

Our **Online Catalog**



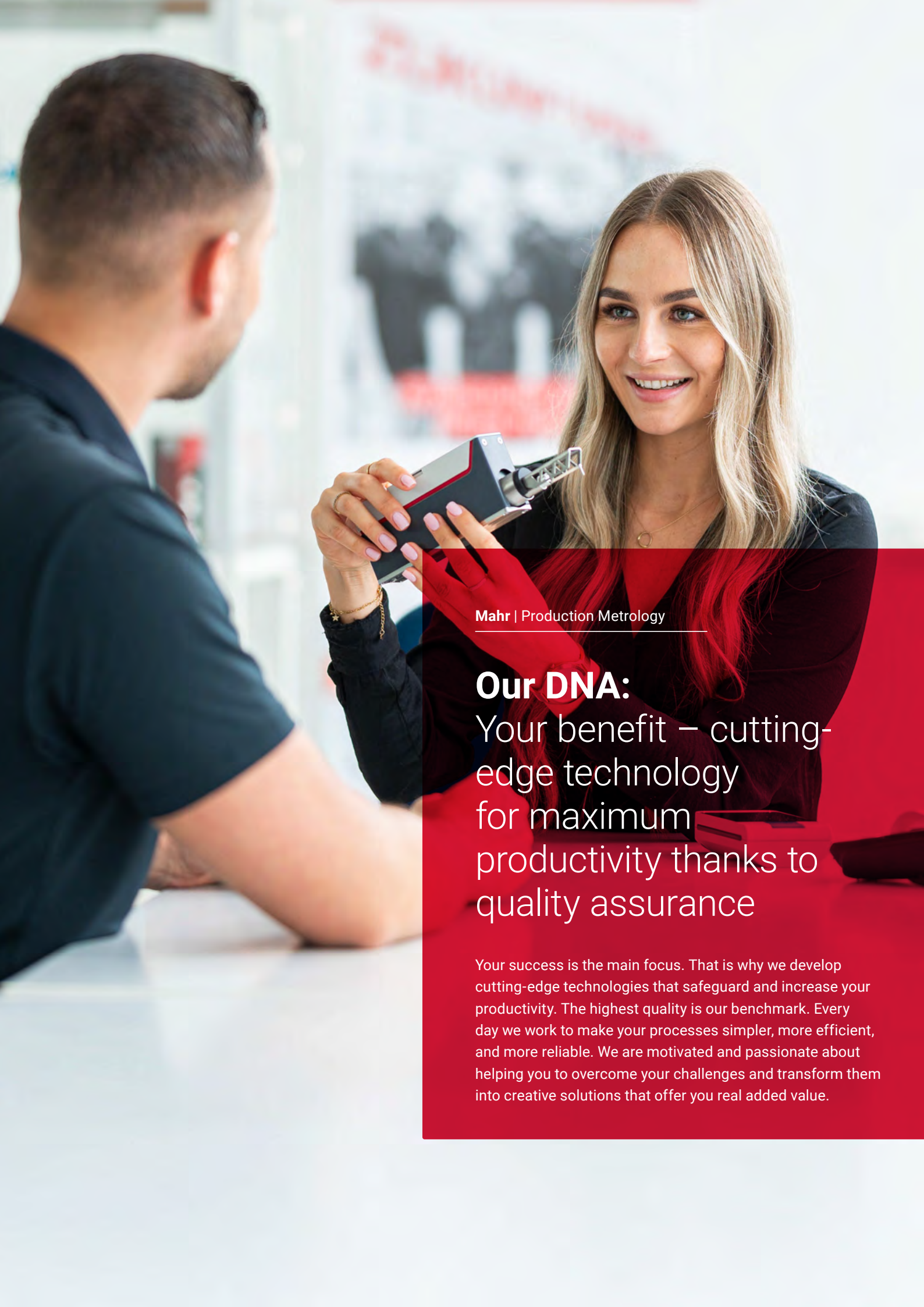
Product Catalog



Main Catalog

Production metrology

62



Mahr | Production Metrology

Our DNA: Your benefit – cutting- edge technology for maximum productivity thanks to quality assurance

Your success is the main focus. That is why we develop cutting-edge technologies that safeguard and increase your productivity. The highest quality is our benchmark. Every day we work to make your processes simpler, more efficient, and more reliable. We are motivated and passionate about helping you to overcome your challenges and transform them into creative solutions that offer you real added value.



The headquarters of the Mahr Group on Carl-Mahr-Strasse in Göttingen, Germany.



The opening of the Global Logistic Center was celebrated in 2024.

Working for your future for six generations

As a family business, we have stood for reliability, continuity, and trust for generations. Our experience in the development, production, and sale of production metrology, mixing and metering pumps, as well as rotary stroke bearings ensures you receive durable solutions, top quality, and a partner you can rely on today and tomorrow.

Always close to you – **worldwide**

You can find us at 35 locations and more than 60 agencies around the globe. Regardless of where your production facilities are based, you will receive fast, comprehensive services and support in your time zone.

Your benefit: **maximum productivity**

We help you to sustainably secure and increase the quality and productivity of your production. To achieve this, we develop intelligent and user-friendly solutions at the highest technological level.

Our metrology makes your processes more efficient, more reliable, and future-proof, providing you with solutions for Industry 4.0.

Technology that makes you stronger

With over 160 years of experience and a clear innovation strategy, we develop solutions that will reliably accompany you into the future. For you, this means continuous development, practical support, and technologies that turn your visions into a reality.

Why you **achieve more** with Mahr

Our measurement solutions are sustainable, reliable, and precise, ensuring the safety of your production processes. Your investment pays off twice – you increase productivity and receive reliable tools that make your work easier and more efficient.



Innovation that helps you develop

You benefit from cutting-edge technologies that are already designed for the requirements of tomorrow. As a founding member of committees for the definition of roughness standards, Mahr has actively contributed to the development of international standards for decades. Our solutions help you to comply with new standards, overcome challenges, and secure sustainable competitive advantages.

The right product for your application

Whether mobile, stationary, or fully automated solutions, you will find the exact technology that suits your process. We offer a wide range of optical, tactile, pneumatic, and three-dimensional metrologies. You will thus receive a solution that optimally supports your degree of automation and seamlessly integrates into your quality assurance process.





Your solution – developed to fit

If standard solutions do not suffice, we will work with you to develop the exact measurement solution to complete your tasks. You will then receive technology that fits seamlessly into your processes and meets your exact requirements.



Service that ensures your success

You can rely on fast, competent support worldwide, 365 days a year. Our experts speak your language and are available for you when and where you need support. In addition, we create tailor-made application programs that provide quick and reliable support for your measuring tasks. The Mahr Academy offers practical training and certifications that deepen your knowledge and make your employees even more successful.

Tailor-made expertise for your measuring tasks

At Mahr, you receive the entire range of measurement solutions from a single source, from leading specialists in our group of companies, and strong partners. This means you benefit from technologies that are perfectly combined and individually tailored to your requirements, enabling you to master even the most complex measuring tasks reliably and efficiently.



μsurf GS3401 CM

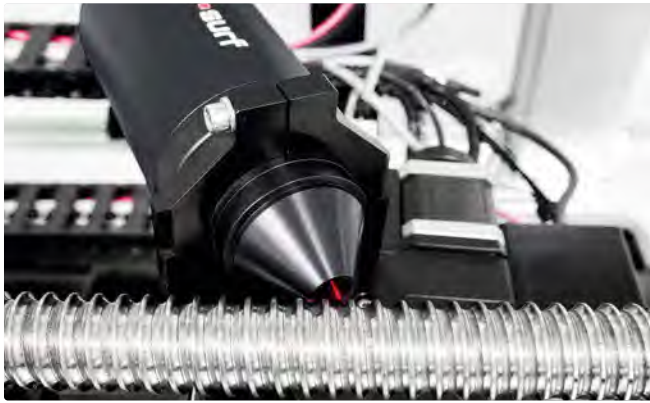
nanofocus[®]
see more ■

NanoFocus AG: 3D measurement with the highest level of detail

With NanoFocus, you benefit from high-resolution, confocal 3D surface metrology that significantly increases the precision and flexibility of your production. The technology is perfect for growing requirements in the research, development, and production sectors and helps you to sustainably ensure quality and process reliability. Special advantage: Materials are analyzed independently and without contact, even on the most sensitive surfaces. You receive reliable results that increase your productivity and make your processes more efficient.



More information about Nanofocus AG:
www.nanofocus.de



MarSurf3D OptoRack



More information about OptoSurf GmbH:
www.optosurf.de

opto ■ surf

OptoSurf GmbH:

Optical surface inspection for maximum precision

OptoSurf guarantees the reliable evaluation of tribological and technical surface properties – quickly, accurately, and in a reproducible manner. The technology offers you clear advantages, particularly for tribological properties, as friction and wear properties can be characterized reliably. This not only assures reliable quality levels and process stability, but also provides competitive advantages through higher productivity, reduced downtimes, and the sustainable optimization of your production processes.



MP15-RMS

breitmeier

A NanoFocus Company

Breitmeier Messtechnik GmbH: Flexible solutions for your surface inspection

With Breitmeier Messtechnik GmbH at your side, you will receive high-precision metrology for a wide range of surface requirements, from roughness to waviness measurements. Whether in the laboratory or in production, our tactile and optical measuring solutions ensure consistently high quality.

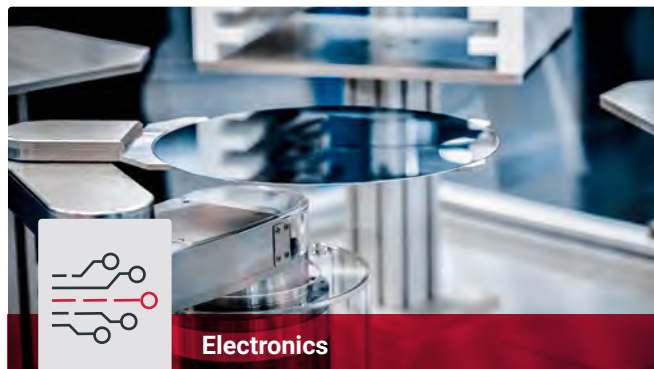


More information about Breitmeier
Messtechnik GmbH:
www.breitmeier.de

Over 160 years of experience for your success

For more than 160 years, Mahr has stood for precision, innovation and state-of-the-art technology. We put this experience to good use for you and develop products that are reliable, high-quality, and always groundbreaking – thus creating the basis for long-term partnerships.





Your solution for every measuring task – **worldwide and across industries**

Whether a simple application or complex production, we offer you the right solution. Our broad portfolio ranges from manual calipers to fully automated, robot-assisted measuring stations. This allows you to ensure the quality of every process stage – reliably, efficiently, and future-proof.





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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, USB or Digimatic, MarConnect will always provide an optimal connection.



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Best performance

in every step

Mahr's portfolio of wireless devices offers you maximum mobility for your measuring tasks. The wireless solution of Integrated Wireless measuring instruments means you can measure without impediment – whatever you use your measuring device for. Mahr measuring instruments are your perfect companion in every manufacturing environment, reliably delivering the performance you have come to expect from state-of-the-art handheld measuring instruments.

Inexpensive

Use your wireless connection for the price of a cable. Purchasing a USB receiver stick (i-Stick) for your computer allows you to operate up to eight measuring devices simultaneously and saves you the additional cost of a connecting cable.

Uncluttered

Keep track! The absence of various cables allows you to keep your workplace tidy and free from clutter.

ID transmission

For quick assignment: The serial and order number are read out by the measuring instrument and saved in the measuring record.



MarConnect | Measuring data processing

Wireless to the result

Reliable

The wireless measuring devices with an integrated transmitter provide visual feedback that data is being transferred correctly, as well as an error message if the connection is lost.

Maximum mobility

Measure autonomously and without limits. Thanks to their wireless, compact system Mahr measuring instruments allow precise measuring – even in the machine or on difficult to reach workpieces.



6 meter range

8 measuring instruments simultaneously per i-Stick receiver

Integrated transmitter

Eliminate risks such as cable breaks or wear and tear. These types of hazards are now a thing of the past with Integrated Wireless technology.



Free software

Enjoy the benefits of MarCom Professional 5.3 interface software and transfer measuring data individually and conveniently to your Windows applications or CAQ software.

130 device versions for every measuring task



It couldn't be easier!

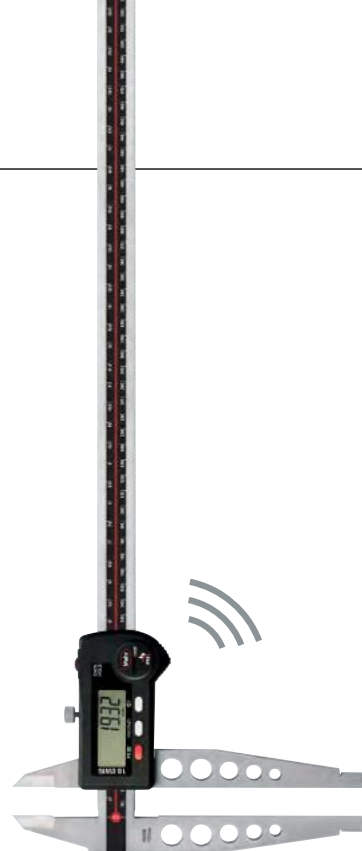
Scan the QR code and see how Integrated Wireless handheld measuring instruments are used in practice.

Your interface for **even greater performance**

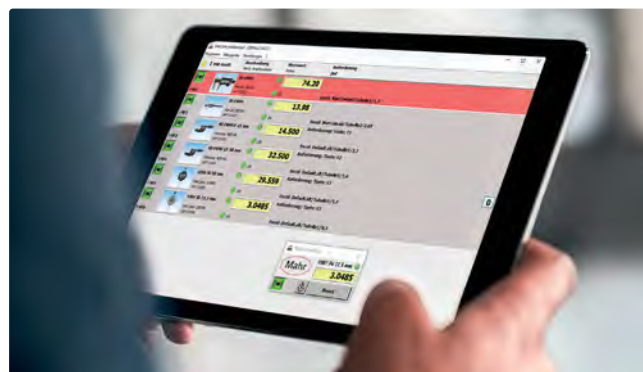
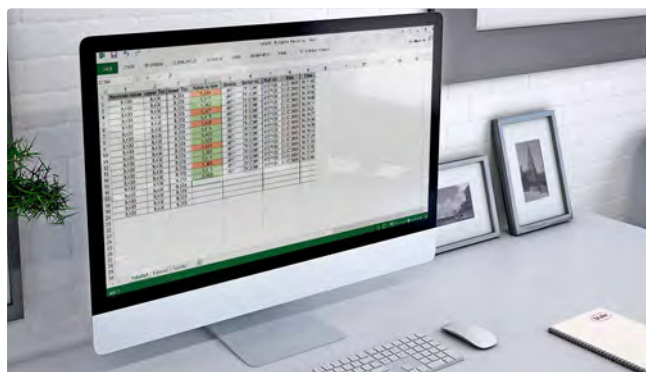
Two steps to the goal: combine your Integrated Wireless instruments with our multifunctional MarCom Professional software. This versatile interface tool combines data acquisition and data transfer with your data processing. How you process the collected data is entirely up to you – for maximum flexibility choose from a range of output formats the one you find easiest to use.

Enjoy maximum individuality at the workplace with a free choice of output medium and four output formats:

- Virtual interface box: CAQ/SPC software
- Intelligent Excel interface: Microsoft Excel
- Emulation keyboard: Any Windows software
- Text file: flexible data processing



The MarCal 18 EWRi workshop calipers with Integrated Wireless.



MarCom Professional is IATF ready and features a comprehensive range of functions for data transfer and data processing.

MarConnect | Measuring data processing

MarCom Professional Software



The Micromar 44 EWri inside micrometer with Integrated Wireless.



The MarSurf M 310 roughness measuring instrument with USB wireless adapter

Improved functions:

Additional data: Additional values are transferred to supplementary columns (name, serial number, item number, date and time)

Device parameters can now be preset: reference values (preset, tolerance limits, warning limits in %) as well as function locks can be queried and changed on the instrument

Improved Excel functionality:

Easily undo the last data transfer – right in the program with a simple click

Adapted column and row names: Z1S1 reference style for use with Excel as in practice

Powerful and user-friendly thanks to continual updates!

Perfectly coordinated: MarCom Professional is the ideal data transfer software for your quality assurance and production needs and is perfectly equipped for data acquisition using measuring equipment from the Integrated Wireless product range. A number of additional functions offer users maximum convenience when acquiring and transferring measured values.

3x
faster
configuration

Save time: Conveniently configure your measuring instruments via PC interface and eliminate the need for manually setting the instrument.

99 %
more secure

Avoid operating errors: all information is automatically transferred and assigned thanks to the automatic identification of measurements and serial number transfers.

