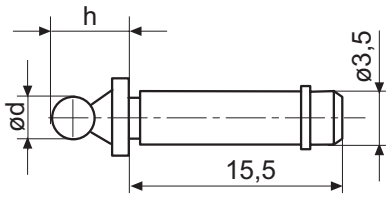
Thread pitch in mm	Blade Order no.	V-anvil Order no.
Pitch diameter, external thread Metric 60°		
0.2	4173707	4173007
0.25	4173708	4173008
0.3	4173709	4173009
0.35	4173710	4173010
0.4	4173711	4173011
0.45	4173712	4173012
0.5 –0.7	4173700	4173000
0.7 –1	4173701	4173001
1.25 –2	4173702	4173002
	4511104	4511105
2 –3.5	4173703	4173003
	4511107	4511108
3.5 –5	4173704	4173004
	4511139	4511140
5 –7	4173705	4173005
	4511141	4511142
7 –9	4173706	4173006

Thread pitch in TPI	Blade Order no.	V-anvil Order no.
UST 60°		
10 –7	4173820	4173120
14 –10	4173819	4173119
18 –14	4173818	4173118
24 –18	4173817	4173117
32 –24	4173816	4173116
4.5 –3	4173822	4173122
40 –32	4173815	4173115
48 –40	4173814	4173114
7 –4.5	4173821	4173121
Whitworth 55 °		
10 –7	4173748	4173048
14 –10	4173747	4173047
18 –14	4173746	4173046
24 –18	4173745	4173045
3 –2.5	4179410	4179408
32 –24	4173744	4173044
4.5 –3	4173750	4173050
40 –32	4173743	4173043
7 –4.5	4173749	4173049



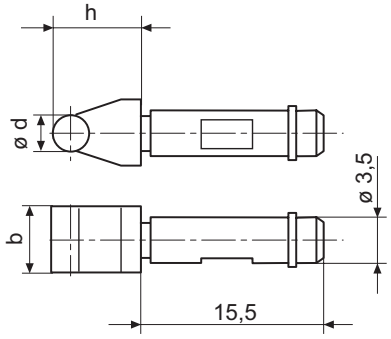
Order no.	d mm	h mm
4179150	0.5	5
4179151	0.551	5.1
4179152	0.62	5.1
4179153	0.623	5.1
4179154	0.63	5.1
4179155	0.722	5.2
4179156	0.862	5.4
4179157	0.895	5.4
4179158	0.965	5.5
4170550	1	5.5
4179159	1.1	5.6
4179160	1.118	5.6
4170551	1.25	5.8
4179161	1.125	5.6
4179162	1.35	5.9
4179163	1.372	5.9
4179164	1.385	5.9
4170552	1.5	6
4179165	1.524	6
4179166	1.54	6
4179167	1.6	6.1
4179168	1.65	6.2
4179169	1.7	6.2
4170553	1.75	6.3
4179170	1.782	6.3
4179171	1.8	6.3
4179172	1.829	6.3
4179173	1.9	6.4
4170554	2	6.5
4170568	2.032	6.5
4170569	2.2	6.7
4170564	2.25	6.8
4179174	2.284	6.8

Order no.	d mm	h mm
4179175	2.386	6.9
4179176	2.438	6.9
4170556	2.5	7
4179177	2.667	7.2
4179178	2.704	7.2
4179179	2.713	7.2
4179180	2.721	7.2
4179181	2.743	7.2
4170565	2.75	7.3
4170557	3	7.5
4179182	3.048	7.5
4170570	3.2	7.7
4170566	3.25	7.8
4179183	3.4	7.9
4170558	3.5	8
4179184	3.658	8.2
4170571	3.7	8.2
4170559	4	8.5
4170560	4.5	9
4179185	4.835	9.3
4170561	5	9.5
4179186	5.25	9.8
4179187	5.486	10
4170562	5.5	10
4170563	6	10.5
4179188	6.096	10.6
4179189	6.35	10.9
4170567	6.5	11
4170572	7	11.5
4170573	8	12.5
4170574	9	13.5
4170575	10	14.5



Roller Blades, Carbide

Order no.	B mm	b mm	d mm	h mm
4510200	5.00	5	1	5.5
4510201	5.00	5	1.25	5.8
4510202	5.00	5	1.5	6
4510203	5.00	5	1.75	6.3
4510204	5.50	5	2	6.5
4510206	5.50	5.5	2.5	7
4510207	5.50	5.5	3	7.5
4510208	5.50	5.5	3.5	8
4510209	5.50	5.5	4	8.5
4510210	5.50	5.5	4.5	9
4510211	6.00	6	5	9.5
4510212	6.00	6	5.5	10
4510213	6.00	6	6	10.5



MaraMeter 853

Indicating Thread Snap Gage

FEATURES

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Anvil spindle adjustable with thumbscrew via worm and rack, for mounting interchangeable support yokes
- Measuring spindle and anvil are made of hardened stainless steel with mounting bore for insertion of interchangeable anvils
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, eliminating user influence
- Maximum wear resistance due to non-contact positioning
- **Package contains:** flat contact point 903 (steel), wooden case, excludes indicator



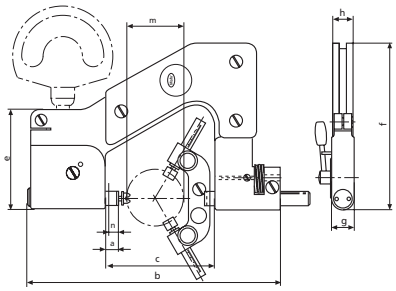
Application:

- For pitch, root and outside diameters on taps in conjunction with interchangeable anvils
- Universally applicable and extremely versatile; each instrument spans a broad measuring range

TECHNICAL DATA

Order no.		4511000	4511001
Product type		853	
Application range	mm	1.2 –35	35 –75
Application range in inch		.04 –1.37″	1.37 –3″
Measuring span	mm	8	
Repeatability f_w	µm	2	
Measuring force	N	7.5	

Order no.	n	a	b	c	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm
4511000	8	12	152	66	60	98	14	11.5
4511001	8	11.5	192	110	65	125	14	14



ACCESSORIES

Order no.	Product name	Product type
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4333000	Millimess 5 µm, ± 130 µm	1004
4332000	Millimess 0.01 mm, ±0.25 mm	1010
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4511024	Interchangeable support yoke 3 flutes of taps for 1.2–35 mm range	853 qk 3
4511025	Interchangeable support yoke 3 flutes of taps for range 35–75mm	853 qg 3
4511026	Interchangeable support yoke 5 flutes of taps for 1.2–35 mm range	853 qk 5
4511027	Interchangeable support yoke 5 flutes of taps for 35–75mm range	853 qg 5
4511028	Interchangeable support yoke 7 flutes of taps for 1.2–35 mm range	853 qk 7
4511029	Interchangeable support yoke 7 flutes of taps for 35–75mm range	853 qg 7
4511190	Anvil flat, carbide tipped	40 Za
4173210	Anvil flat, hardened steel	40 Za



1004



1086 R;
1086 R-HR;
1086 ZR



1086 Ri

MaraMeter Thread Anvils

Indicating Thread Snap Gage

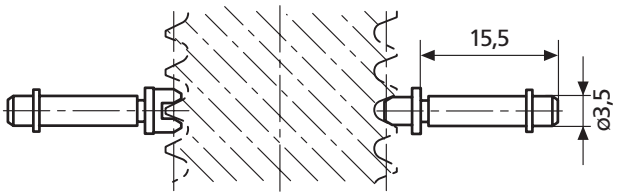
FEATURES

- For pitch diameters
- Wear-resistant special steel, hardened
- With cylindrical mounting shank and retainer ring for rotatable mounting in the bore of the dial comparator snap gage
- Adjustment with threaded setting plug 715 E

ACCESSORIES

Thread pitch in mm	Blade Order no.	V-anvil Order no.
Pitch diameter, external thread Metric 60°		
0.2	4174007	4173051
0.25	4174008	4173052
0.3	4174009	4173053
0.35	4174010	4173054
0.4	4174011	4173055
0.45	4174012	4173056
0.5 –0.7	4174000	4173000
0.7 –1	4174001	4173001
1.25 –2	4174002	4173002
2 –3.5	4174003	4173003
3.5 –5	4173704	4173004
5 –7	4174005	4173005
7 –9	4174006	4173006

Thread pitch in TPI	Blade Order no.	V-anvil Order no.
UST 60°		
60 –48	4176113	4173124
48 –40	4176114	4173125
40 –32	4176115	4173115
32 –24	4176116	4173116
24 –18	4176117	4173117
18 –14	4176118	4173118
14 –10	4176119	4173119
10 –7	4176120	4173120
7 –4.5	4176121	4173121
4.5 –3	4176122	4173122
Whitworth 55 °		
40 –32	4176043	4173043
32 –24	4176044	4173044
24 –18	4176045	4173045
18 –14	4176046	4173046
14 –10	4176047	4173047
10 –7	4176048	4173048
7 –4.5	4176049	4173049
4.5 –3	4176050	4173050
3 –2.5	4179411	4179408



MaraMeter XLI–22P–20

Portable Thickness Gages

RS232C Digimatic

FEATURES

- Indicator built into gage frame for maximum ruggedness
- Lift lever for one hand operation
- Continuous reading dials with revolution counter for absolute measurement of thin materials, plastic films and small parts
- 6.3 mm / .25" diameter, flat steel contacts
- **Data interface:** Digimatic, RS232C, USB
- **Energy supply:** Battery operation
- **Package contains:** includes indicator



Application:

- Thickness measurement of small parts from 0 to 1.0 inch

TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range	Throat depth	Jaw depth	Resolution	Resolution	Size of measuring surface	Indicating instrument (included in package)
		mm	inch	mm	inch	mm	inch		
2057541	XLI–22P–20	0 –25	0 –1"	50	2"	0.0005, 0.001, 0.002, 0.005, 0.01	.00002", .00005", .0001", .0002", .0005"	6.3 mm / 0.25" steel contacts	4337651 1086 ZR

ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26

MaraMeter 22P–11 / 22P–15 / 22P–20

Portable Thickness Gages

FEATURES

- Indicator built into gage frame for maximum ruggedness
- Lift lever for one hand operation
- Continuous reading dials with revolution counter for absolute measurement of thin materials, plastic films and small parts
- 6.3 mm / .25″ diameter, flat steel contacts
- **Data interface:** none
- **Package contains:** includes indicator



Application:

- Thickness measurement of small parts from 0 to 1.0 inch, depending on model

TECHNICAL DATA

Order no.	Product type	Measuring range	Jaw depth	Graduation value	Size of measuring surface	Indicating instrument (included in package)
		inch	inch	inch		
2050446	22P–11	0 –.10″	1.13″	.0001″	6.3 mm / 0.25″ steel contacts	Integral Indicator (22IN-RC dial)
2050447	22P–15	0 –.50″	2″	.001″	6.3 mm / 0.25″ steel contacts	Integral Indicator (28IQN dial)
2050449	22P–20	0 –1″	2″	.001″	6.3 mm / 0.25″ steel contacts	Integral Indicator (28ISN dial)

ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26

MaraMeter 22P–10M / 22P–15M / 22P–20M

Portable Thickness Gages

FEATURES

- Indicator built into gage frame for maximum ruggedness
- Lift lever for one hand operation
- Continuous reading dials with revolution counter for absolute measurement of thin materials, plastic films and small parts
- 6.3 mm / .25" diameter, flat steel contacts
- **Data interface:** none
- **Package contains:** includes indicator



Application:

Thickness Measurement of small parts from 0 to 25.4mm

TECHNICAL DATA

Order no.	Product type	Measuring range	Throat depth	Graduation value	Size of measuring surface	Indicating instrument (included in package)
		mm	mm	mm		
2050445	22P–10M	0 –2.54	28.6	0.002	6.3 mm / 0.25" steel contacts	Integral Indicator (P1I-RC dial)
2050448	22P–15M	0 –12.7	50	0.01	6.3 mm / 0.25" steel contacts	Integral Indicator (26I-RC dial)
2050450	22P–20M	0 –25	50	0.01	6.3 mm / 0.25" steel contacts	Integral Indicator (26I-RC dial)

ACCESSORIES

Order no.	Product name	Product type
2003150	Base/bench stand for 300P or 1000P style snap gage	BA–26

MaraMeter XLI–57B–15

Portable Thickness Gages

FEATURES

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- 0.003 mm / .0001" parallelism with tables up to 19 mm / .75" diameter
- 283 g / 10 oz. dead weight load for constant gaging pressure
- 10 mm / .407" diameter flat upper 54.0 mm / 2.125" lower contacts
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Digital indicator includes integrated wireless transmitter
- With lift lever so work can be easily placed between the table and contact
- Four inch throat depth for part clearance
- **Data interface:** Digimatic, RS232C, USB, Integrated wireless
- **Energy supply:** Battery operation
- **Package contains:** includes indicator



Application:

- Precision thickness measurement requiring dead weight load force

TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range	Throat depth	Jaw depth	Resolution	Resolution	Indicating instrument (included in package)	Parallelism deviation	Parallelism deviation	Measuring force
		mm	inch	mm	inch	mm	inch		µm	inch	N
2057551	XLI–57B–15	0 –25	0 –1"	102	4"	0.0005, 0.001, 0.002, 0.005, 0.01	.00002", .00005", .0001", .0002", .0005"	4337628 (1086Ri)	3	.0001"	278 gm / 10 oz dead weight

MaraMeter 57B–14 / 57B–15

Portable Thickness Gages

FEATURES

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- 0.003 mm / .0001″ parallelism with tables up to 19 mm / .75″ diameter
- 283 g / 10 oz. dead weight load for constant gaging pressure
- 10 mm / .407″ diameter flat upper 54.0 mm / 2.125″ lower contacts
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Digital indicator includes integrated wireless transmitter
- With lift lever so work can be easily placed between the table and contact
- Four inch throat depth for part clearance
- **Data interface:** none
- **Package contains:** includes indicator



Application:

- Precision thickness measurement requiring dead weight load force

TECHNICAL DATA

Order no.	Product type	Measuring range	Jaw depth	Graduation value	Indicating instrument (included in package)	Parallelism deviation	Measuring force
		inch	inch	inch		inch	N
2050982	57B–14	0 –.10″	4″	.0001″	IDT–340 Indicator (32I-RC)	.0001″	2.78 N (10oz dead weight)
2050984	57B–15	0 –1″	4″	.001″	IDS–341 Indicator (D8IS)	.0001″	2.78 N (10oz dead weight)

MaraMeter 57B–14M / 57B–15M

Portable Thickness Gages

FEATURES

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- 0.003 mm / .0001" parallelism with tables up to 19 mm / .75" diameter
- 283 g / 10 oz. dead weight load for constant gaging pressure
- 10 mm / .407" diameter flat upper 54.0 mm / 2.125" lower contacts
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Digital indicator includes integrated wireless transmitter
- With lift lever so work can be easily placed between the table and contact
- Four inch throat depth for part clearance
- **Data interface:** none
- **Package contains:** includes indicator



Application:

- Precision thickness measurement requiring dead weight load force

TECHNICAL DATA

Order no.	Product type	Measuring range	Throat depth	Graduation value	Indicating instrument (included in package)	Measuring force
		mm	mm	mm		N
2050983	57B–14M	0 –2.5	102	0.002	IDS–342 Indicator (Q1I-RC)	2.78 N (10oz dead weight)
2050985	57B–15M	0 –25	102	0.01	IDS–343 Indicator (SQ6IS)	2.78 N (10oz dead weight)

MaraMeter XLI–57B–13

Portable Thickness Gages

RS232C Digimatic

FEATURES

- Using the basic design of the Model 57B–13 (Model 57B–13M — Metric) gage, the lower contact is PT–103, 1.10 mm / .043″ diameter rod, mounted horizontally
- Upper contact is a flat chisel contact , in line with the rod
- By slipping tubular parts onto the lower contact, the gage can measure the wall thickness of the tube
- An auxiliary weight on the indicator provides a total dead weight load of 25 grams
- Digital indicator includes integrated wireless transmitter
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **Energy supply:** Battery operation
- **Package contains:** includes indicator



Application:

- For checking wall thickness of wire insulation and other small diameter tubular parts

TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range	Throat depth	Jaw depth	Resolution	Resolution	Indicating instrument (included in package)	Measuring force
		mm	inch	mm	inch	mm	inch		N
2057550	XLI–57B–13	0 –7.62	0 –.30″	102	4″	0.0005, 0.001, 0.002, 0.005, 0.01	.00002″, .00005″, .0001″, .0002″, .0005″	4337628 (1086Ri)	0.25

ACCESSORIES

Order no.	Product name	Product type
2225698	Replacement rod for PT–103 Pin, 0.043″ diameter 0.687″ length	PS–43
2225741	Pin, Ø=1.10mm / .043″, lower contact 1.10 mm / 0.043″ diameter pin, lower contact assembly	PT–103
2225869	Pin, Ø=0.05mm / .02″, lower contact 0.050 mm / 0.020 in diameter pin, lower contact assembly	PT–2245

MaraMeter 57B–13

Portable Thickness Gages

FEATURES

- Using the basic design of the Model 57B–13 (Model 57B–13M — Metric) gage, the lower contact is PT–103, 1.10 mm / .043″ diameter rod, mounted horizontally
- Upper contact is a flat chisel contact , in line with the rod
- By slipping tubular parts onto the lower contact, the gage can measure the wall thickness of the tube
- An auxiliary weight on the indicator provides a total dead weight load of 25 grams
- Digital indicator includes integrated wireless transmitter
- **Data interface:** none
- **Package contains:** includes indicator



Application:

- For checking wall thickness of wire insulation and other small diameter tubular parts

TECHNICAL DATA

Order no.	Product type	Measuring range	Throat depth	Jaw depth	Graduation value	Indicating instrument (included in package)	Measuring force
		inch	mm	inch	inch		N
2050980	57B–13	0 –.30″	102	4″	.0005″	IDS–116 indicator (25M-RC)	0.25

ACCESSORIES

Order no.	Product name	Product type
2225698	Replacement rod for PT–103 Pin, 0.043″ diameter 0.687″ length	PS–43
2225741	Pin, Ø=1.10mm / .043″, lower contact 1.10 mm / 0.043″ diameter pin, lower contact assembly	PT–103
2225869	Pin, Ø=0.05mm / .02″, lower contact 0.050 mm / 0.020 in diameter pin, lower contact assembly	PT–2245

MaraMeter 57B–13M

Portable Thickness Gages

FEATURES

- Using the basic design of the Model 57B–13 (Model 57B–13M — Metric) gage, the lower contact is PT–103, 1.10 mm / .043" diameter rod, mounted horizontally
- Upper contact is a flat chisel contact , in line with the rod
- By slipping tubular parts onto the lower contact, the gage can measure the wall thickness of the tube
- An auxiliary weight on the indicator provides a total dead weight load of 25 grams
- Digital indicator includes integrated wireless transmitter
- **Data interface:** none
- **Package contains:** includes indicator



Application:

- For checking wall thickness of wire insulation and other small diameter tubular parts

TECHNICAL DATA

Order no.	Product type	Measuring range	Throat depth	Graduation value	Indicating instrument (included in package)	Measuring force
		mm	mm	mm		N
2050981	57B–13M	0 –7.6	102	0.01	IDS–287 indicator (26I-RC)	0.25

ACCESSORIES

Order no.	Product name	Product type
2225698	Replacement rod for PT–103 Pin, 0.043" diameter 0.687" length	PS–43
2225741	Pin, Ø=1.10mm / .043", lower contact 1.10 mm / 0.043" diameter pin, lower contact assembly	PT–103
2225869	Pin, Ø=0.05mm / .02", lower contact 0.050 mm / 0.020 in diameter pin, lower contact assembly	PT–2245

MaraMeter EMD–57B–11 / EMD–57B–11D

Portable Thickness Gages

RS232C Digimatic

FEATURES

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- Furnished with a lift lever so work can be easily placed between the contacts
- Large 54 mm/ 2.125“ diameter lower anvil provides convenient stage for small parts or flat materials
- 4.75 mm/ .187“ diameter radiused upper contact normally provided
- 102 mm/ 4“ throat depth for part clearance
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Available with dial indicator or digital electronic indicator
- **Data interface:** none
- **Energy supply:** Battery operation
- **Package contains:** includes indicator



Application:

- Precision thickness measurement

TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range	Throat depth	Jaw depth	Resolution	Resolution	Indicating instrument (included in package)
		mm	inch	mm	inch	mm	inch	
2051884	EMD–57B–11	0 –21.5	0 –1“	102	4“	0.0005, 0.001, 0.005	.00002“, .00005“, .0001“, .0005“	2033101 Max-µm III
2051885	EMD–57B–11D	0 –21.5	0 –1“	102	4“	0.0005, 0.001, 0.005	.00002“, .00005“, .0001“, .0005“	2033111 Max-µm III
2057548		0 –25		102	4“	0.0005, 0.001, 0.002, 0.005, 0.01	.00002“, .00005“, .0001“, .0002“, .0005“	4337651 (1086ZR)
2057549		0 –12.5		102	4“	0.0005, 0.001, 0.002, 0.005, 0.01	.00002“, .00005“, .0001“, .0002“, .0005“	4337650 (1086 ZR)

MaraMeter 57B–11 / 57B–12

Portable Thickness Gages

FEATURES

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- Furnished with a lift lever so work can be easily placed between the contacts
- Large 54 mm/ 2.125" diameter lower anvil provides convenient stage for small parts or flat materials
- 4.75 mm/ .187" diameter radiused upper contact normally provided
- 102 mm/ 4" throat depth for part clearance
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Available with dial indicator or digital electronic indicator
- **Data interface:** none
- **Package contains:** includes indicator



Application:

- Precision thickness measurement

TECHNICAL DATA

Order no.	Product type	Measuring range	Throat depth	Jaw depth	Graduation value	Indicating instrument (included in package)
		inch	mm	inch	inch	
2050976	57B–11	0 –1"	102	4"	.001"	IDS–160 Indicator (D8IS)
2050978	57B–12	0 –.50"	102	4"	.0005"	IDS–161 Indicator (D7I-RC)

MaraMeter 57B–11M / 57B–12M

Portable Thickness Gages

FEATURES

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- Furnished with a lift lever so work can be easily placed between the contacts
- Large 54 mm/ 2.125“ diameter lower anvil provides convenient stage for small parts or flat materials
- 4.75 mm/ .187“ diameter radiused upper contact normally provided
- 102 mm/ 4“ throat depth for part clearance
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Available with dial indicator or digital electronic indicator
- **Data interface:** none
- **Package contains:** includes indicator



Application:

- Precision thickness measurement

TECHNICAL DATA

Order no.	Product type	Measuring range	Throat depth	Graduation value	Indicating instrument (included in package)
		mm	mm	mm	
2050977	57B–11M	0 –25	102	0.01	IDS–285 Indicator (SQ6IS)
2050979	57B–12M	0 –12.5	102	0.01	IDS–286 Indicator (SQ6I)

MaraMeter 838 TA

Gage for External Measurement

IP 65

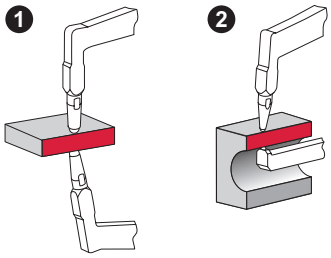
FEATURES

- Contact points made of carbide
- Absolute measuring instrument
- Easy-to-read tolerance markers
- **IP protection category:** IP 65
- **Package contains:** test certificate



Application:

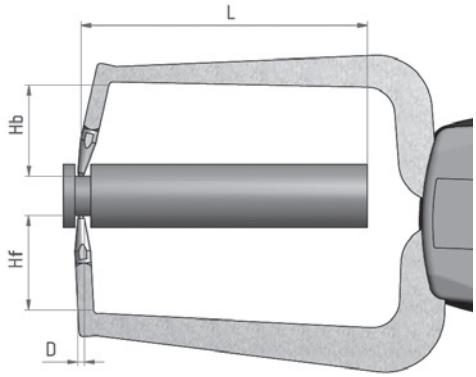
- For measuring thicknesses and wall thicknesses
- Easy to operate, portable and user-friendly



TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Measuring depth	Error limit	Repeatability	Dimension L	Form of measuring contacts	Diameter of measuring contact ball	Measuring force
		mm	mm	mm	mm	mm	mm		mm	N
4495550	838 TA	0 –10	0.005	35	0.015	0.005	35	1	1.5	0.8 –1.2
4495551	838 TA	0 –20	0.01	85	0.03	0.01	85	1	1.5	1.1 –1.6
4495552	838 TA	0 –20	0.01	85	0.03	0.01	85	2	1.5	1.1 –1.6
4495555	838 TA	0 –50	0.05	167	0.05	0.025	167	1	3	0.8 –1.7
4495556	838 TA	0 –50	0.05	169	0.05	0.025	169	2	3	0.8 –1.7

Order no.	D	Hb	Hf	Dimension L
	mm	mm	mm	mm
4495550	1.5	19.1	18.6	35
4495551	1.5	24.6	24.6	85
4495552	1.5	24.6	2.5	85
4495555	3	30	30	167
4495556	3	30	4.3	169



MaraMeter 838 TAZ

Gage for External Measurement

IP 65

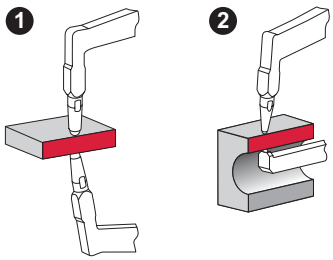
FEATURES

- Contact points made of carbide
- Absolute measuring instrument
- Easy-to-read tolerance markers
- **IP protection category:** IP 65
- **Package contains:** test certificate



Application:

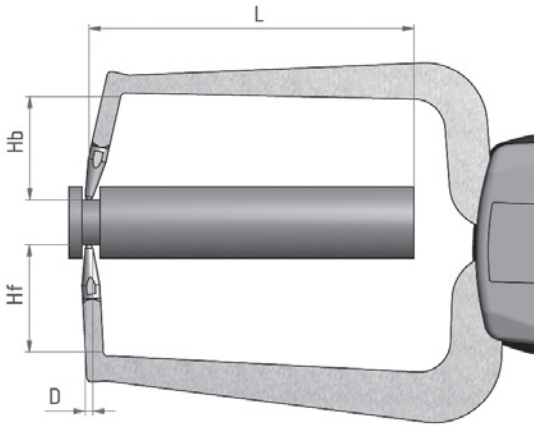
- For measuring thicknesses and wall thicknesses
- Easy to operate, portable and user-friendly



TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Measuring depth	Error limit	Repeatability	L	Form of measuring contacts	Measuring contact ball diameter	Measuring force
		inch	inch	inch	inch	inch	inch		inch	N
4495950	838 TAZ	0 –.40″	.0002″	1.37″	.0008″	.0002″	1.37″	1	.6″	0.8 –1.2
4495951	838 TAZ	0 –.80″	.0005″	3.2″	.0015″	.0005″	3.2″	1	.6″	1.1 –1.6
4495952	838 TAZ	0 –.80″	.0005″	3.2″	.0015″	.0005″	3.2″	2	.6″	1.1 –1.6
4495955	838 TAZ	0 –2.0″	.001″	6.6″	.002″	.001″	6.6″	1	.12″	0.8 –1.7
4495956	838 TAZ	0 –2.0″	.001″	6.7″	.002″	.001″	6.7″	2	.12″	0.8 –1.7

Order no.	D	Hb	Hf	L
	inch	inch	inch	inch
4495950	.6″	.75″	.75″	1.37″
4495951	.6″	.97″	.97″	3.2″
4495952	.6″	.97″	.097″	3.2″
4495955	.12″	1.18″	1.18″	6.6″
4495956	.12″	1.18″	.17″	6.7″



MaraMeter 838 EA

Electronic Gage for External Measurement

ABS | TOL | IP 67 | Digimatic

FUNCTIONS

- ON/OFF
- mm/inch
- TOL (enter tolerance limit values)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)

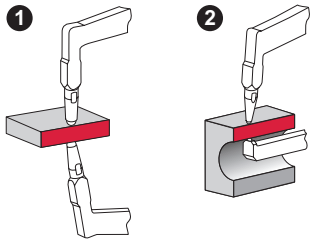
FEATURES

- High contrast analog and digital LCD
- Tolerance displayed with 2 LEDs
- **Data interface:** Digimatic, USB
- **Energy supply:** Battery operation (2x 1.5V AAA)
- **IP protection category:** IP 67
- **Package contains:** instruction manual, battery, test certificate



Application:

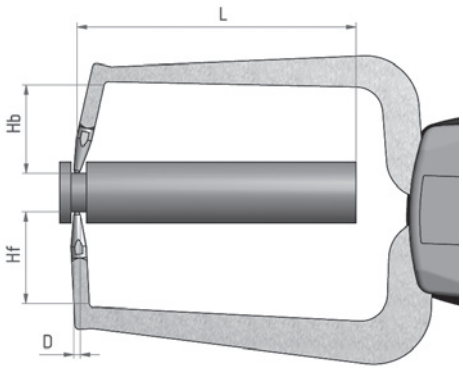
- Specified measuring programs according to application
- Absolute/relative measuring program



TECHNICAL DATA

Order no.	Product type	Measuring range	Graduation value	Measuring depth	Error limit	Repeatability	Dimension L	Form of measuring contacts	Diameter of measuring contact ball	Measuring force
		mm	mm	mm	mm	mm	mm		mm	N
4495560	838 EA	0 –10	0.005	35	0.015	0.005	35	1	1.5	0.8 –1.2
4495561	838 EA	0 –20	0.01	85	0.03	0.01	85	1	1.5	1.1 –1.6
4495562	838 EA	0 –20	0.01	85	0.03	0.01	85	2	1.5	1.1 –1.6
4495563	838 EA	0 –30	0.02	116	0.04	0.02	116	1	3	0.9 –1.6
4495564	838 EA	0 –50	0.02	167	0.06	0.04	167	1	3	0.8 –1.7
4495565	838 EA	0 –30	0.02	116	0.04	0.02	116	2	3	0.9 –1.6
4495566	838 EA	0 –50	0.02	169	0.06	0.04	169	2	3	0.8 –1.7

Order no.	D	Hb	Hf	Dimension L
	mm	mm	mm	mm
4495560	1.5	19.1	18.6	35
4495561	1.5	24.6	24.6	85
4495562	1.5	24.6	2.5	85
4495563	3	30	30	116
4495564	3	30	30	167
4495565	3	30	4	116
4495566	3	30	4.3	169



ACCESSORIES

Order no.	Product name	Product type
4495079	838 USB Data connection cable USB (1.5 m)	838 USB
4495083	Digimatic data cable (1.5 m)	838 di (A)

MaraMeter 838 TI

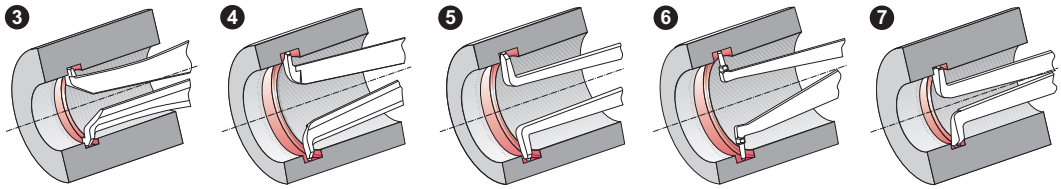
Gage for Internal Measurement

IP 65

FEATURES

- Contact points made of carbide
- Absolute measuring instrument
- Easy-to-read tolerance markers
- **IP protection category:** IP 65
- **Package contains:** test certificate





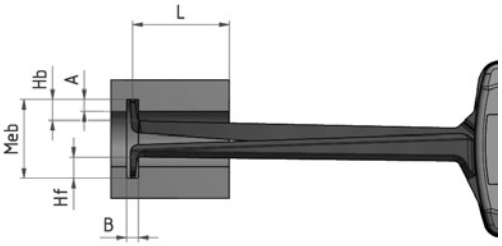
Application:

- For measuring bores and internal grooves
- Easy to operate, portable and user-friendly

TECHNICAL DATA

Order no.		4495580	4495581	4495582	4495583	4495584	4495585	4495586	4495587
Product type		838 TI							
Measuring range	mm	5 –15	10 –30	20 –40	30 –50	40 –60	50 –70	15 –65	40 –90
Graduation value	mm	0.005	0.01					0.05	
Measuring depth	mm	35	85					188	192
Error limit	mm	0.015	0.03					0.05	
Repeatability	mm	0.005	0.01					0.025	
Groove depth	mm	2.3	5.2	7		8.3		5.5	8.3
Groove width	mm	0.8	1.2					1.9	2.4
Form of measuring contacts		4		5		6		7	6
Diameter of measuring contact ball	mm	0.6	1					1.5	2
Measuring force	N	0.8 –1.2	1.1 –1.6					0.9 –1.9	

Order no.	A	B	D	Hb	Hf	Dimension L
	mm	mm	mm	mm	mm	mm
4495580	2.3	0.80	0.6	2.5	2.5	35
4495581	5.2	1.20	1	5.4	5.4	85
4495582	7	1.20	1	7.3	7.3	85
4495583	7	1.20	1	7.3	7.3	85
4495584	8.3	1.20	1	12.2	12.2	85
4495585	8.3	1.20	1	12.2	12.2	85
4495586	5.5	1.90	1.5	6	6	188
4495587	8.3	2.40	2	8.5	8.5	192



MaraMeter 838 TIZ

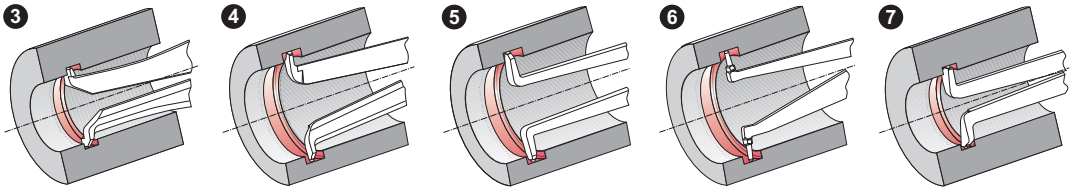
Gage for Internal Measurement

IP 65

FEATURES

- Contact points made of carbide
- Absolute measuring instrument
- Easy-to-read tolerance markers
- **IP protection category:** IP 65
- **Package contains:** test certificate





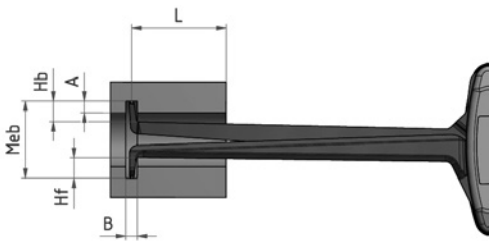
Application:

- For measuring bores and internal grooves
- Easy to operate, portable and user-friendly

TECHNICAL DATA

Order no.		4495980	4495981	4495982	4495983	4495984	4495985	4495986	4495987
Product type		838 TIZ							
Measuring range	inch	.20 –.60″	.40 –1.20″	.80 –1.60″	1.20 –2.00″	1.60 –2.40″	2.00 –2.80″	.60 –2.60″	1.60 –3.60″
Graduation value	inch	.0002″	.0005″					.001″	
Measuring depth	inch	1.37″	3.2″					7.5″	7.6″
Error limit	inch	.0008″	.0015″					.002″	
Repeatability	inch	.0002″	.0005″					.001″	
Form of measuring contacts		4		5		6		7	6
Measuring contact ball diameter	inch	.024″	.04″					.06″	.08″
Measuring force	N	0.8 –1.2	1.1 –1.6					0.9 –1.9	

Order no.	Dimension A	Dimension B	D	Hb	Hf	L
	inch	inch	inch	inch	inch	inch
4495980	.09″	.032″	.024″	.97″	.97″	1.37″
4495981	.19″	.06″	.04″	.21″	.21″	3.2″
4495982	.26″	.08″	.04″	.29″	.29″	3.2″
4495983	.26″	.08″	.04″	.29″	.29″	3.2″
4495984	.31″	.08″	.04″	.33″	.33″	3.2″
4495985	.31″	.08″	.04″	.33″	.33″	3.2″
4495986	.2″	.08″	.06″	.25″	.25″	7.5″
4495987	.2″	.1″	.08″	.33″	.33″	7.6″



MaraMeter 838 EI

Electronic Gage for Internal Measurement

TOL | ABS | IP 67 | Digimatic

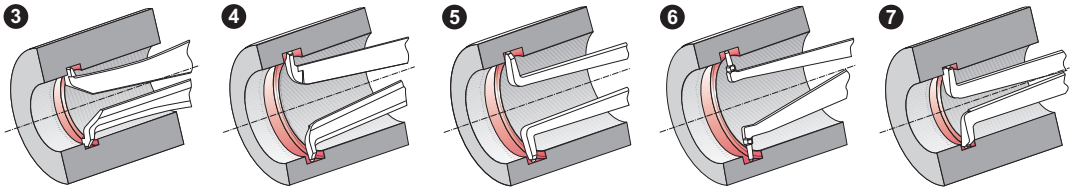
FUNCTIONS

- ON/OFF
- mm/inch
- ABS (display can be set to zero without losing reference to preset)
- TOL (enter tolerance limit values)

FEATURES

- High contrast analog and digital LCD
- Tolerance displayed with 2 LEDs
- **Data interface:** Digimatic, USB
- **Energy supply:** Battery operation (2x 1.5V AAA)
- **IP protection category:** IP 67
- **Package contains:** instruction manual, battery, test certificate





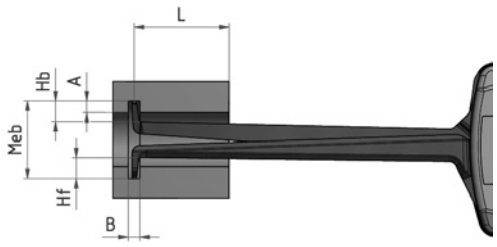
Application:

- Specified measuring programs according to application
- Absolute/relative measuring program

TECHNICAL DATA

Order no.		4495590	4495591	4495592	4495593	4495594	4495595	4495598	4495599	4495600
Product type		838 EI								
Measuring range	mm	5 –15	10 –30	20 –40	30 –50	40 –60	50 –70	13 –43	30 –60	50 –80
Graduation value	mm	0.005	0.01					0.02		
Measuring depth	mm	35	85					127	132	
Error limit	mm	0.015	0.03					0.04		
Repeatability	mm	0.005	0.01					0.02		
Groove depth	mm	2.3	5.2	7		8.3		5.7	6.2	8.3
Groove width	mm	0.8	1.2					1.6	1.8	2.4
Form of measuring contacts		4		5		6		4	6	
Diameter of measuring contact ball	mm	0.6	1					1.3	1.5	2
Measuring force	N	0.8 –1.2	1.1 –1.6					1.2 –1.7		

Order no.	A	B	D	Hb	Hf	Dimension L
	mm	mm	mm	mm	mm	mm
4495590	2.3	0.80	0.6	2.5	2.5	35
4495591	5.2	1.20	1	5.4	5.4	85
4495592	7	1.20	1	7.3	7.3	85
4495593	7	1.20	1	7.3	7.3	85
4495594	8.3	1.20	1	12.2	12.2	85
4495595	8.3	1.20	1	12.2	12.2	85
4495598	5.7	1.60	1.3	5.7	5.7	127
4495599	6.2	1.80	1.5	6.5	6.5	132
4495600	8.3	2.40	2	8.5	8.5	132



ACCESSORIES

Order no.	Product name	Product type
4495083	Digimatic data cable (1.5 m)	838 di (A)
4495079	838 USB Data connection cable USB (1.5 m)	838 USB

MaraMeter EMD–75B–1 / EMD–75B–1D / (XLI–75B–1) / (XLI–75B–2)

FEATURES

- Available with dial indicator (75B–1 Models) or Maxμm®III and μMaxμm®II digital electronic indicators (EMD–75B and XLI–75B Models)
- 89 x 102 mm / 3.50 x 4" hardened, ground work surface provides excellent reference surface
- Four #10–32 tapped holes provided for mounting part location fixturing
- Indicator vertically adjustable over 32 mm / 1.25"
- Two contact points provided, 6 mm / .25" and 32 mm / 1.25" to check features up to 50 mm / 2" deep
- **Data interface:** none
- **Energy supply:** Battery operation



Application:

- Depth measurement inspection of small to medium parts

TECHNICAL DATA

Order no.		2051888	2051889	2057552	2057553
Measuring surface		hardened steel			
Product type		EMD–75B–1	EMD–75B–1D	(XLI–75B–1)	(XLI–75B–2)
Length of base	mm	102			
Lenght of base	inch	4"			
Width of base	mm	89			
Width of base	inch	3.5"			
Measuring range	mm			0 –25	0 –12.5
Measuring range	inch			0 –1"	0 –.5"
Resolution	mm	0.0005, 0.001, 0.005		0.0005, 0.001, 0.002, 0.005, 0.01	
Resolution	inch	.00002", .00005", .0001", .0005"		.00002", .00005", .0001", .0002", .0005"	
Indicating instrument (included in package)		2033201 Maxum-III	2033211 Maxum-III	4337651 (1086 ZR)	4337650 (1086 ZR)
Measuring depth	mm			50	38
Measuring depth	inch			2"	1.5"

MaraMeter 75B–1

FEATURES

- Available with dial indicator (75B–1 Models) or Maxμm®III and μMaxμm®II digital electronic indicators (EMD–75B and XLI–75B Models)
- 89 x 102 mm / 3.50 x 4" hardened, ground work surface provides excellent reference surface
- Four #10–32 tapped holes provided for mounting part location fixturing
- Indicator vertically adjustable over 32 mm / 1.25"
- Two contact points provided, 6 mm / .25" and 32 mm / 1.25" to check features up to 50 mm / 2" deep
- **Data interface:** none



Application:

- Depth measurement inspection of small to medium parts

TECHNICAL DATA

Order no.		2051077
Measuring surface		hardened steel
Product type		75B–1
Length of base	mm	102
Lenght of base	inch	4"
Width of base	mm	89
Width of base	inch	3.5"
Measuring range	inch	0 –1"
Graduation value	inch	.001"
Indicating instrument (included in package)		IDS–152 Indicator (28ISN)
Measuring depth	mm	25
Measuring depth	inch	2"

MaraMeter 75B–1M

FEATURES

- Available with dial indicator (75B–1 Models) or Maxμm®III and μMaxμm®II digital electronic indicators (EMD–75B and XLI–75B Models)
- 89 x 102 mm / 3.50 x 4" hardened, ground work surface provides excellent reference surface
- Four #10–32 tapped holes provided for mounting part location fixturing
- Indicator vertically adjustable over 32 mm / 1.25"
- Two contact points provided, 6 mm / .25" and 32 mm / 1.25" to check features up to 50 mm / 2" deep
- **Data interface:** none



Application:

- Depth measurement inspection of small to medium parts

TECHNICAL DATA

Order no.		2051078
Measuring surface		hardened steel
Product type		75B–1M
Length of base	mm	102
Lenght of base	inch	4"
Width of base	mm	89
Width of base	inch	3.5"
Measuring range	mm	0 –25
Resolution	mm	0.01
Graduation value	mm	0.01
Indicating instrument (included in package)		IDS–310 Indicator (SP6IS)
Measuring depth	mm	25

Dimentron® Plug Gages

The Dimentron® System - Built for Performance



Dimentron® Plug Assembly — shown with *Maxμm®III* Indicator, Housing and Handle



Special depth gaging applications

The Dimentron plug gage, which makes up the plug body, the panto-assembly, its contacts and transfer rod, is the measuring system comprising the Dimentron plug. It can be interchanged by simply unscrewing it from the display assembly.

The **plug body** is made of tough hardened 440 stainless steel, tempered and ground. Introduction into the bore is facilitated with 52-56 HRC hardness guide.

Standard **contacts** are made of tungsten carbide and based on the bore diameter range, come in two possible radii. Other contact materials are available based on the part being measured. Diamond, ruby or hard-chrome-covered contacts are also available. Diamond or ruby contacts are suggested for soft aluminum or highly wearing applications; hard chromed ones (1000 HV) for aluminum and relevant alloys. Also based on the thickness of the surface, cylindrical contacts options are available.

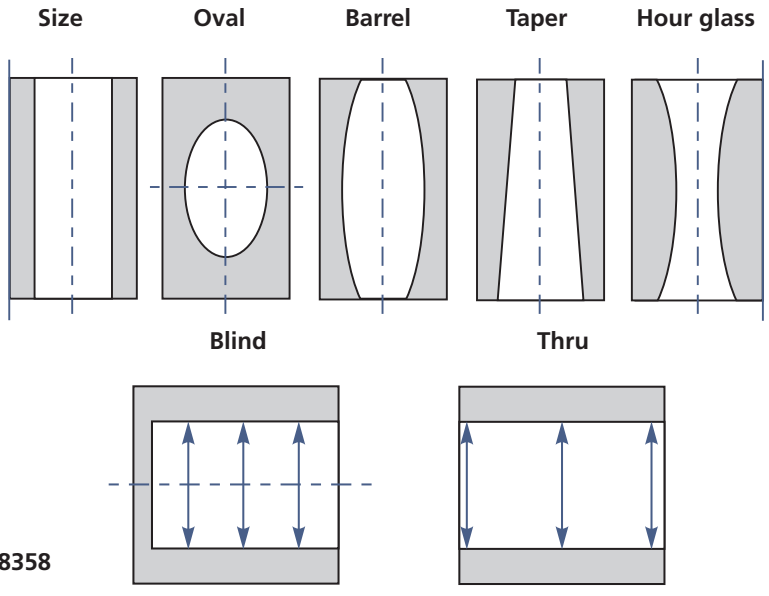
Either 2 or 4 steel spring assemblies **form panto-spring assemblies**. The design of the transfer assembly is determined by the diameter of the plug. This panto-design produces true straight-line transfer to the V-rod.

A **transfer rod**, with spherical tungsten carbide tip, slides on a tempered steel V-shaped guide and inclined plane, transferring the measurement to the display device. This unique floating system has been designed and tested to resist for over 10.000.000 measuring cycles.

Though designed for the toughest shop conditions, wear items do occasionally need replacement. Because of the individual components **service is fast and easy**. All parts are available separately from Mahr and with standard tools, can be replaced in minutes to help maintain up time on the floor.

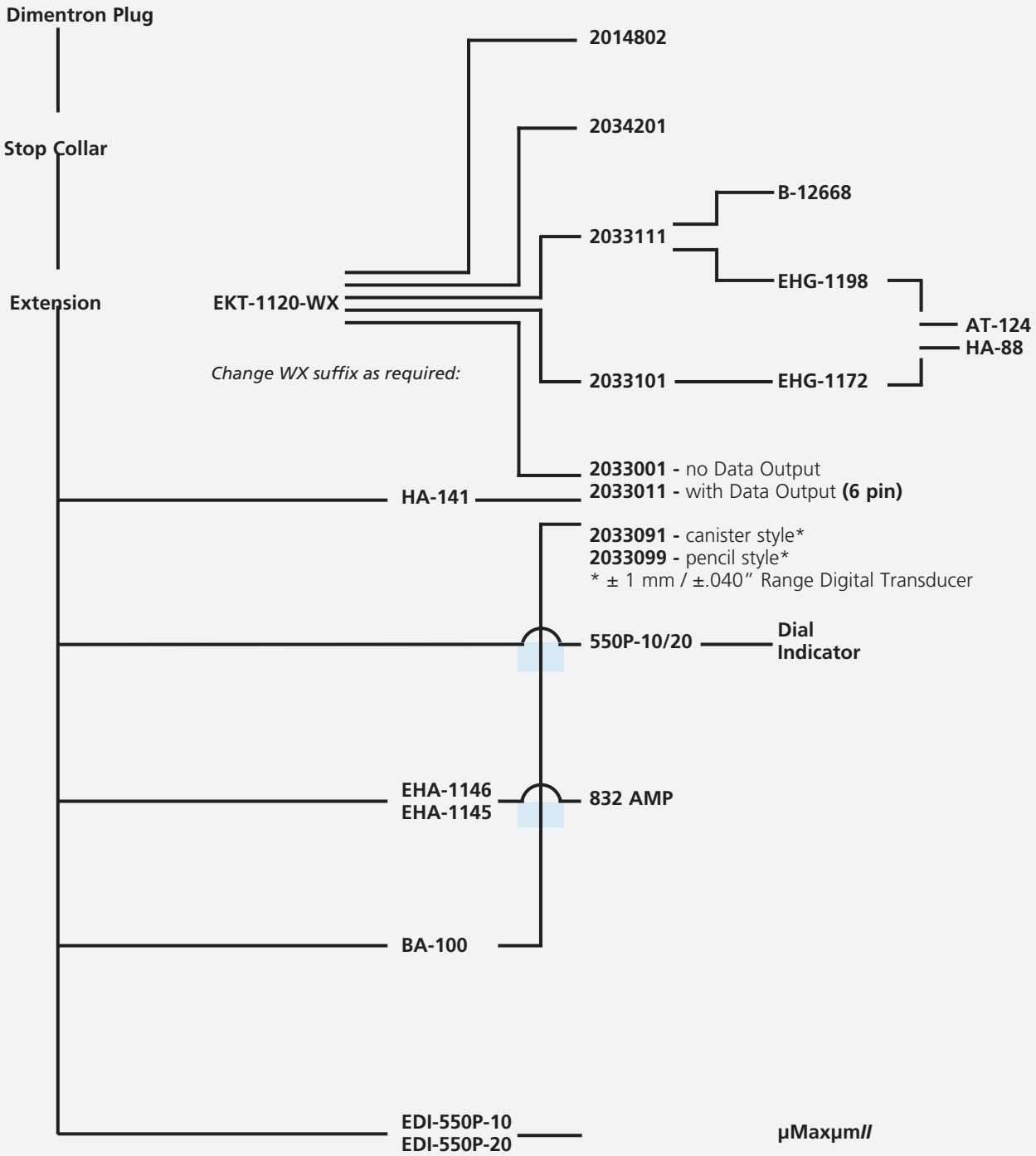


Shown with bench stand 2239307 & plug holder 2248358



Dimentron® Plug Inside Diameter Gages

The following table depicts available readouts for Dimentron Plug Inside Diameter Gages. After making a Plug selection, follow the chart for all the components needed to compose a gaging system suited to your application.



MaraMeter Dimentron

Indicating Plug Gage for Through Hole

FEATURES

- Designed for high production ID gaging
- High chrome content; hardened stainless steel bodies ground precisely for specified size measurement
- Plug tooling interchangeable for quick changeover
- Easy measurement - insert plug into diameter and read (no rocking needed)
- Set to nominal dimension with a single master ring
- Long Life
  - Tungsten carbide contacts and V-Rod ensure durable motion transfer
  - Open design is conducive to easy rinse cleaning
- Good for determining bore conditions for:
  - Taper
  - Barrel shape
  - Bell mouth
  - 2-point out-of-round
- Stop collars available for all standard sizes
- Captive V-Rod design



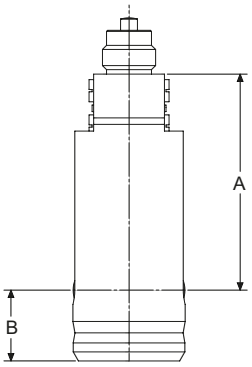
TECHNICAL DATA

Order no.	Product type	Nominal size	Nominal size	Max. tolerance M01	Max. tolerance 050	Max. tolerance M02	Max. tolerance 100	Max. tolerance M05	Max. tolerance 200	Max. tolerance M08	Max. tolerance 400
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2057604	Dimentron	3.200 –5.500	.12500 –.21700″	± 0.025	± .0010″	± 0.038	± .0015″				
2057605	Dimentron	5.001 –8.200	.21705 –0.3220″	± 0.025	± .0010″	± 0.046	± .0018″	± 0.076	± .0030″		
2057606	Dimentron	8.201 –9.500	0.3225 –.37500″	± 0.025	± .0010″	± 0.046	± .0018″	± 0.069	± .0027″	± 0.102	± .0040″
2057607	Dimentron	9.501 –12.700	.37505 –.50000″	± 0.030	± .0012″	± 0.051	± .0020″	± 0.069	± .0027″	± 0.127	± .0050″
2057608	Dimentron	12.701 –19.050	.50005 –.75000″	± 0.038	± .0015″	± 0.058	± .0023″	± 0.086	± .0034″	± 0.137	± .0054″
2057609	Dimentron	19.051 –25.000	.75005 –1.00000″	± 0.038	± .0015″	± 0.069	± .0027″	± 0.102	± .0040″	± 0.165	± .0065″
2057610	Dimentron	25.001 –38.000	1.00005 –1.50000″	± 0.038	± .0015″	± 0.076	± .0030″	± 0.127	± .0050″	± 0.180	± .0071″
2057611	Dimentron	38.001 –63.5	1.50000 - 2.50000″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057612	Dimentron	63.5 –76.2	2.500 –3.000″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057613	Dimentron	76.2 –88.9	3.000 –3.500″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057614	Dimentron	88.9 –101.6	3.500 –4.000″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057615	Dimentron	101.6 –114.3	4.000 –4.500″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057616	Dimentron	114.3 –139.7	4.500 –5.500″					± 0.152	± .0060″	± 0.254	± .0100″
2057617	Dimentron	139.7 –165.1	5.500 –6.500″					± 0.152	± .0060″	± 0.254	± .0100″
2057618	Dimentron	165.1 –203.2	6.500 –8.000″					± 0.152	± .0060″	± 0.254	± .0100″
2057619	Dimentron	203.2 –228.6	8.000 –9.000″					± 0.152	± .0060″	± 0.254	± .0100″

MaraMeter Dimentron

Indicating Plug Gage for Through Hole

Order no.	Nominal size	Nominal size	A	Dimen-sion A	B	Dimen-sion B
	mm	inch	mm	inch	mm	inch
2057604	3.200 –5.500	.12500 –.21700″	31.4	1.23″	6.40	.25″
2057605	5.001 –8.200	.21705 –0.3220″	34.8	1.37″	6.50	.256″
2057606	8.201 –9.500	0.3225 –.37500″	34.8	1.37″	6.50	.256″
2057607	9.501 –12.700	.37505 –.50000″	35.4	1.39″	13.00	.512″
2057608	12.701 –19.050	.50005 –.75000″	35.4	1.39″	13.00	.512″
2057609	19.051 –25.000	.75005 –1.00000″	48.3	1.90″	16.00	.63″
2057610	25.001 –38.000	1.00005 –1.50000″	48.3	1.90″	16.00	.63″
2057611	38.000 – 63.000	1.50000 – 2.50000″	46.7	1.84″	19	.748″
2057612–2057615	63.000 – 114.300	2.50000 – 4.50000″	46.7	1.84″	19	.748″
2057616–2057619	114.300 – 228.300	4.50000 – 9.00000″	46.7	1.84″	9.5	.375″



ACCESSORIES



Maxμm III



1086 R;1086 R-HR;1086 ZR



1086 Ri



1087 R;1087 R-HR;1087 ZR

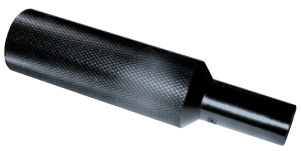


1087 Ri

Order no.	Product name	Type
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337660	Digital indicator, 0.0005 mm, 12.5 mm	1087 R
4337663	Digital indicator, 0.0005 mm, 12.5 mm	1087 Ri
2050829	Bore gage handle with indicator 221, grad. .0001″	550P–10
2050830	Bore gage handle with indicator P1I, grad. 0,002 mm	550P–20
2203139	Adapter for handle HA–88	AT–124
2203140	Adapter for mounting Maxμm III with protective housing to bench stand BA–26	AT–125
2204032	Protective housing for Maxμm III with output	B–12668
2204599	Base with tooling plate, plug to be mounted vertically or horizontally	BA–100
2051697	Bore gage handle with digital indicator μMaxum II, res. 0,001mm / .00005″	EDI–550P–10
2051698	Bore gage handle with digital indicator μMaxum II, res. 0,0005mm / .00002″	EDI–550P–20
2213388	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 1,5m/5ft. straight cable	EHA–1145
2213389	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 3m/11ft. coiled cable	EHA–1146
2214119	Adapter set to mount Maxμm III indicator with 3/8″ stem to a Dimentron plug	EKT–1120-W1
2214120	Adapter set to mount Maxμm III indicator with 8 mm stem to a Dimentron plug	EKT–1120-W2
2214121	Adapter set to mount dial indicators or μMaxum II with 3/8″ stem to a Dimentron plug	EKT–1120-W3
2214122	Adapter set to mount dial indicators or μMaxum II with 8 mm stem to a Dimentron plug	EKT–1120-W4
2214124	Adapter set to mount dial comparators 1002 –1010 with 8 mm stem to a Dimentron plug	EKT–1120-W6
2218595	Depth extension 50mm / 1.97″ for plug diameter 9,5 –19,05mm /.375 –.75″	EX–204
2218596	Depth extension 100mm / 3.94″ for plug diameter 9,5 –19,05mm /.375 –.75″	EX–205
2218597	Depth extension 200mm / 7.87″ for plug diameter 9,5 –19,05mm /.375 –.75″	EX–206
2218600	Depth extension 50mm / 1.97″ for plug diameter 19,05mm /.75″ and above	EX–210
2218601	Depth extension 100mm / 3.94″ for plug diameter 19,05mm /.75″ and above	EX–211
2218602	Depth extension 200mm / 7.87″ for plug diameter 19,05mm /.75″ and above	EX–212
2220037	Handle for Maxμm III digital transducers	HA–141
2220100	Handle to be mounted on protective housings EHG–1172 and EHG–1198 via Adapter AT–124	HA–88
2033101	Inductive digital comparator, ±1 mm/± .040″, no output	Maxμm III
2033111	Inductive digital comparator, ±1 mm/± .040″, with output (6-pin)	Maxμm III
2033201	Inductive digital comparator, ± mm/± .040″, with data output (6-pin), ″0″ at 6 o'clock position	Maxμm III



EDI–550P–10



HA–141



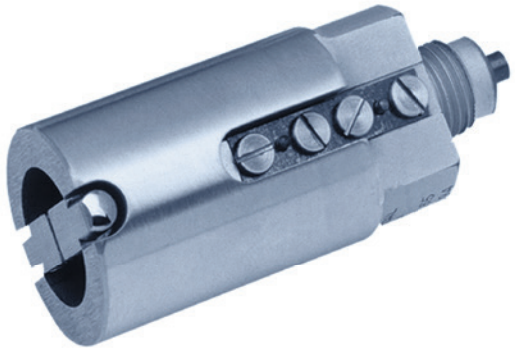
BA–100

MaraMeter Dimentron

Indicating Plug Gage for Through Hole

FEATURES

- Designed for high production ID gaging
- High chrome content; hardened stainless steel bodies ground precisely for specified size measurement
- Plug tooling interchangeable for quick changeover
- Easy measurement - insert plug into diameter and read (no rocking needed)
- Set to nominal dimension with a single master ring
- Long Life
  - Tungsten carbide contacts and V-Rod ensure durable motion transfer
  - Open design is conducive to easy rinse cleaning
- Good for determining bore conditions for:
  - Taper
  - Barrel shape
  - Bell mouth
  - 2-point out-of-round
- Stop collars available for all standard sizes
- Captive V-Rod design



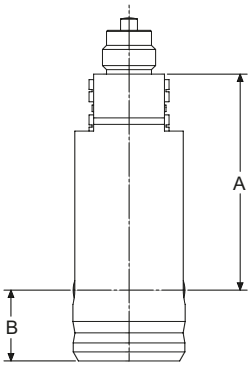
TECHNICAL DATA

Order no.	Product type	Nominal size	Nominal size	Max. tolerance M01	Max. tolerance 050	Max. tolerance M02	Max. tolerance 100	Max. tolerance M05	Max. tolerance 200	Max. tolerance M08	Max. tolerance 400
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2057620	Dimentron	3.180 –3.620	.12500 –.14260″	± 0.025	± .0010″	± 0.038	± .0015″				
		3.621 –5.500	.14265 –.21700″	± 0.025	± .0010″	± 0.046	± .0018″	± 0.076	± .0030″		
2057621	Dimentron	5.501 –7.940	.21705 –.31250″	± 0.025	± .0010″	± 0.046	± .0018″	± 0.069	± .0027″	± 0.102	± .0040″
		7.941 –8.200	.31255 –.32200″	± 0.030	± .0012″	± 0.051	± .0020″	± 0.069	± .0027″	± 0.127	± .0050″
2057622	Dimentron	8.201 –9.500	.32205 –.37500″	± 0.030	± .0012″	± 0.051	± .0020″	± 0.069	± .0027″	± 0.127	± .0050″
2057623	Dimentron	9.501 –12.700	.37505 –.50000″	± 0.038	± .0015″	± 0.058	± .0023″	± 0.086	± .0034″	± 0.137	± .0054″
2057624	Dimentron	12.701 –19.050	.50005 –.75000″	± 0.038	± .0015″	± 0.069	± .0027″	± 0.102	± .0040″	± 0.165	± .0065″
2057625	Dimentron	19.051 –25.400	.75005 –1.00000″	± 0.038	± .0015″	± 0.076	± .0030″	± 0.127	± .0050″	± 0.180	± .0071″
2057626	Dimentron	25.401 –38.000	1.00005 –1.50000″	± 0.038	± .0015″	± 0.076	± .0030″	± 0.152	± .0060″	± 0.221	± .0087″
2057627	Dimentron	38.001 – 63.5	1.50000 – 2.50000″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057628	Dimentron	63.5 –76.2	2.500 –3.000″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057629	Dimentron	76.2 –88.9	3.000 –3.500″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057630	Dimentron	88.9 –101.6	3.500 –4.000″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057631	Dimentron	101.6 –114.3	4.000 –4.500″			± 0.076	± .0030″	± 0.152	± .0060″	± 0.254	± .0100″
2057632	Dimentron	114.3 –139.7	4.500 –5.500″					± 0.152	± .0060″	± 0.254	± .0100″
2057633	Dimentron	139.7 –165.1	5.500 –6.500″					± 0.152	± .0060″	± 0.254	± .0100″
2057634	Dimentron	165.1 –203.2	6.500 –8.000″					± 0.152	± .0060″	± 0.254	± .0100″
2057635	Dimentron	203.2 –228.6	8.000 –9.000″					± 0.152	± .0060″	± 0.254	± .0100″

MaraMeter Dimentron

Indicating Plug Gage for Through Hole

Order no.	Nominal size	Nominal size	A	Dimen-sion A	B	Dimen-sion B
	mm	inch	mm	inch	mm	inch
2057620	3.180 –5.500	.12500 –.21700"	31.4	1.23"	4	.157"
2057621	5.501 –8.200	.21705 –0.3220"	34.8	1.37"	4	.157"
2057622	8.201 –9.500	0.3225 –.37500"	34.8	1.37"	4	.157"
2057623	9.501 –12.700	.37505 –.50000"	35.4	1.39"	4	.157"
2057624	12.701 –19.050	.50005 –.75000"	35.4	1.39"	4	.157"
2057625	19.051 –25.400	.75005 –1.00000"	48.3	1.90"	4	.157"
2057626	25.401 –38.000	1.00005 –1.50000"	48.3	1.90"	4	.157"
2057627	38.000 – 63.000	1.50000 – 2.50000"	46.7	1.84"	4	.157"
2057628–2057635	63.000 – 114.300	2.50000 – 4.50000"	46.7	1.84"	4	.157"
	114.300 – 228.300	4.50000 – 9.00000"	46.7	1.84"	4	.157"





Maxμm III



1086 R;1086 R-HR;1086 ZR



1086 Ri



1087 R;1087 R-HR;1087 ZR



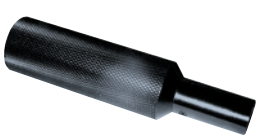
1087 Ri

ACCESSORIES

Order no.	Product name	Type
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337660	Digital indicator, 0.0005 mm, 12.5 mm	1087 R
4337663	Digital indicator, 0.0005 mm, 12.5 mm	1087 Ri
2050829	Bore gage handle with indicator 221, grad. .0001"	550P–10
2050830	Bore gage handle with indicator P1I, grad. 0,002 mm	550P–20
2203139	Adapter for handle HA–88	AT–124
2203140	Adapter for mounting Maxμm III with protective housing to bench stand BA–26	AT–125
2204032	Protective housing for Maxμm III with output	B–12668
2204599	Base with tooling plate, plug to be mounted vertically or horizontally	BA–100
2051697	Bore gage handle with digital indicator μMaxum II, res. 0,001mm / .00005"	EDI–550P–10
2051698	Bore gage handle with digital indicator μMaxum II, res. 0,0005mm / .00002"	EDI–550P–20
2213388	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 1,5m/5ft. straight cable	EHA–1145
2213389	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 3m/11ft. coiled cable	EHA–1146
2214119	Adapter set to mount Maxμm III indicator with 3/8" stem to a Dimentron plug	EKT–1120-W1
2214120	Adapter set to mount Maxμm III indicator with 8 mm stem to a Dimentron plug	EKT–1120-W2
2214121	Adapter set to mount dial indicators or μMaxum II with 3/8" stem to a Dimentron plug	EKT–1120-W3
2214122	Adapter set to mount dial indicators or μMaxum II with 8 mm stem to a Dimentron plug	EKT–1120-W4
2214124	Adapter set to mount dial comparators 1002 –1010 with 8 mm stem to a Dimentron plug	EKT–1120-W6
2218595	Depth extension 50mm / 1.97" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–204
2218596	Depth extension 100mm / 3.94" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–205
2218597	Depth extension 200mm / 7.87" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–206
2218600	Depth extension 50mm / 1.97" for plug diameter 19,05mm /.75" and above	EX–210
2218601	Depth extension 100mm / 3.94" for plug diameter 19,05mm /.75" and above	EX–211
2218602	Depth extension 200mm / 7.87" for plug diameter 19,05mm /.75" and above	EX–212
2220037	Handle for Maxμm III digital transducers	HA–141
2220100	Handle to be mounted on protective housings EHG–1172 and EHG–1198 via Adapter AT–124	HA–88
2033101	Inductive digital comparator, ±1 mm/± .040", no output	Maxμm III
2033111	Inductive digital comparator, ±1 mm/± .040", with output (6-pin)	Maxμm III
2033201	Inductive digital comparator, ± mm/± .040", with data output (6-pin), "0" at 6 o'clock position	Maxμm III



EDI–550P–10



HA–141



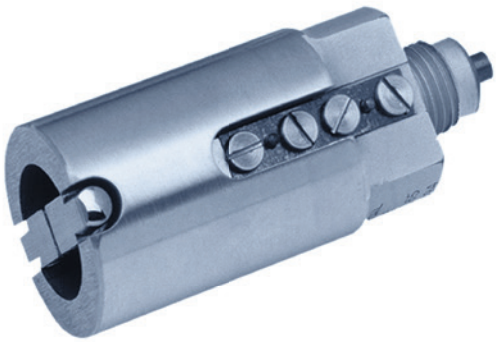
BA–100

MaraMeter Dimentron

Indicating Plug Gage for Through Hole

FEATURES

- Designed for high production ID gaging
- High chrome content; hardened stainless steel bodies ground precisely for specified size measurement
- Plug tooling interchangeable for quick changeover
- Easy measurement - insert plug into diameter and read (no rocking needed)
- Set to nominal dimension with a single master ring
- Long Life
  - Tungsten carbide contacts and V-Rod ensure durable motion transfer
  - Open design is conducive to easy rinse cleaning
- Good for determining bore conditions for:
  - Taper
  - Barrel shape
  - Bell mouth
  - 2-point out-of-round
- Stop collars available for all standard sizes
- Captive V-Rod design



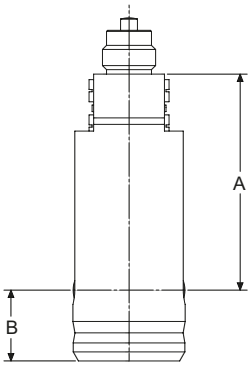
TECHNICAL DATA

Order no.	Product type	Nominal size	Nominal size	Max. tolerance M01	Max. tolerance 050	Max. tolerance M02	Max. tolerance 100	Max. tolerance M05	Max. tolerance 200	Max. tolerance M08	Max. tolerance 400
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2058545	Dimentron	5.501 –7.940	.21705 –.31250"	± 0.025	± .0010"	± 0.046	± .0018"	± 0.069	± .0027"	± 0.102	± .0040"
		7.941 –8.200	.31255 –.32200"	± 0.030	± .0012"	± 0.051	± .0020"	± 0.069	± .0027"	± 0.127	± .0050"
2058546	Dimentron	8.201 –9.500	.32205 –.37500"	± 0.030	± .0012"	± 0.051	± .0020"	± 0.069	± .0027"	± 0.127	± .0050"
2058547	Dimentron	9.501 –12.700	.37505 –.50000"	± 0.038	± .0015"	± 0.058	± .0023"	± 0.086	± .0034"	± 0.137	± .0054"
2058548	Dimentron	12.701 –19.050	.50005 –.75000"	± 0.038	± .0015"	± 0.069	± .0027"	± 0.102	± .0040"	± 0.165	± .0065"
2058549	Dimentron	19.051 –25.400	.75005 –1.00000"	± 0.038	± .0015"	± 0.076	± .0030"	± 0.127	± .0050"	± 0.180	± .0071"
2058550	Dimentron	25.401 –38.000	1.00005 –1.50000"	± 0.038	± .0015"	± 0.076	± .0030"	± 0.152	± .0060"	± 0.221	± .0087"
2058551	Dimentron	38.001 – 63.5	1.50000 – 2.50000"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058552	Dimentron	63.5 –76.2	2.500 –3.000"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058553	Dimentron	76.2 –88.9	3.000 –3.500"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058554	Dimentron	88.9 –101.6	3.500 –4.000"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058555	Dimentron	101.6 –114.3	4.000 –4.500"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058556	Dimentron	114.3 –139.7	4.500 –5.500"					± 0.152	± .0060"	± 0.254	± .0100"
2058557	Dimentron	139.7 –165.1	5.500 –6.500"					± 0.152	± .0060"	± 0.254	± .0100"
2058558	Dimentron	165.1 –203.2	6.500 –8.000"					± 0.152	± .0060"	± 0.254	± .0100"
2058559	Dimentron	203.2 –228.6	8.000 –9.000"					± 0.152	± .0060"	± 0.254	± .0100"

MaraMeter Dimentron

Indicating Plug Gage for Through Hole

Order no.	Nominal size	Nominal size	A	Dimen-sion A	B	Dimen-sion B
	mm	inch	mm	inch	mm	inch
2058545	5.501 –8.200	.21705 –0.3220"	34.8	1.37"	2	.08"
	8.201 –9.500	0.3225 –.37500"	34.8	1.37"	2	.08"
2058546	9.501 –12.700	.37505 –.50000"	35.4	1.39"	2	.08"
2058547	12.701 –19.050	.50005 –.75000"	35.4	1.39"	2	.08"
2058548	19.051 –25.400	.75005 –1.00000"	48.3	1.90"	2	.08"
2058549	25.401 –38.000	1.00005 –1.50000"	48.3	1.90"	2	.08"
2058550	38.000 – 63.000	1.50000 – 2.50000"	46.7	1.84"	2	.08"
2058551–2058555	63.000 – 114.300	2.50000 – 4.50000"	46.7	1.84"	2	.08"
2058556–2058559	114.300 – 228.300	4.50000 – 9.00000"	46.7	1.84"	2	.08"




Maxμm III


1086 R;1086 R-HR;1086 ZR


1086 Ri

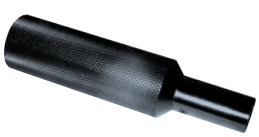

1087 R;1087 R-HR;1087 ZR


1087 Ri

ACCESSORIES

Order no.	Product name	Type
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337660	Digital indicator, 0.0005 mm, 12.5 mm	1087 R
4337663	Digital indicator, 0.0005 mm, 12.5 mm	1087 Ri
2050829	Bore gage handle with indicator 221, grad. .0001"	550P–10
2050830	Bore gage handle with indicator P1I, grad. 0,002 mm	550P–20
2203139	Adapter for handle HA–88	AT–124
2203140	Adapter for mounting Maxμm III with protective housing to bench stand BA–26	AT–125
2204032	Protective housing for Maxμm III with output	B–12668
2204599	Base with tooling plate, plug to be mounted vertically or horizontally	BA–100
2051697	Bore gage handle with digital indicator μMaxum II, res. 0,001mm / .00005"	EDI–550P–10
2051698	Bore gage handle with digital indicator μMaxum II, res. 0,0005mm / .00002"	EDI–550P–20
2213388	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 1,5m/5ft. straight cable	EHA–1145
2213389	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 3m/11ft. coiled cable	EHA–1146
2214119	Adapter set to mount Maxμm III indicator with 3/8" stem to a Dimentron plug	EKT–1120-W1
2214120	Adapter set to mount Maxμm III indicator with 8 mm stem to a Dimentron plug	EKT–1120-W2
2214121	Adapter set to mount dial indicators or μMaxum II with 3/8" stem to a Dimentron plug	EKT–1120-W3
2214122	Adapter set to mount dial indicators or μMaxum II with 8 mm stem to a Dimentron plug	EKT–1120-W4
2214124	Adapter set to mount dial comparators 1002 –1010 with 8 mm stem to a Dimentron plug	EKT–1120-W6
2218595	Depth extension 50mm / 1.97" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–204
2218596	Depth extension 100mm / 3.94" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–205
2218597	Depth extension 200mm / 7.87" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–206
2218600	Depth extension 50mm / 1.97" for plug diameter 19,05mm /.75" and above	EX–210
2218601	Depth extension 100mm / 3.94" for plug diameter 19,05mm /.75" and above	EX–211
2218602	Depth extension 200mm / 7.87" for plug diameter 19,05mm /.75" and above	EX–212
2220037	Handle for Maxμm III digital transducers	HA–141
2220100	Handle to be mounted on protective housings EHG–1172 and EHG–1198 via Adapter AT–124	HA–88
2033101	Inductive digital comparator, ±1 mm/± .040", no output	Maxμm III
2033111	Inductive digital comparator, ±1 mm/± .040", with output (6-pin)	Maxμm III
2033201	Inductive digital comparator, ± mm/± .040", with data output (6-pin), "0" at 6 o'clock position	Maxμm III


EDI–550P–10


HA–141



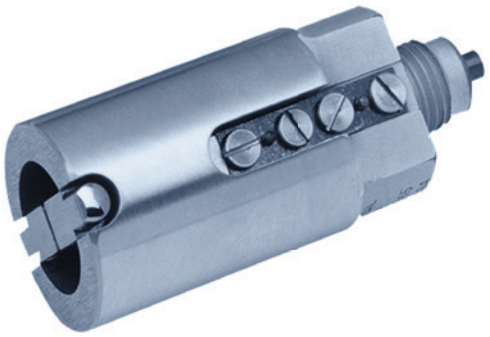
BA–100

MaraMeter Dimentron

Indicating Plug Gage for Through Hole

FEATURES

- Designed for high production ID gaging
- High chrome content; hardened stainless steel bodies ground precisely for specified size measurement
- Plug tooling interchangeable for quick changeover
- Easy measurement - insert plug into diameter and read (no rocking needed)
- Set to nominal dimension with a single master ring
- Long Life
  - Tungsten carbide contacts and V-Rod ensure durable motion transfer
  - Open design is conducive to easy rinse cleaning
- Good for determining bore conditions for:
  - Taper
  - Barrel shape
  - Bell mouth
  - 2-point out-of-round
- Stop collars available for all standard sizes
- Captive V-Rod design



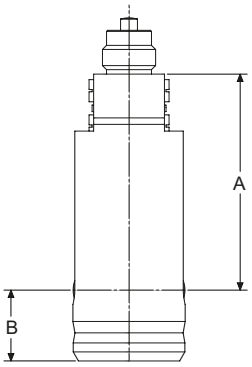
TECHNICAL DATA

Order no.	Product type	Nominal size	Nominal size	Max. tolerance M01	Max. tolerance 050	Max. tolerance M02	Max. tolerance 100	Max. tolerance M05	Max. tolerance 200	Max. tolerance M08	Max. tolerance 400
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2058560	Dimentron	5.501 –7.940	.21705 –.31250"	± 0.025	± .0010"	± 0.046	± .0018"	± 0.069	± .0027"	± 0.102	± .0040"
		7.941 –8.200	.31255 –.32200"	± 0.030	± .0012"	± 0.051	± .0020"	± 0.069	± .0027"	± 0.127	± .0050"
2058561	Dimentron	8.201 –9.500	.32205 –.37500"	± 0.030	± .0012"	± 0.051	± .0020"	± 0.069	± .0027"	± 0.127	± .0050"
2058562	Dimentron	9.501 –12.700	.37505 –.50000"	± 0.038	± .0015"	± 0.058	± .0023"	± 0.086	± .0034"	± 0.137	± .0054"
2058563	Dimentron	12.701 –19.050	.50005 –.75000"	± 0.038	± .0015"	± 0.069	± .0027"	± 0.102	± .0040"	± 0.165	± .0065"
2058564	Dimentron	19.051 –25.400	.75005 –1.00000"	± 0.038	± .0015"	± 0.076	± .0030"	± 0.127	± .0050"	± 0.180	± .0071"
2058565	Dimentron	25.401 –38.000	1.00005 –1.50000"	± 0.038	± .0015"	± 0.076	± .0030"	± 0.152	± .0060"	± 0.221	± .0087"
2058566	Dimentron	38.001 - 63.5	1.50000 - 2.50000"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058567	Dimentron	63.5-76.2	2.500-3.000"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058568	Dimentron	76.2-88.9	3.000-3.500"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058569	Dimentron	88.9-101.6	3.500-4.000"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"
2058570	Dimentron	101.6-114.3	4.000-4.500"			± 0.076	± .0030"	± 0.152	± .0060"	± 0.254	± .0100"

MaraMeter Dimentron

Indicating Plug Gage for Through Hole

Order no.	Nominal size	Nominal size	A	Dimen-sion A	B	Dimen-sion B
	mm	inch	mm	inch	mm	inch
2058560	5.501 –8.200	.21705 –0.3220"	34.8	1.37"	0.79	.031"
	8.201 –9.500	0.3225 –.37500"	34.8	1.37"	0.79	.031"
2058561	9.501 –12.700	.37505 –.50000"	35.4	1.39"	0.79	.031"
2058562	12.701 –19.050	.50005 –.75000"	35.4	1.39"	0.79	.031"
2058563	19.051 –25.400	.75005 –1.00000"	48.3	1.90"	0.79	.031"
2058564	25.401 –38.000	1.00005 –1.50000"	48.3	1.90"	0.79	.031"
2058565	38.000 – 63.000	1.50000 – 2.50000"	46.7	1.84"	0.79	.031"
2058566–2058570	63.000 – 114.300	2.50000 – 4.50000"	46.7	1.84"	0.79	.031"




Maxµm III


1086 R;1086 R-HR;1086 ZR


1086 Ri

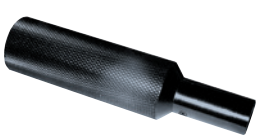

1087 R;1087 R-HR;1087 ZR


1087 Ri

ACCESSORIES

Order no.	Product name	Type
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337660	Digital indicator, 0.0005 mm, 12.5 mm	1087 R
4337663	Digital indicator, 0.0005 mm, 12.5 mm	1087 Ri
2050829	Bore gage handle with indicator 221, grad. .0001"	550P–10
2050830	Bore gage handle with indicator P1I, grad. 0,002 mm	550P–20
2203139	Adapter for handle HA–88	AT–124
2203140	Adapter for mounting Maxµm III with protective housing to bench stand BA–26	AT–125
2204032	Protective housing for Maxµm III with output	B–12668
2204599	Base with tooling plate, plug to be mounted vertically or horizontally	BA–100
2051697	Bore gage handle with digital indicator µMaxum II, res. 0,001mm / .00005"	EDI–550P–10
2051698	Bore gage handle with digital indicator µMaxum II, res. 0,0005mm / .00002"	EDI–550P–20
2213388	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 1,5m/5ft. straight cable	EHA–1145
2213389	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 3m/11ft. coiled cable	EHA–1146
2214119	Adapter set to mount Maxµm III indicator with 3/8" stem to a Dimentron plug	EKT–1120-W1
2214120	Adapter set to mount Maxµm III indicator with 8 mm stem to a Dimentron plug	EKT–1120-W2
2214121	Adapter set to mount dial indicators or µMaxum II with 3/8" stem to a Dimentron plug	EKT–1120-W3
2214122	Adapter set to mount dial indicators or µMaxum II with 8 mm stem to a Dimentron plug	EKT–1120-W4
2214124	Adapter set to mount dial comparators 1002 –1010 with 8 mm stem to a Dimentron plug	EKT–1120-W6
2218595	Depth extension 50mm / 1.97" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–204
2218596	Depth extension 100mm / 3.94" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–205
2218597	Depth extension 200mm / 7.87" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–206
2218600	Depth extension 50mm / 1.97" for plug diameter 19,05mm /.75" and above	EX–210
2218601	Depth extension 100mm / 3.94" for plug diameter 19,05mm /.75" and above	EX–211
2218602	Depth extension 200mm / 7.87" for plug diameter 19,05mm /.75" and above	EX–212
2220037	Handle for Maxµm III digital transducers	HA–141
2220100	Handle to be mounted on protective housings EHG–1172 and EHG–1198 via Adapter AT–124	HA–88
2033101	Inductive digital comparator, ±1 mm/± .040", no output	Maxµm III
2033111	Inductive digital comparator, ±1 mm/± .040", with output (6-pin)	Maxµm III
2033201	Inductive digital comparator, ± mm/± .040", with data output (6-pin), "0" at 6 o'clock position	Maxµm III


EDI–550P–10


HA–141



BA–100

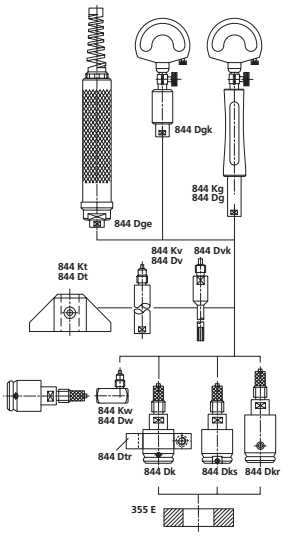
MaraMeter 844 Dk

Indicating Plug Gage

FEATURES

- Measuring head has a hardened chromium plated cylinder guide and carbide tipped anvils
- The carbide expanding pin transfers radial movement to indicating instrument
- Constant measuring force as a result of built-in spring, eliminating user influence
- Extensive modular system is composed of measuring head, holder, depth extension, Right angle attachments and depth stops





Application:

Standard model

- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerances **(for tolerances <10µm on request)**
- Rocking in the bore is unnecessary to determine the reversal point
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values

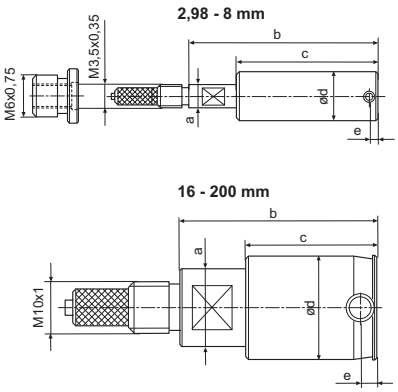
TECHNICAL DATA

Order no.	Product type	Nominal size	Measuring span	Design	Manufacturing tolerance	Linearity deviation fe	Repeatability f_w	Hysteresis f_u
		mm	mm		mm / mm		µm	µm
4480184	844 Dk	2.980 –3.990	0.1	Standard	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478200	844 Dk	3.991 –8.000	0.1	Standard	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478201	844 Dk	8.001 –16.000	0.15	Standard	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478202	844 Dk	16.001 –25.000	0.2	Standard	–0.02 / –0.05	1%, min. 1 µm	1	0.4
4478204	844 Dk	25.001 –32.000	0.2	Standard	–0.02 / –0.05	1%, min. 1 µm	1	0.4
4478205	844 Dk	32.001 –44.000	0.2	Standard	–0.02 / –0.06	1%, min. 1 µm	1	0.4
4478206	844 Dk	44.001 –50.000	0.2	Standard	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478207	844 Dk	50.001 –60.000	0.2	Standard	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478208	844 Dk	60.001 –70.000	0.2	Standard	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478209	844 Dk	70.001 –80.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478210	844 Dk	80.001 –90.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478211	844 Dk	90.001 –100.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478212	844 Dk	100.001 –110.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478213	844 Dk	110.001 –120.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478214	844 Dk	120.001 –130.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478215	844 Dk	130.001 –140.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478216	844 Dk	140.001 –150.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478217	844 Dk	150.001 –160.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478218	844 Dk	160.001 –170.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478219	844 Dk	170.001 –180.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478220	844 Dk	180.001 –190.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478221	844 Dk	190.001 –200.000	0.2	Standard	–0.04 / –0.07	1%, min. 1 µm	1	0.4

MaraMeter 844 Dk

Indicating Plug Gage

Order no.	a	b	c	e	g	Nominal size
	mm	mm	mm	mm		mm
4480184	4	31.3	23.3	1.5	M6 x 0.75	2.980 –3.990
4478200	4	31.3	23.3	1.5	M6 x 0.75	3.991 –8.000
4478201	7.9	33.5	25	3	M6 x 0.75	8.001 –16.000
4478202	15	39	26	3.5	M10 x 1	16.001 –25.000
4478204	15	39	26	3.5	M10 x 1	25.001 –32.000
4478205	15	39	26	3.5	M10 x 1	32.001 –44.000
4478206	20	39.5	26	4	M10 x 1	44.001 –50.000
4478207	20	39.5	26	4	M10 x 1	50.001 –60.000
4478208	20	39.5	26	4	M10 x 1	60.001 –70.000
4478209	20	39.5	33	4	M10 x 1	70.001 –80.000
4478210	20	39.5	33	4	M10 x 1	80.001 –90.000
4478211	20	39.5	33	4	M10 x 1	90.001 –100.000
4478212	20	39.5	33	4	M10 x 1	100.001 –110.000
4478213	20	39.5	33	4	M10 x 1	110.001 –120.000
4478214	20	39.5	33	4	M10 x 1	120.001 –130.000
4478215	20	39.5	33	4	M10 x 1	130.001 –140.000
4478216	20	39.5	33	4	M10 x 1	140.001 –150.000
4478217	20	39.5	33	4	M10 x 1	150.001 –160.000
4478218	20	39.5	33	4	M10 x 1	160.001 –170.000
4478219	20	39.5	33	4	M10 x 1	170.001 –180.000
4478220	20	39.5	33	4	M10 x 1	180.001 –190.000
4478221	20	39.5	33	4	M10 x 1	190.001 –200.000



ACCESSORIES

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337620		Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624		Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4478851	M10 x 1	Standard holder - standard version	844 Dg
4478020	M6 x 0.75	Holder for inductive measuring probes	844 Dge
4478021	M10 x 1	Holder for inductive measuring probes	844 Dge
4478050	M10 x 1	Short holder - short version	844 Dgk
4478110	M10 x 1	Right angle attachment, L = 36.7 mm, H = 17 mm	844 Dw
4470851	M6 x 0.75	Standard measuring instrument holder	844 Kg
4470110	M6 x 0.75	Right angle attachment, L = 26.5 mm, H = 22.5 mm	844 Kw
5312010		Compact amplifier	C 1200
5323010	M 2.5	Inductive probe, ± 2 mm	P2004 M
5318400		Compact column amplifier	S 1840 M


1002


1003


1004

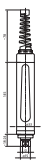

1086 R;1086 R-HR;1086 ZR

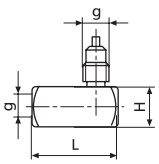

1086 Ri

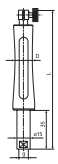

P2004;P2004 M;P2004 T;P2004 U;P2004 F


C1200;C 1200


S 1840 M;S 1840 F






844 Dg

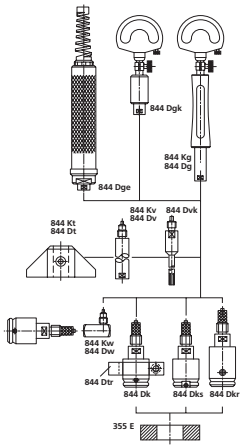
MaraMeter 844 Dkr

Indicating Plug Gage

FEATURES

- Measuring head has a hardened chromium plated cylinder guide and carbide tipped anvils
- The carbide expanding pin transfers radial movement to indicating instrument
- Constant measuring force as a result of built-in spring, eliminating user influence
- Extensive modular system is composed of measuring head, holder, depth extension, Right angle attachments and depth stops





Application:

Model for through holes

- With extended guide cylinder for measuring through holes from the edge of the hole
- For the rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerances **(for tolerances <10µm on request)**
- Rocking in the bore is unnecessary to determine the reversal point
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values

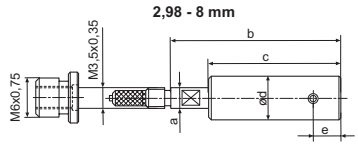
TECHNICAL DATA

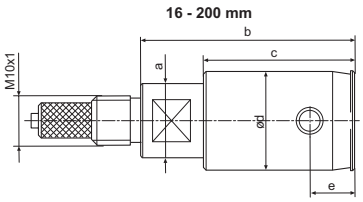
Order no.	Product type	Nominal size	Measuring span	Design	Manufacturing tolerance	Linearity deviation fe	Repeatability f_w	Hysteresis f_u
		mm	mm		mm / mm		µm	µm
4478272	844 Dkr	2.980 –3.990	0.1	For through-bores	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478250	844 Dkr	3.990 –8.000	0.1	For through-bores	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478251	844 Dkr	8.000 –16.000	0.15	For through-bores	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478252	844 Dkr	16.000 –25.000	0.2	For through-bores	–0.02 / –0.05	1%, min. 1 µm	1	0.4
4478254	844 Dkr	25.000 –32.000	0.2	For through-bores	–0.02 / –0.05	1%, min. 1 µm	1	0.4
4478255	844 Dkr	32.000 –44.000	0.2	For through-bores	–0.02 / –0.06	1%, min. 1 µm	1	0.4
4478256	844 Dkr	44.000 –50.000	0.2	For through-bores	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478257	844 Dkr	50.000 –60.000	0.2	For through-bores	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478258	844 Dkr	60.000 –70.000	0.2	For through-bores	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478259	844 Dkr	70.000 –80.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478260	844 Dkr	80.000 –90.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478261	844 Dkr	90.000 –100.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478262	844 Dkr	100.000 –110.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478263	844 Dkr	110.000 –120.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478264	844 Dkr	120.000 –130.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478265	844 Dkr	130.000 –140.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478266	844 Dkr	140.000 –150.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478267	844 Dkr	150.000 –160.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478268	844 Dkr	160.000 –170.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478269	844 Dkr	170.000 –180.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478270	844 Dkr	180.000 –190.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478271	844 Dkr	190.000 –200.000	0.2	For through-bores	–0.04 / –0.07	1%, min. 1 µm	1	0.4

MaraMeter 844 Dkr

Indicating Plug Gage

Order no.	a	b	c	e	g	Nominal size
	mm	mm	mm	mm		mm
4478272	4	35.8	27.8	6	M6 x 0.75	2.980 –3.990
4478250	4	35.8	27.8	6	M6 x 0.75	3.990 –8.000
4478251	7.9	39.5	31	9	M 6 x 0.75	8.000 –16.000
4478252	15	45	32	9.5	M10 x 1	16.000 –25.000
4478254	15	45	32	9.5	M10 x 1	25.000 –32.000
4478255	15	45	32	9.5	M10 x 1	32.000 –44.000
4478256	20	46	26	10.5	M10 x 1	44.000 –50.000
4478257	20	46	26	10.5	M10 x 1	50.000 –60.000
4478258	20	46	26	10.5	M10 x 1	60.000 –70.000
4478259	20	51	33	15	M10 x 1	70.000 –80.000
4478260	20	51	33	15	M10 x 1	80.000 –90.000
4478261	20	51	33	15	M10 x 1	90.000 –100.000
4478262	20	51	33	15	M10 x 1	100.000 –110.000
4478263	20	51	33	15	M10 x 1	110.000 –120.000
4478264	20	51	33	15	M10 x 1	120.000 –130.000
4478265	20	51	33	15	M10 x 1	130.000 –140.000
4478266	20	51	33	15	M10 x 1	140.000 –150.000
4478267	20	51	33	15	M10 x 1	150.000 –160.000
4478268	20	51	33	15	M10 x 1	160.000 –170.000
4478269	20	51	33	15	M10 x 1	170.000 –180.000
4478270	20	51	33	15	M10 x 1	180.000 –190.000
4478271	20	51	33	15	M10 x 1	190.000 –200.000





ACCESSORIES

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337620		Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624		Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4478851	M10 x 1	Standard holder - standard version	844 Dg
4478020	M6 x 0.75	Holder for inductive measuring probes	844 Dge
4478021	M10 x 1	Holder for inductive measuring probes	844 Dge
4478050	M10 x 1	Short holder - short version	844 Dgk
4478110	M10 x 1	Right angle attachment, L = 36.7 mm, H = 17 mm	844 Dw
4470851	M6 x 0.75	Standard measuring instrument holder	844 Kg
4470110	M6 x 0.75	Right angle attachment, L = 26.5 mm, H = 22.5 mm	844 Kw
5312010		Compact amplifier	C 1200
5323010	M 2.5	Inductive probe, ± 2 mm	P2004 M
5318400		Compact column amplifier	S 1840 M


1002


1003


1004

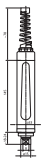

1086 R;1086 R-HR;1086 ZR

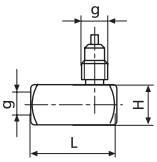

1086 Ri

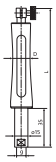

P2004;P2004 M;P2004 T;P2004 U;P2004 F


C1200;C 1200


S 1840 M;S 1840 F






844 Dg

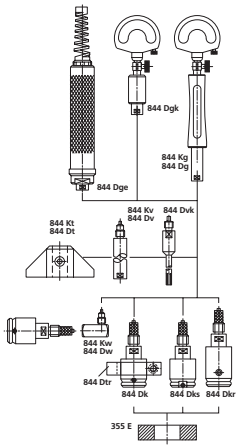
MaraMeter 844 Dks

Indicating Plug Gage

FEATURES

- Measuring head has a hardened chromium plated cylinder guide and carbide tipped anvils
- The carbide expanding pin transfers radial movement to indicating instrument
- Constant measuring force as a result of built-in spring, eliminating user influence
- Extensive modular system is composed of measuring head, holder, depth extension, Right angle attachments and depth stops





Application:

Model for blind holes

- For measurements close to the base of the hole
- For the rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerances **(for tolerances <10µm on request)**
- Rocking in the bore is unnecessary to determine the reversal point
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values

TECHNICAL DATA

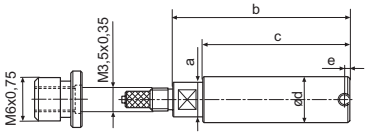
Order no.	Product type	Nominal size	Measuring span	Design	Manufacturing tolerance	Linearity deviation fe	Repeatability f_w	Hysteresis f_u
		mm	mm		mm / mm		µm	µm
4478285	844 Dks	4.000 –8.000	0.1	For blind bores	–0.02 / –0.04	2%, min. 1 µm	1	0.4
4478245	844 Dks	8.000 –16.000	0.15	For blind bores	–0.02 / –0.04	2%, min. 1 µm	1	0.4
4478230	844 Dks	16.000 –25.000	0.15	For blind bores	–0.02 / –0.05	2%, min. 1 µm	1	0.4
4478232	844 Dks	25.000 –32.000	0.15	For blind bores	–0.02 / –0.05	2%, min. 1 µm	1	0.4
4478233	844 Dks	32.000 –44.000	0.15	For blind bores	–0.03 / –0.06	2%, min. 1 µm	1	0.4
4478234	844 Dks	44.000 –50.000	0.15	For blind bores	–0.03 / –0.06	2%, min. 1 µm	1	0.4
4478235	844 Dks	50.000 –60.000	0.15	For blind bores	–0.03 / –0.06	2%, min. 1 µm	1	0.4
4478236	844 Dks	60.000 –70.000	0.15	For blind bores	–0.03 / –0.06	2%, min. 1 µm	1	0.4
4478237	844 Dks	70.000 –80.000	0.15	For blind bores	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478238	844 Dks	80.000 –90.000	0.15	For blind bores	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478239	844 Dks	90.000 –100.000	0.15	For blind bores	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478240	844 Dks	100.000 –110.000	0.15	For blind bores	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478241	844 Dks	110.000 –120.000	0.15	For blind bores	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478242	844 Dks	120.000 –130.000	0.15	For blind bores	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478243	844 Dks	130.000 –140.000	0.15	For blind bores	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478244	844 Dks	140.000 –150.000	0.15	For blind bores	–0.04 / –0.07	2%, min. 1 µm	1	0.4

MaraMeter 844 Dks

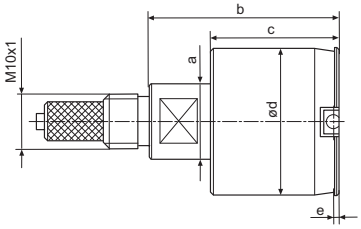
Indicating Plug Gage

Order no.	a	b	c	e	g	Nominal size
	mm	mm	mm	mm		mm
4478285	7.9	30.4	22.4	0.6	M6 x 0.75	4.000 –8.000
4478245	7.9	31.1	22.6	0.6	M6 x 0.75	8.000 –16.000
4478230	15	39	26	1	M10 x 1	16.000 –25.000
4478232	15	39	26	1	M10 x 1	25.000 –32.000
4478233	15	39	26	1	M10 x 1	32.000 –44.000
4478234	20	39	25.5	1	M10 x 1	44.000 –50.000
4478235	20	39	25.5	1	M10 x 1	50.000 –60.000
4478236	20	39	25.5	1	M10 x 1	60.000 –70.000
4478237	20	39	32.5	1	M10 x 1	70.000 –80.000
4478238	20	39	32.5	1	M10 x 1	80.000 –90.000
4478239	20	39	32.5	1	M10 x 1	90.000 –100.000
4478240	20	39	32.5	1	M10 x 1	100.000 –110.000
4478241	20	39	32.5	1	M10 x 1	110.000 –120.000
4478242	20	39	32.5	1	M10 x 1	120.000 –130.000
4478243	20	39	32.5	1	M10 x 1	130.000 –140.000
4478244	20	39	32.5	1	M10 x 1	140.000 –150.000

4 - 8 mm



16 - 150 mm



ACCESSORIES

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337620		Digital indicator, 0.0005 mm, 12.5 mm	1086 R
4337624		Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri
4478851	M10 x 1	Standard holder - standard version	844 Dg
4478020	M6 x 0.75	Holder for inductive measuring probes	844 Dge
4478021	M10 x 1	Holder for inductive measuring probes	844 Dge
4478050	M10 x 1	Short holder - short version	844 Dgk
4478110	M10 x 1	Right angle attachment, L = 36.7 mm, H = 17 mm	844 Dw
4470851	M6 x 0.75	Standard measuring instrument holder	844 Kg
4470110	M6 x 0.75	Right angle attachment, L = 26.5 mm, H = 22.5 mm	844 Kw
5312010		Compact amplifier	C 1200
5323010	M 2.5	Inductive probe, ± 2 mm	P2004 M
5318400		Compact column amplifier	S 1840 M



1002



1003



1004



1086 R;1086 R-HR;1086 ZR



1086 Ri

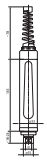
P2004;P2004 M;P2004 T;P2004 U;P2004 F

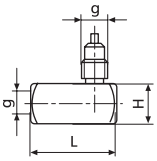


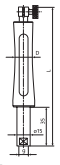
C1200;C 1200



S 1840 M;S 1840 F







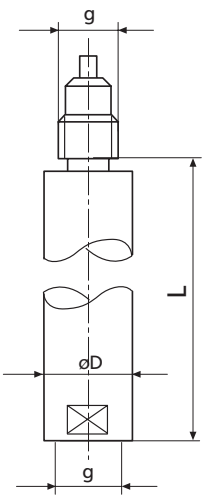
844 Dg

MaraMeter 844 Dv / 844 Kv

Extension

FEATURES

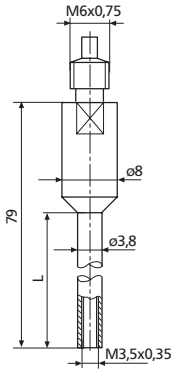
- For very deep bores
- Screws in between holder and measuring heads 844 Dk, 844 Dkr or 844 Dks
- Several extensions can be screwed together as of 8 mm
- Models 844 Dv and 844 Dvk made of Invar steel



TECHNICAL DATA

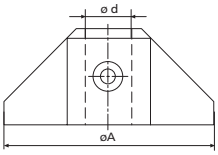
Order no.	Product type	Dimen-sion L
		mm
4478080	844 Dv	64
4470070	844 Kv	64
4478070	844 Dv	64
4478071	844 Dv	80
4478072	844 Dv	100
4478073	844 Dv	125
4478074	844 Dv	250
4478075	844 Dv	500

Order no.	g	D	Dimension L	Produkt type
		mm	mm	
4478080	M6x0.75 / M3.5x0.35	3.8	64	844 Dv
4470070	M6 x 0.75	8	64	844 Kv
4478070	M10 x 1	15	64	844 Dv
4478071	M10 x 1	15	80	844 Dv
4478072	M10 x 1	15	100	844 Dv
4478073	M10 x 1	15	125	844 Dv
4478074	M10 x 1	15	250	844 Dv
4478075	M10 x 1	15	500	844 Dv



ACCESSORIES

Order no.	Product name	Product type
4470115	Depth stop, mounting-ø d = 8 mm, A = 24 mm, h = 60 mm	844 Dt
4478115	Depth stop, mounting-ø d = 15 mm, A = 45 mm, h = 30 mm	844 Dt
4478116	Depth stop, mounting-ø d = 15 mm, A = 75 mm, h = 30 mm	844 Dt
4478117	Depth stop, mounting-ø d = 15 mm, A = 110 mm, h = 30 mm	844 Dt
4478118	Depth stop, mounting-ø d = 15 mm, A = 160 mm, h = 30 mm	844 Dt
4478119	Depth stop, mounting-ø d = 15 mm, A = 220 mm, h = 30 mm	844 Dt



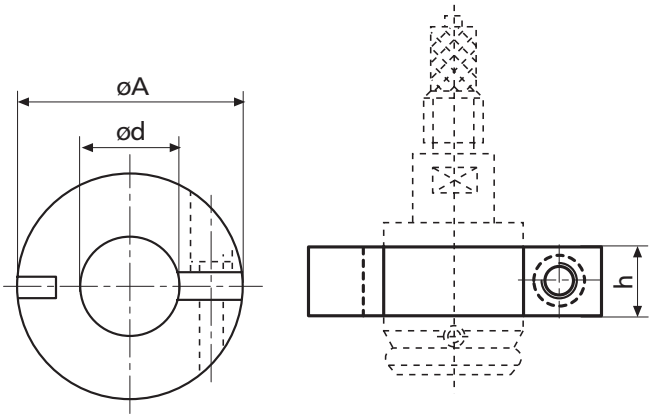
844 Dt

MaraMeter 844 Dtr

Depth Stop Ring

FEATURES

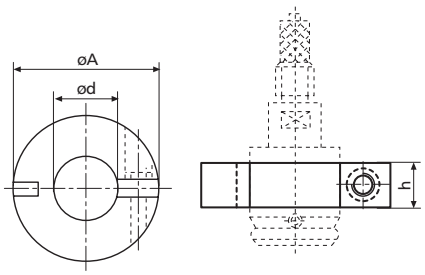
- For limiting depth of insertion of measuring head in bore
- Clamped onto the measuring head



TECHNICAL DATA

Order no.	Product type	Mount diameter d	Stop surface diameter A
		mm	mm
4478130	844 Dtr	3 –5 >5 –8 >8 –11 >11 –15 >15 –20	27 30 33 37 42
4478131	844 Dtr	>20 –25 >25 –30 >30 –35 >35 –40 >40 –45	50 55 60 65 70
4478132	844 Dtr	>45 –50 >50 –60 >60 –70 >70 –80	75 85 95 105
4478133	844 Dtr	>80 –90 >90 –100	115 125

Order no.	Mount diameter d	Stop surface diameter A
	mm	mm
4478130	3 –5 >5 –8 >8 –11 >11 –15 >15 –20	27 30 33 37 42
4478131	>20 –25 >25 –30 >30 –35 >35 –40 >40 –45	50 55 60 65 70
4478132	>45 –50 >50 –60 >60 –70 >70 –80	75 85 95 105
4478133	>80 –90 >90 –100	115 125



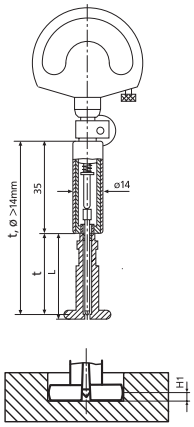
MaraMeter 844 K

Self-Centering Dial Bore Gage

FEATURES

- Maximum wear resistance due to **hard chrome plating**
- Constant measuring force as a result of built-in spring, eliminating user influence
- Highly versatile
  - Each gage covers a broad range
  - Quickly and easily adjustable to any size and type of measuring application (within the limits)
- Extensive modular system is composed of measuring probe, holder, depth extensions, Right angle attachments and depth stops
- **Package contains:** measuring holder, probe, expanding pin, wooden case, excludes indicator





Application:

- Measuring the diameter, roundness and conicity of bores
- Spring loaded halves of measuring probe are split via expanding pin with precision lapped taper; this movement is transferred to indicating instrument

TECHNICAL DATA

Order no.	Product type	Nominal size	Individual probe measuring range	Measuring range	Design	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	mm		Stück		µm
4470000	844 K	0.50 0.55 0.60 0.70 0.80 0.90	**0.47** –0.53 0.52 –0.58 0.57 –0.67 0.65 –0.77 0.75 –0.87 0.85 - **0.97**	0.47 –0.97	Standard	6	2%, min. 1 µm	1
4470001	844 K	1.00 1.10 1.20 1.30 1.40	**0.95** –1.15 1.07 –1.25 1.17 –1.35 1.27 –1.45 1.37 - **1.55**	0.95 –1.55	Standard	5	2%, min. 1 µm	1
4470002	844 K	1.75 2.00 2.25 2.50 2.75 3.00 3.25 3.50 3.75 4.00	**1.50** –1.90 1.80 –2.20 2.05 –2.45 2.30 –2.70 2.55 –2.95 2.80 –3.20 3.05 –3.45 3.30 –3.70 3.55 –3.95 3.80 - **4.20**	1.5 –4.2	Standard	10	1%, min. 1 µm	1
4470003	844 K	4.00 4.50 5.00 5.50 6.00 6.50 7.00	**3.70** –4.30 4.20 –4.80 4.70 –5.30 5.20 –5.80 5.70 –6.30 6.20 –6.80 6.70 - **7.30**	3.7 –7.3	Standard	7	1%, min. 1 µm	1
4470004	844 K	7.50 8.00 8.50 9.00 9.50 10.00	**7.20** –7.80 7.70 –8.30 8.20 –8.80 8.70 –9.30 9.20 –9.80 9.70 - **10.30**	6.7 –10.3	Standard	7	1%, min. 1 µm	1
4470005	844 K	10.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00	**9.40** –10.60 10.40 –11.60 11.40 –12.60 12.40 –13.60 13.40 –14.60 14.40 –15.60 15.40 –16.60 16.40 –17.60 17.40 - **18.60**	9.4 –18.6	Standard	9	1%, min. 1 µm	1

MaraMeter 844 K

Self-Centering Dial Bore Gage

Order no.	Nominal size	Individual probe measuring range	Dimension H1	L	Measuring depth
	mm	mm		mm	mm
4470000	0.50	**0.47** –0.53	0.25	19.50	1.25
	0.55	0.52 –0.58	0.27	19.50	1.5
	0.60	0.57 –0.67	0.29	19.50	1.7
	0.70	0.65 –0.77	0.31	19.50	2.2
	0.80	0.75 –0.87	0.33	19.50	2.55
	0.90	0.85 - **0.97**	0.35	19.50	2.65
4470001	1.00	**0.95** –1.15	0.6	19.50	10.5
	1.10	1.07 –1.25	0.6	19.50	10.5
	1.20	1.17 –1.35	0.6	19.50	10.5
	1.30	1.27 –1.45	0.6	19.50	10.5
	1.40	1.37 - **1.55**	0.6	19.50	10.5
4470002	1.75	**1.50** –1.90	0.9	25.30	16
	2.00	1.80 –2.20	0.9	25.30	16
	2.25	2.05 –2.45	0.9	25.30	16
	2.50	2.30 –2.70	1.2	30.60	21
	2.75	2.55 –2.95	1.2	30.60	21
	3.00	2.80 –3.20	1.2	30.60	21
	3.25	3.05 –3.45	1.2	30.60	21
	3.50	3.30 –3.70	1.2	30.60	21
	3.75	3.55 –3.95	1.2	30.60	21
	4.00	3.80 - **4.20**	1.2	30.60	21
4470003	4.00	**3.70** –4.30	2.0	47.30	38
	4.50	4.20 –4.80	2.0	47.30	38
	5.00	4.70 –5.30	2.0	47.30	38
	5.50	5.20 –5.80	2.0	47.30	38
	6.00	5.70 –6.30	2.0	47.30	38
	6.50	6.20 –6.80	2.0	47.30	38
	7.00	6.70 - **7.30**	2.0	47.30	38

Order no.	Nominal size	Individual probe measuring range	Dimension H1	L	Measuring depth
	mm	mm		mm	mm
4470004	7.50	**7.20** –7.80	2.0	47.30	38
	8.00	7.70 –8.30	2.0	47.30	38
	8.50	8.20 –8.80	2.0	47.30	45
	9.00	8.70 –9.30	2.0	47.30	45
	9.50	9.20 –9.80	2.0	47.30	45
	10.00	9.70 - **10.30**	2.0	47.30	45
4470005	10.00	**9.40** –10.60	3.3	48.50	45
	11.00	10.40 –11.60	3.3	48.50	45
	12.00	11.40 –12.60	3.3	48.50	45
	13.00	12.40 –13.60	3.3	48.50	45
	14.00	13.40 –14.60	3.3	48.50	45
	15.00	14.40 –15.60	3.3	48.50	45
	16.00	15.40 –16.60	3.3	48.50	80
	17.00	16.40 –17.60	3.3	48.50	80
	18.00	17.40 - **18.60**	3.3	48.50	80

ACCESSORIES



1004



1003



1002

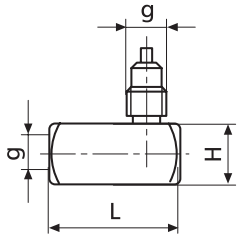


1087 BR



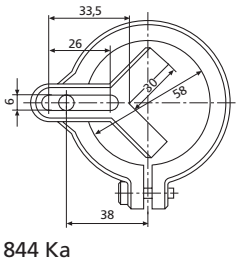
1087 BRi

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337662		Digital indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664		Digital indicator, 0.0005 mm, 12.5 mm	1087 BRi
4470115		Depth stop, mounting-ø d = 8 mm, A = 24 mm, h = 60 mm	844 Dt
4470120		Clampable angle stop for 844 Kst measuring stand	844 Ka
4470160		Ring gage sets, 0.5 / 0.55 / 0.6 / 0.7 / 0.8 / 0.9 mm	844 Ke
4470161		Ring gage sets, 1 / 1.1 / 1.2 / 1.3 / 1.4 mm	844 Ke
4470162		Ring gage sets, 1.75 / 2 / 2.25 / 2.5 / 2.75 / 3 / 3.25 / 3.5 / 3.75 / 4 mm	844 Ke
4470163		Ring gage sets, 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 mm	844 Ke
4470164		Ring gage sets, 7 / 7.5 / 8 / 8.5 / 9 / 9.5 / 10 mm	844 Ke
4470165		Ring gage sets, 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 mm	844 Ke
4470100		Measuring stand for quick measurements, table diameter 58 mm, Max. object height approx. 100 mm	844 Kst
4470105		Floating holder for 844 Kst measuring stand	844 Ksts
4470070	M6 x 0.75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4470110	M6 x 0.75	Right angle attachment, L = 26.5 mm, H = 22.5 mm	844 Kw

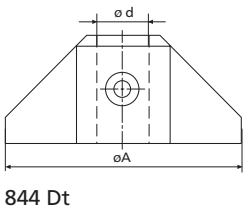




844 Kst



844 Ka



844 Dt

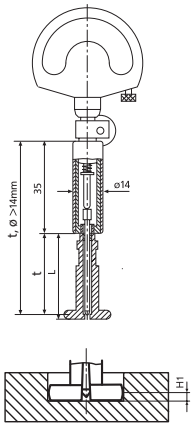
MaraMeter 844 KH

Self-Centering Dial Bore Gage

FEATURES

- Maximum wear resistance due to carbide tipped faces
- Constant measuring force as a result of built-in spring, eliminating user influence
- Highly versatile
  - Each gage covers a broad range
  - Quickly and easily adjustable to any size and type of measuring application (within the limits)
- Extensive modular system is composed of measuring probe, holder, depth extensions, Right angle attachments and depth stops
- **Package contains:** measuring holder, probe, expanding pin, wooden case, excludes indicator





Application:

- Measuring the diameter, roundness and conicity of bores
- Spring loaded halves of measuring probe are split via expanding pin with precision lapped taper; this movement is transferred to indicating instrument

TECHNICAL DATA

Order no.	Product type	Nominal size	Individual probe measuring range	Measuring range	Design	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	mm		Stück		µm
4471002	844 KH	1.75 2.00 2.25 2.50 2.75 3.00 3.25 3.50 3.75 4.00	**1.50** –1.90 1.80 –2.20 2.05 –2.45 2.30 –2.70 2.55 –2.95 2.80 –3.20 3.05 –3.45 3.30 –3.70 3.55 –3.95 3.80 - **4.20**	1.5 –4.2	Standard	10	1%, min. 1 µm	1
4471003	844 KH	4.00 4.50 5.00 5.50 6.00 6.50 7.00	**3.70** –4.30 4.20 –4.80 4.70 –5.30 5.20 –5.80 5.70 –6.30 6.20 –6.80 6.70 - **7.30**	3.7 –7.3	Standard	7	1%, min. 1 µm	1
4471004	844 KH	7.50 8.00 8.50 9.00 9.50 10.00	**7.20** –7.80 7.70 –8.30 8.20 –8.80 8.70 –9.30 9.20 –9.80 9.70 - **10.30**	7.2 –10.3	Standard	7	1%, min. 1 µm	1
4471005	844 KH	10.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00	**9.40** –10.60 10.40 –11.60 11.40 –12.60 12.40 –13.60 13.40 –14.60 14.40 –15.60 15.40 –16.60 16.40 –17.60 17.40 - **18.60**	9.4 –18.6	Standard	9	1%, min. 1 µm	1

MaraMeter 844 KH

Self-Centering Dial Bore Gage

Order no.	Nominal size	Individual probe measuring range	Dimension H1	L	Measuring depth
	mm	mm		mm	mm
4471002	1.75	**1.50** –1.90	0.9	25.30	16
	2.00	1.80 –2.20	0.9	25.30	16
	2.25	2.05 –2.45	0.9	25.30	16
	2.50	2.30 –2.70	1.2	30.60	21
	2.75	2.55 –2.95	1.2	30.60	21
	3.00	2.80 –3.20	1.2	30.60	21
	3.25	3.05 –3.45	1.2	30.60	21
	3.50	3.30 –3.70	1.2	30.60	21
	3.75	3.55 –3.95	1.2	30.60	21
	4.00	3.80 - **4.20**	1.2	30.60	21
4471003	4.00	**3.70** –4.30	2.0	47.30	38
	4.50	4.20 –4.80	2.0	47.30	38
	5.00	4.70 –5.30	2.0	47.30	38
	5.50	5.20 –5.80	2.0	47.30	38
	6.00	5.70 –6.30	2.0	47.30	38
	6.50	6.20 –6.80	2.0	47.30	38
	7.00	6.70 - **7.30**	2.0	47.30	38
4471004	7.50	**7.20** –7.80	2.0	47.30	38
	8.00	7.70 –8.30	2.0	47.30	38
	8.50	8.20 –8.80	2.0	47.30	45
	9.00	8.70 –9.30	2.0	47.30	45
	9.50	9.20 –9.80	2.0	47.30	45
	10.00	9.70 - **10.30**	2.0	47.30	45

Order no.	Nominal size	Individual probe measuring range	Dimension H1	L	Measuring depth
	mm	mm		mm	mm
4471005	10.00	**9.40**	3.3	48.50	45
	11.00	–10.60	3.3	48.50	45
	12.00	10.40	3.3	48.50	45
	13.00	–11.60	3.3	48.50	45
	14.00	11.40	3.3	48.50	45
	15.00	–12.60	3.3	48.50	45
	16.00	12.40	3.3	48.50	80
	17.00	–13.60	3.3	48.50	80
	18.00	13.40	3.3	48.50	80
		–14.60			
		14.40			
		–15.60			
		15.40			
		–16.60			
		16.40			
		–17.60			
		17.40 - **18.60**			

ACCESSORIES



1004



1003



1002

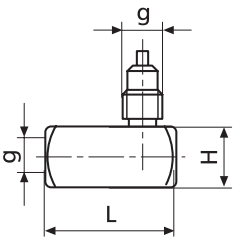


1087 BR



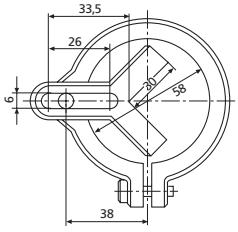
1087 BRi

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337662		Digital indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664		Digital indicator, 0.0005 mm, 12.5 mm	1087 BRi
4470115		Depth stop, mounting-ø d = 8 mm, A = 24 mm, h = 60 mm	844 Dt
4470120		Clampable angle stop for 844 Kst measuring stand	844 Ka
4470162		Ring gage sets, 1.75 / 2 / 2.25 / 2.5 / 2.75 / 3 / 3.25 / 3.5 / 3.75 / 4 mm	844 Ke
4470163		Ring gage sets, 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 mm	844 Ke
4470164		Ring gage sets, 7 / 7.5 / 8 / 8.5 / 9 / 9.5 / 10 mm	844 Ke
4470165		Ring gage sets, 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 mm	844 Ke
4470100		Measuring stand for quick measurements, table diameter 58 mm, Max. object height approx. 100 mm	844 Kst
4470105		Floating holder for 844 Kst measuring stand	844 Ksts
4470070	M6 x 0.75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4470110	M6 x 0.75	Right angle attachment, L = 26.5 mm, H = 22.5 mm	844 Kw

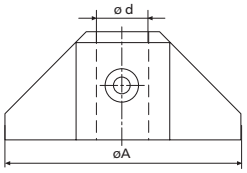




844 Kst



844 Ka



844 Dt

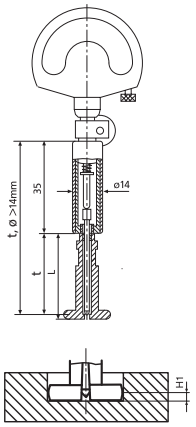
MaraMeter 844 KS

Self-Centering Dial Bore Gage

FEATURES

- Maximum wear resistance due to hard chrome plating
- Constant measuring force as a result of built-in spring, thus eliminating user influence
- Highly versatile
  - Each gage covers a broad range
  - Quickly and easily adjustable to any size and type of measuring application (within the limits)
- Extensive modular system is composed of measuring probe, holder, depth extensions, Right angle attachments and depth stops
- **Package contains:** measuring holder, probe, expanding pin, wooden case, excludes indicator





Application:

- Measuring the diameter, roundness and conicity of bores
- Spring loaded halves of measuring probe are split via expanding pin with precision lapped taper; this movement is transferred to indicating instrument

TECHNICAL DATA

Order no.	Product type	Nominal size	Individual probe measuring range mm	Measuring range	Design	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	mm		Stück		µm
4482163	844 KS	1.75 2.00 2.25 2.50 2.75 3.00 3.25 3.50 3.75 4.00	**1.50** –1.90 1.80 –2.20 2.05 –2.45 2.30 –2.70 2.55 –2.95 2.80 –3.20 3.05 –3.45 3.30 –3.70 3.55 –3.95 3.80 - **4.20**	1.5 –4.2	For blind bores	10	1%, min. 1 µm	1
4482164	844 KS	4.00 4.50 5.00 5.50 6.00 6.50 7.00	**3.70** –4.30 4.20 –4.80 4.70 –5.30 5.20 –5.80 5.70 –6.30 6.20 –6.80 6.70 - **7.30**	3.7 –7.3	For blind bores	7	1%, min. 1 µm	1
4482165	844 KS	7.50 8.00 8.50 9.00 9.50 10.00	**7.20** –7.80 7.70 –8.30 8.20 –8.80 8.70 –9.30 9.20 –9.80 9.70 - **10.30**	6.7 –10.3	For blind bores	7	1%, min. 1 µm	1
4482166	844 KS	10.00 11.00 12.00 13.00 14.00 15.00 16.00 17.00 18.00	**9.40** –10.60 10.40 –11.60 11.40 –12.60 12.40 –13.60 13.40 –14.60 14.40 –15.60 15.40 –16.60 16.40 –17.60 17.40 - **18.60**	9.4 –18.6	For blind bores	9	1%, min. 1 µm	1

MaraMeter 844 KS

Self-Centering Dial Bore Gage

Order no.	Nominal size	Individual probe measuring range	Dimension H1	L	Measuring depth
	mm	mm		mm	mm
4482163	1.75	**1.50** –1.90	0.3	25.30	16
	2.00	1.80 –2.20	0.3	25.30	16
	2.25	2.05 –2.45	0.3	25.30	16
	2.50	2.30 –2.70	0.3	30.60	21
	2.75	2.55 –2.95	0.3	30.60	21
	3.00	2.80 –3.20	0.3	30.60	21
	3.25	3.05 –3.45	0.3	30.60	21
	3.50	3.30 –3.70	0.3	30.60	21
	3.75	3.55 –3.95	0.3	30.60	21
	4.00	3.80 - **4.20**	0.3	30.60	21
4482164	4.00	**3.70** –4.30	0.5	47.30	38
	4.50	4.20 –4.80	0.5	47.30	38
	5.00	4.70 –5.30	0.5	47.30	38
	5.50	5.20 –5.80	0.5	47.30	38
	6.00	5.70 –6.30	0.5	47.30	38
	6.50	6.20 –6.80	0.5	47.30	38
	7.00	6.70 - **7.30**	0.5	47.30	38
4482165	7.50	**7.20** –7.80	0.5	47.30	38
	8.00	7.70 –8.30	0.5	47.30	38
	8.50	8.20 –8.80	0.5	47.30	45
	9.00	8.70 –9.30	0.5	47.30	45
	9.50	9.20 –9.80	0.5	47.30	45
	10.00	9.70 - **10.30**	0.5	47.30	45

Order no.	Nominal size	Individual probe measuring range	Dimension H1	L	Measuring depth
	mm	mm		mm	mm
4482166	10.00	**9.40** –10.60	1.0	48.50	45
	11.00	10.40	1.0	48.50	45
	12.00	–11.60	1.0	48.50	45
	13.00	11.40	1.0	48.50	45
	14.00	–12.60	1.0	48.50	45
	15.00	12.40	1.0	48.50	45
	16.00	–13.60	1.0	48.50	80
	17.00	13.40	1.0	48.50	80
	18.00	–14.60	1.0	48.50	80
		14.40			
		–15.60			
		15.40			
		–16.60			
		16.40			
		–17.60			
		17.40 - **18.60**			

ACCESSORIES



1004



1003



1002

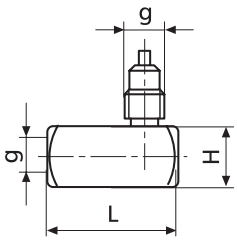


1087 BR



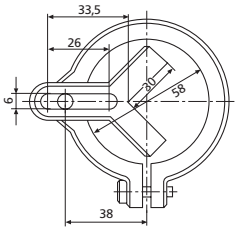
1087 BRi

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337662		Digital indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664		Digital indicator, 0.0005 mm, 12.5 mm	1087 BRi
4470115		Depth stop, mounting-ø d = 8 mm, A = 24 mm, h = 60 mm	844 Dt
4470120		Clampable angle stop for 844 Kst measuring stand	844 Ka
4470162		Ring gage sets, 1.75 / 2 / 2.25 / 2.5 / 2.75 / 3 / 3.25 / 3.5 / 3.75 / 4 mm	844 Ke
4470163		Ring gage sets, 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 mm	844 Ke
4470164		Ring gage sets, 7 / 7.5 / 8 / 8.5 / 9 / 9.5 / 10 mm	844 Ke
4470165		Ring gage sets, 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 mm	844 Ke
4470100		Measuring stand for quick measurements, table diameter 58 mm, Max. object height approx. 100 mm	844 Kst
4470105		Floating holder for 844 Kst measuring stand	844 Ksts
4470070	M6 x 0.75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4470110	M6 x 0.75	Right angle attachment, L = 26.5 mm, H = 22.5 mm	844 Kw

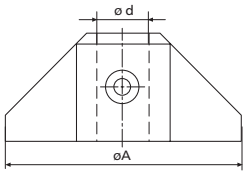




844 Kst



844 Ka



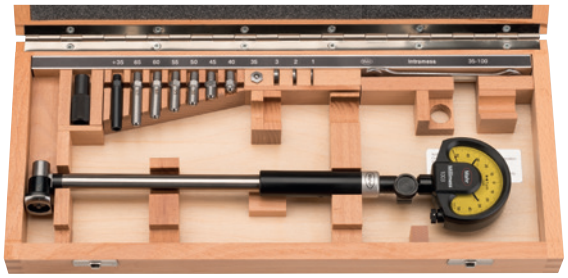
844 Dt

MaraMeter 844 N

Self-Centering Dial Bore Gage

FEATURES

- Measuring head consists of a carbide tipped moving anvil and an interchangeable stationary anvil with a hardened steel ball
- Transmission lever system transfers movement of movable anvil to indicating instrument
- The broad centering bridge ensures automatic centering in the bore
- Resistant to temperature because the shank and transfer rod are made of heat resistant Invar steel
- Highly resistant to wear and tear because of carbide tipped moving anvil
- Constant measuring force due to built-in spring, eliminating user influence
- Universally applicable and extremely versatile
  - Each instrument spans a broad measuring range
  - Quick and easy to adjust to any size (within its range)
- Extensive modular system is composed of measuring head, holder, extensions, Right angle attachments and depth stops
- Invar steel has a particularly low expansion coefficient
  - instrument totally insensitive to any kind of heat (including user body heat and increased ambient temperature)
- **Package contains:** measuring holder, measuring head, anvil spindle, wooden case, excludes indicator



Application:

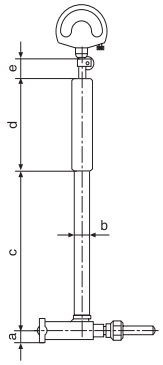
- Measuring the diameter, roundness and conical form of a bore as well as the distances of parallel plane surfaces



TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range	Design	Probe path	Measuring depth	Error limit G_e	Repeatability f_w
		mm	inch		mm	mm	µm	µm
4474000	844 N	18 –50	.7 –2″	Standard, moveable anvil carbide-tipped	1.3	115	2	0.5
4474001	844 N	35 –100	1.4 –4″	Standard, moveable anvil carbide-tipped	1.3	148	2	0.5
4474002	844 N	100 –250	4 –10″	Standard, moveable anvil carbide-tipped	1.6	230	2	0.5
4474003	844 N	250 –400	10 –16″	Standard, moveable anvil carbide-tipped	2.6	366	3	1.5
4474004	844 N	400 –800	16 –32″	Standard, moveable anvil carbide-tipped	2.6	366	3	1.5
4474005	844 N	250 –800	10 –32″	Standard, moveable anvil carbide-tipped	2.6	366	3	1.5

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4474000	5.3	8	115	63	22
4474001	8.5	12	148	80	22
4474002	11.5	18	230	100	25
4474003	16	24	366	110	28
4474004	17.5	24	366	110	28
4474005	17.5	24	366	110	28



MaraMeter 844 N

Self-Centering Dial Bore Gage



1004



1003



1002



1087 BR



1087 BRi

ACCESSORIES

Order no.	Product name	Product type
4335000	Millimess 0.5 µm, ± 25 µm	1002
4334000	Millimess 1 µm, ± 50 µm	1003
4333000	Millimess 5 µm, ± 130 µm	1004
4337662	Digital indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital indicator, 0.0005 mm, 12.5 mm	1087 BRi
4800120	Holder, measuring span 0 –70 mm	420 h
4800121	Holder, measuring span 0 –120 mm	420 h
4800122	Holder, measuring span 100 –220 mm	420 h
4800123	Holder, measuring span 100 –420 mm	420 h
4800124	Holder, measuring span 400 –820 mm	420 h
4474080	Adjustment bridge (70 x 12 mm), for measuring range 18 –250 mm (for 844 N)	844 Neb
4474081	Adjustment bridge (165 x 17 mm), for measuring range 18 –400 mm (for 844 N)	844 Neb
4474082	Adjustment bridge (320 x 20 mm), for measuring range 18 –800 mm (for 844 N)	844 Neb
4474050	Short holder (18 –50 mm)	844 Ngk
4474051	Short holder (35 –100 mm)	844 Ngk
4474052	Short holder (100 –250 mm)	844 Ngk
4474053	Short holder (250 –800 mm)	844 Ngk
4474060	Measuring depth extension (250 mm) for measuring range 35 –100 mm	844 Nv
4474061	Measuring depth extension (250 mm) for measuring range 100 –250 mm	844 Nv
4474062	Measuring depth extension (500 mm) for measuring range 100 –250 mm	844 Nv
4474063	Measuring depth extension (250 mm) for measuring range 250 –800 mm	844 Nv
4474064	Measuring depth extension (500 mm) for measuring range 250 –800 mm	844 Nv
4474066	Measuring depth extension (250 mm) for measuring range 18 –50 mm	844 Nv
4474070	Right angle attachment, bore depth 45mm, for measuring range 18 –50 mm	844 Nw
4474071	Right angle attachment, bore depth 55mm, for measuring range 35 –100 mm	844 Nw
4474072	Right angle attachment, bore depth 70mm, for measuring range 100 –250 mm	844 Nw
4470098	Base for mounting holder 420 h up to 420 mm	844 ef
4470095	Measuring jaw (60 x 9.5 x 9 mm), for measuring range 18 –800 mm (for 844 N)	844 em



844 em



844 Neb



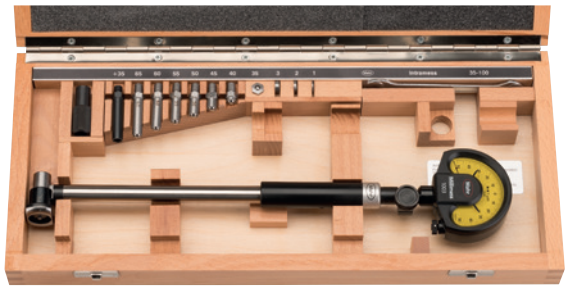
844 ef

MaraMeter 844 NH

Self-Centering Dial Bore Gage

FEATURES

- Measuring head consists of a carbide tipped moving anvil and an interchangeable stationary anvil with a carbide ball
- Transmission lever system transfers movement of movable anvil to indicating instrument
- The broad centering bridge ensures automatic centering in the bore
- Resistant to temperature bacause the shank and transfer rod are made of heat resistant Invar steel
- Highly resistant to wear and tear due to the carbide tipped moving anvil
- Constant measuring force because of built-in spring, eliminating user influence
- Universally applicable and extremely versatile
  - Each instrument spans a broad measuring range
  - Quick and easy to adjust to any size (within its range)
- Extensive modular system is composed of measuring head, holder, extensions, Right angle attachments and depth stops
- Invar steel has a particularly low expansion coefficient
  - instrument totally insensitive to any kind of heat (including user body heat and increased ambient temperature)
- **Package contains:** measuring holder, measuring head, anvil spindle, wooden case, excludes indicator



Application:

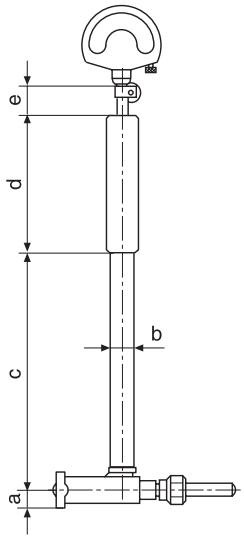
- Measuring the diameter, roundness and conical form of a bore as well as the distances of parallel plane surfaces



TECHNICAL DATA

Order no.	Product type	Measuring range	Measuring range	Design	Probe path	Measuring depth	Error limit G_e	Repeatability f_w
		mm	inch		mm	mm	µm	µm
4475000	844 NH	18 –50	.7 –2″	Standard, moveable anvil and stationary anvil carbide-tipped	1.3	115	2	0.5
4475001	844 NH	35 –100	1.4 –4″	Standard, moveable anvil and stationary anvil carbide-tipped	1.3	148	2	0.5
4475002	844 NH	100 –250	4 –10″	Standard, moveable anvil and stationary anvil carbide-tipped	1.6	230	2	0.5
4475003	844 NH	250 –400	10 –16″	Standard, moveable anvil and stationary anvil carbide-tipped	2.6	336	3	1.5
4475004	844 NH	400 –800	16 –32″	Standard, moveable anvil and stationary anvil carbide-tipped	2.6	336	3	1.5
4475005	844 NH	250 –800	10 –32″	Standard, moveable anvil and stationary anvil carbide-tipped	2.6	336	3	1.5

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4475000	5.3	8	115	63	22
4475001	8.5	12	148	80	22
4475002	11.5	18	230	100	25
4475003	16	24	366	110	28
4475004	17.5	24	366	110	28
4475005	17.5	24	366	110	28



MaraMeter 844 NH

Self-Centering Dial Bore Gage



1004



1003



1002



1087 BR



1087 BRi

ACCESSORIES

Order no.	Product name	Product type
4335000	Millimess 0.5 µm, ± 25 µm	1002
4334000	Millimess 1 µm, ± 50 µm	1003
4333000	Millimess 5 µm, ± 130 µm	1004
4337662	Digital indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital indicator, 0.0005 mm, 12.5 mm	1087 BRi
4800120	Holder, measuring span 0 –70 mm	420 h
4800121	Holder, measuring span 0 –120 mm	420 h
4800122	Holder, measuring span 100 –220 mm	420 h
4800123	Holder, measuring span 100 –420 mm	420 h
4800124	Holder, measuring span 400 –820 mm	420 h
4474080	Adjustment bridge (70 x 12 mm), for measuring range 18 –250 mm (for 844 N)	844 Neb
4474081	Adjustment bridge (165 x 17 mm), for measuring range 18 –400 mm (for 844 N)	844 Neb
4474082	Adjustment bridge (320 x 20 mm), for measuring range 18 –800 mm (for 844 N)	844 Neb
4474050	Short holder (18 –50 mm)	844 Ngk
4474051	Short holder (35 –100 mm)	844 Ngk
4474052	Short holder (100 –250 mm)	844 Ngk
4474053	Short holder (250 –800 mm)	844 Ngk
4474060	Measuring depth extension (250 mm) for measuring range 35 –100 mm	844 Nv
4474061	Measuring depth extension (250 mm) for measuring range 100 –250 mm	844 Nv
4474062	Measuring depth extension (500 mm) for measuring range 100 –250 mm	844 Nv
4474063	Measuring depth extension (250 mm) for measuring range 250 –800 mm	844 Nv
4474064	Measuring depth extension (500 mm) for measuring range 250 –800 mm	844 Nv
4474066	Measuring depth extension (250 mm) for measuring range 18 –50 mm	844 Nv
4474070	Right angle attachment, bore depth 45mm, for measuring range 18 –50 mm	844 Nw
4474071	Right angle attachment, bore depth 55mm, for measuring range 35 –100 mm	844 Nw
4474072	Right angle attachment, bore depth 70mm, for measuring range 100 –250 mm	844 Nw
4470098	Base for mounting holder 420 h up to 420 mm	844 ef
4470095	Measuring jaw (60 x 9.5 x 9 mm), for measuring range 18 –800 mm (for 844 N)	844 em



844 em



844 Neb



844 ef

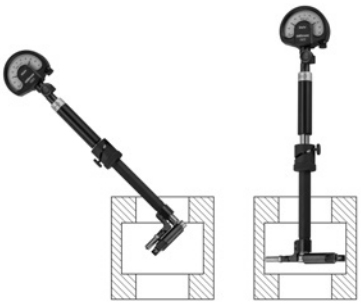
MaraMeter 844 NR

Self-centering Dial Bore Gage

FEATURES

- Measuring head consists of a carbide tipped, movable measuring bolt and an opposing interchangeable stationary anvil with carbide ball
- Stationary measuring bolt can pivot through 180°, giving rise to a very long return travel path of up to 40% of the measured bore
- Movements of the measuring bolt are transmitted to the indicating instrument via the ring segment
- The broad centering bridge ensures automatic centering in the bore
- Resistant to temperature because the shaft and transfer rod are made of heat resistant Invar steel
- Carbide tipped measuring contacts for high wear resistance
- Constant measuring force thanks to built-in and independent measuring force spring preventing external interference
- Universally applicable and extremely versatile
  - Each instrument spans a broad measuring range
  - Quick and easy to adjust to any size (within its range)
- Invar steel has a particularly low expansion coefficient
  - instrument totally insensitive to any kind of heat (including user body heat and increased ambient temperature)
- **Package contains:** measuring holder, measuring head, anvil spindle, wooden case, excludes indicator





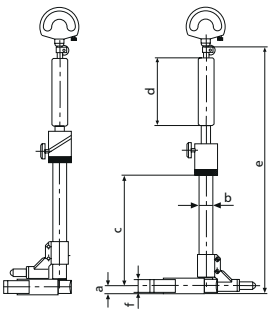
Application:

- For measuring poorly accessible bore diameters, grooves and recesses

TECHNICAL DATA

Order no.		4474580	4474590	4474600	4474610	4474620	4474630
Product type		844 NR					
Measuring range	mm	50 –70	60 –100	80 –150	120 –220	180 –360	290 –530
Measuring range	inch	2 –2.8″	2.4 –4″	3.2 –6″	4.7 –8.7″	7.1 –14.2″	11.4 –20.7″
Design		• For measuring poorly accessible bore diameters, grooves and recesses					
Measuring depth	mm	60		95	107	148	170
Error limit G_e	µm	2				3	
Repeatability f_w	µm	1				1.5	

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4474580	5	12	60	60	203	6
4474590	7	15	110	80	264	8
4474600	7	15	110	80	264	8
4474610	7.5	15	110	80	264	10
4474620	11	23	150	90	343	10
4474630	15	30	170	90	409	10



ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337662	Digital indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital indicator, 0.0005 mm, 12.5 mm	1087 BRi


1004


1003


1002


1087 BR


1087 BRi

MaraMeter 844 NB

Self-centering Dial Bore Gage

FEATURES

- Measuring head consists of a carbide tipped moving anvil and an interchangeable stationary anvil with a carbide ball
- Transmission lever system transfers movement of movable anvil to indicating instrument
- The broad centering bridge ensures automatic centering in the bore
- Resistant to temperature because the shank and transfer rod are made of heat resistant Invar steel
- Highly resistant to wear and tear because of carbide tipped moving anvil
- Constant measuring force due to built-in spring, eliminating user influence
- Universally applicable and extremely versatile
  - Each instrument spans a broad measuring range
  - Quick and easy to adjust to any size (within its range)
- Invar steel has a particularly low expansion coefficient
  - instrument totally insensitive to any kind of heat (including user body heat and increased ambient temperature)
- **Package contains**: measuring holder, measuring head, anvil spindle, wooden case, excludes indicator



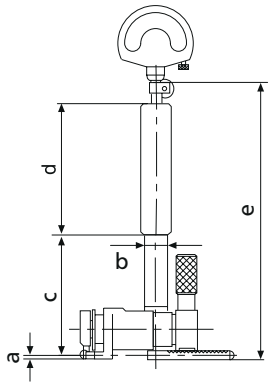
Application:

- For **blind holes**, to measure almost to the base of a bore

TECHNICAL DATA

Order no.		4474179	4474180	4474186
Product type		844 NB		
Measuring range	mm	20 –50	50 –110	110 –300
Measuring range	inch	0.79 –2″	2 –4.33″	4.33 –11.81″
Design		For blind bores. Moveable anvil and stationary anvil carbide-tipped		
Error limit G_e	µm	4	3	2.5
Repeatability f_w	µm	1		

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4474179	1.5	10	77	60	163
4474180	1.5	12	60	60	144
4474186	2	18	90	90	163



ACCESSORIES

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337662	Digital indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital indicator, 0.0005 mm, 12.5 mm	1087 BRi


1004


1003


1002


1087 BR


1087 BRi

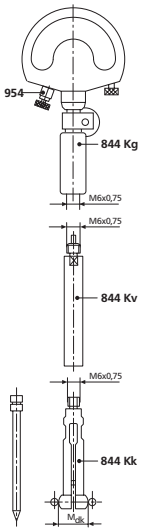
MaraMeter 844 Zk

Anvil for Internal Serration

FEATURES

- Maximum wear resistance due to carbide ball anvils
- Constant measuring force due to built-in spring, eliminating user influence
- Anvils, measuring heads, holder, spacer (intermediate piece) and depth extensions form a very comprehensive modular system which can rapidly be converted to measure further gear sizes
- When ordering please state the required ball diameterTable (Dimensions in mm) 0.5000.5510.6200.6230.6300.7 220.8620.8950.965 1.1001.1181.1251.2501.3501.3 721.3851.5241.5401.6001.6 501.7001.7501.7821.8001.8 291.9002.0322.2502.2842.3 862.4382.6672.7042.7132.7 212.7432.7503.0483.2503.4 003.6584.8355.2505.4865.5- 006.0006.0966.3506.5007.000





Application:

- For diametrical two ball measurement MdK
- To obtain the pitch diameter and conical form of internal gears in any position and at any depth

TECHNICAL DATA

Order no.	Product type	Ball diameter	Dimension over balls MdK	Increment	Expanding pin
		mm	mm	mm	
4482450	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	3.5 –4.1	0.5	844 Kn6
4482451	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	4 –4.6	0.5	844 Kn6
4482452	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	4.5 –5.1	0.5	844 Kn6
4482453	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	5 –5.6	0.5	844 Kn6
4482454	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	5.5 –6.1	0.5	844 Kn6
4482455	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	6 –6.6	0.5	844 Kn6
4482456	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	6.5 –7.1	0.5	844 Kn6
4482457	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	7 –7.6	0.5	844 Kn6
4482458	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	7.5 –8.1	0.5	844 Kn6
4482459	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	8 –8.6	0.5	844 Kn6
4482460	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	8.5 –9.1	0.5	844 Kn6
4482461	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	9 –9.6	0.5	844 Kn6
4482462	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	9.3 –10.6	0.5	844 Kn7
4482463	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	10.3 –11.6	0.5	844 Kn7
4482464	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	11.3 –12.6	0.5	844 Kn7
4482465	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	12.3 –13.6	0.5	844 Kn7
4482466	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	13.3 –14.6	0.5	844 Kn7
4482467	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	14.5 –16.1	0.5	844 Kn7
4482468	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	15.5 –17.1	0.5	844 Kn7
4482469	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	16.5 –18.1	0.5	844 Kn7
4482470	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	17.5 –19.1	0.5	844 Kn7
4482471	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	18.5 –20.1	0.5	844 Kn7
4482472	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	19.5 –21.1	0.5	844 Kn7
4482473	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	20.5 –22.1	0.5	844 Kn7

MaraMeter 844 Zk

Anvil for Internal Serration

Order no.	Product type	Ball diameter	Dimension over balls MdK	Increment	Expanding pin
		mm	mm	mm	
4482474	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	21.5 –23.1	0.5	844 Kn7
4482475	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	22.5 –24.1	0.5	844 Kn7
4482476	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	23.5 –25.1	0.5	844 Kn7
4482477	844 Zk	1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	24.5 –26.1	0.5	844 Kn7
4482550	844 Zk	acc. to table (0.5–7.0mm)	3.5 –4.1		844 Kn6
4482551	844 Zk	acc. to table (0.5–7.0mm)	4 –4.6		844 Kn6
4482552	844 Zk	acc. to table (0.5–7.0mm)	4.5 –5.1		844 Kn6
4482553	844 Zk	acc. to table (0.5–7.0mm)	5 –5.6		844 Kn6
4482554	844 Zk	acc. to table (0.5–7.0mm)	5.5 –6.1		844 Kn6
4482555	844 Zk	acc. to table (0.5–7.0mm)	6 –6.6		844 Kn6
4482556	844 Zk	acc. to table (0.5–7.0mm)	6.5 –7.1		844 Kn6
4482557	844 Zk	acc. to table (0.5–7.0mm)	7 –7.6		844 Kn6
4482558	844 Zk	acc. to table (0.5–7.0mm)	7.5 –8.1		844 Kn6
4482559	844 Zk	acc. to table (0.5–7.0mm)	8 –8.6		844 Kn6
4482560	844 Zk	acc. to table (0.5–7.0mm)	8.5 –9.1		844 Kn6
4482561	844 Zk	acc. to table (0.5–7.0mm)	9 –9.6		844 Kn6
4482562	844 Zk	acc. to table (0.5–7.0mm)	9.3 –10.6		844 Kn7
4482563	844 Zk	acc. to table (0.5–7.0mm)	10.3 –11.6		844 Kn7
4482564	844 Zk	acc. to table (0.5–7.0mm)	11.3 –12.6		844 Kn7
4482565	844 Zk	acc. to table (0.5–7.0mm)	12.3 –13.6		844 Kn7
4482566	844 Zk	acc. to table (0.5–7.0mm)	13.3 –14.6		844 Kn7
4482567	844 Zk	acc. to table (0.5–7.0mm)	14.5 –16.1		844 Kn7
4482568	844 Zk	acc. to table (0.5–7.0mm)	15.5 –17.1		844 Kn7
4482569	844 Zk	acc. to table (0.5–7.0mm)	16.5 –18.1		844 Kn7
4482570	844 Zk	acc. to table (0.5–7.0mm)	17.5 –19.1		844 Kn7
4482571	844 Zk	acc. to table (0.5–7.0mm)	18.5 –20.1		844 Kn7
4482572	844 Zk	acc. to table (0.5–7.0mm)	19.5 –21.1		844 Kn7
4482573	844 Zk	acc. to table (0.5–7.0mm)	20.5 –22.1		844 Kn7
4482574	844 Zk	acc. to table (0.5–7.0mm)	21.5 –23.1		844 Kn7
4482575	844 Zk	acc. to table (0.5–7.0mm)	22.5 –24.1		844 Kn7
4482576	844 Zk	acc. to table (0.5–7.0mm)	23.5 –25.1		844 Kn7
4482577	844 Zk	acc. to table (0.5–7.0mm)	24.5 –26.1		844 Kn7
4482662	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	9.3 –10.6	0.5	844 Kn7
4482663	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	10.3 –11.6	0.5	844 Kn7
4482664	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	11.3 –12.6	0.5	844 Kn7
4482665	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	12.3 –13.6	0.5	844 Kn7
4482666	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	13.3 –14.6	0.5	844 Kn7
4482667	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	14.5 –16.1	0.5	844 Kn7
4482668	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	15.5 –17.1	0.5	844 Kn7
4482669	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	16.5 –18.1	0.5	844 Kn7
4482670	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	17.5 –19.1	0.5	844 Kn7
4482671	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	18.5 –20.1	0.5	844 Kn7
4482672	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	19.5 –21.1	0.5	844 Kn7
4482673	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	20.5 –22.1	0.5	844 Kn7
4482674	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	21.5 –23.1	0.5	844 Kn7
4482675	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	22.5 –24.1	0.5	844 Kn7
4482676	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	23.5 –25.1	0.5	844 Kn7
4482677	844 Zk	7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	24.5 –26.1	0.5	844 Kn7



1003



1004

ACCESSORIES

Order no.	g	Product name	Product type
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4372030		Lifting knob	954
4470851	M6 x 0.75	Standard measuring instrument holder	844 Kg
4470070	M6 x 0.75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4470806		Expanding pin, steel	844 Kn6
4470808		Expanding pin, steel	844 Kn7

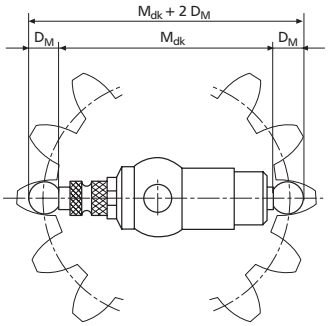
MaraMeter 844 z1 / 844 z2

Measuring Head

FEATURES

- Maximum wear resistance due to carbide ball anvils
- Constant measuring force due to built-in spring, eliminating user influence
- Anvils, measuring heads, holder, spacer (intermediate piece) and depth extensions form a very comprehensive modular system which can rapidly be converted to measure further gear sizes
- When ordering please state the required ball diameterTable (dimensions in mm)
  0.5000.5510.6200.6230.6300.7
  220.8620.8950.965
  1.1001.1181.1251.2501.3501.3
  721.3851.5241.5401.6001.6
  501.7001.7501.7821.8001.8
  291.9002.0322.2502.2842.3
  862.4382.6672.7042.7132.7
  212.7432.7503.0483.2503.4
  003.6584.8355.2505.4865.5-
  006.0006.0966.3506.5007.000





Application:

- For diametrical two ball measurement MdK
- To obtain the pitch diameter and conical form of internal gears in any position and at any depth

TECHNICAL DATA

Order no.	Product type	Measuring range	Dimension over balls MdK	Error limit G_e	Repeat-ability f_w
		mm	mm	µm	µm
4485000	844 z1	23.5 –26.5	26 –130.5	6	1
4485001	844 z2	46 –49	48.5 –333	6	1

ACCESSORIES

Order no.	g	Product name	Product type
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4488300		Floating ball anvil with carbide ball, Ball diameter 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	844 z3
4488301		Floating ball anvil with carbide ball, Ball diameter acc. to table (0.5–7.0mm)	844 z3
4488302		Floating ball anvil with carbide ball, Ball diameter 5.0 mm, 7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	844 z3
4488320		Ball anvils with carbide ball, Ball diameter 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	844 z5
4488321		Ball anvils with carbide ball, Ball diameter acc. to table (0.5–7.0mm)	844 z5
4488322		Ball anvils with carbide ball, Ball diameter 7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	844 z5
4488330		Ball anvils with carbide ball, Ball diameter 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	844 z6
4488331		Ball anvils with carbide ball, Ball diameter acc. to table (0.5–7.0mm)	844 z6
4488332		Ball anvils with carbide ball, Ball diameter 7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	844 z6
4488340		Ball anvils with carbide ball, Ball diameter 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	844 z7
4488341		Ball anvils with carbide ball, Ball diameter acc. to table (0.5–7.0mm)	844 z7
4488342		Ball anvils with carbide ball, Ball diameter 7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	844 z7
4488350		Ball anvils with carbide ball, Ball diameter 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	844 z8
4488351		Ball anvils with carbide ball, Ball diameter acc. to table (0.5–7.0mm)	844 z8
4488352		Ball anvils with carbide ball, Ball diameter 7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	844 z8
4488360		Ball anvils with carbide ball, Ball diameter 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	844 z15
4488361		Ball anvils with carbide ball, Ball diameter acc. to table (0.5–7.0mm)	844 z15
4488362		Ball anvils with carbide ball, Ball diameter 7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	844 z15
4486501		Spacer (intermediate piece), 10 mm	844 z9
4486502		Spacer (intermediate piece), 20 mm	844 z10
4486503		Spacer (intermediate piece), 40 mm	844 z11
4486504		Spacer (intermediate piece), 80 mm	844 z12
4470851	M6 x 0.75	Standard measuring instrument holder	844 Kg
4470070	M6 x 0.75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4488310		Floating ball anvil with carbide ball, Ball diameter 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm	844 z4
4488311		Floating ball anvil with carbide ball, Ball diameter acc. to table (0.5–7.0mm)	844 z4
4488312		Floating ball anvil with carbide ball, Ball diameter 7.5 mm, 8.0 mm, 8.5 mm, 9.0 mm, 9.5 mm, 10.0 mm	844 z4
4486505		Spacer (intermediate piece), 100 mm	844 z13



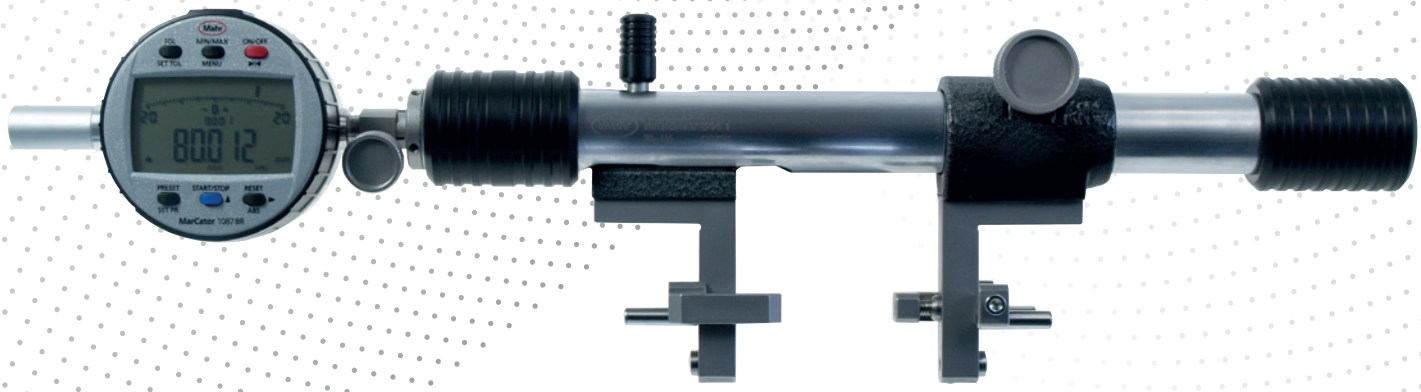
1003



1004

Multimar | Universal Measuring Instruments

Whether you are measuring gears, threads, cones or grooves, Multimar universal measuring instruments are an ideal solution for almost all internal and external measurements for which standard measuring instruments are unsuitable. A choice of basic units and an extensive range of accessories are available.



Multimar 25 EWR 424
Digital Universal Calipers

Multimar 844 T 430
Universal Measuring Instrument

Multimar 844 Tw 432
Depth Stops for 844 Tma, 844 Tmi, 844 Te

Multimar 844 Tma /844 Tmi 433
Mounting Attachment

Multimar 844 Tms 434
Mounting Attachments offset by 90°

Multimar 844 Ta / 844 Ti 435
Shoulder Anvils

Multimar 844 Tb / 844 Tc 437
Measuring Anvils with Measuring Blades

Multimar 844 Td 438
Anvils with round Measuring Faces

Multimar 844 Tz 439
Cylindrical Measuring Pins

Multimar 844 Tv 440
Interchangeable Measuring Rollers

Multimar 844 Te 442
Measuring Arms

Multimar 844 Tp 444
Anvils for Measuring Arms

Multimar 844 Ts 444
Measuring Anvils

Multimar 844 Tk 445
Ball Anvil

Multimar 844 Ty 446
Holder for Measuring Rollers

Multimar 844 S 448
Setting Device

Multimar 36B 449
Indicator Gage

Multimar 25 EWR

Digital Universal Calipers

IP 65 | RS232C | Digimatic

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- LOCK function (key lock)
- DATA (data transmission via connection cable)

FEATURES

- For easy adaptation to individual measuring tasks, optional accessories include:
  - Interchangeable measuring arms
  - Contact blocks
  - Stop elements
- The digital display is always in the operator's line of vision due to the patented mounting fixture of the measuring elements provided on the upper and lower longitudinal face of the arm holders
- Application range can be extended by turning the measuring arms
- The two arm holders can be moved along the rail, providing a well-balanced weight distribution, even with small dimensions
- Hardened stainless steel slide and rail
- **Data interface:** USB, Digimatic, Opto RS232C, Wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 65
- **Package contains:** battery, instruction manual, mounting and resting blocks, wooden case, without arms/attachments and anvils
- Software MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



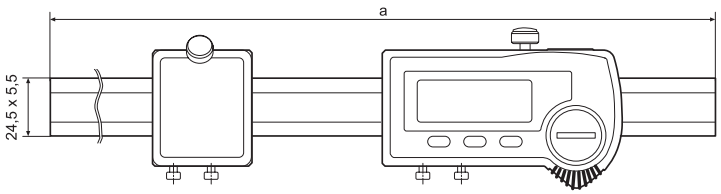
Application:

- For measuring:
- Outside and inside diameters
- Centering shoulders
- Narrow collars
- External and internal tapers
- Dovetails
- Grooves
- Distances between hole centers

TECHNICAL DATA

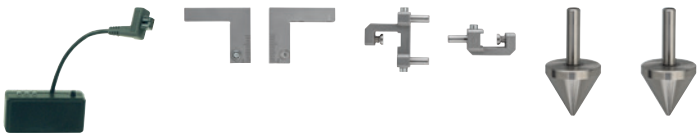
Order no.		4119000	4119001	4119002	4119003
Product type		25 EWR			
Application range outside	mm	0 –300	0 –600	0 –1000	0 –1250
Resolution	mm/inch	0.01 / .0005"			
Error limit	mm	0.03		0.04	

Order no.	a
	mm
4119000	480
4119001	790
4119002	1200
4119003	1450

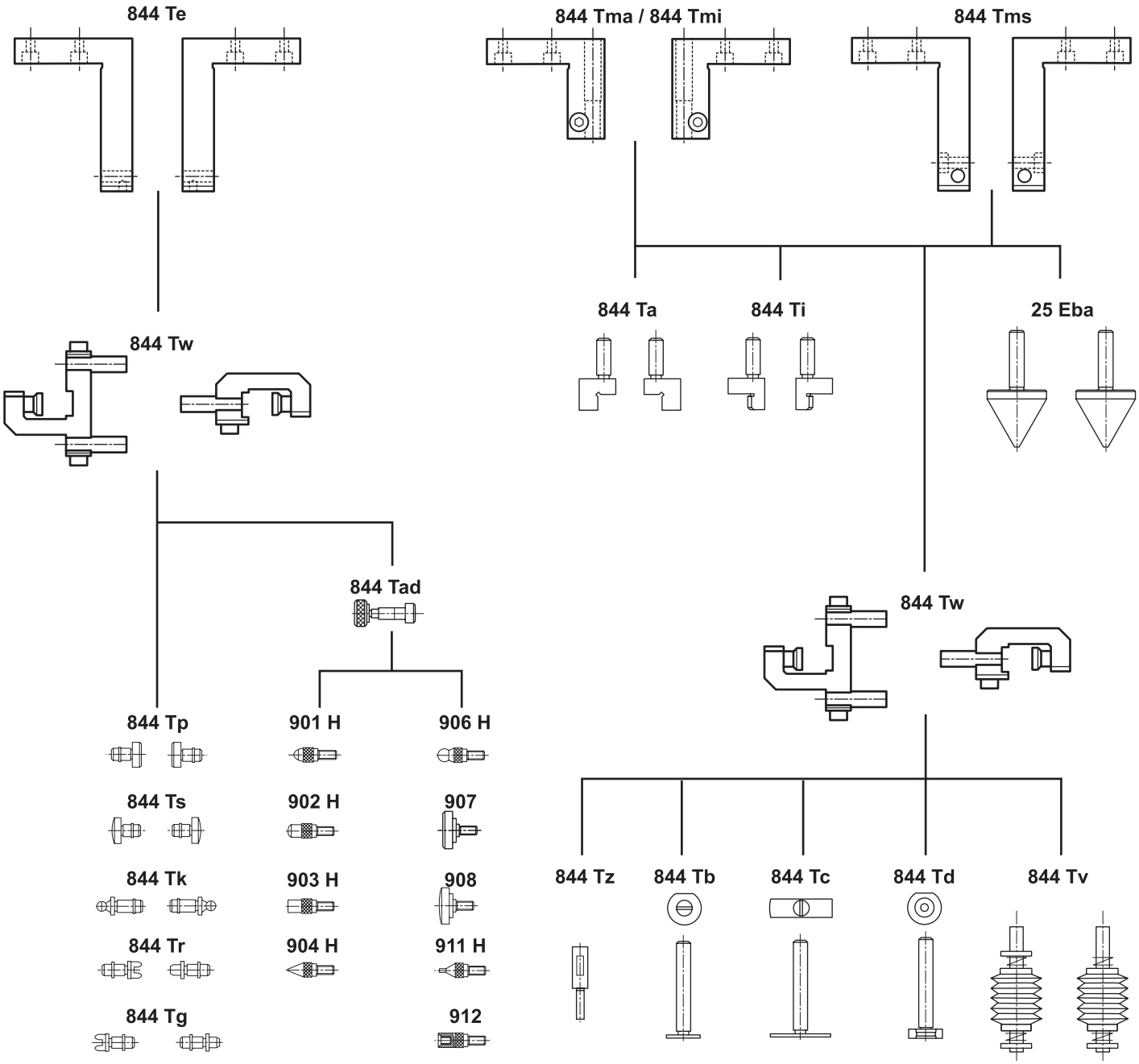


ACCESSORIES

Order no.	Product name	Quantity unit	Product type
4102520	Battery 3 V, CR 2032		
4102915	Digimatic data cable (2 m)		16 EWd
4102410	Data connection cable RS232C (2 m)		16 EXr
4102357	16 EXu Data connection cable USB (2 m)		16 EXu
4102231	16 EWe Transmitter for e-Stick		16 EWe
4118520	Setting gage		25 Eel
4503030	Mounting attachment	Pair	844 Tma
4503031	Mounting attachment	Pair	844 Tmi
4503024	Measuring arms, 25 mm	Pair	844 Te
4503025	Measuring arms, 35 mm	Pair	844 Te
4503026	Measuring arms, 70 mm	Pair	844 Te
4503027	Measuring arms, 100 mm	Pair	844 Te
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	Pair	844 Tw
4119010	Measuring tips for drill hole intervals, Ø 2–20 mm	Piece	25 Eba
4119011	Measuring tips for drill hole intervals, Ø 10–40 mm	Piece	25 Eba
4503020	Case for accessories		844 Tzb



16 EWe | 844 Tma | 844 Tw | 25 Eba


844 Te
844 Tma / 844 Tmi
844 Tms
844 Ta
844 Ti
25 Eba
844 Tw
844 Tad
844 Tp
901 H
906 H
844 Ts
902 H
907
844 Tk
903 H
908
844 Tr
904 H
911 H
844 Tg
912
844 Tw
844 Tz
844 Tb
844 Tc
844 Td
844 Tv

Multimar | Universal Gage 844 T for External and Internal Dimensions

The Universal Gage Multimar 844 T is easy to use and versatile; ideal for all your measuring requirements in dimensional metrology.

Applications

- For measuring
- External and internal dimensions
- External and internal threads
- Centering shoulders, narrow collars, recesses and grooves
- External and internal tapers, external and internal tooth profiles/ gears, etc.



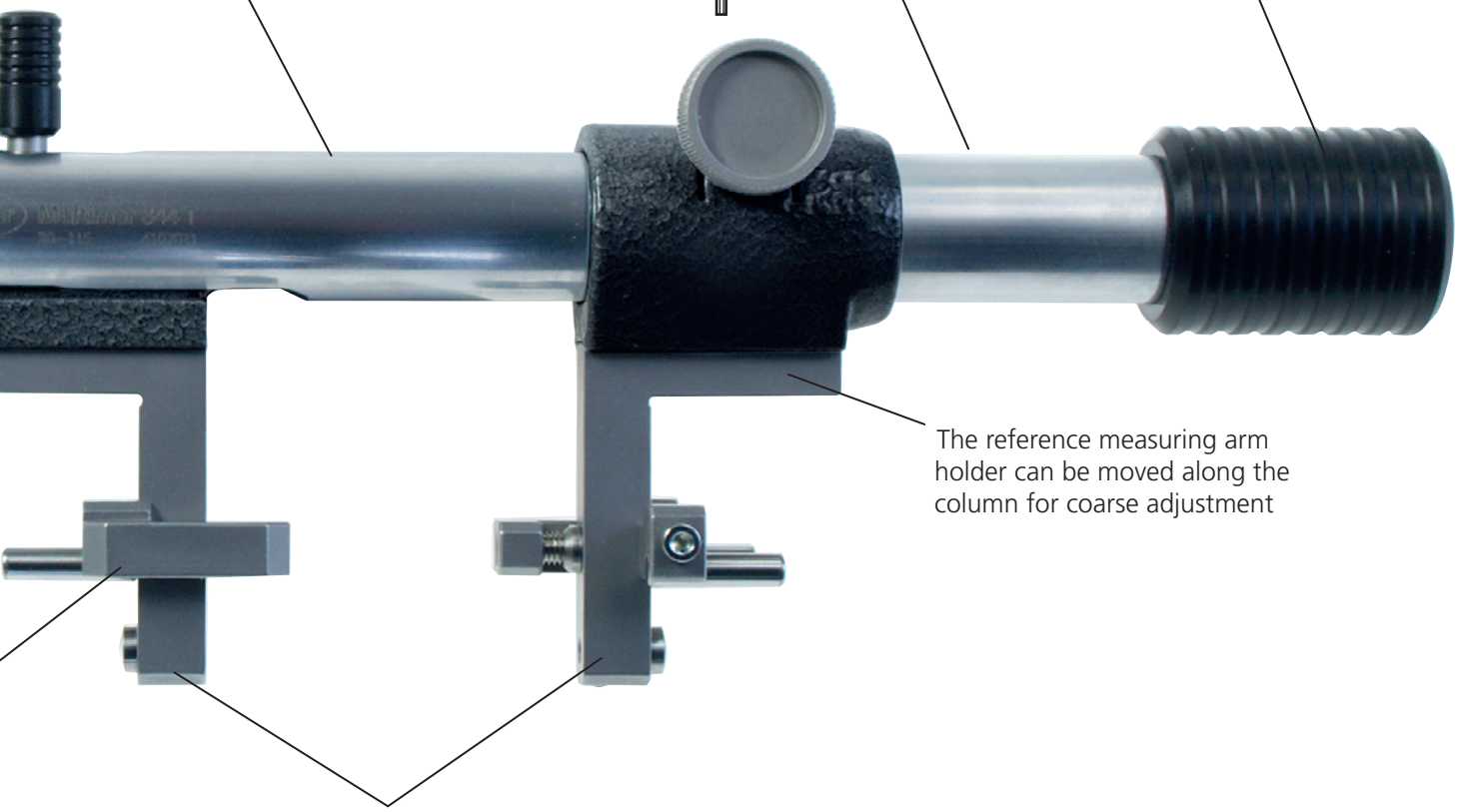
Constant measuring force due to built-in measuring force spring

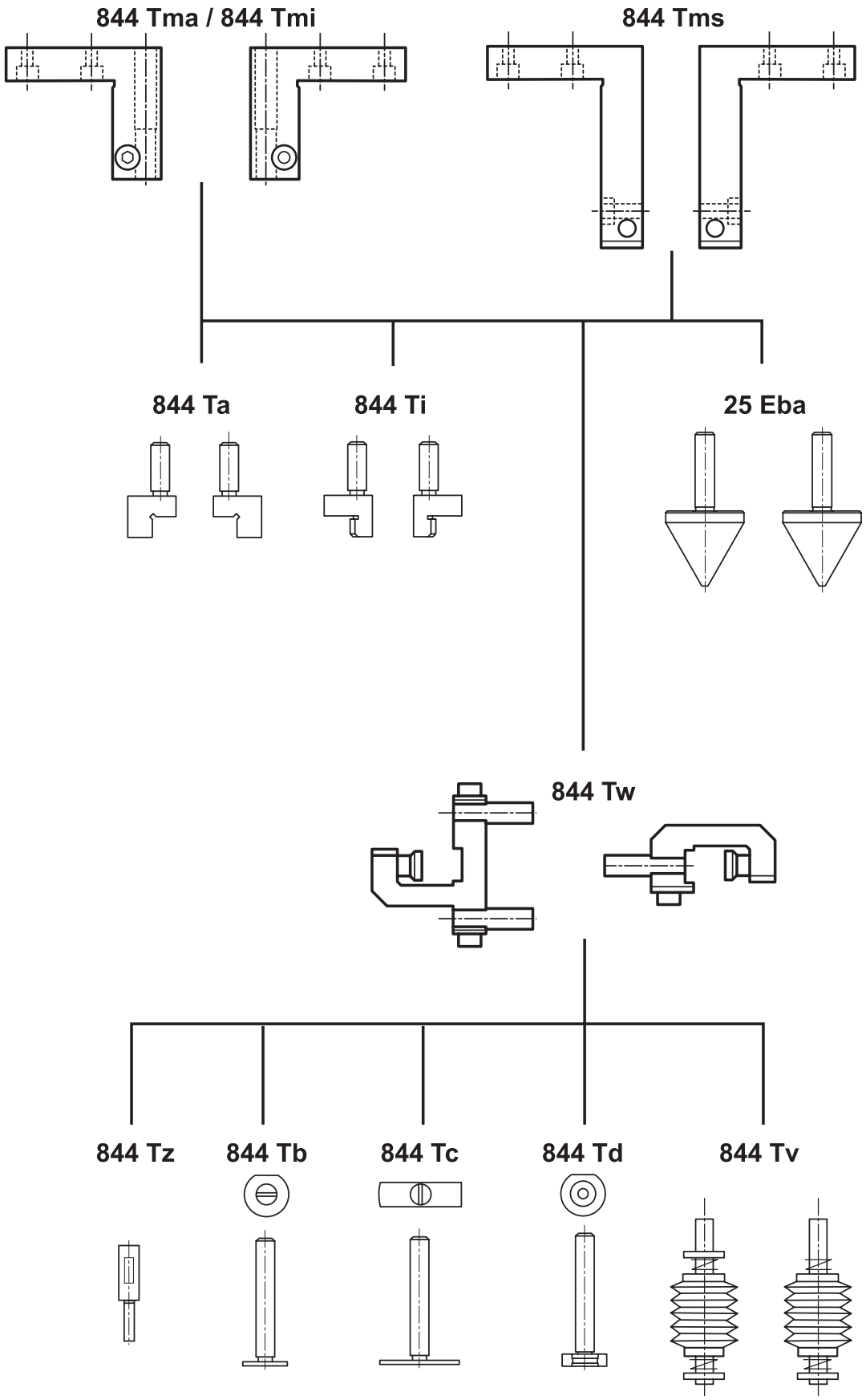
All indicating instruments with an 8 mm mounting shank are applicable



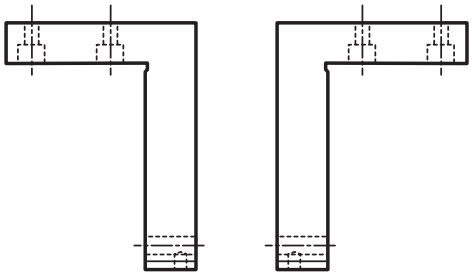
The movable measuring arm holder is mounted on a high precision ball guide to eliminate both play and friction; it also has extreme measuring sensitivity and accuracy due to optimal stability and ease of movement

Stop with non-tilting 3-point support for adjusting the measuring depth

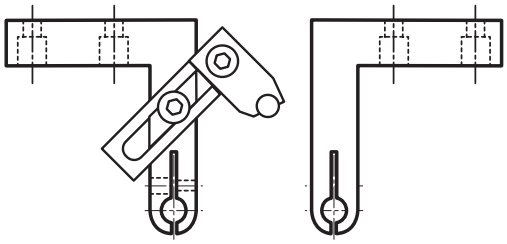

The basic Multimar 844 T gage is made of a rugged, ground and hard chrome plated column
The direction of the measuring force can be changed with an Allen key for either external or internal dimensions
Insulated handle, ideal against hand warmth
The reference measuring arm holder can be moved along the column for coarse adjustment
The measuring arms for measurement of external and internal dimensions. By simply reversing the measuring arms, the application range can be extended


844 Tma / 844 Tmi
844 Tms
844 Ta
844 Ti
25 Eba
844 Tw
844 Tz
844 Tb
844 Tc
844 Td
844 Tv

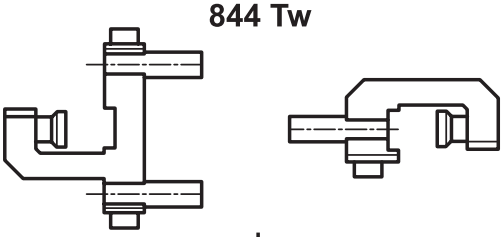
844 Te



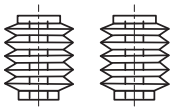
844 Ty



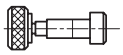
844 Tw



706 Vr



844 Tad



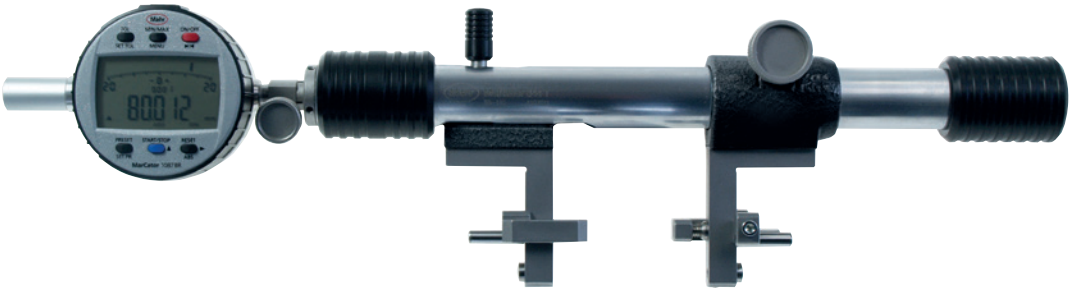
844 Tp	901 H	906 H
844 Ts	902 H	907
844 Tk	903 H	908
844 Tr	904 H	911 H
844 Tg		912

Multimar 844 T

Universal Measuring Instrument

FEATURES

- For easy adaptation to individual measuring tasks, optional accessories include:
  - Interchangeable measuring arms
  - Contact blocks
  - Stop elements
- The movable measuring arm carrier is mounted on a high precision ball bearing guide for reduced play and friction
  - Results in high measuring sensitivity, accuracy and free movement
- Stable support elements for repeatable measurements
- Constant measuring force with integrated measuring force spring
- Reversible measuring force direction for outside and inside measurement
- Highly stable, precision ground, hard chrome plated guide tube
- Lightweight construction with core made from carbon fiber reinforced plastic (CRP) tube, for measuring range 1000–1500 mm
- The stationary measuring arm holder can be moved along the guide tube and clamped for coarse adjustment
- **Package contains:** instruction manual, mounting and resting blocks, wooden case, excludes indicator, without arms/attachments and anvils



Application:

- External and internal measurement of lengths, widths, diameters, distances
- External and internal threads
- Centering shoulders, narrow collars, recesses and grooves
- External and internal tapers
- External and internal gears
- etc.