New features:

IATF ready: transfers and displays the measuring equipment ID and item and serial number to clearly allocate the measuring equipment to the measurements

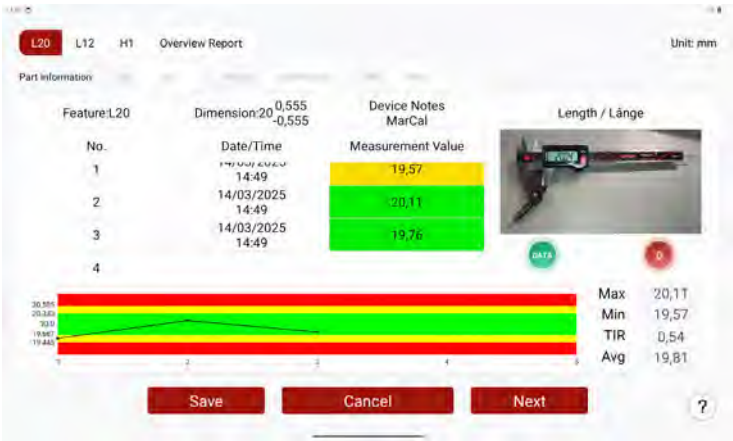
Tab settings in up to 3 areas: settings, device parameters and transmission method

Scalable measured value display

Manually sort the device overview using drag-and-drop

FEATURES

- Data acquisition app for Android tablets
 - User administration
 - Easy connection of up to 8 i-Wireless measuring devices
 - Clear depiction of the selected measuring devices by means of icons
 - Programmable measurement sequences
 - Guided measurement sequence with superimposed instructions
 - Flexible and convenient measurement data transmission either via the "Data" button on the measuring device or data cable or via the button in the APP
 - Graphical representation of the measured values as actual value curve
 - Tolerance evaluation and warning limits
 - Additional data: Transmission and display of the measuring equipment ID and item and serial number for clear allocation of the measuring equipment to the measured values
 - The measured values can be exported as an .xlsx or .pdf file
 - Undo the last data transfer – directly in the program & simply with a click
- Package contains:** driver, instruction manual
- Software:** MarCom App for Android®, download from the Play Store



TECHNICAL DATA

Order no.	4102300
Number of connectable wireless receivers for i-Stick	1
Number of connectable measuring instruments with Integrated Wireless	8
Type	MarCom App for Android
Languages	German, English, Chinese, Japanese

ACCESSORIES

Order no.	For measuring instrument	Description	Type
4102220	All measuring devices with "i" in the name Digimar 816 CLT, 817 CLT	Wireless receiver for measuring instruments with Integrated Wireless	i-Stick



i-Stick

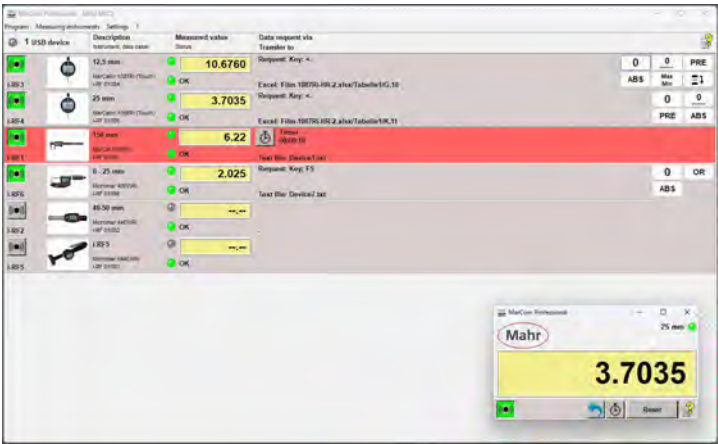


FEATURES

- Direct transfer of measured values into MS Excel (version 97 or later), via virtual interface box (MUX 50 format) in SPC software (Professional) or in text file or via keyboard code
- The measuring values for each connected measuring instrument can be copied into a separate column, table or folder in Excel
- USB hubs can also be connected as a measuring instrument interface
- Clear depiction of the selected measuring devices by means of icons
- Manual sorting of the device overview using drag-and-drop
- Scalable measurement value display
- Configure device parameters easily. Reference values (preset, tolerance limits, warning limits) as well as function locks can be queried and changed on the instrument
- Freely definable and configurable measurement cycles
- Flexible, user-friendly transfer of measuring values via the "Data" button on the measuring device or data cable or via a PC keyboard, timer, foot switch connected to a USB interface or via wireless remote control
- Additional data: Transfers and displays the measuring equipment ID and item and serial number
- to clearly allocate the measuring equipment to the measurements
- Easily undo the last data transfer – right in the program with a simple click

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 RS-232 interface)



TECHNICAL DATA

Order no.	4102212
Number of connectable wireless receivers FM 2	1
Number of connectable wireless receivers for e-Stick	1
Number of connectable wireless receivers for i-Stick	4
Number of connectable measuring instruments with Integrated Wireless	32
Number of connectable measuring instruments with RS232C interface	2
Number of connectable measuring instruments with USB interface	128
Number of connectable transmission modules for wireless receiver FM 2	100
Number of connectable transmission modules for e-Stick	8
Number of connectable USB foot switches	128
Number of virtual interface boxes (8 inputs)	4
Type	MarCom Prof.
Languages	German, English, French, Italian, Spanish, Dutch, Russian, Polish, Portugese, Czech, Chinese, Romanian, Hungarian, Japanese

ACCESSORIES

Order no.	For measuring instrument	Description	Type
4102220	All measuring devices with "i" in the name Digimar 816 CLT, 817 CLT	Wireless receiver for measuring instruments with Integrated Wireless	i-Stick
3003856	MarSurf M 310, M 410	USB Wireless adapter	USB BT
4102357	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 44 EWR, 46 EWR MarCator 1075 R, 1086 R(i), 1087 R(i), 1087 BR(i) (with push buttons!) MarSurf PS1, PS10, M300, M300C (with 4-pin socket)	Data connection cable USB (2 m)	16 EXu
4102410	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 44 EWR, 46 EWR MarCator 1075 R, 1086 R(i), 1087 R(i), 1087 BR(i) (with push buttons!) MarSurf PS1, PS10, M300, M300C (with 4-pin socket)	Data connection cable RS232C (2 m)	16 EXr
4102915	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 44 EWR, 46 EWR MarCator 1075 R, 1086 R(i), 1087 R(i), 1087 BR(i) with push buttons! MarSurf PS1, M300, M300C	Data cable Digimatic (2 m)	16 EWd
4346023	Digimar 816 CL Millimar C1200 Millimess 2000, 2001, 2100, μ Maxum II	Data connection cable USB (2 m)	2000 USB
4346020	Digimar 816 CL Millimar C1200 Millimess 2000, 2001, 2100, μ Maxum II	Data connection cable RS232C (2 m)	2000 r
4102331	Millimar C1208, C1216, 1240, C1240, C1245, S1840, S1841, X1715, X1741, 832 (in conjunction with cable 7024634)	Millimar - USB Adapter cable RS- 232-USB (0,2 m)	Millimar - USB
4102333	Digimar 817 CLM (in conjunction with cable 7024634)	817 USB Adapter cable RS232-USB (0,2 m)	817 USB
7024634	Digimar 817 CLM Millimar C1208, C1216, 1240, C1245, S1840, S1841, X1715, X1745, 832	Data connection cable RS232C (3 m)	RS232C 0-modem cable
4102510	Digimar 814 G, 814 N Multimar 25 ES MarTool 106 ES	Data connection cable RS232C (2 m)	16 ESv
4102330	Digimar M814 (in conjunction with cable 4102510) Multimar 25 ES (in conjunction with cable 4102510)	Opto USB Adapter cable RS232-USB (0,2 m)	Opto USB
4305121	MarCal 31 EW MarTest 800 EW(L), 800EWR	800 EWu Data connection cable USB (2 m)	800 EWu
4305122	MarCal 31 EW MarTest 800 EW(L), 800 EWR	Data connection cable RS232C (2 m)	800 EWr
4102553		USB-Hub 7-fold industrial model	USB-Hub
4102782	(Adapter cable jack plug $\varnothing$ 3.5 mm/USB for) Foot switch 16 Esf (4102058)	MC-I Adaption cable (for foot switch via MarCom): jack plug $\varnothing$ 3.5 mm/USB (0,1 m)	MC-I
4102058		Foot switch to trigger data transmission with jack plug 3.5mm	16 Esf
4102221		Wireless remote control for MarCom	MC-R
4102603	MarCator with touch operation Micromar 40 EWR (≥ 2018) Millimess 2000 W(i), 2001 W(i) Millimar C 1202 MarSurf M 310, M 410 MarSurf PS 10 (with 5-pin socket)	Data cable USB bidirectional (2 m)	DK-U1
4102605	Digimar 814 C	Data cable USB bidirectional (2 m)	DK-U14



i-Stick



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 boxes 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 RS-232 interface), MarCom App for Android®, download from the Play Store



TECHNICAL DATA

Order no.		4102220
Number of channels		3
Number of connectable wireless receivers for i-Stick		4
Number of connectable measuring instruments with Integrated Wireless		32
Frequency band	MHz	2400
Radio range		Up to 6 m
For measuring instrument		All measuring devices with "i" in the name Digimar 816 CLT, 817 CLT
Type		i-Stick

ACCESSORIES

Order no.	Type	Description	
4103400	16 EWRI	Digital caliper, 0 – 150 mm, 0,01 mm	 800 SR;16 EWRI
4103401	16 EWRI	Digital caliper, 0 – 150 mm, 0,01 mm	
4103402	16 EWRI	Digital caliper, 0 – 150 mm, 0,01 mm	 30 EWR; 30 EWR-D; 30 EWRI-D; 30 EWRI
4103403	16 EWRI	Digital caliper, 0 – 150 mm, 0,01 mm	
4103404	16 EWRI	Digital caliper, 0 – 200 mm, 0,01 mm	
4103405	16 EWRI	Digital caliper, 0 – 200 mm, 0,01 mm	
4103406	16 EWRI	Digital caliper, 0 – 300 mm, 0,01 mm	 1086 Ri
4103407	16 EWRI	Digital caliper, 0 – 300 mm, 0,01 mm	
4112571	18 EWRI	Digital workshop caliper, 0 – 300 mm, 0,01 mm	
4112572	18 EWRI	Digital workshop caliper, 0 – 500 mm, 0,01 mm	
4112574	18 EWRI	Digital workshop caliper, 0 – 1000 mm, 0,01 mm	 1086 Ri-HR
4126671	30 EWRI	Digital depth gage, 0 – 150 mm, 0,01 mm	
4126672	30 EWRI	Digital depth gage, 0 – 200 mm, 0,01 mm	
4126673	30 EWRI	Digital depth gage, 0 – 300 mm, 0,01 mm	
4126674	30 EWRI	Digital depth gage, 0 – 500 mm, 0,01 mm	 1086 WRi
4119050	25 EWRI	Digital universal calipers, 0 – 300 mm, 0,01 mm	
4119051	25 EWRI	Digital universal calipers, 0 – 600 mm, 0,01 mm	
4119052	25 EWRI	Digital universal calipers, 0 – 1000 mm, 0,01 mm	
4119053	25 EWRI	Digital universal calipers, 0 – 1250 mm, 0,01 mm	 1087 BRi
4337720	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm	
4337721	1086 Ri	Digital indicator 25 mm / 0,0005 mm	
4337722	1086 Ri	Digital indicator 50 mm / 0,0005 mm	
4337723	1086 Ri	Digital indicator 100 mm / 0,0005 mm	 1087 Ri
4337731	1086 Ri	Digital indicator 25 mm / 0,0005 mm	
4337910	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm	
4337911	1086 Ri	Digital indicator 25 mm / 0,0005 mm	
4337790	1086 Ri	Digital indicator 12,5 mm / 0,01 mm	 1087 ZRi
4337791	1086 Ri	Digital indicator 25 mm / 0,01 mm	
4337770	1086 Ri-HR	Digital indicator 12,5 mm / 0,0001 mm	
4337771	1086 Ri-HR	Digital indicator 25 mm / 0,0001 mm	
4337750	1086 WRi	Digital indicator 12,5 mm / 0,0005 mm	 1087 ZRi
4337751	1086 WRi	Digital indicator 25 mm / 0,0005 mm	
4337870	1087 BRi	Digital indicator 12,5 mm / 0,0005 mm	
4337820	1087 Ri	Digital indicator 12,5 mm / 0,0005 mm	
4337821	1087 Ri	Digital indicator 25 mm / 0,0005 mm	 1087 ZRi
4337822	1087 Ri	Digital indicator 50 mm / 0,0005 mm	
4337970	1087 ZRi	Digital indicator 12,5 mm / 0,0005 mm	
4337971	1087 ZRi	Digital indicator 25 mm / 0,0005 mm	
4337850	1087 Ri-HR	Digital indicator 12,5 mm / 0,0001 mm	 1087 ZRi
4337851	1087 Ri-HR	Digital indicator 25 mm / 0,0001 mm	
4337830	1087 WRi	Digital indicator 12,5 mm / 0,0005 mm	
4157100	40 EWRI	Digital bracket micrometer screw, 0 – 25 mm	
4157101	40 EWRI	Digital micrometer, 25 – 50 mm	 1087 ZRi
4157102	40 EWRI	Digital bracket micrometer screw, 50 – 75 mm	
4157103	40 EWRI	Digital bracket micrometer screw, 75 – 100 mm	
4157104-4157107	40 EWRI	Digital bracket micrometer screw, div.lengths	
4191305-4191321	44 EWRI	Digital 3-point inside micrometer	 1087 ZRi
4192305-4192317	844 EWRI	Digital 3-point inside measuring instrument	
4346701	2000 Wi	Inductive dial comparator, ± 1 µm	
4346801	2001 Wi	Inductive dial comparator, ± 1 µm	
4429630	816 CLT	Digimar height measuring instrument 0– 350 mm	 1087 ZRi
4429631	816 CLT	Digimar height measuring instrument 0– 600 mm	
4429600	817 CLT	Digimar 0– 350 mm	
4429601	817 CLT	Digimar 0– 600 mm	
4429602	817 CLT	Digimar 0– 1000 mm	



FEATURES

- For connecting the measuring instrument to a PC
- Data transfer to MarCom or other applications via virtual communication interface
- Package contains: USB cable



Application:

Data recorded with PC, laptop or tablet using MS-Windows operating System

TECHNICAL DATA

Order no.	For measuring instrument	Type	Cable length
			m
2121428	Maxµm III (E2)		2
4102330	Digimar M814 (in conjunction with cable 4102510) Multimar 25 ES (in conjunction with cable 4102510)	Opto USB	0,2
4102331	Millimar C1208, C1216, 1240, C1240, C1245, S1840, S1841, X1715, X1741, 832 (in conjunction with cable 7024634)	Millimar - USB	0,2
4102333	Digimar 817 CLM (in conjunction with cable 7024634)	817 USB	0,2
4102357	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 40 EWW, 40 EWS, 46 EWR MarCator 1075 R, 1086 R(i), 1087 R(i), 1087 BR(i) (with push buttons!)	16 EXu	2
4102603	MarSurf PS1, PS10, M300, M300C, PocketSurf IV (with 4-pin socket)		
	MarCator with touch operation Micromar 40 EWR (≥ 2018) Millimes 2000 W(i), 2001 W(i) Millimar C 1202 MarSurf M 310, M 410 MarSurf PS 10 (with 5-pin socket)	DK-U1	2
4102605	Digimar 814 C	DK-U14	2
4102782	(Adapter cable jack plug Ø 3.5 mm/USB for) Foot switch 16 Esf (4102058)	MC-I	0,1
4305121	MarCal 31 EW MarTest 800 EW(L), 800EWR	800 EWu	2
4346023	Digimar 816 CL Millimar C1200	2000 USB	2
	Millimes 2000, 2001, 2100, µMaxum II		
4495079	Marameter 838 EI, 838 EA	838 USB	1,5

ACCESSORIES

Order no.	Type	Description
4102221	MC-R	Wireless remote control for MarCom
4102553	USB-Hub	USB-Hub 7-fold industrial model
4102058	16 ESf	Foot switch to trigger data transmission with jack plug 3.5mm

MarConnect 16 EXr / 16 ESv / 800 EWr / 2000 r / RS232C 0-modem cable

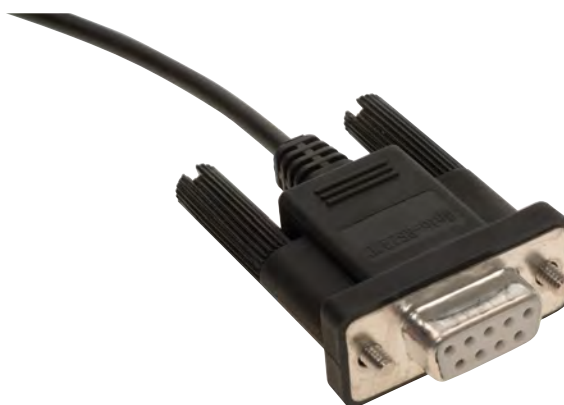
Data connection cable RS232C



FEATURES

- For connecting the measuring instrument to an interface box or PC
- Data transfer to MarCom or to other applications via communication interface

Software: MarCom 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.	For measuring instrument	Type	Cable length
			m
4102410	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 44 EWR, 46 EWR MarCator 1075 R, 1086 R(i), 1087 R(i), 1087 BR(i) (with push buttons!) MarSurf PS1, PS10, M300, M300C (with 4-pin socket)	16 EXr	2
4102510	Digimar 814 G, 814 N Multimar 25 ES MarTool 106 ES	16 ESv	2
4305122	MarCal 31 EW MarTest 800 EW(L), 800 EWR	800 EWr	2
4346020	Digimar 816 CL Millimar C1200 Millimes 2000, 2001, 2100, μ Maxum II	2000 r	2
7024634	Digimar 817 CLM Millimar C1208, C1216, 1240, C1245, S1840, S1841, X1715, X1745, 832	RS232C 0-modem cable	3

MarConnect DK-D1 / 16 EWd / 2000 d / 838 di (A)

Data cable Digimatic



FEATURES

- For connection to Digimatic compatible interfaces and evaluation equipment



Application:
Data collection with Digimatic-compatible devices

TECHNICAL DATA

Order no.	For measuring instrument	Type	Inputs	Cable length
				m
2239035	MaxµmIII dial comparator with 6-pin data output	Maxµm	Footswitch	2
2239037	MaxumIII Indicator with 10 pin output port	Maxµm		2
4102606	MarCator with touch operation Micromar 40 EWR (≥ 2018) Millimes 2000 W(i), 2001 W(i) Millimar C 1202	DK-D1		2
4102915	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR (≤ 2017), 40 EWW, 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	16 EWd		2
4346021	Digimar 816 CL MarCator 1088, 1088 W Millimes 2000, 2001, 2100, µMaxum II Millimar C1200	2000 d		2
4495083	Marameter 838 EI, 838 EA	838 di (A)		1,5

MarCal | Calipers

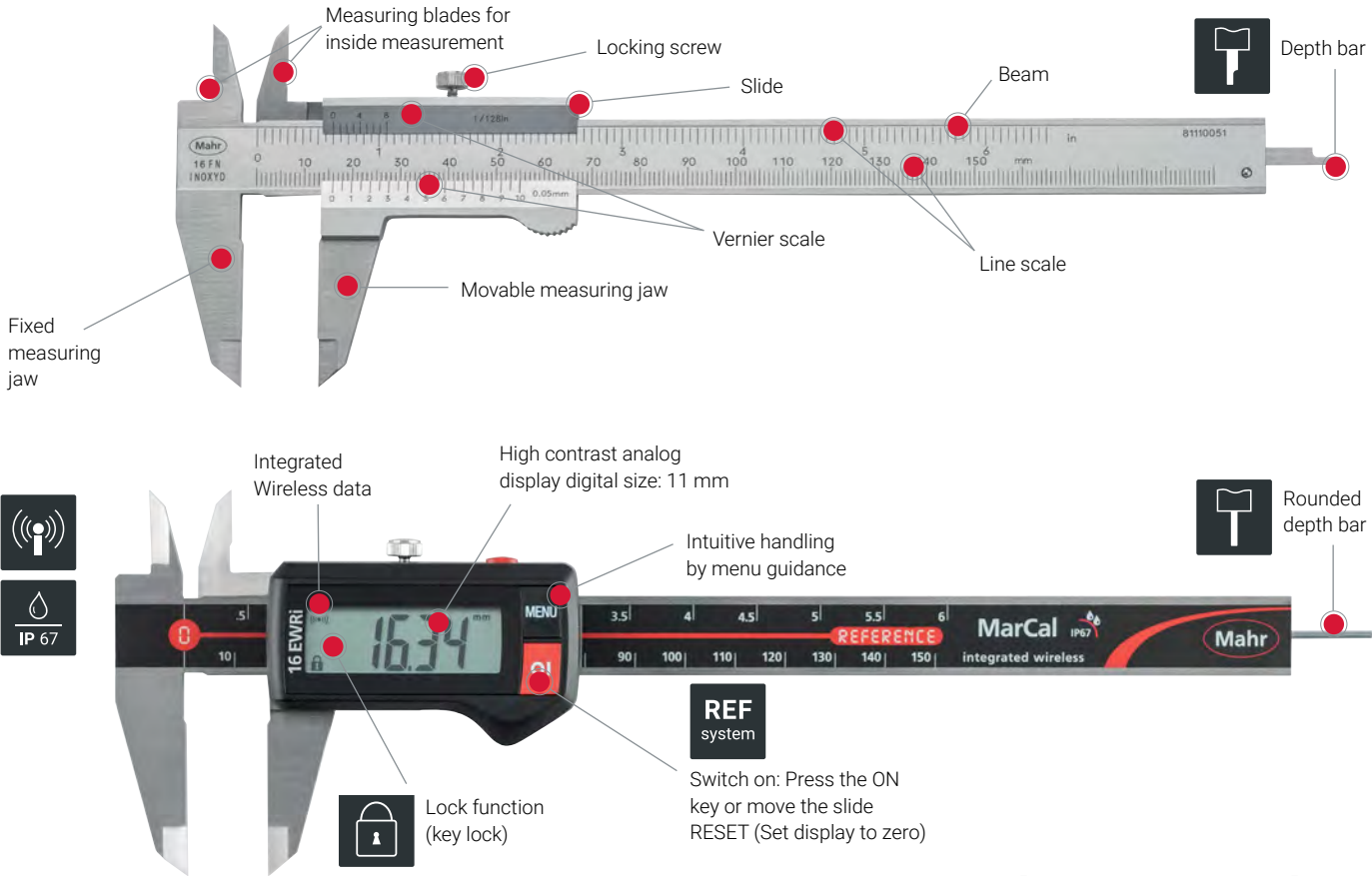
Calipers are some of the most important measuring instruments in production metrology due to their versatile application possibilities and easy handling. The MarCal digital calipers are particularly easy to use and can be read without errors. In addition, they enable simple and secure data transmission for the acquisition of measured values.



Overview MarCal calipers	28
MarCal 16 EWri / 16 EWR / 16 ER Digital caliper	34
MarCal 16 U Dial caliper	39
MarCal 16 FN / 16 GN / 16 DN Caliper with analog display	40
MarCal 18 EWri / 18 EWR Digital workshop caliper	42
MarCal 16 EWR-V / 16 EWri-V Digital universal caliper	44
MarCal 18 EWR-V Digital universal caliper	46
Digital special calipers	48
MarCal 30 EWri / 30 EWR Digital depth gage	62
MarCal 30 EWri-D / 30 EWR-D Digital depth gage	64
MarCal 30 EWri-N / 30 EWR-N Digital depth gage	65

MarCal

Terms



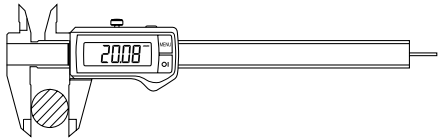
Error limits G according to DIN 8

MarCal

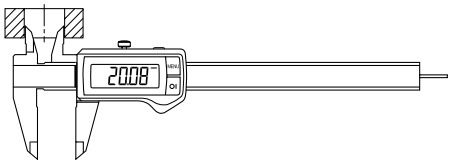
Types of measurement

Mahr pocket slide calipers z.B. 16 EWRi, 16 U, 16 FN) can be used to conduct 4 different types of measurements

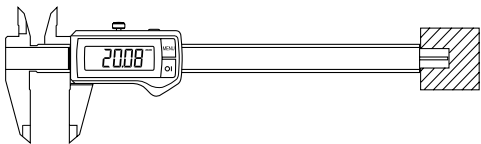
a) Outside measurement



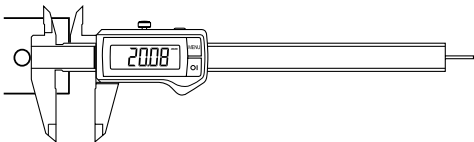
b) Inside measurement



c) Depth measurement



d) Step (distance) measurement



Error limits EMPE to ISO 13385-1

Measuring length mm	Resolution	Scale interval (vernier interval)	
	0,01 mm	0,02 mm	0,05 mm
	EMPE µm	EMPE µm	EMPE µm
0 - 50	±20	±20	±50
> 50 - 100	±30	±40	±50
> 100 - 200	±30	±40	±100
> 200 - 300	±40	±40	±100
> 300 - 400	±40	±40	±100
> 400 - 500	±50	±60	±100
> 500 - 600	±50	±60	±150
> 600 - 700	±60	±60	±150
> 700 - 800	±60	±60	±150
> 800 - 1000	±70	±80	±150

MarCal

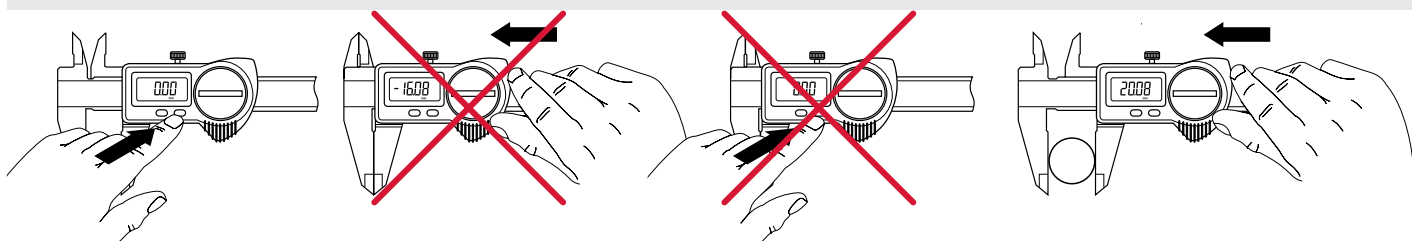
Set zero position once

REF
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.

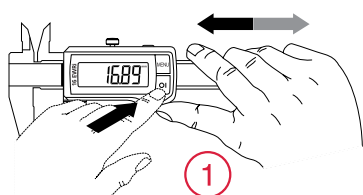
Conventional

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

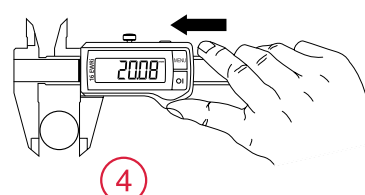


REF
system

- ① Switch ON
- ② Results of measurement



REF
system



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 dust

- 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 under pressure



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

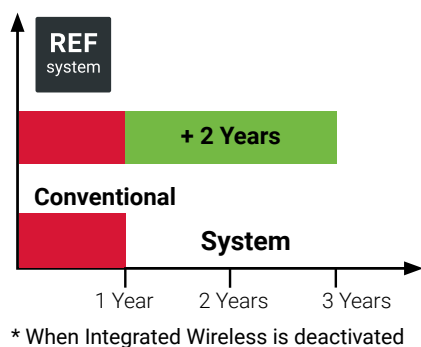
- Zero-position is secured
- Operating error is not possible

The MarCal 16 EWRi digital caliper with the Reference System 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 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*.

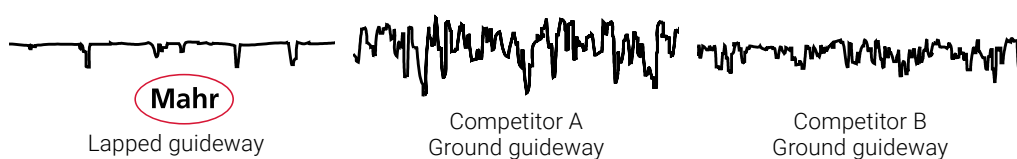


Superior quality of the guideways

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



MarConnect Integrated Wireless



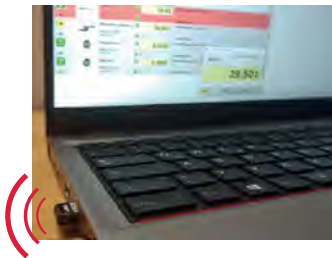
Wireless data transmission for the price of a data cable.

With 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 on 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.

Original size



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





Due to the outstanding protection against dust and water, the MarCal 16 EWri digital caliper with the Reference System 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

Digital pocket calipers at a glance



TECHNICAL DATA

Properties	REF system								REF system Digimatic			
Type	16 ER								16 ER			
Measuring range	150 mm				200 mm		300 mm		150 mm			
Measuring range	6"				8"		12"		6"			
Depth gage	round $\varnothing$ 1,5 mm		square		square		none		round $\varnothing$ 1,5 mm		square	
Friction wheel												
Special measuring surface												
Order no.	4103010	4103011	4103012	4103013	4103205	4103206	4103207	4103208	4103014	4103015	4103016	4103017
Catalog page	37	37	37	37	37	37	37	37	38	38	38	38



TECHNICAL DATA

Properties	REF system IP 67 Digimatic RS232C									
Type	16 EWR				16 EWR-C	16 EWR-H	16 EWR			
Measuring range	150 mm				150 mm		200 mm		300 mm	
Measuring range	6"				6"		8"		12"	
Depth gage	round $\varnothing$ 1,5 mm		sqare		round		sqare		none	
Friction wheel										
Special measuring surface					Ceramic	Carbide				
Order no.	4103064	4103065	4103066	4103067	4103072	4103073	4103068	4103069	4103070	4103071
Catalog page	36	36	36	36	36	36	36	36	36	36

MarCal

Digital pocket calipers at a glance



RS232C   					REF system IP 67    												
16 ER					16 EWR												
200 mm		300 mm			150 mm					200 mm		300 mm					
8"		12"			6"		-		6"		6"		8"		12"		
square		none			round ø 1,5mm			square			square		none				
4103018410301941030204103021					410330041033104103301410330241033034103304410330541033064103307												
38		38		38		38		35		35		35		35		35	



TECHNICAL DATA

Properties	REF system  IP 67  #ID    										
Type	16 EWRi					16 EWRi-C	16 EWRi-H		16 EWRi		
Measuring range	150 mm					150 mm		200 mm		300 mm	
Measuring range	6"	-	6"	6"		6"		8"		12"	
Depth gage	round ø 1,5mm			sqare		round		sqare		none	
Friction wheel											
Special measuring surface						Ceramic	Carbide				
Order no.	4103400	4103410	4103401	4103402	4103403	4103372	4103373	4103404	4103405	4103406	4103407
Catalog page	34	34	34	34	34	34	34	34	34	34	34

MarCal 16 EWRI

Digital caliper



FUNCTIONS

- ON/OFF
- AUTO-ON/OFF
- HOLD (freeze current measured value)
- 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 digit 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

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

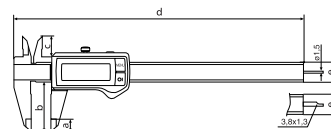
Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



TECHNICAL DATA

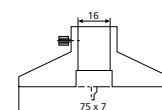
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod	Friction wheel
		mm	inch	mm/inch	mm		mm		
4103400	16 EWRI	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	round	-
4103401	16 EWRI	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	round	•
4103402	16 EWRI	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	-
4103403	16 EWRI	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	•
4103404	16 EWRI	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	-
4103405	16 EWRI	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	•
4103406	16 EWRI	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	11	none	-
4103407	16 EWRI	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	11	none	•
4103410	16 EWRI	0 – 150	Metric	0,01 / --	0,03	ISO 13385-1	11	round	-

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103400	10	40	16	235	16
4103401	10	40	16	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
4103410	10	40	16	235	16



ACCESSORIES

Order no.	Type	Description
4102020	16 Em	Depth bridge (75 x 7 mm)
4102220	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless



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 digit 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

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years

Battery type: CR 2032 (3V Lithium)

Data interface: none

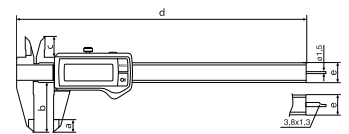
Package contains: battery, test certificate, instruction manual, case



TECHNICAL DATA

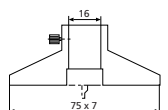
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod	Friction wheel
		mm	inch	mm/inch	mm		mm		
4103300	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	round	-
4103301	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	round	•
4103302	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	-
4103303	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	•
4103304	16 EWR	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	-
4103305	16 EWR	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	•
4103306	16 EWR	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	11	none	-
4103307	16 EWR	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	11	none	•
4103310	16 EWR	0 – 150	Metric	0,01 / --	0,03	ISO 13385-1	11	round	-

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
4103310	10	40	16	235	16



ACCESSORIES

Order no.	Type	Description
4102020	16 Em	Depth bridge (75 x 7 mm)



16 Em

MarCal 16 EWR

Digital caliper



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 digit 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

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years

Battery type: CR 2032 (3V Lithium)

Data interface: USB, Opto

RS-232C, Digimatic

Package contains: battery, test certificate, instruction manual, case

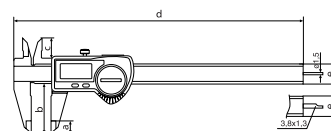
Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



TECHNICAL DATA

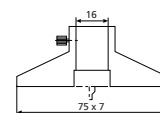
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod	Friction wheel
		mm	inch	mm/inch	mm		mm		
4103064	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	round	-
4103065	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	round	•
4103066	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	rectangular	-
4103067	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	rectangular	•
4103068	16 EWR	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	8,5	rectangular	-
4103069	16 EWR	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	8,5	rectangular	•
4103070	16 EWR	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	8,5	none	-
4103071	16 EWR	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	8,5	none	•

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.	Type	Description
4102020	16 Em	Depth bridge (75 x 7 mm)
4102357	16 EXu	Data connection cable USB (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)



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 digit 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

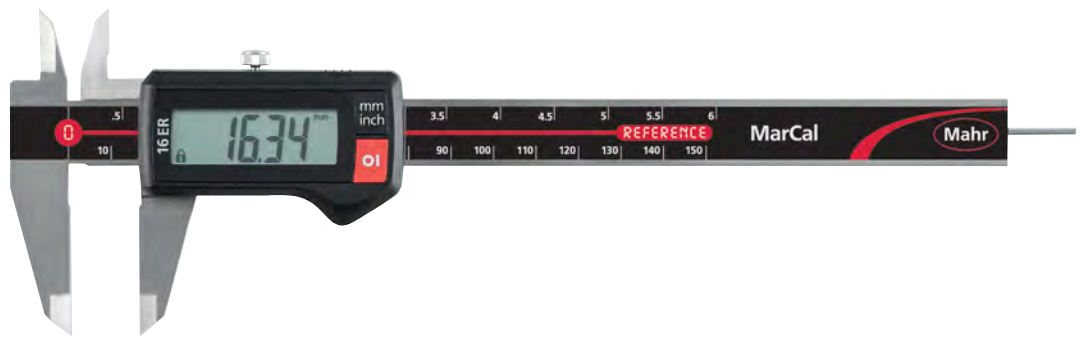
IP protection category: None

Energy supply: Battery, battery life approx. 3 years

Battery type: CR 2032 (3V Lithium)

Data interface: none

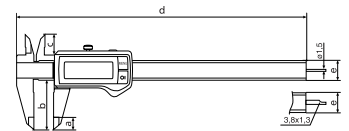
Package contains: instruction manual, battery, case



TECHNICAL DATA

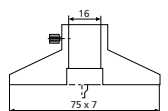
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod	Friction wheel
		mm	inch	mm/inch	mm		mm		
4103010	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	round	-
4103011	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	round	•
4103012	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	-
4103013	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	•
4103205	16 ER	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	-
4103206	16 ER	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	11	rectangular	•
4103207	16 ER	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	11	none	-
4103208	16 ER	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	11	none	•

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.	Type	Description
4102020	16 Em	Depth bridge (75 x 7 mm)



16 Em

MarCal 16 ER

Digital caliper



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 digit 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

IP protection category: None

Energy supply: Battery, battery life approx. 3 years

Battery type: CR 2032 (3V Lithium)

Data interface: USB, Opto

RS-232C, Digimatic

Package contains: instruction manual, battery, case

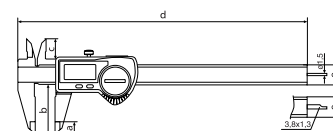
Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



TECHNICAL DATA

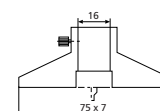
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod	Friction wheel
		mm	inch	mm/inch	mm		mm		
4103014	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	round	-
4103015	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	round	•
4103016	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	rectangular	-
4103017	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	rectangular	•
4103018	16 ER	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	8,5	rectangular	-
4103019	16 ER	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-1	8,5	rectangular	•
4103020	16 ER	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	8,5	none	-
4103021	16 ER	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-1	8,5	none	•

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.	Type	Description
4102020	16 Em	Depth bridge (75 x 7 mm)
4102357	16 EXu	Data connection cable USB (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)



16 Em

MarCal 16 U

Dial caliper

SHOCK
PROOF



FUNCTIONS

- 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



4107005

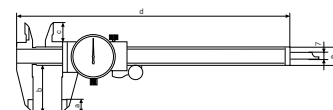


4107107

TECHNICAL DATA

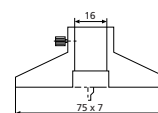
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Readings	Readings	Error limit	Error limit	Standard	Range per turn	Range per turn	Depth rod	Friction wheel
		mm	inch	mm	inch	mm	inch		mm	inch		
4107005	16 U	0 – 150		0,01		0,03		ISO 13385-1	1		rectangular	•
4107107	16 U	0 – 150		0,02		0,04		ISO 13385-1	2		rectangular	•
4107900	16 U		0 – 6"		0,001		0,0012	Factory standard		0,1000	rectangular	

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.	For measuring instrument	Type	Description
4100302	16 U		Synthetic leather pouch, black for pocket slide caliper 150 mm
4102020	16 U	16 Em	Depth bridge (75 x 7 mm)



16 Em



MarCal 16 FN / 16 GN

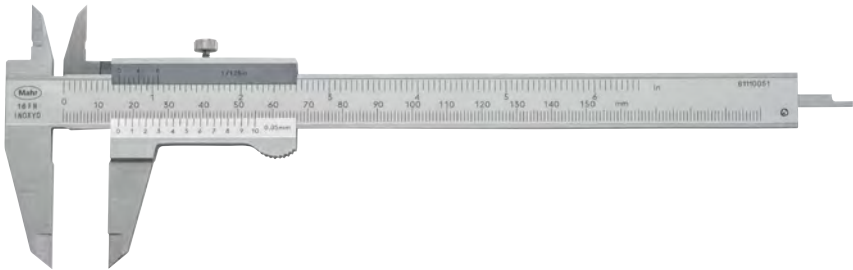
Caliper with analog display



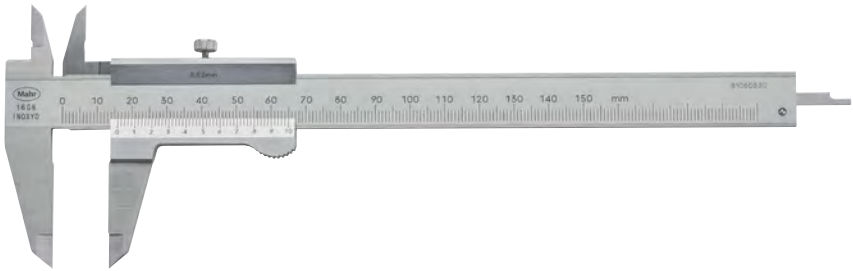
FUNCTIONS

- 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



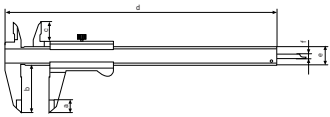
16 GN

Application:
With locking screw: Maintenance-free clamping of the slider thanks to knurled locking screw