TECHNICAL DATA

Order no.	Product type	Application range outside	Application range inside	Measuring force	Travel of movable anvil	Product weight
		mm	mm	N	mm	kg
4503001	844 T	0 –85	30 –115	5	12	0.78
4503002	844 T	80 –235	110 –265	5	12	1.01
4503003	844 T	230 –585	260 –615	5	12	1.59
4503004	844 T	580 –985	610 –1015	5	12	2.22
4503005	844 T	970 –1470	1000 –1500	10	12	2.52
4503006	844 T	1470 –1970	1500 –2000	10	12	2.68
4503007	844 T	1970 –2470	2000 –2500	10	12	2.86
4503008	844 T	2470 –2970	2500 –3000	10	12	3.26
4503009	844 T	2970 –3470	3000 –3500	10	12	3.43
4503010	844 T	3470 –3970	3500 –4000	10	12	3.62
4503011	844 T	3970 –4470	4000 –4500	10	12	3.81

ACCESSORIES

Order no.	Product name	Quantity unit	Product type
4311000	Dial indicator, 0.01 mm, 10 mm		810 S
4333000	Millimess 5 µm, ± 130 µm		1004
4332000	Millimess 0.01 mm, ±0.25 mm		1010
4337662	Digital indicator, 0.0005 mm, 12.5 mm		1087 BR
4337664	Digital indicator, 0.0005 mm, 12.5 mm		1087 BRi
4503030	Mounting attachment	Pair	844 Tma
4503031	Mounting attachment	Pair	844 Tmi
4503024	Measuring arms, 25 mm	Pair	844 Te
4503025	Measuring arms, 35 mm	Pair	844 Te
4503026	Measuring arms, 70 mm	Pair	844 Te
4503027	Measuring arms, 100 mm	Pair	844 Te
4503040	Mounting attachments offset by 90°, 50 mm	Pair	844 Tms
4503041	Mounting attachments offset by 90°, 100 mm	Pair	844 Tms
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	Pair	844 Tw
4503012	Protection for indicator		844 Tsb
4503020	Case for accessories		844 Tzb
4450512	Stand		844 Tf

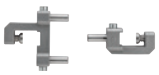

810 S


1004


1087 BR


1087 BRi


844 Tma

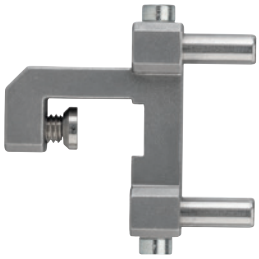

844 Tw

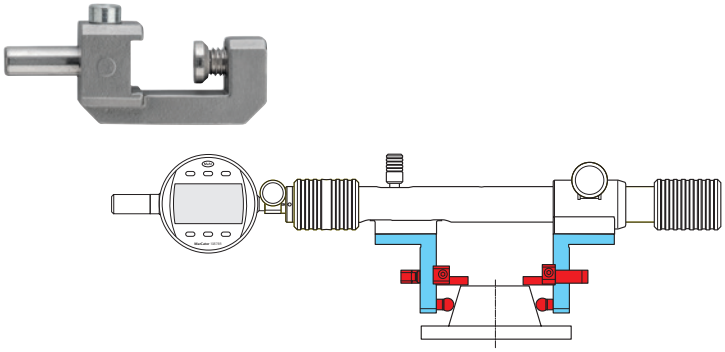
Multimar 844 Tw

Depth Stops for 844 Tma, 844 Tmi, 844 Te

FEATURES

- Stops with stall protected 3-point support
- Hardened stop pins
- Interchangeable and adjustable



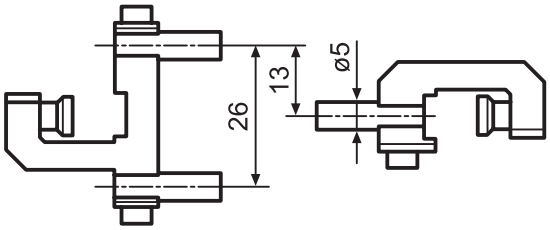


Application:

- For adjustment of the measuring depth in horizontal measuring position
- Precise stops in one plane for repeatable measurements
- To be mounted on 844 Tma, 844 Tmi, 844 Te
- For easy setting of the measuring depth, a mm scale is engraved on the measuring arms 844 Tma, 844 Tmi and 844 Te
- For precise stetting of the measuring depth (i.e. for taper measurements) gage blocks can be used

TECHNICAL DATA

Order no.	Quantity unit	Product type
4503109	Pair	844 Tw



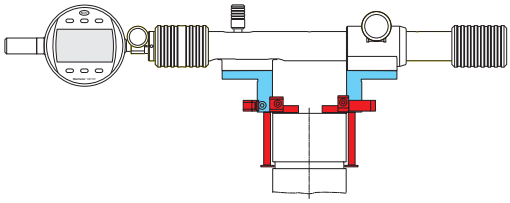
Multimar 844 Tma / 844 Tmi

Mounting Attachment

FEATURES

- For outside (844 Tma) and inside diameters (844 Tmi)
- Stainless steel
- Lateral mm scale for easy positioning and adjustment of measuring limit stops
- Reversible measuring arms on measuring arm holders to increase the measuring range
- With ø 5 mm mounting bore for inserting interchangeable 844 Ta, 844 Ti, 844 Tb, 844 Tc, 844 Td, 844 Tz and 844 Tv measuring anvils

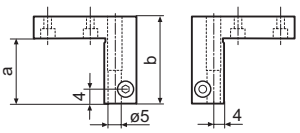




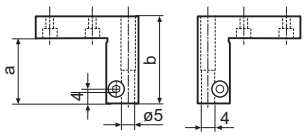
TECHNICAL DATA

Order no.	Mounting hole	Quantity unit	Product type
	mm		
4503030	5	Pair	844 Tma
4503031	5	Pair	844 Tmi

Order no.	a	b	Mounting hole
	mm	mm	mm
4503030	24	32	5
4503031	24	32	5



844 Tmi



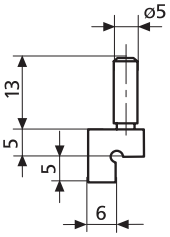
844 Tma

ACCESSORIES

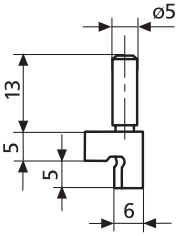
Order no.	Product name	Quantity unit	Product type
4119010	Measuring tips for drill hole intervals, Ø 2–20 mm	Piece	25 Eba
4119011	Measuring tips for drill hole intervals, Ø 10–40 mm	Piece	25 Eba
4500050	Shoulder anvils, flat, hardened steel	Pair	844 Ta
4500055	Shoulder anvils, spherical, hardened steel	Pair	844 Ti
4503015	Measuring anvils with measuring blades, platelet diameter 11 mm, adjustment range 0 –20 mm	Piece	844 Tb
4503016	Measuring anvils with measuring blades, platelet diameter 11 mm, adjustment range 20 –40 mm	Piece	844 Tb
4503017	Anvils with round measuring faces, diameter 11 mm, adjustment range 0 –20 mm	Piece	844 Td
4503018	Anvils with round measuring faces, diameter 11 mm, adjustment range 20 –40 mm	Piece	844 Td
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	Pair	844 Tw
4503114	Measuring anvils with measuring blades, platelet length 20 mm, adjustment range 0 –20 mm	Piece	844 Tc
4503115	Measuring anvils with measuring blades, platelet length 20 mm, adjustment range 20 –40 mm	Piece	844 Tc



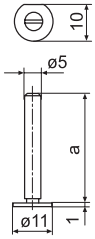
25 Eba



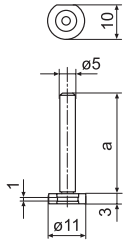
844 Ta



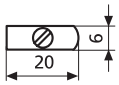
844 Ti



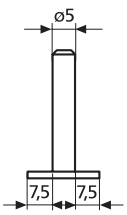
844 Tb



844 Td



844 Tc





844 Tw

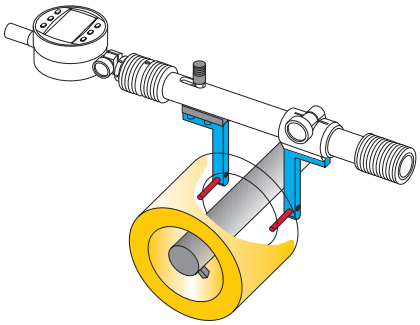
Multimar 844 Tms

Mounting Attachments offset by 90°

FEATURES

- For outer and inner diameters
- Stainless steel
- Reversible measuring arms on measuring arm holders to increase the measuring range
- With ø 5 mm holder for inserting interchangeable 844 Ta, 844 Ti, 844 Tb, 844 Tc, 844 Td, 844 Tz and 844 Tv measuring anvils





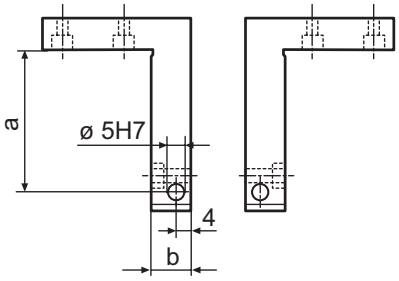
Application:

- For measuring outer and inner dimensions with side probes:
- In flat recesses
- In holes with center hub
- In holes with retracted drill rod

TECHNICAL DATA

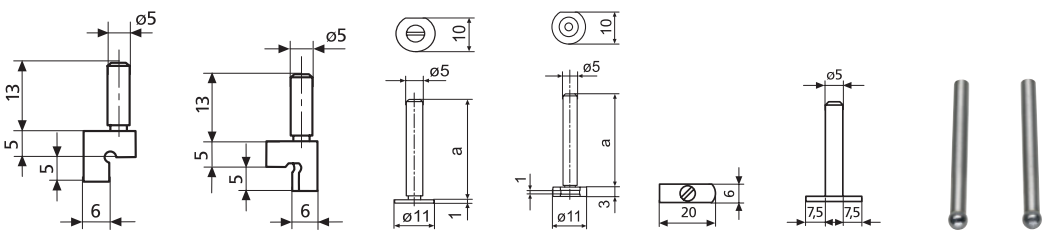
Order no.	Mounting hole	Throat depth	Quantity unit	Product type
	mm	mm		
4503040	5	50	Pair	844 Tms
4503041	5	100	Pair	844 Tms

Order no.	b	Mounting hole
	mm	mm
4503040	12	5
4503041	12	5



ACCESSORIES

Order no.	Product name	Product type
4500050	Shoulder anvils, flat, hardened steel	844 Ta
4500055	Shoulder anvils, spherical, hardened steel	844 Ti
4503015	Measuring anvils with measuring blades, platelet diameter 11 mm, adjustment range 0 –20 mm	844 Tb
4503016	Measuring anvils with measuring blades, platelet diameter 11 mm, adjustment range 20 –40 mm	844 Tb
4503017	Anvils with round measuring faces, diameter 11 mm, adjustment range 0 –20 mm	844 Td
4503018	Anvils with round measuring faces, diameter 11 mm, adjustment range 20 –40 mm	844 Td
4503114	Measuring anvils with measuring blades, platelet length 20 mm, adjustment range 0 –20 mm	844 Tc
4503115	Measuring anvils with measuring blades, platelet length 20 mm, adjustment range 20 –40 mm	844 Tc
4503119	Measuring anvils, ball diameter 6 mm, adjustment range 20 –40 mm	844 To



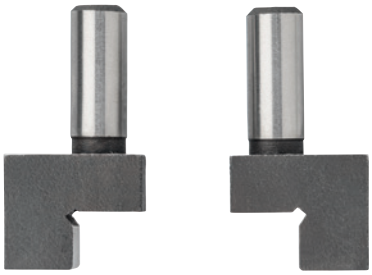
844 Ta 844 Ti 844 Tb 844 Td 844 Tc 844 To

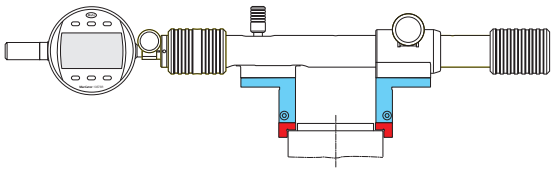
Multimar 844 Ta

Shoulder Anvils

FEATURES

- With cylindrical mounting shaft to attach into mounting attachments 844 Tma, 844 Tmi, 844 Tms
- Flat, for external diameter
- Made of hardened steel





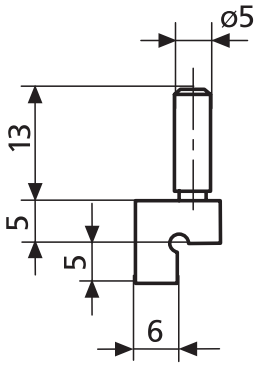
Application:

- For narrow collars such as centering shoulders and other similar measuring tasks

TECHNICAL DATA

Order no.	Mounting shaft diameter	Quantity unit	Product type
	mm		
4500050	5	Pair	844 Ta

Order no.	Mounting ø d
	mm
4500050	5

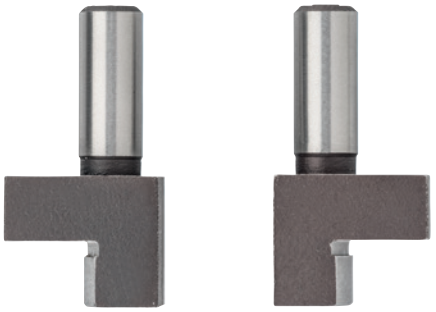


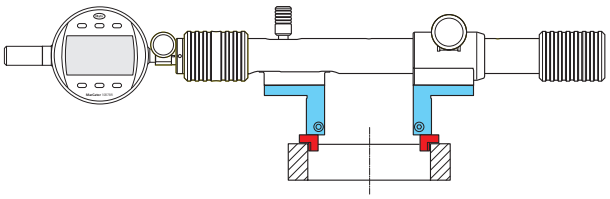
Multimar 844 Ti

Shoulder Anvils

FEATURES

- With cylindrical mounting shaft to attach into mounting attachments 844 Tma, 844 Tmi, 844 Tms
- Semi-cylindrical, for internal diameters
- Made of hardened steel





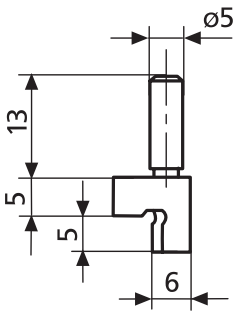
Application:

- For narrow collars such as centering shoulders and other similar measuring tasks

TECHNICAL DATA

Order no.	Mounting shaft diameter	Quantity unit	Product type
	mm		
4500055	5	Pair	844 Ti

Order no.	Mounting ø d
	mm
4500055	5



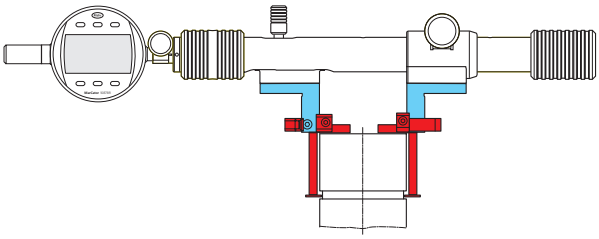
Multimar 844 Tb

Measuring Anvils with Measuring Blades

FEATURES

- With cylindrical mounting shaft to attach into mounting attachments 844 Tma, 844 Tmi, 844 Tms
- Can be moved in the mounting attachment for setting the measuring depth
- With round measuring blade for inner and outer measurements
- Suitable for workpieces with narrow recesses up to 3 mm deep
- Made of hardened steel





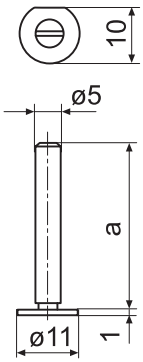
Application:

- For measuring centering shoulders and recesses on internal and external diameters; consists of a pin type holder, which is be moved to set the measuring depth in Mounting Attachment 844 Tm and a mounted measuring blade

TECHNICAL DATA

Order no.	Adjustment range	Mounting shaft diameter	Quantity unit	Product type
	mm	mm		
4503015	0 –20	5	Piece	844 Tb
4503016	20 –40	5	Piece	844 Tb

Order no.	a	Mounting ø d
	mm	mm
4503015	30	5
4503016	50	5



Multimar 844 Tc

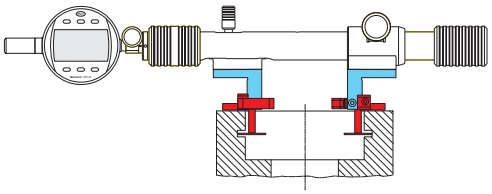
Measuring Anvils with Measuring Blades

FEATURES

- With cylindrical mounting shaft to attach into mounting attachments 844 844 Tma, 844 Tmi, 844 Tms
- Can be moved in the mounting attachment for setting the measuring depth
- With long measuring blade
- Suitable for workpieces with narrow recesses up to 7.5 mm deep
- Made of hardened steel







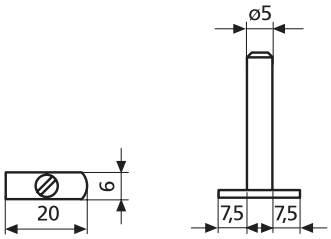
Application:

- For measuring centering shoulders and recesses on internal and external diameters; consists of a pin type holder, which is be moved to set the measuring depth in Mounting Attachment 844 Tm and a mounted measuring blade

TECHNICAL DATA

Order no.	Adjustment range	Mounting shaft diameter	Quantity unit	Product type
	mm	mm		
4503114	0 –20	5	Piece	844 Tc
4503115	20 –40	5	Piece	844 Tc

Order no.	a	Mounting ø d
	mm	mm
4503114	30	5
4503115	50	5



Multimar 844 Td

Anvils with round Measuring Faces

FEATURES

- With cylindrical mounting shaft to attach into mounting attachments 844 Tma, 844 Tmi, 844 Tms
- Made of hardened steel
- Can be moved in the mounting attachment for setting the measuring depth
- Circular probe for inner and outer measurements
  - Ø 11 mm spherical (R=8 mm)
  - plane measuring surface (6 x 1 mm)



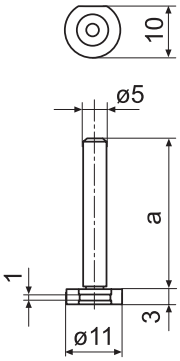
Application:

For measuring internal and external dimensions on round or cylindrical parts

TECHNICAL DATA

Order no.	Adjustment range	Mounting shaft diameter	Quantity unit	Product type
	mm	mm		
4503017	0 –20	5	Piece	844 Td
4503018	20 –40	5	Piece	844 Td

Order no.	a	Mounting ø d
	mm	mm
4503017	30	5
4503018	50	5



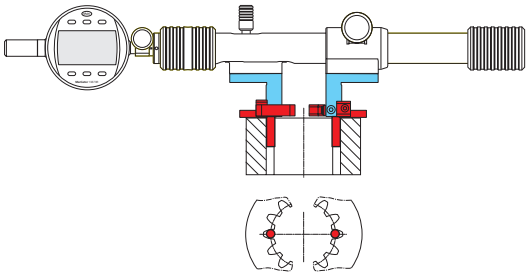
Multimar 844 Tz

Cylindrical Measuring Pins

FEATURES

- With cylindrical holding shaft for fixing in 844 Tma / 844 Tmi mounting attachments
- Made of hardened steel





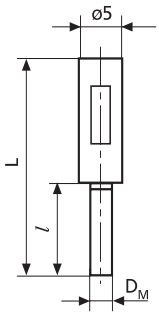
Application:

- Determination of the dimension over 2 pins for inner and outer gears

TECHNICAL DATA

Order no.	D	Mounting shaft diameter	Manufacturing tolerance +/–	Quantity unit	Product type
	mm	mm	µm		
4500500	1	5	2	Pair	844 Tz
4500501	1.25	5	2	Pair	844 Tz
4500502	1.5	5	2	Pair	844 Tz
4500503	1.75	5	2	Pair	844 Tz
4500504	2	5	2	Pair	844 Tz
4500506	2.5	5	2	Pair	844 Tz
4500507	3	5	2	Pair	844 Tz
4500508	3.5	5	2	Pair	844 Tz
4500509	4	5	2	Pair	844 Tz
4500510	4.5	5	2	Pair	844 Tz
4500511	5	5	2	Pair	844 Tz
4500512	5.5	5	2	Pair	844 Tz
4500513	6	5	2	Pair	844 Tz

Order no.	D	Dimension L	l	Mounting ø d
	mm	mm	mm	mm
4500500	1	19.5	6	5
4500501	1.25	19.5	6	5
4500502	1.5	19.5	6	5
4500503	1.75	23.5	10	5
4500504	2	23.5	10	5
4500506	2.5	23.5	10	5
4500507	3	28.5	15	5
4500508	3.5	28.5	15	5
4500509	4	28.5	15	5
4500510	4.5	33.5	20	5
4500511	5	33.5	20	5
4500512	5.5	33.5	20	5
4500513	6	33.5	20	5

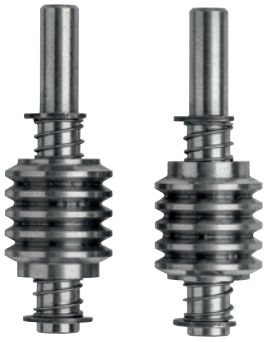


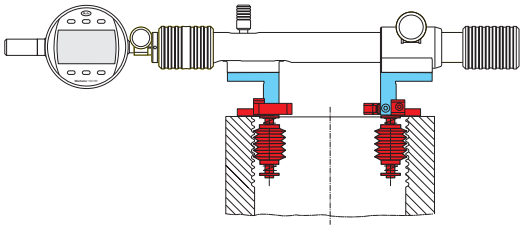
Multimar 844 Tv

Interchangeable Measuring Rollers

FEATURES

- With cylindrical holding shaft for fixing in 844 Tma / 844 Tmi mounting attachments
- Made of hardened steel
- Each with two springs to aid insertion in correct thread turn
- Contact rollers for other thread pitches (metric 60°) as well as for Whitworth and UST thread on request





Application:

- Determining the pitch diameter of outer and inner threads

TECHNICAL DATA

Order no.	Flank angle	Type of thread	Thread parameter	Thread pitch	Thread pitch	Quantity unit	Product type
				TPI	mm		
4501705	60°	Metric thread	Pitch diameter		0.5	Pair	844 Tv
4501706	60°	Metric thread	Pitch diameter		0.6	Pair	844 Tv
4501707	60°	Metric thread	Pitch diameter		0.7	Pair	844 Tv
4501708	60°	Metric thread	Pitch diameter		0.75	Pair	844 Tv
4501709	60°	Metric thread	Pitch diameter		0.8	Pair	844 Tv
4501710	60°	Metric thread	Pitch diameter		0.9	Pair	844 Tv
4501711	60°	Metric thread	Pitch diameter		1	Pair	844 Tv
4501712	60°	Metric thread	Pitch diameter		1.25	Pair	844 Tv
4501713	60°	Metric thread	Pitch diameter		1,5	Pair	844 Tv
4501714	60°	Metric thread	Pitch diameter		1.75	Pair	844 Tv
4501715	60°	Metric thread	Pitch diameter		2	Pair	844 Tv
4501716	60°	Metric thread	Pitch diameter		2.5	Pair	844 Tv
4501717	60°	Metric thread	Pitch diameter		3	Pair	844 Tv
4501718	60°	Metric thread	Pitch diameter		3.5	Pair	844 Tv
4501719	60°	Metric thread	Pitch diameter		4	Pair	844 Tv
4501720	60°	Metric thread	Pitch diameter		4.5	Pair	844 Tv
4501721	60°	Metric thread	Pitch diameter		5	Pair	844 Tv
4501722	60°	Metric thread	Pitch diameter		5.5	Pair	844 Tv
4501723	60°	Metric thread	Pitch diameter		6	Pair	844 Tv

Multimar 844 Tv

Interchangeable Measuring Rollers

Order no.	Flank angle	Type of thread	Thread parameter	Thread pitch	Thread pitch	Quantity unit	Product type
				TPI	mm		
4501750	55°	Whitworth thread	Pitch diameter	6		Pair	844 Tv
4501751	55°	Whitworth thread	Pitch diameter	7		Pair	844 Tv
4501752	55°	Whitworth thread	Pitch diameter	8		Pair	844 Tv
4501753	55°	Whitworth thread	Pitch diameter	9		Pair	844 Tv
4501754	55°	Whitworth thread	Pitch diameter	10		Pair	844 Tv
4501755	55°	Whitworth thread	Pitch diameter	11		Pair	844 Tv
4501756	55°	Whitworth thread	Pitch diameter	12		Pair	844 Tv
4501757	55°	Whitworth thread	Pitch diameter	13		Pair	844 Tv
4501758	55°	Whitworth thread	Pitch diameter	14		Pair	844 Tv
4501759	55°	Whitworth thread	Pitch diameter	16		Pair	844 Tv
4501760	55°	Whitworth thread	Pitch diameter	18		Pair	844 Tv
4501761	55°	Whitworth thread	Pitch diameter	19		Pair	844 Tv
4501762	55°	Whitworth thread	Pitch diameter	20		Pair	844 Tv
4501763	55°	Whitworth thread	Pitch diameter	22		Pair	844 Tv
4501764	55°	Whitworth thread	Pitch diameter	24		Pair	844 Tv
4501765	55°	Whitworth thread	Pitch diameter	28		Pair	844 Tv
4501766	55°	Whitworth thread	Pitch diameter	30		Pair	844 Tv
4501767	55°	Whitworth thread	Pitch diameter	32		Pair	844 Tv
4501768	55°	Whitworth thread	Pitch diameter	36		Pair	844 Tv
4501769	55°	Whitworth thread	Pitch diameter	40		Pair	844 Tv
4501800	60°	UST thread	Pitch diameter	6		Pair	844 Tv
4501801	60°	UST thread	Pitch diameter	7		Pair	844 Tv
4501802	60°	UST thread	Pitch diameter	8		Pair	844 Tv
4501803	60°	UST thread	Pitch diameter	9		Pair	844 Tv
4501804	60°	UST thread	Pitch diameter	10		Pair	844 Tv
4501805	60°	UST thread	Pitch diameter	11		Pair	844 Tv
4501806	60°	UST thread	Pitch diameter	12		Pair	844 Tv
4501807	60°	UST thread	Pitch diameter	13		Pair	844 Tv
4501808	60°	UST thread	Pitch diameter	14		Pair	844 Tv
4501809	60°	UST thread	Pitch diameter	16		Pair	844 Tv
4501810	60°	UST thread	Pitch diameter	18		Pair	844 Tv
4501811	60°	UST thread	Pitch diameter	19		Pair	844 Tv
4501812	60°	UST thread	Pitch diameter	20		Pair	844 Tv
4501813	60°	UST thread	Pitch diameter	22		Pair	844 Tv
4501814	60°	UST thread	Pitch diameter	24		Pair	844 Tv
4501815	60°	UST thread	Pitch diameter	28		Pair	844 Tv
4501816	60°	UST thread	Pitch diameter	30		Pair	844 Tv
4501817	60°	UST thread	Pitch diameter	32		Pair	844 Tv
4501818	60°	UST thread	Pitch diameter	36		Pair	844 Tv
4501819	60°	UST thread	Pitch diameter	40		Pair	844 Tv

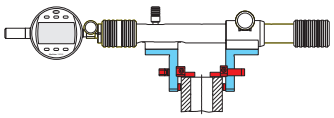
Multimar 844 Te

Measuring Arms

FEATURES

- For outer and inner diameters
- Stainless steel
- Lateral mm scale for easy positioning and adjustment of measuring limit stops
- Reversible measuring arms on measuring arm holder to increase the measuring range
- 3.5 mm diameter holder for inserting interchangeable measuring anvils 844 Tp, 844 Ts, 844 Tk, 844 Tr and 844 Tg

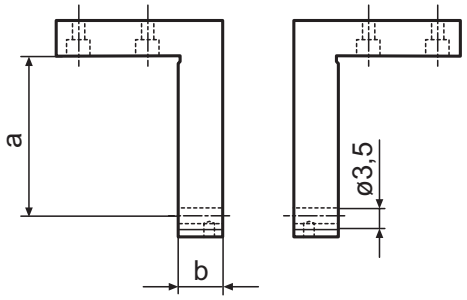




TECHNICAL DATA

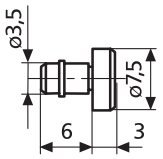
Order no.	Mounting hole	Throat depth	Quantity unit	Product type
	mm	mm		
4503024	3.5	25	Pair	844 Te
4503025	3.5	35	Pair	844 Te
4503026	3.5	70	Pair	844 Te
4503027	3.5	100	Pair	844 Te

Order no.	a	Mounting hole
	mm	mm
4503024	6	3.5
4503025	10	3.5
4503026	10	3.5
4503027	12	3.5

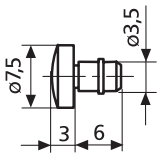


ACCESSORIES

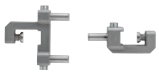
Order no.	Product name	Quantity unit	Product type
4500040	Anvils for measuring arms, flat, hardened steel	Piece	844 Tp
4500045	Measuring anvils, spherical, hardened steel	Piece	844 Ts
4503080	Adapter Ø 3.5 - M2.5 for measuring arms 844 Te	Piece	844 Tad
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	Pair	844 Tw



844 Tp



844 Ts


844 Tw

Multimar Thread anvils

Measuring Arms

FEATURES

- For pitch diameters
- Hardened, wear-resistant special steel
- With cylindrical mounting shank and retainer ring which ensures locking while permitting rotation in bore

ACCESSORIES

Thread pitch in mm	Blade Order no.	Taper Order no.	V-Anvil Order no.	V-anvil Order no.
Pitch diameter, external thread Trapezoid 30°				
1	4501350			4501150
1,5	4501351			4501151
2	4501352			4501152
3	4501353			4501153
4	4501354			4501154
5	4501355			4501155
6	4501356			4501156
7	4501357			4501157
8	4501358			4501158
9	4501359			4501159
10	4501360			4501160
12	4501361			4501161
14	4501362			4501162
16	4501363			4501163
18	4501364			4501164
20	4501365			4501165
Pitch diameter, external thread metric 60°				
0.5 –0.7	4501200			4501000
0.7 –1	4501201			4501001
1.25 –2	4501202			4501002
2 –3.5	4501203			4501003
3.5 –5	4501204			4501004
5 –7	4501205			4501005
7 –9	4501206			4501006
Pitch diameter, internal thread Trapezoid 30°				
1		4501831		4501830
1,5		4501833		4501832
2		4501835		4501834
3		4501837		4501836
4		4501839		4501838
5		4501841		4501840
6		4501843		4501842
7		4501845		4501844
8		4501847		4501846
9		4501849		4501848
10		4501851		4501850
12		4174981		4174961
14		4174982		4174962
16		4174983		4174963
18		4174984		4174964
20		4174985		4174965
metric 60°				
0.5 –0.7		4174600	4174300	
0.7 –1		4174601	4174301	
1.25 –2		4174602	4174302	
2 –3.5		4174603	4174303	
3.5 –5		4174604	4174304	
5 –7		4174605	4174305	
7 –9		4174606	4174306	

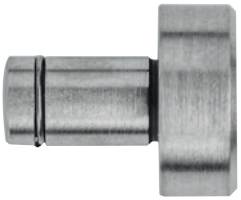
Thread pitch in TPI	Blade Order no.	Taper Order no.	V-anvil Order no.
Pitch diameter, external thread UST 60°			
40 –32	4501418		4501018
32 –24	4501419		4501019
24 –18	4501420		4501020
18 –14	4501421		4501021
14 –10	4501422		4501022
10 –7	4501423		4501023
7 –4.5	4501424		4501024
4.5 –3	4501425		4501025
Whitworth 55 °			
40 –32	4501207		4501007
32 –24	4501208		4501008
24 –18	4501209		4501009
18 –14	4501210		4501010
14 –10	4501211		4501011
10 –7	4501212		4501012
7 –4.5	4501213		4501013
4.5 –3	4501214		4501014
Pitch diameter, internal thread UST 60°			
40 –32		4174615	4174415
32 –24		4174616	4174416
24 –18		4174617	4174417
18 –14		4174618	4174418
14 –10		4174919	4174419
10 –7		4174620	4174420
7 –4.5		4174621	4174421
4.5 –3		4174622	4174422
Whitworth 55 °			
40 –32		4174643	4174343
32 –24		4174644	4174344
24 –18		4174645	4174345
18 –14		4174646	4174346
14 –10		4174647	4174347
10 –7		4174648	4174348
7 –4.5		4174649	4174349
4.5 –3		4174650	4174350

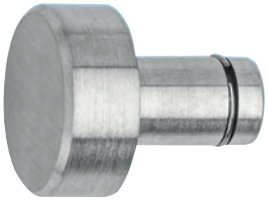
Multimar 844 Tp

Anvils for Measuring Arms

FEATURES

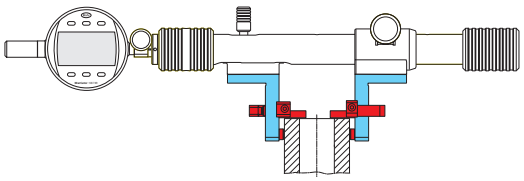
- Made of hardened steel
- With cylindrical mounting shank and retainer ring which allows free rotation inside the bore of measuring arms 844 Te





Application:

- Flat; for external diameters, distances and widths



TECHNICAL DATA

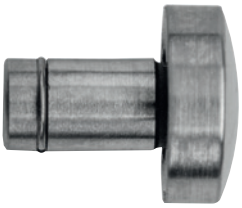
Order no.	Mounting shaft diameter	Quantity unit	Product type
	mm		
4500040	3.5	Piece	844 Tp

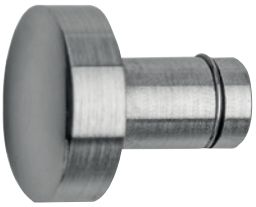
Multimar 844 Ts

Measuring Anvils

FEATURES

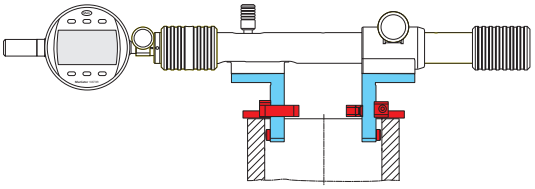
- Made of hardened steel
- With cylindrical mounting shank and retainer ring which allows free rotation inside the bore of measuring arms 844 Te





Application:

- Spherical; for internal diameters



TECHNICAL DATA

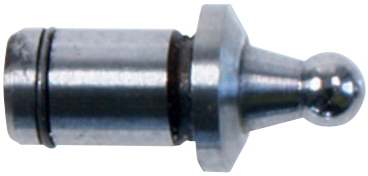
Order no.	Mounting shaft diameter	Quantity unit	Product type
	mm		
4500045	3.5	Piece	844 Ts

Multimar 844 Tk

Ball Anvil

FEATURES

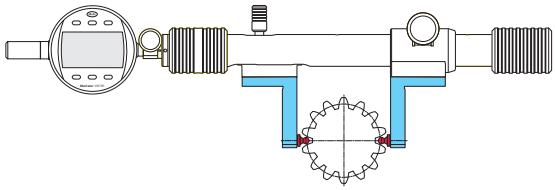
- Measuring ball made of carbide
- With cylindrical mounting shank and retainer ring which allows free rotation inside the bore of Measuring Arms 844 Te
- Manufactoring tolerance ball ± 2 µm





Application:

- Especially suited for the measurement of internal or external helical gear wheels
- Use of convex contours
- Use for cone measurements



TECHNICAL DATA

Order no.	Mounting shaft diameter	Shaft length	Quantity unit	Product type
	mm	mm		
4502620	3.5	6	Piece	844 Tk
4502621	3.5	6	Piece	844 Tk
4502622	3.5	6	Piece	844 Tk
4502623	3.5	6	Piece	844 Tk
4502624	3.5	6	Piece	844 Tk
4502625	3.5	6	Piece	844 Tk
4502626	3.5	6	Piece	844 Tk
4502627	3.5	6	Piece	844 Tk
4502628	3.5	6	Piece	844 Tk
4500350	3.5	6	Piece	844 Tk
4502629	3.5	6	Piece	844 Tk
4502630	3.5	6	Piece	844 Tk
4502631	3.5	6	Piece	844 Tk
4500351	3.5	6	Piece	844 Tk
4502632	3.5	6	Piece	844 Tk
4502633	3.5	6	Piece	844 Tk
4502634	3.5	6	Piece	844 Tk
4500352	3.5	6	Piece	844 Tk
4502635	3.5	6	Piece	844 Tk
4502636	3.5	6	Piece	844 Tk
4502637	3.5	6	Piece	844 Tk
4502638	3.5	6	Piece	844 Tk
4502639	3.5	6	Piece	844 Tk
4500353	3.5	6	Piece	844 Tk
4502640	3.5	6	Piece	844 Tk
4502641	3.5	6	Piece	844 Tk
4502642	3.5	6	Piece	844 Tk
4502643	3.5	6	Piece	844 Tk
4500354	3.5	6	Piece	844 Tk
4502543	3.5	6	Piece	844 Tk
4502540	3.5	6	Piece	844 Tk
4502644	3.5	6	Piece	844 Tk

Order no.	Mounting shaft diameter	Shaft length	Quantity unit	Product type
	mm	mm		
4502544	3.5	6	Piece	844 Tk
4502645	3.5	6	Piece	844 Tk
4502646	3.5	6	Piece	844 Tk
4500356	3.5	6	Piece	844 Tk
4502647	3.5	6	Piece	844 Tk
4502648	3.5	6	Piece	844 Tk
4502649	3.5	6	Piece	844 Tk
4502650	3.5	6	Piece	844 Tk
4502651	3.5	6	Piece	844 Tk
4500618	3.5	6	Piece	844 Tk
4500357	3.5	6	Piece	844 Tk
4502652	3.5	6	Piece	844 Tk
4502541	3.5	6	Piece	844 Tk
4502653	3.5	6	Piece	844 Tk
4500358	3.5	6	Piece	844 Tk
4502654	3.5	6	Piece	844 Tk
4500359	3.5	6	Piece	844 Tk
4500360	3.5	6	Piece	844 Tk
4502655	3.5	6	Piece	844 Tk
4500361	3.5	6	Piece	844 Tk
4502656	3.5	6	Piece	844 Tk
4502657	3.5	6	Piece	844 Tk
4500362	3.5	6	Piece	844 Tk
4500363	3.5	6	Piece	844 Tk
4502658	3.5	6	Piece	844 Tk
4502545	3.5	6	Piece	844 Tk
4502542	3.5	6	Piece	844 Tk
4502547	3.5	6	Piece	844 Tk
4502548	3.5	6	Piece	844 Tk
4502549	3.5	6	Piece	844 Tk
4502550	3.5	6	Piece	844 Tk

Multimar 844 Ty

Holder for Measuring Rollers

FEATURES

- With location bolts for the measuring rollers 706 Vr Vr and provision for a stop and stop pin

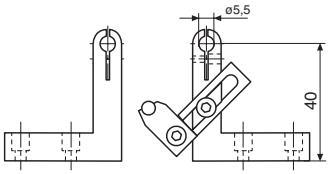


Application:

- Determining the pitch diameter of outer threads

TECHNICAL DATA

Order no.	Quantity unit	Product type
4502463	Pair	844 Ty



Order no.	Product name	Product type
4450512	Stand	844 Tf
4521105	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 0.5 mm	706 Vr
4521106	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 0.6 mm	706 Vr
4521107	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 0.7 mm	706 Vr
4521108	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 0.75 mm	706 Vr
4521109	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 0.8 mm	706 Vr
4521110	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 0.9 mm	706 Vr
4521111	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 1 mm	706 Vr
4521112	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 1.25 mm	706 Vr
4521113	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 1.5 mm	706 Vr
4521114	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 1.75 mm	706 Vr
4521115	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 2 mm	706 Vr
4521116	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 2.5 mm	706 Vr
4521117	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 3 mm	706 Vr
4521118	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 3.5 mm	706 Vr
4521119	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 4 mm	706 Vr
4521120	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 4.5 mm	706 Vr
4521121	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 5 mm	706 Vr
4521122	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 5.5 mm	706 Vr
4521123	Thread measuring rollers, pitch diameter, metric thread 60, thread ascent 6 mm	706 Vr

Multimar 844 Ty

Holder for Measuring Rollers

Order no.	Product name	Product type
4521219	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 40 TPI	706 Vr
4521218	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 36 TPI	706 Vr
4521217	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 32 TPI	706 Vr
4521216	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 30 TPI	706 Vr
4521215	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 28 TPI	706 Vr
4521214	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 24 TPI	706 Vr
4521213	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 22 TPI	706 Vr
4521212	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 20 TPI	706 Vr
4521211	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 19 TPI	706 Vr
4521210	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 18 TPI	706 Vr
4521209	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 16 TPI	706 Vr
4521208	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 14 TPI	706 Vr
4521207	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 13 TPI	706 Vr
4521206	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 12 TPI	706 Vr
4521205	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 11 TPI	706 Vr
4521204	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 10 TPI	706 Vr
4521203	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 9 TPI	706 Vr
4521202	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 8 TPI	706 Vr
4521201	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 7 TPI	706 Vr
4521200	Thread measuring rollers, pitch diameter, Whitworth thread 55, thread ascent 6 TPI	706 Vr
4521319	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 40 TPI	706 Vr
4521318	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 36 TPI	706 Vr
4521317	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 32 TPI	706 Vr
4521316	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 30 TPI	706 Vr
4521315	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 28 TPI	706 Vr
4521314	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 24 TPI	706 Vr
4521313	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 22 TPI	706 Vr
4521312	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 20 TPI	706 Vr
4521311	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 19 TPI	706 Vr
4521310	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 18 TPI	706 Vr
4521309	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 16 TPI	706 Vr
4521308	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 14 TPI	706 Vr
4521307	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 13 TPI	706 Vr
4521306	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 12 TPI	706 Vr
4521305	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 11 TPI	706 Vr
4521304	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 10 TPI	706 Vr
4521303	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 9 TPI	706 Vr
4521302	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 8 TPI	706 Vr
4521301	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 7 TPI	706 Vr
4521300	Thread measuring rollers, pitch diameter, UST thread 60, thread ascent 6 TPI	706 Vr

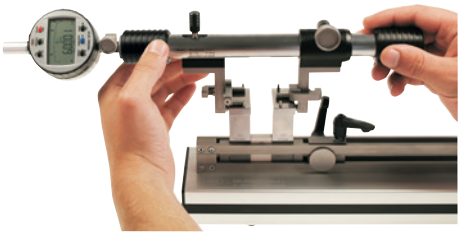
Multimar 844 S

Setting Device

FEATURES

- Simple handling via clamping element
- Accurate setting of nominal value using gage block combinations
- Instrument setting in horizontal or vertical position (using base 844 Sf)
- Rigid base made of anodized aluminum, for mobile or stationary use in the production or in the inspection room
- **Package contains:** basic unit 844 S, instruction manual





Application:

For setting indicating instruments for internal and external dimensions i. e. Multimar 844 T and MaraMeter 844 N at any dimension by using gage block combinations.

TECHNICAL DATA

Order no.		4503500	4503501	4503502
Application range for outside measurement up to	mm	400	1150	2180
Application range for inside measurement up to	mm	360	1110	2140
Product type			844 S	

ACCESSORIES

Order no.	Product name	Product type
4503510	T-shaped gage blocks (20mm) for measuring depth up to 40 mm	844 Sp
4503511	Riser blocks 30mm for extended measuring depths	844 Sph
4474080	Adjustment bridge (70 x 12 mm), for measuring range 18 –250 mm (for 844 N)	844 Neb
4474081	Adjustment bridge (165 x 17 mm), for measuring range 18 –400 mm (for 844 N)	844 Neb
4470095	Measuring jaw (60 x 9.5 x 9 mm), for measuring range 18 –800 mm (for 844 N)	844 em
4503512	Base for vertical use, incl. screws and table clamp	844 Sf
4474082	Adjustment bridge (320 x 20 mm), for measuring range 18 –800 mm (for 844 N)	844 Neb



844 Sp



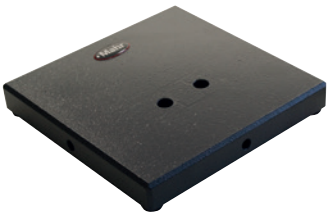
844 Sph



844 Neb



844 em





844 Sf

Multimar EDI–36B–10 / EDI–36B–20 / EMD–36B–10 / EMD–36B–20 / EMD–36B–10D / EMD–36B–20D

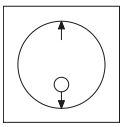
RS232C Digimatic

Indicator Gage

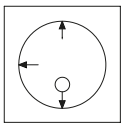
FEATURES

- Friction-free, zero-backlash measuring anvil holder for high measuring accuracy
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
  - Table surface can be tilted and clamped between 0° and 90°
  - Adjustable lifting of movable probe
- Adjustable measuring force
- **Data interface:** Digimatic, RS232C, USB
- **Energy supply:** Battery operation
- **Package contains:** set of jaws JW–9, instruction manual

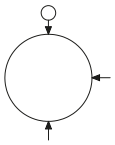




without centralizer



with centralizer



external

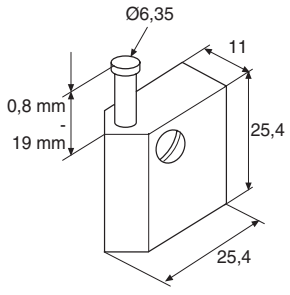
Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses
- "T"-plates give a diameter reading directly across the diameter
- A third contact may be used as a side-stop or centralizer

TECHNICAL DATA

Order no.		2051693	2051695	2051863	2051873	2051864	2051874
Product type		EDI–36B–10	EDI–36B–20	EMD–36B–10	EMD–36B–20	EMD–36B–10D	EMD–36B–20D
Application range outside	mm	6 –127	6 –222	6 –127	6 –222	6 –127	6 –222
Application range outside	inch	.25 –5"	.25 –8.75"	.25 –5"	.25 –8.75"	.25 –5"	.25 –8.75"
Application range inside	mm	19 –89	19 –197	19 –89	19 –197	19 –89	19 –197
Application range inside	inch	.75 –3.5"	.75 –7.75"	.75 –3.5"	.75 –7.75"	.75 –3.5"	.75 –7.75"
Resolution	mm	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02		0.0005, 0.001, 0.005			
Resolution	inch	.00001", .00002", .00005", .0001", .0002", .0005", .001"		.00002", .00005", .0001", .0005"			
Measuring force, adjustable	N	0 –35					
Travel of moveable anvil, adjustable	mm	6 –10					
Travel of moveble anvil, adjustable	inch	.25 –.40"					
Indicating instrument (included in package)		2034201 µMaxµm II		2033109 Maxµm III		2033119 Maxµm III	

Order no.	Mounting hole
2051693	Indicator back mounted
2051695	Indicator back mounted
2051863	Indicator back mounted
2051873	Indicator back mounted
2051864	Indicator back mounted
2051874	Indicator back mounted



JW–9;JW–69;JW–58

ACCESSORIES

Order no.	Product name	Product type
2220455	Jaw set of measuring elements, with measuring anvils made of carbide	JW–58
2225702	Measuring anvil for JW–9, made of steel	PS–55
2225676	Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide	PS–226

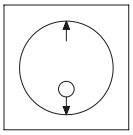
Multimar M36B–10 / M36B–20 / 36B–10M / 36B–20M

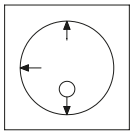
Indicator Gage

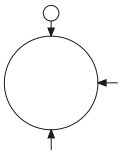
FEATURES

- Friction-free, zero-backlash measuring anvil holder for high measuring accuracy
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
  - Table surface can be tilted and clamped between 0° and 90°
  - Adjustable lifting of movable probe
- Adjustable measuring force









Application:

- For measuring inside and outside dimensions: diameters, lengths, distances between bores, offsets, etc.
- Measurement in bores, outside surfaces, recesses, centering shoulders, etc.

TECHNICAL DATA

Order no.		2003200	2003201	2050644	2050648
Product type		M36B–10	M36B–20	36B–10M	36B–20M
Application range outside	mm	6.5 –125	6.5 –222	6.5 –125	6.5 –222
Application range outside	inch	.25 –5″	.25 –8.75″	.25 –5″	.25 –8.75″
Application range inside	mm	20 –130	20 –197	20 –130	20 –197
Application range inside	inch	.75 –5.1″	.75 –7.75″	.75 –5.1″	.75 –7.75″
Graduation value	mm			0.002	
Measuring force, adjustable	N	0 –35			
Travel of moveable anvil, adjustable	mm	6 –10 mm			
Travel of moveble anvil, adjustable	inch	.25 –.40″			
Indicating instrument (included in package)		None		IDS–317 Indicator (Q1I-RC)	

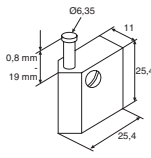


1087 BR

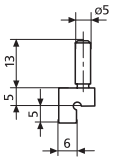


1087 BRi

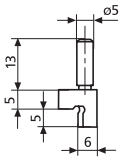
Order no.	Mounting hole	Mounting hole
		mm
2003200		8
2003201		8
2050644	Indicator back mounted	
2050648	Indicator back mounted	



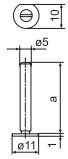
JW–9;JW–69; JW–58



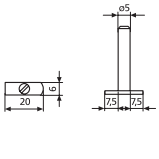
844 Ta



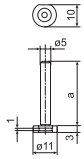
844 Ti



844 Tb



844 Tc



844 Td

ACCESSORIES

Order no.	Product name	Quantity unit	Product type
4337662	Digital indicator, 0.0005 mm, 12.5 mm		1087 BR
4337664	Digital indicator, 0.0005 mm, 12.5 mm		1087 BRi
2220461	Set of measuring elements with measuring anvils made of hardened steel, for metric version M36B–10 / M36B–20	Set (=3 Pc.)	JW–69
2225694	Separate measuring anvils for JW–69M / 2220461 measuring elements, Made of hardened steel	Piece	PS–276
2220455	Jaw set of measuring elements, with measuring anvils made of carbide	Set (=3 Pc.)	JW–58
2225676	Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide	Piece	PS–226
4500050	Shoulder anvils, flat, hardened steel	Pair	844 Ta
4500055	Shoulder anvils, spherical, hardened steel	Pair	844 Ti
4503015	Measuring anvils with measuring blades, Platelet diameter 11 mm, Adjustment range 0 –20 mm	Piece	844 Tb
4503114	Measuring anvils with measuring blades, Platelet length 20 mm, Adjustment range 0 –20 mm	Piece	844 Tc
4503017	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 0 –20 mm	Piece	844 Td

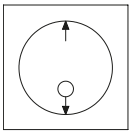
Multimar 36B–10 / 36B–20

Indicator Gage

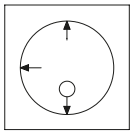
FEATURES

- Friction-free, zero-backlash measuring anvil holder for high measuring accuracy
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
  - Table surface can be tilted and clamped between 0° and 90°
  - Adjustable lifting of movable probe
- Adjustable measuring force
- **Data interface:** none
- **Package contains:** set of jaws JW–9, instruction manual

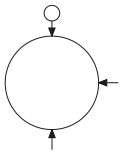




without centralizer



with centralizer



external

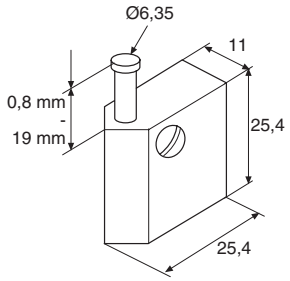
Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses
- "T"-plates give a diameter reading directly across the diameter. A third contact may be used as a side-stop or centralizer

TECHNICAL DATA

Order no.		2050643	2050647
Product type		36B–10	36B–20
Application range outside	inch	.25 –5"	.25 –8.75"
Application range inside	inch	.75 –3.5"	.75 –7.75"
Graduation value	inch	.0001"	
Measuring force, adjustable	N	0 –35	
Travel of moveble anvil, adjustable	inch	.25 –.40"	
Indicating instrument (included in package)		2011593 Indicator (32I-RC)	

Order no.	Mounting hole
2050643	Indicator back mounted
2050647	Indicator back mounted



JW–9;JW–69;JW–58

ACCESSORIES

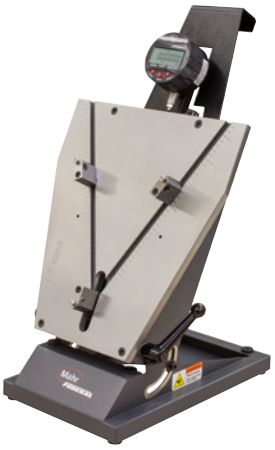
Order no.	Product name	Product type
2220455	Jaw set of measuring elements, with measuring anvils made of carbide	JW–58
2225702	Measuring anvil for JW–9, made of steel	PS–55
2225676	Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide	PS–226

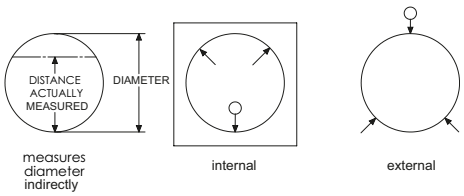
Multimar EDI–36B–9 / EDI–36B–19 / EMD–36B–9D / EMD–36B–19D

Indicator Gage

FEATURES

- Friction-free, zero-backlash measuring anvil holder for high measuring accuracy
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
  - Table surface can be tilted and clamped between 0° and 90°
  - Adjustable lifting of movable probe
- Adjustable measuring force
- **Data interface:** Digimatic, RS232C, USB
- **Energy supply:** Battery operation
- **Package contains:** set of jaws JW–9, instruction manual





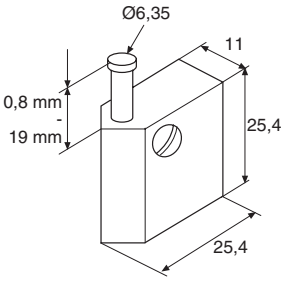
Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses

TECHNICAL DATA

Order no.		2051696	2051694	2051881	2051871
Product type		EDI–36B–9	EDI–36B–19	EMD–36B–9D	EMD–36B–19D
Application range outside	mm	8 –127	8 –241	8 –127	8 –241
Application range outside	inch	.312 –5"	.312 –9.5"	.312 –5"	.312 –9.5"
Application range inside	mm	21 –117	21 –229	21 –117	21 –229
Application range inside	inch	.812 –4.625"	.812 –9"	.812 –4.625"	.812 –9"
Resolution	mm	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02		0.0005, 0.001, 0.005	
Resolution	inch	.00001", .00002", .00005", .0001", .0002", .0005", .001"		.00002", .00005", .0001", .0005"	
Measuring force, adjustable	N	0 –35			
Travel of moveable anvil, adjustable	mm	6 –10 mm			
Travel of moveble anvil, adjustable	inch	.25 –.40"			
Indicating instrument (included in package)		2034201 µMaxµm II		2033145 MaxumIII (special 4:5 ratio)	

Order no.	Mounting hole
2051696	Indicator back mounted
2051694	Indicator back mounted
2051881	Indicator back mounted
2051871	Indicator back mounted



JW–9;JW–69;JW–58

ACCESSORIES

Order no.	Product name	Product type
2220455	Jaw set of measuring elements, with measuring anvils made of carbide	JW–58
2225702	Measuring anvil for JW–9, made of steel	PS–55
2225676	Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide	PS–226

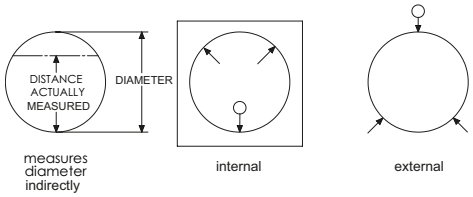
Multimar 36B–19 / 36B–9

Indicator Gage

FEATURES

- Friction-free, zero-backlash measuring anvil holder for high measuring accuracy
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
  - Table surface can be tilted and clamped between 0° and 90°
  - Adjustable lifting of movable probe
- Adjustable measuring force
- **Data interface:** none
- **Package contains:** set of jaws JW–9, instruction manual





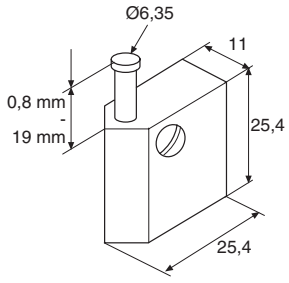
Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses

TECHNICAL DATA

Order no.		2050645	2050652
Product type		36B–19	36B–9
Application range outside	inch	.312 –9.5″	.312 –5″
Application range inside	inch	.812 –9″	.812 –4.625″
Graduation value	inch	.0001″	
Measuring force, adjustable	N	0 –35	
Travel of moveble anvil, adjustable	inch	.25 –.40″	
Indicating instrument (included in package)		IDT–188 Indicator (32K-RC)	

Order no.	Mounting hole
2050645	Indicator back mounted
2050652	Indicator back mounted



JW–9;JW–69;JW–58

ACCESSORIES

Order no.	Product name	Product type
2220455	Jaw set of measuring elements, with measuring anvils made of carbide	JW–58
2225702	Measuring anvil for JW–9, made of steel	PS–55
2225676	Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide	PS–226

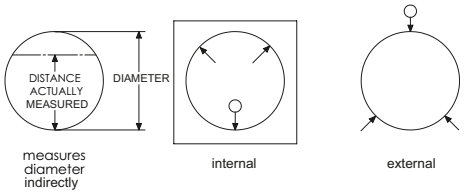
Multimar 36B–19M / 36B–9M

Indicator Gage

FEATURES

- Friction-free, zero-backlash measuring anvil holder for high measuring accuracy
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
  - Table surface can be tilted and clamped between 0° and 90°
  - Adjustable lifting of movable probe
- Adjustable measuring force
- **Data interface:** none
- **Package contains:** set of jaws JW–9, instruction manual





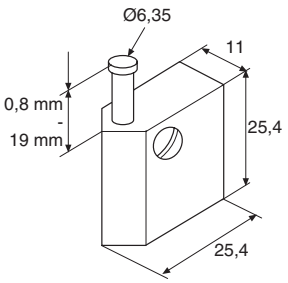
Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses

TECHNICAL DATA

Order no.		2050646	2050653
Product type		36B–19M	36B–9M
Application range outside	mm	8 –241	8 –127
Application range inside	mm	21 –229	21 –117
Graduation value	mm	0.002	
Measuring force, adjustable	N	0 –35	
Travel of moveable anvil, adjustable	mm	6 –10 mm	
Indicating instrument (included in package)		IDS–318 Indicator (Q21-RC)	

Order no.	Mounting hole
2050646	Indicator back mounted
2050653	Indicator back mounted



JW–9;JW–69;JW–58

ACCESSORIES

Order no.	Product name	Product type
2220455	Jaw set of measuring elements, with measuring anvils made of carbide	JW–58
2225702	Measuring anvil for JW–9, made of steel	PS–55
2225676	Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide	PS–226

Multimar 36B–10-VT / 36B–20-VT

Indicator Gage

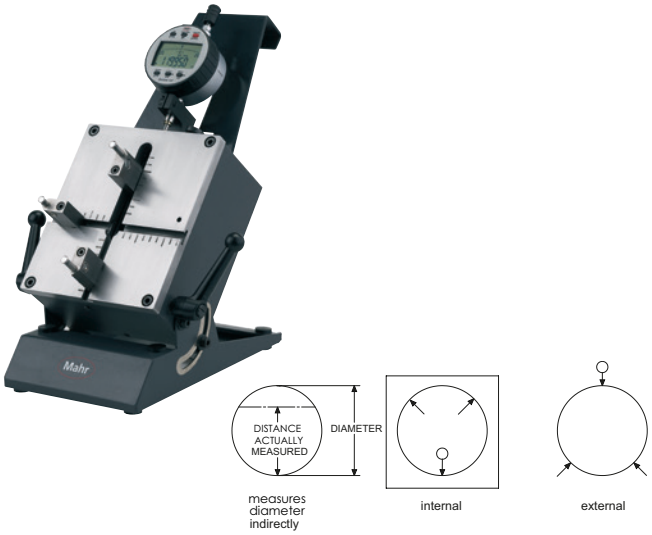
RS232C Digimatic

FEATURES

- Friction-free, zero-backlash measuring anvil holder for high measuring accuracy
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
  - Table surface can be tilted and clamped between 0° and 90°
  - Adjustable lifting of movable probe
- Adjustable measuring force
- **Data interface:** Digimatic, RS232C, USB, Wireless
- **Energy supply:** Battery operation
- **Package contains:** set of jaws JW–9, instruction manual

Application:

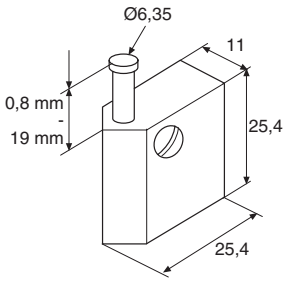
- For measuring internal and external diameters, centering edges, narrow shoulders and recesses
- "T"-plates give a diameter reading directly across the diameter. A third contact may be used as a side-stop or centralizer
- "V"-plates are self-centralizing. Three jaws are used and themeasurement is of the distance between the sensitive contact andthe chord formed by the two reference contacts. This measurementbears a direct relationship to the diameter and compensation ismade by a special ratio indicator so diameter is read directly.Used to inspect parts with odd number lobing conditions



TECHNICAL DATA

Order no.		2061657	2061658
Product type		36B–10-VT	36B–20-VT
Application range outside	mm	6 –127	6 –222
Application range inside	mm	19 –89	19 –197
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01	
Resolution	inch	.00002", .00005", .0001", .0002", .0005"	
Measuring force, adjustable	N	0 –35	
Travel of moveable anvil, adjustable	mm	6 –10 mm	
Travel of moveble anvil, adjustable	inch	.25 –.40"	
Indicating instrument (included in package)		4337662 (1087 BR)	

Order no.	Mounting hole	Mounting hole
	inch	mm
2061657	Indicator back mounted	8
2061658	Indicator back mounted	8



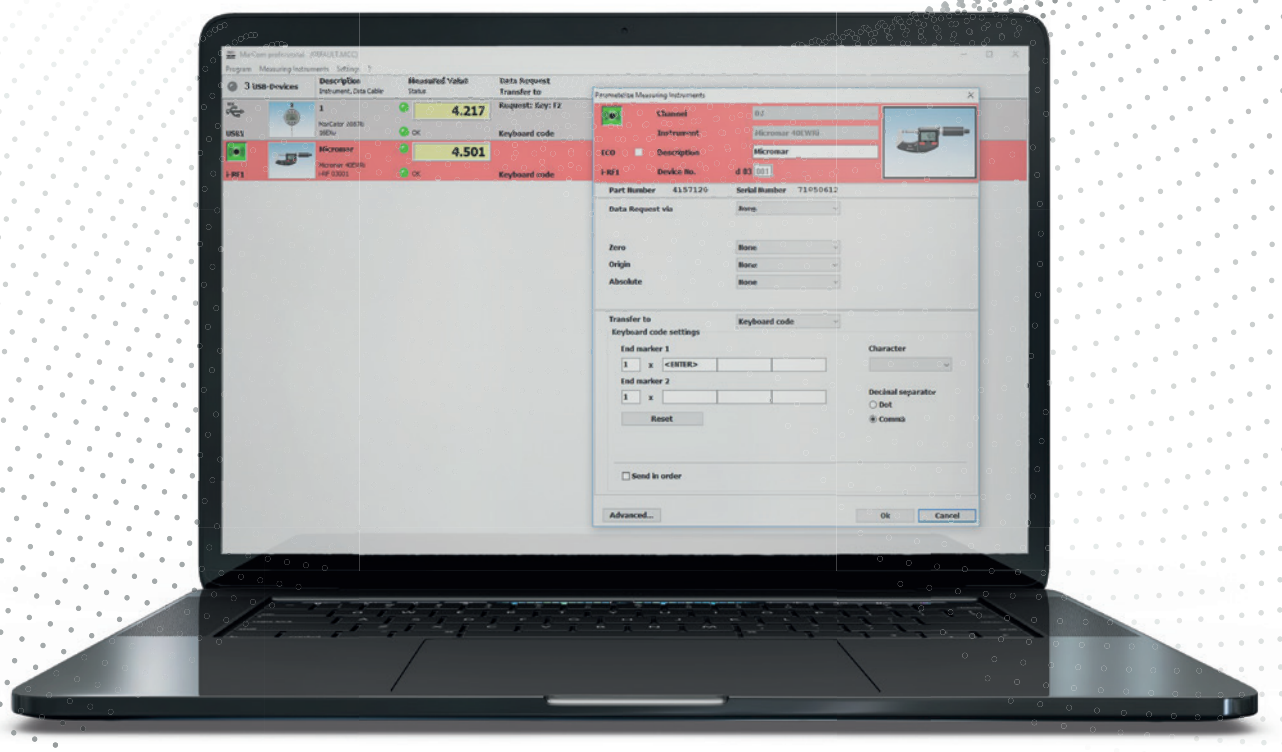
JW–9;JW–69;JW–58

ACCESSORIES

Order no.	Product name	Product type
2220455	Jaw set of measuring elements, with measuring anvils made of carbide	JW–58
2225702	Measuring anvil for JW–9, made of steel	PS–55
2225676	Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide	PS–226

MarConnect | Data Processing

All new digital handheld measuring instruments come with the MarConnect flexible interface concept. Regardless of which interface standard you use, whether Integrated Wireless, external wireless modules, USB, Opto RS232 or Digimatic, MarConnect will always provide an optimal connection.



Overview MarConnect MarCom Professional 5.2 458

MarConnect MarCom Professional 5.2 460
Clear and Flexible Data Acquisition

MarConnect Wireless Transmission

MarConnect i-Stick 462
Receiver for Integrated Wireless

MarConnect e-Stick 463
Receiver for External Transmitter Modules

MarConnect FM 2 464
Receiver for External Transmitter Modules

MarConnect Data Connection Cable

MarConnect Opto usb / Millimar usb / 817 usb / 16 Exu / MC-I / 800 EWu / 2000 usb / 838 usb 465
Data Connection Cable USB

MarConnect 16 EXr / 16 Esv / 800 EWr / 2000 r 466
Data Connection Cable RS232C

MarConnect DK-D1 / 16 EWd / 2000 d / 838 di (A) 467
Data Connection Cable Digimatic

SMAHRT CONNECTIVITY

Sending measuring results

Integrated Wireless Technology



Retrofitted Wireless Technology



Cable Technology



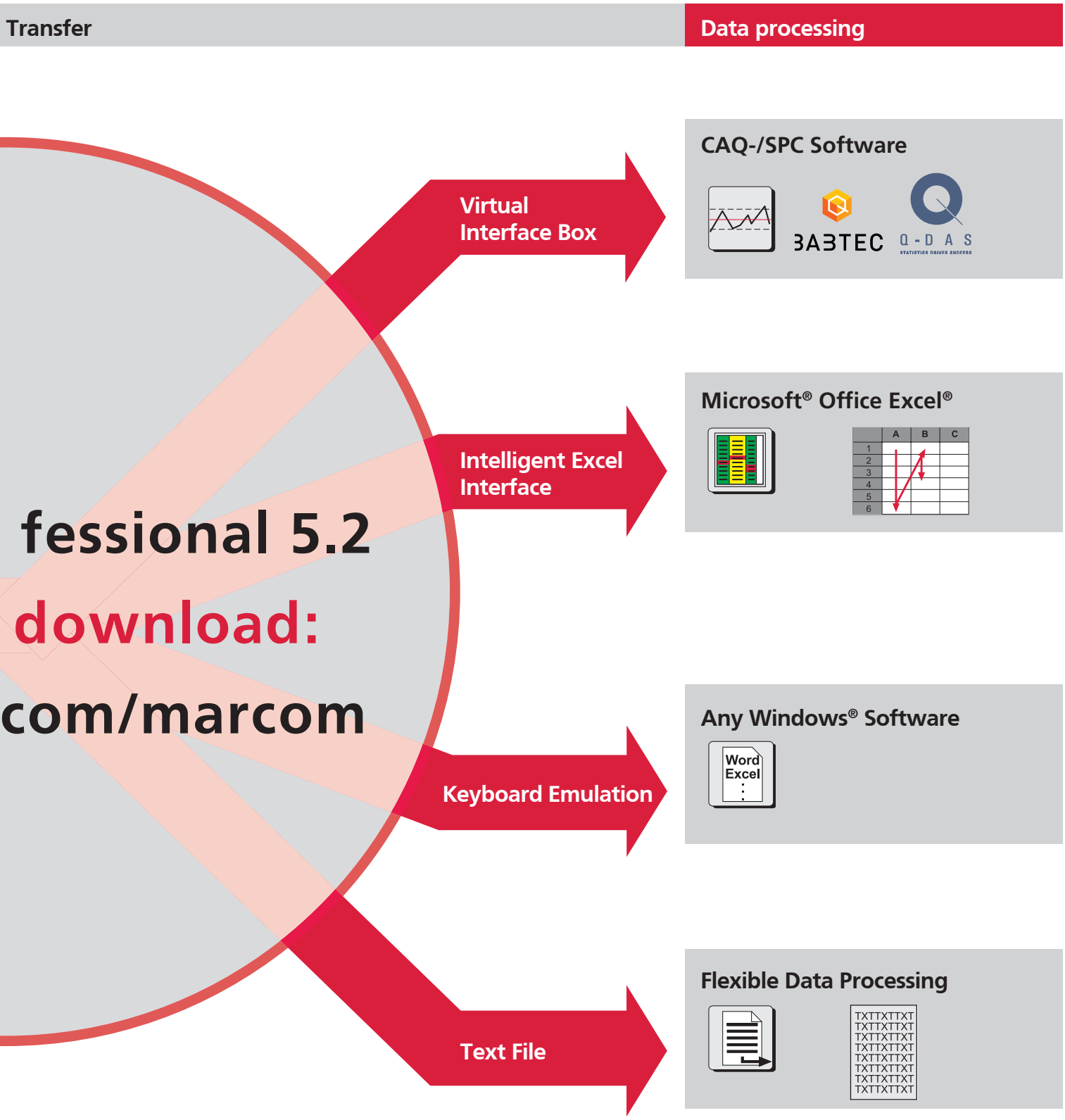
MarCom Pro

Free to

www.mahr.

Scan the QR code to watch simple and practical applications

HIGHLIGHT: Our contribution to Industry 4.0: You can now download MarCom Professional software free of charge!



MarConnect MarCom Prof. 5.2

Software Interface

FEATURES

- Directly transfer measured values into MS Excel®, SPC Software using virtual interface box (MUX50 format), a text file or key code
- The measured values for each connected measuring instrument can be copied into a separate column, table or folder in MS Excel®
- USB hubs can also be connected as a measuring instrument interface
- Clear depiction of the selected measuring devices by means of icons
- Freely definable and configurable measurement cycles
- Flexible, user-friendly data transmission via the "Data" button on the measuring device or data cable or via a PC keyboard, timer, remote control or foot switch connected to a USB interface
- **Package contains:** driver, instruction manual

- **Software MarCom Professional** free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)





TECHNICAL DATA

Product type	MarCom Prof. 5.2
Number of connectable wireless receivers for i-Stick	4
Number of connectable measuring instruments with integrated wireless	32
Number of connectable wireless receivers for e-Stick	1
Number of connectable transmission modules for e-Stick	8
Number of connectable wireless receivers FM 2	1
Number of connectable transmission modules for wireless receiver FM 2	100
Number of connectable measuring instruments with USB interface	128
Number of connectable USB foot switches	128
Number of connectable measuring instruments with RS232C interface	2
Number of virtual interface boxes (8 inputs)	4
Languages	German, English, French, Italian, Spanish, Dutch, Russian, Polish, Portugese, Czech, Chinese, Romanian, Hungarian, Japanese

ACCESSORIES



i-Stick



e-Stick



FM 2



16 EWe

Order no.	Product name	Product type	For measuring instrument
4102220	Receiver for instruments with integrated wireless	i-Stick	MarCal 16 EWRi / 30 EWRi MarCator 1086 Ri / 1086 WRi / 1087 Ri / 1087 BRi Micromar 40 EWRi / 40 EWRi-L
4102230	Receiver	e-Stick	Transmission modules 16 EWe, 2000 e, RS232 e
4102305	Receiver	FM 2	Transmission modules 16 EXf, 1082 f, 2000f, 817 f, RS232 f
4102231	Transmitter for e-Stick	16 EWe	MarCal 16 ER, 16 EWR, 16 EWV, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR (≤2017), 40 EWS, 40 EWV, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR MarSurf PS1, PS10

MarConnect MarCom Prof. 5.2

Software Interface



16 EXf



2000 e



2000 f



RS232 e;RS232 f;817 f

Order no.	Product name	Product type	For measuring instrument
4102306	Transmitter for FM 2	16 EXf	MarCal 16 ER, 16 EWR, 16 EWV, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR (≤2017), 40 EWS, 40 EWV, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR
4102357	16 EXu Data connection cable USB (2 m)	16 EXu	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, PS10, M300, M300C, PocketSurf IV
4102410	Data connection cable RS232C (2 m)	16 EXr	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, PS10, M300, M300C, PocketSurf IV
4102232	Transmitter for e-Stick	2000 e	Digimar 816 CL MarCator 1088 / 1088W Millimess 2000, 2001, 2100, µMaxum II Millimar C1200
4102309	Transmitter for FM 2	2000 f	Digimar 816 CL MarCator 1088 / 1088W Millimess 2000, 2001, 2100, µMaxum II
4346023	2000 USB Data connection cable USB (2 m)	2000 USB	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II
4346020	Data connection cable RS232C (2 m)	2000 r	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II
7024634	Data connection cable RS232C (3 m)		Digimar 817 CLM Millimar C1208, C1216, 1240, C1245, S1840, S1841, X1715, X1745, 832
4102233	Transmitter for e-Stick	RS232 e	Millimar C1208, C1216, C1245, S1840 Digimar 817 CLM
4102331	Millimar - USB Adapter cable RS232-USB (0.2 m)	Millimar - USB	Millimar C1208, C1216, 1240, C1240, C1245, S1840, S1841, X1715, X1741, 832 (in conjunction with cable 7024634)
4102310	Transmitter for FM 2	817 f	Digimar 817 CLM
4102333	817 USB Adapter cable RS232-USB (0.2 m)	817 USB	Digimar 817 CLM (in conjunction with cable 7024634)
4102311	Transmitter for FM 2	RS232 f	Millimar C1208, C1216, C1245, S1840
4102307	Transmitter for FM 2	1082 f	Digimar M814 N/G Multimar 25 ES MarTool 106 ES
4102510	Data connection cable RS232C (2 m)	16 ESv	Digimar 814 G, 814 N Multimar 25 ES MarTool 106 ES
4102330	Opto USB Adapter cable RS232-USB (0.2 m)	Opto USB	Digimar M814 (in conjunction with cable 4102510) Multimar 25 ES (in conjunction with cable 4102510) MarTool 106 ES (in conjunction with cable 4102510)
4305121	800 EWu Data connection cable USB (2 m)	800 EWu	MarCal 31 EW MarTest 800 EW, 800 EWL
4305122	Data connection cable RS232C (2 m)	800 EWr	MarCal 31 EW MarTest 800 EW, 800 EWL
4102553	USB-Hub 7-fold industrial model	USB-Hub	
4102554	USB 2.0 Docking Ball with 5 m extension cable, Interfaces: 1 x USB 2.0 Data , 1 x USB Power	MC-USB-Ext	
4102782	MC-I connection cable (for foot swtich via MarCom): jack plug Ø 3.5 mm/USB (0.1 m)	MC-I	Foot switch 16 ESf
4102058	Foot switch to trigger data transmission	16 ESf	
4102221	Remote control for MarCom	MC-R	
4102239	Battery for e-Stick / FM2 transmission modules Type CR 1/3	CR1/3N	
4102603	Data cable USB bi-directional (2 m)	DK-U1	Micromar 40 EWR (≥ 2018)
4102606	Digimatic data cable (2 m)	DK-D1	Micromar 40 EWR (≥ 2018)

MarConnect i-Stick

Receiver for Instruments with Integrated Wireless

FEATURES

- Unlike conventional wireless solutions, which have a large external transmitter with separate battery, the transmitter in integrated wireless is fully integrated.
- The lack of external cables and modules allows for high mobility
- With integrated wireless, you can transfer your measured values to the PC using the i-Stick
- As with a data cable, the measured values are accepted via the MarCom Software directly into MS Excel® or via a keyboard code into any Windows application
- Safe and reliable data transfer
- Instruments display messages confirming data has been received
- Confirms being in range of i-Stick
- Long battery life
- Negates need for additional battery
- With integrated wireless, you can connect up to 8 measuring instruments per i-Stick receiver
- Expensive interface boes are no longer necessary
- **Package contains:** i-Stick wireless receiver, driver

- **Software MarCom Professional** free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



TECHNICAL DATA

Order no.		4102220
Number of channels		3
Frequency band	MHz	2400
Radio range		Up to 6 m
Product type		i-Stick
Number of connectable wireless receivers for i-Stick		4
Number of connectable measuring instruments with integrated wireless		32
For measuring instrument		MarCal 16 EWRi / 30 EWRi MarCator 1086 Ri / 1086 WRi / 1087 Ri / 1087 BRi Micromar 40 EWRi / 40 EWRi-L

MarConnect e-Stick

Receiver

FEATURES

- To retrofit on all Mahr hand measuring instruments that have a data interface
- Safe and reliable data transfer
- Instruments display messages confirming data has been received
- Confirms being in range of e-Stick
- Compact transmitter without an external antenna
- Bi-directional radio link (remote control from measuring instruments)
- Radio frequency is 2400 MHz
- **Package contains:** e-stick wireless receiver, driver

- **Software MarCom Professional** free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



Application:

- Wireless data transmission from a measuring instrument to a PC

TECHNICAL DATA

Order no.		4102230
Frequency band	MHz	2400
Radio range		Up to 6 m
Product type		e-Stick
Number of connectable wireless receivers for e-Stick		1
Number of connectable transmission modules for e-Stick		8
For measuring instrument		Transmission modules 16 EWe, 2000 e, RS232 e

ACCESSORIES

Order no.	Product name	Type	For measuring instrument
4102231	16 EWe Transmitter for e-Stick	16 EWe	MarCal 16 ER, 16 EWR, 16 EWV, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR (≤2017), 40 EWS, 40 EWV, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR MarSurf PS1, PS10
4102232	2000 e Transmitter for e-Stick	2000 e	Digimar 816 CL MarCator 1088 / 1088W Millimess 2000, 2001, 2100, µMaxum II Millimar C1200
4102233	RS232 e Transmitter for e-Stick	RS232 e	Millimar C1208, C1216, C1245, S1840 Digimar 817 CLM
4102239	Battery for e-Stick / FM2 transmission modules Type CR 1/3	CR1/3N	
4102554	USB 2.0 Docking Ball with 5 m extension cable, Interfaces: 1 x USB 2.0 Data , 1 x USB Power	MC-USB-Ext	



16 EWe



2000 e



RS232 e;RS232 f;817 f

MarConnect FM 2

Receiver

RS232C

FEATURES

- Safe and reliable data transfer
- Instruments display messages confirming data has been received
- TWIN receiver for USB and RS232 interfaces
- Compact transmitter without an external antenna
- Theoretically unlimited amount of measuring instruments can be connected to a receiver
- Distance of radio wave up to 100 m (depending on the working environment)
- Radio frequency is 433 MHz (further frequencies are available upon request)
- Up to 69 channels are available per receiver, several receivers can be used at any one time
- Bi-directional radio link (remote control from measuring instruments)
- Hand triggering possible for acquiring data
- **Package contains:** FM2 wireless receiver, driver, USB cable

- **Software MarCom Professional** free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



Application:

- Wireless data transmission from a measuring instrument to a PC

TECHNICAL DATA

Order no.		4102305
Number of channels		69
Number of transmitters		100
Frequency band	MHz	433
Radio range		Up to 100 m (depending on the working environment)
Product type		FM 2
For measuring instrument		Transmission modules 16 EXf, 1082 f, 2000f, 817 f, RS232 f

Order no.	Depth	Height	Width
	mm	mm	mm
4102305	25	120	60

ACCESSORIES

Order no.	Product name	Type	For measuring instrument
4102306	16 EXf Transmitter for FM 2	16 EXf	MarCal 16 ER, 16 EWR, 16 EWV, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR (≤2017), 40 EWS, 40 EWV, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR
4102307	1082 f Transmitter for FM 2	1082 f	Digimar M814 N/G Multimar 25 ES MarTool 106 ES
4102309	2000 f Transmitter for FM 2	2000 f	Digimar 816 CL MarCator 1088 / 1088W Millimess 2000, 2001, 2100, µMaxum II
4102310	817 f Transmitter for FM 2	817 f	Digimar 817 CLM
4102311	RS232 f Transmitter for FM 2	RS232 f	Millimar C1208, C1216, C1245, S1840
4102239	Battery for e-Stick / FM2 transmission modules Type CR 1/3	CR1/3N	



16 EXf



2000 f



RS232 e;RS232 f;817 f

MarConnect Opto USB / Millimar - USB / 817 USB / 16 EXu / MC-I / 800 EWu / 2000 USB / 838 USB

Adapter Cable RS232-USB

FEATURES

- For connecting the measuring instrument to a PC
- Data transfer to MarCom or other applications via virtual communication interface
- **Package contains:** USB cable, driver

- **SoftwareMarCom Professional** free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



Application:

Data recorded with PC, laptop or tablet using MS-Windows operating system

TECHNICAL DATA

Order no.	Cable length	Type	For measuring instrument
	m		
2121428	2		Maxum III (E1)
4102330	0.2	Opto USB	Digimar M814 (in conjunction with cable 4102510) Multimar 25 ES (in conjunction with cable 4102510) MarTool 106 ES (in conjunction with cable 4102510)
4102331	0.2	Millimar - USB	Millimar C1208, C1216, 1240, C1240, C1245, S1840, S1841, X1715, X1741, 832 (in conjunction with cable 7024634)
4102333	0.2	817 USB	Digimar 817 CLM (in conjunction with cable 7024634)
4102357	2	16 EXu	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, PS10, M300, M300C, PocketSurf IV
4102603	2	DK-U1	Micromar 40 EWR (≥ 2018)
4102782	0.1	MC-I	Foot switch 16 ESf
4305121	2	800 EWu	MarCal 31 EW MarTest 800 EW, 800 EWL
4346023	2	2000 USB	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II
4495079	1.5	838 USB	MaraMeter 838 EI, 838 EA

ACCESSORIES

Order no.	Product name	Product type
4102221	Remote control for MarCom	MC-R
4102553	USB-Hub 7-fold industrial model	USB-Hub
4102058	Foot switch to trigger data transmission	16 ESf

MarConnect 16 EXr / 16 ESv / 800 EWr / 2000 r

Data Connection Cable RS232C

RS232C

FEATURES

- For connecting the measuring instrument to an interface box or PC
- Data transfer to MarCom or to other applications via communication interface

- **SoftwareMarCom Professional** free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS232 interface)



Application:

data collection with RS232 compatible devices

TECHNICAL DATA

Order no.	Cable length	Type	For measuring instrument
	m		
4102410	2	16 EXr	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, PS10, M300, M300C, PocketSurf IV
4102510	2	16 ESv	Digimar 814 G, 814 N Multimar 25 ES MarTool 106 ES
4305122	2	800 EWr	MarCal 31 EW MarTest 800 EW, 800 EWL
4346020	2	2000 r	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II
7024634	3		Digimar 817 CLM Millimar C1208, C1216, 1240, C1245, S1840, S1841, X1715, X1745, 832

MarConnect 16 EWd / 2000 d / 838 di (A)

Digimatic Data Cable

FEATURES

- For connection to Digimatic compatible interfaces and evaluation equipment



Application:

Data collection with Digimatic-compatible devices

TECHNICAL DATA

Order no.	Cable length	Type	Inputs	For measuring instrument
	m			
2239035	2		Footswitch	MaxumIII Indicators with 6 pin output port
2239037	2			MaxumIII Indicator with 10 pin output port
4102606	2	DK-D1		Micromar 40 EWR (≥ 2018)
4102915	2	16 EWd		MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, M300, M300C
4346021	2	2000 d		Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II Millimar C1200

MarGage | Standards and Gage Blocks

Today, measurement standards such as parallel gage blocks still form the basis of dimensional metrology. Their applications range from setting gages for indicating measuring instruments to reference standards in calibration laboratories. We guarantee the highest possible quality due to careful selection of materials used and accreditation of the PTB.



Gage Blocks

MarGage 402 / 404 / 405 / 406 / 408 / 409 / 412 / 413 470
Rectangular Gage Block Set made of Steel

MarGage 411 / 415 474
Rectangular Gage Block Set made of Steel

MarGage 402 C / 404 C / 405 C / 406 C / 408 C / 409 C 475
Rectangular Gage Block Set made of Ceramic

MarGage 418 C / 419 C 478
Rectangular Gage Block Set made of Ceramic

MarGage 417 481
Rectangular Gage Blocks made of Steel

MarGage 417 C 484
Rectangular Gage Blocks made of Ceramic

Pin Gages / Plug Gages

MarGage 426 G 492
Pin Gage with Handle

MarGage 426 / 426 S 495
Pin Gage without Handle

MarGage 426 D 499
Individual Plug Gage with Handle

MarGage 426 M / 426 MS 501
Thread Pin Gages, Holder Pair

Setting Standards

MarGage 355 E 503
Ring Gage

MarGage 402 / 404

Rectangular Gage Block Set made of Steel

FEATURES

- Vertical arrangement to save space

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower tolerance classes.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11.5 x 10^{-6} K^{-1}



402



404

TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800400	402	32	0 Includes Mahr calibration certificate	1.005 1.01 –1.09 1.1 –1.9 1 –9 10 –30 50	- 0.01 0.1 1 10 -	1 9 9 9 3 1
4800401	402	32	1 Includes Mahr calibration certificate	1.005 1.01 –1.09 1.1 –1.9 1 –9 10 –30 50	- 0.01 0.1 1 10 -	1 9 9 9 3 1
4800402	402	32	2 Includes Mahr calibration certificate	1.005 1.01 –1.09 1.1 –1.9 1 –9 10 –30 50	- 0.01 0.1 1 10 -	1 9 9 9 3 1
4800403DKS	402	32	K Includes DAkkS calibration certificate	1.005 1.01 –1.09 1.1 –1.9 1 –9 10 –30 50	- 0.01 0.1 1 10 -	1 9 9 9 3 1
4800000	404	46	0 Includes Mahr calibration certificate	1.001 –1.009 1.01 –1.09 1.1 –1.9 1 –9 10 –100	0.001 0.01 0.1 1 10	9 9 9 9 10
4800001	404	46	1 Includes Mahr calibration certificate	1.001 –1.009 1.01 –1.09 1.1 –1.9 1 –9 10 –100	0.001 0.01 0.1 1 10	9 9 9 9 10
4800002	404	46	2 Includes Mahr calibration certificate	1.001 –1.009 1.01 –1.09 1.1 –1.9 1 –9 10 –100	0.001 0.01 0.1 1 10	9 9 9 9 10
4800003DKS	404	46	K Includes DAkkS calibration certificate	1.001 –1.009 1.01 –1.09 1.1 –1.9 1 –9 10 –100	0.001 0.01 0.1 1 10	9 9 9 9 10

ACCESSORIES

Order no.	Product name	Product type
4800130	Maintenance accessories	424
4800140	Optical flat, Ø = 45 mm	421
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423

MarGage 405 / 406

Rectangular Gage Block Set made of Steel

FEATURES

- Vertical arrangement to save space

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower tolerance classes.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11.5 x 10^{-6} K^{-1}



405



406

TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800410	405	47	0 Includes Mahr calibration certificate	1.005 1.01 –1.19 1.2 –1.9 1 –9 10 –100	- 0.01 0.1 1 10	1 19 8 9 10
4800411	405	47	1 Includes Mahr calibration certificate	1.005 1.01 –1.19 1.2 –1.9 1 –9 10 –100	- 0.01 0.1 1 10	1 19 8 9 10
4800412	405	47	2 Includes Mahr calibration certificate	1.005 1.01 –1.19 1.2 –1.9 1 –9 10 –100	- 0.01 0.1 1 10	1 19 8 9 10
4800413DKS	405	47	K Includes DAkkS calibration certificate	1.005 1.01 –1.19 1.2 –1.9 1 –9 10 –100	- 0.01 0.1 1 10	1 19 8 9 10
4800010	406	87	0 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –9.5 10 –100	- 0.001 0.01 0.5 10	1 9 49 18 10
4800011	406	87	1 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –9.5 10 –100	- 0.001 0.01 0.5 10	1 9 49 18 10
4800012	406	87	2 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –9.5 10 –100	- 0.001 0.01 0.5 10	1 9 49 18 10
4800014DKS	406	87	K Includes DAkkS calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –9.5 10 –100	- 0.001 0.01 0.5 10	1 9 49 18 10

ACCESSORIES

Order no.	Product name	Product type
4800130	Maintenance accessories	424
4800140	Optical flat, Ø = 45 mm	421
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423

MarGage 408 / 409

Rectangular Gage Block Set made of Steel

FEATURES

- Vertical arrangement to save space

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower tolerance classes.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11.5 x 10^{-6} K^{-1}



408



409

TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800020	408	111	0 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –24.5 25 –100	- 0.001 0.01 0.5 25	1 9 49 48 4
4800021	408	111	1 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –24.5 25 –100	- 0.001 0.01 0.5 25	1 9 49 48 4
4800022	408	111	2 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –24.5 25 –100	- 0.001 0.01 0.5 25	1 9 49 48 4
4800027DKS	408	111	K Includes DAkkS calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –24.5 25 –100	- 0.001 0.01 0.5 25	1 9 49 48 4
4800030	409	121	0 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1.6 –1.9 1 –24.5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0.001 0.01 0.1 0.5 10 25	1 9 49 4 48 6 4
4800031	409	121	1 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1.6 –1.9 1 –24.5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0.001 0.01 0.1 0.5 10 25	1 9 49 4 48 6 4
4800032	409	121	2 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1.6 –1.9 1 –24.5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0.001 0.01 0.1 0.5 10 25	1 9 49 4 48 6 4
4800033DKS	409	121	K Includes DAkkS calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1.6 –1.9 1 –24.5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0.001 0.01 0.1 0.5 10 25	1 9 49 4 48 6 4

ACCESSORIES

Order no.	Product name	Product type
4800130	Maintenance accessories	424
4800140	Optical flat, Ø = 45 mm	421
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423

MarGage 412 / 413

Rectangular Gage Block Set made of Steel

FEATURES

- Vertical arrangement to save space

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower tolerance classes.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11.5 x 10^{-6} K^{-1}



TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Number
		Pieces		mm	
4800425	412	8	0 Includes Mahr calibration certificate	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	8
4800426	412	8	1 Includes Mahr calibration certificate	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	8
4800427	412	8	2 Includes Mahr calibration certificate	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	8
4800430	413	5	0 Includes Mahr calibration certificate	600 / 700 / 800 / 900 / 1000	5
4800431	413	5	1 Includes Mahr calibration certificate	600 / 700 / 800 / 900 / 1000	5
4800432	413	5	2 Includes Mahr calibration certificate	600 / 700 / 800 / 900 / 1000	5
4800428DKS	412	8	K Includes DAkkS calibration certificate	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	8
4800433DKS	413	5	K Includes DAkkS calibration certificate	600 / 700 / 800 / 900 / 1000	5

ACCESSORIES

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800180	Optical parallel, Ø = 30 mm	421 P
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423
4800130	Maintenance accessories	424

MarGage 411 / 415

Rectangular Gage Block Set made of Steel

FEATURES

- Vertical arrangement to save space

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.
For testing and calibrating calipers

- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11.5 x 10^{-6} K^{-1}



TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Number
		Pieces		mm	
4800343	411	5	1 Includes Mahr calibration certificate	30 / 41.3 / 131.4 / 243.5 / 281.2	5
4800344	411	5	2 Includes Mahr calibration certificate	30 / 41.3 / 131.4 / 243.5 / 281.2	5
4800339	415	6	1 Includes Mahr calibration certificate	30 / 41.3 / 131.4 / 243.5 / 281.2 /481.1	6
4800340	415	6	2 Includes Mahr calibration certificate	30 / 41.3 / 131.4 / 243.5 / 281.2 /481.1	6

MarGage 402 C / 404 C

Rectangular Gage Block Set made of Ceramic

FEATURES

Advantages of ceramic:

- Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Sliding ability is retained for longer
- **Extremely wear-resistant.** The longest life and highest stability of any material currently used in measuring technology. Allows for significantly longer gage monitoring intervals
- **Corrosion-resistant.** Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- **Coefficient of expansion similar to that of steel.** Therefore there are no usage restrictions, even in extreme temperature conditions
- Circonimar is non-magnetizable, anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt.

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower tolerance classes.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9.3 x 10^{-6} K^{-1}



402 C



404 C

TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800094DKS	402 C	32	K Includes DAkkS calibration certificate	1.005 1.01 –1.09 1.1 –1.9 1 –9 10 –30 50	- 0.01 0.1 1 10 -	1 9 9 9 3 1
4800095	402 C	32	0 Includes Mahr calibration certificate	1.005 1.01 –1.09 1.1 –1.9 1 –9 10 –30 50	- 0.01 0.1 1 10 -	1 9 9 9 3 1
4800096	402 C	32	1 Includes Mahr calibration certificate	1.005 1.01 –1.09 1.1 –1.9 1 –9 10 –30 50	- 0.01 0.1 1 10 -	1 9 9 9 3 1
4800097	402 C	32	2 Includes Mahr calibration certificate	1.005 1.01 –1.09 1.1 –1.9 1 –9 10 –30 50	- 0.01 0.1 1 10 -	1 9 9 9 3 1
4800008	404 C	46	0 Includes Mahr calibration certificate	1.001 –1.009 1.01 –1.09 1.1 –1.9 1 –9 10 –100	0.001 0.01 0.1 1 10	9 9 9 9 10
4800009	404 C	46	1 Includes Mahr calibration certificate	1.001 –1.009 1.01 –1.09 1.1 –1.9 1 –9 10 –100	0.001 0.01 0.1 1 10	9 9 9 9 10
4800004	404 C	46	2 Includes Mahr calibration certificate	1.001 –1.009 1.01 –1.09 1.1 –1.9 1 –9 10 –100	0.001 0.01 0.1 1 10	9 9 9 9 10
4800088DKS	404 C	46	K Includes DAkkS calibration certificate	1.001 –1.009 1.01 –1.09 1.1 –1.9 1 –9 10 –100	0.001 0.01 0.1 1 10	9 9 9 9 10

ACCESSORIES

Order no.	Product name	Product type
4800130	Maintenance accessories	424
4800140	Optical flat, Ø = 45 mm	421
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423

MarGage 405 C / 406 C

Rectangular Gage Block Set made of Ceramic

FEATURES

Advantages of ceramic:

- Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Sliding ability is retained for longer
- **Extremely wear-resistant.** The longest life and highest stability of any material currently used in measuring technology. Allows for significantly longer gage monitoring intervals
- **Corrosion-resistant.** Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- **Coefficient of expansion similar to that of steel.** Therefore there are no usage restrictions, even in extreme temperature conditions
- Circonimar is non-magnetizable, anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt.

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower tolerance classes.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9.3 x 10^{-6} K^{-1}



405 C



406 C

TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800420	405 C	47	0 Includes Mahr calibration certificate	1.005 1.01 –1.19 1.2 –1.9 1 –9 10 –100	- 0.01 0.1 1 10	1 19 8 9 10
4800421	405 C	47	1 Includes Mahr calibration certificate	1.005 1.01 –1.19 1.2 –1.9 1 –9 10 –100	- 0.01 0.1 1 10	1 19 8 9 10
4800422	405 C	47	2 Includes Mahr calibration certificate	1.005 1.01 –1.19 1.2 –1.9 1 –9 10 –100	- 0.01 0.1 1 10	1 19 8 9 10
4800423DKS	405 C	47	K Includes DAkkS calibration certificate	1.005 1.01 –1.19 1.2 –1.9 1 –9 10 –100	- 0.01 0.1 1 10	1 19 8 9 10
4800018	406 C	87	0 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –9.5 10 –100	- 0.001 0.01 0.5 10	1 9 49 18 10
4800019	406 C	87	1 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –9.5 10 –100	- 0.001 0.01 0.5 10	1 9 49 18 10
4800017	406 C	87	2 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –9.5 10 –100	- 0.001 0.01 0.5 10	1 9 49 18 10
4800016DKS	406 C	87	K Includes DAkkS calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –9.5 10 –100	- 0.001 0.01 0.5 10	1 9 49 18 10

ACCESSORIES

Order no.	Product name	Product type
4800130	Maintenance accessories	424
4800140	Optical flat, Ø = 45 mm	421
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423

MarGage 409 C / 408 C

Rectangular Gage Block Set made of Ceramic

FEATURES

Advantages of ceramic:

- Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Sliding ability is retained for longer
- **Extremely wear-resistant.** The longest life and highest stability of any material currently used in measuring technology. Allows for significantly longer gage monitoring intervals
- **Corrosion-resistant.** Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- **Coefficient of expansion similar to that of steel.** Therefore there are no usage restrictions, even in extreme temperature conditions
- Circonimar is non-magnetizable, anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt.

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower tolerance classes.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9.3 x 10^{-6} K^{-1}



409 C



408 C

TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800038	409 C	121	0 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1.6 –1.9 1 –24.5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0.001 0.01 0.1 0.5 10 25	1 9 49 4 48 6 4
4800039	409 C	121	1 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1.6 –1.9 1 –24.5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0.001 0.01 0.1 0.5 10 25	1 9 49 4 48 6 4
4800037	409 C	121	2 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1.6 –1.9 1 –24.5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0.001 0.01 0.1 0.5 10 25	1 9 49 4 48 6 4
4800036DKS	409 C	121	K Includes DAkkS calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1.6 –1.9 1 –24.5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0.001 0.01 0.1 0.5 10 25	1 9 49 4 48 6 4
4800028	408 C	111	0 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –24.5 25 –100	- 0.001 0.01 0.5 25	1 9 49 48 4
4800029	408 C	111	1 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –24.5 25 –100	- 0.001 0.01 0.5 25	1 9 49 48 4
4800026	408 C	111	2 Includes Mahr calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –24.5 25 –100	- 0.001 0.01 0.5 25	1 9 49 48 4
4800025DKS	408 C	111	K Includes DAkkS calibration certificate	0.5 1.001 –1.009 1.01 –1.49 1 –24.5 25 –100	- 0.001 0.01 0.5 25	1 9 49 48 4

ACCESSORIES

Order no.	Product name	Product type
4800130	Maintenance accessories	424
4800140	Optical flat, Ø = 45 mm	421
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423

MarGage 418 C

Rectangular Gage Block Set made of Ceramic

FEATURES

Advantages of ceramic:

- Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Sliding ability is retained for longer
- **Extremely wear-resistant.** The longest life and highest stability of any material currently used in measuring technology. Allows for significantly longer gage monitoring intervals
- **Corrosion-resistant.** Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- **Coefficient of expansion similar to that of steel.** Therefore there are no usage restrictions, even in extreme temperature conditions
- Circonimar is non-magnetizable, anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

- **Pair of protective gage blocks:** As outer cover gage blocks where the same gage blocks are in frequent use
- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9.3 x 10^{-6} K^{-1}



TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Number
		Pieces		mm	
4800085	418 C	2	0 Includes Mahr calibration certificate	2	2
4800086	418 C	2	1 Includes Mahr calibration certificate	2	2

MarGage 419 C

Rectangular Gage Block Set made of Ceramic

FEATURES

Advantages of ceramic:

- Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Sliding ability is retained for longer
- **Extremely wear-resistant.** The longest life and highest stability of any material currently used in measuring technology. Allows for significantly longer gage monitoring intervals
- **Corrosion-resistant.** Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- **Coefficient of expansion similar to that of steel.** Therefore there are no usage restrictions, even in extreme temperature conditions
- Circonimar is non-magnetizable, anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

- For testing and calibrating outside micrometers
- **Package contains:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9.3 x 10^{-6} K^{-1}



TECHNICAL DATA

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Number
		Pieces		mm	
4800090	419 C	10	1 Includes Mahr calibration certificate	2.5 / 5.1 / 7.7 / 10.3 / 12.9 / 15.0 / 17.6 / 20.2 / 22.8 / 25 + 421 P, ø 30 mm	10

MarGage

Rectangular Gage Block Set made of Steel

FEATURES

- Long used as the practical standards of dimensional measurement in precision manufacturing
- With accuracies, materials and manufacturing methods greatly refined, gage blocks are now of highest quality and precision
- Used as comparison reference and utilization standards in the field of length measurement
- For checking gages and measuring instruments
- Used individually or in combinations by wringing several blocks together
- Mahr gage blocks are available from stock individually and as full sets in inches (rectangular only)
- Sets are manufactured to Grade 0 only, which meet or exceed ASME B89.1.9–2002 specifications
- Offered in steel to suit a wide range of service conditions
  - Steel blocks are extremely stable, hardened to Rc 62 minimum, and processed through a thorough seasoning cycle to relieve internal stresses before lap finishing
- All block sets are serialized and supplied in a fitted storage case (certification priced separately)
- **Package contains:** wooden case with clear labeling strips



TECHNICAL DATA

Order no.	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
	Pieces		inch	inch	
2176361	81	0 Includes Mahr calibration certificate	.1001″ –.1009″ .101″ –.149″ .050″ –.950″ 1.000″ –4.000″	.0001″ .001″ .050″ 1.00″	9 49 19 4
2176362	49	0 **Includes Mahr calibration certificate**	.1001″ –.1009″ .101″ –.109″ .010″ –.090″ .110″ –.190″ .100 –.900″ 1.000″ –4.000″	.0001″ .001″ .010″ .010″ .100″ 1.00″	9 9 9 9 9 4

ACCESSORIES

Order no.	Product name	Type
4800140	Optical flat, Ø = 45 mm	421
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423
4800130	Maintenance accessories	424

MarGage 417/0

Rectangular Gage Blocks made of Steel, Tolerance Class 0

FEATURES

- From nominal size 125 mm on, also supplied with wooden case
- Special sizes are available upon request

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

- **Coefficient of linear expansion:** 11.5 x 10^{-6} K^{-1}



Nominal size mm	Order no.
0.5	4801009
0.55	4801173
0.6	4801174
0.65	4801175
0.7	4801176
0.75	4801177
0.8	4801178
0.85	4801179
0.9	4801180
0.95	4801181
1	4801019
1.0005	4801720
1.001	4801020
1.002	4801021
1.003	4801022
1.004	4801023
1.005	4801024
1.006	4801025
1.007	4801026
1.008	4801027
1.009	4801028
1.01	4801029
1.02	4801030
1.03	4801031
1.04	4801032
1.05	4801033
1.06	4801034
1.07	4801035
1.08	4801036
1.09	4801037
1.1	4801038
1.11	4801039
1.12	4801040
1.13	4801041
1.14	4801042
1.15	4801043
1.16	4801044
1.17	4801045
1.18	4801046
1.19	4801047
1.2	4801048
1.21	4801049
1.22	4801050
1.23	4801051
1.24	4801052
1.25	4801053

Nominal size mm	Order no.
1.26	4801054
1.27	4801055
1.28	4801056
1.29	4801057
1.3	4801058
1.31	4801059
1.32	4801060
1.33	4801061
1.34	4801062
1.35	4801063
1.36	4801064
1.37	4801065
1.38	4801066
1.39	4801067
1.4	4801068
1.41	4801069
1.42	4801070
1.43	4801071
1.44	4801072
1.45	4801073
1.46	4801074
1.47	4801075
1.48	4801076
1.49	4801077
1.5	4801078
1.6	4801079
1.7	4801080
1.8	4801081
1.9	4801082
2	4801083
2.5	4801084
3	4801085
3.5	4801086
4	4801087
4.5	4801088
5	4801089
5.5	4801090
6	4801091
6.5	4801092
7	4801093
7.5	4801094
8	4801095
8.5	4801096
9	4801097
9.5	4801098
10	4801099

Nominal size mm	Order no.
10.5	4801100
11	4801101
11.5	4801102
12	4801103
12.5	4801104
13	4801105
13.5	4801106
14	4801107
14.5	4801108
15	4801109
15.5	4801110
16	4801111
16.5	4801112
17	4801113
17.5	4801114
18	4801115
18.5	4801116
19	4801117
19.5	4801118
20	4801119
20.5	4801120
21	4801121
21.5	4801122
22	4801123
22.5	4801124
23	4801125
23.5	4801126
24	4801127
24.5	4801128
25	4801129
30	4801130
40	4801131
50	4801132
60	4801133
70	4801134
75	4801135
80	4801136
90	4801137
100	4801138
125	4801139
150	4801140
175	4801141
200	4801142
250	4801143
300	4801144
400	4801146

Nominal size mm	Order no.
500	4801148
600	4801149
700	4801150
800	4801151
900	4801152
1000	4801153

MarGage 417/1

Rectangular gage blocks made of steel Tolerance class 1

FEATURES

- From nominal size 125 mm on, also supplied with wooden case
- Special sizes are available upon request

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

- **Coefficient of linear expansion:** 11.5 x 10^{-6} K^{-1}



Nominal size mm	Order no.
0.5	4801209
0.55	4801358
0.6	4801359
0.65	4801360
0.7	4801361
0.75	4801362
0.8	4801363
0.85	4801364
0.9	4801365
0.95	4801366
1	4801219
1.0005	4801357
1.001	4801220
1.002	4801221
1.003	4801222
1.004	4801223
1.005	4801224
1.006	4801225
1.007	4801226
1.008	4801227
1.009	4801228
1.01	4801229
1.02	4801230
1.03	4801231
1.04	4801232
1.05	4801233
1.06	4801234
1.07	4801235
1.08	4801236
1.09	4801237
1.1	4801238
1.11	4801239
1.12	4801240
1.13	4801241
1.14	4801242
1.15	4801243
1.16	4801244
1.17	4801245
1.18	4801246
1.19	4801247
1.2	4801248
1.21	4801249
1.22	4801250
1.23	4801251
1.24	4801252
1.25	4801253

Nominal size mm	Order no.
1.26	4801254
1.27	4801255
1.28	4801256
1.29	4801257
1.3	4801258
1.31	4801259
1.32	4801260
1.33	4801261
1.34	4801262
1.35	4801263
1.36	4801264
1.37	4801265
1.38	4801266
1.39	4801267
1.4	4801268
1.41	4801269
1.42	4801270
1.43	4801271
1.44	4801272
1.45	4801273
1.46	4801274
1.47	4801275
1.48	4801276
1.49	4801277
1.5	4801278
1.6	4801279
1.7	4801280
1.8	4801281
1.9	4801282
2	4801283
2.5	4801284
3	4801285
3.5	4801286
4	4801287
4.5	4801288
5	4801289
5.5	4801290
6	4801291
6.5	4801292
7	4801293
7.5	4801294
8	4801295
8.5	4801296
9	4801297
9.5	4801298
10	4801299

Nominal size mm	Order no.
10.5	4801300
11	4801301
11.5	4801302
12	4801303
12.5	4801304
13	4801305
13.5	4801306
14	4801307
14.5	4801308
15	4801309
15.5	4801310
16	4801311
16.5	4801312
17	4801313
17.5	4801314
18	4801315
18.5	4801316
19	4801317
19.5	4801318
20	4801319
20.5	4801320
21	4801321
21.5	4801322
22	4801323
22.5	4801324
23	4801325
23.5	4801326
24	4801327
24.5	4801328
25	4801329
30	4801330
40	4801331
131.4	4803179
50	4801332
60	4801333
70	4801334
75	4801335
80	4801336
90	4801337
100	4801338
125	4801339
243.5	4803180
150	4801340
175	4801341
200	4801342
281.2	4803181

Nominal size mm	Order no.
250	4801343
300	4801344
400	4801346
481.1	4803182
500	4801348
600	4801349
700	4801350
800	4801351
900	4801352
1000	4801353

MarGage 417/2

Rectangular Gage Blocks made of Steel, Tolerance Class 2

FEATURES

- From nominal size 125 mm on, also supplied with wooden case
- Special sizes are available upon request

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Coefficient of linear expansion:** 11.5 x 10^{-6} K^{-1}



Nominal size mm	Order no.
0.5	4801409
0.55	4801777
0.6	4801778
0.65	4801779
0.7	4801780
0.75	4801781
0.8	4801782
0.85	4801783
0.9	4801784
0.95	4801785
1	4801419
1.0005	4803068
1.001	4801420
1.002	4801421
1.003	4801422
1.004	4801423
1.005	4801424
1.006	4801425
1.007	4801426
1.008	4801427
1.009	4801428
1.01	4801429
1.02	4801430
1.03	4801431
1.04	4801432
1.05	4801433
1.06	4801434
1.07	4801435
1.08	4801436
1.09	4801437
1.1	4801438
1.11	4801439
1.12	4801440
1.13	4801441
1.14	4801442
1.15	4801443
1.16	4801444
1.17	4801445
1.18	4801446
1.19	4801447
1.2	4801448
1.21	4801449
1.22	4801450
1.23	4801451
1.24	4801452
1.25	4801453

Nominal size mm	Order no.
1.26	4801454
1.27	4801455
1.28	4801456
1.29	4801457
1.3	4801458
1.31	4801459
1.32	4801460
1.33	4801461
1.34	4801462
1.35	4801463
1.36	4801464
1.37	4801465
1.38	4801466
1.39	4801467
1.4	4801468
1.41	4801469
1.42	4801470
1.43	4801471
1.44	4801472
1.45	4801473
1.46	4801474
1.47	4801475
1.48	4801476
1.49	4801477
1.5	4801478
1.6	4801479
1.7	4801480
1.8	4801481
1.9	4801482
2	4801483
2.5	4801484
3	4801485
3.5	4801486
4	4801487
4.5	4801488
5	4801489
5.5	4801490
6	4801491
6.5	4801492
7	4801493
7.5	4801494
8	4801495
8.5	4801496
9	4801497
9.5	4801498
10	4801499

Nominal size mm	Order no.
10.5	4801500
11	4801501
11.5	4801502
12	4801503
12.5	4801504
13	4801505
13.5	4801506
14	4801507
14.5	4801508
15	4801509
15.5	4801510
16	4801511
16.5	4801512
17	4801513
17.5	4801514
18	4801515
18.5	4801516
19	4801517
19.5	4801518
20	4801519
20.5	4801520
21	4801521
21.5	4801522
22	4801523
22.5	4801524
23	4801525
23.5	4801526
24	4801527
24.5	4801528
25	4801529
30	4801530
40	4801531
41.3	4803329
50	4801532
60	4801533
70	4801534
75	4801535
80	4801536
90	4801537
100	4801538
125	4801539
131.4	4803330
150	4801540
175	4801541
200	4801542
243.5	4803331

Nominal size mm	Order no.
250	4801543
300	4801544
481.1	4803382
400	4801546
500	4801548
600	4801549
700	4801550
800	4801551
900	4801552
1000	4801553

MarGage 417 C/0

Rectangular Gage Blocks made of Ceramic, Tolerance Class 0

FEATURES

- Ideal for all applications
- The outstanding features of all ceramic gage blocks from Mahr provide unrivalled flexibility in practical use

- **Advantages of ceramic:**
  - Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Sliding ability is retained for longer
  - **Extremely wear-resistant.** The longest life and highest stability of any material currently used in measuring technology. Allows for significantly longer gage monitoring intervals
  - **Corrosion-resistant.** Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
  - **Coefficient of expansion similar to that of steel.** Therefore there are no usage restrictions, even in extreme temperature conditions
  - Circonimar is non-magnetizable, anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt.

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

- **Coefficient of linear expansion:** 9.3 x 10^{-6} K^{-1}

Nominal size mm	Order no.
0.5	4804000
1	4804010
1.0005	4804759
1.001	4804011
1.002	4804012
1.003	4804013
1.004	4804014
1.005	4804015
1.006	4804016
1.007	4804017
1.008	4804018
1.009	4804019
1.01	4804020
1.02	4804021
1.03	4804022
1.04	4804023
1.05	4804024
1.06	4804025
1.07	4804026
1.08	4804027
1.09	4804028
1.1	4804029
1.11	4804030
1.12	4804031
1.13	4804032
1.14	4804033
1.15	4804034
1.16	4804035
1.17	4804036
1.18	4804037
1.19	4804038
1.2	4804039
1.21	4804040
1.22	4804041
1.23	4804042
1.24	4804043
1.25	4804044
1.26	4804045
1.27	4804046
1.28	4804047
1.29	4804048
1.3	4804049
1.31	4804050
1.32	4804051
1.33	4804052
1.34	4804053
1.35	4804054
1.36	4804055
1.37	4804056
1.38	4804057
1.39	4804058
1.4	4804059
1.41	4804060
1.42	4804061
1.43	4804062
1.44	4804063
1.45	4804064
1.46	4804065
1.47	4804066
1.48	4804067
1.49	4804068

Nominal size mm	Order no.
1.5	4804069
1.6	4804070
1.7	4804071
1.8	4804072
1.9	4804073
2	4804074
2.5	4804075
3	4804076
3.5	4804077
4	4804078
4.5	4804079
5	4804080
5.5	4804081
6	4804082
6.5	4804083
7	4804084
7.5	4804085
8	4804086
8.5	4804087
9	4804088
9.5	4804089
10	4804090
10.5	4804091
11	4804092
11.5	4804093
12	4804094
12.5	4804095
13	4804096
13.5	4804097
14	4804098
14.5	4804099
15	4804100
15.5	4804101
16	4804102
16.5	4804103
17	4804104
17.5	4804105
18	4804106
18.5	4804107
19	4804108
19.5	4804109
20	4804110
20.5	4804111
21	4804112
21.5	4804113
22	4804114
22.5	4804115
23	4804116
23.5	4804117
24	4804118
24.5	4804119
25	4804120
30	4804121
40	4804122
50	4804123
60	4804124
70	4804125
75	4804126
80	4804127
90	4804128
100	4804129

MarGage 417 C/1

Rectangular Gage Blocks made of Ceramic, Tolerance Class 1

FEATURES

- Ideal for all applications
- The outstanding features of all ceramic gage blocks from Mahr provide unrivalled flexibility in practical use

- **Advantages of ceramic:**
  - Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Sliding ability is retained for longer
  - **Extremely wear-resistant.** The longest life and highest stability of any material currently used in measuring technology. Allows for significantly longer gage monitoring intervals
  - **Corrosion-resistant.** Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
  - **Coefficient of expansion similar to that of steel.** Therefore there are no usage restrictions, even in extreme temperature conditions
  - Circonimar is non-magnetizable, anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt.

Tolerance class 1
For high accuracy requirements. As reference gage block for the measuring room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments. For checking precision gages.

- **Coefficient of linear expansion:** 9.3 x 10^{-6} K^{-1}

Nominal size mm	Order no.
0.5	4804200
1	4804210
1.0005	4804764
1.001	4804211
1.002	4804212
1.003	4804213
1.004	4804214
1.005	4804215
1.006	4804216
1.007	4804217
1.008	4804218
1.009	4804219
1.01	4804220
1.02	4804221
1.03	4804222
1.04	4804223
1.05	4804224
1.06	4804225
1.07	4804226
1.08	4804227
1.09	4804228
1.1	4804229
1.11	4804230
1.12	4804231
1.13	4804232
1.14	4804233
1.15	4804234
1.16	4804235
1.17	4804236
1.18	4804237
1.19	4804238
1.2	4804239
1.21	4804240
1.22	4804241
1.23	4804242
1.24	4804243
1.25	4804244
1.26	4804245
1.27	4804246
1.28	4804247
1.29	4804248
1.3	4804249
1.31	4804250
1.32	4804251
1.33	4804252
1.34	4804253
1.35	4804254
1.36	4804255
1.37	4804256
1.38	4804257
1.39	4804258
1.4	4804259
1.41	4804260
1.42	4804261
1.43	4804262
1.44	4804263
1.45	4804264
1.46	4804265
1.47	4804266
1.48	4804267
1.49	4804268

Nominal size mm	Order no.
1.5	4804269
1.6	4804270
1.7	4804271
1.8	4804272
1.9	4804273
2	4804274
2.5	4804275
3	4804276
3.5	4804277
4	4804278
4.5	4804279
5	4804280
5.1	4804751
5.5	4804281
6	4804282
6.5	4804283
7	4804284
7.5	4804285
7.7	4804752
8	4804286
8.5	4804287
9	4804288
9.5	4804289
10	4804290
10.3	4804753
10.5	4804291
11	4804292
11.5	4804293
12	4804294
12.5	4804295
12.9	4804754
13	4804296
13.5	4804297
14	4804298
14.5	4804299
15	4804300
15.5	4804301
16	4804302
16.5	4804303
17	4804304
17.5	4804305
17.6	4804755
18	4804306
18.5	4804307
19	4804308
19.5	4804309
20	4804310
20.2	4804756
20.5	4804311
21	4804312
21.5	4804313
22	4804314
22.5	4804315
22.8	4804757
23	4804316
23.5	4804317
24	4804318
24.5	4804319
25	4804320
30	4804321
40	4804322

Nominal size mm	Order no.
41.3	4804758
50	4804323
60	4804324
70	4804325
75	4804326
80	4804327
90	4804328
100	4804329
131.4	4804760

MarGage 417 C/2

Rectangular Gage Blocks made of Ceramic, Tolerance Class 2

FEATURES

- Ideal for all applications
- The outstanding features of all ceramic gage blocks from Mahr provide unrivalled flexibility in practical use

- **Advantages of ceramic:**
  - Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Sliding ability is retained for longer
  - **Extremely wear-resistant.** The longest life and highest stability of any material currently used in measuring technology. Allows for significantly longer gage monitoring intervals
  - **Corrosion-resistant.** Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
  - **Coefficient of expansion similar to that of steel.** Therefore there are no usage restrictions, even in extreme temperature conditions
  - Circonimar is non-magnetizable, anti-static, anti-magnetic and non-conductive. It does not attract dust or dirt.

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Coefficient of linear expansion:** 9.3 x 10^{-6} K^{-1}

Nominal size mm	Order no.
0.5	4804400
1	4804410
1.0005	4804765
1.001	4804411
1.002	4804412
1.003	4804413
1.004	4804414
1.005	4804415
1.006	4804416
1.007	4804417
1.008	4804418
1.009	4804419
1.01	4804420
1.02	4804421
1.03	4804422
1.04	4804423
1.05	4804424
1.06	4804425
1.07	4804426
1.08	4804427
1.09	4804428
1.1	4804429
1.11	4804430
1.12	4804431
1.13	4804432
1.14	4804433
1.15	4804434
1.16	4804435
1.17	4804436
1.18	4804437
1.19	4804438
1.2	4804439
1.21	4804440
1.22	4804441
1.23	4804442
1.24	4804443
1.25	4804444
1.26	4804445
1.27	4804446
1.28	4804447
1.29	4804448
1.3	4804449
1.31	4804450
1.32	4804451
1.33	4804452
1.34	4804453
1.35	4804454
1.36	4804455
1.37	4804456
1.38	4804457
1.39	4804458
1.4	4804459
1.41	4804460
1.42	4804461
1.43	4804462
1.44	4804463
1.45	4804464
1.46	4804465
1.47	4804466
1.48	4804467
1.49	4804468

Nominal size mm	Order no.
1.5	4804469
1.6	4804470
1.7	4804471
1.8	4804472
1.9	4804473
2	4804474
2.5	4804475
3	4804476
3.5	4804477
4	4804478
4.5	4804479
5	4804480
5.1	4806114
5.5	4804481
6	4804482
6.5	4804483
7	4804484
7.5	4804485
7.7	4806115
8	4804486
8.5	4804487
9	4804488
9.5	4804489
10	4804490
10.3	4806116
10.5	4804491
11	4804492
11.5	4804493
12	4804494
12.5	4804495
12.9	4806117
13	4804496
13.5	4804497
14	4804498
14.5	4804499
15	4804500
15.5	4804501
16	4804502
16.5	4804503
17	4804504
17.5	4804505
17.6	4806118
18	4804506
18.5	4804507
19	4804508
19.5	4804509
20	4804510
20.2	4806119
20.5	4804511
21	4804512
21.5	4804513
22	4804514
22.5	4804515
22.8	4806120
23	4804516
23.5	4804517
24	4804518
24.5	4804519
25	4804520
30	4804521
40	4804522

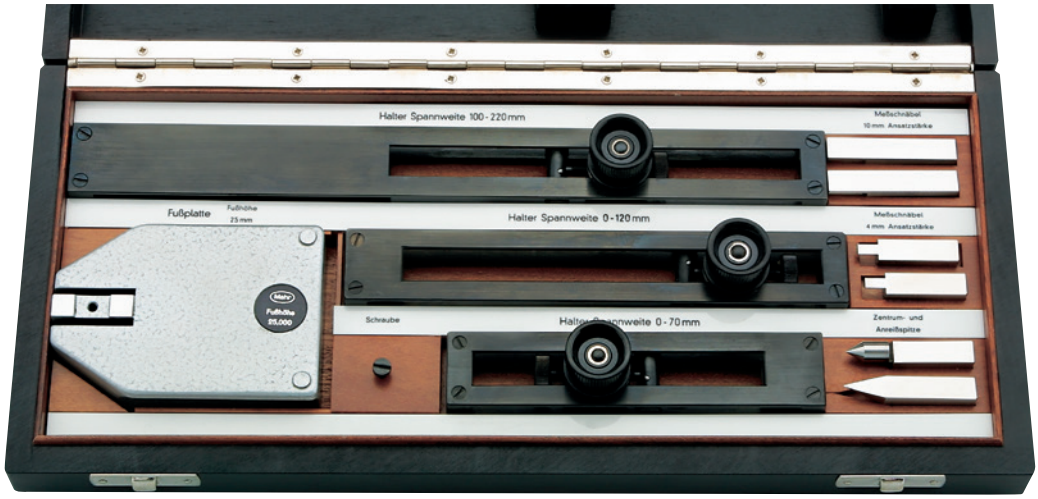
Nominal size mm	Order no.
41.3	4806121
50	4804523
60	4804524
70	4804525
75	4804526
80	4804527
90	4804528
100	4804529
131.4	4806122

MarGage 420

Gage Block Holder and Measuring Jaws Accessory Set

FEATURES

- To be used in conjunction with gage blocks for gaging both workpieces and fixtures
- To measure and calibrate setting gages and measuring instruments
- For scribing and marking
- **Package contains:** wooden case



TECHNICAL DATA

Order no.	Product type
4800100	420

ACCESSORIES

Order no.	Product name	Product type
4800110	Hemispherical measuring jaws, approach 2 x 2 mm = 4 mm	420 m
4800111	Hemispherical measuring jaws, approach 2 x 5 mm = 10 mm	420 m
4800112	Scriber tip	420 a
4800113	Centering point	420 z
4800114	Stand	420 f
4800120	Holder, Measuring span 0 –70 mm	420 h
4800121	Holder, Measuring span 0 –120 mm	420 h
4800122	Holder, Measuring span 100 –220 mm	420 h
4800123	Holder, Measuring span 100 –420 mm	420 h
4800124	Holder, Measuring span 400 –820 mm	420 h

MarGage 424

Maintenance Accessories

FEATURES

- The main tools for testing and repairing parallel gage blocks

Set contains:

- Optical flat 421
  - For checking the flatness of the measuring surface by the interference method, Ø 45 mm
- Wooden tongs 423
  - For heat insulation when holding parallel gage blocks
- Granite lapping plate
  - For removing ridges and damage from gage block surfaces
  - High precision model
- Special Vaseline tin
  - For anti-corrosive protection of parallel steel gage blocks
- Brush and suede cloth
  - For cleaning the parallel gage block
- **Package contains:** case



TECHNICAL DATA

Order no.	Product type
4800130	424

ACCESSORIES

Order no.	Product name	Product type
4800142	Wooden tongs, single, to prevent heat transfer when handling gage blocks	423

MarGage 421

Optical Flat

FEATURES

- For testing the flatness of high-precision measuring surfaces (by the interference method) on gage blocks and measuring equipment and on precision components with similarly challenging surfaces.
- **Package contains:** case



TECHNICAL DATA

Order no.	Product type	Diameter	Thickness	Flatness deviation
		mm	mm	µm
4800135	421	100	20	0.1
4800136	421	150	30	0.1
4800137	421	300	50	0.4
4800140	421	45	11	0.1

MarGage 421 P

Optical Parallel

FEATURES

- For simultaneous testing of parallelism and flatness of plan measuring surfaces of outside micrometers and snap gages by interference method
- **Package contains:** case





TECHNICAL DATA

Order no.	Product type	Diameter	Thickness	Flatness deviation	Parallelism deviation
		mm	mm	µm	µm
4800180	421 P	30	12	0.15	0.3

MarGage 421 PS

Optical Parallels

FEATURES

- For simultaneous testing of parallelism and flatness of planar measuring surfaces of outside micrometers and indicating snap gages by the interference method
- 4 different thicknesses, for parallelism testing in different spindle settings (rotating spindles)
- **Package contains:** case





TECHNICAL DATA

Order no.	Product type	Diameter	Measuring range	Nominal size	Flatness deviation	Parallelism deviation	Quantity per set
		mm		mm	µm	µm	Pieces
4800185	421 PS	30	for 0–25 mm / 0–1″	12	0.15	0.3	4
4800186	421 PS	30	for 25–50 mm / 1–2″	25	0.15	0.3	4
4800187	421 PS	30	for 50–75 mm / 2–3″	50	0.15	0.5	4
4800188	421 PS	30	for 75–100 mm / 3–4″	75	0.15	0.5	4

MarGage 426 G

Pin Gage with Handle

FEATURES

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- Gage is made of wear-resistant, hardened, multi-aged, ground and lapped steel
- Grade 0
- DIN 2269
- Manufacturing tolerance ± 0.5 µm



TECHNICAL DATA

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Usable length
			mm	mm	µm	mm
4828151	426 G	0	0.1 –0.19	0.01	0.5	25
4828152	426 G	0	0.2 –0.29	0.01	0.5	25
4828153	426 G	0	0.3 –0.49	0.01	0.5	25
4828154	426 G	0	0.5 –0.99	0.01	0.5	25
4828155	426 G	0	1 –2.99	0.01	0.5	57
4828156	426 G	0	3 –5.99	0.01	0.5	57
4828157	426 G	0	6 –10	0.01	0.5	57
4828351	426 G	0	0.1 –0.199	0.001	0.5	25
4828352	426 G	0	0.2 –0.299	0.001	0.5	25
4828353	426 G	0	0.3 –0.499	0.001	0.5	25
4828354	426 G	0	0.5 –0.999	0.001	0.5	25
4828355	426 G	0	1 –2.999	0.001	0.5	57
4828356	426 G	0	3 –5.999	0.001	0.5	57
4828357	426 G	0	6 –10	0.001	0.5	57

MarGage 426 G

Pin Gage with Handle

FEATURES

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- Gage is made of wear-resistant, hardened, multi-aged, ground and lapped steel
- Grade 1
- DIN 2269
- Manufacturing tolerance ± 1.0 µm



TECHNICAL DATA

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Usable length
			mm	mm	µm	mm
4828161	426 G	1	0.1 –0.19	0.01	1	33
4828162	426 G	1	0.2 –0.29	0.01	1	33
4828163	426 G	1	0.3 –0.49	0.01	1	33
4828164	426 G	1	0.5 –0.99	0.01	1	33
4828165	426 G	1	1 –2.99	0.01	1	62
4828166	426 G	1	3 –5.99	0.01	1	62
4828167	426 G	1	6 –10	0.01	1	62
4828361	426 G	1	0.1 –0.199	0.001	1	33
4828362	426 G	1	0.2 –0.299	0.001	1	33
4828363	426 G	1	0.3 –0.499	0.001	1	33
4828364	426 G	1	0.5 –0.999	0.001	1	33
4828365	426 G	1	1 –2.999	0.001	1	62
4828366	426 G	1	3 –5.999	0.001	1	62
4828367	426 G	1	6 –10	0.001	1	62

MarGage 426 G

Pin Gage with Handle

FEATURES

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- Gage is made of wear-resistant, hardened, multi-aged and precision ground steel
- DIN 2269
- Manufacturing tolerance ± 1.5 µm



TECHNICAL DATA

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Usable length
			mm	mm	µm	mm
4828171	426 G	2	0.1 –0.19	0.01	1.5	33
4828172	426 G	2	0.2 –0.29	0.01	1.5	33
4828173	426 G	2	0.3 –0.49	0.01	1.5	33
4828174	426 G	2	0.5 –0.99	0.01	1.5	33
4828175	426 G	2	1 –2.99	0.01	1.5	62
4828176	426 G	2	3 –5.99	0.01	1.5	43
4828177	426 G	2	6 –10	0.01	1.5	62

MarGage 426

Pin Gage without Handle

FEATURES

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- Gage is made of wear-resistant, hardened, multi-aged, ground and lapped steel
- Grade 0
- DIN 2269
- Manufacturing tolerance ± 0.5 µm
- Starting from diameter 5.01 mm and above, pin gage value is inscribed on the end face



TECHNICAL DATA

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Length
			mm	mm	µm	mm
4828103	426	0	0.3 –0.49	0.01	0.5	30
4828104	426	0	0.5 –0.99	0.01	0.5	30
4828105	426	0	1 –2.99	0.01	0.5	60
4828106	426	0	3 –5.99	0.01	0.5	60
4828107	426	0	6 –10	0.01	0.5	60
4828303	426	0	0.3 –0.499	0.001	0.5	30
4828304	426	0	0.5 –0.999	0.001	0.5	30
4828305	426	0	1 –2.999	0.001	0.5	60
4828306	426	0	3 –5.999	0.001	0.5	60
4828307	426	0	6 –10	0.001	0.5	60

MarGage 426

Pin Gage without Handle

FEATURES

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- Gage is made of wear-resistant, hardened, multi-aged, ground and lapped steel
- Grade 1
- DIN 2269
- Manufacturing tolerance ± 1.0 µm
- Starting from diameter 5.01 mm and above, pin gage value is inscribed on the end face



TECHNICAL DATA

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Length
			mm	mm	µm	mm
4828113	426	1	0.3 –0.49	0.01	1	40
4828114	426	1	0.5 –0.99	0.01	1	40
4828115	426	1	1 –2.99	0.01	1	70
4828116	426	1	3 –5.99	0.01	1	70
4828117	426	1	6 –9.99	0.01	1	70
4828118	426	1	10 –11.99	0.01	1	70
4828119	426	1	12 –13.99	0.01	1	70
4828120	426	1	14 –15.99	0.01	1	70
4828121	426	1	16 –18.99	0.01	1	70
4828122	426	1	19 –20	0.01	1	70
4828313	426	1	0.3 –0.499	0.001	1	40
4828314	426	1	0.5 –0.999	0.001	1	40
4828315	426	1	1 –2.999	0.001	1	70
4828316	426	1	3 –5.999	0.001	1	70
4828317	426	1	6 –9.999	0.001	1	70
4828318	426	1	10 –11.999	0.001	1	70
4828319	426	1	12 –13.999	0.001	1	70
4828320	426	1	14 –15.999	0.001	1	70
4828321	426	1	16 –18.999	0.001	1	70
4828322	426	1	19 –20	0.001	1	70

MarGage 426

Pin Gage without Handle

FEATURES

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- Gage is made of wear-resistant, hardened, multi-aged and precision ground steel
- DIN 2269
- Manufacturing tolerance ± 1.5 µm
- Starting from diameter 5.01 mm and above, pin gage value is inscribed on the end face



TECHNICAL DATA

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Length
			mm	mm	µm	mm
4828133	426	2	0.3 –0.49	0.01	1.5	40
4828134	426	2	0.5 –0.99	0.01	1.5	40
4828135	426	2	1 –2.99	0.01	1.5	70
4828137	426	2	6 –9.99	0.01	1.5	70
4828138	426	2	10 –11.99	0.01	1.5	70
4828139	426	2	12 –13.99	0.01	1.5	70
4828140	426	2	14 –15.99	0.01	1.5	70
4828141	426	2	16 –18.99	0.01	1.5	70
4828142	426	2	19 –20	0.01	1.5	70

MarGage 426 S

Pin Gage Sets without Handle

FEATURES

- To be used as setting standards for indicating measuring instruments and testing the distances between axes, tapers and other workpieces in conjunction with gage blocks
- Can be used for determining pitch diameter of threads or pitch circle diameter on gears and serrations
- Gage steel, hardened, multi-aged, ground (grade 2) and **lapped** (grade 0 and 1)



TECHNICAL DATA

Order no.	Product type	Grade	Ø	Increment	Quantity per set	Manufacturing tolerance +/–
			mm	mm	Pieces	µm
4828181	426 S	0	0.1 –0.5	0.01	41	0.5
4828182	426 S	0	0.5 –1	0.01	51	0.5
4828183	426 S	0	0.1 –1	0.01	91	0.5
4828184	426 S	0	1 –2	0.01	101	0.5
4828190	426 S	1	1 –10	0.1	91	1
4828191	426 S	1	0.1 –0.5	0.01	41	1
4828192	426 S	1	0.5 –1	0.01	51	1
4828193	426 S	1	0.1 –1	0.01	91	1
4828194	426 S	1	1 –2	0.01	101	1
4828195	426 S	1	2 –3	0.01	101	1
4828196	426 S	1	3 –4	0.01	101	1
4828197	426 S	1	4 –5	0.01	101	1
4828198	426 S	1	5 –6	0.01	101	1
4828199	426 S	1	6 –7	0.01	101	1
4828200	426 S	1	7 –8	0.01	101	1
4828201	426 S	1	8 –9	0.01	101	1
4828202	426 S	1	9 –10	0.01	101	1
4828210	426 S	2	1 –10	0.1	91	1.5
4828211	426 S	2	0.1 –0.5	0.01	41	1.5
4828212	426 S	2	0.5 –1	0.01	51	1.5
4828213	426 S	2	0.1 –1	0.01	91	1.5
4828214	426 S	2	1 –2	0.01	101	1.5
4828215	426 S	2	2 –3	0.01	101	1.5
4828216	426 S	2	3 –4	0.01	101	1.5
4828217	426 S	2	4 –5	0.01	101	1.5
4828218	426 S	2	5 –6	0.01	101	1.5
4828219	426 S	2	6 –7	0.01	101	1.5
4828220	426 S	2	7 –8	0.01	101	1.5
4828221	426 S	2	8 –9	0.01	101	1.5
4828222	426 S	2	9 –10	0.01	101	1.5

MarGage 426 D

Individual Plug Gages with Handle

FEATURES

- Unbreakable plastic handle inscribed with the diameter
- Gage is made of wear-resistant, hardened, multi-aged, ground and lapped steel
- For testing diameters of small bores
- To be used as setting standards for indicating measuring instruments and testing the distances between axes, grooves and slots on workpieces in conjunction with gage blocks



TECHNICAL DATA

Order no.	Product type	Ø	Increment	Manu-facturing tolerance +/–
		mm	mm	µm
4828230	426 D	0.06 –0.09	0.01	0.5
4828231	426 D	0.1 –0.19	0.01	0.5
4828232	426 D	0.2 –0.29	0.01	0.5
4828233	426 D	0.3 –0.49	0.01	0.5
4828234	426 D	0.5 –0.99	0.01	0.5
4828235	426 D	1 –2.99	0.01	0.5
4828236	426 D	3 –5.99	0.01	0.5
4828237	426 D	6 –10	0.01	0.5

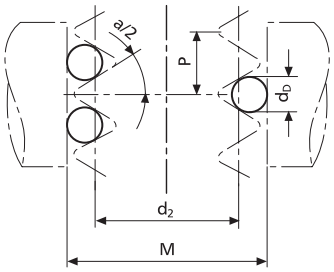
MarGage 426 A

Thread Pin Gage

FEATURES

- Designed to be suspended over a test specimen
- Set consists of 3 pin gages
- Manufacturing tolerance ± 0.5 µm
- Pin gage length: 32 mm
- For determining pitch diameter of external threads according to the three wire method





TECHNICAL DATA

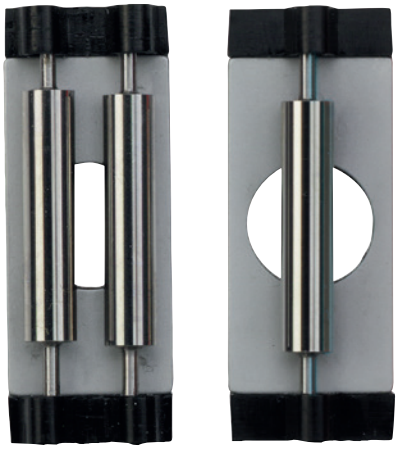
Order no.	Product type	Diameter	Metric	Whitworth	UST	Trapezoid	Manufacturing tolerance +/–
		mm	mm	TPI	TPI	mm	µm
4821000	426 A	0.17	0.25 / 0.3				0.5
4821001	426 A	0.195			80		0.5
4821002	426 A	0.22	0.35		72		0.5
4821003	426 A	0.25	0.4		64		0.5
4821004	426 A	0.29	0.45 / 0.5		56		0.5
4821005	426 A	0.335	0.6		48		0.5
4821006	426 A	0.39		40	44 / 40		0.5
4821007	426 A	0.455	0.7 / 0.75 / 0.8	32	36		0.5
4821008	426 A	0.53		28	32 / 28		0.5
4821009	426 A	0.62	1	26 / 24	24		0.5
4821010	426 A	0.725	1.25	22 / 20	20		0.5
4821011	426 A	0.895	1.5	19 / 18 / 16	18		0.5
4821012	426 A	1.1	1.75	14	16 / 14 / 13		0.5
4821013	426 A	1.35	2	12 / 11	12 / 11		0.5
4821014	426 A	1.65	2.5	10 / 9	10 / 9	3	0.5
4821015	426 A	2.05	3 / 3.5	8 / 7	8 / 7	4	0.5
4821016	426 A	2.55	4 / 4.5	6	6	5	0.5
4821017	426 A	3.2	5 / 5.5	5 / 4.5	5 / 4.5	6	0.5
4821018	426 A	4	6	4 / 3.5	4	7	0.5

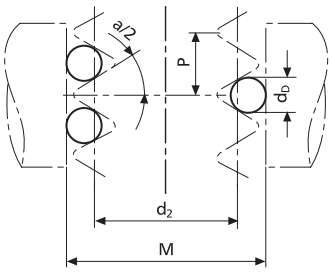
MarGage 426 M

Thread Pin Gages, Holder Pair

FEATURES

- For determining the pitch diameter of external threads by the three wire method
- In conjunction with inside micrometers, indicating measuring instruments or measuring machines
- Each pair consists of one holder with 1 pin gage and one holder with 2 pin gages
- Holder has a satin chrome finish
- With the retainer ring locked, the measuring spindle can still rotate
- Pin gages are hardened and lapped
- Pin gages freely float in holder to allow proper positioning and contact with thread flanks
- Manufacturing tolerance ± 0.5 µm
- Mounting bore 6.35 mm = 1/4", 8 mm on request)
- For threads with outside diameter up to 95 mm





TECHNICAL DATA

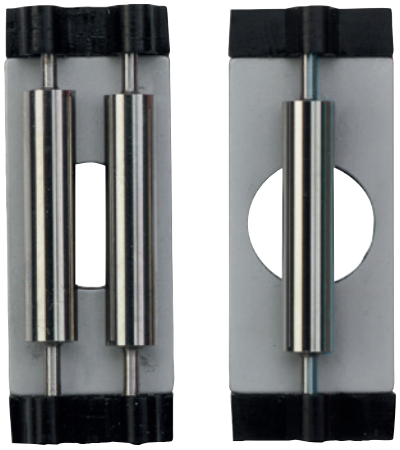
Order no.	Product type	Mounting hole	Diameter	Metric	Whitworth	UST	Trapezoid
			mm	mm	TPI	TPI	mm
4820010	426 M	7.5 mm	0.17	0.25 / 0.3			
4820011	426 M	7.5 mm	0.195			80	
4820012	426 M	7.5 mm	0.22	0.35		72	
4820013	426 M	7.5 mm	0.25	0.4		64	
4820014	426 M	7.5 mm	0.29	0.45 / 0.5		56	
4820015	426 M	7.5 mm	0.335	0.6		48	
4820016	426 M	7.5 mm	0.39		40	44 / 40	
4820017	426 M	7.5 mm	0.455	0.7 / 0.75 / 0.8	32	36	
4820018	426 M	7.5 mm	0.53		28	32 / 28	
4820019	426 M	7.5 mm	0.62	1	26 / 24	24	
4820020	426 M	7.5 mm	0.725	1.25	22 / 20	20	
4820021	426 M	7.5 mm	0.895	1.5	19 / 18 / 16	18	
4820022	426 M	7.5 mm	1.1	1.75	14	16 / 14 / 13	
4820023	426 M	7.5 mm	1.35	2	12 / 11	12 / 11	
4820024	426 M	7.5 mm	1.65	2.5	10 / 9	10 / 9	3
4820025	426 M	7.5 mm	2.05	3 / 3.5	8 / 7	8 / 7	4
4820026	426 M	7.5 mm	2.55	4 / 4.5	6	6	5
4820027	426 M	7.5 mm	3.2	5 / 5.5	5 / 4.5	5 / 4.5	6
4820028	426 M	7.5 mm	4	6	4 / 3.5	4	7
4820131	426 M	6.5 mm	0.25	0.4		64	
4820132	426 M	6.5 mm	0.17	0.25 / 0.3			
4820133	426 M	6.5 mm	0.22	0.35		72	
4820134	426 M	6.5 mm	0.29	0.45 / 0.5		56	
4820135	426 M	6.5 mm	0.335	0.6		48	
4820137	426 M	6.5 mm	0.455	0.7 / 0.75 / 0.8	32	36	
4820139	426 M	6.5 mm	0.62	1	26 / 24	24	
4820140	426 M	6.5 mm	0.725	1.25	22 / 20	20	
4820141	426 M	6.5 mm	0.895	1.5	19 / 18 / 16	18	
4820142	426 M	6.5 mm	1.1	1.75	14	16 / 14 / 13	
4820143	426 M	6.5 mm	1.35	2	12 / 11	12 / 11	
4820144	426 M	6.5 mm	1.65	2.5	10 / 9	10 / 9	3
4820145	426 M	6.5 mm	2.05	3 / 3.5	8 / 7	8 / 7	4
4820146	426 M	6.5 mm	2.55	4 / 4.5	6	6	5
4820147	426 M	6.5 mm	3.2	5 / 5.5	5 / 4.5	5 / 4.5	6
4820149	426 M	6.5 mm	0.195			80	
4820150	426 M	6.5 mm	0.39			44 / 40	
4820151	426 M	6.5 mm	0.53			32 / 28	
4820152	426 M	6.5 mm	4	6			7

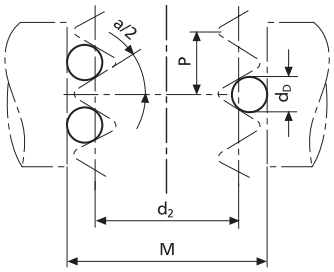
MarGage 426 MS

Thread Pin Gages Set

FEATURES

- Set of thread pin gages in holder consists of: 18 holder pairs 426 M
- Diameter 0.17 –3.2 mm
- For threads with outside diameter up to 95 mm
- **Package contains:** wooden case





TECHNICAL DATA

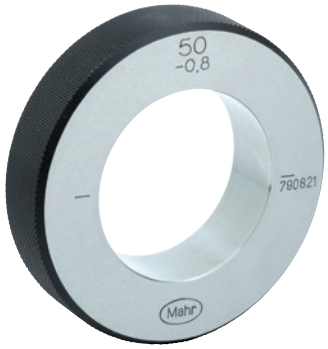
Order no.	Product type	Mounting hole
		mm
4820000	426 MS	7.5
4820002	426 MS	8.0
4820003	426 MS	6.5
4820004	426 MS	6.35

MarGage 355 E

Ring Gage

FEATURES

- Gage is made of special wear-resistant, hardened and lapped steel
- Dimensions: DIN 2250, Type C
- Manufacturing tolerance: DIN 2250 (JS4)
- Uncertainty of actual deviation: 1/2 IT 1



Diameter mm	Order no.
1	4710006
2	4710010
3	4710014
4	4710018
5	4710020
6	4710022
7	4710024
8	4710026
9	4710028
10	4710030
11	4710031
12	4710032
13	4710033
14	4710034
15	4710035
16	4710036
17	4710037
18	4710038
19	4710039
20	4710040
21	4710041
22	4710042
23	4710043
24	4710044
25	4710045
26	4710046
27	4710047
28	4710048
29	4710049
30	4710050
31	4710051
32	4710052
33	4710053
34	4710054
35	4710055
36	4710056
37	4710057
38	4710058
39	4710059
40	4710060
41	4710061
42	4710062
43	4710063
44	4710064
45	4710065
46	4710066

Diameter mm	Order no.
47	4710067
48	4710068
49	4710069
50	4710070
51	4710071
52	4710072
53	4710073
54	4710074
55	4710075
56	4710076
57	4710077
58	4710078
59	4710079
60	4710080
61	4710081
62	4710082
63	4710083
64	4710084
65	4710085
66	4710086
67	4710087
68	4710088
69	4710089
70	4710090
71	4710091
72	4710092
73	4710093
74	4710094
75	4710095
76	4710096
77	4710097
78	4710098
79	4710099
80	4710100
81	4710101
82	4710102
83	4710103
84	4710104
85	4710105
86	4710106
87	4710107
88	4710108
89	4710109
90	4710110
91	4710111
92	4710112

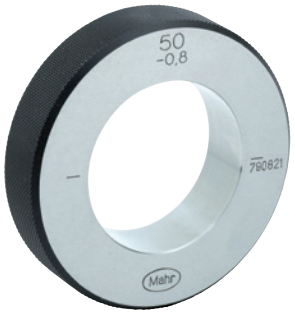
Diameter mm	Order no.
93	4710113
94	4710114
95	4710115
96	4710116
97	4710117
98	4710118
99	4710119
100	4710120
125	4710121
175	4710122

MarGage 355 E

Ring Gage

FEATURES

- Gage is made of special wear-resistant, hardened and lapped steel
- Dimensions: DIN 2250, Type C
- Manufacturing tolerance: DIN 2250 (JS4)
- Uncertainty of actual deviation: 1/2 IT 1
- **Diameter increments of 1mm**
- **When placing an order, please inform us of the diameter**



Ø mm	Order no.
101 –105	4714201
106 –110	4714202
111 –115	4714203
116 –120	4714204
121 –124	4714205
126 –130	4714206
131 –135	4714207
136 –140	4714208
141 –145	4714209
146 –150	4714210
151 –155	4714211
156 –160	4714212
161 –165	4714213
166 –170	4714214
171 –174	4714215
176 –180	4714216
181 –185	4714217
186 –190	4714218
191 –195	4714219
196 –200	4714220

MarGage 355 E

Ring Gage

FEATURES

- Gage is made of special wear-resistant, hardened and lapped steel
- Dimensions: DIN 2250, Type C
- Manufacturing tolerance: DIN 2250 (JS4)
- Uncertainty of actual deviation: 1/2 IT 1
- **Diameter increments 0.001mm**
- **When placing an order please inform us of the diameter**



Ø mm	Order no.
1 –1.8	4732600
1.801 –3	4732641
3.001 –5	4732642
5.001 –10	4732635
10.001 –15	4732602
15.001 –20	4732603
20.001 –25	4732604
25.001 –32	4732605
32.001 –35	4732606
35.001 –40	4732607
40.001 –45	4732608
45.001 –50	4732609
50.001 –55	4732610
55.001 –60	4732611
60.001 –65	4732612
65.001 –70	4732613
70.001 –75	4732614
75.001 –80	4732615
80.001 –85	4732616
85.001 –90	4732617
90.001 –95	4732618
95.001 –100	4732619
100.001 –105	4732620
105.001 –110	4732636
110.001 –115	4732621
115.001 –120	4732637
120.001 –125	4732622
125.001 –130	4732638
130.001 –135	4732623
135.001 –140	4732639
140.001 –145	4732624
145.001 –150	4732640
150.001 –155	4732625
155.001 –160	4732626
160.001 –165	4732627
165.001 –170	4732628
170.001 –175	4732629
175.001 –180	4732630
180.001 –185	4732631
185.001 –190	4732632
190.001 –195	4732633
195.001 –200	4732634

Precimar | Precision Length Measurement

Precimar stands for high-precision dimensional metrology – for both absolute and relative measurements. Typical applications include products and gages for the aerospace and automotive industries and the production testing of gages in calibration laboratories.



Precimar 826 PC 508
Gage Block Measuring Instrument

Precimar 130B 509
Gage Block Measuring Instrument

Precimar ICM 25 511
Long Range Indicator Checker

Precimar Precimar ICM 100 512
Dial Indicator Test Device

Precimar Precimar ICM 100 IP 513
Dial Indicator Test Device

Precimar SM 60 515
Length Measuring Bench

Precimar LINEAR 100 516
Length Measuring Instrument

Precimar LINEAR Series 517
Setting and Measuring Instrument

Precimar ULM-E 518
Calibration Measuring Instruments

Precimar ULM S-E 519
Calibration Measuring Instruments

Precimar ULM L-E 520
Calibration Measuring Instruments

Precimar PLM-E 521
Precision Length Measuring Machine

Precimar CIM 1000 CNC 522
Precision Length Measuring Machine

The latest information about Precimar precision length measuring systems is available on our website: **www.mahr.de**

Precimar 826 PC

Gage Block Measuring Instrument

DESCRIPTION

- The 826 PC gage block measuring instrument is quick, reliable and highly accurate. An open and extremely rigid L-shaped stand forms the base for the two counteracting precision measuring probes and the measuring table.
- Rigid cast stand for temperature stability and heat resistance
- Fast adjustment of vertical slide with top probe
- Highly ergonomic, user friendly one-handed operation to position the gage blocks under the measuring probe
- Precision adjustment via torsionally rigid parallelogram springs
- Electropneumatic lifting of measuring probes
- Precision ball bearing guides for smooth manipulator actuation
- No influence on measurement from hand force
- Round carbide precision support pins make it easy to move the gage blocks on the measuring table
- Set value linked to the stored actual deviation of the reference gage block, avoiding the need for zero point setting
- With QM-Block software:
- Flattening correction
- Correction of differing coefficients of expansion
- Mean value generation



TECHNICAL DATA

826 PC	
Stylus ball radius, upper probe	1.500000
Stylus ball radius, lower probe	1.500000
Table surface (A x B) mm	60 mm x 55 mm
Application range mm	0.5 to 170
Type	826 PC
Direct measuring range [mm]	0.2
Repeatability [µm]	± 0.01
Mass [kg]	37

APPLICATIONS

- Quick and easy high precision testing of European and US gage blocks up to 170 mm in length, as per ISO 3650

ACCESSORIES

- QMSOFT® / QM-Block calibration software for the calibration and data management of gage blocks and gage block sets
- The evaluation program runs under Windows 7 Ultimate.
- Excellent thermal insulation with wraparound acrylic glass screen
- 826 Va HS lifting device for fast and quiet pneumatic lifting of inductive probes via foot switch
- Temperature compensation
- Pincers, gage block suction lifter, optical flat, lay-on thermometer

For more information, please visit our website: www.mahr.com

Precimar 130B

Gage Block Measuring Instrument

DESCRIPTION

- The 130B–24 and 130B–16 gage block measuring instruments from Mahr are the first choice for many large calibration laboratories. They are designed for comparative measurements of gage blocks.
- A unique ‘floating measuring frame’ ensures exact point-to-point measurement
- Single sensor design for minimal electronic noise
- Precision balanced system for optimum adjustment of measuring forces
- Integrated measuring software and user interface
- Built-in positioning device for reproducible measuring positions





TECHNICAL DATA

130B	
Stylus ball radius, upper probe	3.000000
Stylus ball radius, lower probe	3.000000
Application range mm	0.25 to 100|0.25 to 600
Type	130B
Direct measuring range [mm]	± 0.01
Repeatability [µm]	6σ < 0.025
Mass [kg]	100|140

APPLICATIONS

- Quick and easy high precision testing of European and US gage blocks

ACCESSORIES

- For further information please see our separate brochure

For more information, please visit our website: www.mahr.com

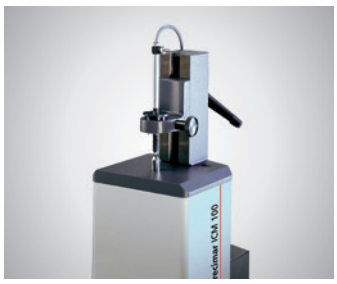
Precimar. Dial Indicator Testing

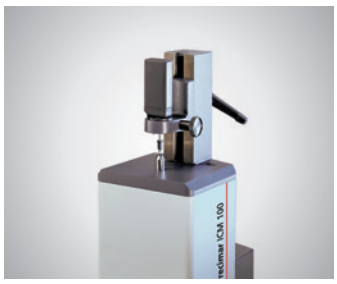
Partially and fully automated Testing of Indicating Measuring Equipment

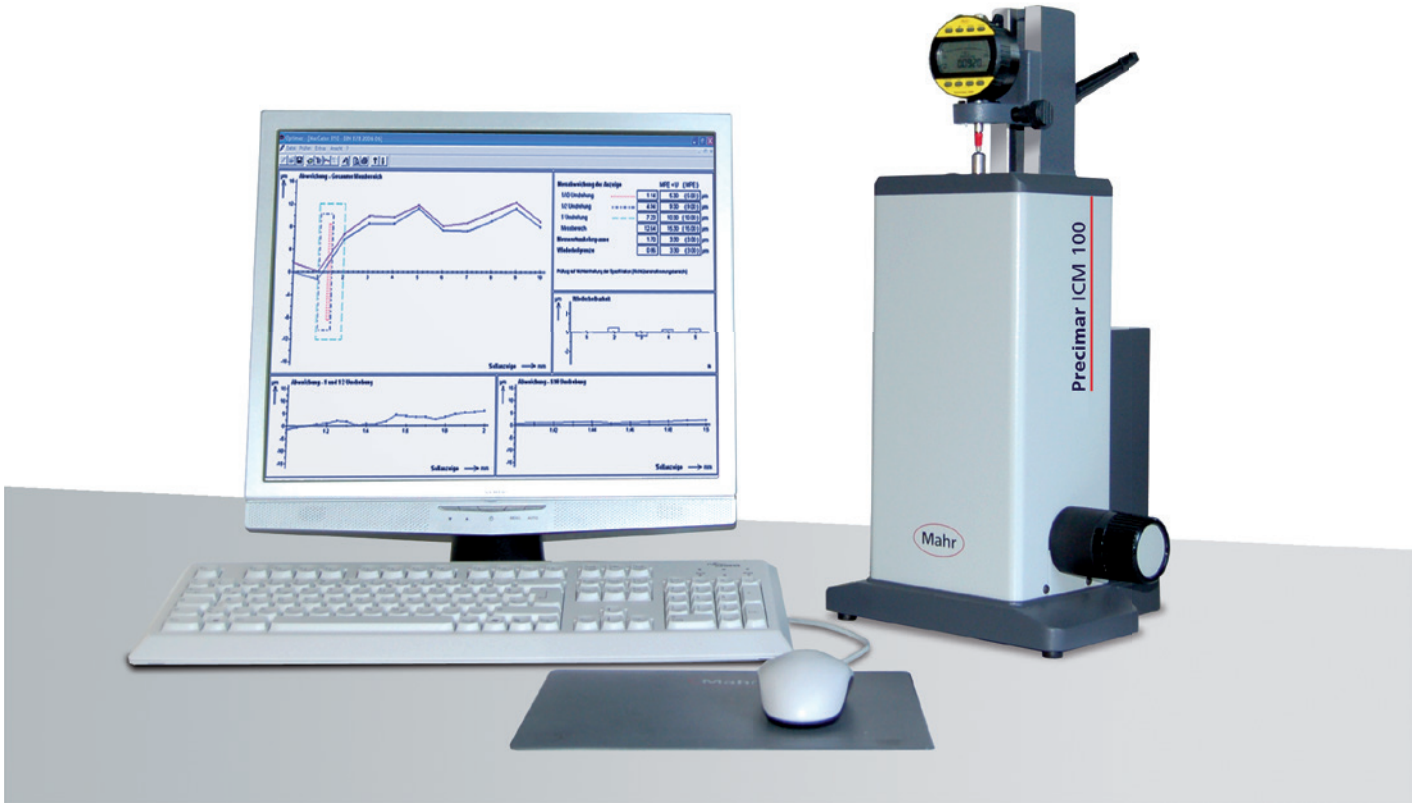
Dial indicator test devices from Mahr stand for accurate and efficient measurement. These devices are designed for absolute measurement of dial indicators, dial comparators, dial test indicator measuring devices and 2-point bore gages as well as inductive and incremental measuring probes. Typical areas of use include dial indicator testing in all sectors of industry, measuring rooms and calibration laboratories as well as production testing by dial indicator manufacturers. The Precimar ICM 100 from Mahr is a practical solution for both the cost-effective, semi-automatic testing of analog dial indicators and the efficient, fully automatic testing of digital measuring equipment.











Precimar ICM 25

Long Range Indicator Checker

FEATURES

- **Energy supply:** 230 V/115 V; 50/60 Hz
- **Package contains:** split bushing BU–197, mounting shaft 800a3/8, MarCheck angle display stand



Application:

For testing of:

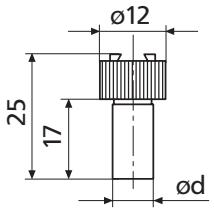
- Dial indicators (analog and digital)
- Dial comparators (analog and digital)
- Dial test indicator measuring devices (analog and digital)
- Inductive and incremental probes

TECHNICAL DATA

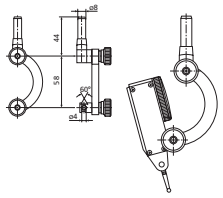
Order no.	Type
2062722	ICM 25

ACCESSORIES

Order no.	Product name	Type
4305885	Mounting shaft ø 4 mm	800 a4
4305893	Universal centering support frame	800 b
5350196	Gage inspection program QMSOFT® / QM-DIAL32	
5360322	Foot switch for data transfer from MarCheck to PC	
7024634	Data connection cable RS232C (3 m)	



800 a6;800 a8;800 a3/8;800 a4;800 a1/4”



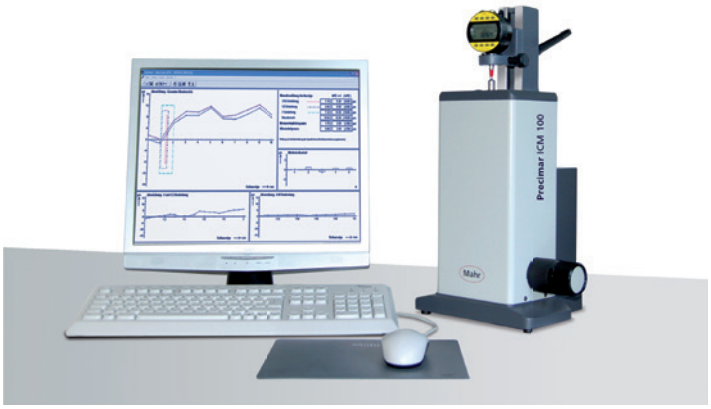
800 b

Precimar Precimar ICM 100

Dial Indicator Test Device

DESCRIPTION

- The Precimar ICM 100 is the most cost-effective test station for the partially or fully automated testing of dial indicators, dial comparators, dial test indicator measuring devices and 2-point bore gages, as well as inductive and incremental measuring probes.
- Automated sub-processes with motorized measuring spindle drive
- Fully automatic measuring procedure with digital measuring equipment
- Precimar ICM 100 is suitable for horizontal use
- Testpiece held by a vertical guide. Fast height adjustment to adapt measuring objects to different measuring ranges
- Rigid, box-shaped device housing
- For measuring objects with 8 mm, 28 mm, 3/8" shaft diameter
- Electronic handwheel for manual control of spindle movement. The sensitivity of the electronic handwheel adjusts automatically to the testpiece resolution
- All control elements are ergonomically arranged
- Complies with Ernst Abbe's comparator principle for maximum measuring accuracies
- LIF 101 measuring system with error compensation
- Checking of 2-point bore gages with no loss of accuracy
- Pre-positioning: automatic
- Fine positioning: electronic rotary knob



TECHNICAL DATA

ICM 100	
Positioning speed [mm/s]	2
Type	Precimar ICM 100
Measuring range	100 mm, 4 inch (101.66 mm)
Direct measuring range [mm]	100
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0.2 + L/250)
Digital numerical increment [µm]	0.02
Device dimensions (LxWxH)	235 x 216 x 480

APPLICATIONS

- For testing of:
- Dial indicators (analog and digital)
- Dial comparators (analog and digital)
- Dial test indicator measuring devices (analog and digital)
- Inductive and incremental probes
- 2-point bore gages

ACCESSORIES

- Holder for dial test indicator measuring devices
- Wide choice of adapters for digital dial indicators and incremental measuring probes from various manufacturers
- Please ask for the appropriate adapter
- Inductive probes from various manufacturers can be connected to Precimar ICM 100 via the probe interface.
- Holding device and software for testing 2-point bore gages with a moving measuring pin (test in accordance with VDI / VDE / DGQ 2618, Part 13.2, 2005)
- Device for force sensor on request
- Camera attachment kit for precise and ergonomically improved operation in semi-automatic measuring procedures
- Calibration set for user calibration
- Factory or DAkkS/DKD calibrations available

For more information, please visit our website: www.mahr.com

Precimar Precimar ICM 100 IP

Dial Indicator Test Device

DESCRIPTION

- With the Precimar ICM 100 IP, the testing of indicators and comparators has become automated and efficient. The simple, one-handed usability and the clever operating software make the Precimar ICM 100 IP the perfect measurement solution for inspection rooms, calibration labs, and routine series testing. Never before has it been so efficient to measure indicators and comparators. With the Precimar ICM 100 IP, reduce measurement time by over 60% thanks to faster image processing, easy-to-use software, and simpler handling.
- Convenient, tool-free and intuitive operation with just one hand
- Highest-accuracy measurement through compliance with Abbe's principle
- Testing to international standards, including ASME/ANSI, DIN, BS, JIS, VDI, GOST and NF.
- High-performance USB 3.0 industrial camera with high image quality and wide dynamic range
- Robust, industrial-grade LED ring light for measurements unaffected by ambient light
- Ability to automatically measure digital indicators through direct reading of values – no cables required
- Wide variety of possible test specimens up to 4 Inches / 100 mm – dial & digital indicators, comparators, test indicators
- Pre-programmed measurement modules with pre-loaded nominal values and tolerances
- Direct measurement range of 4 inches / 100 mm – no need to reposition the test specimen during testing
- Inductive probes from various manufacturers can be tested (only in manual mode)

Supplied with:

- Precimar ICM 100 base device
- Precimar IP 100 upgrade kit image processing
- Software Precimar MSW V12
- Software option Precimar ICM IP image processing
- USB cable
- Clamping 8 mm
- Mount for dial test indicators
- Mahr calibration certificate
- Operating manual



TECHNICAL DATA

Dial indicator testing machines, image processing	
Positioning speed [mm/s]	4
Type	Precimar ICM 100 IP
Measuring range	100 mm
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0.2 + L/250)
Digital numerical increment [µm]	0.02
Mass [kg]	45

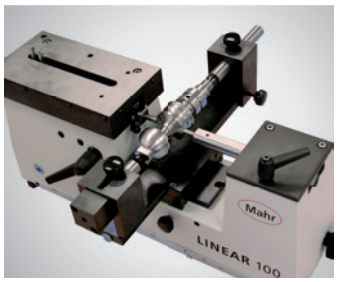
APPLICATIONS

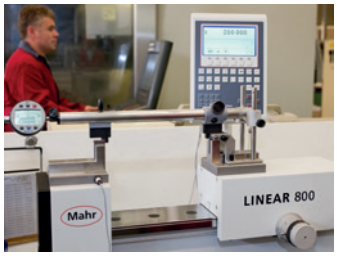
- Calibration of dial indicators, dial test indicator measuring devices and dial comparators
- The Precimar MSW 100 software system controls the dial indicator test device, processes the camera image (pointer or numeric display of the test object) and the reference measuring values of the dial indicator test device, and also performs all the subsequent processes related to test equipment management.
- The testing routine can be implemented based on DIN, VDI, DKD or DAkkS guidelines, various international standards, or based on the company's internal specifications.
- Deviations between test objects are illustrated in a graph during testing.

For more information, please visit our website: www.mahr.com

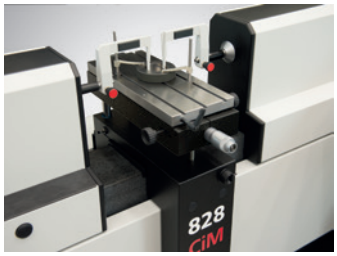
Precimar. Length Measurement for all Areas of Use

Length measurement is used today in all sorts of different sectors. LINEAR length measuring instruments are setting and measuring instruments designed for general workshop use. The well-established universal length measuring instruments (ULM) are standard instruments for quality assurance in calibration measurement. They are also used for highly accurate length measurements on precision parts. Motorized PLM and CiM instruments offer fast, reliable and user friendly measurement with the lowest possible uncertainty. With products ranging from the simple LINEAR length measuring instrument and the ULM devices to the ultra accurate, partially automated CiM Universal measuring machine, Mahr has practical solutions for manufacturing, measuring rooms and calibration laboratories. Precimar offers maximum precision combined with extremely efficient measuring processes.











Precimar SM 60

Length Measuring Bench

DESCRIPTION

- The Precimar SM 60 is a user-friendly measuring instrument for fast, precise outside measurements on workpieces.
- Simple instrument design
- Quick adaptation to new workpieces
- Rugged construction makes it suitable for use close to production
- Freely selectable measuring equipment (e.g. digital dial indicator, probes, etc.)
- Carbide measuring surfaces
- Integrated coupling protects the measuring equipment
- Wide choice of measuring attachments
- Suitable for left- and right-handed operators
- Large support table, Ø 60 mm, with variable height adjustment



TECHNICAL DATA

SM 60	
Size of table	Ø 60
Application range mm	0 –60
Type	SM 60
Measuring range	0 –25 mm
Direct measuring range [mm]	25
Device dimensions (LxWxH)	285 x 80 x 100 (without control elements)290 x 140 x 120 (with control elements)
Measuring forces [N]	1 ± 0.2 + measuring force of measuring system
Mass [kg]	9

For more information, please visit our website: www.mahr.com

Precimar LINEAR 100

Length Measuring Instrument

DESCRIPTION

- The LINEAR 100 is a universal, easy to operate length measuring instrument for quick and precise outside and inside measurements up to 100 mm, directly on the production line. The simple design of the instrument speeds up the measurement process and makes it quick and easy to adapt to new measuring tasks.
- Cushioned measuring spindle with 2 preselectable measuring forces
- Constant measuring force over the entire measuring range
- Complies with Ernst Abbe's comparator principle for outer measurements
- Infinitely adjustable measuring table height for accurate adjustment of measuring positions
- Combined outer/inner measurement possible without the need for recalibration
- Easy change measuring anvils can be selected to match specific measuring tasks
- Sturdy cast body to eliminate stresses and bending errors
- Height adjustable support tables for inner and outer measurements
- MarCheck measurement display (with optional stand): including 2 channels, USB connection for printer or stick, USB connection for PC, and RS 232 interface for easy transfer of measured values to PCs
- Measured values can be transferred to all MS Windows® programs (e.g. Microsoft Excel®) via the MarCom software (optional)
- Various accessories available upon request



TECHNICAL DATA

LINEAR 100	
Digital display	MarCheck
Application range mm	for outer measurements from 0 to 100 for inner measurements from 15 to 100 6 to 100 on request
Type	LINEAR 100
Direct measuring range [mm]	50
Measuring range for outer measurement [mm]	0 to 100
Measuring range for inner measurement [mm]	15 to 100
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0.7 + L/1000)
Measuring forces [N]	1 or 3
Device length [mm]	260

APPLICATIONS

- Quick and easy high-precision outer and inner measurements
- Outer diameter measurements (bolts, turned parts, etc.)
- Inner diameter measurements (bores, rings, etc.)
- 2-ball dimension checks on outer and inner gears

ACCESSORIES

- Outer measurement set (assorted measuring anvils)
- Inner measurement set (probe pair starting from 6 mm, floating plate, etc.)
- Centering tip mount set
- Support plate for cylindrical workpieces
- Foot switch, data cable, stand for display unit
- Outside and inside probes with M2.5 bore for gear measuring balls
- MarCom software for transferring measured values to Windows programs

For more information, please visit our website: www.mahr.com

Precimar LINEAR Series

Setting and Measuring Instrument

DESCRIPTION

- LINEAR length measuring instruments from Mahr are ideal for use as a setting and adjusting instrument close to the production area. They offer precision setting of inside and outside comparative measuring instruments, inside micrometers, 2-point bore gages, dial comparator snap gages and many other measuring instruments.
- As an infinitely adjustable dimensional standard, the LINEAR is a cost effective alternative to setting gages, adjustment rings and gage blocks.
- Key advantages include the ease of handling, short set-up time and ability to set any dimension. A switchable measuring force regulator, for both outside and inside measurements, delivers user independent measuring results.
- Base bar made of steel alloy, providing the same thermal behavior as the setting and measuring objects
- Precision ground and lapped guide rail, non-rusting
- Glued on steel scale along entire length of base bar
- Easy to operate
- Precision adjustable to 1/10 µm
- Measured values displayed with MarCheck:
- Display unit with extensive measuring functions, USB connection for printer or stick and USB connection and RS232 interface for transfer to PC
- A factory calibration or DAkkS/ DKD calibration is available for the measuring station



TECHNICAL DATA

Type	LINEAR Series	LINEAR Series	LINEAR Series
Product name	LINEAR 800	LINEAR 1200	LINEAR 2000
Measuring range for outer measurement [mm]	0 to 815	0 to 1215	0 to 2015
Measuring range for inner measurement [mm]	40 to 855	40 to 1255	40 to 2055
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0.7 + L/1000)	≤ (0.7 + L/1000)	≤ (0.7 + L/1000)
Repeatability [µm]	≤ 0.5	≤ 0.5	≤ 0.5
Measuring forces [N]	3	3	3
Device length [mm]	1250	1650	2450
Mass [kg]	approx. 155	approx. 210	approx. 320

APPLICATIONS

- Setting comparative measuring instruments, e.g. Multimar 844 T
- Setting 2-point bore gages, e.g. Intramess 844 N
- Setting dial comparator snap gages, e.g. MaraMeter 840 F
- Checking and setting outer micrometers
- Checking setting standards, rods etc.
- Checking calipers
- Checking and setting inside micrometers
- Measuring cylindrical parts
- Measuring inner dimensions and bores, etc.