TECHNICAL DATA

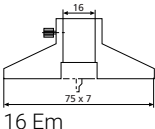
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Vernier value	Vernier value	Error limit	Error limit	Standard	Depth rod
		mm	inch	mm	inch	mm	inch		
4100400	16 FN	0 – 150 mm	0 – 6"	0,05	1/128"	0,05	0,002	Factory standard	rectangular
4100401	16 FN	0 – 200 mm	0 – 8"	0,05	1/128"	0,05	0,002	Factory standard	rectangular
4100402	16 FN	0 – 300 mm	0 – 12"	0,05	1/128"	0,05	0,002	Factory standard	rectangular
4100420	16 FN	0 – 150 mm		0,05		0,05		Factory standard	rectangular
4100421	16 FN	0 – 200 mm		0,05		0,05		Factory standard	rectangular
4100422	16 FN	0 – 300 mm		0,05		0,05		Factory standard	rectangular
4100650	16 GN	0 – 150 mm		0,02		0,04		ISO 13385-1	rectangular
4100651	16 GN	0 – 200 mm		0,02		0,04		ISO 13385-1	rectangular
4100652	16 GN	0 – 300 mm		0,02		0,04		ISO 13385-1	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.	For measuring instrument	Type	Description
4100302	16 FN, 16 GN		Synthetic leather pouch, black for pocket slide caliper 150 mm
4102020	16 FN, 16 GN	16 Em	Depth bridge (75 x 7 mm)



MarCal 16 DN

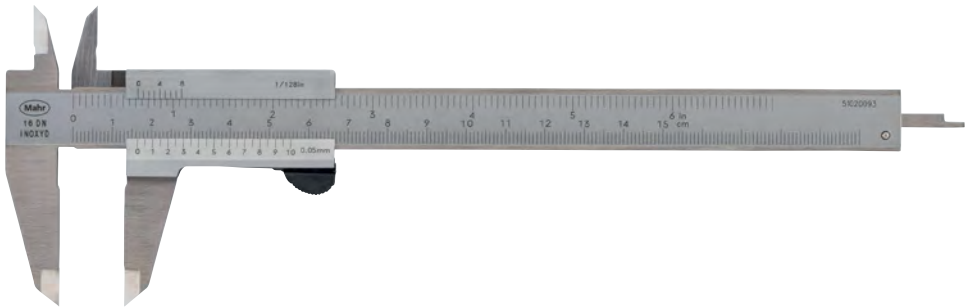
Caliper with analog display



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



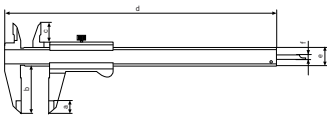
Application:

With thumb clamp: Spring-loaded clamping lever causes self-locking of the slide when the thumb contact is released

TECHNICAL DATA

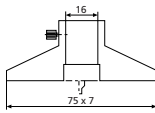
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Vernier value	Vernier value	Error limit	Error limit	Standard	Depth rod
		mm	inch	mm	inch	mm	inch		
4100600	16 DN	0 – 150 mm	0 – 6"	0,05	1/128"	0,05	0,002	Factory standard	rectangular

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.	Type	Description
4100302		Synthetic leather pouch, black for pocket slide caliper 150 mm
4102020	16 Em	Depth bridge (75 x 7 mm)

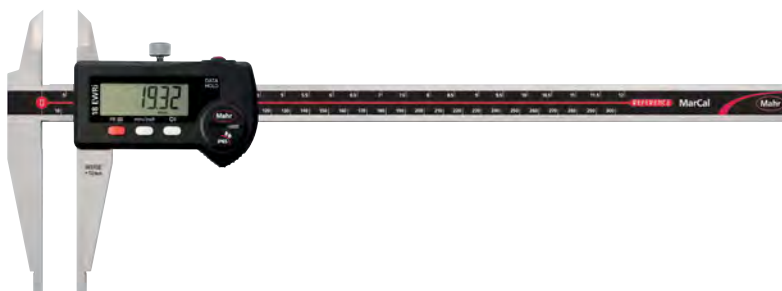


16 Em



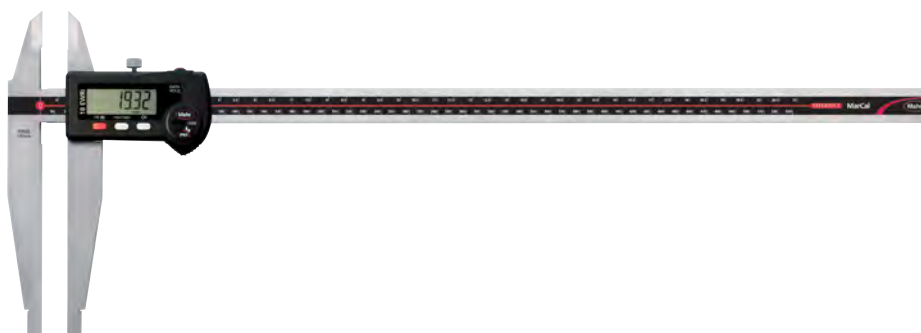
FUNCTIONS

- ON/OFF
- AUTO-ON/OFF
- HOLD (freeze current measured value)
- 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 digit 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



IP protection category: IP 65

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

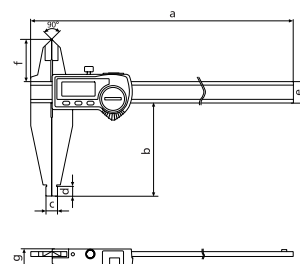
Package contains: battery, test certificate, instruction manual, case

Software: MarCom 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.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Mesuring blades for outside measurements
		mm	inch	mm/inch	mm		mm	
4112571	18 EWri	0 – 300	0 – 12"	0,01 / .0005"	0,03	Factory standard	12,5	•
4112572	18 EWri	0 – 500	0 – 20"	0,01 / .0005"	0,04	Factory standard	12,5	•
4112570	18 EWri	0 – 800	0 – 32"	0,01 / .0005"	0,05	Factory standard	12,5	•
4112574	18 EWri	0 – 1000	0 – 40"	0,01 / .0005"	0,06	Factory standard	12,5	•

Order no.	a	b	c	d	e	f	Rail cross-section
	mm	mm	mm	mm	mm	mm	mm
4112571	430	90	10	10	20	40	20 x 4,5
4112572	650	150	20	20	25	55	25 x 5,5
4112570	995	150	20	20	30	60	30 x 6,5
4112574	1165	150	20	20	30	60	30 x 6,5



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless



i-Stick

MarCal 18 EWR

Digital workshop caliper



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)
- High contrast digit 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



FEATURES

IP protection category: IP 65

Energy supply: Battery, battery life approx. 3 years

Battery type: CR 2032 (3V Lithium)

Data interface: USB, Opto

RS-232C, Digimatic

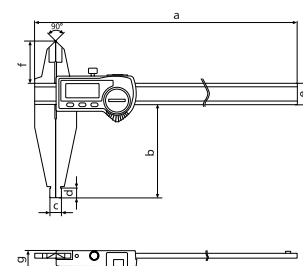
Package contains: battery, test certificate, instruction manual, case

Software: MarCom 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.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Mesuring blades for outside measurements
		mm	inch	mm/inch	mm		mm	
4112704	18 EWR	0 – 300	0 – 12"	0,01 / .0005"	0,03	Factory standard	10	•
4112712	18 EWR	0 – 500	0 – 20"	0,01 / .0005"	0,04	Factory standard	12,5	•
4112706	18 EWR	0 – 800	0 – 32"	0,01 / .0005"	0,05	Factory standard	12,5	•
4112716	18 EWR	0 – 1000	0 – 40"	0,01 / .0005"	0,06	Factory standard	12,5	•
4112705	18 EWR	0 – 300	0 – 12"	0,01 / .0005"	0,03	Factory standard	10	
4112713	18 EWR	0 – 500	0 – 20"	0,01 / .0005"	0,04	Factory standard	12,5	
4112707	18 EWR	0 – 800	0 – 32"	0,01 / .0005"	0,05	Factory standard	12,5	
4112717	18 EWR	0 – 1000	0 – 40"	0,01 / .0005"	0,06	Factory standard	12,5	

Order no.	a	b	c	d	e	f	Rail cross-section
	mm	mm	mm	mm	mm	mm	mm
4112704	410	90	10	10	20	40	20 x 4,5
4112712	650	150	20	20	25	55	25 x 5,5
4112706	995	150	20	20	30	60	30 x 6,5
4112716	1165	150	20	20	30	60	30 x 6,5
4112705	410	90	10	10	20		20 x 4,5
4112713	650	150	20	20	25		25 x 5,5
4112707	995	150	20	20	30	60	30 x 6,5
4112717	1165	150	20	20	30		30 x 6,5



ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102357	18 EWR	16 EXu	Data connection cable USB (2 m)
4102410	18 EWR	16 EXr	Data connection cable RS232C (2 m)
4102915	18 EWR	16 EWD	Data cable Digimatic (2 m)

MarCal 16 EWR-V / 16 EWRi-V

Digital universal caliper

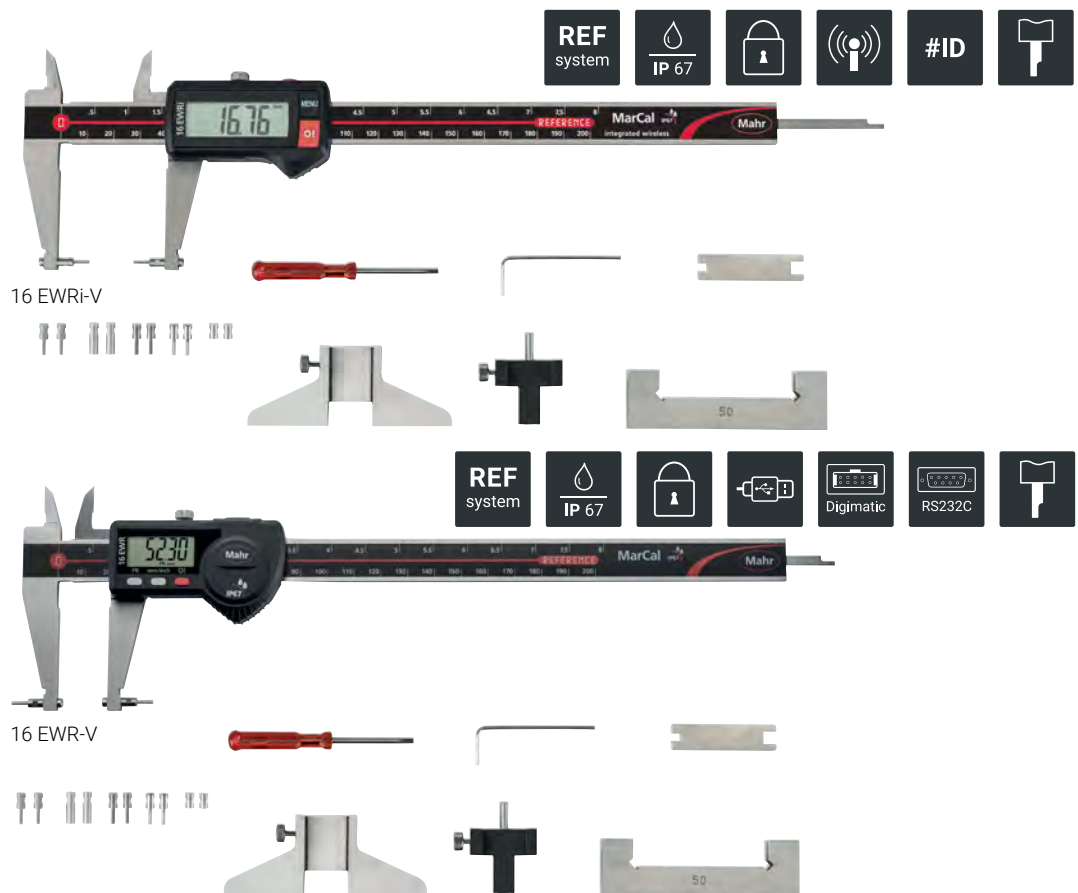
FUNCTIONS

Functions 16 EWR-V:

- 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)

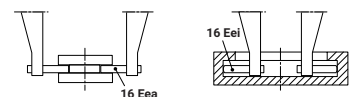
Functions 16 EWRi-V:

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



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

FEATURES 16 EWRi-V:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: 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 16 Eei 1-3, battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

FEATURES 16 EWR-V:

IP protection category: IP 67

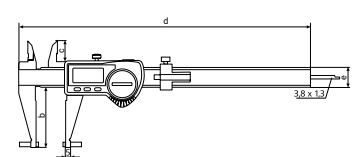
Energy supply: Battery, battery life approx. 3 years

Battery type: CR 2032 (3V Lithium)

Data interface: USB, Opto

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4118807	16 EWR-V	0 – 200	0 – 8"	0,01 / .0005"	0,03	Factory standard	8,5	rectangular
4118907	16 EWRi-V	0 – 200	0 – 8"	0,01 / .0005"	0,03	Factory standard	11	rectangular

Order no.	b	c	d	e
	mm	mm	mm	mm
4118807	48	16,5	285	16
4118907	48	16,5	285	16



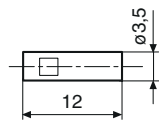
RS-232C, Digimatic

Package contains: 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 16 Eei 1-3, 4118808 without measuring anvils, adjustment bridge and measuring force equipment, battery, test certificate, instruction manual, case

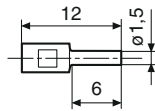
Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

ACCESSORIES

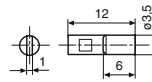
Order no.	For measuring instrument	Type	Quantity unit	Description
4102020	16 EWRI-V, 16 EWR-V	16 Em		Depth bridge (75 x 7 mm)
4102220	16 EWRI-V	i-Stick		Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-V	16 EXu		Data connection cable USB (2 m)
4102410	16 EWR-V	16 EXr		Data connection cable RS232C (2 m)
4102915	16 EWR-V	16 EWd		Data cable Digimatic (2 m)
4118810	16 EWRI-V, 16 EWR-V	16 Eea 1	Piece	Anvil for outside measurement (3,5 x 12 mm)
4118811	16 EWRI-V, 16 EWR-V	16 Eea 2	Piece	Anvil for outside measurement (1,5 x 6 mm)
4118812	16 EWRI-V, 16 EWR-V	16 Eea 3	Piece	Anvil for outside measurement (3,5 x 6 mm)
4118813	16 EWRI-V, 16 EWR-V	16 Eei 1	Piece	Anvil for inside measurement (3,5 x 6 mm)
4118814	16 EWRI-V, 16 EWR-V	16 Eei 2	Piece	Anvil for inside measurement (1,5 x 6 mm)
4118815	16 EWRI-V, 16 EWR-V	16 Eei 3	Piece	Anvil for inside measurement (3,5 x 6 mm)
4118816	16 EWRI-V, 16 EWR-V	16 Eei 4	Piece	Anvil for inside measurement (4 x 2,5 mm)
4118817	16 EWRI-V, 16 EWR-V	16 Eel		Setting gage for inside measurement (50 mm)
4118818	16 EWRI-V, 16 EWR-V	16 Ec		Measuring force device
4118819	16 EWRI-V, 16 EWR-V	16 Eab		Mounting attachment for thread anvils 844 TG/844Tr and ball anvils 844 Tk
4879602	16 EWRI-V, 16 EWR-V		Piece	Screws M2x8



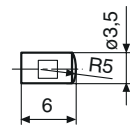
16 Eea 1



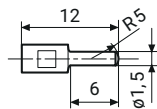
16 Eea 2



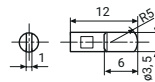
16 Eea 3



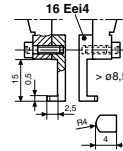
16 Eei 1



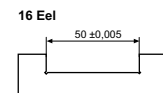
16 Eei 2



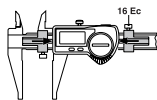
16 Eei 3



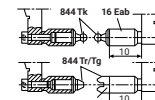
16 Eei 4



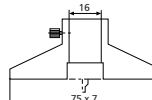
16 Eel



16 Ec



16 Eab



16 Em



i-Stick

MarCal 18 EWR-V

Digital universal caliper

REF
system

IP 65

Digimatic

RS232C

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 digit 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

IP protection category: IP 65

Energy supply: Battery, battery life approx. 3 years

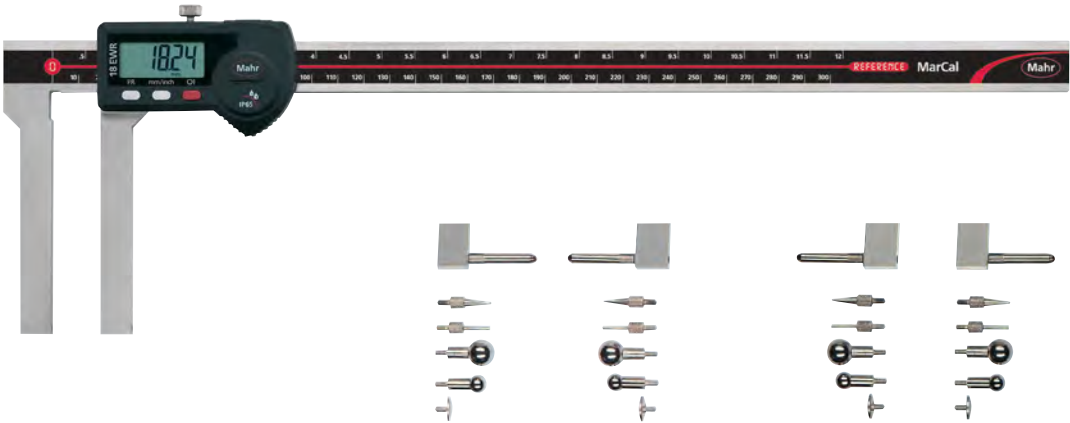
Battery type: CR 2032 (3V Lithium)

Data interface: USB, Opto

RS-232C, Digimatic

Package contains: anvils, battery, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



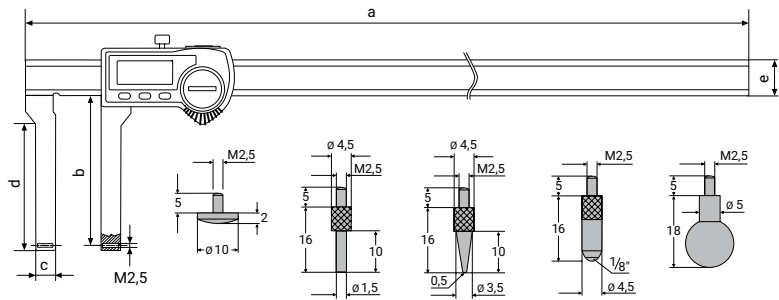
Application:

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

TECHNICAL DATA

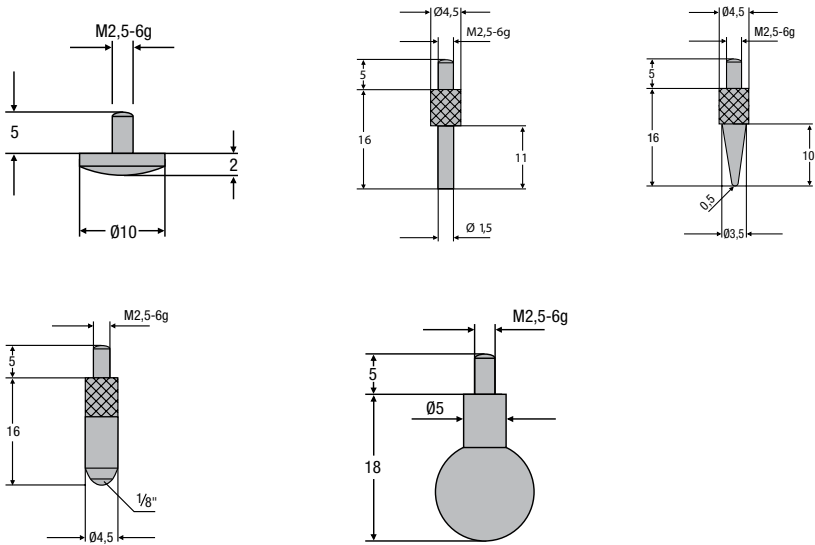
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height
4112722	18 EWR-V	0 – 300	0 – 12"	mm/inch	mm	Factory standard	mm
4112723	18 EWR-V	0 – 500	0 – 20"	0,01 / .0005"	0,06	Factory standard	10
				0,01 / .0005"	0,08	Factory standard	12,5

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.	Type	Quantity unit	Description
4102357	16 EXu		Data connection cable USB (2 m)
4102410	16 EXr		Data connection cable RS232C (2 m)
4102915	16 EWd		Data cable Digimatic (2 m)
4112050		Piece	Replacement measuring anvil: Spherical plate Ø 10.0 mm
4112051		Piece	Replacement measuring anvil: Cylindrical stylus Ø 1.5 mm x 10 mm
4112052		Piece	Replacement measuring anvil: Tip, radius 0.5 mm x 10 mm
4112053		Piece	Replacement measuring anvil: Sphere diameter 1/8" length 16 mm
4112054		Piece	Replacement measuring anvil: Ball dia. 7.0 mm
4112055		Piece	Replacement measuring anvil: Sphere Ø 10.0 mm



MarCal 16 EWri-C / 16 EWR-C

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWri-C

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 digit 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-C

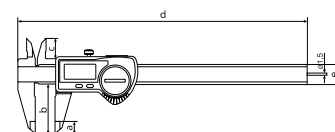
Application:

Outer measuring surfaces made of ceramic, for measuring hard materials

TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
4103372	16 EWri-C	mm	inch	mm/inch	mm	ISO 13385-1	mm	round
4103072	16 EWR-C	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	round

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



FEATURES 16 EWri-C:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

FEATURES 16 EWR-C:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWri-C	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-C	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-C	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-C	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWRI-H / 16 EWR-H

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWRI-H

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 digit 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-H

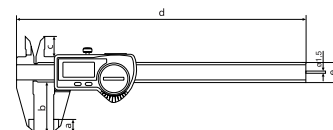
Application:

Outer measuring surfaces made of carbide, for measuring hard materials

TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103373	16 EWRI-H	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	11	round
4103073	16 EWR-H	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-1	8,5	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



FEATURES 16 EWRI-H:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

FEATURES 16 EWR-H:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-H	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-H	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-H	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-H	16 EWd	Data cable Digimatic (2 m)



i-Stick

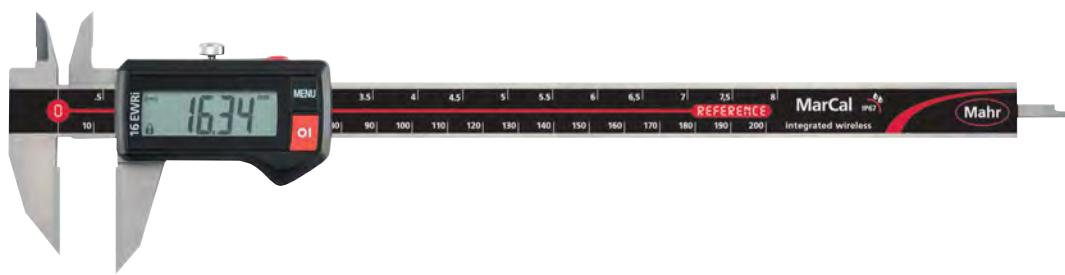
MarCal 16 EWri-AR / 16 EWR-AR

Digital special calipers

FUNCTIONS

Functions 16 EWri-AR:

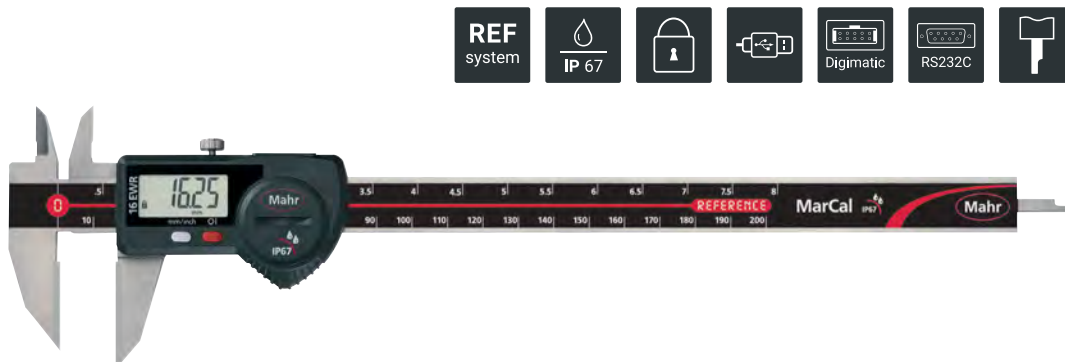
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (data transmission)
- HOLD (freeze current measured value)



16 EWri-AR

Functions 16 EWR-AR:

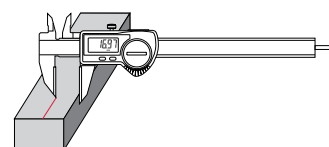
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast digit display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- 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:

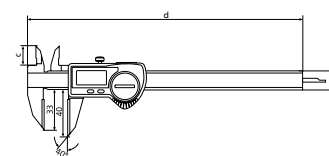
- Outer measuring surfaces made of carbide
- For marking out workpieces



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103382	16 EWri-AR	0 – 200	0 – 8"	0,01 / .0005"	0,03	Factory standard	11	rectangular
4103082	16 EWR-AR	0 – 200	0 – 8"	0,01 / .0005"	0,03	Factory standard	8,5	rectangular

Order no.	c	d	e
	mm	mm	mm
4103382	16,5	285	16
4103082	16,5	285	16



FEATURES 16 EWri-AR:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

- Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

FEATURES 16 EWR-AR:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWri-AR	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-AR	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-AR	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-AR	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWRI-NA / 16 EWR-NA

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWRI-NA

Functions 16 EWR-NA:

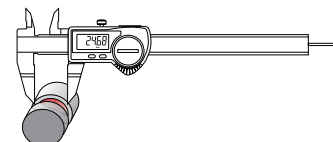
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast digit display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- 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-NA

Application:

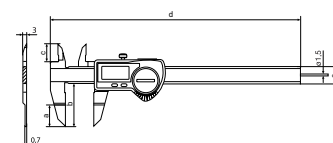
For measuring keyseats



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
4103374	16 EWRI-NA	0 – 150	0 – 6"	0,01 / .0005"	0,03	Factory standard	11	round
4103074	16 EWR-NA	0 – 150	0 – 6"	0,01 / .0005"	0,03	Factory standard	8,5	round

Order no.	a	b	c	d	e
4103374	20	40	16,5	235	16
4103074	20	40	16,5	235	16



FEATURES 16 EWRI-NA:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

FEATURES 16 EWR-NA:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-NA	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-NA	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-NA	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-NA	16 EWd	Data cable Digimatic (2 m)



i-Stick

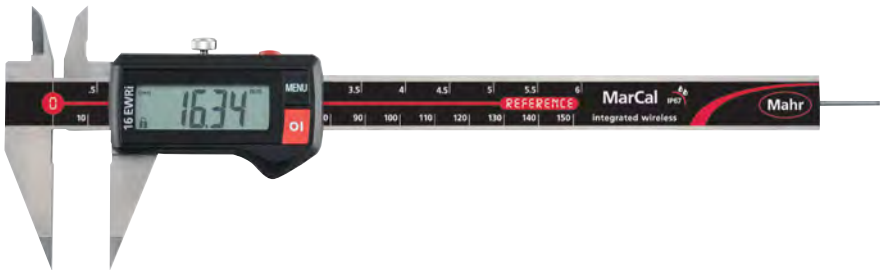
MarCal 16 EWri-S / 16 EWR-S

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWri-S



Functions 16 EWR-S:

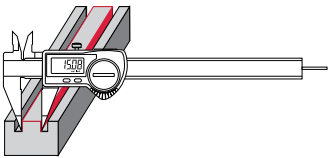
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast digit display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- 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-S



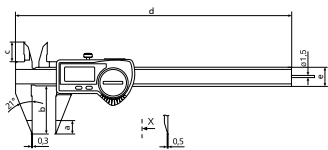
Application:
With pointed jaws e.g. for measuring distances between grooves



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103375	16 EWri-S	0 – 150	0 – 6"	0,01 / .0005"	0,03	Factory standard	11	round
4103075	16 EWR-S	0 – 150	0 – 6"	0,01 / .0005"	0,03	Factory standard	8,5	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



FEATURES 16 EWri-S:

- IP protection category:** IP 67
- Energy supply:** Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)
- Battery type:** CR 2032 (3V Lithium)
- Data interface:** Integrated Wireless
- Package contains:** battery, test certificate, instruction manual, case
- Software:** MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

FEATURES 16 EWR-S:

- Energy supply:** Battery, battery life approx. 3 years
- Data interface:** USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWri-S	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-S	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-S	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-S	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWRI-SM / 16 EWR-SM

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



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 digit 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

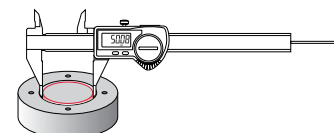


16 EWR-SM



Application:

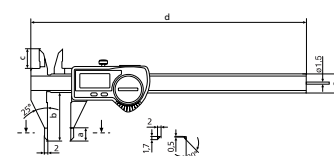
With pointed jaws e.g. for measuring distances between grooves



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103376	16 EWRI-SM	0 - 150	0 - 6"	0,01 / .0005"	0,03	Factory standard	11	round
4103076	16 EWR-SM	0 - 150	0 - 6"	0,01 / .0005"	0,03	Factory standard	8,5	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



FEATURES 16 EWRI-SM:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

FEATURES 16 EWR-SM:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-SM	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-SM	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-SM	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-SM	16 EWd	Data cable Digimatic (2 m)



i-Stick

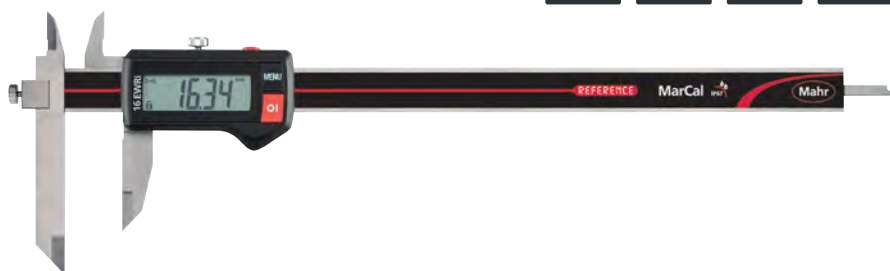
MarCal 16 EWRI-VS / 16 EWR-VS

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWRI-VS

Functions 16 EWR-VS:

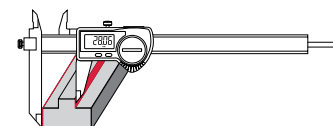
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (data transmission via connection cable)
- High contrast digit display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- 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-VS

Application:

With moving jaws for measuring stepped workpieces



TECHNICAL DATA

FEATURES 16 EWRI-VS:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

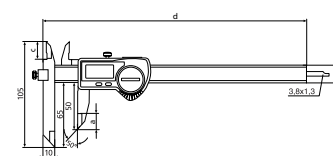
Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232C interface)

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
4103383	16 EWRI-VS	0 – 200	0 – 8"	0,01 / .0005"	0,04	Factory standard	11	rectangular
4103083	16 EWR-VS	0 – 200	0 – 8"	0,01 / .0005"	0,04	Factory standard	8,5	rectangular

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



FEATURES 16 EWR-VS:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-VS	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-VS	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-VS	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-VS	16 EWd	Data cable Digimatic (2 m)



i-Stick

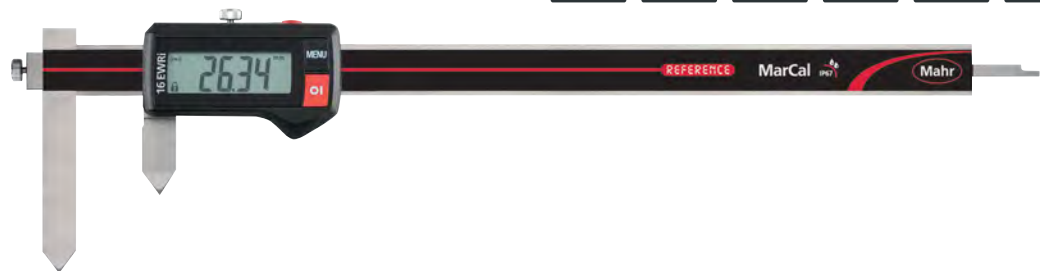
MarCal 16 EWRI-BA / 16 EWR-BA

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWRI-BA

Functions 16 EWR-BA:

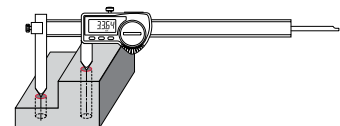
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast digit display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- 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-BA

Application:

For measuring the distance between bores



TECHNICAL DATA

FEATURES 16 EWRI-BA:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

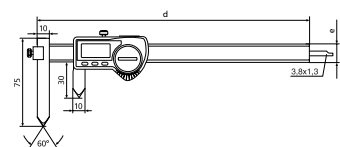
Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
4103384	16 EWRI-BA	10 – 210	0,4 – 8,3"	0,01 / .0005"	0,04	Factory standard	11	rectangular
4103084	16 EWR-BA	10 – 210	0,4 – 8,3"	0,01 / .0005"	0,04	Factory standard	8,5	rectangular

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



FEATURES 16 EWR-BA:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-BA	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-BA	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-BA	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-BA	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWri-SA / 16 EWR-SA

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWri-SA



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 digit 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

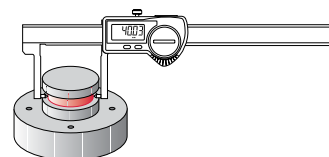


16 EWR-SA



Application:

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



FEATURES 16 EWri-SA:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

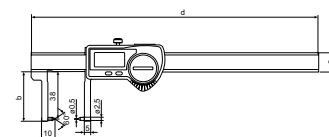
Package contains: battery, test certificate, instruction manual, case

Software: MarCom 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.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103377	16 EWri-SA	0 - 140	0 - 6"	0,01 / .0005"	0,03	Factory standard	11	none
4103077	16 EWR-SA	0 - 140	0 - 6"	0,01 / .0005"	0,03	Factory standard	8,5	none

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



FEATURES 16 EWR-SA:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWri-SA	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-SA	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-SA	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-SA	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWRI-AA / 16 EWR-AA

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWRI-AA



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 digit 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

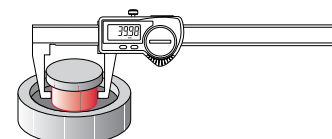


16 EWR-AA



Application:

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



FEATURES 16 EWRI-AA:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

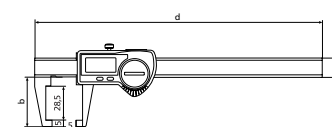
Package contains: battery, test certificate, instruction manual, case

Software: MarCom 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.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103379	16 EWRI-AA	0 – 150	0 – 6"	0,01 / .0005"	0,03	Factory standard	11	none
4103079	16 EWR-AA	0 – 150	0 – 6"	0,01 / .0005"	0,03	Factory standard	8,5	none

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



FEATURES 16 EWR-AA:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-AA	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-AA	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-AA	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-AA	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWRI-SI / 16 EWR-SI

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



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 digit 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

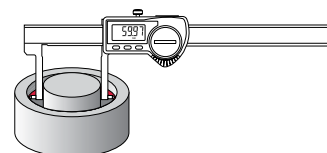


16 EWR-SI



Application:

Outward-angled measuring tips for measuring recesses in bores



TECHNICAL DATA

FEATURES 16 EWRI-SI:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

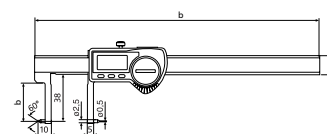
Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103378	16 EWRI-SI	20 – 170	0,8 – 6,7"	0,01 / .0005"	0,03	Factory standard	11	none
4103078	16 EWR-SI	20 – 170	0,8 – 6,7"	0,01 / .0005"	0,03	Factory standard	8,5	none

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



FEATURES 16 EWR-SI:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-SI	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-SI	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-SI	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-SI	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWRI-AI / 16 EWR-AI

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWRI-AI

Functions 16 EWR-AI:

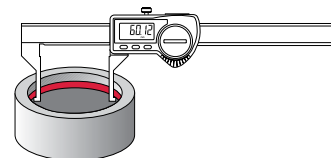
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast digit display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- 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-AI

Application:

Outward-angled measuring surfaces for measuring recesses in bores



TECHNICAL DATA

FEATURES 16 EWRI-AI:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

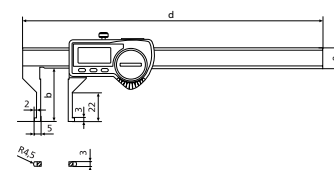
Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
4103380	16 EWRI-AI	10 – 160	0,4 – 6,3"	0,01 / .0005"	0,03	Factory standard	11	none
4103080	16 EWR-AI	10 – 160	0,4 – 6,3"	0,01 / .0005"	0,03	Factory standard	8,5	none

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



FEATURES 16 EWR-AI:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-AI	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-AI	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-AI	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-AI	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWri-RW / 16 EWR-RW

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



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 digit 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

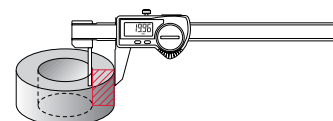


16 EWR-RW



Application:

Measurement of wall thicknesses



FEATURES 16 EWri-RW:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

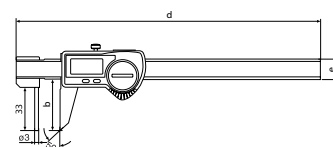
Package contains: battery, test certificate, instruction manual, case

Software: MarCom 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.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103381	16 EWri-RW	0 - 150	0 - 6"	0,01 / .0005"	0,05	Factory standard	11	none
4103081	16 EWR-RW	0 - 150	0 - 6"	0,01 / .0005"	0,05	Factory standard	8,5	none

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



FEATURES 16 EWR-RW:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWri-RW	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-RW	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-RW	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-RW	16 EWd	Data cable Digimatic (2 m)



i-Stick

MarCal 16 EWRI-LI / 16 EWR-LI

Digital special calipers

FUNCTIONS

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 (freeze current measured value)



16 EWRI-LI

Functions 16 EWR-LI:

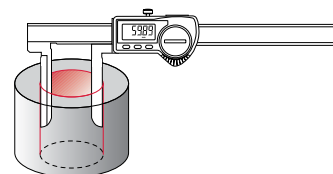
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast digit display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and 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:

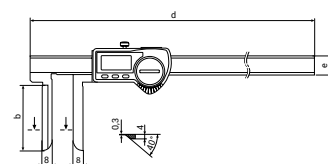
With long inner blades



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4103385	16 EWRI-LI	10 – 200	0,4 – 8"	0,01 / .0005"	0,05	Factory standard	11	none
4103085	16 EWR-LI	10 – 200	0,4 – 8"	0,01 / .0005"	0,05	Factory standard	8,5	none

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



FEATURES 16 EWRI-LI:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

FEATURES 16 EWR-LI:

Energy supply: Battery, battery life approx. 3 years

Data interface: USB, Opto RS-232C, Digimatic

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	16 EWRI-LI	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EWR-LI	16 EXu	Data connection cable USB (2 m)
4102410	16 EWR-LI	16 EXr	Data connection cable RS232C (2 m)
4102915	16 EWR-LI	16 EWd	Data cable Digimatic (2 m)



i-Stick

Digital depth gage

FUNCTIONS

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 (freeze current measured value)
- 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 digit 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



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height
		mm	inch	mm/inch	mm		mm
4126671	30 EWRI	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-2	11
4126672	30 EWRI	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-2	11
4126673	30 EWRI	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-2	11
4126674	30 EWRI	0 – 500	0 – 20"	0,01 / .0005"	0,05	ISO 13385-2	11
4126651	30 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	ISO 13385-2	8,5
4126652	30 EWR	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-2	8,5
4126653	30 EWR	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-2	8,5
4126654	30 EWR	0 – 500	0 – 20"	0,01 / .0005"	0,05	ISO 13385-2	8,5

FEATURES 30 EWRI:

IP protection category: IP 67

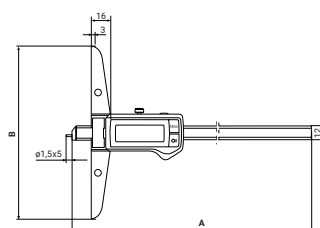
Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Order no.	a	b	Rail cross-section
	mm	mm	mm
4126671	230	100	12 x 3,5
4126672	280	100	12 x 3,5
4126673	382	150	12 x 3,5
4126674	586	150	12 x 3,5
4126651	230	100	12 x 3,5
4126652	280	100	12 x 3,5
4126653	382	150	12 x 3,5
4126654	586	150	12 x 3,5



ACCESSORIES

FEATURES 30 EWR:

IP protection category: IP 67

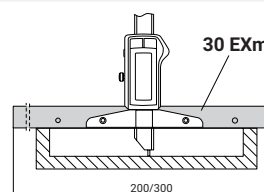
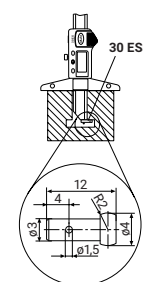
Energy supply: Battery, battery life approx. 3 years

Battery type: CR 2032 (3V Lithium)

Data interface: USB, Opto RS-232C, Digimatic

Package contains: battery, test certificate, instruction manual, case

Order no.	For measuring instrument	Type	Quantitacay unit	Description
4102220	30 EWri	i-Stick		Wireless receiver for measuring instruments with Integrated Wireless
4102357	30 EWR	16 EXu		Data connection cable USB (2 m)
4102410	30 EWR	16 EXr		Data connection cable RS232C (2 m)
4102915	30 EWR	16 EWd		Data cable Digimatic (2 m)
4125611	30 EWri, 30 EWR	30 ESa	Piece	Anvil (4 mm)
4126510	30 EWri, 30 EWR	30 EXm		Cross beam extension (300 mm)
4126511	30 EWri, 30 EWR	30 EXm		Cross beam extension (200 mm)



FUNCTIONS

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



FEATURES

- High contrast digit display
- Locking screw above
- Lapped guideway
- Measuring pin with spherical measuring surface made of hardened steel
- Measuring bridge element made of wear-resistant anodized and lightweight aluminum
- 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

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

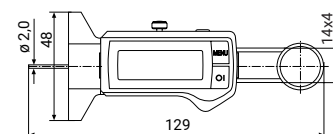
Application:

- 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	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height	Depth rod
		mm	inch	mm/inch	mm		mm	
4126751	30 EWRI	0 – 25	0 – 1"	0,01 / .0005"	0,02	ISO 13385-2	11	round

Order no.	a	b
	mm	mm
4126751	129	48



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless



i-Stick

MarCal 30 EWRI-D / 30 EWR-D

Digital depth gage

FUNCTIONS

- High contrast digit 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-D



30 EWR-D

FEATURES 30 EWRI-D:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)

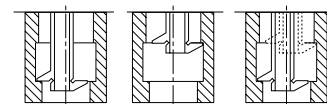
Battery type: CR 2032 (3V Lithium)

Data interface: Integrated Wireless

Package contains: battery, test certificate, instruction manual, case

Application:

Measuring groove widths and distances between grooves. Special advantage: The two measuring surfaces - downwards and upwards to the measuring direction - are precisely machined in one plane, so the set zero position applies to both measuring surfaces.



FEATURES 30 EWR-D:

IP protection category: IP 67

Energy supply: Battery, battery life approx. 3 years

Battery type: CR 2032 (3V Lithium)

Data interface: USB, Opto

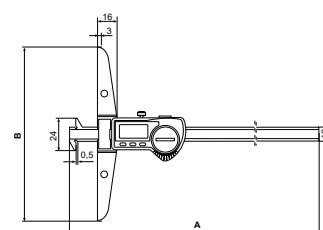
RS-232C, Digimatic

Package contains: battery, test certificate, instruction manual, case

TECHNICAL DATA

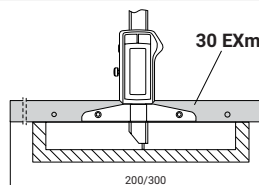
Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height
		mm	inch	mm/inch	mm		mm
4126535	30 EWRI-D	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-2	11
4126536	30 EWRI-D	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-2	11
4126525	30 EWR-D	0 – 200	0 – 8"	0,01 / .0005"	0,03	ISO 13385-2	8,5
4126526	30 EWR-D	0 – 300	0 – 12"	0,01 / .0005"	0,04	ISO 13385-2	8,5

Order no.	a	b	c	Rail cross-section
	mm	mm	mm	mm
4126535	289	100	12	12 x 3,5
4126536	391	150	12	12 x 3,5
4126525	289	100	12	12 x 3,5
4126526	391	150	12	12 x 3,5



ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	30 EWRI-D	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	30 EWR-D	16 EXu	Data connection cable USB (2 m)
4102410	30 EWR-D	16 EXr	Data connection cable RS232C (2 m)
4102915	30 EWR-D	16 EWd	Data cable Digimatic (2 m)
4126510	30 EWRI-D, 30 EWR-D	30 EXm	Cross beam extension (300 mm)
4126511	30 EWRI-D, 30 EWR-D	30 EXm	Cross beam extension (200 mm)

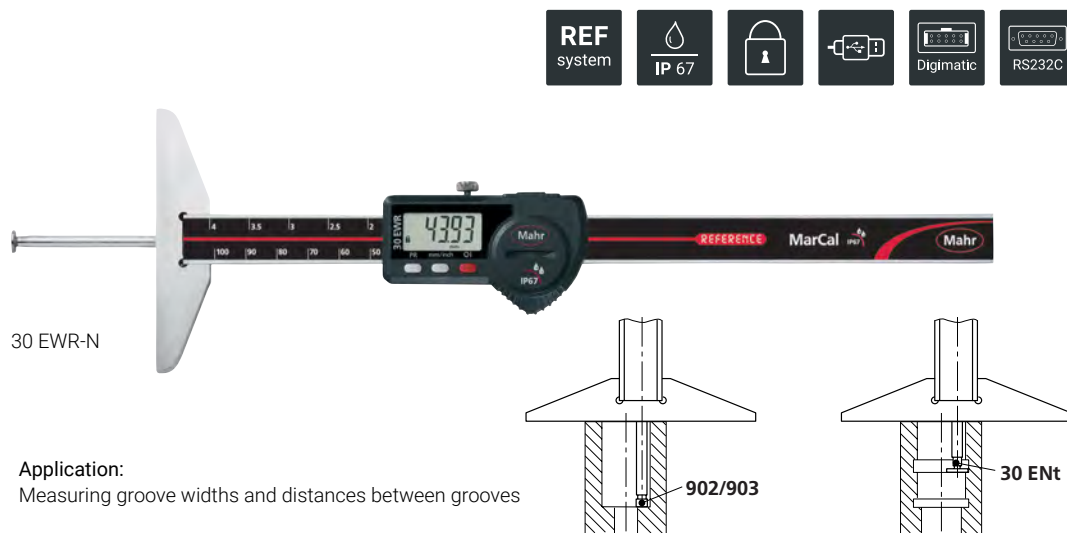


Digital depth gage

- 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 (freeze current measured value)



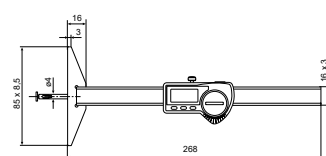
- ON/OFF
- AUTO-ON/OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (data transmission via connection cable)
- High contrast digit display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam 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



IP protection category: IP 67
Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)
Battery type: CR 2032 (3V Lithium)
Data interface: Integrated Wireless
Package contains: battery, test certificate, instruction manual, anvils 30 Ent (1mm), 902 (4mm) and 903 (4mm), case

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Resolution	Error limit	Standard	Digit height
		mm	inch	mm/inch	mm		mm
4126532	30 EWRi-N	0 – 100	0 – 4"	0,01 / .0005"	0,03	ISO 13385-2	11
4126513	30 EWR-N	0 – 100	0 – 4"	0,01 / .0005"	0,03	ISO 13385-2	8,5

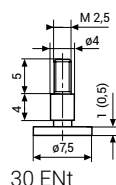
Order no.	a	b	c
	mm	mm	mm
4126532	268	85	16
4126513	268	85	16



FEATURES 30 FWR-N:

Energy supply: Battery, battery life approx. 3 years
Data interface: USB, Opto RS-232C, Digimatic

Order no.	For measuring instrument	Type	Quantitacay unit	Description
4102220	30 EWRi-N	i-Stick		Wireless receiver for measuring instruments with Integrated Wireless
4102357	30 EWR-N	16 EXu		Data connection cable USB (2 m)
4102410	30 EWR-N	16 EXr		Data connection cable RS232C (2 m)
4102915	30 EWR-N	16 EWd		Data cable Digimatic (2 m)
4126310	30 EWR-N, 30 EWRi-N	30 Ent	Piece	Disc type anvil (7,5 x 0,5 mm)
4882022	30 EWR-N, 30 EWRi-N	30 Ent	Piece	Disc type anvil (7,5 x 1 mm)



Micromar | Micrometers

Micrometers are among the most frequently used handheld measuring instruments. Products in the Micromar series boast superior precision and impressive reliability.

The latest generations of digital calipers and interior micrometers impress with their simple, intuitive operation and practical functions. Equipped with special IP protection, nothing stands in the way of their use even under the most challenging workshop conditions.



Overview Micromar micrometers	68
Outside micrometers	
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Micromar 40 EWR

Digital micrometer

With the Micromar 40 EWRi digital waterproof micrometer,, 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.

High-contrast display

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



Reference Lock

function prevents operating error caused by accidental usage of the operating buttons.

Steel frame

Sturdy hard lacquered

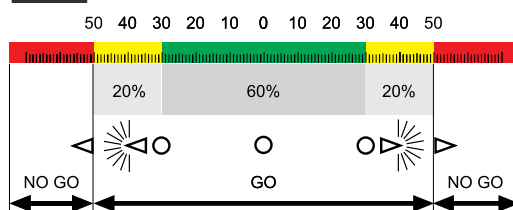
ABS

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.

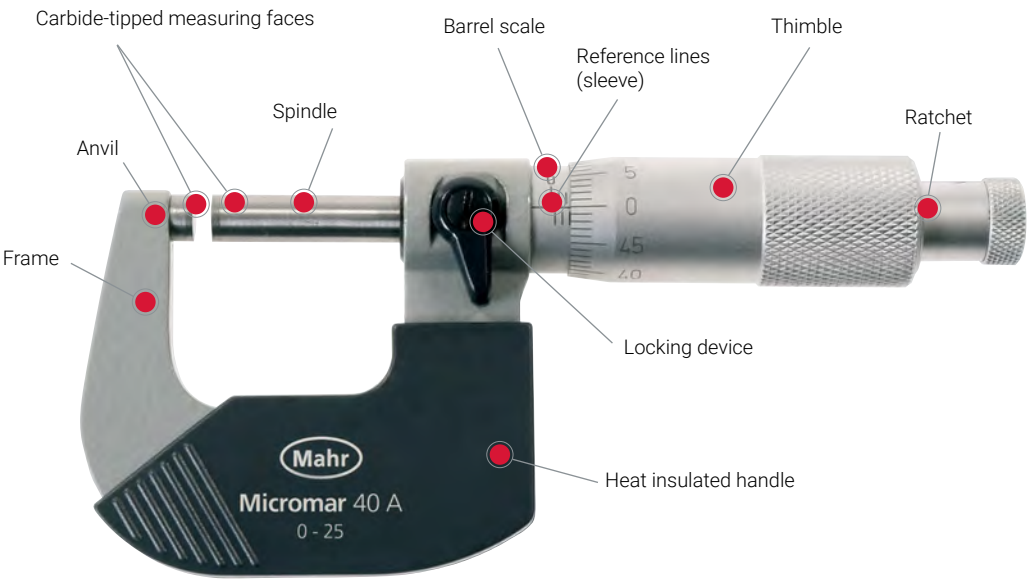


Protection class IP65 in accordance with IEC 60529, the waterproof measuring system FPS (Fluid Protected measuring System) with a sealed housing.



Micromar

Terms



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 in the following display variants:

a) Digital micrometer with digital display



b) Mechanical micrometer with scale and dial



c) Mechanical micrometer with scale



Digital 3-point inside micrometer **with unique compact measuring element**

The Micromar 44 EWR(i) digital 3-point inside micrometer for measuring inner diameters boasts a lighter and more compact measuring element than its predecessors - for even more sensitivity and clarity when measuring.

The latest generation of Micromar micrometers offers some exciting new features with the 44 EWR(i) model. The housing of the measuring element is made of plastic, which offers enormous advantages when measuring; not only is the micrometer unit very light and compact, this ergonomic lightweight also offers maximum sensitivity during operation. The smooth ratchet stop enables extra precise measurements and the large, high-contrast display also contributes to additional safety when reading off the measuring results and icons.

The measuring heads from Ø 30 mm now feature a black anodized surface and stainless steel front panels which, thanks to the hardened surface and material properties, offer improved wear and corrosion protection and are also easier to clean.

Another new feature is the 3-value PRESET function, which allows you to preset dimensions and tolerances for three reference values at once.



Advantages

- Lightweight and compact plastic micrometer unit
- Corrosion- and wear-resistant measuring heads
- Wide range of sizes for measuring ranges from 6 to 200 mm
- Preset: Three PRESET and tolerance values possible
- Connectivity: Model available both as 44 EWR with bidirectional data output (cable) or 44 EWRi with Integrated Wireless
- Download free MarCom Professional software
- Available as an individual instrument or as a set

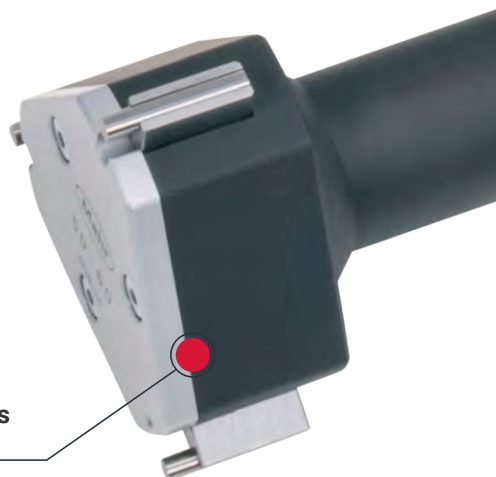


Compact plastic measuring element

The new plastic measuring element is ergonomically optimized and significantly lighter than comparable measuring elements – giving you maximum sensitivity when measuring.

Wear- and corrosion-resistant measuring heads

The measuring heads from 6 to 30 mm are optimally protected for all workshop requirements thanks to their satin chrome surface. The measuring heads from 30 mm (manufactured with a lightweight aluminum body) are now black anodized and feature non-corrosive front panels for optimum durability and cleaning properties.



Micromar 44 EWR(i)

Digital 3-point inside micrometer



Set 20-50 mm



Outstanding connectivity and remote control capability



Benefit from the USB and Integrated Wireless functionality and the option of setting up your measuring instrument easily and clearly via a PC or operating it remotely.

Smooth ratchet stop

The extended ratchet offers you even more sensitivity during operation and thus ensures more precise measurements.



Large screen with integrated tolerance display

The particularly large display enables error-free reading and offers sufficient contrast to quickly read the 10 mm digits at a glance. The tolerance and warning limits function provides a clear and direct overview of tolerances.

Tried and tested function keys

The proven 3-key functionality offers a clear and intuitive operating philosophy and ensures additional safety when measuring.

Further information on the product, product variants and accessories can be found on our website:

[metrology.mahr.com/
micromar-3-point-inside-measuring-devices](https://metrology.mahr.com/micromar-3-point-inside-measuring-devices)



Micromar 844 EWR(i)

Digital 3-point inside measuring instrument

Digital 3-point inside measuring device **with lever return**

The Micromar 844 EWR(i) digital 3-point inside measuring device for measuring inner diameters boasts an ergonomic handle with release lever for fast, self-centering measurements over the entire measuring range and a rotating display with touch operation.

With the Micromar 844 EWR(i) inside measuring device, you can quickly measure diameters of different sizes in one step. The stroke path covers the entire application range of the respective measuring head.

You can use the red operating keys in the lever to either trigger a data command or activate the hold function - ideal for situations in which you do not have a direct view of the device display (e.g. in the machine). The spring-loaded measuring force guarantees high reproducibility of the measuring results for measurements such as through holes or blind holes.

But the lever return is not the only new feature: The integrated display module boasts features such as touch operating keys with handy direct functions, an extra-hardened glass front, colored LEDs for measurement classification and unparalleled connectivity and remote control capability.



Advantages

- Measuring pistol with lever return for fast and self-centering measurement of different diameters
- Integrated measuring system with conveniently rotating display module
- Wide range of sizes for measuring ranges from 6 to 100 mm
- Preset: 3 PRESET and tolerance values possible
- Connectivity: Model available both as 844 EWR with bidirectional data output (cable) or 844 EWRi with Integrated Wireless
- Remote control via the free downloadable MarCom Professional software
- Available as an individual instrument or as a set



Outstanding connectivity and remote control capability

Benefit from the USB and Integrated Wireless functionality and the option of setting up your measuring instrument easily and clearly via a PC or operating it remotely. You can use the free MarCom Professional software for this.



Wear- and corrosion-resistant measuring heads

The measuring heads from 6 to 30 mm are optimally protected for all workshop requirements thanks to their satin chrome surface. The measuring heads from 30 mm (manufactured with a lightweight aluminum body) are now black anodized and feature non-corrosive front panels for optimum durability and cleaning properties.