ACCESSORIES

- Testing devices for outside micrometers
- Clamping devices for 2-point bore gages for universal measuring table
- Support for large, 2-point bore gages and their accurate positioning and setup on the LINEAR
- Adjustable height support for setting up large bore gages
- Support plates for rings > 200 mm
- Holding device for long measuring equipment
- Attachment for dial comparator snap gages (height-adjustable)
- Height measuring system for universal measuring table
- Additional support table for long measuring objects
- Measuring anvils with Ø 20 mm balls; with ball-ended gage blocks; with Ø 15 mm and Ø 7.5 mm spindles
- Caliper, bore gages, plug-on heads, clamping elements
- Testing setups for depth gages
- Support for inside micrometers
- Temperature compensation

For more information, please visit our website: www.mahr.com

Precimar ULM-E

Calibration Measuring Instruments

DESCRIPTION

- ULM-E universal length measuring comparator instruments are mounted on highly homogeneous rigid granite in a horizontal configuration

X-axis measuring system:
- Heidenhain incremental, precision length measuring system, 100 mm long

Z-axis measuring system:
- Renishaw incremental, precision length measuring system, 80 mm long
- High measuring accuracy
- Compliant with Ernst Abbe's comparator principle
- Manual operation of measuring spindle
- Air bearings for smooth manual positioning of measuring element and counter bearing (not ULM 300-E)
- Object table height adjustment via pushbuttons (also positioning of predefined increments)
- Computer provided temperature measurement with 2 or 3 sensors
- Computer-aided correction of systematic instrument errors (CAA)
- Computer-aided instrument zero point stabilizing
- Computer-aided correction of temperature and measuring force influences
- Constant measuring force over the entire measuring spindle setting range
- Large object table with precision guidance in the Z direction and a loading capacity of 25 kg
- Automatic reversing point detection with static and dynamic adoption of measuring values
- Inner thread measurement supported by automatic Z positioning
- Highly flexible in application range
- Mahr 828 WIN measuring and evaluation software runs under MS Windows®
- Optional use of measuring axis extensions



TECHNICAL DATA

Type	ULM-E	ULM-E	ULM-E	ULM-E
Product name	ULM 300-E	ULM 600-E	ULM 1000-E	ULM 1500-E
Direct measuring range [mm]	100	100	100	100
Measuring range for outer measurement [mm]	0 to 305	0 to 640	0 to 1060	0 to 1560
Measuring range for inner measurement [mm]	0.5 to 150	0.5 to 485	0.5 to 905	0.5 to 1405
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0.09+L/2000)	≤ (0.09+L/2000) or ≤ (0.3+L/1500)	≤ (0.09+L/2000) or ≤ (0.3+L/1500)	≤ (0.09+L/2000) or ≤ (0.3+L/1500)
Repeatability [µm]	≤ 0.05	≤ 0.05 or 0.1	≤ 0.05 or 0.1	≤ 0.05 or 0.1
Measuring forces [N]	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11
Device length [mm]	685	1080	1500	2000
Mass [kg]	110	160	215	280

APPLICATIONS

Calibration of:
- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2-point bore gages
- Outside micrometers
- 2-point inside micrometers
- Length measurement on precision table

ACCESSORIES

- Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:
- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station

For more information, please visit our website: www.mahr.com

Precimar ULM S-E

Calibration Measuring Instruments

DESCRIPTION

- Large universal length measuring instruments with large direct measuring range are mounted on highly homogeneous rigid granite in a horizontal configuration

X-axis measuring system:
- Heidenhain incremental, precision length measuring system, 100 mm long in measuring element
- Heidenhain incremental incident light measuring systems covering the entire length of the base bed and to its right and lef

Z-axis measuring system:
- Renishaw incremental, precision length measuring system, 80 mm long
- Combined measuring instrument for ultra accurate measurements in the range to 100 mm and for measurements in the standard accuracy range
- Accurate throughout the entire movement range of the measuring element and counter bearing
- Recommended for measurements of larger measuring objects, but also suitable for measurements of smaller measuring objects
- Manual operation of measuring spindle
- Air bearings for smooth manual positioning of measuring element and counter bearing
- Object height adjustment via pushbuttons (also positioning of predefined increment)
- Computer provided temperature measurement with 3 sensors
- Computer-aided instrument zero point stabilizing and correction of systematic instrument errors (CAA)
- Constant measuring force over the entire measuring spindle setting range
- Computer-aided correction of temperature and measuring force influences
- Large object table with precision guidance in the Z direction and a loading capacity of 25 kg
- Mahr 828 WIN measuring and evaluation software runs under MS Windows®
- Optional use of measuring axis extensions
- Inner thread measurement supported by automatic Z positioning



TECHNICAL DATA

Type	ULM S-E	ULM S-E
Product name	ULM 520 S-E	ULM 1000 S-E
Direct measuring range [mm]	Outer measurement: 0 to 520 Inner measurement: 0.5 to 365	Outer measurement: 0 to 1025 Inner measurement: 0.5 to 870
Measuring range for outer measurement [mm]	0 to 520	0 to 1025
Measuring range for inner measurement [mm]	0.5 to 365	0.5 to 870
Measuring uncertainty MPE_{E1} (L in mm) [µm]	only with ABBE measuring element: MPE E1 ≤ (0.09+L/2000) with base bed measuring system: MPE E1 ≤ (0.6+L/1000)	only with ABBE measuring element: MPE E1 ≤ (0.09+L/2000) with base bed measuring system: MPE E1 ≤ (0.6+L/1000)
Repeatability [µm]	With Abbe measuring element: ≤ 0.05 With base bed measuring system: ≤ 0.2	With Abbe measuring element: ≤ 0.05 With base bed measuring system: ≤ 0.2
Measuring forces [N]	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11
Device length [mm]	1080	1500
Mass [kg]	160	215

APPLICATIONS

Calibration of:
- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2-point bore gages
- Outside micrometers
- 2-point inside micrometers

ACCESSORIES

- Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:
- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station

For more information, please visit our website: www.mahr.com

Precimar ULM L-E

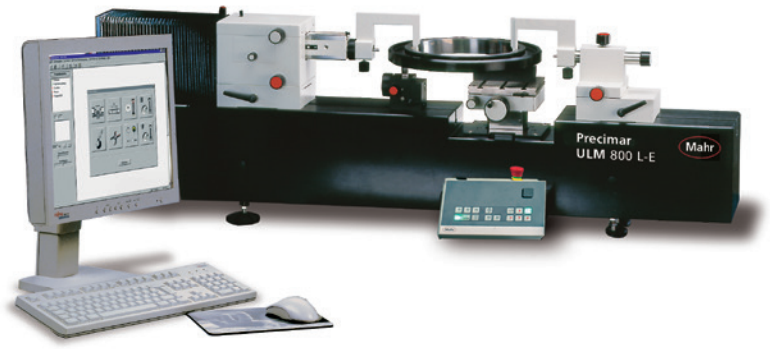
Calibration Measuring Instruments

DESCRIPTION

- Universal length measuring instruments with laser measuring system are mounted on highly homogeneous rigid granite in a horizontal configuration

X-axis measuring system:
- Interferential laser measuring system, 525 or 1115 mm long

Z-axis measuring system:
- Renishaw incremental, precision length measuring system, 80 mm long
- High end length measuring instrument with large direct measuring range
- Compliant with Ernst Abbe's comparator principle
- Manual operation of measuring spindle
- Air bearings for smooth manual positioning of measuring element (with laser reflector) and counter element
- Object table height adjustment via pushbuttons (also positioning of predefined increment)
- Laser correction with respect to environmental influences: temperature, air pressure (humidity optional)
- Separate laser generator outside the measuring instrument, fed via optical cable, and laser beam cover
- Computer-aided instrument zero point stabilizing and correction of systematic instrument errors (CAA)
- Computer provided temperature measurement and computer-aided correction of temperature and measuring force influences
- Constant measuring force over the entire measuring spindle setting range
- Large object table with precision guidance in the Z direction and a loading capacity of 25 kg
- Automatic reversing point detection with static and dynamic adoption of measuring values
- Highly flexible within the application range (can be used for measuring both miniature and large measuring objects)
- Mahr 828 WIN measuring and evaluation software and MS Windows®
- Inner thread measurement supported by automatic Z positioning



TECHNICAL DATA

Type	ULM L-E	ULM L-E
Product name	ULM 800 L-E	ULM 1500 L-E
Direct measuring range [mm]	0 to 525	0 to 1115
Measuring range for outer measurement [mm]	0 to 830	0 to 1620
Measuring range for inner measurement [mm]	0.5 to 670	0.5 to 1465
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0.1+L/2000)	≤ (0.1+L/2000)
Repeatability [µm]	≤ 0.05	≤ 0.05
Measuring forces [N]	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11
Device length [mm]	1500	2300
Mass [kg]	220	325

APPLICATIONS

Calibration of:
- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2-point bore gages
- Outside micrometers
- 2-point inside micrometers

ACCESSORIES

- Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:
- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station

For more information, please visit our website: www.mahr.com

Precimar PLM-E

Precision Length Measuring Machine

DESCRIPTION

- The PLM-E precision length measuring machine is an Abbe compliant comparator mounted on highly homogeneous rigid granite in a horizontal configuration
- Sensitive adjustment in 5 axes, and object table with a loading capacity of 35 kg
- PC-based, multi-axis machine control, including PC workstation and 828 WIN "Free measurement" basic software
- Simple operating procedure by means of measuring force-adjusted and joystick-controlled measuring slides with progressive deflection characteristic and automatic contact detection
- Automatic detection of outside and inside measurements and computer-aided search for reversal points
- The motorized measuring slide allows for high travel speeds
- The CNC-controlled vertical and cross adjustment of the universal measuring table facilitates highly efficient measuring
- State-of-the-art machine control (MarEcon)
- Recording, processing, logging and transfer of measurement data via powerful software and menu-driven controls
- Software compensation of thermal dimensional deviations
- Very easy to set the measuring force using the software
- Aerostatic guides for all slides mounted on the machine bed ensure low measurement uncertainties
- Electronic generation of measuring force and automatic contacting
- Subjective influences largely eliminated and unintended collisions with the test piece avoided.
- Automatic bore and inner thread measurement
- Automatic TY adjustment: What's unique is that a manual TY-adjustment is still possible
- Motorized tilting axis (TB) for alignment. Alignment is carried out via the manual control panel or using the 828 WIN software.
- A factory calibration or DAkkS/DKD calibration is available for the Precimar PLM-E



TECHNICAL DATA

Type	PLM-E	PLM-E
Product name	PLM 600-E	PLM 1000-E
Direct measuring range [mm]	200	200
Measuring range for outer measurement [mm]	0 bis 600	0 to 1000
Measuring range for inner measurement [mm]	0.5 to 445	0.5 to 845
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0.085 + L/1500)	≤ (0.085 + L/1500)
Repeatability [µm]	≤ 0.05	≤ 0.05
Measuring forces [N]	0 to 13.9	0 to 13.9
Device length [mm]	1660	2110
Mass [kg]	480	535

*** Proof can be carried out at the Göttingen site if required**

APPLICATIONS

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Dial indicators
- Dial comparators
- 2-point bore gages
- Outside micrometers
- 2-point inside micrometers
- Precision length measurement
- Measurement of thin-walled and deformed workpieces

ACCESSORIES

- Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:
- Thread gages
- Conical thread gages
- Gears
- Thread pitches

For more information, please visit our website: www.mahr.com

Precimar CIM 1000 CNC

Precision Length Measuring Machine

DESCRIPTION

- The Precimar CiM 1000 CNC precision length measuring machine is an Abbe-compliant comparator with horizontal base bed (highly homogeneous, rigid granite)
- Electronically controlled measuring force generation
- Motorized measuring spindle control with joystick and automatic contacting
- Air bearings for smooth positioning of measuring slide, counter bearing and object table
- Sensitive adjustment in 5 axes, and object table with a loading capacity of 25 kg
- Motorized object table height adjustment via joystick or CNC
- Maximum measuring accuracy
- Fast and reliable measurement
- Exceptionally low length measuring uncertainty for precision parts and gage monitoring
- Compliant with Ernst Abbe's comparator principle
- Online temperature monitoring
- Software-supported measuring force generation, especially advantageous for thin-walled workpieces and gages
- Semi-automatic bore and inner thread measurement
- Measuring and evaluation software runs under MS Windows®, 828 WIN
- Patented measuring procedure
- Aerostatic guides for all slides mounted on the machine bed ensure extremely low measuring uncertainties
- Movable measuring spindle mount via a spring parallelogram free from play and friction
- Electronic measuring force adjustment and automatic contacting – largely eliminating subjective influences and avoiding unintended collisions with the testpiece
- Possibility ofcalculating measuring result down to measuring force 0 N (dynamic measuring)



For more information, please visit our website: www.mahr.com

Precimar CIM 1000 CNC

Precision Length Measuring Machine

TECHNICAL DATA

CiM series	
Contacting speed with joystick (max)	8
Contacting speed with direction keys (max)	3.5
Drive (measuring slide)	aerostatically motorized
Resolution	0.1 µm
Total width	700.000000
Total height (excluding monitor) [mm]	1700.000000
Total length	2500.000000
Height of X-axis (above lowest table position)	70
Height movement, Z-drive (motorized)	70
Tilting movement ϕY [°]	3
Power consumption	200
Air consumption in l/h	100 to 276
mains pressure pn/pa (pn=mains pressure, pa=atmospheric pressure)	≥ 4 bar
Particle size	< 10 (< 934)
Transverse motion Y	25
Pivoting movement ϕZ	8
Floating movement X (±)	10
Supply pressure ps/pa (pn=system pressure,pa=air pressure)	3.000000
Temperature	20 ± 0.5 K
Operating temp. range	15°C to 35°C
Temperature lapse rate	< 0.2 K/h
Table surface (A x B) mm	150 x 350
Travel speed (max)	50
Numerical increment in µm	0.01
Type	CIM 1000 CNC
Direct measuring range [mm]	300
Measuring range for outer measurement [mm]	0 to 1000
Measuring range for inner measurement [mm]	0.5 to 845
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0.055 + L/1500)
Position deviation / error limit (L in mm) [µm] *	≤ (0.04+ L/2000)
Repeatability [µm]	≤ 0.03
Measuring forces [N]	0 to 13.9
Device length [mm]	2500
Mass [kg]	840

*Verification can be carried out at the Göttingen site if required

APPLICATIONS

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Dial indicators
- Dial comparators
- 2-point bore gages
- Outside micrometers
- 2-point inside micrometers
- Precision length measurement
- Measurement of thin-walled and deformed workpieces

ACCESSORIES

- Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:
- Thread gages
- Conical thread gages
- Gears
- Thread pitches
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station

MarSurf | Surface Measuring Instruments

Careful testing is paramount wherever surface structures affect the function or appearance of components. MarSurf surface measuring instruments offer outstanding quality. Mahr has perfected the stylus method, which has now become established worldwide. We also meet the latest demands for contactless measuring with a range of optical sensors. Mahr's MarSurf surface metrology offers a combination of top quality, maximum competence and perfect expertise.



MarSurf Pocket Surf IV 526
Mobile Roughness Measuring Instrument

MarSurf PS 10 528
Mobile Roughness Measuring Instrument

MarSurf M 300 530
Mobile Roughness Measuring Instrument

MarSurf M 300 C 532
Mobile Roughness Measuring Instrument

MarSurf M 400 534
Mobile Surface Measuring Instrument

MarSurf XR 1 537
Roughness Measuring Station

MarSurf GD 140 / 280 538
Roughness Measuring Station

MarSurf XC 2 with CD 120 539
Contour Measuring Station

MarSurf CD 140 / CD 280 540
Contour Measuring Station

MarSurf VD 140 / VD 280 541
Roughness and Contour Measuring Station

MarSurf UD 130 / LD 130 / LD 260 542
Combined Contour and Surface Measuring Station

MarSurf CNC *modular* 543

MarSurf CM *explorer/expert* 547
3D Surface Measurement

MarSurf CM *mobile/select* 549
3D Surface Measurement

MarSurf CP *select* 551
3D Profilometry

MarSurf WM 100 552

MarSurf CWM 100 553

MarSurf MfM Topography Software 554

3D Surface Metrology – Industries 555

The latest information about MARSURF products is available on our website:
www.mahr.de, web code 158

MarSurf Pocket Surf IV

Mobile Roughness Measuring Instrument

FEATURES

- Durable cast aluminum housing provides years of accurate and reliable measuring operations
- Can be used to measure four selectable parameters: Ra, Rmax/Ry, Rz
- Review all parameters after the measurement is complete
- Adjustable measuring length based on 1, 3 or 5 times the cutoff wavelength of 0.8 mm/0.030"
- Operates in any position – horizontal, vertical, and upside down
- Four switchable probe positions – axial or at an angle of 90°, 180° or 270°
- Even difficult to reach surfaces such as inside and outside diameters are accessible
- MarConnect data output for easy data transfer that is compatible with standard data processing systems
- Easy to read LCD presents the measured roughness value in µm or µinch immediately after scanning
- Out of range (high or low) and 'low battery' signals are also displayed
- Simplified calibration process
- Improved battery life with 9V battery that is easy to replace



Application:



- Pocket-sized, economically priced, completely portable instrument
- Performs traceable surface roughness measurements on a wide variety of surfaces
- Can be used confidently in production, on the shop floor and in the laboratory

TECHNICAL DATA

Order no.		2191800	2191802
Product type		Pocket Surf IV	
Parameters		Ra, Ry, Rmax, Rz	
Stylus		10 µm /.0004"	5 µm / .0002"
Data interface:		RS232C, USB	
Rechargeable batteries		Battery, 9V	
H x W x D	mm	140 x 76 x 6.35 mm	
Weight	kg	1.03	
Measuring principle		Skid probe system	
Probe		Piezoelectric skid probe	
Measuring range	mm	Ra –6.35 µm / 250 Ry, Rmax, Rz –25.3 µm / 999 µin	Ra –6.35 µm / 250 Ry, Rmax, Rz –25.3 µm / 999 µin
Profile resolution		0.01 µm / 1 µin	
Number n of sampling length according to ISO/JIS		Selected: 1 –5	
Measuring force	N	15 mN	

MarSurf Pocket Surf IV

Mobile Roughness Measuring Instrument

ACCESSORIES

Order no.	Description	Type
2008010	General purpose probe, 10µm/90°	EGH–1019
2008012	Transverse chisel probe, 10 µm	EGH–1020-W1
2008013	Parallel chisel probe, 10 µm	EGH–1020-W2
2008014	Small bore probe, 10µm/90°	EGH–1021
2008011	General purpose probe, 5µm/90°	EGH–1026
2008015	Small bore probe, 5µm/90°	EGH–1027
2008016	Groove bottom probe, 10µm/90°	EGH–1028
2008024	Compact height stand	EAS–2496
2008025	Universal stand	EAS–2426
2008026	Column clamp for EAS–2426	EAS–2567
2008027	Adapter plate	EPL–1681
2008023	Portable V-fixture	EAS–2421
2008022	Bottom plate	EAS–2584
2008021	Bore adapter kit	EAS–2839
2008020	V-adapter kit	EAS–2739
2223604	Certified specimen, incl. test certificate	PMD–90101
2008031	Precision reference specimen, without certificate	EMD–90010
4346023	Data connection cable USB	
4346020	Data connection cable RS232C	



EAS–2584



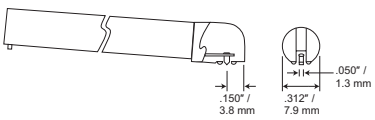
EAS–2839



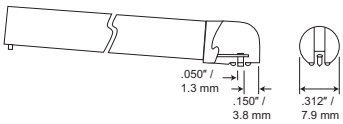
EAS–2739



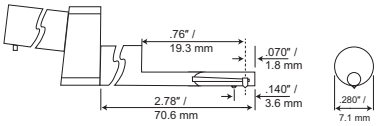
EAS–2421



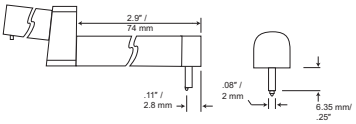
EGH–1020-W1



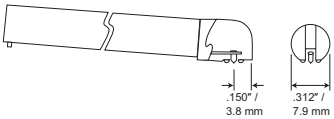
EGH–1020-W2



EGH–1021;EGH–1027



EGH–1028



EGH–1019;EGH–1026

MarSurf PS 10

Mobile Roughness Measuring Instrument

FEATURES

"SMAHRT Surf" – simple, smart and mobile

- Compact roughness measuring instrument for mobile use
- Simple and intuitive to use: as easy as using a smart phone
- Large, illuminated 4.3" TFT touch display
- Adjustable display
- Data backup as TXT, X3P, CSV or PDF file
- Create complete PDF measuring records directly in the measuring instrument
- Customized comments for the PDF measuring record can be entered directly into the MarSurf PS 10
- Mains-independent operation: Over 1200 measurements without having to recharge the instrument
- An all-in-one solution. Small and lightweight (approx. 500 g)
- Instrument flexibility: removable drive unit
- 31 surface parameters: offer the same range of functions as a laboratory instrument
- Roughness standard stored within housing aids in reducing errors
- Quick access to your frequently used functions via the Favorites list in the display
- Automatic cutoff selection, so even non-specialists can be sure of getting the correct measuring results

- NEW: Additional version with transverse drive unit available as MarSurf PS 10 C2 (item number 6910235)

Scope of delivery
- MarSurf PS 10 unit
- Drive unit (detachable)
- 1 standard probe conforming to standards
- Built-in rechargeable battery
- Roughness standard integrated into housing (detachable), including Mahr calibration certificate
- Probe protection
- Power source with 3 adapters
- Operating instructions
- Carry case with shoulder strap
- USB cable
- Extension cable for drive unit (length 1.2 m)
- Height adjustment (integrated)



Application:

- For shafts and housing components
- For large machines
- For large workpieces
- For milled and turned parts
- For ground and honed workpieces
- On the production line or directly on the machine; ideal for rapid testing of the surface roughness of a workpiece

TECHNICAL DATA

Order no.		6910230	6910232
Product type		PS 10	
Parameters		Ra, Rq, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, RS, CR, CF, CL, R, Ar, Rx, R3z	
Stylus		2 µm	5 µm
Calibration function		Dynamic; Ra, Rz, Rsm	
Storage capacity		Min. 3900 profiles, min. 500.000 results, min. 1500 PDF records, expandable to 32 GB with Micro SD card	
Languages		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish, Romanian	
Other		Lock/password protected, date/time	
Data interface:		USB, MarConnect (RS232), Micro SD slot for SD / SDHC cards up to 32 GB	
System of protection		IP 40	
Rechargeable batteries		Lithium-ion battery, min. 1200 measurements	
Wide range power supply		100 to 264 V	
H x W x D	mm	160 mm x 77 mm x 50 mm	
Weight	kg	1.85	
Measuring principle		Stylus method	
Probe		Inductive skidded probe	
Measuring range	mm	0.350	
Profile resolution		8 nm	
Filter according to ISO/JIS		Gaussian filter as per ISO 16610–21 (formerly ISO 11562), special filter as per DIN EN ISO 13565–1, Lambda s filter as per DIN EN ISO 3274 (can be switched off)	
Cutoff lc according to ISO/JIS		0.25 mm, 0.8 mm, 2.5 mm, automatic filter detection	
Number n of sampling length according to ISO/JIS		Selectable: 1 to 16	
Short stroke under ISO/JIS		Selectable	
Traversing length Lt according ISO/JIS		1.5 mm, 4.8 mm, 15 mm, N x Lc, variable, automatic	
Traversing length according ISO 12085 (MOTIF)		1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm	
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4.0 mm, 12.5 mm	
Measuring force	N	0.00075	

MarSurf PS 10

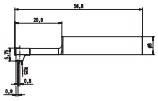
Mobile Roughness Measuring Instrument

ACCESSORIES

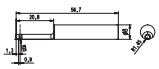
Order no.	Product description	Product type
6850540	PHT pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe 2 µm	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/5µm
6111527	Standard probe 10 µm	PHT 6–350/10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6910209	Mount MarSurf PS 10 on measuring stand ST	ST-a3
6910435	RD 18 C / PS 10 upright holder for cylindrical drive unit, Ø 8 mm	ST-a2
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height measuring and scribing instrument	814 SR
4426101	Height measuring and scribing instrument	814 SR
4102410	Data connection cable RS232C	16 EXr
4102357	Data connection cable USB	16 EXu
4102231	Transmitter	16 EWe
4102230	Receiver	e-Stick
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6820420	Roughness standard with Mahr calibration certificate, profile depth 10 µm	PRN 10
6820601	Geometric standard with sinusoidal groove profile, profile depth 3 µm	PGN 3
6820602	Geometric standard with sinusoidal groove profile, profile depth 1.5 µm	PGN 1
6820605	Geometric standard with sinusoidal groove profile, profile depth 10 µm	PGN 10
9027715	Mahr calibration certificate for PGN Standard	PGN
6980102	DKD (German Calibration Service) calibration certificate for PGN Standard	PGN
4413000	Indicator stand with delta base	815 GN
4413001	Indicator stand with delta base	815 GN
4413005	Indicator stand with delta base	815 GN
4416000	Measuring tripod with magnetic base	815 MA
6299054	Evaluation software	SW XR 20
6910240	Protective films for LCD, real glass (3 pieces)	SF LCD



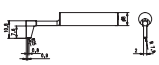
PHT (80 mm)



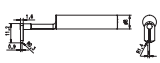
PHT 6–350;PHT 6–350/ 5µm



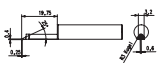
PHT 3–350



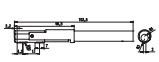
PHT 11–100



PHTR–100



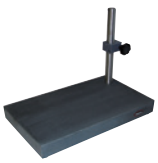
PHTF 0.5–100



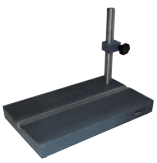
PT 150



ST-D



ST-F



ST-G



814 Sh



814 SR



16 EWe



e-Stick



109 PS

MarSurf M 300

Mobile Roughness Measuring Instrument

FEATURES

MarSurf M 300, the first portable roughness measuring unit with the option of wireless (Bluetooth) connection to the drive unit.

- Bluetooth wireless connection
- Easy to use, with high-resolution color display and ATM-style user guidance
- Integrated standard in drive unit
- Automatic profile detection and corresponding selection of filters and traversing length conforming to standards
- Integrated memory for the results of up to 40.000 measurements and 30 profiles
- Integrated thermal printer with high print quality
- Data transfer of results and profiles via USB interface to your PC
- Evaluation of most common parameters as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Tolerance monitoring
- Printing of R-profile (ISO/ASME/JIS), P-profile (MOTIF), material ratio curve, measuring record
- Setting of asymmetrical intersection lines for peak count calculation
- Measuring units (µm/µinch) and standards (ISO/JIS/ASME/MOTIF) are selectable
- Individual sampling lengths and short cutoff can be selected
- Lock for instrument settings
- Built-in rechargeable battery with power management
- Suitable for use with stationary measuring station
- For use with PHT probe range
- MarSurf PS1/M 300 Explorer software for recording measurements

Scope of delivery

- Evaluation unit M 300 drive unit RD 18 with integrated roughness standard
- Standard pick-up PHT 6–350/2µm (conforming to standards)
- Power source with 3 adapters
- Height adjustment accessory
- Pick-up protection
- Pick-up protection with prismatic underside end face V-block
- 2 USB cables
- 1 roll of thermal paper
- Shoulder strap
- Carrying case
- Mahr calibration certificate
- Operating instructions



Application:

- For shafts and housing components
- Forlarge scale machines
- For large workpieces
- Formilling and turning parts
- For use on grinding and honing components
- On the production line or directly on the machine; ideal for rapid testing of the surface roughness of a workpiece

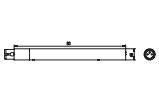


TECHNICAL DATA

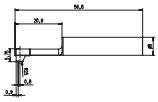
Order no.		6910401	6910411
Product type		M 300	
Parameters		Ra, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rq, Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, S, CR, CF, CL, R, Ar, Rx, Rv, W (MOTIF)	
Horizontal scale		Depends on cutoff	
Log contents		R profile, MRK,P profile (MOTIF),results	
Stylus		2 µm	5 µm
LC display		High resolution color display, 3.5", 320 x 240 pixel	
Printing		Automatic/manualrecord with time	
Printer		Thermal printer, 384 points/horizontal line, 20 characters/line	
Printing speed		Approx. 6 lines/second corresponds to approx. 25 mm/s (1 in/s)	
Thermopaper		Ø 40.0 mm–1.0 mm, width 57.5 mm–0.5 mm, coated	
Calibration function		Dynamic	Dynamic
Password protection		Yes	
Lock for device settings		Yes	
Languages		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish	
Power management		Yes	
Interfaces		Drive unit, power pack, USB, MarConnect	
Data interface:		RS232C, USB, Digimatic, USB A	
Relative humidity		30 % to 85 %	
System of protection		M 300 = IP 42, RD 18 = IP 40	
Operating temp. range		+5 °C to +40 °C	
Temperature range for storage		–15 °C to +55 °C	
Power supplied		NiMH battery, capacity: approx. 1.000 measurements (depends on number andlength of record printouts), plug-in power pack with three power adapters,- for input voltages from 90 V to 264 V	
(L x W x H) for drive unit in mm.		130 x 70 x 50 mm	
(L x W x H) for measuring instrument in mm.		190 x 140 x 75 mm	
Weight	kg	4.1	
Measuring principle		Stylus method	
Probe		Inductive skidded probe	
Measuring range	mm	0.350	
Profile resolution		8 nm	
Filter according to ISO/JIS		Gaussian filter, Ls filter	
Cutoff lc according to ISO/JIS		0.25 mm, 0.8 mm, 2.5 mm	
Number n of sampling length according to ISO/JIS		Selectable: 1–5	
Short stroke under ISO/JIS		Selectable	
Traversing length Lt according ISO/JIS		1.75 mm, 5.6 mm, 17.5 mm	
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4 mm, 12.5 mm	1.25 mm, 4 mm, 12.5 mm
Contacting speeds		0.5 mm/s	
Measuring force	N	0.00075	
Weight drive unit		Approx. 300 g	
Weight measuring instrument		Approx. 1 kg	

ACCESSORIES

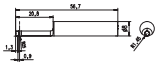
Order no.	Product description	Product type
6850540	PHT pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe 2 µm	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/5µm
6111527	Standard probe 10 µm	PHT 6–350/10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
6850541	Adapter for transverse tracing	PHT AQ
6850542	Vee-block holder	PS1 php
6910203	End face vee-block	PS1 / RD18
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6910201	Mount for MarSurf PS1 / RD 18 on measuring stand ST	ST-a1
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height measuring and scribing instrument	814 SR
4426101	Height measuring and scribing instrument	814 SR
4102357	Data connection cable USB	16 EXu
4102410	Data connection cable RS232C	16 EXr
4102915	Digimatic data cable	16 EWd
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6910205	Evaluation software	SW PS1/M300 Explorer
6299054	Evaluation software	SW XR 20
6820420	Roughness standard with Mahr calibration certificate, profile depth 10 µm	PRN 10
6820601	Geometric standard with sinusoidal groove profile, profile depth 3 µm	PGN 3
6820602	Geometric standard with sinusoidal groove profile, profile depth 1.5 µm	PGN 1
6820605	Geometric standard with sinusoidal groove profile, profile depth 10 µm	PGN 10
9027715	Mahr calibration certificate for PGN Standard	PGN
6980102	DKD (German Calibration Service) calibration certificate for PGN Standard	PGN



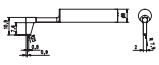
PHT (80 mm)



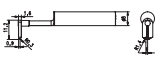
PHT 6–350;PHT 6–350/ 5µm



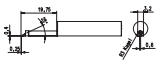
PHT 3–350



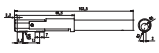
PHT 11–100



PHTR–100



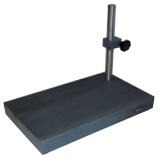
PHTF 0.5–100



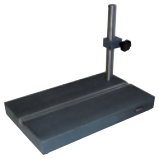
PT 150



ST-D



ST-F



ST-G



814 Sh



814 SR



109 PS

MarSurf M 300 C

Mobile Roughness Measuring Instrument

FEATURES

- Bright, illuminated color display
- Automatic selection of filter and traversing length conforming to standards
- Integrated thermal graphics printer with high print quality
- Log printed by pressing a button
- Data transfer of results and profiles via USB interface to your PC
- Evaluation of most common parameters as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Printing of R profile (ISO/ASME/JIS), P profile (motif), material ratio curve, measuring record
- Measuring units (µm/µinch) and standards (ISO/Jis/asme/motif) are selectable
- Tolerance monitoring
- Integrated memory for results of up to 40000 measurements and 30 profiles
- Setting of asymmetric intersection lines for peak count calculation
- Individual sampling lengths and short cutoff can be selected
- Key pad lock and/or password protection for instrument settings
- Built-in rechargeable battery with power management
- Integrated roughness standard for the standard pick-up PHT 6–350
- Dynamic calibration function
- Date and/or time of measurement
- MarSurf PS1/M300 Explorer Software for recording measurements

Scope of delivery

- Evaluation unit M 300 C
- Cylindrical drive unit RD18 C
- Handheld V
- Block with height adjustable feet
- Standard pick-up PHT 6–350/2µm (conforming to standards)
- Roughness standard PRN 10 with Mahr calibration certificate
- 1 roll of thermal paper
- Pick-up protection
- 8 mm mounting clamp for the drive unit
- Power source with 3 adapters
- USB cable (for connection to a PC)
- Shoulder strap
- Carrying case
- Operating instructions

Application:

- For shafts and housing components
- Forlarge scale machines
- For large workpieces
- For milling and turning parts
- For use on grinding and honing components
- On the production line or directly on the machine; ideal for rapid testing of the surface roughness of a workpiece

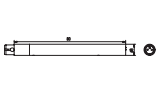


TECHNICAL DATA

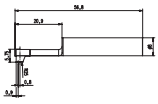
Order no.		6910431
Product type		M 300 C
Parameters		Ra, Rq, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, S, CR, CF, CL, R, Ar, Rx, Rv, W (MOTIF)
Horizontal scale		Depends on cutoff
Log contents		R profile, MRK,P profile (MOTIF),results
Stylus		2 µm
LC display		High resolution color display, 3.5”, 320 x 240 pixel
Printing		Automatic/manual record with time
Printer		Thermal printer, 384 points/horizontal line, 20 characters/line
Printing speed		Approx. 6 lines/second corresponds to approx. 25 mm/s (1 in/s)
Thermopaper		Ø 40.0 mm –1.0 mm, width 57.5 mm–0.5 mm, coated
Calibration function		Dynamic
Storage capacity		Internal memory for max. 40000 results, max. 30 profiles
Password protection		Yes
Lock for device settings		Yes
Languages		German, English, French, Italian, Japanese, Korean, Spanish, Dutch, Chinese, Polish, Czech, Portugese, Russian, Swedish, Hungarian, Turkish
Power management		Yes
Interfaces		Drive unit, power sorce, USB, MarConnect
Data interface:		RS232C, Digimatic, USB, USB A
Relative humidity		30 % to 85 %
System of protection		M 300 = IP 42, RD 18 = IP 40
Operating temp. range		+5 °C to +40 °C
Temperature range for storage		–15 °C to +55 °C
Power supplied		NiMH battery, capacity: approx. 500 measurements (depends on number and length of record printouts)
Rechargeable batteries		NiMH battery, capacity: approx. 500 measurements
Wide range power supply		Plug-in power pack with three power adapters, for input voltages from 90 V to 264 V
(L x W x H) for drive unit in mm.		139 x 26 mm
(L x W x H) for measuring instrument in mm.		190 x 140 x 75 mm
Weight	kg	4.1
Measuring principle		Stylus method
Probe		Inductive skidded probe
Measuring range	mm	0,350
Profile resolution		8 nm
Filter according to ISO/JIS		Gaussian filter, Ls filter
Cutoff lc according to ISO/JIS		0.25 mm, 0.8 mm, 2.5 mm, automatic
Number n of sampling length according to ISO/JIS		Selectable: 1–5
Short stroke under ISO/JIS		Selectable
Traversing length Lt according ISO/JIS		1.75 mm, 17.5 mm, 5.6 mm, automatic
Traversing length according ISO 12085 (MOTIF)		1 mm, 2 mm, 4 mm, 8 mm, 12 mm,16 mm
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4 mm, 12.5 mm
Contacting speeds		0.5 mm/s
Measuring force	N	0.00075
Weight drive unit		Approx. 300 g
Weight measuring instrument		Approx. 1 kg

ACCESSORIES

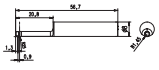
Order no.	Product description	Product type
6850540	PHT pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe 2 µm	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/5µm
6111527	Standard probe 10 µm	PHT 6–350/10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
6850541	Adapter for transverse tracing	PHT AQ
6850542	Vee-block holder	PS1 php
6910203	End face vee-block	PS1 / RD18
6910426	Drive unit for transverse tracing for MarSurf M300C	RD 18 C2
6850738	Collet chucks for RD 18 C2 / PFM–2 for ø 5 –80 mm	RD 18 C2
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6851304	Mount for MarSurf RD18 C on measuring stand ST	PST-a2
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height measuring and scribing instrument	814 SR
4426101	Height measuring and scribing instrument	814 SR
4102357	Data connection cable USB	16 EXu
4102410	Data connection cable RS232C	16 EXr
4102915	Digimatic data cable	16 EWd
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6910205	Evaluation software	SW PS1/M300 Explorer
6299054	Evaluation software	SW XR 20
6820420	Roughness standard with Mahr calibration certificate, profile depth 10 µm	PRN 10
6820601	Geometric standard with sinusoidal groove profile, profile depth 3 µm	PGN 3
6820602	Geometric standard with sinusoidal groove profile, profile depth 1.5 µm	PGN 1
6820605	Geometric standard with sinusoidal groove profile, profile depth 10 µm	PGN 10
9027715	Mahr calibration certificate for PGN Standard	PGN
6980102	DKD (German Calibration Service) calibration certificate for PGN Standard	PGN



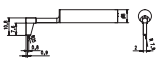
PHT (80 mm)



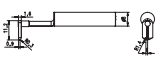
PHT 6–350;PHT 6–350/ 5µm



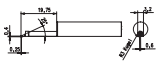
PHT 3–350



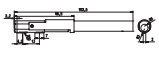
PHT 11–100



PHTR–100



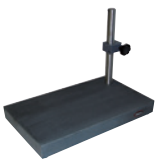
PHTF 0.5–100



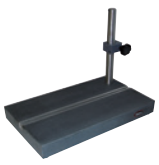
PT 150



ST-D



ST-F



ST-G



814 Sh



814 SR



109 PS

MarSurf M 400

Mobile Surface Measuring Instrument

DESCRIPTION

MarSurf M 400. The best of the "mobiles"

- Surface evaluation using skidless tracing is not only needed in the measuring room but is required more and more in production as well.
- This usually means higher demands on operator qualities, more time, more adjustment work.
- In the line of "mobile surface metrology", MarSurf M 400 offers this required scope of performance and at the same time simple and fast operability.

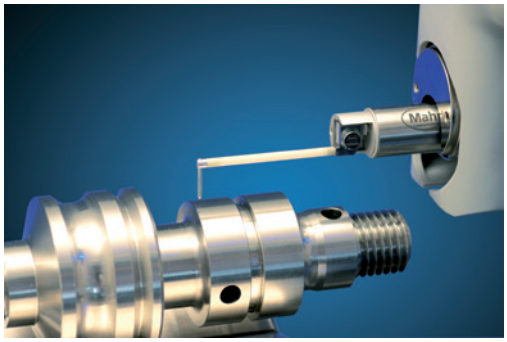
- Mobile and stationary measuring instrument
- Roughness and waviness measurements
- Traversing lengths up to 26 mm
- Over 50 R , W and P surface parameters
- Automatic choice of cut-off and traversing length in accordance with international standards
- Dynamic calibration function
- Cable and Bluetooth connection between drive unit and evaluation instrument (4 m) (MarSurf M 400 C is only with cable connection)
- Magnetic probe holder (break away probe) BFW 250
- Motorized probe zero setting (max. 7.5 mm)

Supplied with:

- MarSurf M 400 evaluation instrument
- MarSurf SD 26 drive unit including BFW 250 probe system
- Standard probe arm (6852403)
- 1 roll of thermal paper
- Wide-range power supply unit with 3 adapters
- 2 USB cables (for connecting to the PC and the M 400)
- Operating instructions
- Case







TECHNICAL DATA

Measuring principle	Stylus method
Probe	BFW skidless system
Measuring range	+/–250 µm (up to +/–750 µm with 3x probe arm length)
Profile resolution	Measuring range +/–250 µm: 8 nm Measuring range +/–25 µm: 0.8 nm
Filter according to ISO/JIS	Gaussian filter as per ISO 11562 Filter as per ISO 13565
Cutoff lc according to ISO/JIS	0.25 mm, 0.8 mm, 2.5 mm, automatic, variable
Number n of sampling length according to ISO/JIS	1–5
Contacting speeds	0.2 mm/s; 1.0 mm/s
Measuring force	0.75 mN
Surface parameters	Over 50 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

APPLICATIONS

Machine building
- Bearings, shafts, racks, valves

Automotive industry
- Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Steel industry
- Measurement of sheet metal surfaces
- Measurement of roller surface

Medicine
- Surface roughness measurement for hip and knee endoprostheses

Aerospace
- Turbine components

ACCESSORIES

Measuring stand
- ST-D, ST-F and ST-G
- Holder on measuring stand

Other accessories
- CT 120 XY table, parallel vise, V-block
- Assorted probe arms for the BFW probe system

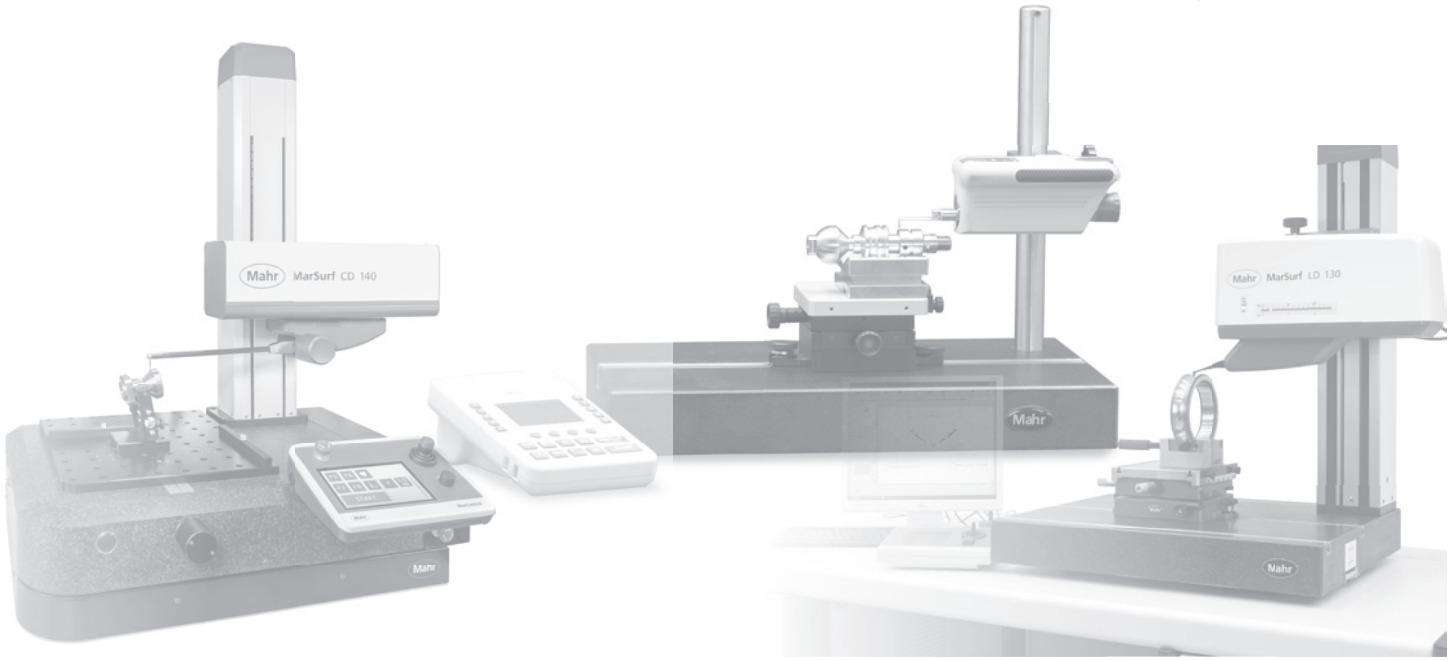
For more information, please visit our website: www.mahr.com

MarSurf Surface Measuring Instruments



Portable Surface Roughness Measurement

Portable and Stationary Surface Measurement
for Roughness Depth and Contours

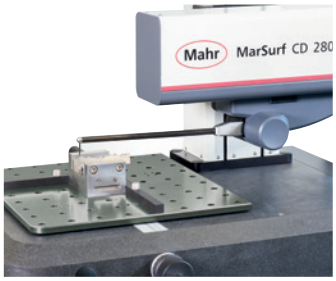


MarSurf. PC-based stationary Surface Measuring Stations

Versatile and Powerful in Measuring Rooms and Laboratories

PC-based surface measuring instruments represent the cutting edge in surface measurement and evaluation incorporating international standards, versatile evaluation methods, comprehensive documentation, large storage capacity, data export/import and networking with other systems. Extensive Quality Assurance procedures guarantee the highest quality and stability of software and hardware.











MarSurf XR 1 Roughness Measuring Station

DESCRIPTION

MarSurf XR 1. The ideal instrument for a low-cost introduction to user-friendly surface metrology.
The PC-based instrument delivers all common surface parameters and profiles in accordance with international standards, both in the measuring room and in production. MarSurf XR 1 from Mahr stands for innovative roughness evaluation software.



- Over 80 surface parameters for R-, P- and W-profiles according to current ISO/JIS or MOTIF standards (ISO 12085)
- Bandpass filter Ls in accordance with current standard; Ls can also be switched off or varied as required
- Comprehensive measuring records
- Teach-in methods for the rapid creation of Quick&Easy measuring programs
- Automatic functions for choosing cut-off and traversing length in accordance with standards
- Support for various calibration methods (static and dynamic) by specifying the Ra or Rz parameter
- Adjustable maintenance and calibration intervals
- Multiple measuring station configurations for custom applications
- Range of options provide system flexibility
- Various user levels protect the device against misuse and prevent unauthorized people from using it

Drive units and probe options:
- Skidded or skidless tracing
- Drive units MarSurf GD 26 and/or MarSurf SD 26 and/or MarSurf RD 18

Supplied with:
- MarSurf XR 1, Software MarWin EasyRoughness, Mahr license key with standard license
- Drive unit adapter
- All-in-one PC optional
- MarSurf SD 26 and/or RD 18 drive unit set including probe system
- MFW 250 B probe system set
- MarSurf ST-G measuring stand
- CT 120 XY table

TECHNICAL DATA

XR 1	
Measuring principle	Stylus method
Probe	BFW skidless system with MarSurf SD 26 drive unit and/or PHT skidded system with MarSurf RD 18 drive unit
Measuring range	+/–250 µm (up to +/–750 µm with 3x probe arm length) applies to BFW system 350 µm applies to PHT probe system
Filter according to ISO/JIS	filter as per ISO 16610–21(replaced Gaussian filter as per ISO 11562), robust Gaussian filter a per ISO 16610–31
Number n of sampling length according to ISO/JIS	1 to 50 (default: 5)
Traversing lengths	MarSurf GD 26 / SD 26: Automatic; 0.56 mm*; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm, Measurement up to stop, variable * Traversing length dependent on drive unit RD 18: Automatic; 1.75 mm; 5.6 mm; 17.5 mm
Measuring force	0.75 mN
Surface parameters	Over 80 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

APPLICATIONS

Machine building
- Bearings, shafts, racks, valves, various components from the engineering and precision engineering industry

Automotive industry
- Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Medicine
- Surface roughness measurement for hip and knee endoprostheses

Aerospace
- Turbine components

Optics
- Various optical components

ACCESSORIES

General software options
- Dominant waviness (WDc) for MarWin
- ISO 13565–3 surface parameters
- QS-STAT / QS-STAT Plus
- Profile processing
- User defined parameters between operator and authorized personnel
- Contour 1 for MarSurf XR 1 / XR 20 (in conjunction with MarSurf SD 26 drive unit)
- All options on one MLK

Software options
- Option RoughnessPlus
- Option MeasurementPlus
- Digital I/O set

For more information, please visit our website: www.mahr.com

MarSurf GD 140 / GD 280

Roughness Measuring Station

DESCRIPTION

MarSurf GD: The new reference measuring station for roughness and waviness

The new measuring stations of the MarSurf GD series from Mahr set new standards. In addition to surface roughness evaluations, profile and waviness evaluations can also be carried out. With the new MarSurf GD series, manufacturing companies are reaching a new dimension in order to reliably secure and improve the production quality of workpieces in the measuring room or close to production.
The new measuring station concept combines speed, reliability and flexibility. The aim is to increase the profitability of the system for your company.
The measuring stations are operated with the user-friendly MarWin software (MarWin EasyRoughness or MarWin ProfessionalRoughness)

Innovative technologies:

- **Fast axes**
- Positioning speeds up to 200 mm/s in X
- 40 x faster than its predecessor MarSurf GD 120
- The Z-axis is fully CNC-capable by default
- The Z-axis is approx. twice as fast as previous Mahr Z-axes
- Up to 5 times faster than standard Z-axes on the market
- Contacting and zeroing via the Z-axis

New flexible probe system mount with BFW probe system

- Simple probe arm change and probe arm protection by means of magnetic probe arm holder
- Probe arm holder allows the change from standard to transverse measurement without tools or adapters
- Extensions for the touch probe are possible

Innovative workpiece clamping system

- Mounting plate 390 x 430 mm with bore dimension 50 mm
- Integrated 60 mm TY adjustment
- The combination of mounting plate and integrated TY adjustment makes an additional XY table superfluous
- Low workpiece setup supports a favorable short measurement loop, which has a positive effect on the measurement results



TECHNICAL DATA

MarSurf GD 140 / 280	
Measuring range	500 µm (±250 µm) for probe arm length 45 mm 1500 µm (±750 µm) for probe arm length 135 mm
Resolution	Measuring range 1: 7.6 nm Measuring range 2: 0.76 nm
Guide deviation	0.07 µm / 20 mm 0.2 µm / 60 mm 0.4 µm / 140 mm
Measuring speed	Up to 10 mm/s
Positioning speed	0.02 –200 mm/s (in X)
Probe arm length	45 mm (x 1) 67.5 mm (x 1.5) 90 mm (x 2) 112.5 mm (x 2.5) 135 mm (x 3)

APPLICATIONS

Mechanical Engineering

- Bearings, threads, threaded bars, ball screws, shafts, racks

Production metrology

- Contour measurement in a semi-automatic process

Automotive industry

- Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medical technology

- Contour of hip and knee endoprosthesis, contour of medical screws, contour of dental implants

ACCESSORIES

Optional

- Manual control panel with joystick and display
- Motor-driven TY axis
- Parallel vice
- Prism block
- Equipment table
- Vibration damping system

General software options

- Option - RoughnessPLus
- Option - MeasurementPlus
- Option - Dominant Waviness (WDc) for MarWin
- Option - ISO 13565-3 surface parameters
- Option - QS-STAT / QS-STAT Plus
- Option - Profile processing
- Option - User-defined parameters
- Option - Topography

MarSurf XC 2 with CD 120

Contour Measuring Station

DESCRIPTION

Your entry into precision contour measurement
The quick, simple and inexpensive 2D contour measuring system satisfies all demands in terms of accuracy and range of evaluation criteria
Consistently delivers safe and reliable results

- Parameters that are dependent on datum elements are recalculated as soon as a datum element is changed
- Password protected user access prevents improper use
- Outstanding calibration processes including geometry calibration, measuring force calibration, bend compensation, etc.
- Sturdy, rigid probes
- Smooth running, sturdy and accurate drive unit
- Automatic lowering and raising of the probe arm at individually adjustable speeds
- Patented probe arm attachment for collision protection

Supplied with:

- MarSurf XC 2 including PC, MidRange Standard, MarSurf XC 2 software, Mahr license key
- TFT monitor
- MarSurf CD 120 drive unit
- MarSurf ST 500 measuring stand (including holder)
- Calibration set
- MCP 23 manual control panel
- CT 120 XY table including rotary adjustment



TECHNICAL DATA

XC 2	
Measuring range	(in Z) 50 mm
Traversing lengths	0.2 mm to 120 mm
Measuring force	1 mN to 120 mN
Sampling angle	On smooth surfaces, depending on deflection: trailing edges up to 88°, leading edges up to 77°
Contacting speed (in Z)	0.1 to 1 mm/s
Resolution	In Z, relative to stylus tip: 0.38 µm (350 mm probe arm) / 0.19 µm (175 mm probe arm) In Z, relative to measuring system: 0.04 µm
Guide deviation	< 1 µm (over 120 mm)
Measuring speed	0.2 mm/s to 4 mm/s
Positioning speed	In X and return speed: 0.2 to 8 mm/s In Z: 0.2 to 10 mm/s
Probe arm length	175 mm, 350 mm
Tip radius	25

APPLICATIONS

Machine building

- Bearings, threads, threaded rods, ball screws, shafts, racks
- Measurement close to the production area
  Contour measurement in semi-automated operation

Automotive industry

- Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine

- Contour measurement for hip and knee endoprostheses
- Contour measurement for medical screws
- Contour measurement for dental implants

ACCESSORIES

Optional

- Parallel vise, vee-block
- Equipment table

Software options

- DXF import option
- Tangential elements option
- QS-STAT / QS-STAT Plus option

For more information, please visit our website: www.mahr.com

MarSurf CD 140 / CD 280

Contour Measuring Station

DESCRIPTION

Contour measuring in a new dimension

The new MarSurf CD series from Mahr sets new standards when it comes to contour testing. With the new MarSurf CD series, manufacturing companies are entering a new dimension in order to reliably secure and improve the manufacturing quality of workpieces in the measuring room or close to production.
The new measuring station concept combines speed, reliability and flexibility. The aim is to increase the profitability of the system for your company.



Innovative technologies:

- Fast axes
- Positioning speeds up to 200 mm/s in X
- 25x faster than the predecessors MarSurf PCV and MarSurf CD 120
- All measuring stations of this series have a fully CNC-capable Z-axis
- The Z-axis is approx. twice as fast as previous Mahr Z-axes
- Up to 5x faster than the X-axes usually found on the market

Highly dynamic, intelligent probe system

- Probe arm recognition via integrated chip
- Standard measuring range up to 70 mm; max. 100 mm with 490 mm probe arms
- Magnetic probe arm mount, probe arm change without tools
- The probe system combines robustness with dynamics
- Optional: Expansion for roughness evaluation

Innovative workpiece clamping system

- Mounting plate 390 x 430 mm with bore size 50 mm
- Integrated 60 mm TY adjustment
- The combination of mounting plate and integrated TY adjustment omits the needs for an additional XY table
- Low workpiece set-up leads to an advantageously short measuring circuit, which positively affects the measuring results

TECHNICAL DATA

MarSurf CD 140 / 280	
Measuring range	70 mm (in Z with 350 mm probe arm) max. 100 mm (with 490 mm probe arm)
Measuring force	4 mN to 30 mN, in Z+ and Z-, adjustable via software
Resolution	max. 6 nm (with 210 mm probe arm)
Guide deviation	0.350 µm / 60 mm 0.400 µm / 140 mm 0.750 µm / 280 mm
Measuring speed	0.02 –10 mm/s
Positioning speed	0.02 –200 mm/s (in X)
Probe arm length	210 mm; 350 mm; 490 mm

APPLICATIONS

Mechanical engineering

- Bearings, threads, threaded rods, ball spindles, shafts, racks

Measurements close to production

- Semi-automatic contour measurement

Automative Industry

- Steering, brake system, transmission, crankshaft, camshaft, cylinder head

Medical technology

- Contour of the hip and knee endoprostheses, contour on medical screws, contour on dental implants

ACCESSORIES

Optional

- Manual control panel with joystick and display
- Motor-driven TY axis
- Parallel vice
- Prism block
- Equipment table
- Vibration damping system

General software options

- Option - ContourPlus
- Option - MeasurementPlus
- Option - Roughness in Contour view
- Option - EasyRoughness
- Option - QS-STAT / QS-STAT Plus
- Option - Profile processing
- Option - Topography

For more information, please visit our website: www.mahr.com

MarSurf VD 140 / VD 280

Roughness and Contour Measuring Station

DESCRIPTION

MarSurf VD Series - The MarSurf family is complemented:
The easy change between roughness and contour tracing system Depending on the measuring task, either the BFW roughness probe system for surface roughness or the C 11 contour probe system for contour measurements can be changed by the operator (hot-plug capable). The new system offers the advantages of combining the highly dynamic C 11 contour probe system with the high-precision BFW probe system, which is particularly suitable for fine surfaces.
The new measuring station concept combines speed, reliability and flexibility.
The aim is to increase the profitability of the system for your company.
The measuring stations are operated with the user-friendly MarWin software (MarWin Easy Roughness & Contour or MarWin Professional Roughness & Contour).

Innovative technologies:
- Fast axes
- Positioning speeds up to 200 mm/s in X
- Contour measurements are 25 x faster than with its predecessor MarSurf PCV or MarSurf CD 120
- Surface measurements are 40 x faster than with the MarSurf GD 120
- By default, the Z-axis is fully CNC-capable
- The Z-axis is approx. twice as fast as previous Mahr Z-axes
- Up to 5 times faster than standard Z-axes on the market

Two reference probe systems for your measuring tasks
Contour probe system C 11
- Probe arm recognition via integrated chip
- Standard measuring range up to 70 mm; Max. 100 mm with 490 mm probe arm length
- Magnetic probe arm holder, probe arm change without tools
- The touch probe combines robustness with dynamics
- Optional: Possibility to extend the roughness value determination to contours



TECHNICAL DATA

MarSurf VD 140 / 280	
Measuring range	with probe system BFW 250 500 µm (±250 µm) for probe arm length 45 mm 1500 µm (±750 µm) for probe arm length 135 mm with probe system C 11 70 mm with probe arm length 350 mm max. 100 mm with probe arm length 490 mm
Guide deviation	0.07 µm / 20 mm (with probe system BFW 250) 0.35 µm / 60 mm 0.4 µm / 140 mm
Measuring speed	Up to 10 mm/s
Positioning speed	0.02 –200 mm/s (in X)

Roughness probe system BFW
- Easy probe arm change and probe arm protection by means of magnetic probe arm holder
- Probe arm mount allows the change from standard to transverse measurement without tools or adapter
- Extensions for the probe system possible

Innovative workpiece clamping system
- Mounting plate 390 x 430 mm with hole dimension 50 mm
- Integrated 60 mm TY adjustment
- The combination of mounting plate and integrated TY adjustment makes an additional XY table superfluous
- Low workpiece setup supports a favorable short measurement loop, which has a positive effect on t he measurement results

APPLICATIONS

Machine building
- Bearings, threads, threaded rods, ball screws, shafts, racks

Metrology close to production
- Contour measurement in a semi-automatic process

Automotive industry
- Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine
- Contour measurement for hip and knee endoprostheses, medical screws, dental implants

ACCESSORIES

Optional
- Manual control panel with joystick and display
- Motor-driven TY axis
- Parallel vice
- Prism block
- Equipment table
- Vibration damping system

General software options
- Option - MeasurementPlus
- Option - RoughnessPlus
- Option - ContourPlus
- Option - Dominant Waviness (WDc) for MarWin
- Option - ISO 13565-3 surface parameters
- Option - QS-STAT / QS-STAT Plus
- Option - Profile processing
- Option - User-defined parameters
- Option - Topography

For more information, please visit our website: www.mahr.com

MarSurf UD 130 / LD 130 / LD 260

Combined Contour and Surface Measuring Station

DESCRIPTION

MarSurf UD 130
The **MarSurf UD 130** closes the gap between the high-end solution MarSurf LD 130/LD 260 and the new standard combination measuring station MarSurf VD140/280 with two probe systems.

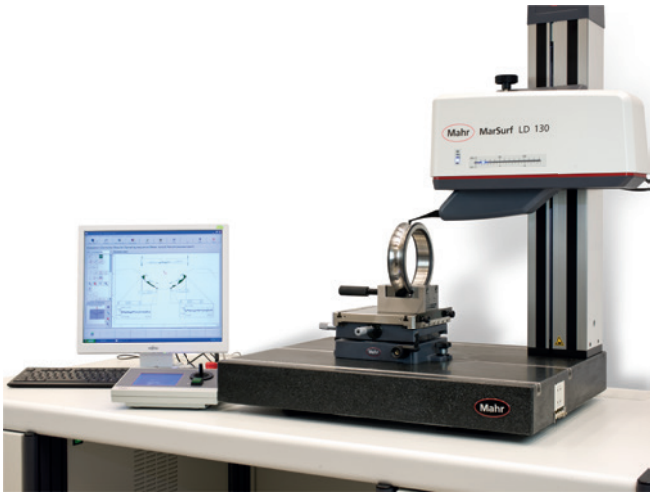
The technical specifications of the MarSurf UD 130 are based on theinterferometric probe system and the positioning speeds that reduce themeasuring time for each workpiece.

MarSurf LD 130 / LD 260. A step into a new dimension
Combined contour and roughness measurements in just one step comes courtesy of proven cutting-edge technology from Mahr metrology. The MarSurf LD 130 and MarSurf LD 260 measuring stations have been systematically developed to draw on the experience from the first generation of equipment.

- Roughness and contour in just one step
- High measuring and positioning speed cuts measuring times dramatically
- Innovative probe system removal
- Quick and reliable probe arm exchange with simultaneous probe arm detection by magnetic holder
- Long measuring length up to 260 mm (MarSurf LD 260) with a measuring stroke of 13 mm (100 mm probe arm length) or 26 mm (200 mm probe arm length)
- Modular construction for ease of maintenance
- No need to fully dismantle the measuring stand for maintenance

Supplied with:

- MarSurf XCR 20 including midrange LD, MarWin software Easy Roughness & Contour, Mahr license key
- TFT monitor
- MCP 21 manual control panel
- MarSurf LD 130 or LD 260 drive unit including LP D 14–10–2/60 LP D 14–10–500 probe system and probe arms
- Calibration standard for contour 1, accuracy class 1
- MarSurf ST 500 CNC measuring stand with 700 mm x 550 mm granite plate (including control module)
- Dampening element set
- CT 300 XY table



TECHNICAL DATA

	UD 130	LD 130	LD 260
Traversing lengths	0.1 mm to 130 mm	0.1 mm –130 mm	0.1 mm –260 mm
Measuring force	1 mN to 30 mN, software-adjustable	0.5 mN to 30 mN, software-adjustable	0.5 mN to 30 mN, software-adjustable
Resolution	2 nm	0.8 nm	0.8 nm
Measuring speed	0.1 mm/s to 5 mm/s; for roughness measurements 0.1 mm/s to 0.5 mm/s are recommended	0.02 mm/s to 10 mm/s; for roughness measurements 0.1 mm/s to 0.5 mm/s is recommended	0.02 mm/s to 10 mm/s; for roughness measurements 0.1 mm/s to 0.5 mm/s is recommended
Positioning speed	0.1 mm/s to 30 mm/s	0.02 mm/s to 200 mm/s	0.02 mm/s to 200 mm/s

APPLICATIONS

Machine building
- Roller bearings, threads, threaded rods, ball screws, shafts, racks, ball heads, valves

Measurement close to the production area
- Contour and surface roughness measurement in semi-automatic and fully automatic operation

Automotive industry
- Engine parts including cylinder block, cylinder head, crankshaft, camshaft, valves, steering, gearbox, injection systems, turbocharger

Medicine
- Contour and surface roughness measurement for hip and knee endoprostheses, contour measurement for medical screws, contour and surface roughness measurement for dental implants

Optics
- Contour and surface roughness measurement of aspherical lenses

ACCESSORIES

- ST 750 measuring stand
- Parallel V-block
- V-block, equipment table
- Measuring cabinet
- Extensive range of probe arms

Software options
- Profile processing
- Dominant waviness (WDc) for MarWin
- ISO 13565–3 surface parameters
- User defined parameters
- Topography
- Topography with MfM
- Thread evaluation
- Chamfer evaluation (in accordance with Bosch standard)
- QS-STAT / QS-STAT Plus
- Digital I/O set

For more information, please visit our website: www.mahr.com

MarSurf CNC *modular*

DESCRIPTION

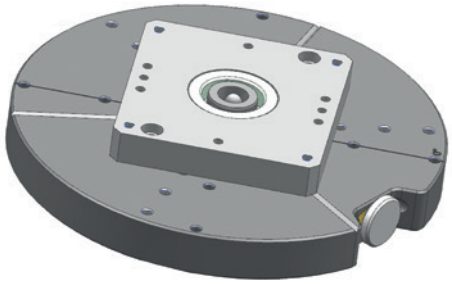
MarSurf CNC *modular*. CNC measuring stations based on standard components
A standard surface measuring station can be expanded into a user-friendly, semi-automatic CNC measuring station simply by adding auxiliary table axes and possibly a measuring cabinet.

- Plug-and-play configuration of the control unit
- Easy to operate MarWin Software measuring wizard

- Universal concept for workpiece holder and clamp
- Minimal training required

Supplied with:
- MarSurf XC 20 measuring station with PCV 200
- Alternatively: MarSurf LD 130 / LD 260 / UD 130 measuring station
- Including midrange CNC controller
- MarSurf ST 500 / 750 CNC measuring stand
- MCP 21 manual control panel
- **Optional table axes**
- T1S-L linear axis 200 mm
- T1S-R rotation axis
- T3S-LLR 3 table axes comprising 2 linear and one rotation axis
- **Optional measuring cabinet**





TECHNICAL DATA

	**T1S-L** Linear axis Complete with control module for midrange CNC Displacement path 200 mm Dimensions 510 mm x 200 mm x 200 mm Bearing strength 50 kg
	**T1S-R** Rotation axis Complete with standard support plate and control module for midrange CNC For use as a TA or TC axis Dimensions 270 mm x 200 mm x 210 mm Bearing strength 30 kg
	**T3S-LLR** 3 axis combination Complete with standard support plate and control module for midrange CNC Multiaxis, monolithic structure comprising axes TX, TY, TC Bearing strength 30 kg

APPLICATIONS

- Measurement close to the production area
- Pallet measurement
- Topography measurement
- Multiple measuring points on one part without reclamping
- Automatic X-axis alignment
- Universal measuring station for a wide variety of measuring tasks
- Automatic zenith search

ACCESSORIES

- Table plate with clamping sphere adapter and universal clamping plate
- Standard measuring station upgraded to MarSurf CNC *modular*

For more information, please visit our website: www.mahr.com

MarSurf Engineered

DESCRIPTION

MarSurf Engineered - Customized Solutions

- From individual workpiece holder or probe arms to fully automatic measuring stations, Engineered Solutions offers a comprehensive portfolio in the area of MarSurf Engineered to simplify the measurement of surfaces.



Measuring in the production

- Nowadays, roughness and contour are often measured in the direct vicinity of the production in order to determine quality trends and data almost simultaneously with the products produced. The advantage: Measuring and monitoring take place quickly, process-oriented and, above all, process-reliably.
- Particularly in surface metrology, where measured variables are determined in the µm range, environmental influences such as temperature, vibrations, acoustics or humidity can have a major impact on the measurement.

Measuring stations individually adapted to customer requirements

- The MarSurf Engineered measuring stations – manual or fully automatic – offer a comprehensive professional concept in regards to ergonomics, safety, environmental conditions and combine market leading metrology with the requirements of the customers. Furthermore, the operation is usually carried out by production employees who expect a measuring station that is as robust and easy to operate as possible.
- For example, in conjunction with the probe arm changing device, up to 10 different probe arms of the LD 130 / LD 260 line of drive units can be changed in an automatic sequence. This is unique in the field of surface metrology and saves a lot of time since the program sequences do not have to be interrupted.
- A pallet measurement of several identical workpieces in one automatic cycle can also be realized.
- All measuring stations include a comprehensive service and maintenance concept. This makes it possible for the machines to be quickly ready for operation again if they need servicing, which is indispensable for fast production.



The right software for the machine

- With their specially developed intelligent software solutions, MarSurf Engineered measuring stations enable measuring programs to be created on one machine and then copied to identical machines without problems and without further programming. The measuring programs are programmed according to the features to be measured. This means that the machine operator without programming knowledge can create individual process-optimized measuring programs from the features already programmed.



Manual solutions should not be underestimated

- It does not always have to be a partially or fully automated measuring solution. Manually operated measuring stations are also justified if they are designed to facilitate and accelerate quality assurance work. The manual measuring system MarSurf Engineered Series 002, which Mahr designed for a customer who produces large workpieces such as cylinder blocks with weights of up to 300 kg, supports the operator by means of an air-bearing positioning system in order to position the workpieces simply and quickly, yet very precisely and finely.
- In combination with the software ***Operator Guidance MarSurf Q&E*** existing Quick & Easy measuring programs can be combined to measuring sequences. Thus, a comprehensive and well-structured documentation of the measured characteristics of a workpiece can be realized, including data export.

MarSurf Engineered

Individual construction of probe arms

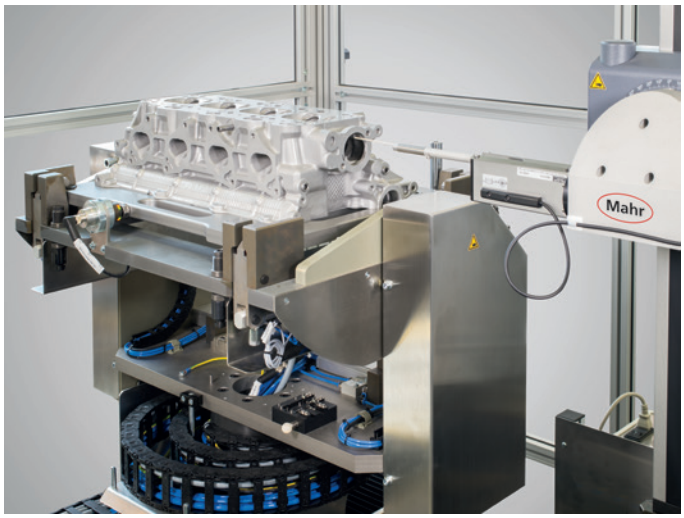
- Especially for complex geometries and the associated measuring tasks, it is necessary to design a probe arm that is suitable for the required measurement. The probe arm is a component that touches the workpiece and is therefore responsible for the quality of the measurement. Engineered Solutions strives to enable the measuring tasks with as few as probe arms as necessary and has a long experience in the design of new probe arm geometries in order to perform the daily measurements more efficiently but with high quality.
- Intelligent probe arms, which can ideally replace several probe arms, offer a high potential to simplify the work at standardised measuring stations for the measuring technicians in order to obtain a quicker assessment of the quality of the workpiece.
- The construction of customized probe arms is possible for all drive units of the MarSurf product line within the scope of the technical data of the devices.

Efficient measurement of large workpieces

- If workpieces are too large to measure with classical measuring instruments or they cannot reach the measuring point, the MarSurf Engineered portfolio offers a variety of specially designed measuring gages for mobile use in the production or in the measuring room. MarSurf Engineered gages are easy and intuitive to use and allow measurements that are impossible to achieve with regular measuring devices. The available gages are already able to measure bore diameters between approx. 6 mm and 170 mm and bore depths between approx. 5 mm and 1000 mm. Depending on the respective application, the gages can be designed for different diameters and depths, so that one gage provides several solutions.

Your advantages with MarSurf Engineered

- Machine concepts individually adapted to the measuring task to be solved in reference to the workpiece size, weight and geometry – from manual solutions to fully automatic machines to in-line measurements with robot loading.
- The right solution suitable for the respective environment, including the necessary safety modules required
- Operating concept adapted to user group – "one-touch" concept
- Software concepts and user interfaces individually adapted to the measuring station and operator





MarSurf Optical Metrology from Mahr

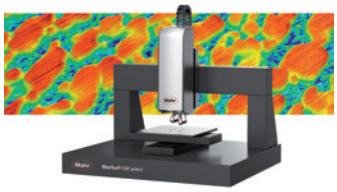
3D Surface Metrology for Industry and Research

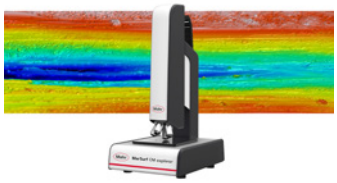
Optical analysis of surface topographies and geometries

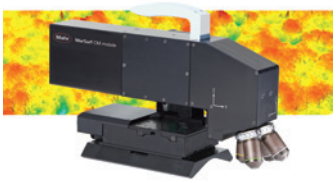
Due to their versatility, MarSurf measuring systems can be used in many areas of industry, from quality control to serial measurements. Within a few seconds, they deliver accurate and repeatable 3D measurements of almost any material – metals, glass, ceramics, semiconductors, polymers or organic materials.

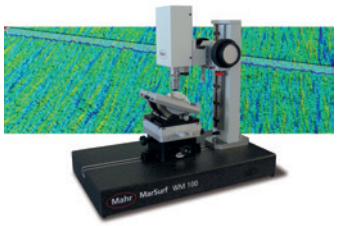
- Contactless, independent of material, and fast
- Reproducible and automatic measurements
- User-independent evaluation and documentation
- 2D/3D roughness measurement according to ISO 25178 / ISO 4287
- Topography measurement (volume, wear ...)
- Geometry

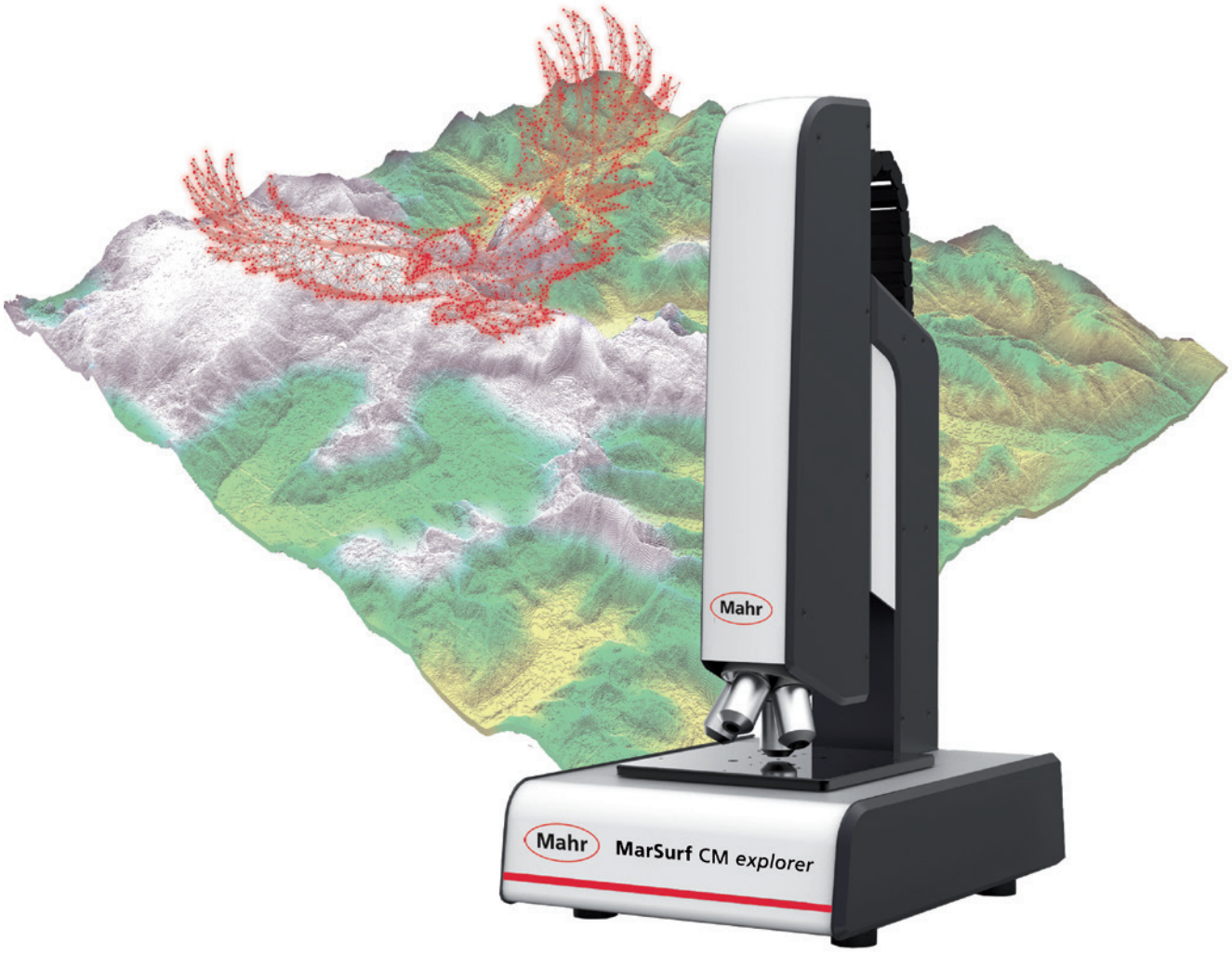
The MarSurf product range offers versatile solutions for your applications.











MarSurf CM *explorer*

3D Surface Measurement

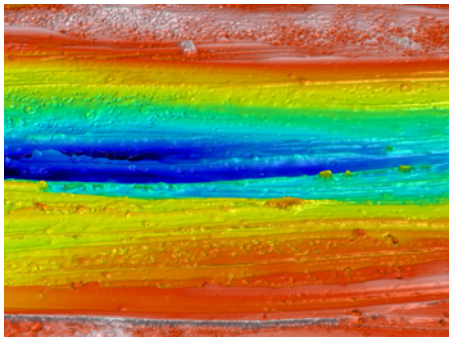
DESCRIPTION

- **The flexible, all-round measuring solution**
- The MarSurf CM ***explorer*** is a compact confocal microscope for the three-dimensional measurement and analysis of surfaces – ***contactless, independent of material, and fast***.
- The MarSurf CM ***explorer*** is suitable for use in test laboratories and equipped for quality assurance in production environments due to its robust construction and insensitivity to environmental influences.

Key benefits:

- High measuring speed – even at full resolution
- User-friendly concept
- Safety through collision detection in all directions to protect your workpiece and measuring system
- High Dynamic Range (HDR) function, 16-bit
- Consistent high resolution output of large measuring surfaces due to HD stitching
- **This established optical measuring system is successfully used, for example, for:**
- Roughness measurement according to DIN EN ISO 4287 / 25178
- Topography measurement (including volume, wear, isotropy)
- Measurement of microgeometry and layer thicknesses
- Users value the MarSurf CM ***explorer*** as a reliable measuring system that provides quantitative traceable **3D characteristics for many industries**.





TECHNICAL DATA

CM explorer	
Measuring principle	Confocal High-performance LED (505 nm / white)

Supplied with: MarSurf CM ***explorer***

- Confocal measuring head
  – HDR camera (B/W or color camera)
  – 4x lens revolver with identification
- L-tripod including control electronics
- Motorized XY table (50x50 mm) with glass scales for sample positioning and image field merging (“stitching”)
- Motorized Z-axis (70 mm) with glass measuring scale
- Measuring system computer with 24” TFT monitor
- Objective lenses:
  – 5x to 100x selectable
- MarSurf MSW for intuitive data acquisition
- MarSurf MfM for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium version)

APPLICATIONS

Mechanical Engineering

- To qualify and quantify roughness, geometry and wear volume

Electronics and semiconductors

- Component inspection down to the sub-micrometer range for defect-free products

Medical Technology

- Quality assurance of medical surfaces in production and laboratory

Material Science

- Optimization of functional properties of new surfaces and products

Microsystems Technology

- Measure complex surface geometries of smallest components with nanometer precision

For more information, please visit our website: www.mahr.com

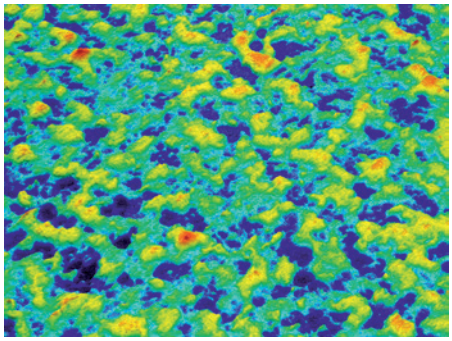
MarSurf CM *expert*

3D Surface Measurement

DESCRIPTION

- **Automatable, high-end measuring system**
- The MarSurf CM ***expert*** is a powerful confocal microscope for the three-dimensional measurement and analysis of surfaces – **contactless, independent of material, and fast**.
- The MarSurf CM ***expert*** is suitable for use in test laboratories and equipped for quality assurance in production environments due to its robust construction and insensitivity to environmental influences.
- With additional manual Z positioning, a large x and y travel range and the possibility of automation, it offers excellent ease of use. The option of performing user-independent, fully automatic measurements makes this surface measuring system ideal for straightforward and efficient use in quality assurance.





TECHNICAL DATA

CM expert	
Measuring principle	Confocal High-performance LED (505nm / white)

Key benefits:

- User-independent serial measurements by automation software
- High measuring speed – even at full resolution
- User-friendly concept
- Safety through collision detection in all directions to protect your workpiece and measuring system
- High Dynamic Range (HDR) function, 16-bit
- Consistent high resolution output of large measuring surfaces due to HD stitching
- **This established optical measuring system is successfully used, for example, for:**
- Roughness measurement according to DIN EN ISO 4287 / 25178
- Topography measurement (including volume, wear, isotropy)
- Measurement of microgeometry and layer thicknesses
- Users value the reliability of this measuring system, which provides quantitative, traceable
- **3D characteristics for many industries**.

Supplied with: MarSurf CM ***expert***

- Confocal measuring head
  – HDR camera (B/W or color camera)
  – 4x lens revolver with identification
- L-tripod including control electronics
- Motorized XY table (100x100 mm) with glass scales for sample positioning and image field merging (“stitching”)
- Motorized Z-axis (70 mm) with glass measuring scale
- Measuring system computer with 24” TFT monitor
- Objective lenses:
  – 5x to 100x selectable
- MarSurf MSW for intuitive data acquisition
- MarSurf ASW for automation (optional)
- MarSurf MfM for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium version)

APPLICATIONS

Mechanical Engineering
- To qualify and quantify roughness, geometry and wear volume

Electronics and semiconductors
- Component inspection down to the sub-micrometer range for defect-free products

Medical Technology
- Quality assurance of medical surfaces in production and laboratory

Material Science
- Optimization of functional properties of new surfaces and products

Microsystems Technology
- Measure complex surface geometries of smallest components with nanometer precision

For more information, please visit our website: www.mahr.com

MarSurf CM *mobile*

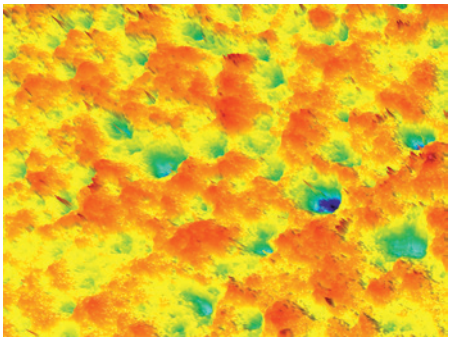
3D Surface Measurement

DESCRIPTION

- **Ready for use anywhere**
- The compact MarSurf CM ***mobile*** is a portable confocal microscope for the three dimensional measurement and analysis of surfaces – non-tactile, independent of material and fast.
- Its low weight and operation via a laptop allow for flexible use when measuring on large objects and difficult to move workpieces, such as rollers.

- Mobile application enables testing directly on the component / tool – even if they are only briefly accessible
- Compact system (5 kg) with motorized axes for HD stitching
- Robust and reliable for use in production
- High measuring speed – even at full resolution
- User-friendly concept
- Consistently high resolution even with large measurement areas thanks to HD stitching
- **The established optical measuring system is successfully used, for example for:**
- Roughness measurement according to DIN EN ISO 4287 / 25178
- Topography measurement (including volume, wear, isotropy)
- Measurement of microgeometry and layer thicknesses
- Users value the MarSurf CM ***mobile*** as a reliable measuring system that provides quantitative traceable **3D characteristics for many industries**.





TECHNICAL DATA

CM mobile	
Measuring principle	Confocal High-performance LED (505 nm)

Supplied with: MarSurf CM *mobile*

- Confocal measuring head
  – B/W camera
  – 4x lens revolver
- Control electronics integrated in the system
- Motorized XY table (50x50 mm) with glass scales for positioning and image field merging (“stitching”)
- Motorized Z-axis (35 mm)
- Laptop or measuring system computer with 24” TFT monitor selectable
- Objective lenses:
  – 5x to 100x selectable
- MarSurf MSW for intuitive data acquisition
- MarSurf for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium version)

APPLICATIONS

Mechanical Engineering
- To qualify and quantify roughness, geometry and wear volume

Electronics and semiconductors
- Component inspection down to the sub-micrometer range for defect-free products

Medical Technology
- Quality assurance of medical surfaces in production and laboratory

Material Science
- Optimization of functional properties of new surfaces and products

Microsystems Technology
- Measure complex surface geometries of smallest components with nanometer precision

MarSurf CM *select*

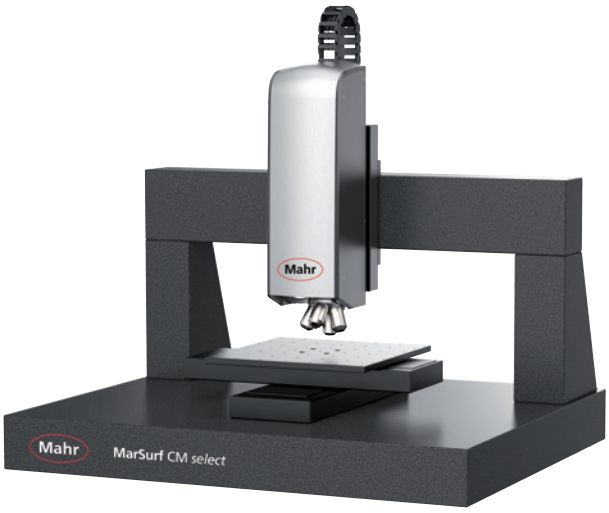
3D Surface Measurement

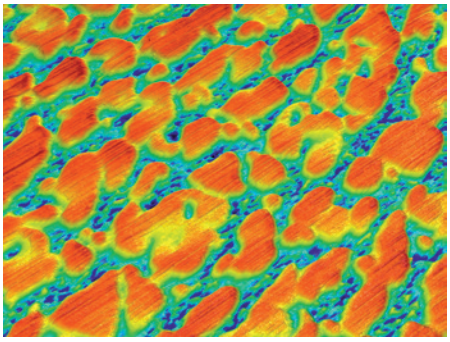
DESCRIPTION

- **Tailor-made measurement of surfaces**
- The MarSurf CM ***select*** is a powerful, configurable confocal microscope for the three-dimensional measurement and analysis of surfaces – **contactless, independent of material, and fast**.
- Axes and isolation systems as well as software modules can be combined individually. This allows the measuring system to be adapted to different measuring tasks.
- As a multi-sensor system, the MarSurf CM ***select*** also offers the possibility of combining different sensor technologies in one measuring device. Depending on the measuring task, the optimal point sensor can also be flexibly selected.
- The MarSurf CM ***select*** meets your individual requirements for automation, measuring comfort and accuracy – right up to the fully automated measuring solution.

Key benefits:

- Designed for continuous operation
- Automation software with industrial interfaces for transfer to QA systems
- High measuring speed – even at full resolution
- Individually configurable to your sample size
- Multi-sensor system
- User-friendly concept
- Safety through collision detection in all directions to protect your workpiece and measuring system
- High Dynamic Range (HDR) function, 16-bit
- Consistent high resolution output of large measuring surfaces due to HD stitching
- **This established optical measuring system is successfully used, for example, for:**
- Roughness measurement according to DIN EN ISO 4287 / 25178
- Topography measurement (including volume, wear, isotropy)
- Measurement of microgeometry and layer thicknesses
- Users value the reliability of this measuring system, which provides quantitative, traceable **3D characteristics for many industries**.





TECHNICAL DATA

CM select	
Measuring principle	Confocal High-performance LED (505 nm / white)

Supplied with: MarSurf CM *select*

- Confocal measuring head
  – HDR camera (B/W or color camera)
  – 4x lens revolver with identification (optional)
- Gantry design including control electronics
- Motorized XYZ axes available in different variants
- Industrial computer including two 24" TFT monitors
- Objective lenses:
  – 5x to 100x selectable
- Vibration damping system available
- Multi-sensor system (optional)
- Overview camera (optional)
- MarSurf MSW for intuitive data acquisition
- MarSurf ASW for automation (optional)
- MarSurf MfM for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium version)

APPLICATIONS

Mechanical Engineering

- To qualify and quantify roughness, geometry and wear volume

Electronics and semiconductors

- Component inspection down to the sub-micrometer range for defect-free products

Medical Technology

- Quality assurance of medical surfaces in production and laboratory

Material Science

- Optimization of functional properties of new surfaces and products

Microsystems Technology

- Measure complex surface geometries of smallest components with nanometer precision

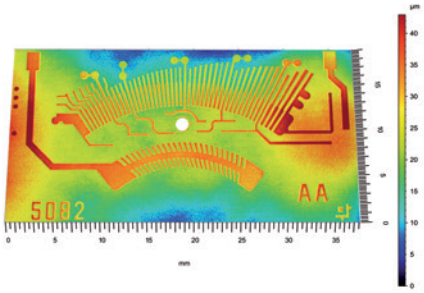
MarSurf CP *select*

3D Profilometry

DESCRIPTION

- **Optical 2D / 3D profilometry**
- The compact MarSurf CP and the MarSurf CL ***select*** are optical profilometers for the three dimensional measurement and analysis of surfaces – non-tactile, independent of material and fast.
- They are characterized by an extremely fast detection of large measuring surfaces with simultaneously high measuring precision.
- Thanks to their modular design, the measuring systems can be adapted to different measuring tasks and individual requirements for automation, measuring comfort and accuracy. Depending on the measuring task, various sensors can be flexibly selected. Axis systems as well as software modules can be combined individually.
- The MarSurf CP and CL ***select*** meet your individual requirements for automation, measuring comfort and accuracy - right up to the fully automated measuring solution.
- Large-scale 3D measurement
- Very high measuring speed
- User-independent serial measurements by automation software
- Excellent flank acceptance
- Layer thickness measurement and measurement of transparent materials
- Large height measuring range with large working distance
- Robust and reliable
- User-friendly concept
- **The established optical measuring system is successfully used, for example, for:**
- Roughness measurement according to DIN EN ISO 4287
- Topography measurement (including volume, wear, isotropy)
- Measurement of macro and microgeometries
- Determination of flatness and coplanarity
- Users value the MarSurf CP and CL ***select*** series as reliable measuring systems that provide quantitative traceable **3D characteristics for many industries**.





TECHNICAL DATA

CP select	
Measuring principle	Chromatic-confocal

Supplied with: MarSurf CP *select*

- Chromatic point sensors selectable
- Portal construction including control electronics, model selectable
- Motorized XYZ table selectable in different variants
- Industrial computer incl. two 24“ TFT monitors
- Vibration damping selectable
- Overview camera selectable
- MarSurf MSW for intuitive data acquisition
- MarSurf ASW for automation (optional)
- MarSurf MfM for professional evaluation, graphic presentation and creation of measuring records
- (Standard, Extended, Premium version selectable)
- **MarSurf CL *select***
- Chromatic line sensors selectable
- Portal construction including control electronics, model selectable
- Motorized XYZ table selectable in different variants
- Industrial computer incl. two 24“ TFT monitors
- Vibration damping selectable
- Overview camera selectable
- MarSurf MSW for intuitive data acquisition
- MarSurf ASW for automation (optional)
- MarSurf MfM for professional evaluation, graphic presentation and creation of measuring records (Standard, Extended, Premium version selectable)

APPLICATIONS

Mechanical Engineering
- To qualify and quantify roughness, geometry and wear volume

Electronics and semiconductors
- Component inspection down to the sub-micrometer range for defect-free products

Medical Technology
- Quality assurance of medical surfaces in production and laboratory

Material Science
- Optimization of functional properties of new surfaces and products

Microsystems Technology
- Measure complex surface geometries of smallest components with nanometer precision

For more information, please visit our website: www.mahr.com

MarSurf WM 100

3D Surface Measurement

DESCRIPTION

High-precision white light interferometry.The MarSurf WM 100 with new camera and functionally enlarged Interferometer Software offers sub-nanometer resolution and precision.

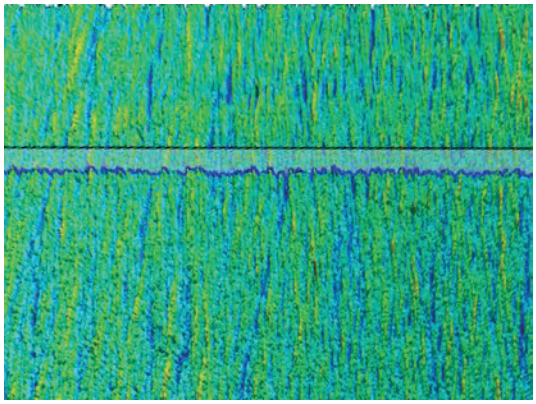
Key benefits:

- Maximum precision with sub-nanometer resolution and measuring accuracy
- Fast and simple measurements- reliable results
- Suitable for all optical and reflective surfaces, fine technical surfaces and surfaces of circuit boards, semi-conductor products and biological tissue
- Three different measuring modes: VSI, EPSI and PSI
- Special evaluation mode for small steps
- 2D surface analysis and measurement evaluations
- Topographical 3D surface analysis and measurement evaluations
- Manual table and object positioning in up to 4 axes
- Wide choice of lenses for perfect adjustment to the measuring object
- Sturdy design with granite base plate

Supplied with:

- Sensor system consisting of:
  - WLI sensor head
  - Camera, 1280 x 1024 pixels, up to 169 fps
  - 100 µm piezo drive z-measuring head
- WLI software module, operating Software
- PC with Windows 10 and 24" screen
- Granite base and column with manual positioning of sensor system
- Manual XY object table for object positioning
- 20x0.4 DI lens (white light Interferometer)





TECHNICAL DATA

WM 100	
Measuring principle	By interferometer, by white light interferometer Light source (WLI): LED, 505 nm
Measuring range	Sensor unit can be moved manually over 200 mm in Z Object table can be moved manually in X and Y Interferometer, white light interferometer: Measuring range (WLI): Up to 100 µm (vertical). More on request.

APPLICATIONS

Mechanical Engineering

- To qualify and quantify roughness of metal surfaces (ground, rolled, etc.)

Electronics and semiconductors

- Surface analysis of coatings, measurement and analysis of electronic and semi-conductor components

Medical Technology

- Metal, ceramic and plastic surfaces of implants, prostheses and Instruments

Optics

- Roughness analysis of optical components (all materials)

ACCESSORIES

Optional:

- CT 120 two-axis tilting table
- Tilting table for large angles +/–30°
- Set of standards
- WLI Objective lenses: 2.5x0.075; 5x0.13; 10x0.3; 20x0.4; 50x0.55; 100x0.7
- MarSurf MfM for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium Version)
- Active vibration isolation system (for optimum damping for measurements in the nanometer and sub-nanometer range)

For more information, please visit our website: www.mahr.com

MarSurf CWM 100

3D Surface Measurement

DESCRIPTION

The multi-measurement solution MarSurf CWM 100 is a precise optical measuring instrument with sub-nanometer resolution combining a confocal microscope with a white light Interferometer.

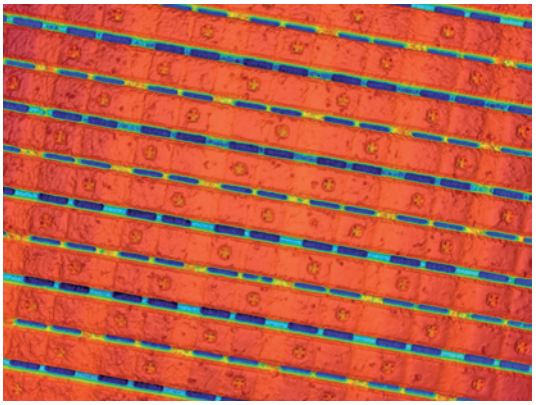
Key benefits:

- Highest precision with sub-nanometer resolution
- Universal suitability for technical, optical and reflective surfaces. Also for surfaces of printed circuit boards and semiconductor products as well as biological tissues
- 2D surface analysis and measuring evaluations
- Topographic 3D surface analysis and measuring evaluations
- Intelligent measuring strategies - fast measurements – short measuring times
- Microscope image field sizes, easily expandable by fully automatic stitching
- Automatic table or object positioning: 100 mm x 100 mm, longer distances on request
- A wide range of lenses allows for an ideal adaptation to the measurement object
- Solid construction with granite base plate and granite column for the best possible vibration damping

Supplied with:

- Sensor system consists of:
  - Confocal microscope & WLI with 6x nosepiece
  - Camera, 780 x 580 pixels, up to 48 images/s (standard version)
  - 100 mm CNC controlled Z axis with integrated Heidenhain glass scale
- One operating software with WLI and confocal software modules
- Granite base frame and column with sensor system and CNC controlled object table
- CNC controled motorized Z axis and XY table for probe positioning and image field merging
- Lenses (optional)
  - 4x to 150x (confocal microscope)
  - 2.5x to 100x (white light Interferometer)





TECHNICAL DATA

CWM 100	
Measuring principle	By interferometer, by white light interferometer and confocal Light source (CM and WLI): LED, 505 nm
Measuring range	Sensor unit can be moved 100 mm in Z, CNC controlled Object table can be moved 100 mm in X and Y, CNC controlled Interferometer, white light interferometer: Measuring range (WLI): More as 4 mm (Standard mode), more as 20 mm in extended mode Confocal microscope: Measuring range (CM): more than 12 mm (depending on resolution in Z and lens)

APPLICATIONS

Mechanical Engineering

- To qualify and quantify roughness, geometry and wear volume

Electronics and semiconductors

- Component inspection down to the sub-micrometer range for defect-free products

Medical Technology

- Quality assurance of medical surfaces in production and laboratory

Material Science

- Optimization of functional properties of new surfaces and products

Microsystems Technology

- Measure complex surface geometries of smallest components with nanometer precision

ACCESSORIES

Optional:

- CT 120 two-axes tilting table
- Tilting table for large angles +/–30°
- Set of standards
- WLI Objective lenses: 2.5x0.075; 5x0.13; 10x0.3; 20x0.4; 50x0.55; 100x0.7
- Confocal microscope objective lenses: 10x0.3; 10x0.5; 20x0.4; 20x0.75;50x0.6; 50x0.8; 100x0.9
- MarSurf MfM for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium Version)
- Active vibration isolation system (for optimum damping for measurements in the nanometer and sub-nanometer range

For more information, please visit our website: www.mahr.com

MarSurf MFM - Software

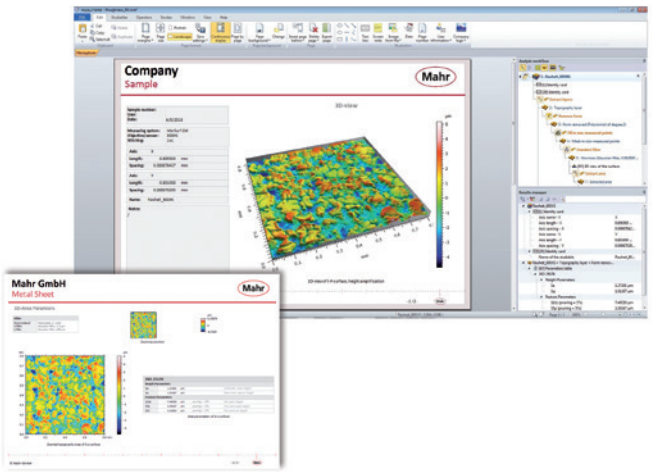
Powerful Software Solution

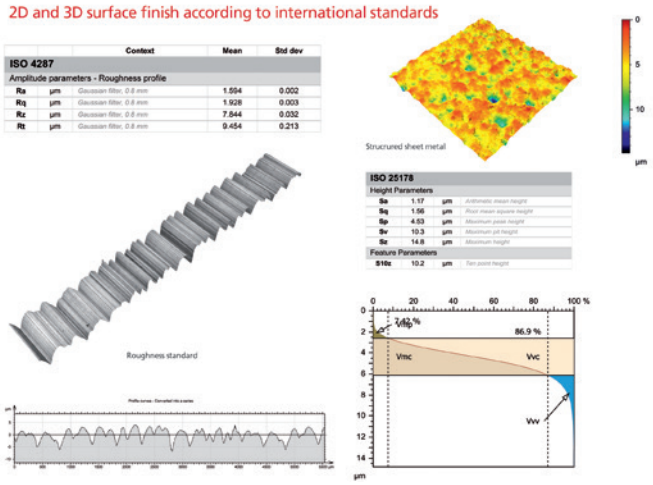
DESCRIPTION

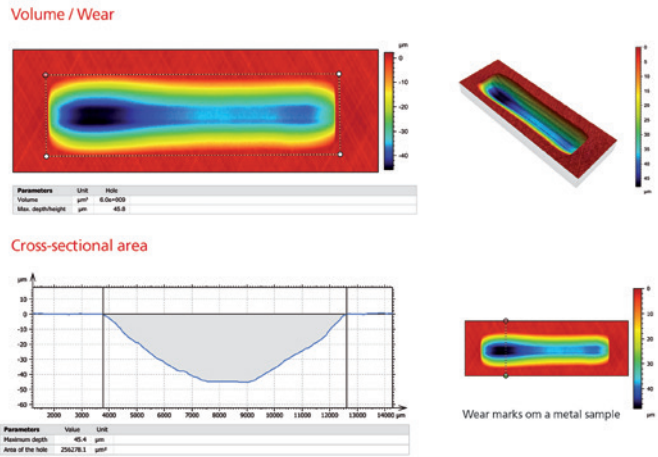
Effective analysis and documentation of all kinds of measured surface features. Standardized or customizable.

- User-independent
- Powerful automation options
- Customer-specific adaptation and analysis
- 3D analysis, ISO 25178, ISO 13565, ISO 12781,...
- 2D analysis, ISO 4287
- Geometry, volumes, contour, CAD comparsion, …

- The MarSurf MfM software offers everything needed to present and analyze structure, roughness, waviness, level heights, contours and other surface characteristics.
- Complex analysis reports can be created at the push of a button in the intuitive, multi-language user interface. Diverse presentation options such as the profile view, 3D reconstruction or reflection image generate detailed measurement protocols.
- The software always contains filter functions and the latest standard parameters. The software is available as a standard, extended and premium version. Further special modules, for example statistical evaluation, are available.





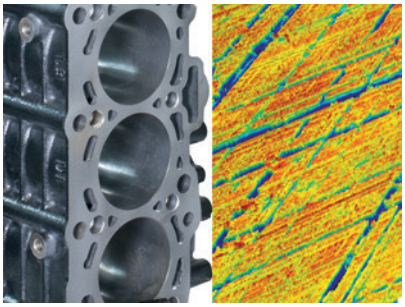


For more information, please visit our website: www.mahr.com

MarSurf 3D Surface Metrology - Industries

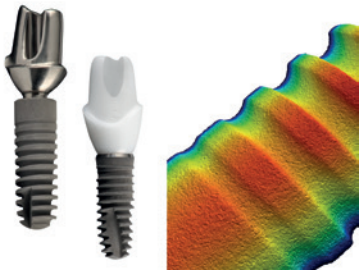
Automotive

- Powertrain
- Body-in-white
- Interior
- Electronics
- Glass components
- Coatings



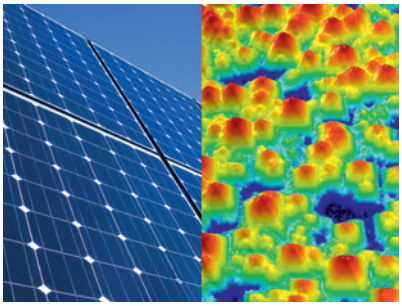
Medical Technology

- Implants
- Microfluidics
- Sensors
- Stents
- Microtomes
- Smart materials



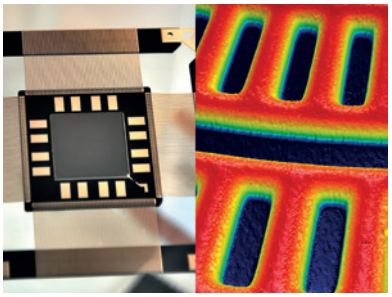
Energy

- Solar cells
- Fuel cells
- Batteries
- Gearbox and turbines



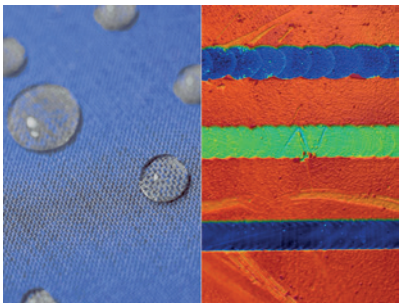
Microsystems

- MEMS
- LED
- High performance electronics
- BGA
- Micro-optics



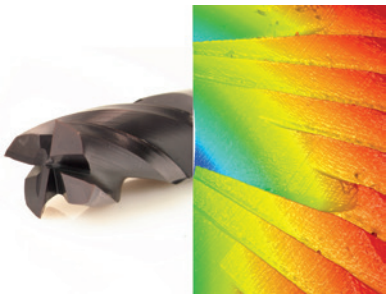
Printing and security

- Printing cylinder
- Printing plates
- Paper sieves
- Bank notes
- Security features
- Works of art
- Chip cards



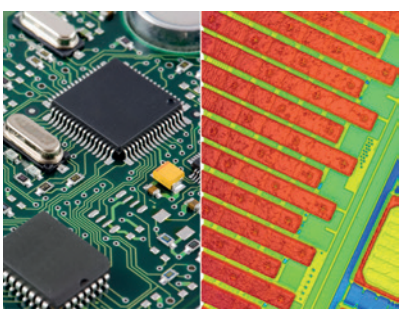
Tools

- Cutting and milling tools
- Razor blades
- Sand paper
- Coatings
- Micro-tools



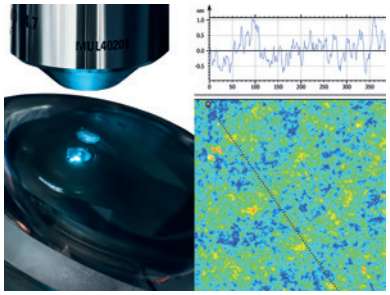
Electronic and semiconductor

- BGA
- MEMS
- High performance electronics
- Microelectronics
- Microvias
- Hybrid technology
- Conductor tracks and plates



Optics

- Lenses
- Plane optics
- Freeform
- Aspheres
- Laser and x-ray mirrors



MarForm | Form measuring instruments

The error-free functioning and durability of a workpiece is determined not only by its dimensions but above all by its form. Especially in the case of rotationally symmetrical workpieces requirements are rising all the time, whether in terms of roundness, flatness, straightness, coaxiality or runout. MarForm helps you to cut process costs without driving up testing costs – by stable, innovative devices with a maximum of automation, flexibility and accuracy.



MarForm MMQ 100 559
Compact Form Measuring Machine

MarForm MMQ 150 560
Compact Form Measuring Machine

MarForm MMQ 200 561
Compact Form Measuring Machine

MarForm MMQ 400 563
Universal Form Measuring Machine

MarForm MFU 100 565
Reference Form Measuring Station

MarForm MFK 500 566
Reference Form Measuring Station

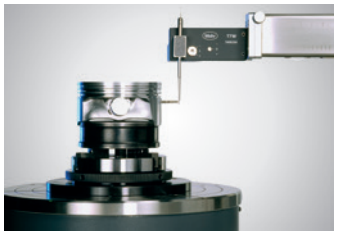
The latest information about MarForm products is available on our website:
www.mahr.com, web code 20570, 20575, 21052

MarForm. Form tester for a wide variety of applications

Form Measuring Instruments for Workbenches or Measuring Rooms

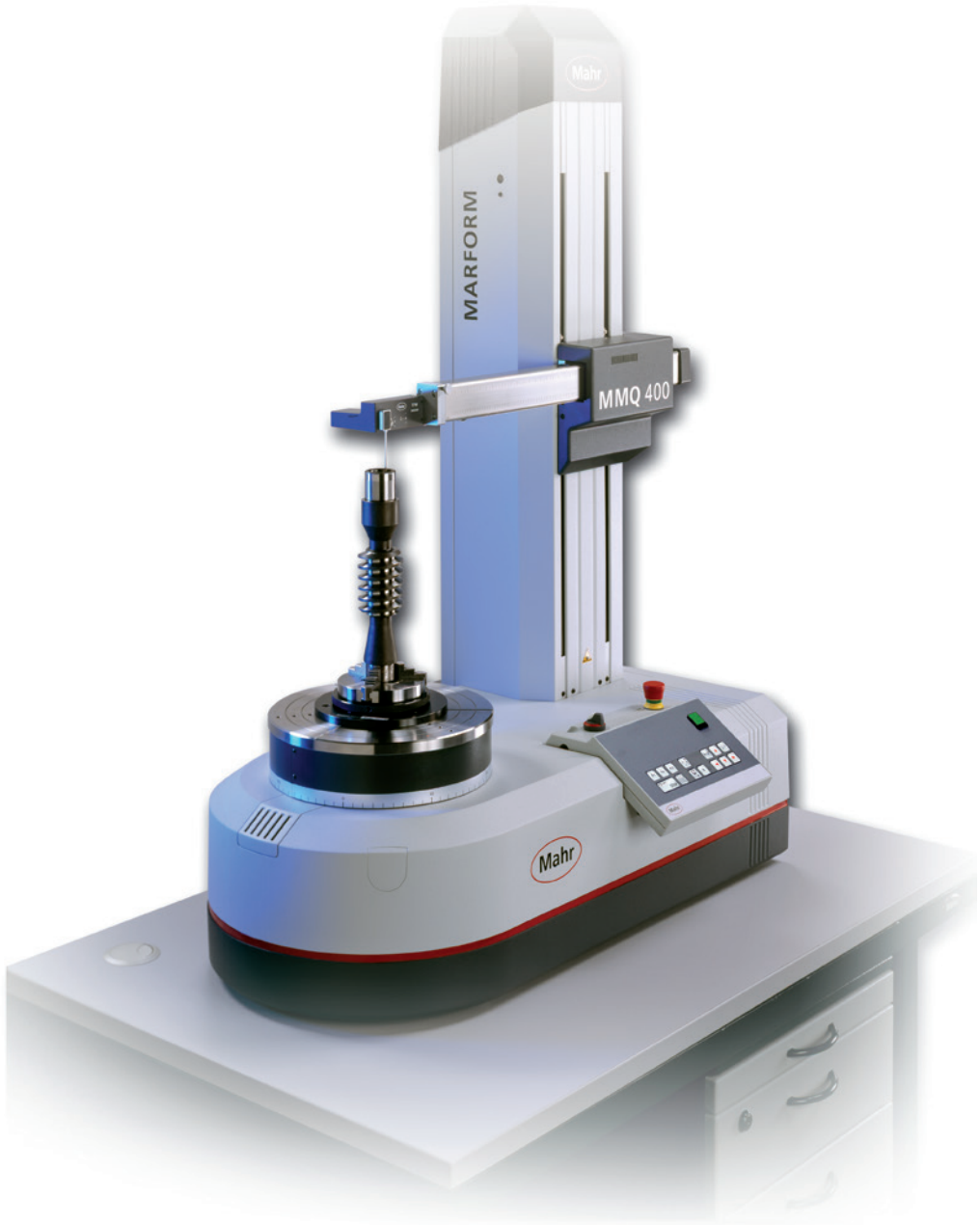
In many aspects of our daily lives, we put our faith in the reliable operation of technical components. From the ABS brakes, fuel injection system and gearbox in our car to our PC hard drive, from the compressor in the air conditioning system to the blades on our razor, not to mention the landing flaps on airplanes. The smooth interaction between moving parts is critical to their error-free function and durability. To guarantee this level of performance, rotationally symmetrical workpieces are manufactured under strict specifications for the permissible deviation from the ideal form. These tolerances can only be reliably tested with high precision, specially optimized form testers. MarForm helps you to cut process costs without driving up testing costs.











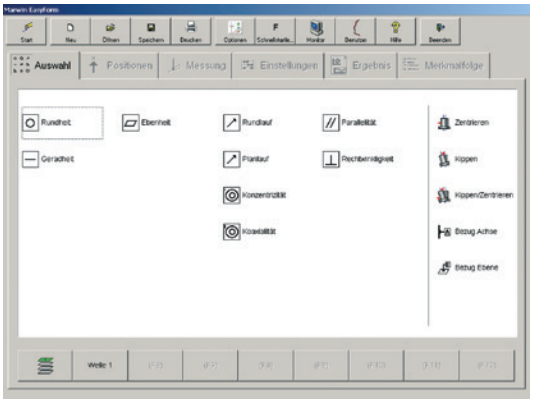
MarForm MMQ 100

Compact Form Measuring Machine

FEATURES

- The MarForm MMQ 100 form tester is the ideal solution for simple yet precise measuring tasks
- Fast and accurate measuring results
- Mechanical bearings for reliability
- Large measuring volume
- Low weight and compact size for greater mobility
- Fast, computer aided workpiece alignment
- Centering and tilting knobs for coarse and fine adjustment
- Universal and reliable
- Workshop compatible, no compressed air connection required
- Touchscreen design eliminates the need for a keyboard or mouse
- Digital encoders in Z and X transfer the measuring position directly to the software





OPTIONS:

- AdvancedForm
- Mahr QE QS-STAT data export

VERSIONS

- **MMQ 100 with EasyForm** is a powerful PC based evaluation system running under Windows® 10. It offers meaningful color reports with user-friendly software for evaluating form and position tolerances (DIN ISO 1101): roundness, roundness within sections, radial runout, axial runout, concentricity, coaxiality, flatness(1), straightness(1), parallelism(1), perpendicularity(1).

(1) from one circular track

The **MMQ 100 measuring station with EasyForm** comes as a complete system. The MMQ 100 consists of the following:

- MarForm MMQ 100
- Digital encoders in X/Z
- T20W probe
- MarWin® EasyForm Software
- MarWin PC with WIN 10 operating system
- 24" TFT monitor
- Touch sensitive touch screen monitor (optional)

For more information, please visit our website: www.mahr.com

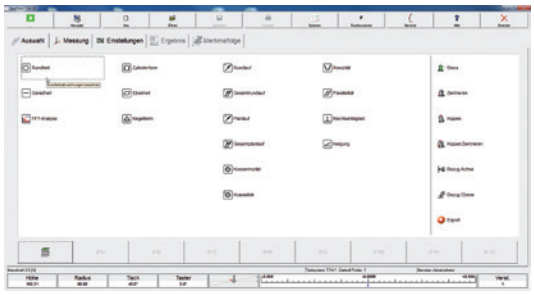
MarForm MMQ 150

Compact Form Measuring Machine

FEATURES

- MarForm MMQ 150 - The entry into the world of cylindricity metrology, the MMQ 150 is an automatic measuring machine for the testing of form and location tolerances.
- Use in production or measuring room
- Fast and easy operation
- Measuring accuracy, optimized for cylindricity tolerances
- Reduces number of rejected parts, saves time, lowers production costs
- Maintenance free, high precision mechanical bearings





OPTIONS:

- Rim chuck Ø 100 mm
- Various additional clamps
- Commutator analysis
- Vibrational velocity analysis
- Upgrade to MarWin AdvancedForm
- 22" touch screen instead of 24" monitor
- Probe arms of various lengths and with various stylus ball geometries
- Various double probe arms
- Various calibration standards
- Various equipment tables, some with vibration compensation

VERSIONS

- The MMQ 150 measuring station consists of the following components:
- MarForm MMQ 150 form tester
- T20W length measuring probe with probe arm
- EasyForm Software for measuring and operating
- MarWin PC, Windows 10 operating system
- 24" monitor

For more information, please visit our website: www.mahr.com

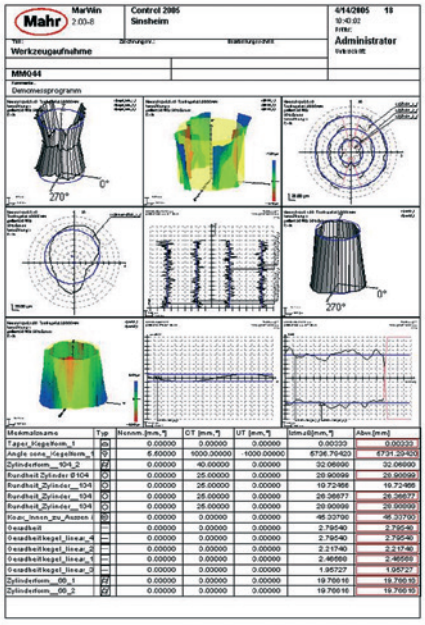
MarForm MMQ 200

Compact Form Measuring Machine

FEATURES

- Compact form measuring machine for manufacturing workshops and inspection rooms
- Proof of form and position deviations as per DIN/ISO 1101
- Fully automatic measuring sequences
- Precision roundness measuring axis (C)
- Motorized vertical measuring axis (Z)
- Motorized horizontal positioning axis (X)
- Manual centering and tilting table
- T20W manual length measuring probe or
- T7W motorized probe
- Ergonomic control panel, can also be used to start select measuring programs (P1, P2, P3)





OPTIONS:

- 22" touchscreen TFT monitor instead of the 24" standard TFT
- Roughness measurement and evaluation with MMQ 200/T7W
- MarWin Software, diameter evaluation
- Various clamps
- Probe arms of various lengths and with various stylus ball geometries
- Various double probe arms
- Various calibration standards

VERSIONS

- The MarForm **MMQ 200** is available in two versions: As a measuring station with the universal measuring probe **T20W** and as a measuring station with the motorized measuring probe **T7W**, which takes automation another step forward with its unique motorization.
- The **MMQ 200** is operated with the **EasyForm** Software. It is controlled by means of touchscreen technology, which also makes operation with the mouse exceptionally easy.

Form measuring station with T20W

- MarForm MMQ 200 form tester
- T20W length measuring probe, manual, with probe arm
- EasyForm measuring and operating software
- Intel-class PC, Windows 10
- 24" TFT monitor
- Rim chuck Ø 100 mm

Form measuring station with T7W

- MarForm MMQ 200 form tester
- T7W length measuring probe with probe arm
- EasyForm measuring and operating software
- Intel-class PC, Windows 10
- 24" TFT monitor
- Rim chuck Ø 100 mm

For more information, please visit our website: www.mahr.com

MarForm MMQ 400

Universal Form Measuring Machine

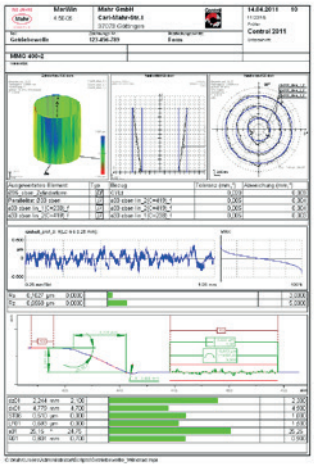
DESCRIPTION

- MarForm MMQ 400 is suitable for universal use for extensive workpiece evaluation according to DIN ISO 1101
- High precision measuring axes in Z and X make every form measuring task possible. MarForm MMQ 400 is available in different versions for:
- High precision workpieces
- Unusually long workpieces
- Large and heavy workpieces
- Use in production or in the precision measuring room
- Different modules are available with which the MarForm MMQ 400 can optimally be prepared for your requirements:
- Motorized or manual centering and tilting table
- Vertical axis (Z) with 900 mm, 500 mm or 350 mm measuring length
- Horizontal axis (X) with 180 mm or 280 mm measuring length and with digital linear scales in the X and Z axes; high probe position accuracy for measurements requiring high reproducibility
- Manual or fully automatic probe with short measuring circuit, high linearity, low measuring force
- Path control for fast measuring of a nominal contour



OPTIONS:

- Roughness measurement
- Switch between form probe with ruby ball and roughness probe PHT 6–350
- Piston testing with MarWin Evaluation Software
- Shaft twist testing and analysis with MarWin
- Cam profile testing
- Bar to bar variation analysis at commutators
- Contour measurement and evaluation
- Path control (MCPC)
- Shape evaluation
- Vibrational velocity analysis
- Dominant roundness waviness (MBN 10455)

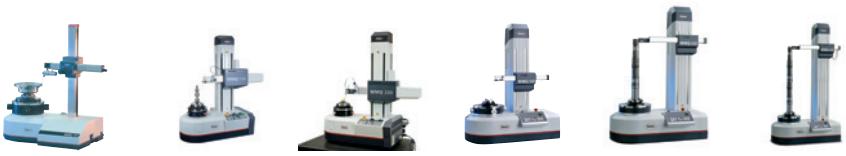




For more information, please visit our website: www.mahr.com

MarForm MMQ 100 / MMQ 150 / MMQ 200 / MMQ 400

Compact Form Measuring Machine



Formtester	MMQ 100	MMQ 150	MMQ 200	MMQ 400–2 Z = 350 mm X = 180 mm	MMQ 400–2 Z = 500 mm X = 280 mm	MMQ 400–2 Z = 900 mm X = 280 mm
Roundness measuring unit, C-axis						
Roundness deviation (µm+µm/mm measuring height) **	0.05 + 0.0006	0.03 + 0.0006	0.03 + 0.0006	0.02 + 0.0005	0.02 + 0.0005	0.02 + 0.0005
Roundness deviation (µm+µm/mm measuring height) *	0.025 + 0.0003	0.015 + 0.0003	0.015 + 0.0003	0.01 + 0.00025	0.01 + 0.00025	0.01 + 0.00025
Axial runout deviation (µm+µm/mm measuring radius) **	0.04 + 0.0006	0.4 + 0.0006	0.04 + 0.0006	0.04 + 0.0002	0.04 + 0.0002	0.04 + 0.0002
Axial runout deviation (µm+µm/mm measuring radius) *	0.02 + 0.0003	0.02 + 0.0001	0.02 + 0.0001	0.02 + 0.0001	0.02 + 0.0001	0.02 + 0.0001
Centering and tilting table						
Centering and tilting table	manual	manual	manual	manual / auto-matic	manual / auto-matic	automatic
Table diameter	160	160	160	285	285	285
Table load capacity, centered (N)	200	200	200	600	600	400
Speed (rpm) 50 Hz / 60 Hz	5 / 6	1–6	0.2–15	0.2–15	0.2–15	0.2–15
Vertical straightness measuring untit, Z-axis						
Positioning path (mm), Z axis	300, manual	-	-	-	-	-
Z axis positioning	manual	-	-	-	-	-
Measuring path, motorized Z (mm)	-	250	250	350	500	900
Straightness deviation / 100 mm measuring path (µm)**, Z axis	-	0.4	0.15	0.15	0.15	0.15
Straightness deviation / total measuring path (µm)**, Z axis	-	1	0.3	0.3	0.4	0.9
Parallelism deviation Z-/C axis in tracing direction, measuring path (µm)	-	1	0.5	0.5	0.8	2
Measuring speed (mm/s), Z axis	-	0.5–30	0.5–30	0.1–30	0.1–30	0.1–30
Positioning speed (mm/s), Z axis	-	0.5–50	0.5–100	0.5 –100	0.5 –100	0.5 –100
Horizontal straightness measuring unit, X-axis						
Positioning path (mm), X axis	180, manual	150, motorized	150, motorized	-	-	-
Measuring path, motorized X (mm)	-	-	-	180	280	280
Straightness deviation / 100 mm measuring path (µm)**, X-axis	-	-	-	0.4	0.5	0.5
Straightness deviation / total measuring path (µm)**, X axis	-	-	-	0.8	1.5	1.5
Perpendicularity X/C axis, measuring path (µm)	-	-	-	1	2	2
Positioning speed (mm/s), X axis	-	0.5–30	0.5–30	0.5–30	0.5–30	0.5–30
Measuring speed (mm/s), X axis	-	-	-	0.5–10	0.5–10	0.5–10

* Values as maximum deviation from LSC reference circle, filter 15 undulations/revolution.

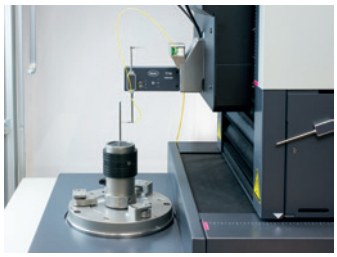
** All values in accordance with DIN ISO 1101 at 20°C ±1°C in a vibration-neutral environment, filter 15 undulations/revolution LSC or 2.5 mm LSS, 5 rpm or 5 mm/s and standard probe arm with ball diameter 3 mm. Proof at the standard using error separation techniques. Given the number of different options available, only a few machines are described here by way of example. Technical data for "your" MMQ is available from Mahr on request.

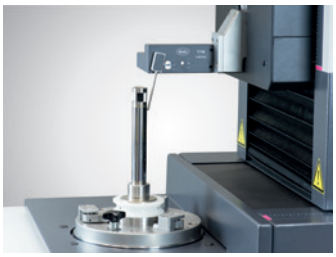
For more information, please visit our website: www.mahr.com

MarForm. Reference Machines for Form and Position Tolerances

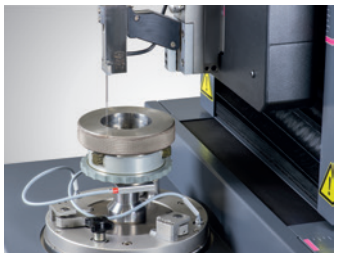
Our most accurate Form Measuring Machines

Precision form measurement cuts costs! MarForm is our ultra accurate form measuring system. These systems are used wherever information is required about the geometry of workpieces with very strict tolerances. ISO 1101 describes roundness, cylindricity, straightness, parallelism, etc., as form and position deviations. These features are monitored by form testers. The high accuracy of form measuring instruments can save you money, because you can maintain the necessary tolerance margins for your production. MarForm is a precision roundness and concentricity measuring machine.











MarForm MFU 100

Reference Form Measuring Station

DESCRIPTION

- Reference form measuring station in a new dimension.
- The journey from high precision measuring axes to competent measurements is often a long one that the **MFU 100** has mastered completely. Only the MFU 100 has integrated reference elements for the real-time spatial compensation of geometric deviations, recording all profiles as high precision 3D coordinates.
- For decades, **MarForm** measuring machines have been recognized for their accuracy and stability. The new **MarForm MFU 100** was developed with the claims of testing the shape and position features of product parts in a one liter measuring volume close to the production area and at a reasonable cost. In doing so, it has taken our long experience into a new dimension.
- **MarForm MFU 100** is a precision reference form measuring center. Its exceptionally low measurement uncertainty increases the tolerance margin for your production processes, thereby lowering production costs.
- Circular roundness measuring axis (C)
- Motorized centering and tilting table (X, Y, A, B)
- Vertical straightness measuring axis (Z)
- Horizontal straightness measuring axis (X)
- Tangential multifunction axis (Y)
- Motorized length measuring probe T7W
- MarWin Evaluation Software for form and position features
- All axes are coordinated to ensure maximum measuring reliability. The horizontal X axis extends beyond the center of the workpiece, allowing 'true parallelism' to be checked free from other measuring influences. The tangential Y axis is an innovative new feature. This additional motorized axis, which is new to conventional form testers, helps to locate the zenith of miniature workpiece geometries without operator influence. The actual precision measurement can then be started in exactly the right place. This significantly increases process accuracy.
- The Y axis is used together with the vertical Z axis and the horizontal X axis to determine the workpiece diameter. This allows tolerances to be checked in the sub-nanometer range by the maximum material principle, in accordance with standards, for the very first time and at a very reasonable price.
- High resolution digital scales in conjunction with the machine electronics provide a level of positioning accuracy which allows even miniature part geometries to be tested. MarForm MFU 100 is also suitable for error-free scanning of surfaces.
- The MarWin Software package offers the full range of functions of a modern measuring and evaluating application including user friendly records and electronic documentation in the company network.
- The rigorous separation of control and evaluation functions ensures that **MarForm MFU 100** is future proof and expandable. New language versions, special evaluations and new standards are easy to incorporate. The **MFU 100** is also ready for the addition of future sensor systems.
- In short: **MarForm MFU 100** brings form measuring machines for inspection rooms and production areas into a new dimension.
- **MarForm MFU 110** with optional optical sensor which is interchangeable with T7W (motorized).



APPLICATIONS

- Checking product parts for form and position features
- Recording of all profiles as high-precision 3D coordinates with real-time spatial compensation of geometric deviations
- Scanning of surfaces, roughness evaluation
- Scanning and evaluation of contours and shapes

For more information, please visit our website: www.mahr.com

MarForm MFK 500

Reference Form Measuring Station

DESCRIPTION

- Reference form measuring center for laboratory and measuring room, with a large measuring volume for heavy workpieces
- The benchmark form measuring centers for laboratories and measuring rooms.
- **MFK form measuring center for comprehensive workpiece assessment. MFK form tester -** ideal for testing engine blocks, cylinder heads, gear cases, hydraulic elements, crankshafts and camshafts. Generously sized, optimized design for high measuring accuracy throughout the machine. Long measuring and travel paths for easy, safe workpiece changing.
- **MarForm MFK 600** or **MFK 500**, built from individual coordinated components, offer flexibility and adaptability for a range of measuring tasks.
- The form tester is based on a non-warping granite base, which is set up so it is isolated from vibrations. Its high precision horizontal surface forms the datum plane for the measuring setup. The CNC table supports and guides heavy workpieces by means of air bearings on the granite surface.
- Universal form measuring station with a large measuring volume for heavy workpieces
- **MFK 600** with 5 measuring and set up axes for measuring form elements and determining positions
- **MFK 500** with 3 measuring and 4 set up axes for measuring form elements
- Rotating measuring probes and automatic workpiece positioning make it easy to use and quick to set up
- Air bearings for low maintenance and continuous loading
- Collision protected probe systems for diverse measuring tasks
- Large workpiece holder surface for large individual workpieces or workpiece pallets
- Roundness measuring device with automatic adjustment to the workpiece diameter, even with eccentric positioning
- Straightness measurements in 3 main coordinate directions
- Workpiece assessment as per ISO 1101
- Testing in machine and workpiece coordinates in accordance with production specifications
- Full evaluation of form and position features as well as diameter and position values
- Extensive accessories and choice of measuring probes for optimized performance of all measuring tasks
- Ready for use and easily expandable with additional movement axes for turning workpieces during a program sequence. In this way the most complex measuring tasks on V-engine blocks for example can be carried out without operator intervention. MarWin Software enables a customized and intuitive operation for every application. With the help of user-friendly family programs, created in the MarEdit operating mode, you parameterize your measuring program without any programming knowledge thanks to clear masks. Then you measure your part-families and automatically document the measurement results.

OPTIONS:

- Additional movement axes for turning workpieces during a program sequence



APPLICATIONS

- Checking of form and position features as well as diameter:
- Engine blocks
- Cylinder heads
- Gear cases
- Hydraulic elements
- Crankshafts and camshafts

For more information, please visit our website: www.mahr.com

MarForm Software MarWin

DESCRIPTION

- **MarWin** AdvancedForm for MarForm gives you full control over your form measuring station. You can position, align, measure and document at the click of a mouse – and the graphical user interface keeps you fully informed at all times.
- Functions can be selected with the mouse from pull-down menus in menu bars, just as in other Windows® applications.
- **MarWin** lets you stay in control of the form measuring station at all times. You can track the profile shape while it is being measured, and intervene if you wish. The controls can be adapted to individual requirements. Whether you are carrying out a quick individual measurement, starting a program sequence on a series component or converting a complex measuring task into a measuring program: **MarWin** offers the ideal operating strategy for every task. As tasks can differ so greatly, there is no one operating strategy that is perfect for every application.



That is why MarWin offers a variety of operating strategies:
- **EasyForm:** Easy to learn and shortest way to achieve a meaningful measuring record
- **Favorite measuring runs** for measurement using an existing measuring program

Quick&Easy (AdvancedForm)
- for fast measurement; obtain a measuring result quickly, with minimal effort

Teach-in programming (AdvancedForm)
- for creating, modifying and running a measuring program, with lots of different options
- The powerful **teach-in programming** feature of **AdvancedForm** allows you to create measuring programs for frequently measured workpieces. It can also be used to create measuring runs containing special positioning movements, measurements, evaluations and displays.
- In teach-in programming, simply use the mouse to click on an icon – e.g. for measuring and evaluating a run – and a window opens in which you can describe the feature in more detail (e.g. radial or axial run-out, datum, code name, tolerance, etc.). The number and type of measurements (true measurement or reevaluation of already measured profiles) are also specified in this window. Separate windows can be opened for editing measuring, evaluation and display parameters. In many cases, however, this is unnecessary, as default values are already entered which can be used for many measuring tasks. If different settings are required for specific measuring tasks, then the clear window layout will quickly take you to the right place, allowing you to optimize the settings in a flash.
- Measuring programs for frequently measured series components can be saved and then opened and started as a measuring run (see above) at any time.
- Meaningful graphical profile displays, with several profiles in one graphic if required, displayed in different colors and in various ways, are immediately available on the generously sized color screen. If you are interested in exact numerical values, you can choose to display the results as a table.

For more information, please visit our website: www.mahr.com

MarGear | Gear MeasuringInstruments

MarGear gear measuring technology allows you to carry out your measuring tasks on gears and gear cutting tools quickly, simply and accurately, in just one measuring process. The flexible systems – with or without mechanical alignment and reclamping, and with a combination of gear measuring technology and form and position evaluation – create the best possible conditions for gaining and retaining a competitive edge. By fully integrating measuring technology into production, you can achieve a closed quality control loop in transmission manufacturing.



MarGear GMX 275 W 571
Universal Gear Measuring Center

MarGear GMX 400 W 572
Universal Gear Measuring Center

MarGear GMX 400 ZLW 573
Universal Gear Measuring Center

MarGear GMX 600 W 574
Universal Gear Measuring Center

MarGear GRP1 575
Roughness Probe

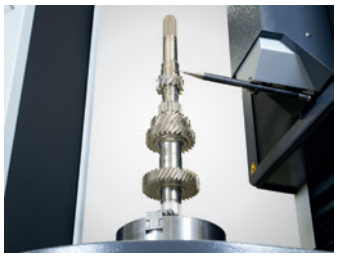
The latest information about MarGear products is available on our website:
www.mahr.com, web code 20597

MarGear. MarGear GMX W Series

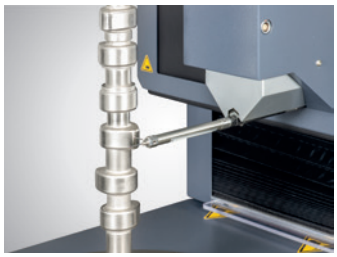
Opening up a new Dimension

The W Series extends the MarWin® platform to Mahr gear measurement

- MarEcon control unit with tracking mode
- Gear testing software runs under MarWin (option)
- Intuitive GDE interface for gear data (option)
- MarForm Advanced and Professional (option)
- Easy program creation in Teach-In mode
- Integration of data matrix code scanners (option)
- Uninterrupted movements
- High precision target positioning
- 3D visualization of gear geometry











MarGear GMX 275 W

Universal Gear Measuring Center

FEATURES

- Fully automatic precision testing of gears and gear cutting tools up to an outer diameter of 275 mm
- Combining gear measuring tasks with various form & position features has never been easier
- With over 6000 units sold, the MarWin environment is a clear and simple way of creating complete programs in Teach In mode
- Improves programming efficiency and reduces the possibility of incorrect use
- Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon control unit, guaranteeing maximum speed and precision throughout the entire measuring and movement sequence
- **Gear, form and 3D measurements** are performed on one measuring instrument.
- **High-precision 3D scanning sensor** combined with directly driven C-axis for accuracy and efficiency
- GDE interface: "Closed loop" for cylindrical gears
- With tailstock option
- Gear measuring instrument, accuracy class 1, for gear measurements in accordance with **VDI/VDE 2612/2613 Group 1** at 20°C ± 2 K (rotational axis in form tester accuracy)

Options:
- Active damping system
- Data Matrix Scanner



TECHNICAL DATA

GMX 275 W	
Measuring path X (mm)	180
Measuring path Y (mm)	150
Measuring path Z (mm)	320
Diameter max.* [mm]	275
Length	1520
Width	621
Height	1920
Mass [kg]	760
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

* Max. diameter of cylindrical gears

APPLICATIONS

- Straight and helical toothed cylindrical gears
- Synchronous gears
- Form and position measurements
- Camshaft measurement
- 3D geometries such as distances, diameters, cone angles, position, etc.

ACCESSORIES

- Data matrix scanner
- Range of chucks for "clamping on the fly" and measurements on "virtually" aligned workpieces (wobble coordinate system)
- Optional roughness probe
- Active vibration damping system

For more information, please visit our website: www.mahr.com

MarGear GMX 400 W

Universal Gear Measuring Center

FEATURES

- Precision, fully automatic testing of gears and gear cutting tools up to an outer diameter of 400 mm
- Combining gear measuring tasks with various form & position features has never been easier
- With over 6000 units sold, the MarWin environment is a clear and simple way of creating complete programs in Teach In mode
- Improves programming efficiency and reduces the possibility of incorrect use
- Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon control unit, guaranteeing maximum speed and precision throughout the entire measuring and movement sequence
- **Gear, form and 3D measurements** are performed on one measuring instrument.
- **High-precision 3D scanning sensor** combined with directly driven C-axis for accuracy and efficiency
- GDE interface: "Closed loop" for cylindrical gears
- With tailstock option
- Gear measuring instrument, accuracy class 1, for gear measurements in accordance with **VDI/VDE 2612/2613 Group 1** at 20°C ± 2 K (rotational axis in form tester accuracy)

Options:
- Active damping System
- Data Matrix Scanner



TECHNICAL DATA

GMX 400 W	
Measuring path X (mm)	200
Measuring path Y (mm)	200
Measuring path Z (mm)	320
Diameter max.* [mm]	400
Length	1520
Width	621
Height	1920
Mass [kg]	760
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

* Max. diameter of cylindrical gears

APPLICATIONS

- Basic measuring station with MahrEcon Control unit
- Suitable for use as a gear measuring station with QE Cylindrical Gear

ACCESSORIES

- Data matrix scanner
- Range of chucks for "clamping on the fly" and measurements on "virtually" aligned workpieces (wobble coordinate system)
- Optional roughness probe
- Active vibration damping system

For more information, please visit our website: www.mahr.com

MarGear GMX 400 ZLW

Universal Gear Measuring Center

FEATURES

- Fully automatic precision testing of long gear shafts and gear cutting tools up to an outer diameter of 400 mm
- Combining gear measuring tasks with various form & position features has never been easier
- With over 6000 units sold, the MarWin environment is a clear and simple way of creating complete programs in Teach In mode
- Improves programming efficiency and reduces the possibility of incorrect use
- Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon control unit, guaranteeing maximum speed and precision throughout the entire measuring and movement sequence
- **Gear, form and 3D measurements** are performed on one measuring instrument
- **High-precision 3D scanning sensor** combined with directly driven C-axis for accuracy and efficiency
- GDE interface: "Closed loop" for cylindrical gears
- With the long tailstock option, transmission shafts up to 850 mm can be clamped
- Gear measuring instrument, accuracy class 1, for gear measurements in accordance with **VDI/VDE 2612/2613 Group 1** at 20°C ± 2 K (rotational axis in form tester accuracy)

Options:
- Active damping System
- Data Matrix Scanner



TECHNICAL DATA

GMX 400 ZLW	
Measuring path X (mm)	200
Measuring path Y (mm)	200
Measuring path Z (mm)	650
Diameter max.* [mm]	400
Length	1520
Width	621
Height	2170
Mass [kg]	780
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

* Max. diameter of cylindrical gears

APPLICATIONS

- Basic measuring station with MahrEcon Control unit
- Suitable for use as a gear measuring station with QE Cylindrical Gear

ACCESSORIES

- Active vibration damping system
- Revolving counter tip
- Data matrix scanner
- Chuck 70 mm
- Chuck 200 mm
- Drive pin set

For more information, please visit our website: www.mahr.com

MarGear GMX 600 W

Universal Gear Measuring Center

DESCRIPTION

- The new GMX 600 W cylinder coordinate measuring center
- The successful combination of diameter, gear and form measurement in one setup saves on additional investment and maintenance costs as well as time
- Full functionality as gear or cylinder coordinate measuring center and form tester up to an outside diameter of 600 mm
- The **MarGear GMX 600W**, as a complete solution, can also be used for measuring hydraulic parts, crankshafts, camshafts and pistons
- Combining **gear measuring** tasks with various **diameter, form & position features** has never been easier. Due to high precision scales and smooth drive units, even contour measurements and waviness analysis are possible
- With over 6000 units sold, the **MarWin** environment is a clear and simple way ofcreating complete programs in Teach In mode
- Improves programming efficiency and reduces the possibility of incorrectuse
- Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon control unit, guaranteeing maximum speed andprecision throughout the entire measuring and movement sequenc
- The **high-precision 3D scanning sensor** combined with fully automated swivelling unit leads to highest flexibility even regarding future measuring tasks
- The use of **standardized interfaces** leads to universal communication in terms of Industry 4.0. The following interfaces are available:
- GDE interface for inner and outer gears
- Data export to QS-STAT
- ASCII



TECHNICAL DATA

GMX 600 W	
Measuring path X (mm)	300
Measuring path Y (mm)	600
Measuring path Z (mm)	700
Diameter max.* [mm]	600
Mass [kg]	2250
Max. workpiece weight [kg]	300 (on fixed base plate)100 (on centering and tilting table)
Accuracy	Accuracy class I for gear measurement according to VDI/VDE 2612/2613 Group 1 at 20°C ±2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.07 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.1 µm

*max. diameter of spur gears

APPLICATIONS

Fully automatic testing of:

- Diameter and distance
- Straight and helical toothed cylindrical gears
- Synchronizing gear
- Form and location (also with centering and tilting table)
- 3D geometries like line form

- Optional: camshafts, crankshafts and pistons

ACCESSORIES

- Probe arm changer (4 boxes)
- Anti vibration damping system
- XXL centering and tilting table (centering path up to ± 72 mm)
- Tailstock 1000 mm

For more information, please visit our website: www.mahr.com

MarGear GRP1

Roughness Probe

DESCRIPTION

- **Expansion package for roughness measurement and analysis on gears**
- In the field of gear metrology, Mahr already offers highly accurate reference systems that combine gear measurement with the measurement of diameters or form. Moreover in the field of surface metrology, we have brought the worldwide styling method to perfection.
- So what could be more obvious than to measure and document roughness parameters such as Ra and Rz when testing your workpieces with a gear measuring device?
- As a specialist for inductive probes, Mahr combines the advantages of its self-developed universal 3D probe with the precision of the proven roughness probe PHT. Gear and roughness measurement grow together.
- Combine the gear analytical measurement with roughness characteristics monitoring on the MarGear GMX series gauging centers. Simultaneously document typical roughness parameters such as Ra and Rz during inspection without reclamping the workpiece on another measuring station. The superior positioning accuracy of the MarGear GMX combined with the new motorized swivel axis of the MarGear roughness probe ensures maximum reproducibility.



YOUR ADVANTAGES

- Miniaturized roughness probe for toothing from module 0.8
- The MarWin platform allows the use of our known roughness software for surface metrology at the gear measuring center
- Automatic swivel axis of the roughness probe enables standard surface measurement even on helical gears
- Characteristic values e.g. according to ISO 4287 or ISO 13565–2

APPLICATIONS

- Roughness at teeth flanks
- Roughness at bearing positions

For more information, please visit our website: www.mahr.com

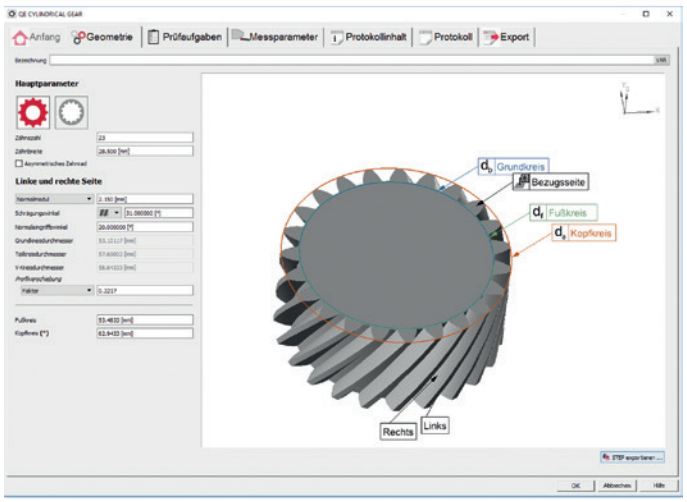
MarGear

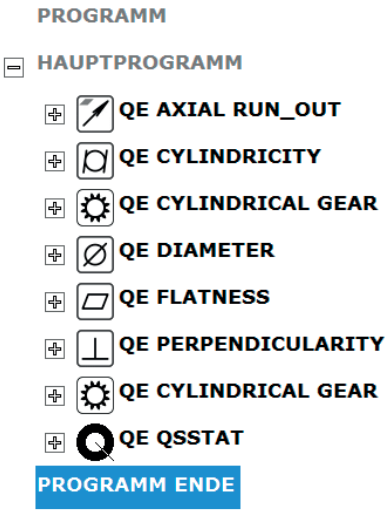
MarWin Software Solutions

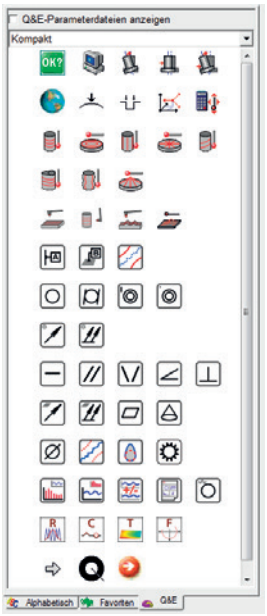
DESCRIPTION

Software Highlights

- The intuitive ‘QE Cylindrical Gear’ user interface provides a number of interfaces for importing and exporting data
- Using the QEP interface (Quick&Easy profile) you can archive profile and results data relating to a gear measurement in MarWin format and then reload it subsequently for evaluation
- The new ‘QE Cylindrical Gear’ module is the latest measuring module to be added to the MarWin platform
- Q&E modules from the MarWin system can be linked together quickly and easily to create a complete program for a transmission shaft, for example







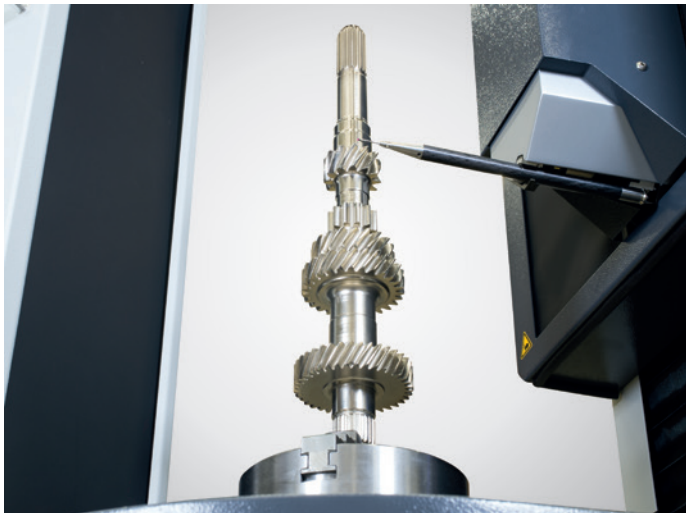
For more information, please visit our website: www.mahr.com

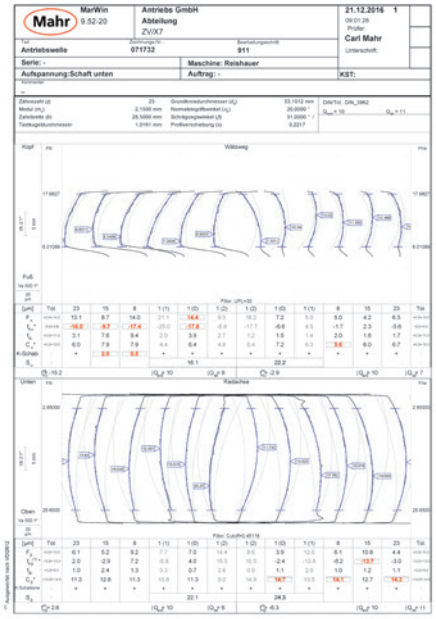
MarGear

MarWin Software Solutions

DESCRIPTION

- In addition to simple controls, the new software offers users a variety of interfaces to simplify automation of the measuring procedure
- Gear data are imported in GDE format, for example. The software then generates a 3D model of the gear, which can be used for visual inspection and for checking the validity of the tooth geometry. This further reduces the possibility of operator errors





For more information, please visit our website: www.mahr.com

MarOpto | Measuring Instruments for the Optical Industry

The role of metrology is changing to keep up with innovations in manufacturing processes. Given the ever more stringent accuracy requirements and falling cycle times, rapid measurement directly at the manufacturing machine is absolutely essential. With MarOpto you can measure lenses, aspheres and freeforms at the point of origin of the product – with rapid feedback to the manufacturing process to avoid waste.



MarOpto FI 1040 Z 581
Fizeau Interferometer

MarOpto FI 1100 Z 582
Fizeau Interferometer

MarOpto FI 1150 Z 583
Fizeau Interferometer

MarSurf LD 130/260 Aspheric 2D and 3D 584
Asphere Measuring Station

MarForm MFU 200 Aspheric 3D 585
Precision 3D Measuring Station

MarOpto MT 100 586
Measuring Towers

MarOpto TWI 60 587
Tilted Wave Interferometer

The latest information about MarOpto products can be found on our website:
www.mahr.com, WebCode 21872

MarOpto. Fizeau Interferometers

Versatile and Powerful in Measuring Rooms and Production

Powerful MarOpto Fizeau interferometers can provide contactless measurements on flats and spherical surfaces and of transmitted wavefronts. MarOpto interferometers are ideal for measuring optical components such as flats, prisms and lenses or precision metal workpieces including bearings, sealing surfaces and polished ceramics.

Measurements can be performed by means of simple interference ring detection, IntelliPhase static spatial carrier analysis, or phase-modulated interferogram analysis. MarOpto Fizeau interferometers offer the flexibility and excellent performance that today's industrial applications demand.



MarOpto FI 1040 Z

Fizeau Interferometer

DESCRIPTION

40 mm Fizeau interferometer for flats and spherical surfaces

The MarOpto FI 1040 Z is a powerful interferometer that can provide contactless measurements on flats and spherical surfaces and of transmitted wavefronts. The MarOpto FI 1040 Z is ideal for measuring optical components such as flats, prisms and lenses or precision metal workpieces including bearings, sealing surfaces and polished ceramics. Measurements can be performed by means of simple interference fringe detection, IntelliPhase static spatial carrier analysis, or phase-modulated interferogram analysis. The MarOpto FI 1040 Z offers the flexibility and excellent performance that today's industrial applications demand.



FEATURES

- 6x / 3x zoom for workpieces with a diameter of up to 1.5 mm
- 3 modes of interferogram analysis: Phase shifting, IntelliPhase – static spatial carrier analysis, or fringe tracing (automated or manual)
- Small size allows easy integration into OEM systems
- Compact, rugged design
- Transmission spheres from F / 0.7 to F / 6.0

APPLICATIONS

- Transmission and surface testing of small optics
- Measurements on optics, machined parts, ceramics, semiconductors, and wafers
- Integrated radius of curvature measurements

For more information, please visit our website: www.mahr.com

MarOpto FI 1100 Z

Fizeau Interferometer

DESCRIPTION

High accuracy measurement capability with unsurpassed flexibility and versatility

The MarOpto FI 1100 Z offers contactless measurements on flats and spherical lenses. It can also be used for transmitted wavefront measurements of optical components and assemblies. Measurements may be made by means of simple interference fringe analysis or phase-modulated interferogram analysis. The established IntelliWave Software offers superior measurement and analysis capability. The MarOpto FI 1100 Z provides the versatility and reliability to handle today's advanced applications at unrivaled value for money.



FEATURES

- Total USB connectivity option (laptop or desktop) with 1k x 1k true spatial resolution
- Excellent versatility, stability and repeatability
- 1x to 6x zoom, focus and attenuation controls
- Vibration-insensitivity can be accomplished via Mahr's IntelliPhase™ Static Spatial Carrier Acquisition and Analysis Software
- Compact, lightweight and rugged design
- Compatible with all industry standard 4" (100 mm) reference optics and accessories
- High accuracy measurements at an affordable price
- Configurations include horizontal, vertical look up and vertical look down. Optional workstations for flats and for radius of curvature measurements

APPLICATIONS

- Measurement of flat, concave or convex surfaces
- Prism, corner cube, wedge angle and homogeneity measurements
- Measurement of machined, ceramic, and wafer surfaces
- Wavefront analysis of optical systems & components
- Integration into OEM systems

For more information, please visit our website: www.mahr.com

MarOpto FI 1150 Z

Fizeau Interferometer

DESCRIPTION

Powerful 150 mm Fizeau interferometer for flats and spherical surfaces

The MarOpto FI 1150 Z offers contactless measurements on flats and spherical lenses. It can also be used for transmitted wavefront measurements of optical components and assemblies. Measurements may be made by means of simple interference fringe analysis or phase-modulated interferogram analysis. The established IntelliWave Software offers superior measurement and analysis capability. The MarOpto FI 1150 Z provides the versatility and reliability to handle today's advanced applications.



FEATURES

- Total USB connectivity option (laptop or desktop) with 1k x 1k true spatial resolution
- Excellent versatility, stability and repeatability
- 1x to 6x zoom, focus and attenuation controls
- Vibration-insensitivity can be accomplished via Mahr's IntelliPhase Static Spatial Carrier Acquisition and Analysis Software
- Compact, lightweight and rugged design
- Compatible with all industry standard 6" (150 mm) reference optics and accessories
- Configurations include horizontal, vertical look up and vertical look down. Optional workstations for flats and for radius of curvature measurements

APPLICATIONS

- Measurement of flat, concave or convex surfaces
- Prism, corner cube, wedge angle and homogeneity measurements
- Measurement of machined, ceramic, and wafer surfaces
- Wavefront analysis of optical systems components
- Integration into OEM systems

For more information, please visit our website: www.mahr.com

MarSurf LD 130/260 Aspheric 2D and 3D

Asphere Measuring Station

DESCRIPTION



MarSurf LD 130 / LD 260. A step into a new dimension

- MarSurf LD 130 / 260 Aspheric is a high-precision 2D / 3D surface measuring station for characterizing contour and roughness on optical components. MarWin is the software used for operation and analysis.

Checks the topography in the first machining operations

- Early detection of deviations, thus avoiding costly reworking
- Differential profile output in machine-readable format for controlling the machine tool

Increased flexibility

- Different types of rotationally symmetrical aspheres can be measured with one measuring system, no additional investment required
- Large measuring range up to **260 mm** (up to 400 mm with the stitching option)
- Maximum measuring speed and dynamics (up to **10 mm/s** for large lenses / up to 0.02 mm/s for microlenses)
- Fully positionable stylus tip

Bionic-style LP D probe arm

- Improved probe system dynamics thanks to increased rigidity and attenuation as well as a lower moment of inertia:
  - Optimized overall design of the probe system
  - Innovative choice of materials
- Probe arm with integrated chip for:
  - Detecting and identifying the probe arm
  - Checking that the probe arm is inserted correctly
  - Providing information from probe arm

Your results will be right

- The high-precision MarSurf LD 130 / 260 is the basis for the accurate measurement of your workpieces. The vertical resolution of 0.8 nm and form deviations of < 100 nm guarantee the exact reproduction of your asphere.
- Probe arm change with no need to recalibrate
- Lenses with steep sides can be measured



Measurement of steep aspheres with stitching, step 1: measuring left flank of lens

For more information, please visit our website: www.mahr.com

MarForm MFU 200 Aspheric 3D

Precision 3D Measuring Station

DESCRIPTION

Mahr developed the **MarForm MFU 200 Aspheric 3D** to enable optical components to be tested in 2D / 3D quickly and close to the production area. MarForm measuring machines have been recognized for decades for their accuracy and stability.
With the **MarForm MFU 200 Aspheric 3D**, this experience has now become available to the optical industry.



Accuracy

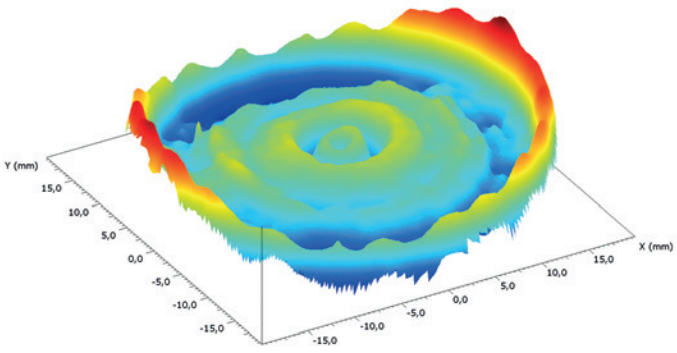
- The **MarForm MFU 200 Aspheric 3D** is a precision measuring instrument. Its very low measurement uncertainty is ideally suited to your process optimization requirements.

Measuring principle

- The **MarForm MFU 200 Aspheric 3D** measures the topography of optical components. Of course, a quick 2D measurement can also be recorded with a profile across the zenith of the lens. For 3D measurements, two linear profiles offset by 90° are first measured across the zenith of the lens in a single sequence. Then, multiple concentric polar profiles are recorded by rotating the C axis. These measuring points are used to generate a topography. Interrupted surfaces can be measured with the fully positionable probe arm.
- Using the measuring station in a vibration-cushioned cabinet keeps external interference, such as vibration and dirt, away from the measuring objects. MarWin is the software used for operation and analysis.

Measuring procedure

- Before starting the measurement, choose the nominal form type and set the parameters for the expected reference lens. In the next step, the measuring data is recorded and compared with the nominal data for the lens.
- The RMS value, PV value and slope error are shown as parameters.
- In the software, the individual parameters for the aspheres, such as the radius of curvature R0, conical constant k and the aspheric coefficients Ai, can be adjusted to the measuring results when adjusting the nominal asphere to the fit asphere.
- The differential topography between the measured values and the nominal lens is displayed as a color coded line chart. The 2D profiles and the differential topography can then be exported in known formats for correction for the machine tool.
- In addition to measuring spheres and aspheres as described above, other rotationally symmetrical objects can also be measured and evaluated using the nominal form as a conical profile or Sagitta description of a 3D scatter plot.



3D visualization of target/actual comparison

For more information, please visit our website: www.mahr.com

MarOpto MT 100

Measuring Towers

DESCRIPTION

Mahr presents the Fizeau interferometer measuring towers of the MarOpto MT series. These are modern workshop interferometer towers for operation close to production. Vertical tower solutions offer easy handling of lenses, quick measurement, including vibration damping and requires little space. Besides testing form deviation, towers with scales can towers with scales can produce highly accurate radius measurements as well. Motorized axes allow easy and fast operation.



The **MarOpto MT 100** is a high-precision Fizeau interferometer measuring tower for the testing of spherical and flat glass surfaces. The stable and vibration-isolated design makes this 4" interferometer measuring tower an ideal tool for the production of high-performance optics. Also available as an inverse measuring tower **MarOpto MT 100i**.

Highest precision in the production environment:

- Rigid granite tower with passive vibration isolation by four shock absorbers
- Measuring table with clearance-free bearings on linear slides
- Measuring table positioner via a servo motor and ball screw
- Fine selection of speed using joystick
- Manual fine adjustment of the measuring table with fine thread screw via backlash-free preloaded precision cross-roller guides
- 3-axes table: Z-axis in the basic unit and cross table for lenses up to 100 mm
- High-precision glass scale for the absolute measurement of radii, mounted close to the optical axis (Abbe comparator principle)

Options:
The interferometer measuring tower MarOpto MT 100 can optionally be expanded with a lens extension, lens protection and lens holder.

- Remote control for focus and zoom
- Tilting table 120 mm

For more information, please visit our website: www.mahr.com

MarOpto TWI 60

Tilted Wave Interferometer

DESCRIPTION

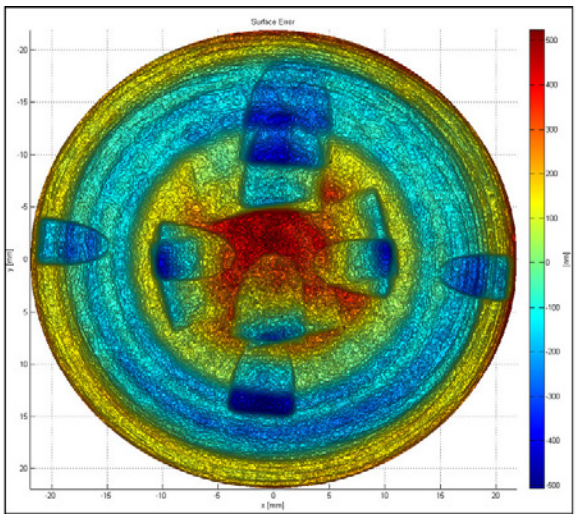
Tilted Wave Interferometer for the quick and flexible measurement and analysis of aspherical lenses.

The Tilted Wave Interferometer (MarOpto TWI 60) is a new and highly flexible interferometer for the quick and high precision measurement of aspheres.
The second picture shows the surface deviations measured in the A5 demonstrator asphere (free aperture 50 mm, best fit radius 40.8 mm, deviation from best-fit sphere 600 µm, gradient deviation 8°).
The lateral resolution is approx. 30 µm. During the data acquisition time of approximately 30 seconds, the entire surface of the asphere is measured at a high lateral resolution and with low measurement uncertainty. Most importantly, neither a CGH (Computer Generated Hologram) nor stitching is required.



FEATURES

- Flexible interferometric measurements of aspherical lenses without CGH
- Measurements without the need for stitching
- Short data acquisition time of approximately 30 s
- Beam diameter 100 mm
- Permitted aspherical deviation compared to a best-fit sphere approximately 1.5 mm



Measured surfaces defects as well as the form deviation of an asphere with MRF footprints

For more information, please visit our website: www.mahr.com

MarVision | Optical Measuring Instruments

Quality control is in a state of transition throughout the manufacturing industry: The pressure is on to measure workpieces more quickly, more accurately and yet at the same time also less expensively. That is where measuring microscopes from Mahr come into their own. These instruments provide fast, contactless measurement of contours, distances, angles, radii and also form and position features on your components, close to production. Even the smallest components can be measured very accurately by selecting appropriate zoom settings.
Measuring microscopes from Mahr can be found in virtually every sector and deliver prease measuring results at an unbeatable price-performance ratio.



MarVision SM 150 / SM 151 590
Stereo Zoom Microscope

MarVision SM 160 / SM 161 591
Stereo Zoom Microscope

MarVision MM 220 592
Workshop Measuring Microscope with M2 Software

MarVision MM 420 594
Workshop Measuring Microscope with M3 Software

MarVision MM 420 CNC 596
CNC Workshop Measuring Microscope

MarVision 300 fs 598
Cold Light Source

MarVision 109 PS 599
Set of miniature Precision Vises

MarVision 220 Set 2/1, 2/2, 2/3 600

MarVision SM 150 / SM 151

Stereo Zoom Microscope

FEATURES

- High quality optics for light intensive and sharp 3D images
- Variable magnification due to adjustable zoom lens
- Focusing with an ergonomic handwheel, mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45° and rotatable through 360°; with dioptric adjustment
- Integrated incident and transmitted illumination, continuously variable
- Optional digital camera mounting is possible (SM 151)
- **Package contains:** Eyepiece 10x with eyecup, dust cover, glass and plastic plate black/white, instruction manual



Application:

- For the visual inspection of work-pieces on the production line and in quality assurance

TECHNICAL DATA

Order no.		4245001	4245002	4245061	4245062
Product type		SM 150	SM 151	SM 150	SM 151
Observation tube angle		45°			
Camera connector		no	yes	no	yes
Optical tube		Binocular	Trinocular	Binocular	Trinocular
Field of vision - diameter	mm	28 –5			
Magnification		variable 7x–45x			
Working distance	mm	105			
Max. object height	mm	75			
Illumination		12 V /15 W, Incident and transmitted light,variable			
Energy supply		230 V / 50 Hz		110 V / 60 Hz	

Order no.	Contact surface
4245001	260 x 200 mm
4245002	260 x 200 mm
4245061	260 x 200 mm
4245062	260 x 200 mm

ACCESSORIES

Order no.	Product name	Product type
4245030	LED ring light	150 lr
4245067	Cold light source	300 fs
4245042	Fiber optic gooseneck, 2 arms, L = 500 mm, D = 40 mm	200 fl
4245010	Eyepiece lens 15x	150 e15
4245011	Eyepiece lens 20x	150 e20
4245012	Eyepiece lens 10x with glass reticle (1x)	150 e10s
4245021	Ancillary lens 2x	150 v2.0
4245020	Ancillary lens 0.5x	150 v0.5
4245026	Digital camera with adapter	150 cam



150 lr



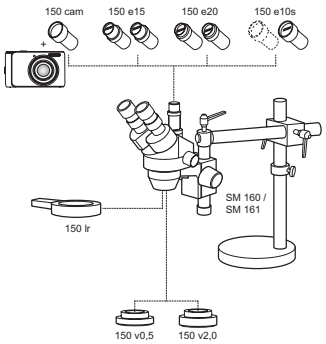
300 fs



200 fl



150 cam



150 e15

MarVision SM 160 / SM 161

Stereo Zoom Microscope

FEATURES

- High quality optics for light intensive and sharp 3D images
- Variable magnification due to adjustable zoom lens
- Focusing with an ergonomic handwheel, mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45° and rotatable through 360°; with the dioptric adjustment
- Optional digital camera mounting is possible (SM 161)
- **Package contains:** Eyepiece 10x with eyecup, dust cover, instruction manual



Application:

- For the visual inspection of workpieces on the production line and in quality assurance

TECHNICAL DATA

Order no.		4245003	4245004	4245063	4245064
Product type		SM 160	SM 161	SM 160	SM 161
Observation tube angle		45°			
Camera connector		No	Yes	No	Yes
Optical tube		Binocular	Trinocular	Binocular	Trinocular
Field of vision - diameter	mm	28 –5			
Magnification		Variable 7x–45x			
Working distance	mm	105			
Energy supply		230 V / 50 Hz		110 V / 60 Hz	

Order no.	Contact surface
4245003	230 x 230 mm
4245004	230 x 230 mm
4245063	230 x 230 mm
4245064	230 x 230 mm

ACCESSORIES

Order no.	Product name	Product type
4245030	LED ring light	150 lr
4245067	Cold light source	300 fs
4245042	Fiber optic gooseneck, 2 arms, L = 500 mm, D = 40 mm	200 fl
4245010	Eyepiece lens 15x	150 e15
4245011	Eyepiece lens 20x	150 e20
4245012	Eyepiece lens 10x with glass reticle (1x)	150 e10s
4245021	Ancillary lens 2x	150 v2.0
4245020	Ancillary lens 0.5x	150 v0.5
4245026	Digital camera with adapter	150 cam



150 lr



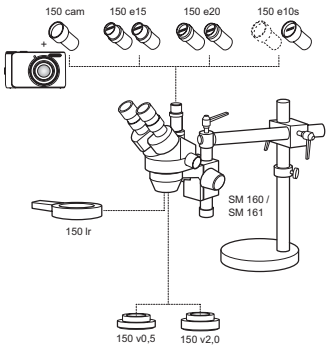
300 fs



200 fl



150 cam



150 e15

MarVision MM 220

Workshop Measuring Microscope with M2 Software

FEATURES

Measuring Microscope

- High quality optics for light intensive and sharp images
- Zoom lens with continuous variable magnification
- Focusing with an ergonomic handwheel, mounted either side, ideal for either a left or right-handed operator
- Prism head tilted to 45° with dioptric adjustment
- LED ring light, dimmable
- LED transmitted light, dimmable
- Solid granit stand
- Sturdy XY table, precision-mounted
- Quick and fine adjustment of axes
- Optical incremental measuring system for outstanding accuracy and reliability

M2 Geometry Measuring Software

- 2 axes (X, Y)
- Measuring point recorded using crosshair
- Creation of other magnifications using front-lens
- Measure, define and construct 2D elements
- Different calculation methods (best fit, best form, minimum circumscribing circle, maximum inscribed circle, etc.)
- Partial programming using Teach-In
- Comprehensive measuring records
- Multilingual user guidance
- Tolerances test as per DIN / ISO
- Data transmission

Evaluation Unit

- All-in-one PC 15.6”
- Interfaces*: 2x RS232, 4x USB 3.1
- Hard disk*: SSD 120 GB
- User memory*: 4 GB

* Subject to deviations!