Micromar 844 EWR(i)

Digital 3-point inside measuring instrument

Further information on the product, product variants and accessories can be found on our website:

[metrology.mahr.com/
micromar-3-point-inside-measuring-devices](https://metrology.mahr.com/micromar-3-point-inside-measuring-devices)



Ergonomic handle with lever return

Quick measurements with a simple hand movement. The lever stroke covers the entire application range of the self-centering measuring head.



Rotating screen with touch operation and integrated tolerance display

The particularly large display makes for reliable reading, while the integrated tolerance display provides a clear and direct overview of tolerances, including colored LED measurement classification. The display can also be rotated, allowing you to work in all directions.

Handy DATA/HOLD keys in the lever

Measure and record the value in one step: Either trigger a data command or activate the hold function (freeze the current measured value). Ideal for situations in which you do not have a direct view of the device display.

The arrangement of the keys means that you can always trigger them with your index finger, regardless of the position in which you are operating.



Set 20-50 mm



Micromar 40 EWri

Digital outside micrometers

REF
system

IP 65

#ID

ABS

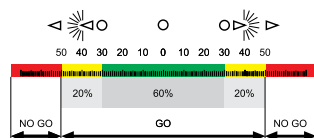
ABS

TOL

TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



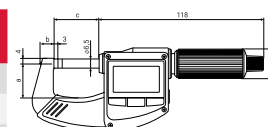
FEATURES

- High contrast digit 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
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)
- Battery type: CR 2032 (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: setting values, battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Parallelism deviation	Flatness deviation	Standard	Measuring force	Height of digits	Contact surface
		mm	inch	mm/inch	μm	μm	μm		N	mm	
4157100	40 EWri	0 – 25	0 – 1"	0,001 / .00005"	2	2	0,6	ISO 3611	5 – 10	10	flat
4157101	40 EWri	25 – 50	1 – 2"	0,001 / .00005"	2	2	0,6	ISO 3611	5 – 10	10	flat
4157102	40 EWri	50 – 75	2 – 3"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157103	40 EWri	75 – 100	3 – 4"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157104	40 EWri	100 – 125	4 – 5"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157105	40 EWri	125 – 150	5 – 6"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157106	40 EWri	150 – 175	6 – 7"	0,001 / .00005"	4	4	0,6	ISO 3611	5 – 10	10	flat
4157107	40 EWri	175 – 200	7 – 8"	0,001 / .00005"	4	4	0,6	ISO 3611	5 – 10	10	flat
4157115	40 EWri	0 – 100	0 – 4"	0,001 / .00005"				ISO 3611	5 – 10	10	flat

Order no.	Measuring surface	Spindle thread pitch	Number of micrometers	a	b	c
		mm		mm	mm	mm
4157100	Carbide	0,5		24	9,5	32
4157101	Carbide	0,5		36	11	57
4157102	Carbide	0,5		45	13	82
4157103	Carbide	0,5		57	13	107
4157104	Carbide	0,5		73	13	132
4157105	Carbide	0,5		82	13	157
4157106	Carbide	0,5		95	13	182
4157107	Carbide	0,5		106	13	207
4157115	Carbide	0,5	4			



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4158000	41 H	Stand, for holding outside micrometers



41 H



i-Stick

Micromar 40 EWR

Digital micrometer

REF
system

IP 65

+

#ID

Digimatic

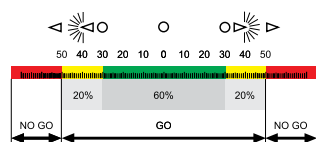
ABS

LOCK

TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission via connection cable)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



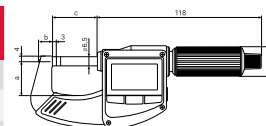
FEATURES

- High contrast digit 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
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Parallelism deviation	Flatness deviation	Standard	Measuring force	Height of digits	Contact surface
		mm	inch	mm/inch	µm	µm	µm		N	mm	
4157000	40 EWR	0 – 25	0 – 1"	0,001 / .00005"	2	2	0,6	ISO 3611	5 – 10	10	flat
4157001	40 EWR	25 – 50	1 – 2"	0,001 / .00005"	2	2	0,6	ISO 3611	5 – 10	10	flat
4157002	40 EWR	50 – 75	2 – 3"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157003	40 EWR	75 – 100	3 – 4"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157004	40 EWR	100 – 125	4 – 5"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157005	40 EWR	125 – 150	5 – 6"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157006	40 EWR	150 – 175	6 – 7"	0,001 / .00005"	4	4	0,6	ISO 3611	5 – 10	10	flat
4157007	40 EWR	175 – 200	7 – 8"	0,001 / .00005"	4	4	0,6	ISO 3611	5 – 10	10	flat
4157015	40 EWR	0 – 100	0 – 4"	0,001 / .00005"				ISO 3611	5 – 10	10	flat

Order no.	Measuring surface	Spindle thread pitch	Number of micrometers	a	b	c
		mm		mm	mm	mm
4157000	Carbide	0,5		24	9,5	32
4157001	Carbide	0,5		36	11	57
4157002	Carbide	0,5		45	13	82
4157003	Carbide	0,5		57	13	107
4157004	Carbide	0,5		73	13	132
4157005	Carbide	0,5		82	13	157
4157006	Carbide	0,5		95	13	182
4157007	Carbide	0,5		106	13	207
4157015	Carbide	0,5	4			



ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4158000	41 H	Stand, for holding outside micrometers



Micromar 40 ER

Digital micrometer

REF
system

IP 40

FUNCTIONS

- RESET (set display to zero)
- mm/inch
- HOLD (freeze current measured value)
- LOCK function (key lock)

FEATURES

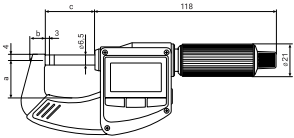
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- IP protection category: IP 40
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Package contains: battery, test certificate, instruction manual, case



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Model Contact surface
4157010	40 ER	mm 0 – 25	inch 0 – 1"	mm/inch 0,001 / .00005"	µm 2	ISO 3611	N 5 – 10	mm 10	flat

Order no.	Measuring surface	Spindle thread pitch	a	b	c
4157010	Carbide	mm 0,5	mm 24	mm 9,5	mm 32



ACCESSORIES

Order no.	Type	Description
4158000	41 H	Stand, for holding outside micrometers



41 H

Micromar 40 EWR

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)
- HOLD (freeze current measured value)

FEATURES

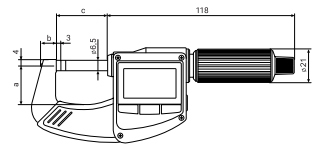
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface
		mm	inch	mm/inch	µm		N	mm	
4157011	40 EWR	0 – 25	0 – 1"	0,001 / .00005"	2	ISO 3611	5 – 10	10	flat
4157012	40 EWR	25 – 50	1 – 2"	0,001 / .00005"	2	ISO 3611	5 – 10	10	flat
4157013	40 EWR	50 – 75	2 – 3"	0,001 / .00005"	3	ISO 3611	5 – 10	10	flat
4157014	40 EWR	75 – 100	3 – 4"	0,001 / .00005"	3	ISO 3611	5 – 10	10	flat

Order no.	Measuring surface	Spindle thread pitch	a	b	c
		mm	mm	mm	mm
4157011	Carbide	0,5	24	9,5	32
4157012	Carbide	0,5	36	11	57
4157013	Carbide	0,5	45	13	82
4157014	Carbide	0,5	57	13	107



ACCESSORIES

Order no.	Type	Description
4158000	41 H	Stand, for holding outside micrometers



Micromar 40 EWri-L

Digital micrometer

REF
system

IP 65

WIFI

#ID

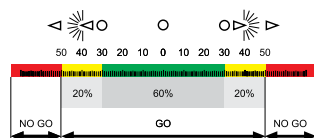
ABS

LOCK

TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



FEATURES

- High contrast digit 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
- IP protection category: IP 65
- Energy supply: Battery life approx. 2 years (approx. 0.5 in wireless mode)
- Battery type: CR 2032 (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

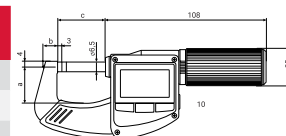
Application:

- Avoiding workpiece damage: The non-rotating spindle has a touching touch, 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Parallelism deviation	Flatness deviation	Standard	Measuring force	Height of digits	Contact surface
		mm	inch	mm/inch	µm	µm	µm		N	mm	
4157120	40 EWri-L	0 – 25	0 – 1"	0,001 / .00005"	2	2	0,6	ISO 3611	5 – 10	10	flat
4157121	40 EWri-L	25 – 50	1 – 2"	0,001 / .00005"	2	2	0,6	ISO 3611	5 – 10	10	flat
4157122	40 EWri-L	50 – 75	2 – 3"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157123	40 EWri-L	75 – 100	3 – 4"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157410	40 EWri-L	0 – 100	0 – 4"	0,001 / .00005"				ISO 3611	5 – 10	10	flat

Order no.	Measuring surface	Spindle thread pitch	Number of micrometers	a	b	c
		mm		mm	mm	mm
4157120	Carbide	5		24	9,5	32
4157121	Carbide	5		36	11	57
4157122	Carbide	5		45	13	82
4157123	Carbide	5		57	13	107
4157410	Carbide	5	4			



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4158000	41 H	Stand, for holding outside micrometers



Micromar 40 EWR-L

Digital micrometer

REF
system

IP 65

+

#ID

Digimatic

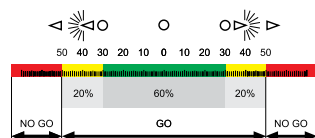
ABS

LOCK

TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission via connection cable)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



FEATURES

- High contrast digit 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
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

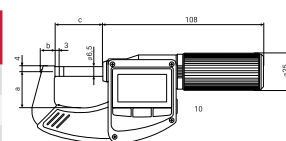
Application:

- Avoiding workpiece damage: The non-rotating spindle has a touching touch, 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Parallelitätsabweichung	Flatness deviation	Standard	Measuring force	Height of digits	Contact surface
		mm	inch	mm/inch	µm	µm	µm		N	mm	
4157020	40 EWR-L	0 – 25	0 – 1"	0,001 / .00005"	2	2	0,6	ISO 3611	5 – 10	10	flat
4157021	40 EWR-L	25 – 50	1 – 2"	0,001 / .00005"	2	2	0,6	ISO 3611	5 – 10	10	flat
4157022	40 EWR-L	50 – 75	2 – 3"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157023	40 EWR-L	75 – 100	3 – 4"	0,001 / .00005"	3	3	0,6	ISO 3611	5 – 10	10	flat
4157400	40 EWR-L	0 – 100	0 – 4"	0,001 / .00005"				ISO 3611	5 – 10	10	flat

Order no.	Measuring surface	Spindle thread pitch	Number of micrometers	a	b	c
		mm		mm	mm	mm
4157020	Carbide	5		24	9,5	32
4157021	Carbide	5		36	11	57
4157022	Carbide	5		45	13	82
4157023	Carbide	5		57	13	107
4157400	Carbide	5	4			



ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Datenverbindungskabel USB Bi-Direktional (2 m)
4102606	DK-D1	Datenverbindungskabel Digimatic (2 m)
4158000	41 H	Stand, for holding outside micrometers



41 H

Micromar 40 A / 40 SA

Micrometer

FEATURES

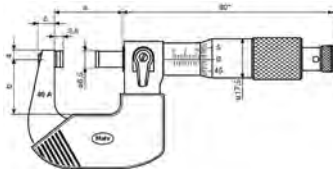
- Operating and display units with satin chrome finish
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide-tipped
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- Package contains: setting standard (measuring range of 25–50 mm), instruction manual,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



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Readings	Error limit	Standard	Contact surface	Spindle thread pitch	Number of micrometers
		mm	mm	µm			mm	
4134000	40 A	0 – 25	0,01	4	Factory standard	flat	0,5	
4134001	40 A	25 – 50	0,01	4	Factory standard	flat	0,5	
4134002	40 A	50 – 75	0,01	5	Factory standard	flat	0,5	
4134003	40 A	75 – 100	0,01	5	Factory standard	flat	0,5	
4134004	40 A	100 – 125	0,01	6	Factory standard	flat	0,5	
4134005	40 A	125 – 150	0,01	6	Factory standard	flat	0,5	
4134006	40 A	150 – 175	0,01	7	Factory standard	flat	0,5	
4134007	40 A	175 – 200	0,01	7	Factory standard	flat	0,5	
4134050	40 SA	0 – 100	0,01		Factory standard	flat	0,5	4
4134051	40 SA	100 – 200	0,01		Factory standard	flat	0,5	4

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
4134050			
4134051			



ACCESSORIES

Order no.	Type	Description
4158000	41 H	Stand, for holding outside micrometers



Micromar 40 A / 40 SA

Micrometer

FEATURES

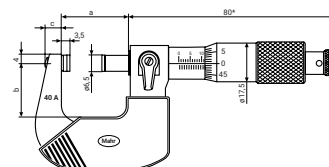
- Operating and display units with satin chrome finish
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide-tipped
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- Package contains: instruction manual, setting standard (from measuring range 1–2"),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



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Readings	Standard	Contact surface	Spindle thread pitch
		inch	inch			inch
4134900	40 A	0 – 1"	0,0001	Factory standard	flat	0,025
4134901	40 A	1 – 2"	0,0001	Factory standard	flat	0,025
4134902	40 A	2 – 3"	0,0001	Factory standard	flat	0,025
4134903	40 A	3 – 4"	0,0001	Factory standard	flat	0,025
4134904	40 A	4 – 5"	0,0001	Factory standard	flat	0,025
4134905	40 A	5 – 6"	0,0001	Factory standard	flat	0,025
4134906	40 A	6 – 7"	0,0001	Factory standard	flat	0,025
4134907	40 A	7 – 8"	0,0001	Factory standard	flat	0,025
4134960	40 SA	0 – 4"	0,0001	Factory standard	flat	0,025
4134961	40 SA	4 – 8"	0,0001	Factory standard	flat	0,025

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
4134960			
4134961			



ACCESSORIES

Order no.	Type	Description
4158000	41 H	Stand, for holding outside micrometers



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



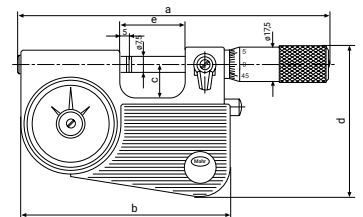
Application:

- 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	4150900	4150901
Type		40 F		40 FC		40 F	
Measuring span of indicator	mm	0 – 25	25 – 50	0 – 25	25 – 50		
Measuring span of indicator	inch					0 – 1"	1 – 2"
Measuring range of dial comparator	µm		± 65				
Measuring range of dial comparator	inch					± .0025"	
Readings	mm		0,01				
Readings	inch					0,0001	
Scale graduation value of dial comparator	µm		1				
Scale graduation value of dial comparator	inch					0,00005	
Error limit	µm		2				
Error limit	inch					0,00008	
Parallelism deviation	µm			1			
Flatness deviation	µm			0,2			
Error limit G _e	µm		1				
Error limit G _e	inch					0,00005	
Standard		Factory standard					
Measuring force	N			9			
Contact surface				flat			
Measuring surface		carbide		ceramic		carbide	
Spindle thread pitch	mm		0,5				
Spindle pitch	inch					0,025	

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
4150900	149	100	16	71	32
4150901	174	125	30	85	56



ACCESSORIES

Order no.	Type	Description
4158000	41 H	Stand, for holding outside micrometers
4159400	43 A	Setting gage, flat (25 mm)
4159940	43 A	Setting gage, flat (1 inch)



41 H



43 A

Micromar 40 T

Micrometer with integrated dial comparator

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



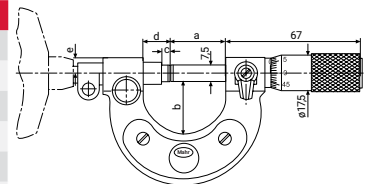
Application:

- 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
Type		40 T				
Measuring span of indicator	mm	0 – 25	25 – 50	50 – 100	100 – 150	150 – 200
Measuring range of dial comparator	µm	± 50				
Readings	mm	0,01				
Scale graduation value of dial comparator	µm	1				
Error limit	µm	2				
Parallelism deviation	µm	2				
Flatness deviation	µm	0,2				
Error limit G _e	µm	1				
Standard		Factory standard				
Measuring force	N	6,5			7,5	
Indicating instrument (included in package)		Millimess 1003				
Contact surface		flat				
Spindle thread pitch	mm	0,5				

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.	Type	Description
4158000	41 H	Stand, for holding outside micrometers
4159400	43 A	Setting gage, flat (25 mm)
4159401	43 A	Setting gage, flat (50 mm)
4159402	43 A	Setting gage, flat (75 mm)
4159403	43 A	Setting gage, flat (100 mm)
4159404	43 A	Setting gage, flat (125 mm)
4159405	43 A	Setting gage, flat (150 mm)
4159406	43 A	Setting gage, flat (175 mm)



41 H



43 A

Micromar 40 TS / 40 TSZ

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: instruction manual

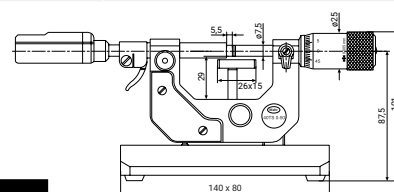
Application:

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



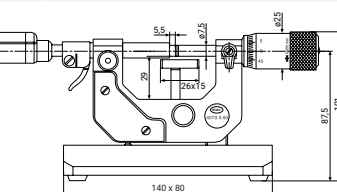
TECHNICAL DATA

Order no.		4154030	4154031	4154930	4154931
Type		40 TS		40 TSZ	
Measuring span of indicator	mm	0 – 50			
Measuring span of indicator	inch			0 – 2"	
Measuring range of dial comparator	µm	± 50			
Measuring range of dial comparator	inch			± .0025"	
Readings	mm	0,005			
Readings	inch			0,00025	
Scale graduation value of dial comparator	µm	1			
Scale graduation value of dial comparator	inch			0,00005	
Error limit	µm	2			
Error limit	inch			0,00008	
Parallelism deviation	µm			2	
Flatness deviation	µm			0,2	
Error limit G _e	µm	1			
Error limit G _e	inch			0,00005	
Standard		Factory standard			
Measuring force	N			6,5	
Indicating instrument (included in package)		Millimess 1003	Without readout	Millimess 1003 Z	Without readout
Contact surface		flat			
Spindle thread pitch	mm	0,5			
Spindle pitch	inch			0,025	

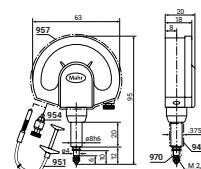


ACCESSORIES

Order no.	Type	Description
4154035		Wooden case
4159400	43 A	Setting gage, flat (25 mm)
4335000	1002	Mechanical dial comparator 0,5 µm / ± 25 µm
4334000	1003	Mechanical dial comparator 1 µm / ± 50 µm
4333000	1004	Mechanical dial comparator 5 µm / ± 130 µm
4337700	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337720	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm
4337800	1087 R	Digital indicator 12,5 mm / 0,0005 mm
4337820	1087 Ri	Digital indicator 12,5 mm / 0,0005 mm
4159940	43 A	Setting gage, flat (1 inch)
4335005	1002 T	Mechanical dial comparator 0,5 µm / ± 25 µm
4335900	1002 Z	Mechanical dial comparator .00002" / ± .0010"
4334900	1003 Z	Mechanical dial comparator .00005" / ± .0020"
4333900	1004 Z	Mechanical dial comparator .0001" / ± .0050"



43 A



1002 Z; 1003 Z; 1003 ZT; 1004 Z;
1004 ZT; 1002 ZT; 1003; 1003 T;
1002; 1002 T; 1004; 1003 XL;
1003 XLT; 1004 T



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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



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.