- **Data interface:** RS232C, USB
- **Package contains:** M2 software with tablet PC, standard stop bar 220 as, instruction manual



Application:

- For measuring distances, bore holes and angles
- Determination of geometric elements (points, lines, circles, distances, intersections, etc.) for example: punched and flexible parts, plastic components, as well as electronic circuit boards

TECHNICAL DATA

Order no.		4246230	4246235	4246231	4246236	4246232	4246237
Product type		MM 220					
Operating and display unit		Tablet PC with M2 software					
Measuring range X/Y	mm	100 / 100		200 / 100		250 / 170	
Z travel path	mm	200					
Maximum table load	kg	20					
Measuring system		Built-in incremental scale					
Measuring system - resolution	mm	0.001					
Measuring system - E1 X/Y	µm	1.9 + (L/100) L in mm					
Measuring system - E2 XY	µm	2.9 + (L/100) L in mm					
Magnification		8–40x variable zoom					
Image field - diameter	mm	23 –4					
Max. height of test piece	mm	185					
Max. height of test piece / 0.5-fold	mm	110					
200 extension in Z	mm	385					
200 extension in Z / 0.5-fold	mm	310					
Illumination		LED Incident and transmitted light, individually adjustable					
Energy supply		230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz
H x W x D	mm	550 x 480 x 430		550 x 650 x 530		550 x 700 x 600	

ACCESSORIES

Order no.	Product name	Product type
4246010	Optional eyepiece head with angle measuring device	200 w
4247050	Optional telecentric transmitted light for measuring rotationally symmetrical parts	200 ld
4246051	Optional Z axis, extended by 200 mm	320 Zv
4246020	Ancillary lens 0.5x	200 v0.5
4246021	Ancillary lens 2.0x	200 v2.0
4246801	Prisms, pair, for diameter 5–55 mm (measuring tables 100x100 mm, 200x100 mm)	220 p
4246802	Center support, pair, center height 40 mm (measuring tables 100x100 mm, 200x100 mm)	220 sp
4246806	Center support, pivoting, pair, center height 50 mm, distance between centers 130 mm (measuring table 200 x 100 mm)	220 sps
4246920	Pivoting glass plate, Ø 100 mm (measuring table 200 x 100 mm)	200 dk
4246821	90° stop for MM 220 / MM 320	220 as90
4245067	Cold light source	300 fs
4245042	Fiber optic gooseneck, 2 arm, L = 500 mm, D = 40 mm	200 fl
4246901	Calibration standard for circles, with calibration certificate	320 nkz
4246071	Protective cover for measuring tables 100x100 and 200x100 mm	
4246850	Set of clamping elements in wooden case	220 Set 1
4246851	Rack rails for measuring range 200 x 100 mm	220 Set 2/1
4246854	V-supports, jaw chuck and tailstock	220 Set 3
4246855	Rotating swivel holder without jaw chuck or rack rails	220 ds
4246856	Precision jaw chuck for 0–3 mm for rotating swivel holder 220 ds	220 pb03
4246857	Precision jaw chuck for Ø 0–6.5 mm for rotating swivel holder 220 ds	220 pb065
4246831	Prisms, pair, for diameter 5–55 mm (measuring table 250 x 170 mm)	220 p
4246833	Center support, pair, center height 40 mm (measuring table 250 x 170 mm)	220 sp
4246807	Center support, pivoting, pair, center height 50 mm, distance between centers 130 mm (measuring table 250 x 170 mm)	220 sps
4246921	Pivoting glass plate, Ø 100 mm (measuring table 250 x 170 mm)	200 dg
4246852	Rack rails for measuring range 250 x 170 mm	220 Set 2/2



220 p



220 sp



220 sps



220 as90



300 fs



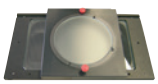
200 fl



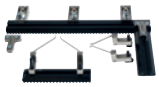
220 Set 1



220 ds



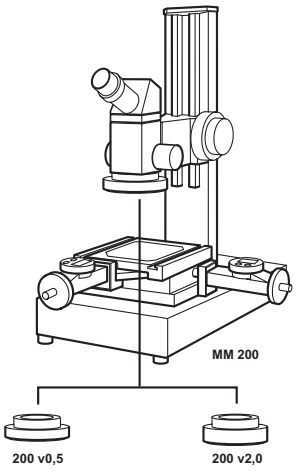
200 dg



220 Set 2/3



220 Set 3



200 v2.0

MarVision MM 420

Workshop Measuring Microscope with M3 Software

FEATURES

Measuring Microscope

- Integrated color camera
- Zoom lens (0.7x –4.5x), optionally motorized
- LED ring light: 1 ring and 4 segments, individually switchable and dimmable
- Dimmable LED transmitted light
- Laser pointer for position finding
- Solid granite base
- Sturdy steel XY table, precision-mounted
- Quick and fine adjustment of axes
- Optical incremental measuring system for outstanding accuracy and reliability

Control and Display Unit with M3 Software and Touchscreen PC

- 23" touchscreen with keyboard and mouse
- Windows 10 Pro operating system, additional software can be installed
- Operation via the multi-touch screen or with a mouse/keyboard
- Large video screen
- Reference/actual evaluation with tolerances
- Record output with company logo
- Graphical display with dimensioning
- Automatic edge detection, even on low contrast parts
- Stitching
- Statistics
- **Package contains:** M3 software with touchscreen PC, standard stop bar 220 as, instruction manual, Mahr calibration certificate

Optional

- Navitar motorized zoom 35x - 225x
- Navitar 4K motorized zoom 8x - 116x
- Telecentric light for 4K motorized zoom



Application:

- Measurement or determination of geometric elements (point, straight line, circle, distance, intersection point, etc.) by automatic edge detection, e.g. on punched and bent components, plastic components, and circuit boards

TECHNICAL DATA

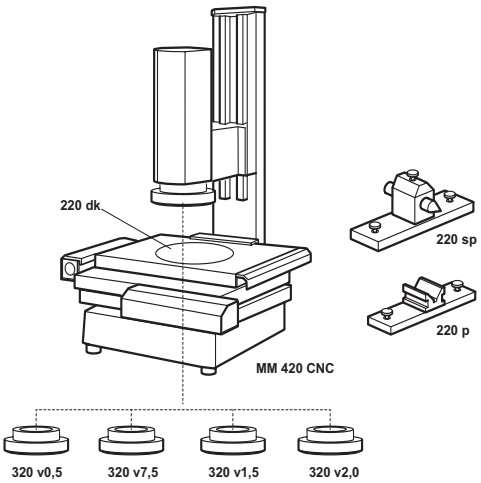
Order no.		4247600	4247605	4247601	4247606	4247602	4247607	4247603	4247608
Product type		MM 420							
Measuring range X/Y	mm	100 / 100		200 / 100		250 / 170		400 / 250	
Size of table	mm	270 x 210		370 x 210		420 x 280		600 x 480	
Maximum table load	kg	20							
Measuring system		Built-in incremental scale							
Measuring system - resolution	mm	0.001							
Measuring system - E1 X/Y	µm	1.9 + (L/100)	1.9 + (L/100)	1.9 + (L/100)	1.9 + (L/100)			3.9 + (L/100)	3.9 + (L/100)
Measuring system - E2 XY	µm	2.9 + (L/100)	2.9 + (L/100)	2.9 + (L/100)	2.9 + (L/100)	2.9 + (L/100)	2.9 + (L/100)	4.9 + (L/100)	4.9 + (L/100)
Magnification		35 –225x							
Max. height of test piece	mm	115						290	
Max. height of test piece / 0.5-fold	mm	20						200	
Max. height of test piece with coax.	mm	115						260	
200 extension in Z	mm	315							
200 extension in Z / 0.5-fold	mm	220							
Illumination		LED back and front illumination, adjustable							
Energy supply		230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz
H x W x D	mm	700 x 480 x 430		700 x 650 x 550		700 x 700 x 600		800 x 1000 x 900	

MarVision MM 420

Workshop Measuring Microscope with M3 Software

ACCESSORIES

Order no.	Product name	Product type
4246114	Optional DXF file integration for M3 software	
4247027	Optional TV adapter, 0.67x (instead of 1.0x)	320 tv0.67
4247028	Optional Navitar zoom 6.5:1, motorized	320 zmo
4247029	Optional Navitar zoom 6.5:1, motorized with coaxial light	320 zmk
4247035	Optional Navitar 4 K Motor-Zoom 8x –116x	
4247050	Optional telecentric transmitted light for measuring rotationally symmetrical parts	200 ld
4247039	Optional telecentric transmitted light for Navitar 4 K motor-zoom	200 ldm
4245300	Optional coaxial LED incident light for zoom lens	320 kaz
4246050	Optional Z axis with measuring system	320 zm
4246051	Optional Z axis, extended by 200 mm	320 Zv
4246052	Optional Z axis, extended by 200 mm, including measuring system	320 zvm
4247020	Ancillary lens 0.5x (for Navitar objective lens only)	320 v0.5
4247021	Ancillary lens 0.75x (for Navitar objective lens only)	320 v0.75
4247022	Ancillary lens 1.5x (for Navitar objective lens only)	320 v1.5
4247023	Ancillary lens 2.0x (for Navitar objective lens only)	320 v2
4246801	Prisms, pair, for diameter 5–55 mm (measuring tables 100x100 mm, 200x100 mm)	220 p
4246802	Center support, pair, center height 40 mm (measuring tables 100x100 mm, 200x100 mm)	220 sp
4246806	Center support, pivoting, pair, center height 50 mm, distance between centers 130 mm (measuring table 200 x 100 mm)	220 sps
4246920	Pivoting glass plate, Ø 100 mm (measuring table 200 x 100 mm)	200 dk
4246821	90° stop for MM 220 / MM 320	220 as90
4246901	Calibration standard for circles, with calibration certificate	320 nkz
4246071	Protective cover for measuring tables 100x100 and 200x100 mm	
4246115	Upgrade M3-Software Version V1 to V2	
4246121	Upgrade M3 software from version V2 to V3	
4246116	DXF option and profiling package for MM420	
4246117	Upgrade from DXF to profiling for MM420 / MM420-CNC	
4246118	Thread measuring option for MM420	
4246119	Optional cable insulation measurement for MM420	
4246831	Prisms, pair, for diameter 5–55 mm (measuring table 250 x 170 mm)	220 p
4246833	Center support, pair, center height 40 mm (measuring table 250 x 170 mm)	220 sp
4246807	Center support, pivoting, pair, center height 50 mm, distance between centers 130 mm (measuring table 250 x 170 mm)	220 sps
4246921	Pivoting glass plate, Ø 100 mm (measuring table 250 x 170 mm)	200 dg
4246072	Protective cover for measuring table 250x170 mm	
4246054	Option measuring system for extended Z-axis (350 mm)	320 zvl
4246832	Prisms, pair, for diameter 5–55 mm (measuring table 400 x 250 mm)	220 p
4246834	Center support, pair, center height 40 mm (measuring table 400 x 250 mm)	220 sp
4246808	Center support, pivoting, pair, center height 50 mm, distance between centers 130 mm (measuring table 400 x 250 mm)	220 sps
4246922	Pivoting glass plate, Ø 100 mm (measuring table 400 x 250 mm)	200 db
4246825	90° stop for table 400x250 mm	220 as90–1
4246073	Protective cover for measuring table 400x250 mm	



320 v0.5



220 sps



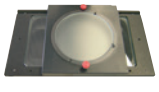
220 as90



220 p



220 sp



200 dg

MarVision MM 420 CNC

CNC Workshop Measuring Microscope

FEATURES

Measuring microscope

- 3 axis CNC control with servo motor and joystick
- Axis movement and speed regulation controlled via the joystick
- Integrated color camera
- Motorized zoom lens (0.7x –4.5x) with automatic focus
- LED ring light: 1 ring and 4 segments, individually switchable and dimmable
- Dimmable LED transmitted light
- Laser pointer for position finding
- Solid granite base
- Sturdy steel XY table, precision mounted
- Optical incremental measuring system for outstanding accuracy and reliability

Control and Display Unit with M3 Software and Touchscreen PC

- 23" touchscreen with keyboard and mouse
- Windows 10 Pro operating system, additional software can be installed
- Operation via the Multi-touch screen or with a mouse/keyboard
- Large video screen
- Reference/actual evaluation with tolerances
- Record output with company logo
- Graphic display with dimensioning
- Automatic edge detection, even on low contrast parts
- Stitching
- Statistics
- Palletizing of serial parts
- **Package contains:** M3 software with touchscreen PC, standard stop bar 220 as, instruction manual, Mahr calibration certificate

Optional

- 3D tactile measuring system TP20
- Conversion motor zoom to Navitar 4K motor zoom 8x - 116x
- Telecentric light for 4K motorized zoom



Application:

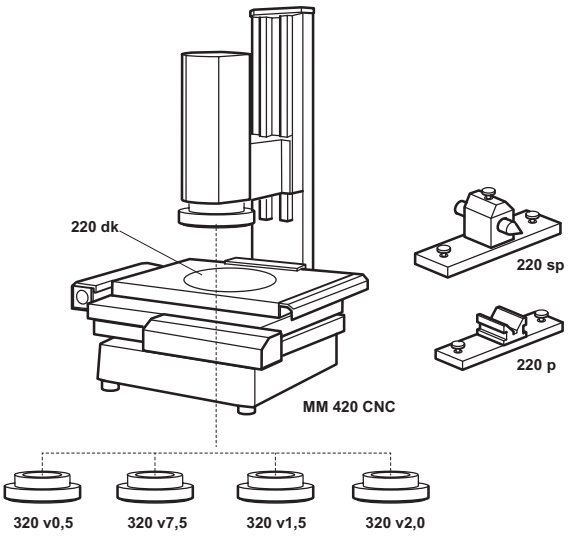
- Measurement or determination of geometric elements (point, straight line, circle, distance, intersection point, etc.) by automatic edge detection, e.g. on punched and bent components, plastic components, and circuit boards

TECHNICAL DATA

Order no.		4247701	4247702	4247703	4247706	4247707	4247708
Product type		MM 420 CNC					
Measuring range X/Y	mm	200 / 100	250 / 170	400 / 250	200 / 100	250 / 170	400 / 250
Z travel path	mm			200			200
Size of table	mm	370 x 210	420 x 280	600 x 480 x 200	370 x 210	420 x 280	600 x 480 x 200
Maximum table load	kg	20					
Measuring system		built-in incremental scale					
Measuring system - resolution	mm	0.001					
Measuring system - E1 X/Y	µm	1.9 + (L/100)	1.9 + (L/100)	3.9 + (L100)	1.9 + (L/100)	1.9 + (L/100)	3.9 + (L100)
Measuring system - E2 XY	µm	2.9 + (L/100)		4.9 + (L/100)	2.9 + (L/100)		4.9 + (L/100)
Magnification		35 –225x					
Max. height of test piece	mm	200					
Max. height of test piece / 0.5-fold	mm	110					
Max. height of test piece with coax.	mm	200					
Max. height of test piece with coax. / 0.5-fold	mm	110					
Illumination		LED back and front illumination, adjustable					
Energy supply		230 V / 50 Hz			110 V / 60 Hz		

ACCESSORIES

Order no.	Product name	Product type
4247036	Optional Navitar 4 K motor-zoom 8x –116x for CNC versions	
4246114	Optional DXF file integration for M3 software	
4247027	Optional TV adapter, 0.67x (instead of 1.0x)	320 tv0.67
4247050	Optional telecentric transmitted light for measuring rotationally symmetrical parts	200 ld
4247039	Optional telecentric transmitted light for Navitar 4 K motor-zoom	200 ldm
4245302	Optional **coaxial LED incident light** for zoom lens	320 kac
4247020	Ancillary lens 0.5x (for Navitar objective lens only)	320 v0.5
4247021	Ancillary lens 0.75x (for Navitar objective lens only)	320 v0.75
4247022	Ancillary lens 1.5x (for Navitar objective lens only)	320 v1.5
4247023	Ancillary lens 2.0x (for Navitar objective lens only)	320 v2
4246801	Prisms, pair, for diameter 5–55 mm (measuring tables 100x100 mm, 200x100 mm)	220 p
4246802	Center support, pair, center height 40 mm (measuring tables 100x100 mm, 200x100 mm)	220 sp
4246806	Center support, pivoting, pair, center height 50 mm, distance between centers 130 mm (measuring table 200 x 100 mm)	220 sps
4246920	Pivoting glass plate, Ø 100 mm (measuring table 200 x 100 mm)	200 dk
4246821	90° stop for MM 220 / MM 320	220 as90
4246901	Calibration standard for circles, with calibration certificate	320 nkz
4246071	Protective cover for measuring tables 100x100 and 200x100 mm	
4246834	Center support, pair, center height 40 mm (measuring table 400 x 250 mm)	220 sp
4246115	Upgrade M3 Software version V1 to V2	
4246121	Upgrade M3 Software version V2 to V3	
4246116	DXF option and profiling package for MM420	
4246117	Upgrade from DXF to profiling for MM420 / MM420-CNC	
4246118	Thread measuring option for MM420	
4246119	Optional cable insulation measurement for MM420	
4247040	Optional 3D tactile measuring system TP20, probe L=20 mm with ball diameter 2 mm	
4247041	Calibration standard ball Ø 20 mm and setting ring Ø 10 mm	
4246831	Prisms, pair, for diameter 5–55 mm (measuring table 250 x 170 mm)	220 p
4246833	Center support, pair, center height 40 mm (measuring table 250 x 170 mm)	220 sp
4246807	Center support, pivoting, pair, center height 50 mm, distance between centers 130 mm (measuring table 250 x 170 mm)	220 sps
4246921	Pivoting glass plate, Ø 100 mm (measuring table 250 x 170 mm)	200 dg
4246072	Protective cover for measuring table 250x170 mm	
4246825	90° stop for table 400x250 mm	220 as90–1
4246922	Pivoting glass plate, Ø 100 mm (measuring table 400 x 250 mm)	200 db
4246832	Prisms, pair, for diameter 5–55 mm (measuring table 400 x 250 mm)	220 p
4246808	Center support, pivoting, pair, center height 50 mm, distance between centers 130 mm (measuring table 400 x 250 mm)	220 sps
4246073	Protective cover for measuring table 400x250 mm	



320 v0.5



220 sps



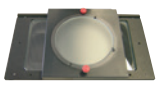
220 as90



220 p



220 sp



200 dg

MarVision 300 fs

Cold Light Source

FEATURES

- High intensity
- Electronic controls
- Offers cooler color temperature for measuring colored surfaces
- Patented light guide for uniform illumination

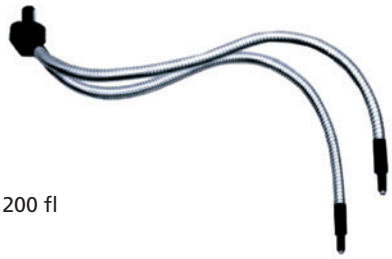


TECHNICAL DATA

Order no.	Product type	Illumination	Energy supply
4245067	300 fs	Illuminance 26 mlx, 150 W	230 V / 50 Hz 110 V - 240 V

ACCESSORIES

Order no.	Product name	Product type
4245042	Fiber optic gooseneck, 2 arm, L = 500 mm, D = 40 mm	200 fl



200 fl

MarVision 109 PS

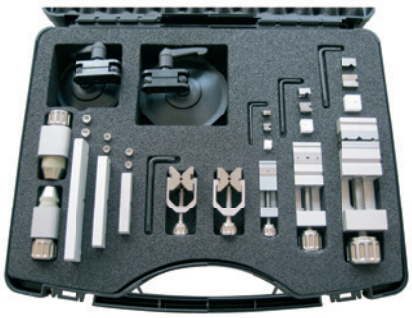
Set of Miniature Precision Vises

FEATURES

- Hard chrome plated or anodized construction (jaw width 15-35 mm)
- Exchangeable clamping jaws in hardened stainless steel and plastic



4246817



4246819

Application:

- For clamping small workpieces on measuring microscopes

TECHNICAL DATA

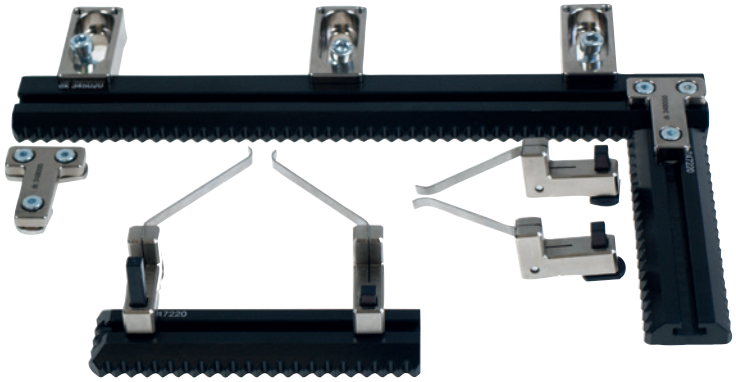
Order no.	Product type	Set contents
4246810	109 P	Mini vise, jaw width 15 mm
4246811	109 P	Mini vise, jaw width 25 mm
4246812	109 P	Mini vise, jaw width 35 mm
4246813	109 Pst	Tripod for vise, jaw width 15 mm
4246814	109 Pst	Tripod for vise, jaw width 25 mm
4246815	109 Pst	Tripod for vise, jaw width 35 mm
4246816	109 PS	Mini vises, jaw width 15 and 25 mm
4246817	109 PS	Mini vises, jaw width 25 and 35 mm
4246818	109 PS	Mini vises, jaw widths 15 / 25 / 35 mm, with tripod and V-blocks
4246819	109 PS	Mini vises, jaw widths 15 / 25 / 35 mm, with tripod, V-blocks and miniature dividing attachments

MarVision 220 Set 2/1 / 220 Set 2/2 / 220 Set 2/3

Set of Rack Rails for Measuring Range 200 x 100 mm

FEATURES

- Clamping elements for different table sizes



Application:

- For clamping workpieces on measuring microscopes

TECHNICAL DATA

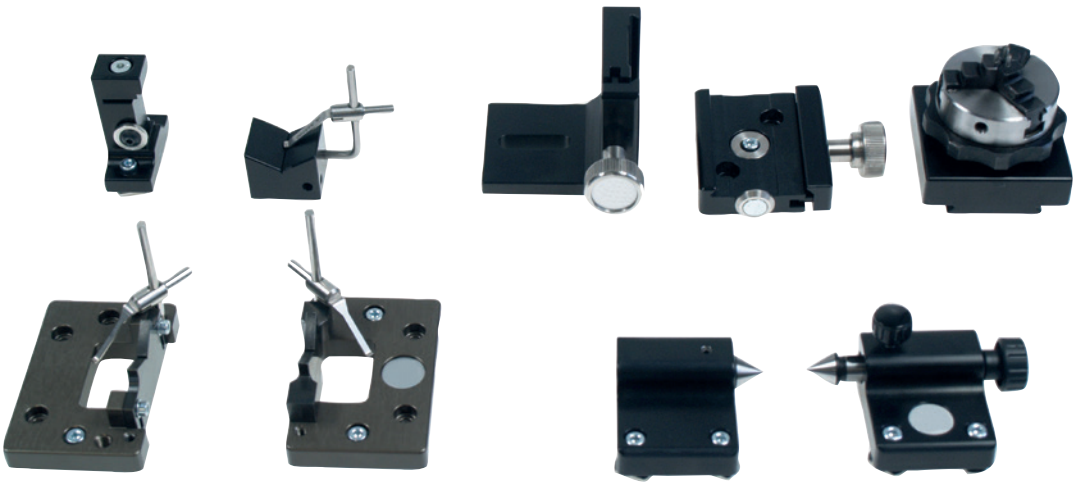
Order no.	Product type	Set contents
4246851	220 Set 2/1	Rack rails for measuring range 200 x 100 mm
4246852	220 Set 2/2	Rack rails for measuring range 250 x 170 mm
4246853	220 Set 2/3	Rack rails for measuring range 400 x 200 mm

MarVision 220 Set 2/1 / 220 Set 2/2 / 220 Set 2/3

Set of Rack Rails for Measuring Range 200 x 100 mm

ACCESSORIES

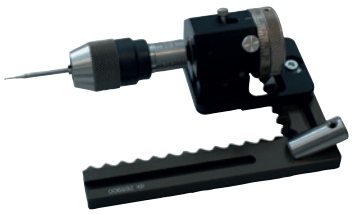
Order no.	Product name	Product type
4246850	Set of clamping elements in wooden case	220 Set 1
4246854	V-supports, jaw chuck and tailstock	220 Set 3
4246855	Rotating swivel holder without jaw chuck and without rack rails	220 ds
4246856	Precision jaw chuck for 0–3 mm for rotating swivel holder 220 ds	220 pb03
4246857	Precision jaw chuck for Ø 0–6.5 mm for rotating swivel holder 220 ds	220 pb065



220 Set 3



220 Set 1



220 ds

MarShaft | Shaft Measuring Instruments

The role of metrology is changing, to keep pace with innovations in manufacturing processes. Given the ever more stringent accuracy requirements and falling cycle times, rapid measurement directly at the manufacturing machine is absolutely essential. Flexible MarShaft shaft measuring technology from Mahr is the right solution for quick and accurate measurement in production.



MarShaft MAN 605
Manual tactile Shaft Measuring Machine

MarShaft MAN MarCheck 606
Measured Value Display MarCheck for MAN Shaft Measuring Instruments

MarShaft MAN 607
OMS 120 optical Measuring System

MarShaft MAN 608
Manual tactile Shaft Measuring Machine with Software MarWin EasyShaft

MarShaft SCOPE *plus* 609
MarShaft SCOPE 350 / 750 / 1000 *plus* optical Shaft Measuring Systems

MarShaft SCOPE *plus* 610
MarShaft SCOPE 600 *plus* 3D optical Shaft Measuring Systems

MarShaft SCOPE *plus* 611
Universal, fully automatic optical Shaft Measuring System MarShaft SCOPE 250 *plus*

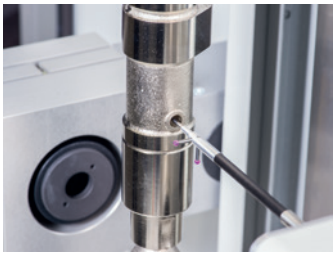
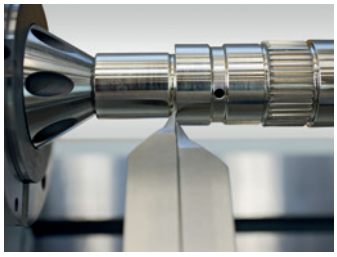
MarShaft Software EasyShaft 612

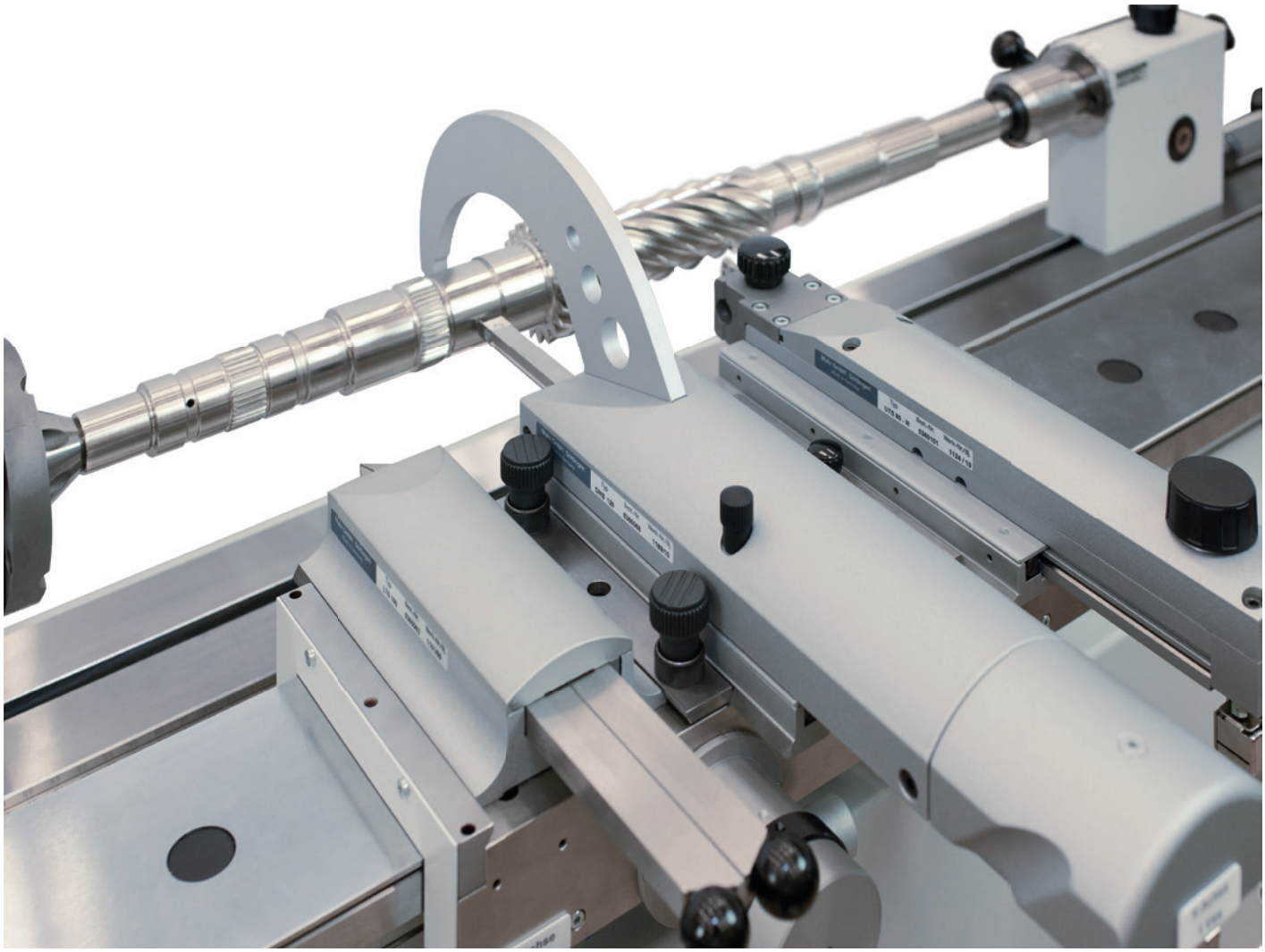
The latest information about MarShaft products is available on our website:
www.mahr.com, web code 11935

MarShaft. Measurement of Shaft-Type Parts in Production.

MarShaft shaft measuring instruments are mostly used in production. However, with their high measuring accuracy they can also be used in measuring laboratories. The instruments are available in various sizes, and their modular design allows them to be optimized to individual measuring tasks. Inline measurement directly in the manufacturing process saves the time and expense of measurements in the measuring room and increases productivity.





MarShaft MAN

Manual tactile Shaft Measuring Machine

DESCRIPTION

- MarShaft MAN is a universal, modular shaft measuring instrument for the fast and flexible measurement of shaft-type testpieces.
- Precision workpieces can be produced cost-effectively and to a high level of quality across all manufacturing stages – from cutting to length through to hard finishing – if the individual process steps are kept consistently stable. That is exactly where production-floor characteristics testing with MarShaft MAN comes in. Short feedback times on reaching the tolerance limits and seamless documentation of all functional data relating to the component soon pay off.
- The MarShaft MAN shaft measuring center is the right solution for your quality control.
- The MarShaft MAN shaft measuring center is available in a number of different instrument sizes (workpiece lengths up to 400 mm / 800 mm / 1200 mm / 1600 mm / 2000 mm / 2400 mm, diameters from 120 mm to 220 mm) and its modular design allows it to be adapted to individual measuring tasks. The measuring modules (e.g. diameter, length, roundness module) can be arranged in any order or can easily be added at a later date.

- **Advantages at a glance:**
- No operator influence
- Highly accurate measuring results
- Excellent repeatability
- Measuring system for all typical measuring tasks, including length, diameter, radial run-out, axial run-out, recess width, cone angle, roundness, coaxiality, concentricity and much more
- Automatic measuring force application to avoid operator influence
- Good workshop compatibility for direct use in production
- User-friendly MarCheck evaluation computer (2 models)





TECHNICAL DATA

MarShaft MAN, length and diameter measurement, MarCheck II measuring computer	
Measuring range length (Z) (mm)	400 / 800 / 1200 / 1600 / 2000 / 2400
Measuring range diameter (X) (mm)	120 or 220
Workpiece weight (max.) in kg	20 / 60
Length/diameter resolution (mm)	0.0001
Angle resolution (°)	0.001
Length error limit (Z) (µm)	(3 + L/100) µm, L (length) in mm (at 20°C ± 1°C on reference standard)
Diameter error limit (X) (µm)	(0.8 + L/100) µm, L (length) in mm (at 20°C ± 1°C on reference standard)
Drives	manual
Lens	Optical measuring system (OMS) with matrix camera and software

APPLICATIONS

- **Typical workpieces:**
- Crankshaft, camshaft, gear shaft, rack, axle journal, hollow shaft, drive shaft, turning parts

- **Typical measuring tasks:**
- Length, diameter, radial run-out/axial run-out

- **Other measuring tasks:**
- Distance, recess width, depth, increment, recess diameter, roundness, taper, radius, position of cross-holes, and much more

For more information, please visit our website: www.mahr.com

MarShaft MAN

Measured Value Display MarCheck for MAN Shaft Measuring Instruments

DESCRIPTION

- **MarCheck** is a compact measuring and evaluation unit for manual MarShaft MAN shaft measuring machines, featuring intuitive controls and an excellent range of functions.

- The minimal training input that is required means that the instrument can be used straight away, saving time and money. The large, easy-to-read monochrome LCD display (240 x 160 dots) can display up to three measuring channels at the same time. The individual measuring channels are activated automatically on the display when measuring with the corresponding measuring axis. The measuring direction is displayed.

- MarCheck comes as standard with three measuring channels, for two linear measuring axes (Z and X) and one rotational measuring axis (C), which if necessary can be reconfigured to a linear measuring axis (R). The precision measuring spindle (C-axis) is controlled by MarCheck and switched on and off automatically for radial run-out and roundness measurements.

Performance features

- Large, easy-to-read monochrome LCD display (240 x 160 dots) with backlight
- 3 measuring channels (Z-axis, X-axis, and C-/R-axis)
- Numeral size approx. 13 mm
- 1 USB interface for max. 3 GB USB stick
- 1 USB interface for PC (optionally RS232 interface, data analysis in Excel or MarCom software) or software installation (updates)
- Can be connected to an inkjet printer
- Roundness and radial run-out measured with the DMS 120, no additional R-axis required
- Automatic adoption of measuring values on reaching the non-user specific measuring force
- Automatic adoption of calibration values from the individual measuring modules



TECHNICAL DATA

MarShaft MAN with MarCheck, measured value display for MAN shaft measuring instruments	
Measuring range length (Z) (mm)	400 / 800 / 1200 / 1600 / 2000 / 2400
Measuring range diameter (X) (mm)	120 or 220
Workpiece weight (max.) in kg	20 / 60
Length/diameter resolution (mm)	0.0001
Angle resolution (°)	0.001
Length error limit (Z) (µm)	(3 + L/100) µm, L (length) in mm
Diameter error limit (X) (µm)	(0.8 + L/100) µm, L (length) in mm
Lens	Optical measuring system (OMS) with matrix camera and software

Measuring and programming functions

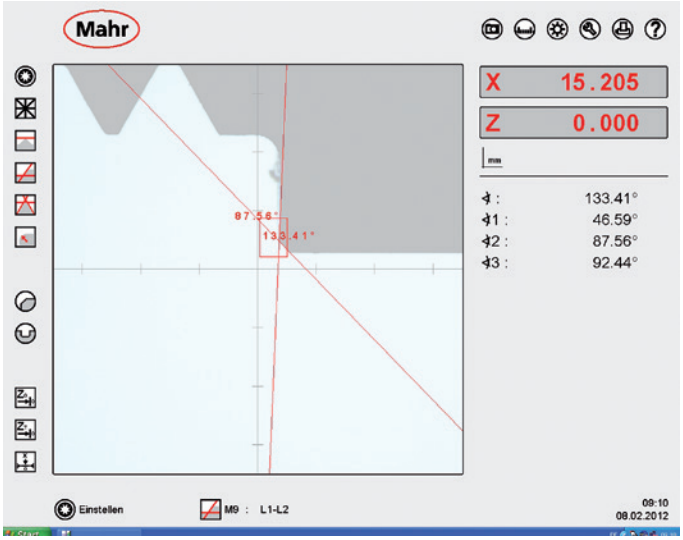
- Evaluation of diameters, length dimensions, distances, taper, symmetry, center-to-center distance, roundness, axial run-out, radial run-out, concentricity, workpiece axis datum calculation, maximum/minimum function, preset function for datum points outside the workpiece.
- Teach-in programming, storage in MarCheck or on external PC or USB stick, printing to an external printer, internal storage of up to 40 measuring programs.

MarShaft MAN

OMS 120 optical Measuring System

DESCRIPTION

- In conjunction with the evaluation software, the optical measuring system OMS 120 can be used to measure geometry elements which cannot be contacted or evaluated with the available contacting measuring probes of MarShaft MAN. The operating concept is optimized for use directly on the production line and can be used without any knowledge of metrology whatsoever. The testpiece contour is mapped on the camera chip using the shadow image method and displayed on the monitor. High-quality, telecentric optical components are used for precision mapping. To this end the corresponding testpiece contour is positioned only roughly in the camera's image field. There is no need for precision adjustment in the Z or X direction. The software has quick measuring functions which automatically evaluate the relevant feature results for the current measuring task.



Quick measuring functions

- Recess
- Chamfer
- Radius
- Straight line
- Intersection point line-line A quick measuring function analyses multiple feature results at the same time. The relevant results can be selected for recording or for data transfer. Most shaft measuring tasks can be performed in a quick and user-friendly manner using these functions.

- A whole range of manual analysis functions are available for measuring tasks which are not covered by the quick measuring functions.

Technical data

- Traverse path in X-direction: 120 mm
- Measurement resolution: 0.001 mm

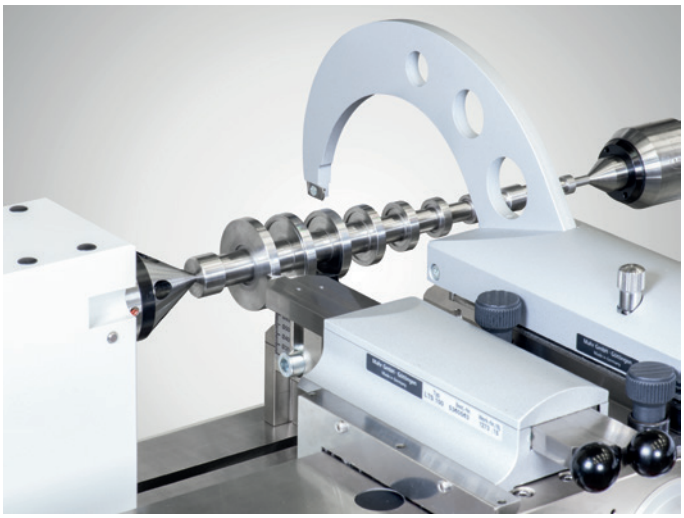
MarShaft MAN

Manual tactile Shaft Measuring Machine with Software MarWin EasyShaft

DESCRIPTION

- The MarCheck ***plus*** control electronic is designed exclusively for the operation of MarShaft MAN units (sizes 400 mm to 2400 mm) with the MarWin EasyShaft MAN measurement and evaluation software. The control electronic is available in the basic version (4 channels) or premium version (9 channels). The Premium version has two additional connections fortemperature sensors required for the optional temperature compensation.
- With the new evaluation software MarWin EasyShaft MAN, Mahr again sets new standards in manual shaft measurement technology on the market.
- The software operation concept was largely taken over by the very successful evaluation software of the optical Mahr shaft measuring devices of the MarShaft SCOPE ***plus*** product line.
- The very simple, intuitive operation minimizes the training requirements. The evaluation software MarWin EasyShaft MAN can be mastered in a very short time. No programming knowledge is required; the creation of measuring programs is done in Teach-In mode. The individual characteristics are simply measured one after the other and subsequently this measurement sequence is stored as a measurement program.
- A robust panel PC with 15.6" touchscreen monitor (including stand) is suitable for use in production.





Features

- Robust panel PC suitable for production with 15.6" touchscreen monitor (including stand)
- Protection class IP54 (dustproof and splash-proof)
- TFT 15.6" touchscreen
- i5 CPU 3337U, 1.8GHz, DDR3 SO-DIMM max. 8GB, SSD SATA 2.5" 256GB, RAM4GB
- Operating system Windows 10
- 4 measuring channels (MarCheck basic) and 9 measuring channels (MarShaft premium)
- Designed for the manual shaft measuring machines MarShaft MAN 400 to MAN 2400
- Can be retrofitted to all MarShaft MAN shaft machines

Measurement and programming functions

- Absolutely simple operation
- Fast measurement without measuring program
- Teach-In programming
- Barcode connection
- Data export to statistics programs extends the scope of services,
- QS-Stat and QS-Stat plus interface
- The well-known Windows® user interface ensures short processing times
- Uniform Mahr software across all products (e.g. MarWin EasyShaft Scope or MarWin EasyForm)
- Overview of structure through window technology
- Easy handling thanks to 100% touchscreen functionality
- Many functions can be directly selected via symbols (icons)
- Comfortable and state-of-the-art measurement program management
- Precise test reports - black or white or colored - on all Windows® printers
- Future-proof investment, runs under Windows 10

For more information, please visit our website: www.mahr.com

MarShaft SCOPE *plus*

MarShaft SCOPE 350 / 750 / 1000 *plus* optical Shaft Measuring Systems

DESCRIPTION

- The **MarShaft SCOPE *plus*** is a universal, fully automatic optical shaft measuring system for testing rotationally symmetrical workpieces.
- The **MarShaft SCOPE *plus*** has a highly accurate roundness measuring axis (C), a vertical measuring axis (Z) and a horizontal measuring axis (X).
- A tactile measuring system with an inductive measuring probe is available as an option, for measuring radial and axial run-out, for example. The measuring device is calibrated to the optical measuring system, so it can perform tactile and optical measuring tasks in combination.
- The new MarWin EasyShaft software provides a high level of flexibility and exceptionally user-friendly operation.
- The measuring sequences are carried out fully automatically, free from operator influences.
- The MarShaft SCOPE ***plus*** is suitable for use in both the harsh workshop environment and in the inspection room. Zoom functions allow the smallest details to be measured, which with conventional measuring methods are difficult if not impossible to test.

- Automatic measuring procedure
- Matrix camera, 1280 x 1024 pixels
- User-friendly touchscreen operation
- One measuring instrument for multiple measuring tasks
- Good workshop compatibility
- MarWin EasyShaft software provides a high level of flexibility and user-friendly operation

Options:

- Tactile measuring unit for measuring radial run-out and axial run-out
- Temperature compensation
- Thread measurement
- Turbocharger shaft measurement
- Manual control panel
- Signal lamp
- Barcode scanner
- MarWin Professional Shaft software
- QS-Stat interface



TECHNICAL DATA

Optical, fully automated CNC-controlled shaft measuring machines	
Measuring range length (Z) (mm)	350 / 750 / 1000
Measuring range diameter (X) (mm)	80 or 120
Workpiece weight (max.) in kg	15 (optional 30)
Length/diameter resolution (mm)	0.01 to 0.0001
Angle resolution (°)	0.01 to 0.0001
Length error limit (Z) (µm)	(2 + L/125) L in mm (at 20°C ± 1°C on reference standard)
Diameter error limit (X) (µm)	(1.0 + L/125) L in mm (at 20°C ± 1°C on reference standard)
Drives	Servo motors
Lens	Telecentric precision lens High-resolution CCD array

APPLICATIONS

Typical workpieces

- Turned parts
- Tripods
- Transmission shaft
- Rack
- Axle journal
- Hollow shaft
- Drive shaft
- Camshaft
- Turbocharger shafts
- Bone screws
- Worm gears
- Balance shafts
- Hydraulic parts
- Valves (diesel engine)
- and much more

For more information, please visit our website: www.mahr.com

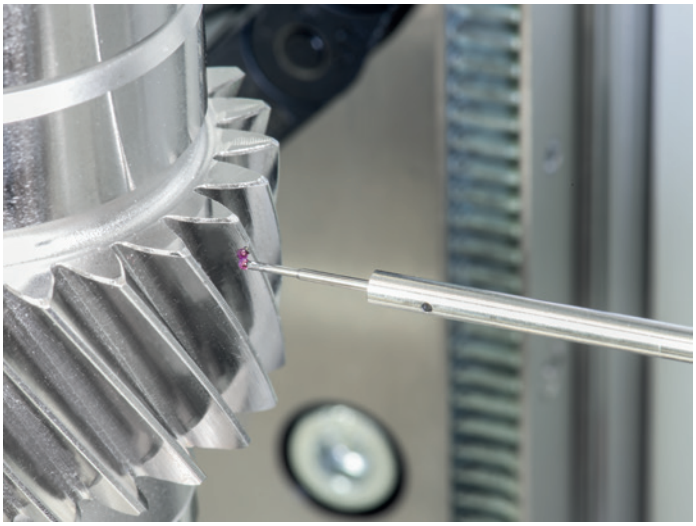
MarShaft SCOPE *plus*

MarShaft 600 *plus* 3D optical Shaft Measuring System

DESCRIPTION

- Mahr, the application specialist, provides a completely new measurement method for the camshaft and now (optionally) also for straight and helical cylindrical gears using the new MarShaft SCOPE 600 *plus* 3D: The combination of optical and tactile sensors allow for the first time ever the functionally complete 3D inspection of the workpiece in one clamping. Due to this market need, Mahr further developed the highly anticipated and well-received MarShaft SCOPE 750 *plus* system. The advanced system now utilizes a new 2D probe system, a motorized tailstock and a calibration for the linear axes. A matrix camera optically measures characteristics such as diameters, lengths, radii, geometries, location characteristics, cam angle or cam lift in seconds. The additional 2D probe system detects features that are not optically measurable: concave cam profile, all common gear parameters on cylindrical gears, axial run out, reference elements in the axial direction such as blind holes. For this system, the tactile and optical systems are calibrated in one measuring coordinate system. The measuring station operates in conjunction with the MarWin software platform, thus providing full 3D functionality.





TECHNICAL DATA

MarShaft SCOPE 600 *plus* 3D	
Measuring range length (Z) (mm)	600
Measuring range diameter (X) (mm)	120
Workpiece weight (max.) in kg	15
Length/diameter resolution (mm)	0.01 to 0.0001
Angle resolution (°)	0.01 to 0.0001
Length error limit (Z) (µm)	(2 + L/125) L in mm (at 20°C ± 1°C on reference standard)
Diameter error limit (X) (µm)	(1.0 + L/125) L in mm (at 20°C ± 1°C on reference standard)
Drives	Servo motors
Lens	Telecentric precision lens High-resolution CCD array

APPLICATIONS

- Complete measurement of camshafts
- Complete measurement of gear shafts

Typical workpieces

- Camshaft
- Gear shafts
- Eccentric shafts
- Shafts with keyways or blind boreholes

Features:

- Complete measuring of camshafts, including cam angle and all cam profiles
- Measurement of cylindrical gears
- Measurement of conturs
- No use of radial drivers
- Direct measurement of reference (2 flat, blind borehole or keyway)
- Measurement of keyway grooves
- Measurement of blind boreholes
- 100% 3D function with the new 2D probesystem 1320–2
- Additional Y- measuring axis
- Special calibration of the linear axis (Z-X-Y)
- MarShaft Professional Software
- Manual panel

Options:

- Barcode scanner
- Signal light (red, yellow, green)
- Coated tip (no driver required)
- Vibration isolation system
- Temperature compensation
- Thread measurement
- Turbocharger shaft measurement

For more information, please visit our website: www.mahr.com

MarShaft SCOPE *plus*

Universal, fully automatic optical Shaft Measuring System MarShaft SCOPE 250 *plus*

DESCRIPTION

- The role of dimensional metrology is expanding at a dramatic rate, in parallel with innovations in manufacturing processes. Given the ever more stringent accuracy requirements and falling cycle times in production (turning, milling, grinding, etc.), rapid measurement directly at the manufacturing machine is absolutely essential. Measurement at the point of origin of the product, with rapid feedback to the manufacturing process to avoid waste. Mahr's flexible MarShaft SCOPE 250 ***plus*** shaft measuring machine offers the right measuring solution for the fast, precise and fully automatic measurement of rotationally symmetrical workpieces in production.

- The MarShaft SCOPE 250 *plus* has a high precision roundness measuring axis (C) and a vertical measuring axis (Z) with a measuring range of 250 mm. At its heart is the state-of-the-art, high-resolution CMOS matrix camera (live image) with an image field of 1088 x 2048 mm. The extremely high image acquisition rate of over 120 images per second keeps measuring times to a minimum. Zoom functions allow the smallest details to be measured, which with conventional measuring methods are difficult if not impossible to test.

Performance features at a glance:

- New, high-resolution CMOS matrix camera with a 40 mm live image field allows fast scanning with over 120 images per second
- High accuracy for diameter and length measurement
- Measuring speeds of up to 200 mm/s result in extremely fast measuring times
- By using Mahr's MarWin software platform, you can benefit from our decades of experience in length, form, position and contour measurement
- Excellent entry level price into the small optical shaft measuring machine segment



TECHNICAL DATA

MarShaft SCOPE 250 *plus*	
Measuring range length (Z) (mm)	250
Measuring range diameter (X) (mm)	40
Length/diameter resolution (mm)	0.01...0.0001
Angle resolution (°)	0.01...0.0001
Length error limit (Z) (µm)	≤ (3.0+l/125) L in mm
Diameter error limit (X) (µm)	≤ (1.5+l/40) L in mm
Lens	Telecentric precision optics High-resolution CMOS camera

APPLICATIONS

The main measurable features

- Length
- Diameter
- Form and position tolerances
- Offsets
- Recess width
- Bevel width
- Intersection points
- Position of intersection points
- Angles of rotation
- Radii
- Position of radii
- Taper lengths
- Angles
- Pitches
- Widths across flats
- Outer threads

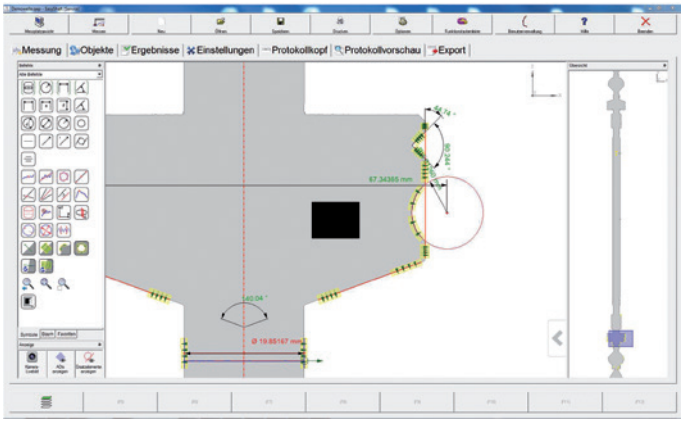
For more information, please visit our website: www.mahr.com

MarShaft Software EasyShaft

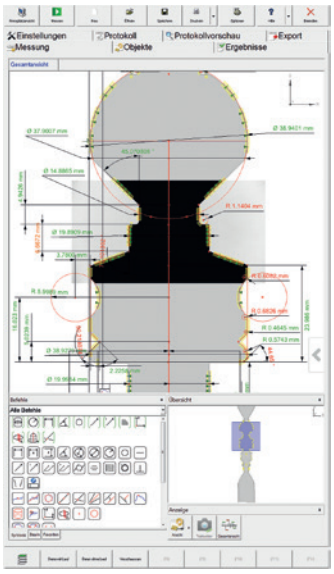
DESCRIPTION

- **MarWin EasyShaft software** is the measuring, control and evaluation system for the MarShaft SCOPE *plus*. It offers precision measurement of diameters, lengths, contour features and form and position tolerances in accordance with standards, along with many new evaluation and documentation options, all with a well-laid-out, intuitive user interface.

- The software runs entirely under the familiar Windows® operating system. The user interface is compatible with other Windows® applications, reducing the familiarization time substantially. All Windows®-compatible printers can be used for record output.

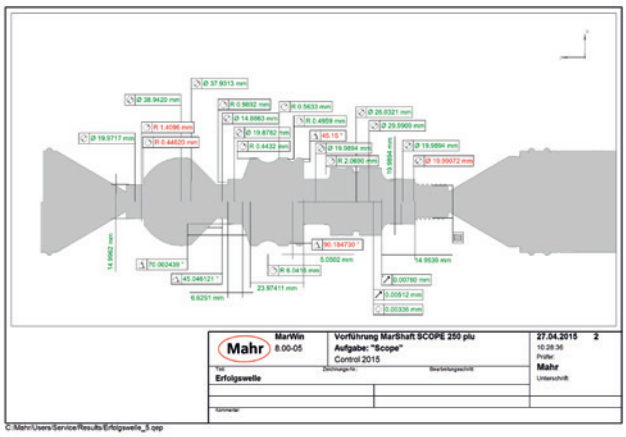


Performance features at a glance:
- The familiar Windows® user interface makes for a short learning curve
- The user interface is used as standard across all Mahr products (e.g. EasyForm or Contour 1)
- Clear, windows-based layout
- User-friendly, 100% touchscreen functionality
- Predefined macros for easy programming (e.g. diameter measurement at a mouse click)
- Many functions can be selected directly via obvious icons
- Touchscreen-controllable machine axes
- The live image from the matrix camera is permanently displayed during measurement, i.e. direct visual assessment of the workpiece condition (e.g. soiling) even during measurement
- For individual and serial measurements: the ideal operating strategy for every task
- User-friendly, state-of-the-art measuring program management
- Time-optimized measuring program sequence (shortest measuring times)
- Meaningful measuring records – in black-and-white or color – output to all Windows® printers
- Future-proof investment, runs under Windows 10
- Optional data export to statistics programs extends the range of functions of the EasyShaft software



Options:
EasyShaft program window
- The EasyShaft software gives you full control over the MarShaft SCOPE. The touchscreen gives you direct access to positioning, programming, measurement and documentation. The excellent, simple user interface helps you keep track of everything you need to know.
- Many functions, such as loading measuring results or adding feature measurements, can be selected simply by clicking an icon.

EasyShaft commands
- The clearly laid-out command bar contains all the commands required for measuring and evaluating features.
- Macros (composed sequences of evaluation actions, e.g. diameter, radius, distance or angle)
- Features which can be calculated (e.g. direct distance, distance in X and Z, angle, angle sector, radius, roundness, straightness, radial run-out, axial run-out, cylindricity, symmetry)
- Substitute elements which can be calculated (e.g. point, line, circle, point on straight line, intersection point, symmetry straight line, parallel straight line, extreme point, C-reference)
- **Display palette (touchscreen control of machine axes)**
- Used to show or hide the display palette
- Used to select the zoom range
- Joystick for the C-axis
- Joystick for the X- and Z-axis
- Zoom in incrementally
- Zoom in or out continuously
- Zoom out incrementally



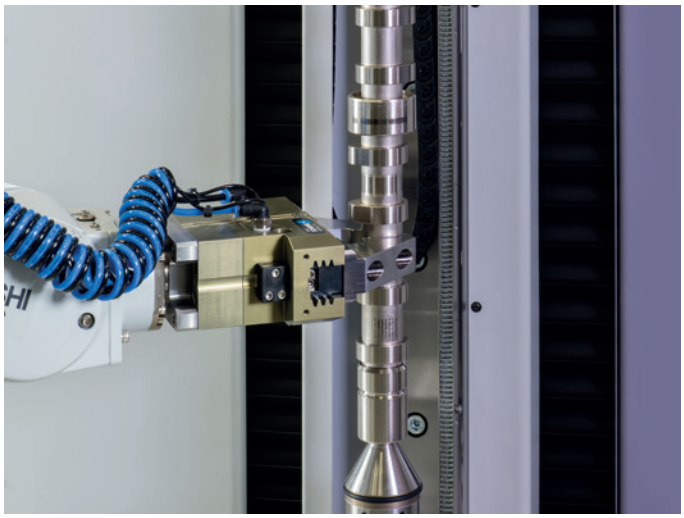
For more information, please visit our website: www.mahr.com

MarShaft

Engineered Solutions

DESCRIPTION

Shaft measuring system for the intelligent and cross-linked production of the future.
The advancing digitalization and automation also demands from measurement technology to adapt to new requirements – in terms ofspeed and reliability, for example.
That is why Mahr has been developing measuring systems for the intelligent factory: measuring instruments that can be loaded by robots and that measure automatically.
For the MarShaft Scope product family, Engineered Solutions offers concepts that can deliver fully automated quality assurance, without operator intervention, round the clock. In this way you can increase production efficiency, optimize process costs and boost product safety. The cameras used at Mahr optically detect features such as diameters, lengths, radii, form or position features contactlessly and with maximum precision, in just a few seconds.



Intelligent measuring machine with robot loading
As a Mahr customer you benefit from a comprehensive approach to integrating the measuring process into the existing production environment, through fully automatic robot loading and the proven performance features of the MarShaft Scope 600 *plus* 3D or MarShaft Scope 750.
If you need an additional measuring machine to solve the measuring tasks, the robot can transfer the workpiece to different stations for further measurements.
Using the Fieldbus interface in the MarWin platform software, measuring stations from all product groups can easily be integrated into the production process to design the measuring room of the future.



Fixtures for each measuring task
Mahr has a wealth of knowledge regarding the design of highly accurate fixtures for shaft measurement. For the measuring room of the future, fixtures will also need to be designed so that they clamp the workpiece in a secure and reproducible manner, even when loaded by a robots.
Even when no fully automatic and robot-loaded measuring machine is used, Engineered Solutions with its broad portfolio of various clamping device concepts can deliver a solution for the measuring task: from different tip shapes (hollow tips, centering tips), angles or diameters through to collet chucks or patented mandrels.

Together with you, we can find the right fixture for your measuring task.



For more information, please visit our website: www.mahr.com

Engineered Solutions | Customer-Specific Measuring Technology

As modern production techniques develop, bringing with them growing demands in terms of flexibility and quality, conventional measuring technology faces new challenges. With Engineered Solutions, Mahr can offer you custom-made solutions that take into account specific environmental conditions and requirements relating to handling, reliability and speed. Measuring solutions that are as individual as your measuring task: for us your requirements are the benchmark.



Engineered Solutions 617
Customized Measuring Technology

Engineered Solutions Standardized Measuring Devices 620
Standardized Measuring Devices

Engineered Solutions Millimar Standard Components 621
Measuring Devices based on Millimar Standard Elements

Engineered Solutions Customer Specific Measuring Units 622
Customer-specific Measuring Devices

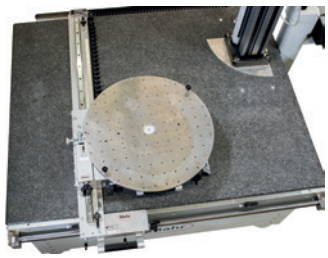
The latest information about Engineered Solutions can be found on our website:
www.mahr.com

Engineered Solutions. When standardized Solutions are not enough

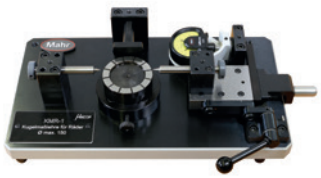
Individual Solutions according to Customer Requirements

Focusing on modern manufacturing requirements

In many industries, quality control increasingly takes place within the production environment itself, to enable the production process to be controlled and adjusted in an optimal manner. This is giving rise to new, specific demands in measuring technology: challenging environmental conditions, higher speed and simple controls are increasingly relevant. In spite of all this, measuring results still have to be solid and reliable. The measuring machines from Mahr Engineered Solutions are designed precisely with this in mind.











Engineered Solutions

Customized Measuring Technology

DESCRIPTION

Mahr – a full-service Provider for your Measuring System

As your partner from the initial inquiry to commissioning at your site, Engineered Solutions offers a complete solution:

- Project management
- Design and development
- Commissioning
- Instruction and training at the customer's site
- Support from the start of the project right up to the turnkey handover
- After sales service

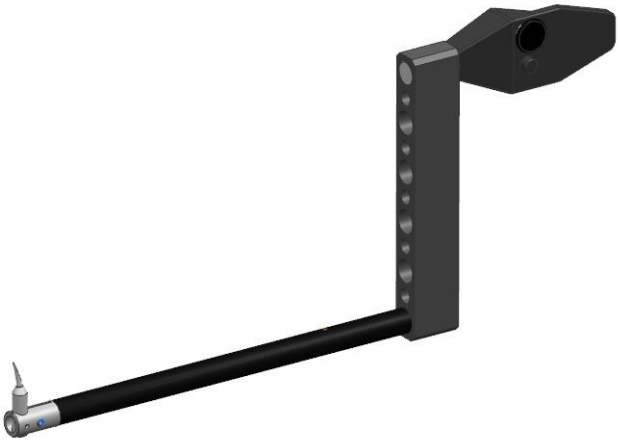


Experience and international Presence

Many years of experience with a large range of different system solutions makes Engineered Solutions your competent partner for individual measurement tasks worldwide. Together with the companies belonging to the Mahr Group, Mahr MWF GmbH (Großostheim / Germany), SMPR (Grand Couronne / France) and Mahr Inc. (Providence / USA), the team from Engineered Solutions in Goettingen (Germany) offers concentrated expertise. Mahr is also represented in Asia when it comes to customer-specific measuring stations: In Suzhou, China, Mahr has its own office from which customers are comprehensively supported.

The Right Solution for your Application

With Engineered Solutions, Mahr combines the know-how of various product groups and designs customized measuring stations worldwide. These range from manually operated devices to fully automated, robot-loaded solutions for inline measurements.



Individual Clamping Concepts

In the simplest case, these can be individual solutions that are equipped with specially adapted fixtures to securely fix the workpiece with its partially complex geometry. With simple means, the work for measurement technicians and machine operators in production is made simpler and more efficient.

Manual and Semi-Automated Solutions

On the way towards automation, Mahr offers various configurations of manual axes (linear and rotary axes) that can also be integrated into existing measuring stations. This makes it possible to further simplify the often very complex measuring sequences of a standardized measuring station.
With semi-automated measuring stations, measuring processes can be accelerated and measurement reliability increased. These measuring station concepts are characterized by an automated measuring sequence that guarantees reproducible and comparable measurement series. Setting up the measuring station for the respective measurement, however, is still carried out manually by the operator.



CNC Measuring Machines – Fully Automated and Reliable

Our fully automated customer solutions recognize and measure workpieces automatically, with high precision quickly, and therefore highly productively. CNC measuring systems based on the MarSurf LD 130, for example, can check the roughness and contour of small workpieces with a resolution of 0.8 nm – valve needles, nozzle bodies or spindle measurements of steering nuts. At the touch of a button, measurements will be performed fully automated and independent of the operator, resulting in highly reliable measurement results – even when comparing production sites worldwide.

For more information, please visit our website: www.mahr.com

Engineered Solutions

Customized Measuring Technology

Inline Solutions for the Modern Factory

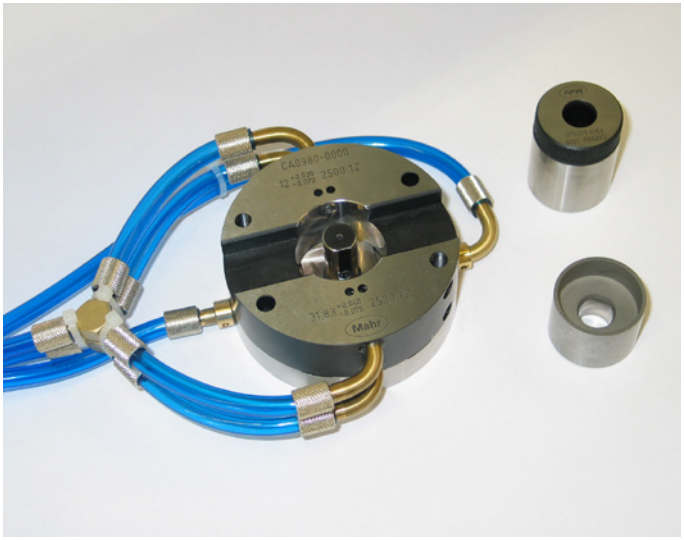
Engineered Solutions also offers production-integrated solutions that can independently capture the relevant measurement data to monitor production machines. According to customer requirements, the measuring devices can be loaded by robots, measure automatically, intervene as required and the measurement results can be cross-linked – for an intelligent production.

Fully automatic measuring rooms with robot loading guarantee an automatic and comprehensive quality inspection 24 hours a day without operator influence. Rejects are minimized, tool wear is detected immediately and costs are saved.



Non-Contact Measurements of Diameters and Lengths Using Air Pressure

Pneumatic metrology records dimensional deviations quickly and accurately. It has proven itself for years in industrial production and in the measuring room. Engineered Solutions offers pneumatic metrology from simple nozzle mandrel to highly complex pneumatic measuring devices, which is characterized by its robust functionality and high accuracy – down to 0.5 µm measurement accuracy.

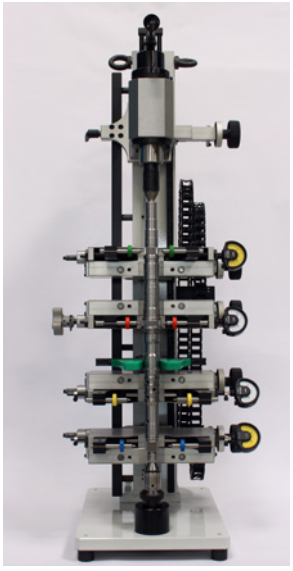


Measuring Devices – Manual or Integrated in Production

Mahr GmbH and SMPR stand for the development, manufacturing and sale of high-precision special solutions for measuring and testing equipment, special machines and automation technology especially for the automotive industry. The portfolio includes standardized ball gages for gears and shafts, concentricity and axial run-out devices to carry out dimensional testing of workpieces directly in the production environment. This allows rejected parts to be identified more quickly and an immediate reaction to be initiated. The flexible design of the measuring device allows a quick changeover for other workpiece types (different diameters).

In addition to the standardized solutions, Engineered Solutions offers individual solutions adapted to your specific measuring problem in the field of measuring devices: from simple plug gages, to handheld measuring tools in special design, gages and handheld measuring devices, SPC testing devices up to fully automatic measuring machines for 100% testing.

Are you also interested in implementing an intelligent production? Don't hesitate to contact us. Engineered Solutions will be happy to advise you on the way to an individual complete solution that fits your requirements.

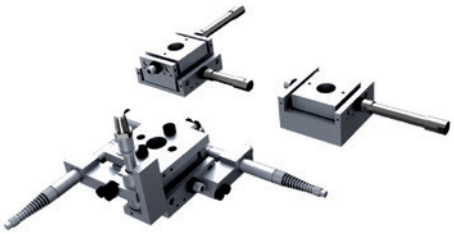


For more information, please visit our website: www.mahr.com

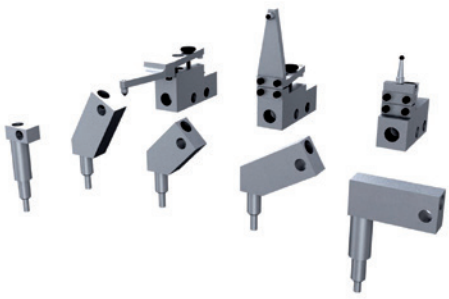
Engineered Solutions. Customized Measuring Devices

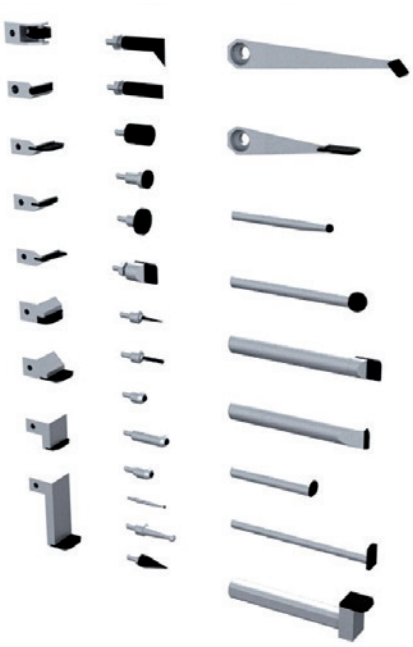
Millimar standard elements can be used for the flexible design and cost-effective realization of multi-gage measuring devices for a wide range of workpieces, e.g. rotationally symmetrical and non-rotationally symmetrical parts. Rotationally symmetrical workpieces can be mounted between centering tips or on prismatic supports, whereas non-rotationally symmetrical workpieces require a special holder. The extensive range of standard elements includes, for example, vertical and horizontal measuring stands, holders, coordinate measuring tables, block elements, spring parallelograms, swivel elements and a range of measuring anvils.











Engineered Solutions MarSolution

Standardized Measuring Devices

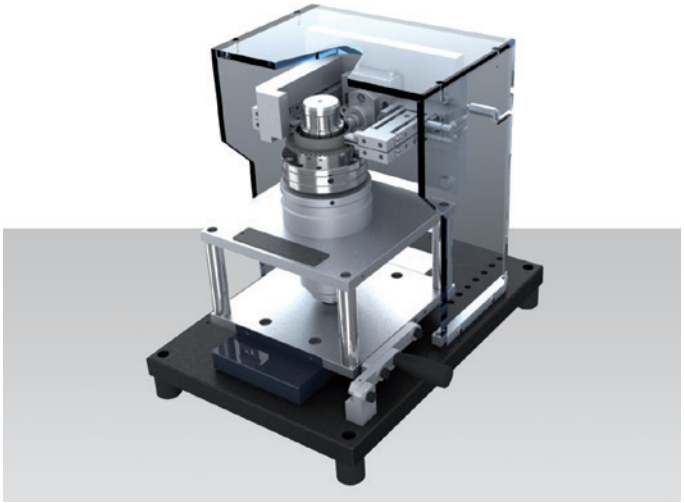
DESCRIPTION

Mahr's "MarSolution" product group offers special customized solutions in dimensional measuring technology – semi and fully automatic measuring systems that work directly in production. Mahr uses its tried and tested standard components (Millimar measuring interface, probes and standard elements) to provide reliable and accurate measuring technology. Always the right solution for your task. Mahr offers solutions for various sectors and industries.



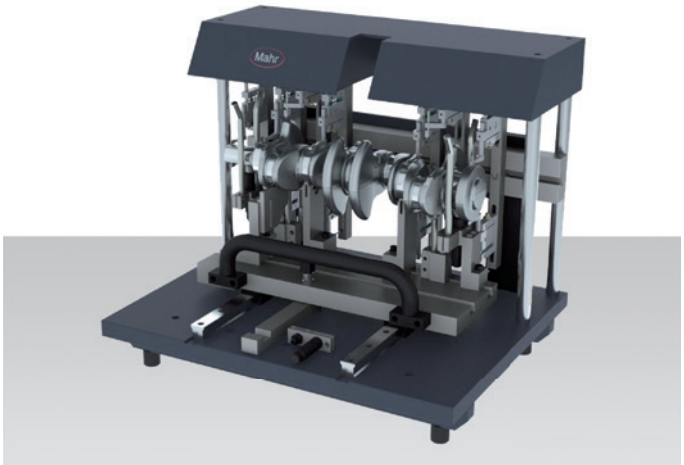
Vertical Measuring Device with Pivoting Workpiece Holder Between Centers

- These measuring devices allow inspection of diameter, length, and radial and axial runout for rotationally symmetrical parts.
- Available with manual or automatic swivel workpiece holder between centers.
- Motorized rotation also allows the option of dynamic workpiece measurement.



Measuring Device with Rotary Table

- Measuring devices with rotary table allow combined external and internal measurements and automatic radial and axial runout testing.
- This measuring device can also be motorized to enable dynamic measurements.



Horizontal Measuring Device

- Workpiece holder on V-blocks or between centers, including workpiece loading table.
- The horizontal measuring devices allow workpieces to be held on V-blocks or between centers. This system is particularly suitable for heavy workpieces.
- The workpiece can be inserted in the workpiece holder outside of the actual measuring station.

For more information, please visit our website: www.mahr.com

Engineered Solutions MarSolution

Measuring Devices based on Millimar Standard Elements

DESCRIPTION



Versatile

- The versatility of the Millimar standard elements means that the right solution can be provided, whatever the measurement task at hand.
- Whether outer, inner or length measurements, the Millimar standard elements can be adapted to the most diverse test requirements, even with difficult to reach workpiece geometries.
- Due to the compact design of the anvils, a large number of measuring points can be inspected within a small area of the testpiece.
- The pneumatic lifting mechanisms integrated in the measuring elements simplify the job of moving the testpiece into the measuring position and reduce wear to the measuring anvils.

Flexible

- The modular concept using Millimar standard elements throughout the whole system and a generous amount of travel in the measuring anvils (up to 20 mm), allow a high degree of flexibility in terms of the variety of testpieces that can be accommodated.

Precise

- The Millimar standard elements are specially designed for use in the workshop and are manufactured using a rigorous process. This guarantees that the measuring devices give stable and reliable measurements.
- For example, using measuring anvils fitted with two ball-bearing guides for supporting the moving part, it is possible to achieve measurement repeatability in the µm range, if this is required due to the tolerances of the feature being measured.

Reliable

- All components are long-lasting and low-maintenance due to the use of rust-proof materials and the selection of appropriate heat treatments. The use of lifting mechanisms to minimize the effects of friction on the measuring anvils when the workpiece is inserted, further reduces component wear.

Economical

- Our systems can either be constructed by the customer from standard catalog elements, or alternatively, we can provide turn-key solutions. Whichever option you choose, you can be sure that you are purchasing a system that is tailored to your specific requirements on the most favorable of terms.
- Below are just a few examples of the many factors that contribute to the cost effectiveness of the Millimar standard elements:
  - Standard elements can be reused: Once manufacture of a particular type of workpiece has ceased, all standard elements used in the test equipment can be reused to create new test equipment for a different type of workpiece
  - A choice of different mechanisms for guiding the moving part of the measuring anvils according to the accuracy requirements of the measuring task (optimum value for money)
  - Reduction in development and implementation time
  - Availability of devices: Our standard elements are manufactured under standard production conditions and are always available off the shelf and ready to use

For more information, please visit our website: www.mahr.com

Engineered Solutions MarSolution

Customer-specific Measuring Devices

DESCRIPTION

RPM series - commutator shaft measuring device

- The RPM measuring device is a simple and accurate solution for measuring diameters, roundness, radial run-out and bar-to-bar height, for example, of the commutator shaft or precision shaft in the electric motor.

- The RPM offers the following benefits:
  - Simple operation for efficient measuring
  - Fast measurements
  - Powerful functional analysis using the D1200X software



TC series - housing measuring device

- These measuring devices can be used to measure various types of housing, for example turbochargers, pumps, electric motors, housing. The measuring device is available as a standalone solution for close-to-production use or as an integrated version for 100% production control.



CR 240A: Automated measuring devices for connecting rods

- Simple measuring devices can be used to control various work sequences. Automatic solutions can perform all the measuring tasks for the final inspection.

- For example, the CR 240A measuring station can measure the usual dimensional features on a connecting rod and also offers the following functions:
  - Interchangeable measuring heads with pneumatic plug gages and Millimar P2004 inductive probe
  - Laser engraving of connecting rods, the complete housing protects against laser beams
  - Camera for check reading
  - Precise weighing system
  - D1200X measuring software with clear and simple user guide
  - Measurement results can be evaluated online to allow tool adjustments, statistical analysis, etc.

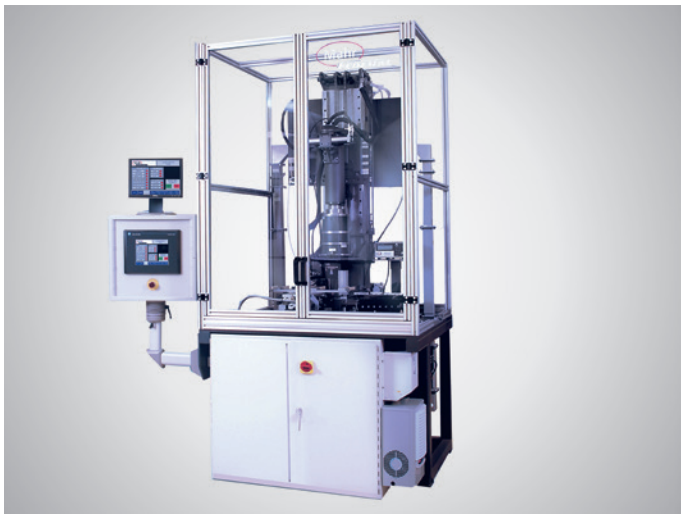


For more information, please visit our website: www.mahr.com

Engineered Solutions MarSolution

Customer-specific Measuring Devices

Dynamic measurements of the inner diameter of cylinder bores and wall thicknesses



- The cylinder liner measuring machine is a standalone version for automatically measuring the inner diameter of bores and the wall thickness of a diesel cylinder liner.
- A handling device allows fully automatic loading and unloading. The measuring machine is directly integrated in the production line. The cycle time for a complete measurement is less than 2 seconds.

- The measuring instrument consists of three stations:
  - The first station is the charging station where the temperature of the socket is measured.
  - At the second station the inner diameter of the bore is measured using a pneumatic plug gage. The second station also contains the diameter setting master for the pneumatic plug gage; the plug gage is automatically calibrated at regular intervals. This process guarantees maximum measuring accuracy and stability of the measuring results, even in the harshest of manufacturing environments.
  - At the third station a tactile measurement determines the wall thickness of the socket. The probes are automatically positioned at the relevant measuring points after loading. The wall thickness measurement takes just seconds. The probes are parked before the socket is removed from the measuring device to minimize wear to the contacting measuring elements.

Dynamic measuring of deformations in half-bearings



- Type 2152447 is an automatic standalone measuring instrument for measuring dimensional changes caused by pressure to half-bearings (e.g. for connecting rods).

- The half-bearing is automatically conveyed into the measuring machine and inserted into the relevant test chamber (semicircular holder), secured at one side, and a defined pressure is applied to the other free side (e.g. according to the operating mode of the subsequent motor assembly). A tactile probe system simultaneously measures the dimensional change circumferential to the half-bearing. After the measurement, the half-bearing is removed by the handling device.

- To ensure measuring accuracy throughout the process, the measuring device is automatically calibrated at regular intervals using a setting master.

- The entire process is computer-controlled with user-definable force parameters. Measuring records and databases can be created.

Measuring device for checking diameters on large rings



- Large rings (e.g. bearing rings) are subject to the most stringent tolerances. Checking these requires flexible measuring equipment that can cover a range of inner and outer diameters.

- The measuring device for large rings means that inner and outer diameters can be measured with just one device.

- It can measure inner diameters from 63.5 mm up to maximum 825 mm and outer diameters from 76.2 mm up to maximum 831 mm.

For more information, please visit our website: www.mahr.com

Mahr | Services

In addition to its many branches and agencies, Mahr also has a worldwide service network. To find the appropriate contact, visit the Mahr's website at **www.mahr.com** or refer to the back page of this catalog. Besides product related services, additional services are also available from various Mahr sites, reflecting the available experience and expertise in each case. We are happy to help with all your metrology questions, no matter how specific.



Mahr Academy 626

Application Advice 626

Technical Service 627

Maintenance Agreements 627

Calibration. Services 628

Mahr Academy



The **Mahr Academy** offers application specific product training courses and basic technical seminars. These programs can be held at fixed venues on predetermined dates, or arranged internally within your company. The subjects offered are relevant to all employees who work either directly or indirectly on production tasks. The courses are beneficial to new employees on the shop floor, in the inspection room and in the design department. They are equally valuable to employees who are looking to expand their knowledge.

MahrExpert seminars stand for:

- Trainers with practical experience
- Training concepts based on proven educational techniques
- Extensive, always up-to-date training documents
- Expert advice on all questions relating to the improved quality of technical products

We offer the following seminars:

- Product training at three levels (easy, advanced, professional)
- Basic training and seminars (on length metrology, surface metrology, form measurement, gear and cordinate metrology, AUKOM 1 Basic)
- Professional training to become an authorized measuring instrument representative and gage monitoring, measurement uncertainty, measuring instrument capability and process capability (organized and run in cooperation with the Technical Academy Wuppertal TAW/AfQ)

For more information, please visit our website: www.mahr.com

Application Advice



Do you need help with designing solutions for metrological tasks? Do you need to create measuring programs for complex workpieces? Do your users need some basic product training?

Take advantage of the services offered by our application engineering specialists, with their extensive knowledge and many years of experience in dimensional metrology.

The terms **Precimar, MarForm, MarSurf, Millimar** and **MarShaft** represent core skills in the fields of length metrology, form, contour and roughness metrology and shaft metrology. Our application engineering and technical service specialists also offer:

- Sample measurements
- Help with commissioning equipment
- Program creation
- Product training
- Measuring equipment capability testing
- User training

Technical Service

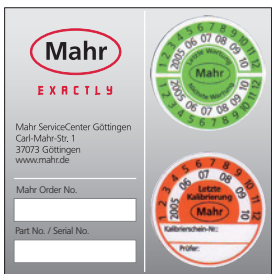


Mahr quality guidelines set high standards in which **Mahr measuring instruments** are developed and manufactured, using the very latest technology available. This guarantees that consistently, all **Mahr measuring instruments** are of the highest quality.

To assure that your machine/measuring station receives the best possible care, Mahr operates an efficient worldwide service organization. The **Mahr Service Organization**, run by trained specialists, is equipped with cutting edge tools and instruments, many of which have been specially developed, and stocks an extensive range of spare parts.

Mahr works according to progressive, tried-and-tested guidelines and offers a range of complementary services. To ensure the best results from your **Mahr measuring equipment** at all times, we recommend you use only the services offered by the **Mahr Service Organization**. This is the only way of ensuring that only **original Mahr spare parts** and servicing procedures are used, reflecting the stringent **Mahr quality standard**.

Visit Mahr's website at **www.mahr.com** to find your nearest **Mahr Service Center**.



Maintenance for Measuring Systems



The **operational availability** of your measuring equipment is very important. To ensure smooth operation over many years, Mahr recommends your equipment be **regularly inspected**. Regular inspection of your measuring equipment results in **considerable advantages**:

- Unexpected equipment failures are prevented
- Wear parts are exchanged in reasonable time and within the framework of the agreed service intervals
- Keeps your equipment running at peak performance, including incorporation of future product improvements
- Provides the best conditions for your quality assurance system
- With a service agreement you minimize operation costs and optimally retain the value of your machine. Preventative maintenance can be planned and leads to an undisturbed operation of production
- Maximal operational readiness by the setting of all mechanisms, pneumatic and electronic functions as well as the examination of software used
- Complete, intensive examination is conducted only by Mahr specialists
- Calibration certificates are issued
- Early detection of trouble due to wear leads to a decrease in idle time and ensuing costs

For more information, please visit our website: www.mahr.com

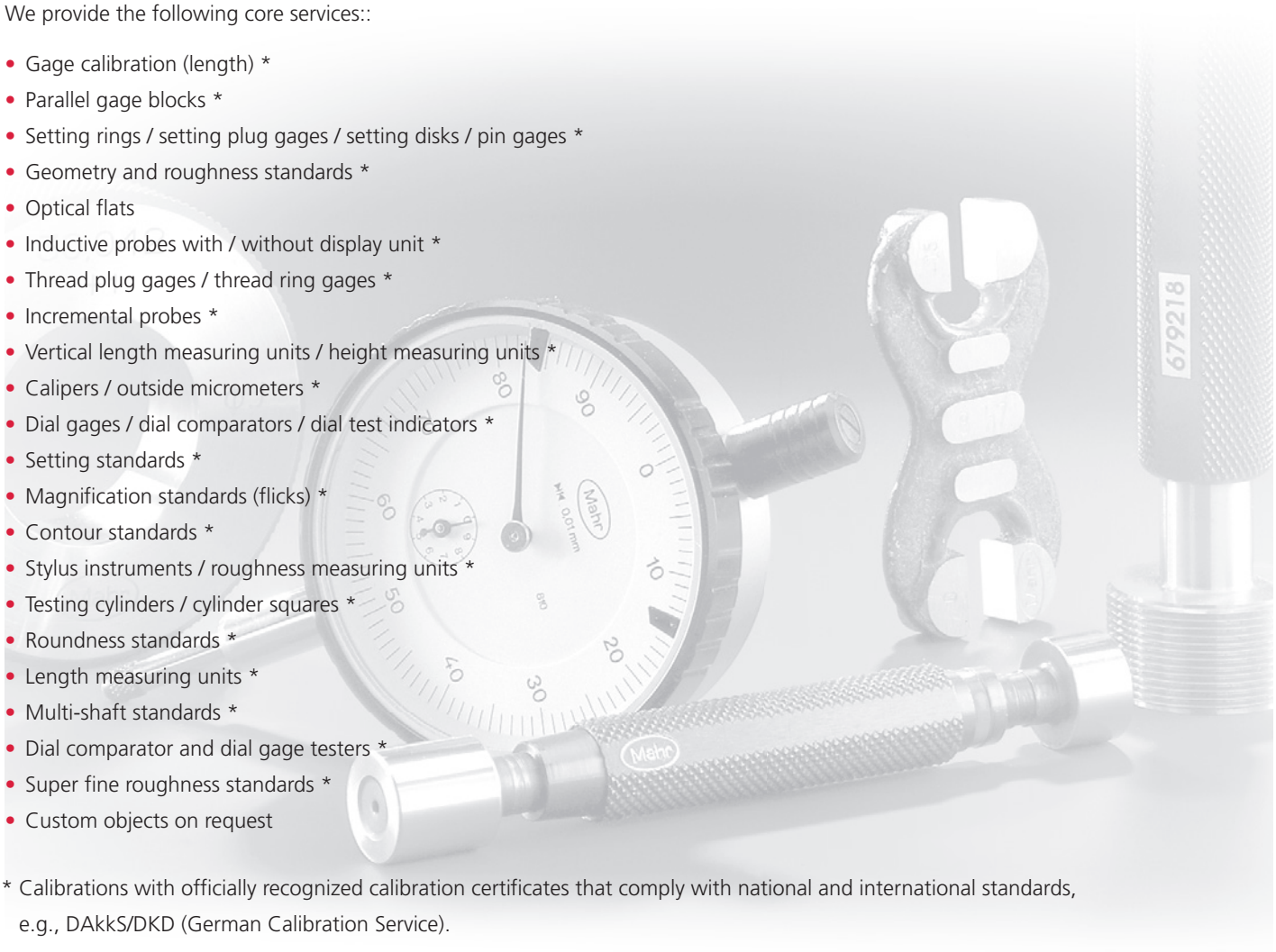
Calibration Services Measuring Systems





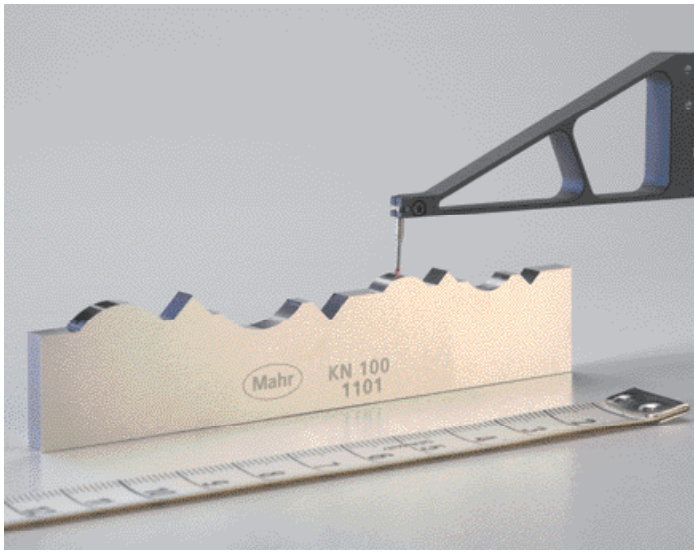
Mahr runs **laboratories** for **various instruments** and **instrument sizes** in the field of **length metrology**. These ensure high dimensional accuracy and **very low measurement uncertainties**. In principle, **all measuring equipment** can be calibrated
We provide the following core services::

- Gage calibration (length) *
- Parallel gage blocks *
- Setting rings / setting plug gages / setting disks / pin gages *
- Geometry and roughness standards *
- Optical flats
- Inductive probes with / without display unit *
- Thread plug gages / thread ring gages *
- Incremental probes *
- Vertical length measuring units / height measuring units *
- Calipers / outside micrometers *
- Dial gages / dial comparators / dial test indicators *
- Setting standards *
- Magnification standards (flicks) *
- Contour standards *
- Stylus instruments / roughness measuring units *
- Testing cylinders / cylinder squares *
- Roundness standards *
- Length measuring units *
- Multi-shaft standards *
- Dial comparator and dial gage testers *
- Super fine roughness standards *
- Custom objects on request



* Calibrations with officially recognized calibration certificates that comply with national and international standards, e.g., DAkkS/DKD (German Calibration Service).

Calibration Services Measuring Systems



DAkkS
Deutsche
Akkreditierungsstelle
D-K-15074-01-00

DAkkS/DKD (German Calibration Service) is a signatory of the multilateral agreement by the European cooperation for Accreditation **(EA)** and the International Laboratory Accreditation Cooperation **(ILAC)** concerning the mutual recognition of calibration certificates.

Your **Mahr contact** will provide you with information on national and international recognition, e.g., as part of the multilateral agreements
www.european-accreditation.org and www.ilac.org

Mahr Inc. offers an inspection and recalibration program for dimensional standards, and calibration and certification services for a wide range of gages. ISO/IEC 17025 Accreditation defines general requirements for the competence of testing and calibration laboratories.

NVLAP® **National Voluntary Laboratory Accreditation Program**

CALIBRATION LABORATORIES **NVLAP LAB CODE 200605-0**

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

America

USA
Mahr Inc.
1144 Eddy Street
Providence, RI 02905, USA
Phone: +1 401 784-3100
+1 800 343-2050 (toll-free)
Fax: +1 401 784-3246
information@mahr.com

Mahr Inc.- Cincinnati Resource Center
4450 Olympic Blvd.
Erlanger, KY 41018, USA
Phone: +1 859 525-6116
Fax: +1 859 525-0481
information@mahr.com

Mahr Inc.- L. A. Resource Center
Division: Metrology
11135 Knott Ave., Suite H
Cypress CA 90630, USA
Phone: +1 714 379-7051
Fax: +1 714 379-0468
information@mahr.com

Mahr Metering Systems Corporation
1415 A Cross Beam Dr.
Charlotte, NC 28217, USA
Phone: +1 704 525-7128
+1 800 459-7867 (toll-free)
Fax: +1 704 525-8290
information@mahrusa.com

Mahr Inc.
150 N Tucson Blvd.
AZ 85716-4740 Tucson, USA
Phone: +1 (520) 296-3068
Fax: +1 (520) 296-2897
information@mahr.com

Mexiko
Mahr Corp. de México S.A. de C.V.
Francisco Garza Sada #690,
Col. Chepevera
64030 Monterrey,
Nuevo León, México
Phone: +52 81 8333-2010
Fax: +52 81 8347-2793
ventasmexico@mahr.com

Mahr - MarOpto Resource Center.
Division: Metrology
150 N Tucson Blvd
Tucson AZ 85716, USA
Phone: +1 520 296-3068
Fax: +1 520 296-2897
info@esdimetrology.com

Brasil
Mahr do Brasil Ltda.
Rua Joana Foresto Storani
500 Galpão 3C - Distrito Industrial
13-280-000 Vinhedo - Sao Paulo
Brazil
Phone: +55 (19) 3876-8600
Fax: +55 11 98203-9834
apoio.vendas@mahr.com.br

Europe

Germany
Mahr GmbH
Carl-Mahr-Str. 1
37073 Göttingen, Germany
Phone: +49 551 7073-800
Fax: +49 551 7073-888
info@mahr.de

Mahr GmbH
Site Esslingen
Reutlinger Straße 48
73728 Esslingen, Germany
Phone: +49 711 9312-600
Fax: +49 711 9312-725
mahr.es@mahr.de

Mahr GmbH
Site Jena
Carl-Zeiss-Promenade 10
07745 Jena, Germany
Phone: +49 551 7073-800
Fax: +49 551 7073-808
info-jena@mahr.de

Mahr GmbH Applikations-Zentrum
Berlin / Chemnitz
An der Hopfendarre 7
09212 Limbach-Oberfrohna, Germany
Phone: +49 3722 736-310
Fax: +49 3722 736-320
Applikationszentrum-Vertrieb@mahr.de

Mahr GmbH Niederlassung Südwest
Reutlinger Straße 48
73728 Esslingen, Germany
Phone: +49 711 9312-800
Fax: +49 711 9312-815
Niederlassung-Suedwest@mahr.de

Mahr GmbH Niederlassung Nord
Hatzfelder Straße 161
42281 Wuppertal, Germany
Phone: +49 202 758187-0
Fax: +49 202 7100-57
Niederlassung-Nord@mahr.de

Mahr GmbH Niederlassung Südost
Hopfenstr. 30
85283 Wolnzach, Germany
Phone: +49 8442 96266-0
Fax: +49 8442 96266-11
Niederlassung-Suedost@mahr.de

Mahr MWF GmbH
Melberstraße 9
63762 Großostheim, Germany
Phone: +49 6026 9728-0
Fax: +49 6026 9728-20
info-mwf@mahr.de

Poland
Mahr Polska Sp. z o.o.
ul. Pulawska 5/4
02-515 Warsaw, Poland
Phone: +48 607 665446
arkadiusz.kolakowski@mahr.com

Mahr Russia
Ogorodniy proezd, 20 str.1 Office 204a
127322 Moscow, Russia
Phone: +7 (929) 6465190
Alexey.Golovkin@mahr.de

Czeck Republic
Mahr spol. s.r.o.
Ulice Kpt. Jaroše 552
41712 Proboštov, Czech Republic
Phone: +420 417 816 711
Fax: +420 417 560 237
Info-cz@mahr.com

Slowakia
Mahr Metrológia, s.r.o.
Seberíniho 482/1
821 03 Bratislava, Slovak Republic
Phone:+421 2 321 212 16
Info-sk@mahr.com

Hungary
Mahr Magyarország Kft.
Gyár u. 2 (101. Épület)
2040 Budaörs, Hungary
Phone: +36 1 414 0177
Fax: +36 1 414 0178

Austria
Mahr Austria GmbH
Hirschstettnerstraße 19-21
1220 Wien, Austria
Phone: +43 1 204 36 73-0
Fax: +43 1 204 36 73-15
info-austria@mahr.com

France
Mahr France
6, rue Lavoisier-Z.I.
91430 Igny, France
Phone: +33 1 69351919
Fax: +33 1 69351900
info@mahr.fr

Switzerland
Mahr AG Schweiz
Zürcherstrasse 68
8800 Thalwil, Switzerland
Phone: +41 44 723 39 99
Fax: +41 44 723 39 98
ch@mahr.com

United Kingdom / Ireland
Mahr U.K. Plc.
19 Drakes Mews
Crownhill, Milton Keynes
MK 8 0ER, Great Britain
Phone: +44 1908 563700
Fax: +44 1908 563704
info-uk@mahr.com

Spain
Mahr Metrologia S.L.
Paseo de Gracia 118
08008 Barcelona, Spain
Phone: +34 932 553 197
info-es@mahr.com

Asia

China
Mahr Trading Co., Ltd.
Unit 2701, East Tower, Guangzhou
International Commercial Center,
510620 Guangzhou, China
Phone: +86 20 3887-1132/-1173
Fax: +86 20 3887-1172
info@mahr.com.hk or
sales@mahr.com hk

Mahr Trading Co., Ltd.
88 Jiangchangsan Road,
Shibei Hi-tech Park, Zhabei District,
200436 Shanghai, China
Phone: +86 21 5238 5353
Fax: +86 21 5238 6012
info@mahr.com.hk or
sales@mahr.com.hk

Mahr Trading Co., Ltd.
RM 1006, Saturn Tower C3, No. 8
Xingguangwu road, Yubei Dist
401121 Chonqing, China
Phone: +86 (23) 6321-9971
Fax: +86 (23) 6321-9982

Mahr Precision Metrology (Suzhou) Ltd.
#399 Su Hong Road
Suzhou Industrial Park
215122 Suzhou, P.R. China
Phone: +86 512 62585-862
Fax: +86 512 62585-870
info_suzhou@mahr.com

Korea
Mahr Korea Ltd.
Hyein B/D 2F, 200, Jangchungdan-ro
100-391 Jung-gu, Seoul, Korea
Phone: +82 2 579 4981
Fax: +82 2 579498-6/-7
sales@mahr.co.kr

Japan
Mahr Japan Co., Ltd.
712-4-1, Mamedo-cho, Kohoku-ku,
222-0032 Yokohama, Japan
Phone: +81 45 540-3591
Fax: +81 45 540-6251
info@mahr.co.jp

Malaysia
Mahr Malaysia Sdn. Bhd.
No. 130, Block B 1,
Leisure Commerce Square
No. 9, Jalan PJS 8/9,
46150 Petaling Jaya, Selangor
Malaysia
Phone: +60 3 7877-2060
Fax: +60 3 7877-2040
sales_msea@mahr.com

Thailand
Mahr S.E.A. Co. Ltd.
719 KPN Tower, 20th Floor
Rama 9 Rd., Bangkapi, Huaykwang
Bangkok 10310, Thailand
Phone: +66 2 717 1050-2
Fax: +66 2 717 1055
Valeerut.Amadtirut@mahr.com

India
Mahr Metrology India Pvt. Ltd.
Chennai Office
B-6, 4th Street, Reddipalayam Road,
Mogappair West Estate
600 037 Chennai, India
Phone: +91 (44) 4617 5555
Fax: +91 (44) 4617 5505
mahrindia@mahr.com

Mahr Metrology India Pvt. Ltd.
Bangaluru Office
No.180, Ground Floor, "Kyaswar Mansion"
16th Main Road, 4th T Block, Jayanagar,
560 041 Bangalore, India
Phone / Fax:
+91 20 2665 1396
mahrindia@mahr.com

Mahr Metrology India Pvt. Ltd.
Pune Office
RH No.5, Clover Mews,
Park Street, Viman Nagar,
411 014 Pune, India
Phone / Fax:
+91 20 6520 0367
mahrindia@mahr.com

Metrology India Pvt. Ltd.
Delhi Office
131 & 132, JMD Megapolis ,1st Floor,
Sector 48, Sohna Road, Gurgaon
122 002 Haryana, India
Phone: +91 (124) 4968767
Fax: +91 11 4231 6372
mahrindia@mahr.com

Mahr Metrology India Pvt Ltd
Ahmedabad (Gujarat & MP)
Phone: +91(0) 90990 94080,
+91(0) 90990 05302

Please refer to our website www.mahr.com
for addresses of our worldwide Sales Partners
(not included in the Mahr Group)

© by Mahr GmbH, Esslingen / Göttingen

We reserve the right to make changes to our
products, especially due to technical improve-
ments and further developments.
All illustrations and technical data are therefore
without guarantee.

3760703 – 01.12.2019
Printed in Germany

Mahr GmbH

Carl-Mahr-Straße 1
37073 Göttingen
Germany
Tel.: +49 551 7073-800
Fax: +49 551 7073-888

Reutlinger Str. 48
73728 Esslingen
Germany
Tel.: +49 711 9312-600
Fax: +49 711 9312-725

info@mahr.com
www.mahr.com

© Mahr GmbH

We reserve the right to make changes to our products, especially due to technical improvements and further developments. All illustrations and technical data are therefore subject to change.

3760703 | 07.2021

Mahr | Metrology

Supplementary Catalog 2020/2021









Supplement to the General Catalog 2019

Solutions for your measurement challenges

Innovative solutions for every measuring task – that's what Mahr offers you. All products combine proven precision and high efficiency to make your work as productive as possible.

Your global partner for **efficient quality assurance**

Content

MarCal
Digital Workshop Caliper 4

Multimar
Universal Measuring Instruments 5

Millimar
Modules for Inductive Probes 6

Marameter
Indicating Measuring Instruments 10

Precimar
Precision Length Measurement 19
Length Measuring Bench 20

MarSurf
Mobile Roughness Measuring Instrument 21
White Light Interferometers 25

MarForm
High-Precision Universal Form Measuring Instruments 28

MarOpto
Measuring Instruments for the Optical Industry 29

MarCal 18 EWRi

Digital workshop caliper

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- HOLD (storage of measured values)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- Reversal of counting direction
- mm/inch
- LOCK function (key lock)
- DATA (data transmission)

FEATURES

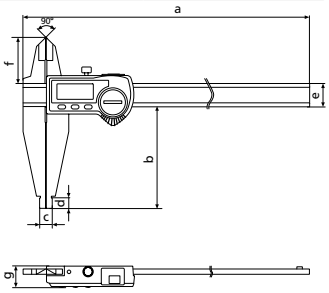
- High contrast analog display
- Locking screw above
- Rounded measuring blades for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideway for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS–232 interface)
- **Digit height:** 12,5 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **Battery type:** CR 2032 (3V Lithium)
- **IP protection category:** IP 65
- **Package contains:** battery, instruction manual, case



TECHNICAL DATA

Order no.	Type	Measuring range	Resolution	Measuring blades for outside measurements	Error limit	Standard
		mm	mm/inch		mm	
4112571	18 EWRi	0 –300	0,01 / .0005″	•	0,03	Factory standard
4112572	18 EWRi	0 –500	0,01 / .0005″	•	0,04	Factory standard
4112573	18 EWRi	0 –750	0,01 / .0005″	•	0,05	Factory standard
4112574	18 EWRi	0 –1000	0,01 / .0005″	•	0,06	Factory standard

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4112571	430	90	10	10	20	40
4112572	650	150	20	20	25	55
4112573	905	150	20	20	25	55
4112574	1165	150	20	20	30	60



ACCESSORIES

Order no.	Description	Type
4102220	Receiver for instruments with Integrated Wireless	i-Stick



i-Stick

Multimar 25 EWRi

Digital universal calipers

FUNCTIONS

- ON/OFF
- AUTO-ON / OFF
- HOLD (storage of measured values)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- Reversal of counting direction
- mm/inch
- LOCK function (key lock)
- DATA (data transmission)

FEATURES

- Can be customized to the measuring task thanks to modular accessories (optional)
- Digital display can always be read as the measuring elements can be installed on the top or bottom
- The application range can be extended by turning the measuring arms
- The two arm holders can be moved along the rail for optimal balance, which is particularly practical with small dimensions
- Slide and rail are made of hardened stainless steel
- **Data interface:** Integrated wireless
- **IP protection category:** IP 65
- **Software:** MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS–232 interface)
- **Energy supply:** Battery life approx. 3 years (approx. 0.5 in wireless mode)
- **Battery type:** CR 2032 (3V Lithium)



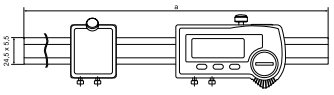
Application:
For measuring:

- Outer and inner diameters
- Centering shoulders
- Narrow collars
- Outer and inner tapers
- Dovetails
- Recesses
- Bore distances

TECHNICAL DATA

Order no.	a	Type	Application range outside	Resolution	Error limit
	mm		mm	mm/inch	mm
4119050	480	25 EWRi	0 –300	0,01 / .0005"	0,03
4119051	790	25 EWRi	0 –600	0,01 / .0005"	0,03
4119052	1200	25 EWRi	0 –1000	0,01 / .0005"	0,04
4119053	1450	25 EWRi	0 –1250	0,01 / .0005"	0,04

Order no	a
	mm
4119050	480
4119051	790
4119052	1200
4119053	1450



ACCESSORIES

Order no.	Description	Type
4102220	Receiver for instruments with Integrated Wireless	i-Stick
4102520	Battery 3 V, CR 2032	
4118520	Setting gage	25 Eel
4119010	Measuring tips for drill hole intervals, Ø 2–20 mm	25 Eba
4119011	Measuring tips for drill hole intervals, Ø 10–40 mm	25 Eba
4503020	Case for accessories	844 Tzb
4503024	Measuring arms, 25 mm	844 Te
4503025	Measuring arms, 35 mm	844 Te
4503026	Measuring arms, 70 mm	844 Te
4503027	Measuring arms, 100 mm	844 Te
4503030	Mounting attachment	844 Tma
4503031	Mounting attachment	844 Tmi
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	844 Tw



Millimar C 1202

Compact amplifier

FUNCTIONS

- mm/inch
- TOL (Tolerance and Warning Limits Input)
- PRESET (for entering a numerical value)
- Mastering 1 and 2 point
- MAX/MIN memory for searching the reversal point
- (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)
- Selectable resolution
- Factor (adjustable)
- Reversal of counting direction
- Control input programmable
- Measuring sequence with time control
- DATA (data transmission)
- Menu interlock

FEATURES

- Versatility for a wide range of measuring tasks.
- N 1700 modules as measuring channels for inductive and incremental probes or for pneumatic measuring equipment.
- High-resolution, high-contrast color display
- Fully adjustable display for ideal viewing angle
- Measurement values can be displayed in three ways: as a number, pointer or bar
- 1 –3 features can be displayed at once
- Extremely easy to operate
- Several measuring tasks can be stored on the memory card.
- Compact housing
- Suitable for wall-mounting
- **Package contains:** power source, micro SD memory card, instruction manual, without N 1700 module (necessary optional accessory)
- **Software:** MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS–232 interface)



Application:

Indicating instrument for precise length measurements

- for connecting different sensors by way of N1700 measuring modules
- for connecting up to 2 measuring sensors
  Please note: N1700 measuring modules are necessary additional accessories

TECHNICAL DATA

Order no.		5312025
Type		C 1202
Display		TFT-Farbdisplay 110 mm (4,3"), 480 x 272 Pixel
Range of digital display	µm	± 999 999,9
Range of analog display	µm	± 5000, ± 2000, ± 1000, ± 300, ± 100, ± 30, ± 10, ± 3
Resolution	µm	0,01, 0,1, 1
Scale graduation value	µm	500, 200, 100, 20, 10, 2, 1, 0,2
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B
Features		3
Dynamic functions		Max, Min, TIR (Max-Min), (Max+Min)/2, Average
Statistical functions		Length, Angle
Configuration		Keyboard
Data transmission rate	Hz	30
Refresh rate	fps	40
Error limit, digital display		0.3% (min. 0.2 µm); * 0,3 % (min. 0,04 µm) * with N 1702 M-HR
Error limit, analog display		0.25% of the end scale value / 0.3% of the displayed value
Data interface:		USB, Digimatic
Control inputs		Control input programmable (functions and function sequences)
Energy supply:		Power source, 230 V/115 V; 50/60 Hz
IP protection category:		IP 42

Order no.	Depth	Height	Width
	mm	mm	mm
5312025	130	175	145

Millimar C 1202

Compact amplifier

ACCESSORIES

Order no.	Description	Type
5331120	Module for inductive probes	N 1702 M
5331125	Module for inductive probes	N 1702 M-HR
5331121	Module for inductive probes	N 1702 T
5331122	Module for inductive probes	N 1702 U
5331155	Module for pneumatic gages	N 1701 PF–2500/5000
5331157	Module for pneumatic gages	N 1701 PF–10000
4102603	Data cable USB bi-directional (2 m)	DK-U1
4102606	Interface Adapter with Data Cable Digimatic (2 m)	DK-D1
4102058	Foot switch to trigger data transmission	16 ESf







Millimar N 1702 T / N 1702 U / N 1702 M-HR

Module for inductive probes

FEATURES

- Flexibly configurable RS485 bus modules
- Powerful connection modules for evaluating measuring sensors (inductive/pneumatic)
- Synchronous data retrieval from multiple connected measuring probes
- Connection of N 1700 modules via USB interface to the smart, universal evaluation and configuration software Millimar Cockpit
- Connects all compatible probe types using one module
- Flexible and modular product combinations to tackle customer-specific measuring tasks
- Maximum theoretical bus data rate of 4189 values/s (depending on the number of connected channels)
- **Package contains:** instruction manual





Application:

Smart and flexible combination of measuring modules and software for solving customer-specific measuring tasks.

TECHNICAL DATA

Order no.		5331121	5331122	5331125
Type		N 1702 T	N 1702 U	N 1702 M-HR
Resolution	µm	0,1		0,01
Measuring range, inductive probe	µm	± 5000, ± 2000, ± 1000, ± 500		± 200
Probe inputs		2		
Compatibility		Tesa	Marposs	Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT
Configuration		Millimar Cockpit Software		
Data transmission rate	Hz	4189		
Error limit		0,3 % (min. 0,2 µm)		0,3 % (min. 0,04 µm)
Data interface:		RS–485		
Current consuption	mA	95	110	
Energy supply:		+ 5V from N 1700 Bus		
IP protection category:		IP 42		

Order no.	Depth	Height	Width
	mm	mm	mm
5331121	77	54,8	66
5331122	77	54,8	66
5331125	77	54,8	66

Millimar N 1702 T / N 1702 U / N 1702 M-HR

Module for inductive probes

ACCESSORIES

Order no.	Description	Type
4400190	Inductive probe, ± 1 mm	P1300 TA
4400191	Inductive probe, ± 1 mm	P1300 TB
5323011	Inductive probe, ± 2 mm	P2004 T
5323021	Inductive probe, ± 2 mm	P2004 TA
5323031	Inductive probe, ± 2 mm	P2004 TB
5324021	Inductive probe, ± 5 mm	P2010 TA
5324031	Inductive probe, ± 5 mm	P2010 TB
5324071	Inductive probe, ± 2 mm	P2104 TA
5324081	Inductive probe, ± 2 mm	P2104 TB
5331138	Extension cable, length 2 m	N 1700 RS485
5323013	Inductive probe, ± 2 mm	P2004 U
5323023	Inductive probe, ± 2 mm	P2004 UA
5323033	Inductive probe, ± 2 mm	P2004 UB
5324023	Inductive probe, ± 5 mm	P2010 UA
5324033	Inductive probe, ± 5 mm	P2010 UB
5324073	Inductive probe, ± 2 mm	P2104 UA
5324083	Inductive probe, ± 2 mm	P2104 UB
5313400	Inductive probe, ± 2 mm	1340
5313010	Inductive probe, ± 1 mm	1301
5313030	Inductive probe, ± 1 mm	1303
5313049	Inductive probe, ± 1 mm	1304 K
5323010	Inductive probe, ± 2 mm	P2004 M
5323020	Inductive probe, ± 2 mm	P2004 MA
5323030	Inductive probe, ± 2 mm	P2004 MB
5324070	Inductive probe, ± 2 mm	P2104 MA
5324080	Inductive probe, ± 2 mm	P2104 MB
5323040	Inductive probe, ± 0,5 mm	P2001 M
4400180	Inductive probe, ± 2 mm	P1300 MA
4400181	Inductive probe, ± 2 mm	P1300 MB
5313180	Inductive probe, –0,3 . . . 1 mm	1318



High-precision comparative measurements of holes

Inside measuring probes from the 844 K family are 2-point comparative measuring instruments used to determine a reversing point in a hole by oscillation. This reversal point equates to the minimum and thus the exact bore diameter.

Measuring process

The measuring value is displayed via analog dial comparators or electronic dial indicators.

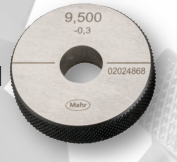
Practical tip

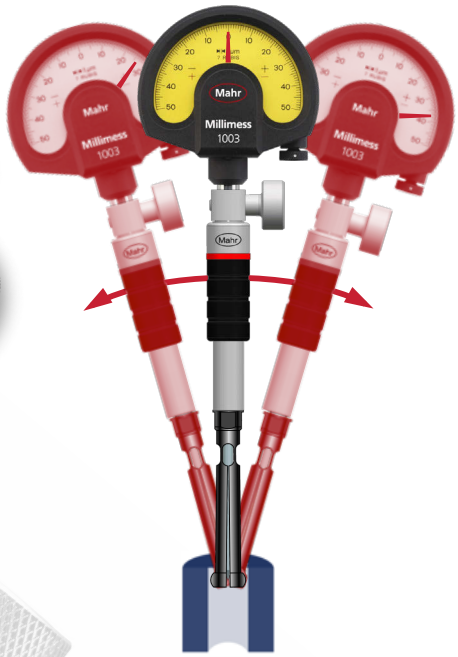
An electronic dial indicator such as type 1087 BR or 1087 BRi, offers the major advantage of being able to automatically record the reversing point using the MIN function and display an absolute measuring value on the screen thanks to the PRESET setting. In addition, you can conveniently and reliably transfer the measuring data to a PC or a CAQ system by data cable or Integrated Wireless technology.



Setting the comparative measuring instrument

Setting rings are used to set the instrument to the respective nominal



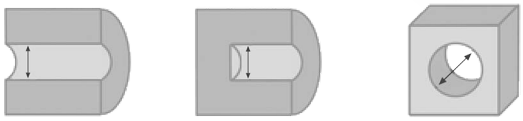


Measuring process

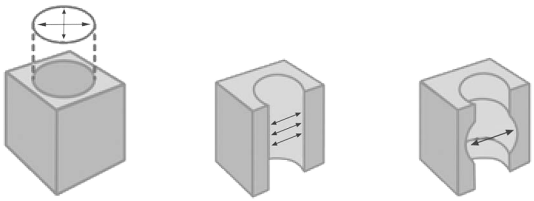
The reversing point (minimum value) is calculated by oscillation in a hole .

Typical applications of self-centering inside measuring probes

- Rapid testing of hole diameters



- Determining roundness and cylindricity deviations by rotating and moving to other bore depths





Special advantages

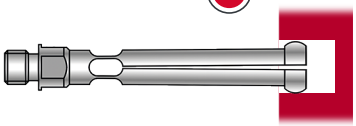
Setting rings are used to set the instrument to the respective nominal size.

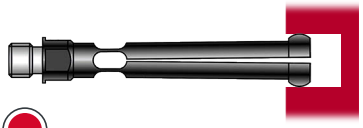
- Self-centering in the hole
- Fast determination of reversing point by oscillation
- Measuring value displayed immediately
- Ideal for processing measuring values directly especially when used with digital indicating instruments

Inside measuring probe models (split-ball probe)

844 K Standard for common hole shapes

- Split-ball probe made of hardened steel
- Hard chrome-plated measuring surfaces



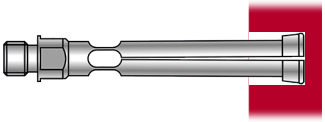


844 KC for common hole shapes with DLC coating

- Split-ball probe made of hardened steel
- Measuring surfaces and inner edges coated with DLC (hard diamond-like coating)
- Enhanced wear protection and very low friction coefficients, therefore
- ideal for measurements in sensitive or abrasive surfaces
- For common hole shapes

844 KS split-ball probe for bore measurements close to the bottom of the hole

- Split-ball probe made of hardened steel
- Hard chrome plated measuring surfaces



Particular advantages of DLC coating

- **DLC coating** (diamond-like carbon)
- Extremely hard coating for **very high wear resistance**
- **Extremely low friction coefficient, thus preventing** e.g.
  - streaking on precision-machined non-ferrous metal surfaces
  - increased wear in abrasive materials
- DLC coating over entire measuring surfaces including inner contact point of driving needle, for **very high long-term accuracy (Linearity)**
- **Visual wear display:** Visible light spot once coating is worn out
- **Excellent corrosion prevention**

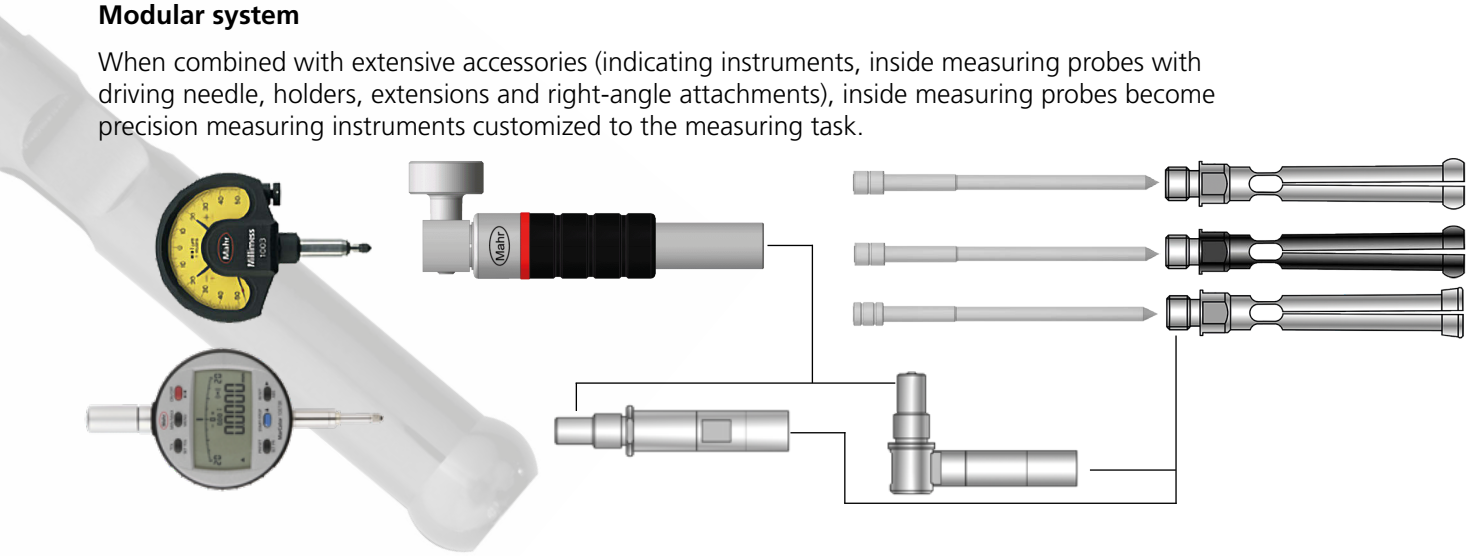
Ideal equipment for long-term accuracy

Driving needles are inserted in the probe to transfer the measuring movement of the probe head to the indicating instrument. To ensure **maximum service life** and thus **high linearity** in the **long term**, **Mahr driving needles are usually made of solid carbide.**



Modular system

When combined with extensive accessories (indicating instruments, inside measuring probes with driving needle, holders, extensions and right-angle attachments), inside measuring probes become precision measuring instruments customized to the measuring task.



Marameter 844 KC

Self-centering dial bore gage

FEATURES

- **Measuring head made in harden steel, DLC coated**
- Constant measuring force as a result of built-in spring, eliminating user influence
- Extensive modular system is composed of measuring head, transfer needle, holder, depth extension, right angle attachments and setting rings

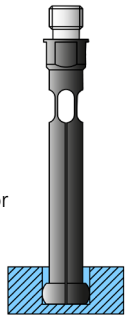
- **Benefits of DLC-Coating**
  - Explanation DLC = Diamond Like Carbon
  - Extremely high wear resistance, for long service life even on hard or abrasive surfaces
  - Reduction of friction, ideal for sensitive surfaces such as non-ferrous metals and aluminium alloys
  - Wear indicator, worn areas appear as bright spots in the dark DLC coating

- **The minimum set of a measuring instrument consists of:** Measuring head, transfer needle and holder plus indicator unit
- **Package contains:** Measuring holder 844 Kg, probe, expanding pin, wooden case, excludes indicator



Application:
Standard model with DLC-coated surface

- For indicating measurment of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point per rocking in the bore



TECHNICAL DATA

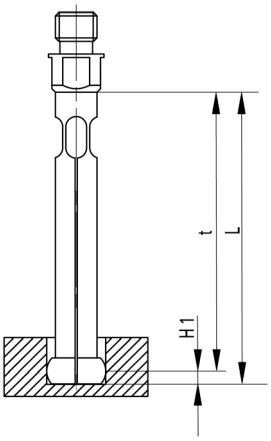
Order no.	Type	Nominal size	Individual probe measuring range mm	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	Piece		µm
4473105	844 KC	1,00 1,10 1,20 1,30 1,40	**0,95** –1,15 1,07 –1,25 1,17 –1,35 1,27 –1,45 1,37 - **1,55**	5	2 %, min. 1 µm	1
4473106	844 KC	1,75 2,00 2,25 2,50 2,75 3,00 3,25 3,50 3,75	**1,50** –1,90 1,80 –2,20 2,05 –2,45 2,30 –2,70 2,55 –2,95 2,80 –3,20 3,05 –3,45 3,30 –3,70 3,55 - **3,95**	9	1 %, min. 1 µm	1
4473107	844 KC	4,00 4,50 5,00 5,50 6,00 6,50 7,00 7,50 8,00 8,50 9,00 9,50	**3,70** –4,30 4,20 –4,80 4,70 –5,30 5,20 –5,80 5,70 –6,30 6,20 –6,80 6,70 –7,30 7,20 –7,80 7,70 –8,30 8,20 –8,80 8,70 –9,30 9,20 - **9,80**	12	1 %, min. 1 µm	1
4473108	844 KC	1,75 2,00 2,25 2,50 2,75 3,00 3,25 3,50 3,75 4,00 4,50 5,00 5,50 6,00 6,50 7,00 7,50 8,00 8,50 9,00 9,50	**1,50** –1,90 1,80 –2,20 2,05 –2,45 2,30 –2,70 2,55 –2,95 2,80 –3,20 3,05 –3,45 3,30 –3,70 3,55 –3,95 3,70 –4,30 4,20 –4,80 4,70 –5,30 5,20 –5,80 5,70 –6,30 6,20 –6,80 6,70 –7,30 7,20 –7,80 7,70 –8,30 8,20 –8,80 8,70 –9,30 9,20 - **9,80**	21	1 %, min. 1 µm	1
4473109	844 KC	10,00 11,00 12,00 13,00 14,00 15,00 16,00 17,00 18,00 19,00 20,00	**9,40** –10,60 10,40 –11,60 11,40 –12,60 12,40 –13,60 13,40 –14,60 14,40 –15,60 15,40 –16,60 16,40 –17,60 17,40 –18,60 18,40 –19,60 19,40 - **20,60**	11	1 %, min. 1 µm	1

Marameter 844 KC

Self-centering dial bore gage

Order no.	Nominal size	H1 mm	L mm	Measuring depth mm
	mm			mm
4473005	1,00	0,6	19,50	10,5
	1,10	0,6	19,50	10,5
	1,20	0,6	19,50	10,5
	1,30	0,6	19,50	10,5
	1,40	0,6	19,50	10,5
4473006	1,75	0,9	25,30	16
	2,00	0,9	25,30	16
	2,25	0,9	25,30	16
	2,50	1,2	30,60	21
	2,75	1,2	30,60	21
	3,00	1,2	30,60	21
	3,25	1,2	30,60	21
	3,50	1,2	30,60	21
	3,75	1,2	30,60	21
4473007	4,00	2,0	47,30	38
	4,50	2,0	47,30	38
	5,00	2,0	47,30	38
	5,50	2,0	47,30	38
	6,00	2,0	47,30	38
	6,50	2,0	47,30	38
	7,00	2,0	47,30	38
	7,50	2,0	47,30	38
	8,00	2,0	47,30	38
	8,50	2,0	47,30	38
	9,00	2,0	47,30	38
	9,50	2,0	47,30	38

Order no.	Nominal size	H1 mm	L mm	Measuring depth mm
	mm			mm
4473008	1,75	0,9	25,30	16
	2,00	0,9	25,30	16
	2,25	0,9	25,30	16
	2,50	1,2	30,60	21
	2,75	1,2	30,60	21
	3,00	1,2	30,60	21
	3,25	1,2	30,60	21
	3,50	1,2	30,60	21
	3,75	1,2	30,60	21
	4,00	2,0	47,30	38
	4,50	2,0	47,30	38
	5,00	2,0	47,30	38
	5,50	2,0	47,30	38
	6,00	2,0	47,30	38
	6,50	2,0	47,30	38
	7,00	2,0	47,30	38
	7,50	2,0	47,30	38
	8,00	2,0	47,30	38
	8,50	2,0	47,30	38
	9,00	2,0	47,30	38
	9,50	2,0	47,30	38
4473009	10,00	3,3	48,50	45
	11,00	3,3	48,50	45
	12,00	3,3	48,50	45
	13,00	3,3	48,50	45
	14,00	3,3	48,50	45
	15,00	3,3	48,50	45
	16,00	3,3	48,50	45
	17,00	3,3	48,50	45
	18,00	3,3	48,50	45
	19,00	3,3	48,50	45
	20,00	3,3	48,50	45



ACCESSORIES

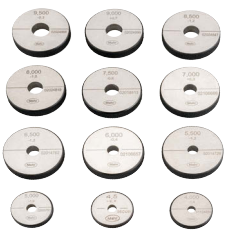
Order no.	Description	Type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4335000	Millimess 0,5 µm, ± 25 µm	1002
4337662	Digital indicator, 0,0005 mm, 12,5 mm	1087 BR
4337664	Digital indicator, 0,0005 mm, 12,5 mm	1087 BRi
4473375	844 Ke Setting rings in Set for measuring range 1 –1,4 mm	844 Ke
4473400	844 Kg Holder for indicator, Ø 8 mm / M6 x 0.75	844 Kg
4473401	844 Kga Holder for indicator, Ø 8 mm / M6 x 0.75	844 Kga
4473402	844 Kgz Holder for indicator, Ø .375" / M6 x 0.75	844 Kgz
4473405	844 Kv Extension for measuring depth, length 50 mm	844 Kv
4473406	844 Kv Extension for measuring depth, length 100 mm	844 Kv
4473407	844 Kv Extension for measuring depth, length 250 mm	844 Kv
4473409	844 Kw Angle attachment 90°, M6 x 0.75	844 Kw
4473376	844 Ke Setting rings in Set for measuring range 1,75 –3,75 mm	844 Ke
4473377	844 Ke Setting rings in Set for measuring range 4 –9,5 mm	844 Ke
4473378	844 Ke Setting rings in Set for measuring range 1,75 –9,5 mm	844 Ke
4473379	844 Ke Setting rings in Set for measuring range 10 –20 mm	844 Ke



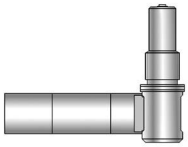
1003



1087 BRi



844 Ke



844 Kw



844 Kv

Marameter 844 K

Self-centering dial bore gage

FUNCTIONS

Measuring head made in harden steel, hard chrome plated

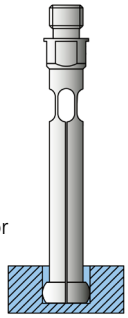
- Constant measuring force as a result of built-in spring, eliminating user influence
- Extensive modular system is composed of measuring head, transfer needle, holder, depth extension, right angle attachments and setting rings

- **The minimum set of a measuring instrument consists of:** Measuring head, transfer needle and holder plus indicator unit
- **Package contains:** Measuring holder 844 Kg, probe, expanding pin, wooden case, excludes indicator



Application:
Standard model

- For indicating measurment of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point per rocking in the bore



TECHNICAL DATA

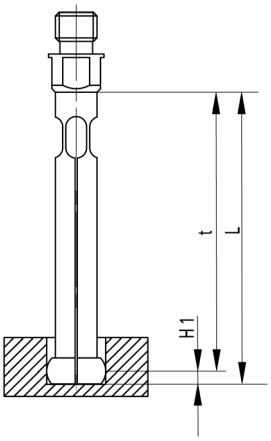
Order no.	Type	Nominal size	Individual probe measuring range mm	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	Piece		µm
4473005	844 K	1,00 1,10 1,20 1,30 1,40	**0,95** –1,15 1,07 –1,25 1,17 –1,35 1,27 –1,45 1,37 - **1,55**	5	2 %, min. 1 µm	1
4473006	844 K	1,75 2,00 2,25 2,50 2,75 3,00 3,25 3,50 3,75	**1,50** –1,90 1,80 –2,20 2,05 –2,45 2,30 –2,70 2,55 –2,95 2,80 –3,20 3,05 –3,45 3,30 –3,70 3,55 - **3,95**	9	1 %, min. 1 µm	1
4473007	844 K	4,00 4,50 5,00 5,50 6,00 6,50 7,00 7,50 8,00 8,50 9,00 9,50	**3,70** –4,30 4,20 –4,80 4,70 –5,30 5,20 –5,80 5,70 –6,30 6,20 –6,80 6,70 –7,30 7,20 –7,80 7,70 –8,30 8,20 –8,80 8,70 –9,30 9,20 - **9,80**	12	1 %, min. 1 µm	1
4473008	844 K	1,75 2,00 2,25 2,50 2,75 3,00 3,25 3,50 3,75 4,00 4,50 5,00 5,50 6,00 6,50 7,00 7,50 8,00 8,50 9,00 9,50	**1,50** –1,90 1,80 –2,20 2,05 –2,45 2,30 –2,70 2,55 –2,95 2,80 –3,20 3,05 –3,45 3,30 –3,70 3,55 –3,95 3,70 –4,30 4,20 –4,80 4,70 –5,30 5,20 –5,80 5,70 –6,30 6,20 –6,80 6,70 –7,30 7,20 –7,80 7,70 –8,30 8,20 –8,80 8,70 –9,30 9,20 - **9,80**	21	1 %, min. 1 µm	1
4473009	844 K	10,00 11,00 12,00 13,00 14,00 15,00 16,00 17,00 18,00 19,00 20,00	**9,40** –10,60 10,40 –11,60 11,40 –12,60 12,40 –13,60 13,40 –14,60 14,40 –15,60 15,40 –16,60 16,40 –17,60 17,40 –18,60 18,40 –19,60 19,40 - **20,60**	11	1 %, min. 1 µm	1

Marameter 844 K

Self-centering dial bore gage

Order no.	Nominal size	H1 mm	L mm	Measuring depth mm
	mm			mm
4473005	1,00	0,6	19,50	10,5
	1,10	0,6	19,50	10,5
	1,20	0,6	19,50	10,5
	1,30	0,6	19,50	10,5
	1,40	0,6	19,50	10,5
4473006	1,75	0,9	25,30	16
	2,00	0,9	25,30	16
	2,25	0,9	25,30	16
	2,50	1,2	30,60	21
	2,75	1,2	30,60	21
	3,00	1,2	30,60	21
	3,25	1,2	30,60	21
	3,50	1,2	30,60	21
	3,75	1,2	30,60	21
4473007	4,00	2,0	47,30	38
	4,50	2,0	47,30	38
	5,00	2,0	47,30	38
	5,50	2,0	47,30	38
	6,00	2,0	47,30	38
	6,50	2,0	47,30	38
	7,00	2,0	47,30	38
	7,50	2,0	47,30	38
	8,00	2,0	47,30	38
	8,50	2,0	47,30	38
	9,00	2,0	47,30	38
	9,50	2,0	47,30	38

Order no.	Nominal size	H1 mm	L mm	Measuring depth mm
	mm			mm
4473008	1,75	0,9	25,30	16
	2,00	0,9	25,30	16
	2,25	0,9	25,30	16
	2,50	1,2	30,60	21
	2,75	1,2	30,60	21
	3,00	1,2	30,60	21
	3,25	1,2	30,60	21
	3,50	1,2	30,60	21
	3,75	1,2	30,60	21
	4,00	2,0	47,30	38
	4,50	2,0	47,30	38
	5,00	2,0	47,30	38
	5,50	2,0	47,30	38
	6,00	2,0	47,30	38
	6,50	2,0	47,30	38
	7,00	2,0	47,30	38
	7,50	2,0	47,30	38
	8,00	2,0	47,30	38
	8,50	2,0	47,30	38
	9,00	2,0	47,30	38
	9,50	2,0	47,30	38
4473009	10,00	3,3	48,50	45
	11,00	3,3	48,50	45
	12,00	3,3	48,50	45
	13,00	3,3	48,50	45
	14,00	3,3	48,50	45
	15,00	3,3	48,50	45
	16,00	3,3	48,50	45
	17,00	3,3	48,50	45
	18,00	3,3	48,50	45
	19,00	3,3	48,50	45
	20,00	3,3	48,50	45



ACCESSORIES

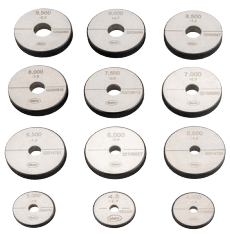
Order no.	Description	Type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4335000	Millimess 0,5 µm, ± 25 µm	1002
4337662	Digital indicator, 0,0005 mm, 12,5 mm	1087 BR
4337664	Digital indicator, 0,0005 mm, 12,5 mm	1087 BRi
4473375	844 Ke Setting rings in Set for measuring range 1 –1,4 mm	844 Ke
4473400	844 Kg Holder for indicator, Ø 8 mm / M6 x 0.75	844 Kg
4473401	844 Kga Holder for indicator, Ø 8 mm / M6 x 0.75	844 Kga
4473402	844 Kgz Holder for indicator, Ø .375" / M6 x 0.75	844 Kgz
4473405	844 Kv Extension for measuring depth, length 50 mm	844 Kv
4473406	844 Kv Extension for measuring depth, length 100 mm	844 Kv
4473407	844 Kv Extension for measuring depth, length 250 mm	844 Kv
4473409	844 Kw Angle attachment 90°, M6 x 0.75	844 Kw
4473376	844 Ke Setting rings in Set for measuring range 1,75 –3,75 mm	844 Ke
4473377	844 Ke Setting rings in Set for measuring range 4 –9,5 mm	844 Ke
4473378	844 Ke Setting rings in Set for measuring range 1,75 –9,5 mm	844 Ke
4473379	844 Ke Setting rings in Set for measuring range 10 –20 mm	844 Ke



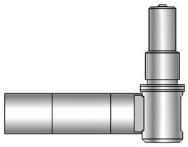
1003



1087 BRi



844 Ke



844 Kw



844 Kv

Marameter 844 KS

Self-centering dial bore gage

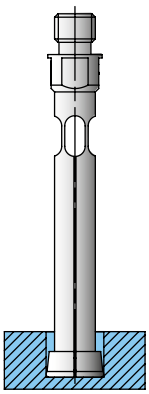
FEATURES

Measuring head made in harden steel, hard chrome plated

- Constant measuring force as a result of built-in spring, eliminating user influence
- Extensive modular system is composed of measuring head, transfer needle, holder, depth extension, right angle attachments and setting rings

- **The minimum set of a measuring instrument consists of:** Measuring head, transfer needle and holder plus indicator unit
- **Package contains:** Measuring holder 844 Kg, probe, expanding pin, wooden case, excludes indicator





Application:
Model for Blind Holes

For measurments near to the ground of bores

- For indicating measurment of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point per rocking in the bore

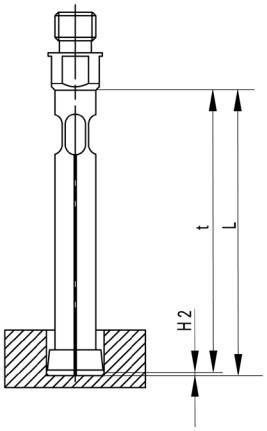
TECHNICAL DATA

Order no.	Type	Nominal size	Individual probe measuring range	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	Piece		µm
4473207	844 KS	4,00 4,50 5,00 5,50 6,00 6,50 7,00 7,50 8,00 8,50 9,00 9,50	**3,70** –4,30 4,20 –4,80 4,70 –5,30 5,20 –5,80 5,70 –6,30 6,20 –6,80 6,70 –7,30 7,20 –7,80 7,70 –8,30 8,20 –8,80 8,70 –9,30 9,20 - **9,80**	12	1 %, min. 1 µm	1
4473209	844 KS	4,00 4,50 5,00 5,50 6,00 6,50 7,00 7,50 8,00 8,50 9,00 9,50	**9,40** –10,60 10,40 –11,60 11,40 –12,60 12,40 –13,60 13,40 –14,60 14,40 –15,60 15,40 –16,60 16,40 –17,60 17,40 –18,60 18,40 –19,60 19,40 - **20,60**	11	1 %, min. 1 µm	1

Marameter 844 KS

Self-centering dial bore gage

Order no.	Nominal size	H1 mm	L mm	Measuring depth mm
	mm			mm
4473207	4,00	0,5	47,30	38
	4,50	0,5	47,30	38
	5,00	0,5	47,30	38
	5,50	0,5	47,30	38
	6,00	0,5	47,30	38
	6,50	0,5	47,30	38
	7,00	0,5	47,30	38
	7,50	0,5	47,30	38
	8,00	0,5	47,30	38
	8,50	1,0	48,50	45
	9,00	1,0	48,50	45
	9,50	1,0	48,50	45
4473209	4,00	1,0	48,50	45
	4,50	1,0	48,50	45
	5,00	1,0	48,50	45
	5,50	1,0	48,50	45
	6,00	1,0	48,50	45
	6,50	1,0	48,50	45
	7,00	1,0	48,50	45
	7,50	1,0	48,50	45
	8,00	1,0	48,50	45
	8,50	1,0	48,50	45
	9,00	1,0	48,50	45
	9,50			



ACCESSORIES

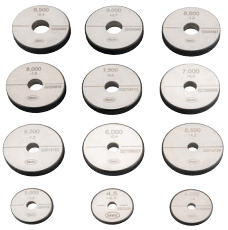
Order no.	Description	Type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4335000	Millimess 0,5 µm, ± 25 µm	1002
4337662	Digital indicator, 0,0005 mm, 12,5 mm	1087 BR
4337664	Digital indicator, 0,0005 mm, 12,5 mm	1087 BRi
4473375	844 Ke Setting rings in Set for measuring range 4 –9,5 mm	844 Ke
4473400	844 Kg Holder for indicator, Ø 8 mm / M6 x 0.75	844 Kg
4473401	844 Kga Holder for indicator, Ø 8 mm / M6 x 0.75	844 Kga
4473402	844 Kgz Holder for indicator, Ø .375" / M6 x 0.75	844 Kgz
4473405	844 Kv Extension for measuring depth, length 50 mm	844 Kv
4473406	844 Kv Extension for measuring depth, length 100 mm	844 Kv
4473407	844 Kv Extension for measuring depth, length 250 mm	844 Kv
4473409	844 Kw Angle attachment 90°, M6 x 0.75	844 Kw
4473376	844 Ke Setting rings in Set for measuring range 10 –20 mm	844 Ke
4473377	844 Ke Setting rings in Set for measuring range 4 –9,5 mm	844 Ke
4473378	844 Ke Setting rings in Set for measuring range 1,75 –9,5 mm	844 Ke
4473379	844 Ke Setting rings in Set for measuring range 10 –20 mm	844 Ke



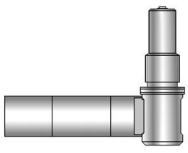
1003



1087 BR



844 Ke



844 Kw



844 Kv

Marameter 844 KM

Measuring Stand

FEATURES

Measuring stand with practical equipment:

- High measuring column with large adjustment range
- Stop ring for measuring height, ideal when changing probes
- Large stroke for probe lowering
- Depth stop for stroke limitation
- Large measuring table (Ø 120 mm) with dust grooves and 4 threaded holes for the individual mounting of a prismatic stop 844 KMp
- Adjustment element for device holder 844 Kg / 844 Kga / 844 Kgz with shaft Ø 10 mm
- Additional mounting Ø 8 mm for optional dial gage as measuring depth indicator.





Application:

Ideal for production testing with 844 K.. inside measuring probes without time-consuming reversal point search by oscillation

TECHNICAL DATA

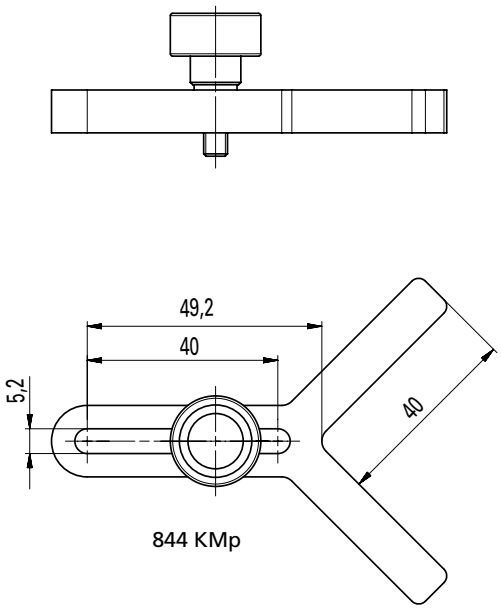
Order no.	Throat depth	Stroke	max. object height	Table diameter	Type
	mm	mm	mm		
4473420	90	50	approx. 150 mm	120	844 KM

ACCESSORIES

Order no.	Description	Type
4473425	Floating holder for measuring stand 844 KM	844 KMs
4473426	Prismatic stop incl. knurled clamping screw for measuring table 844 KM	844 KMp



844 KMs



844 KMp

Precimar SM 60

Length measuring bench

FEATURES

- Simple instrument design
- Quick adaptation to new work-pieces
- Rugged construction makes it suitable for use close to production
- Freely selectable measuring equipment (e.g. digital dial indicator, measuring probes, etc.)
- Carbide measuring surfaces
- Integrated coupling protects the measuring equipment
- Wide choice of measuring attachments
- Suitable for left- and right-handed operators
- Large support table, Ø 60 mm, with variable height adjustment





TECHNICAL DATA

Order no.		5357360
Type		SM 60
Mounting shaft diameter	mm	8
Application range mm	mm	0 –60
Measuring range	mm	0 –25 mm
Measuring surface ø	mm	6
Parallelism of measuring surfaces		<0,001 mm
Size of table	mm	Ø 60
Measuring forces [N]		1 ± 0,2 + measuring force of measuring system
Mass [kg]		9

ACCESSORIES

Order no.	Description	Type
4337661	Digital indicator, 0,0005 mm, 25 mm	1087 R
4337665	Digital indicator, 0,0005 mm, 25 mm	1087 Ri
4337621	Digital indicator, 0,0005 mm, 25 mm	1086 R
4337625	Digital indicator, 0,0005 mm, 25 mm	1086 Ri
5312010	Compact amplifier	C 1200
5323010	Inductive probe, ± 2 mm	P2004 M
5355368	Measuring attachment M 2.5	
5355410	Measuring attachment with plane surface Ø 2 mm	
5355411	Measuring attachment with flat-edged blade 2	
5355412	Measuring attachment with ball zone R20	
5355413	Measuring attachment with flat-edged blade 8 (pair)	
5355414	Measuring attachment with plane surface Ø 8 mm	
5355415	Measuring attachment with plane surface Ø 14 mm	
5355416	Measuring attachment with plane surface Ø 7.5 mm	
5355485	Measuring attachment with plane surface Ø 6.35 mm	



1087 R;1087 R-HR;1087 ZR



1087 Ri



1086 R;1086 R-HR;1086 ZR



1086 Ri



C1200;C 1200

P2004 M;P2004 T;P2004 U;P2004 F;P2004

Precimar ICM 100 IP

Fully automated dial indicator test bench

FEATURES

- Convenient, tool-free and intuitive operation with just one hand
- Highest-accuracy measurement through compliance with Abbe's principle
- Testing to international standards, including ASME/ANSI, DIN, BS, JIS, VDI, GOST and NF.
- High-performance USB 3.0 industrial camera with high image quality and wide dynamic range
- Robust, industrial-grade LED ring light for measurements unaffected by ambient light
- Ability to automatically measure digital indicators through direct reading of values – no cables required
- Wide variety of possible test specimens up to 4 Inches / 100 mm – dial & digital indicators, comparators, test indicators
- Pre-programmed measurement modules with pre-loaded nominal values and tolerances
- Direct measurement range of 4 inches / 100 mm – no need to reposition the test specimen during testing
- Inductive probes from various manufacturers can be tested (only in manual mode)
- **Energy supply:** 230 V/115 V; 50/60 Hz

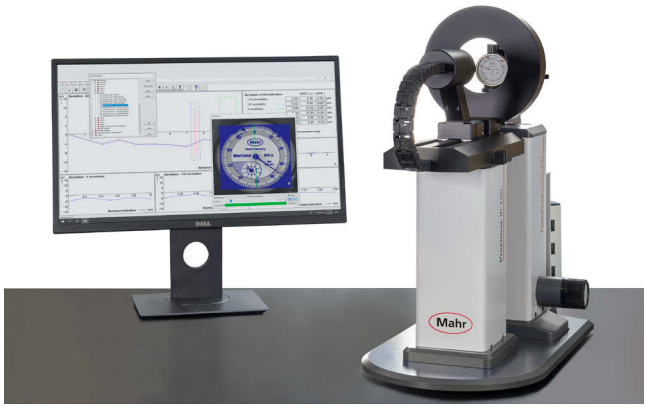


Application:

- Calibration of dial indicators, dial test indicator measuring devices and dial comparators
- The Precimar MSW 100 software system controls the dial indicator test device, processes the camera image (pointer or numeric display of the test object) and the reference measuring values of the dial indicator test device, and also performs all the subsequent processes related to test equipment management.
- The testing routine can be implemented based on DIN, VDI, DKD or DAkkS guidelines, various international standards, or based on the company's internal specifications.
- Deviations between test objects are illustrated in a graph during testing.

TECHNICAL DATA

Order no.	Type	Measuring range	Measuring uncertainty MPE_{E1} (L in mm) [µm]	Mass [kg]
5351010	Precimar ICM 100 IP	≤ (0,2 + L/250)	100 mm	45



MarSurf M 310 / M 310 with printer

Mobile roughness measuring instrument

FEATURES

Mobile roughness measurement – guaranteed success!





- Compact roughness measuring instrument for mobile use
- Simple and intuitive to use: as easy as using a smartphone
- Large, illuminated 4.3" TFT touch display
- Adjustable display
- Micro USB interface for remote control using ASCII commands, e.g. using software for statistical process control
- USB-A interface - for connection of e.g. a USB Bluetooth adapter or the USB/Bluetooth printer
- Specification of the intersection line C in µm or in % of Rz for the parameters Rmr and tp
- Data backup as TXT, X3P, CSV or PDF file
- Transfer of measuring records and data optionally via Bluetooth or cable
- IATF 16949 compliant – safe traceability with MarConnect
- Print directly on mobile printer (as option or directly in set with printer)
- Create complete PDF measuring records directly in the measuring instrument
- Customer-specific comments for the PDF measuring record can be entered directly into MarSurf M 310
- Display and printout of the MRC and ADC diagram
- Storage of measuring programs (quick & easy)
- Mains-independent operation: Over 1200 measurements without having to recharge the instrument
- An all-in-one solution. Small and lightweight (approx. 500 g)
- Instrument flexibility: removable drive unit
- 31 thread parameters: offer the same range of functions as a laboratory instrument.
- Roughness standard stored within housing aids in reducing errors
- Quick access to your frequently used functions via the Favorites list in the display
- Automatic cutoff selection, so even non-specialists can be sure of getting the correct measuring results
- Additional versions with transverse drive unit available as MarSurf M 310 C2 or MarSurf M 310 set without probe

Package contents:

- MarSurf M 310 basic device
- Drive unit (detachable)
- 1 standard probe PHT6–350, conforming to standards
- Built-in rechargeable battery

Application:

- For shafts and housing components
- For large machines
- For large workpieces
- For milled and turned parts
- For ground and honed workpieces
- On the production line or directly on the machine, ideal for rapid testing of the surface roughness of a workpiece in or on the machine.

TECHNICAL DATA

Order no.		6910260	6910267
Type		M 310	M 310 with printer
Parameters		A1, A2, Ar, CF, CL, CR, Mr1, Mr2, R, R3z, RPc, RS, RSk, RSm, Ra, Rk, Rmax, Rmr (tp (JIS, ASME) is equivalent to Rmr), Rp, RpA (ASME), Rpk, Rpm, Rpm (ASME), Rq, Rt, Rvk, Rx, Rz, Rz (JIS), Rz (Ry (JIS) is equivalent to Rz), Vo	
Stylus		2 µm	
Calibration function		Dynamic; Ra, Rz, Rsm	
Storage capacity		Min. 3900 profiles, min. 500,000 results, min. 1500 PDF records, expandable to 32 GB with Micro SD card	
Languages		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish, Romanian	
Other		Lock/password protected, date/time	
Data interface:		USB A, USB B, MarConnect (bidirectional), Micro SD slot for SD / SDHC cards up to 32 GB	
System of protection		IP 40	
Rechargeable batteries		Lithium-ion battery, min. 1200 measurements	
Wide range power supply		100 to 264 V	
H x W x D	mm	160 mm x 77 mm x 50 mm	
Weight	kg	3,6	4
Measuring principle		Stylus method	
Probe		Inductive skidded probe	
Measuring range	mm	0,350	
Profile resolution		8 nm	
Filter according to ISO/JIS		Gaussian filter as per ISO 16610–21 (formerly ISO 11562), special filter as per DIN EN ISO 13565–1, Lambda s filter as per DIN EN ISO 3274 (can be switched off)	
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm, automatic filter detection, variable	
Number n of sampling length according to ISO/JIS		Selectable: 1 to 16	
Short stroke under ISO/JIS		Selectable	
Traversing length Lt according ISO/JIS		1.5 mm, 4.8 mm, 15 mm, N x Lc, variable, automatic	
Traversing length according ISO 12085 (MOTIF)		1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm	
Evaluation lenth ln according to ISO/JIS		1,25 mm, 4,0 mm, 12,5 mm	
Measuring force	N	0.00075	

- Roughness standard integrated into housing (detachable), including Mahr calibration certificate
- Probe protection / V-block holder
- Charger / 3 adapters
- Height adjustment (integrated)
- Carry case with shoulder strap
- USB cable
- Hand-held support with height adjustment (pair)
- Extension cable for drive unit (length 1.2 m)
- Operating instructions

ACCESSORIES

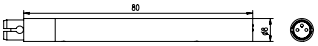
Order no.	Description	Type
6850540	PHT pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe 2 µm	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/ 5µm
6111527	Standard probe 10 µm	PHT 6–350/ 10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6910209	Mount PS 10/M310 on measuring stand ST	ST-a3
6910435	RD 18 C / PS 10 upright holder for cylindrical drive unit, Ø 8 mm	ST-a2
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height measuring and scribing instrument, 0 –350 mm	814 SR
4426101	Height measuring and scribing instrument, 0 –600 mm	814 SR
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Set of miniature precision vises Set contents: Mini-vises, jaw widths 15 / 25 / 35 mm, with tripod and V-blocks and miniature dividing attachments	109 PS
6820420	Roughness standard with Mahr calibration certificate, profile depth 10 µm	PRN 10
6820601	Geometric standard with sinusoidal groove profile, profile depth 3 µm	PGN 3
6820602	Geometric standard with sinusoidal groove profile, profile depth 1,5 µm	PGN 1
6820605	Geometric standard with sinusoidal groove profile, profile depth 10 µm	PGN 10
9027715	Mahr calibration certificate for PGN Standard	PGN
6980102	DKD (German Calibration Service) calibration certificate for PGN Standard	PGN
4413000	Measuring tripod with triangular pedestal 300 mm	815 GN
4413001	Measuring tripod with triangular pedestal 500 mm	815 GN
4413005	Measuring tripod with triangular pedestal 750 mm	815 GN
4416000	Measuring tripod with magnetic base	815 MA
6299054	Evaluation software	SW XR 20
6910240	Protective films for LCD, real glass (3 pieces)	SF LCD
6850500	Magnetic fixture PS 10 / M 310	MH
6820521	PS 10 Gage / Geometric Standard incl. Mahr Calibration Certificate	PS 10 KN Mahr
4102603	Data cable USB bi-directional (2 m)	DK-U1

MarSurf M 310 / M 310 with printer

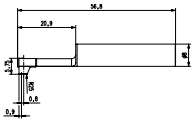
Mobile roughness measuring instrument



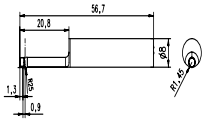
Printer



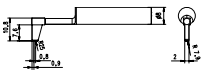
PHT (80 mm)



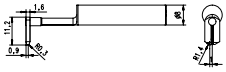
PHT 6–350;PHT 6–350/ 5µm;PHT 6–350/ 10µm



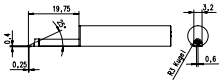
PHT 3–350



PHT 11–100



PHTR–100



PHTF 0.5–100



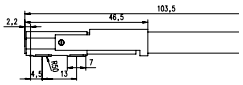
814 Sh



814 SR



109 PS



PT 150



ST-D



ST-F



ST-G

MarSurf M 310 PC

Mobile roughness measuring instrument

DESCRIPTION

Clever combination: The MarSurf M 310 & MarWin

The new MarSurf M 310 can be used as a drive unit together with MarWin Easy Roughness software. It can be easily connected to the computer by cable or Bluetooth wireless technology. This use combines the handiness of the Mahr M 310 with the wider range of functions of the software. It allows you to evaluate even more parameters and optimally analyze your measuring results without compromising on flexibility and ease of use. The PC-based instrument delivers all common thread parameters and profiles in accordance with international standards, both in the measuring room and in production. MarSurf M 310 PC from Mahr stands for innovative roughness evaluation software.





FEATURES

- Over 80 parameters for R-, P- and W-profiles according to current ISO/JIS or MOTIF standards (ISO 12085)
- Bandpass filter Ls in accordance with current standard; Ls can also be switched off or varied as required
- Comprehensive measuring records
- Quick & Easy measuring programs can be created fast using teach-in methods
- Automatic function for choosing cut-off and traversing length in accordance with standards
- Support for various calibration methods (static and dynamic) by specifying the Ra or Rz parameter
- Adjustable maintenance and calibration intervals
- Multiple measuring station configurations for custom applications
- Range of options provide system flexibility
- Various user levels protect the device against misuse and prevent unauthorized people from using it

Package contents:

- Software MarWin Easy Roughness mobile incl. Mahr License Key with standard license MarSurf M 310 Set, 2 µm probe tip

TECHNICAL DATA

Order no		6910295
Type		M 310 PC
Weight	kg	1,9
Measuring principle		Stylus method
Probe		Inductive skidded probe
Filter according to ISO/JIS		Gaussian filter as per ISO 16610–21 (formerly ISO 11562), special filter as per DIN EN ISO 13565–1, Ls filter as per DIN EN ISO 3274 (can be switched off)
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm, automatic filter detection, variable
Number n of sampling length according to ISO/JIS		selectable: 1 to 16
Short stroke under ISO/JIS		selectable
Traversing length according ISO 12085 (MOTIF)		1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm

APPLICATION:

- **Mechanical Engineering**
  To qualify and quantify roughness, geometry and wear volume
- **Electronics and semiconductors**
  Component inspection down to the sub-micrometer range for defect-free products
- **Medical Technology**
  Quality assurance of medical surfaces in production and laboratory
- **Material Science**
  Optimization of functional properties of new surfaces and products
- **Microsystems Technology**
  Measure complex surface geometries of smallest components with nanometer precision

MarSurf WI 50 M

3D surface measurement

DESCRIPTION

Powerful entry-level solution

The MarSurf WI 50 M is a compact white light interferometer for the three-dimensional measurement and analysis of surfaces – ***contactless, independent of material, and fast***.

The new WI 50 M meets all requirements that your measuring tasks in the nanometer range demand – at maximum performance and a convincing cost-benefit-ratio. With the help of a functional tip/tilt table and the manual stages, adjustment and focusing are easy for you. Due to the concentration on essentials, its compact design and large positioning volume this tool satisfies the needs of an optimum entry-level solution in the best way.

Key benefits:

- High measuring speed – even at full resolution
- Eays handling
- Fast measurements
- Cost efficient
- High Dynamic Range (HDR) function, 16-bit
- Robust and reliable

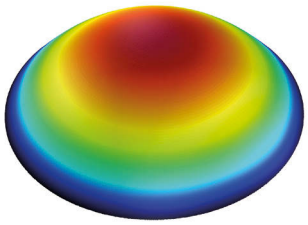
This established optical measuring system is successfully used, for example, for:

- Roughness measurement according to DIN EN ISO 4287 / 25178
- Topography measurement (including volume, wear, isotropy)
- Measurement of microgeometry and layer thicknesses
- Users value the reliability of this measuring system, which provides quantitative, traceable **3D characteristics for many industries**

Supplied with:
MarSurf WI 50

- Interferometric measuring head – HDR camera (2 MP or 5 MP)
- L-tripod including control electronics
- Motorized XY table (105x220 mm)
- Manual Z-axis (220 mm)
- Measuring system computer with 24" TFT monitor
- Objective lenses:
  – 2.5x to 100x selectable
- MarSurf MSW for intuitive data acquisition
- MarSurf MfM for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium version)





TECHNICAL DATA

WI 50M	
Measuring principle	White Light Interferometer High-performance LED (650 nm / white)
Resolution	up to 0.2 (nm) vertical
Measuring speed	up to 140 fps
Surface parameters	ISO 4287, ISO 13565, ISO 25178 …

APPLICATION:

- **Mechanical Engineering**
  To qualify and quantify roughness, geometry and wear volume
- **Electronics and semiconductors**
  Component inspection down to the sub-micrometer range for defect-free products
- **Medical Technology**
  Quality assurance of medical surfaces in production and laboratory
- **Material Science**
  Optimization of functional properties of new surfaces and products
- **Microsystems Technology**
  Measure complex surface geometries of smallest components with nanometer precision

For more information, please visit our website: www.mahr.com

MarSurf WI 50

3D surface measurement

DESCRIPTION

The flexible, all-round measuring solution

The MarSurf WI 50 is a compact white light interferometer for the three-dimensional measurement and analysis of surfaces – ***contactless, independent of material, and fast***.

Allrounder-measurement solutions, flexible at all times, exactly where it comes down to the sub-nanometer: this is what the new MarSurf WI 50 stand for. These high-precision measurement tools for research and quality assurance deliver reliable 3D measuring data – quickly and straightforward in very few steps.

Key benefits:

- measuring speed – even at full resolution
- CNC-functionalitiy for all axes
- Safety through collision detection in all directions to protect your workpiece and measuring system
- High Dynamic Range (HDR) function, 16-bit
- HD-stitching: Consistent high resolution output of large measuring surfaces

This established optical measuring system is successfully used, for example, for:

- Roughness measurement according to DIN EN ISO 4287 / 25178
- Topography measurement (including volume, wear, isotropy)
- Measurement of microgeometry and layer thicknesses
- Users value the reliability of this measuring system, which provides quantitative, traceable **3D characteristics for many industries**

Supplied with:
MarSurf WI 50

- Interferometric measuring head
  – HDR camera (2 MP or 5 MP)
  – 4x lens revolver with identification
- L-tripod including control electronics
- Motorized XY table (50 x 50 mm) with glass scales for sample positioning and image field merging (“stitching”)
- Motorized Z-axis (70 mm) with glass measuring scale
- Measuring system computer with 24” TFT monitor
- Objective lenses:
  – 2.5x to 100x selectable
- MarSurf MSW for intuitive data acquisition
- MarSurf MfM for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium version)





TECHNICAL DATA

WI 50	
Measuring principle	White Light Interferometer High-performance LED (650 nm / white)
Resolution	up to 0.2 (nm) vertical
Measuring speed	up to 140 fps
Surface parameters	ISO 4287, ISO 13565, ISO 25178 …

APPLICATION:

- **Mechanical Engineering**
  To qualify and quantify roughness, geometry and wear volume
- **Electronics and semiconductors**
  Component inspection down to the sub-micrometer range for defect-free products
- **Medical Technology**
  Quality assurance of medical surfaces in production and laboratory
- **Material Science**
  Optimization of functional properties of new surfaces and products
- **Microsystems Technology**
  Measure complex surface geometries of smallest components with nanometer precision

For more information, please visit our website: www.mahr.com

MarSurf WI 100

3D surface measurement

DESCRIPTION

Automatable, high-end measuring system

The MarSurf WI 100 is a powerful white light interferometer for the three-dimensional measurement and analysis of surfaces – **contactless, independent of material, and fast**.

Allrounder-measurement solutions, flexible at all times, exactly where it comes down to the sub-nanometer: this is what the new MarSurf WI 100 stand for. These high-precision measurement tools for research and quality assurance deliver reliable 3D measuring data – quickly and straightforward in very few steps.

With additional manual Z positioning, a large x and y travel range and the possibility of automation, it offers excellent ease of use. The option of performing user-independent, fully automatic measurements makes this surface measuring system ideal for straightforward and efficient use in quality assurance.

Key benefits:

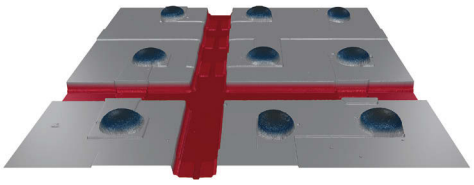
- User-independent serial measurements by automation software
- High measuring speed – even at full resolution
- User-friendly concept
- Safety through collision detection in all directions to protect your workpiece and measuring system
- High Dynamic Range (HDR) function, 16-bit
- HD-stitching: Consistent high resolution output of large measuring surfaces

This established optical measuring system is successfully used, for example, for:

- Roughness measurement according to DIN EN ISO 4287 / 25178
- Topography measurement (including volume, wear, isotropy)
- Measurement of microgeometry and layer thicknesses

Users value the reliability of this measuring system, which provides quantitative, traceable **3D characteristics for many industries**





TECHNICAL DATA

WI 100	
Measuring principle	White Light Interferometer High-performance LED (650 nm / white)
Resolution	up to 0.2 (nm) vertical
Measuring speed	up to 140 fps
Surface parameters	ISO 4287, ISO 13565, ISO 25178 …

Supplied with:
MarSurf WI 100

- Interferometric measuring head
  – HDR camera (2 MP or 5 MP)
  – 4x lens revolver with identification
  L-tripod including control electronics
- Motorized XY table (100 x 100 mm) with glass scales for sample positioning and image field merging (“stitching”)
- Motorized Z-axis (70 mm) with glass measuring scale
- Additional manual Z-Axis (100 mm)
- Measuring system computer with 24”-TFT-monitor
- Objective lenses:
  – 2.5x to 100x selectable
- MarSurf MSW for intuitive data acquisition
- MarSurf ASW for automation (optional)
- MarSurf MfM for professional evaluation, graphical representation and creation of measuring records (choice of Standard, Extended or Premium version)

APPLICATION:

- **Mechanical Engineering**
  To qualify and quantify roughness, geometry and wear volume
- **Electronics and semiconductors**
  Component inspection down to the sub-micrometer range for defect-free products
- **Medical Technology**
  Quality assurance of medical surfaces in production and laboratory
- **Material Science**
  Optimization of functional properties of new surfaces and products
- **Microsystems Technology**
  Measure complex surface geometries of smallest components with nanometer precision

For more information, please visit our website: www.mahr.com

MarForm MMQ 500

High precise universal form measuring machine

FEATURES

Due to the variety of precise measurement options, the new MarForm MMQ 500 is the best option for tabletop form testers. Thanks to its optimized engineering design it can be implemented universally and guarantees maximum utilization.

- Can be used universally for small workpieces of just a few millimeters right through to
- heavy workpieces of up to 80 kg
- Intuitive software
- Highest axis accuracy even as the tolerances become smaller
- Best repeatability even for difficult measuring task
- Measurement of form, position, roughness, contour, and lead in one measuring sequence





TECHNICAL DATA

Order no.	5440901
Diameter max.* [mm]	530
Measuring path Z (mm)	470
Type	MMQ 500
Roundness deviation (µm+µm/mm measuring height) **	0,02 + 0,0005
Roundness deviation (µm+µm/mm measuring height) *	0,01 + 0,00025
Axial runout deviation (µm+µm/mm measuring radius) **	0,04 + 0,0002
Axial runout deviation (µm+µm/mm measuring radius) *	0,02 + 0,0001
Centering and tilting table	automatic
Table diameter	300
Table load capacity, centered (N)	800
Straightness deviation / total measuring path (µm)**, Z axis	0,3
Parallelism deviation Z-/C axis in tracing direction, measuring path (µm)	0,6
Measuring speed (mm/s), Z axis	100

Values as maximum deviation from LSC reference circle, filter 15 undulations/revolution.
** All values in accordance with DIN ISO 1101 at 20°C ±1°C in a vibration-neutral environment, filter 15 undulations/revolution LSC or 2.5 mm LSS, 5 rpm or 5 mm/s and standard probe arm with ball diameter 3 mm. Proof at the standard using error separation techniques. Given the number of different options available, only a few machines are described here by way of example. Technical data for "your" MMQ is available from Mahr on request.

MarOpto FI 100

Fizeau interferometer

DESCRIPTION

High accuracy measurement capability with unsurpassed flexibility and versatility
The MarOpto FI 100 offers contactless measurements on flats and spherical lenses. It can also be used for transmitted wavefront measurements of optical components and assemblies. Measurements may be made by means of simple interference fringe analysis or phase-modulated interferogram analysis. The established IntelliWave Software offers superior measurement and analysis capability. The MarOpto FI 100 provides the versatility and reliability to handle today's advanced applications at unrivaled value for money.

- Total USB connectivity (laptop or desktop) with 1k x 1k true spatial resolution
- Excellent versatility, stability and repeatability
- Digital zoom, focus and attenuation controls
- Vibration-insensitivity can be accomplished via Mahr's Intelli-Phase Static Spatial Carrier Acquisition and Analysis Software
- Compact, lightweight and rugged design
- Compatible with all industry standard 4" (100 mm) reference optics and accessories
- High accuracy measurements at an affordable price
- Configurations include horizontal, vertical look up and vertical look down. Optional workstations for flats and for radius of curvature measurements



APPLICATIONS

- Measurement of flat, concave or convex surfaces
- Prism, corner cube, wedge angle and homogeneity measurements
- Measurement of machined, ceramic, and wafer surfaces
- Wavefront analysis of optical systems & components
- Integration into OEM systems

For more information, please visit our website: www.mahr.com

America

USA
Mahr Inc.
1144 Eddy Street
Providence, RI 02905, USA
Phone: +1 401 784-3100
+1 800 343-2050 (toll-free)
Fax: +1 401 784-3246
information@mahr.com

Mahr Inc.- Cincinnati Resource Center
4450 Olympic Blvd.
Erlanger, KY 41018, USA
Phone: +1 859 525-6116
Fax: +1 859 525-0481
information@mahr.com

Mahr Inc.- L. A. Resource Center
Division: Metrology
11135 Knott Ave., Suite H
Cypress CA 90630, USA
Phone: +1 714 379-7051
Fax: +1 714 379-0468
information@mahr.com

Mahr Metering Systems Corporation
1415 A Cross Beam Dr.
Charlotte, NC 28217, USA
Phone: +1 704 525-7128
+1 800 459-7867 (toll-free)
Fax: +1 704 525-8290
information@mahrusa.com

Mahr Inc.
150 N Tucson Blvd.
AZ 85716-4740 Tucson, USA
Phone: +1 (520) 296-3068
Fax: +1 (520) 296-2897
information@mahr.com

Mexiko
Mahr Corp. de México S.A. de C.V.
Francisco Garza Sada #690,
Col. Chepevera
64030 Monterrey,
Nuevo León, México
Phone: +52 81 8333-2010
Fax: +52 81 8347-2793
ventasmexico@mahr.com

Mahr - MarOpto Resource Center.
Division: Metrology
150 N Tucson Blvd
Tucson AZ 85716, USA
Phone: +1 520 296-3068
Fax: +1 520 296-2897
info@esdimetrology.com

Brasil
Mahr do Brasil Ltda.
Rua Joana Foresto Storani
500 Galpão 3C - Distrito Industrial
13-280-000 Vinhedo - Sao Paulo
Brazil
Phone: +55 (19) 3876-8600
Fax: +55 11 98203-9834
apoio.vendas@mahr.com.br

Europe

Germany
Mahr GmbH
Carl-Mahr-Str. 1
37073 Göttingen, Germany
Phone: +49 551 7073-800
Fax: +49 551 7073-888
info@mahr.de

Mahr GmbH
Site Esslingen
Reutlinger Straße 48
73728 Esslingen, Germany
Phone: +49 711 9312-600
Fax: +49 711 9312-725
mahr.es@mahr.de

Mahr GmbH
Site Jena
Carl-Zeiss-Promenade 10
07745 Jena, Germany
Phone: +49 551 7073-800
Fax: +49 551 7073-808
info-jena@mahr.de

Mahr GmbH Applikations-Zentrum
Berlin / Chemnitz
An der Hopfendarre 7
09212 Limbach-Oberfrohna, Germany
Phone: +49 3722 736-310
Fax: +49 3722 736-320
Applikationszentrum-Vertrieb@mahr.de

Mahr GmbH Niederlassung Südwest
Reutlinger Straße 48
73728 Esslingen, Germany
Phone: +49 711 9312-800
Fax: +49 711 9312-815
Niederlassung-Suedwest@mahr.de

Mahr GmbH Niederlassung Nord
Hatzfelder Straße 161
42281 Wuppertal, Germany
Phone: +49 202 758187-0
Fax: +49 202 7100-57
Niederlassung-Nord@mahr.de

Mahr GmbH Niederlassung Südost
Hopfenstr. 30
85283 Wolnzach, Germany
Phone: +49 8442 96266-0
Fax: +49 8442 96266-11
Niederlassung-Suedost@mahr.de

Mahr MWF GmbH
Melberstraße 9
63762 Großostheim, Germany
Phone: +49 6026 9728-0
Fax: +49 6026 9728-20
info-mwf@mahr.de

Poland
Mahr Polska Sp. z o.o.
ul. Pulawska 5/4
02-515 Warsaw, Poland
Phone: +48 607 665446
arkadiusz.kolakowski@mahr.com

Mahr Russia
Ogorodniy proezd, 20 str.1 Office 204a
127322 Moscow, Russia
Phone: +7 (929) 6465190
Alexey.Golovkin@mahr.de

Czeck Republic
Mahr spol. s.r.o.
Ulice Kpt. Jaroše 552
41712 Proboštov, Czech Republic
Phone: +420 417 816 711
Fax: +420 417 560 237
Info-cz@mahr.com

Slowakia
Mahr Metrológia, s.r.o.
Seberíniho 482/1
821 03 Bratislava, Slovak Republic
Phone:+421 2 321 212 16
Info-sk@mahr.com

Hungary
Mahr Magyarország Kft.
Gyár u. 2 (101. Épület)
2040 Budaörs, Hungary
Phone: +36 1 414 0177
Fax: +36 1 414 0178

Austria
Mahr Austria GmbH
Hirschstettnerstraße 19-21
1220 Wien, Austria
Phone: +43 1 204 36 73-0
Fax: +43 1 204 36 73-15
info-austria@mahr.com

France
Mahr France
6, rue Lavoisier-Z.I.
91430 Igny, France
Phone: +33 1 69351919
Fax: +33 1 69351900
info@mahr.fr

Switzerland
Mahr AG Schweiz
Zürcherstrasse 68
8800 Thalwil, Switzerland
Phone: +41 44 723 39 99
Fax: +41 44 723 39 98
ch@mahr.com

United Kingdom / Ireland
Mahr U.K. Plc.
19 Drakes Mews
Crownhill, Milton Keynes
MK 8 0ER, Great Britain
Phone: +44 1908 563700
Fax: +44 1908 563704
info-uk@mahr.com

Spain
Mahr Metrologia S.L.
Paseo de Gracia 118
08008 Barcelona, Spain
Phone: +34 932 553 197
info-es@mahr.com

Asia

China
Mahr Trading Co., Ltd.
Unit 2701, East Tower, Guangzhou
International Commercial Center,
510620 Guangzhou, China
Phone: +86 20 3887-1132/-1173
Fax: +86 20 3887-1172
info@mahr.com.hk or
sales@mahr.com hk

Mahr Trading Co., Ltd.
88 Jiangchangsan Road,
Shibei Hi-tech Park, Zhabei District,
200436 Shanghai, China
Phone: +86 21 5238 5353
Fax: +86 21 5238 6012
info@mahr.com.hk or
sales@mahr.com.hk

Mahr Trading Co., Ltd.
RM 1006, Saturn Tower C3, No. 8
Xingguangwu road, Yubei Dist
401121 Chonqing, China
Phone: +86 (23) 6321-9971
Fax: +86 (23) 6321-9982

Mahr Precision Metrology (Suzhou) Ltd.
#399 Su Hong Road
Suzhou Industrial Park
215122 Suzhou, P.R. China
Phone: +86 512 62585-862
Fax: +86 512 62585-870
info_suzhou@mahr.com

Korea
Mahr Korea Ltd.
Hyein B/D 2F, 200, Jangchungdan-ro
100-391 Jung-gu, Seoul, Korea
Phone: +82 2 579 4981
Fax: +82 2 579498-6/-7
sales@mahr.co.kr

Japan
Mahr Japan Co., Ltd.
712-4-1, Mamedo-cho, Kohoku-ku,
222-0032 Yokohama, Japan
Phone: +81 45 540-3591
Fax: +81 45 540-6251
info@mahr.co.jp

Malaysia
Mahr Malaysia Sdn. Bhd.
No. 130, Block B 1,
Leisure Commerce Square
No. 9, Jalan PJS 8/9,
46150 Petaling Jaya, Selangor
Malaysia
Phone: +60 3 7877-2060
Fax: +60 3 7877-2040
sales_msea@mahr.com

Thailand
Mahr S.E.A. Co. Ltd.
719 KPN Tower, 20th Floor
Rama 9 Rd., Bangkapi, Huaykwang
Bangkok 10310, Thailand
Phone: +66 2 717 1050-2
Fax: +66 2 717 1055
Valeerut.Amadtirut@mahr.com

India
Mahr Metrology India Pvt. Ltd.
Chennai Office
B-6, 4th Street, Reddipalayam Road,
Mogappair West Estate
600 037 Chennai, India
Phone: +91 (44) 4617 5555
Fax: +91 (44) 4617 5505
mahrindia@mahr.com

Mahr Metrology India Pvt. Ltd.
Bangaluru Office
No.180, Ground Floor, "Kyaswar Mansion"
16th Main Road, 4th T Block, Jayanagar,
560 041 Bangalore, India
Phone / Fax:
+91 20 2665 1396
mahrindia@mahr.com

Mahr Metrology India Pvt. Ltd.
Pune Office
RH No.5, Clover Mews,
Park Street, Viman Nagar,
411 014 Pune, India
Phone / Fax:
+91 20 6520 0367
mahrindia@mahr.com

Metrology India Pvt. Ltd.
Delhi Office
131 & 132, JMD Megapolis ,1st Floor,
Sector 48, Sohna Road, Gurgaon
122 002 Haryana, India
Phone: +91 (124) 4968767
Fax: +91 11 4231 6372
mahrindia@mahr.com

Mahr Metrology India Pvt Ltd
Ahmedabad (Gujarat & MP)
Phone: +91(0) 90990 94080,
+91(0) 90990 05302

Please refer to our website www.mahr.com
for addresses of our worldwide Sales Partners
(not included in the Mahr Group)

© by Mahr GmbH, Esslingen / Göttingen

We reserve the right to make changes to our
products, especially due to technical improve-
ments and further developments.
All illustrations and technical data are therefore
without guarantee.

3765485 – 06/2021
Printed in Germany

Mahr GmbH

Carl-Mahr-Straße 1
37073 Göttingen
Germany
Tel.: +49 551 7073-800
Fax: +49 551 7073-888

Reutlinger Str. 48
73728 Esslingen
Germany
Tel.: +49 711 9312-600
Fax: +49 711 9312-725

info@mahr.com
www.mahr.com

© Mahr GmbH

We reserve the right to make changes to our products, especially due to technical improvements and further developments. All illustrations and technical data are therefore subject to change.

3765485 | 06/2021