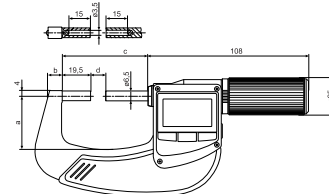
FEATURES

- High contrast digit display
 - Stainless spindle is hardened throughout and ground
 - With mounting bores for measuring anvils with a shaft $\varnothing$ 3.5 mm
 - QUICK DRIVE
 - Sliding spindle
 - Ratchet is integrated in the thimble
 - Lacquered steel frame, heat insulated
 - IP protection category: IP 65
 - Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)
 - Battery type: CR 2032 (3V Lithium)
 - Data interface: Integrated Wireless
 - Package contains: battery, test certificate, instruction manual, case
 - Package contents: For each pair of measuring anvils:
 - 40 Ef flat $\varnothing$ 6.5 mm
 - 40 Ea offset $\varnothing$ 2 x 4 mm
 - 40 Et plate $\varnothing$ 11.3 mm
 - 40 Er spherical R=5 mm
 - 40 Ep tapered $60^\circ \varnothing$ 0.3 – 5.5 mm
 - 40 Es blade 0.75 x 4 mm
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Spindle thread pitch	Incl. accessories
		mm	inch	mm/inch	μm		N	mm		mm	
4157150	40 EWri-V	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	3,5 mm bore	5	•

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

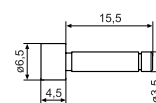


ACCESSORIES

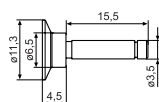
Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4151794	40 Ef	Flate measuring anvil ($\varnothing$ 6,5 mm)
4151795	40 Ea	Measuring anvil with reduced measuring surface ($\varnothing$ 2 mm x 4 mm)
4151796	40 Et	Measuring anvil plate ($\varnothing$ 11,3 mm)
4151797	40 Er	Measuring anvil with convex measuring surface ($\varnothing$ 7 mm, R=5 mm)
4151798	40 Ep	Measuring anvil with tip (60°)
4151799	40 Es	Measuring anvil with blade (0,75 mm x 4 mm)
4158000	41 H	Stand, for holding outside micrometers
4173210	40 Za	Anvil flat, hardened steel, $\varnothing$ 7.5 mm
4511190	40 Za	Anvil flat, carbide tipped, $\varnothing$ 7.5 mm



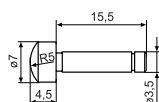
i-Stick



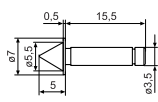
40 Ef



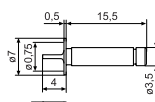
40 Et



40 Er



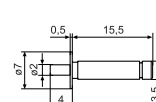
40 Ep



40 Es



41 H



40 Ea

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



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.

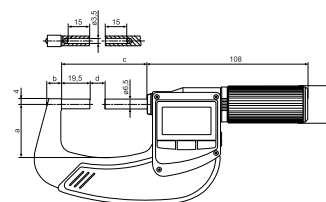
FEATURES

- High contrast digit 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
 - IP protection category: IP 65
 - Energy supply: Battery, battery life approx. 3 years
 - Battery type: CR 2032 (3V Lithium)
 - Data interface: MarConnect (bidirectional), USB, Digimatic
 - Package contains: battery, test certificate, instruction manual, case
 - Package contents: For each pair of measuring anvils:
 - 40 Ef flat Ø 6.5 mm
 - 40 Ea offset Ø 2 x 4 mm
 - 40 Et plate Ø 11.3 mm
 - 40 Er spherical R=5 mm
 - 40 Ep tapered 60° Ø 0.3 – 5.5 mm
 - 40 Es blade 0.75 x 4 mm
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

TECHNICAL DATA

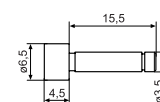
Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Spindle thread pitch	Incl. accessories
4157050	40 EWR-V	0 – 25 mm	0 – 1"	0,001 / .00005"	4	DIN 863-3	5 – 10 N	10 mm	3,5 mm bore	5 mm	•

Order no.	a	b	c	Mounting hole
4157050	32 mm	11,5 mm	57 mm	For measuring anvils with a shaft diameter 3.5 x 15.5 mm

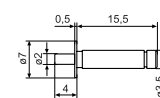


ACCESSORIES

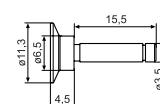
Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4151794	40 Ef	Flat measuring anvil (Ø 6,5 mm)
4151795	40 Ea	Measuring anvil with reduced measuring surface (Ø 2 mm x 4 mm)
4151796	40 Et	Measuring anvil plate (Ø 11,3 mm)
4151797	40 Er	Measuring anvil with convex measuring surface (Ø 7 mm, R=5 mm)
4151798	40 Ep	Measuring anvil with tip (60°)
4151799	40 Es	Measuring anvil with blade (0,75 mm x 4 mm)
4158000	41 H	Stand, for holding outside micrometers
4173210	40 Za	Anvil flat, hardened steel, Ø 7.5 mm
4511190	40 Za	Anvil flat, carbide tipped, Ø 7.5 mm



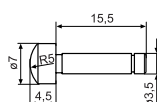
40 Ef



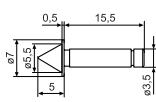
40 Ea



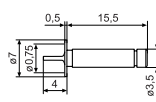
40 Et



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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

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

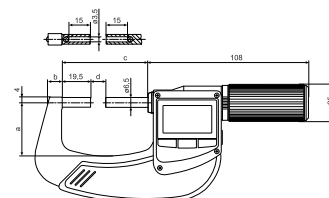
FEATURES

- With mounting bores for measuring anvils with a shaft Ø 3.5 mm
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Model Contact surface	Spindle thread pitch
		mm	inch	mm/inch	µm		N	mm		mm
4157145	40 EWri-V	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	3,5 mm bore	5
4157146	40 EWri-V	25 – 50	1 – 2"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	3,5 mm bore	5
4157147	40 EWri-V	50 – 75	2 – 3"	0,001 / .00005"	5	DIN 863-3	5 – 10	10	3,5 mm bore	5
4157148	40 EWri-V	75 – 100	3 – 4"	0,001 / .00005"	5	DIN 863-3	5 – 10	10	3,5 mm bore	5

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.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4158000	41 H	Stand, for holding outside micrometers
4173210	40 Za	Anvil flat, hardened steel, Ø 7.5 mm
4511190	40 Za	Anvil flat, carbide tipped, Ø 7.5 mm



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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

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



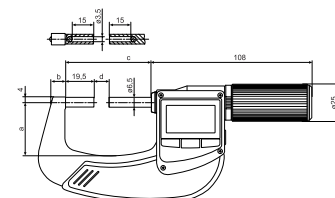
FEATURES

- With mounting bores for measuring anvils with a shaft Ø 3.5 mm
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Spindle thread pitch
		mm	inch	mm/inch	µm		N	mm		mm
4157045	40 EWR-V	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	3,5 mm bore	5
4157046	40 EWR-V	25 – 50	1 – 2"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	3,5 mm bore	5
4157047	40 EWR-V	50 – 75	2 – 3"	0,001 / .00005"	5	DIN 863-3	5 – 10	10	3,5 mm bore	5
4157048	40 EWR-V	75 – 100	3 – 4"	0,001 / .00005"	5	DIN 863-3	5 – 10	10	3,5 mm bore	5

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.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4158000	41 H	Stand, for holding outside micrometers
4173210	40 Za	Anvil flat, hardened steel, Ø 7.5 mm
4511190	40 Za	Anvil flat, carbide tipped, Ø 7.5 mm



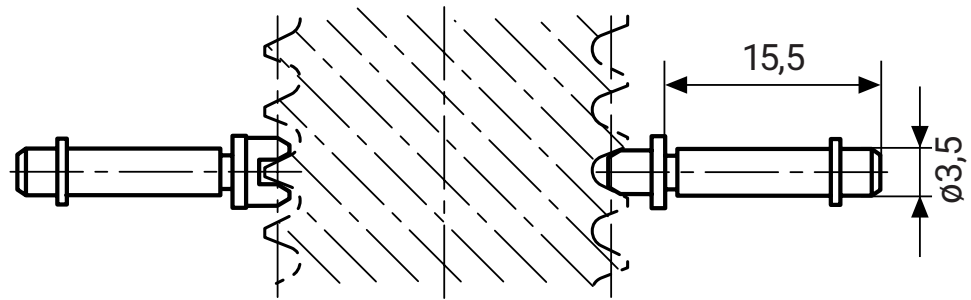
41 H

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	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
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

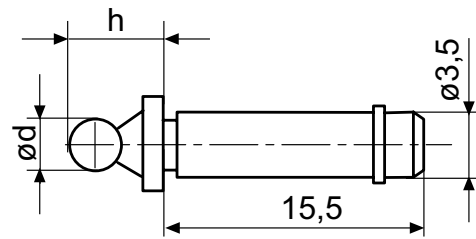
Thread pitch in TPI	Taper Order no.	V-anvil Order no.
Pitch diameter, external thread		
UST 60°		
48 – 40	4173514	4173114
40 – 32	4173515	4173115
32 – 24	4173516	4173116
24 – 18	4173517	4173117
18 – 14	4173518	4173118
14 – 10	4173519	4173119
10 – 7	4173520	4173120
7 – 4,5	4173521	4173121
4,5 – 3	4173522	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

Micromar

Ball contact

FEATURES

- For gear measurement and for special tasks
- Carbide measuring balls
- Cylindrical mounting shank with circlip for mounting in the mounting bore of the micrometer or indicating snap gage



Order no.	d mm	h mm	Measuring surface
4179150	0,5	5	Carbide
4179151	0,551	5,1	Carbide
4179152	0,62	5,1	Carbide
4179153	0,623	5,1	Carbide
4179154	0,63	5,1	Carbide
4179155	0,722	5,2	Carbide
4179156	0,862	5,4	Carbide
4179157	0,895	5,4	Carbide
4179158	0,965	5,5	Carbide
4170550	1	5,5	Carbide
4179159	1,1	5,6	Carbide
4179160	1,118	5,6	Carbide
4170551	1,25	5,8	Carbide
4179161	1,125	5,6	Carbide
4179162	1,35	5,9	Carbide
4179163	1,372	5,9	Carbide
4179164	1,385	5,9	Carbide
4170552	1,5	6	Carbide
4179165	1,524	6	Carbide
4179166	1,54	6	Carbide
4179167	1,6	6,1	Carbide
4179168	1,65	6,2	Carbide
4179169	1,7	6,2	Carbide
4170553	1,75	6,3	Carbide
4179170	1,782	6,3	Carbide
4179171	1,8	6,3	Carbide
4179172	1,829	6,3	Carbide
4179173	1,9	6,4	Carbide
4170554	2	6,5	Carbide
4170568	2,032	6,5	Carbide
4170569	2,2	6,7	Carbide
4170564	2,25	6,8	Carbide
4179174	2,284	6,8	Carbide

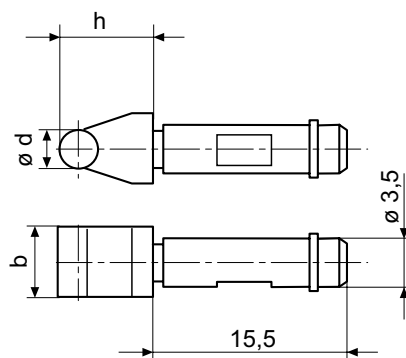
Order no.	d mm	h mm	Measuring surface
4179175	2,386	6,9	Carbide
4179176	2,438	6,9	Carbide
4170556	2,5	7	Carbide
4179177	2,667	7,2	Carbide
4179178	2,704	7,2	Carbide
4179179	2,713	7,2	Carbide
4179180	2,721	7,2	Carbide
4179181	2,743	7,2	Carbide
4170565	2,75	7,3	Carbide
4170557	3	7,5	Carbide
4179182	3,048	7,5	Carbide
4170570	3,2	7,7	Carbide
4170566	3,25	7,8	Carbide
4179183	3,4	7,9	Carbide
4170558	3,5	8	Carbide
4179184	3,658	8,2	Carbide
4170571	3,7	8,2	Carbide
4170559	4	8,5	Carbide
4170560	4,5	9	Carbide
4179185	4,835	9,3	Carbide
4170561	5	9,5	Carbide
4179186	5,25	9,8	Carbide
4179187	5,486	10	Carbide
4170562	5,5	10	Carbide
4170563	6	10,5	Carbide
4179188	6,096	10,6	Carbide
4179189	6,35	10,9	Carbide
4170567	6,5	11	Carbide
4170572	7	11,5	Carbide
4170573	8	12,5	Carbide
4170574	9	13,5	Carbide
4170575	10	14,5	Carbide

Micromar

Carbide roller blades

FEATURES

- For gear measurement and for special tasks
- Carbide contact roller
- Cylindrical mounting shank with circlip for mounting in the mounting bore of the micrometer or indicating snap gage



Order no.	b mm	d mm	h mm	Measuring surface
4510200	5	1	5,5	Carbide
4510201	5	1,25	5,8	Carbide
4510202	5	1,5	6	Carbide
4510203	5	1,75	6,3	Carbide
4510204	5	2	6,5	Carbide
4510206	5,5	2,5	7	Carbide
4510207	5,5	3	7,5	Carbide
4510208	5,5	3,5	8	Carbide
4510209	5,5	4	8,5	Carbide
4510210	5,5	4,5	9	Carbide
4510211	6	5	9,5	Carbide
4510212	6	5,5	10	Carbide
4510213	6	6	10,5	Carbide

Micromar 40 EWri-S

Digital micrometer

REF
system

IP 65

WIFI

#ID

ABS

LOCK

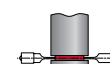
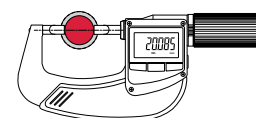
TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:
For measuring recesses, grooves, etc.



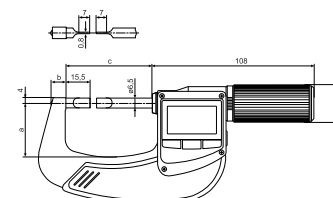
FEATURES

- With blade-type measuring surfaces
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Measuring surface	Spindle thread pitch
		mm	inch	mm/inch	µm		N	mm			mm
4157141	40 EWri-S	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863–3	5 – 10	10	Blade	hardened steel	5
4157142	40 EWri-S	25 – 50	1 – 2"	0,001 / .00005"	4	DIN 863–3	5 – 10	10	Blade	hardened steel	5
4157143	40 EWri-S	50 – 75	2 – 3"	0,001 / .00005"	5	DIN 863–3	5 – 10	10	Blade	hardened steel	5
4157144	40 EWri-S	75 – 100	3 – 4"	0,001 / .00005"	5	DIN 863–3	5 – 10	10	Blade	hardened steel	5

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.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4158000	41 H	Stand, for holding outside micrometers



i-Stick



41 H

Micromar 40 EWR-S

Digital micrometer

REF
system

IP 65

#ID

#ID

Digimatic

ABS

ABS

TOL

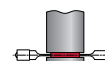
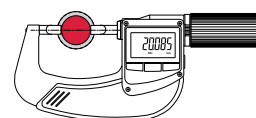
FUNCTIONS

- 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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

For measuring recesses, grooves, etc.



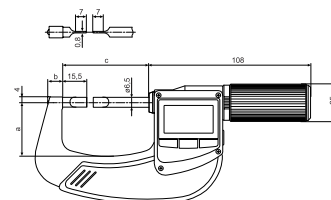
FEATURES

- With blade-type measuring surfaces
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- QUICK DRIVE
- Sliding spindle
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Measuring surface	Spindle thread pitch
		mm	inch	mm/inch	µm		N	mm			mm
4157041	40 EWR-S	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	Blade	hardened steel	5
4157042	40 EWR-S	25 – 50	1 – 2"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	Blade	hardened steel	5
4157043	40 EWR-S	50 – 75	2 – 3"	0,001 / .00005"	5	DIN 863-3	5 – 10	10	Blade	hardened steel	5
4157044	40 EWR-S	75 – 100	3 – 4"	0,001 / .00005"	5	DIN 863-3	5 – 10	10	Blade	hardened steel	5

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.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4158000	41 H	Stand, for holding outside micrometers



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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

For measuring grooves, spline shafts, recesses, etc.

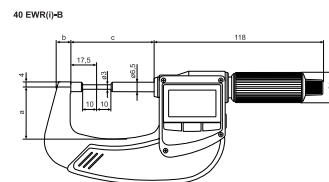
FEATURES

- Reduced measuring surfaces Ø 3 mm
- High contrast digit 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
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Measuring surface	Spindle thread pitch
		mm	inch	mm/inch	µm		N	mm			mm
4157132	40 EW-Ri-B	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	flat, reduced	carbide	0,5
4157133	40 EW-Ri-B	25 – 50	1 – 2"	0,001 / .00005"	4	DIN 863-3	5 – 10	10	flat, reduced	carbide	0,5

Order no.	a	b	c
	mm	mm	mm
4157132	32	11,5	57
4157133	44	13,5	82



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4158000	41 H	Stand, for holding outside micrometers



i-Stick



41 H

Micromar 40 EWR-B

Digital micrometer

REF
system

IP 65

#ID

#ID

Digimatic

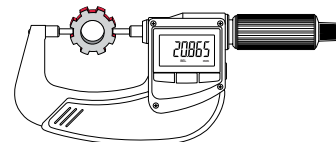
ABS

ABS

TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

For measuring grooves, spline shafts, recesses, etc.

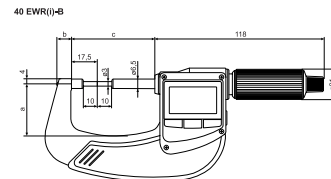
FEATURES

- Reduced measuring surfaces Ø 3 mm
- High contrast digit 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
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Measuring surface	Spindle thread pitch
4157032	40 EWR-B	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863–3	5 – 10	10	flat, reduced	carbide	0,5
4157033	40 EWR-B	25 – 50	1 – 2"	0,001 / .00005"	4	DIN 863–3	5 – 10	10	flat, reduced	carbide	0,5

Order no.	a	b	c
	mm	mm	mm
4157032	32	11,5	57
4157033	44	13,5	82



ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4158000	41 H	Stand, for holding outside micrometers



41 H

Micromar 40 EWri-R

Digital micrometer

REF
system

IP 65

#ID

ABS

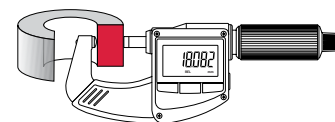
ABS

TOL

TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

For measuring the thickness of pipe walls

FEATURES

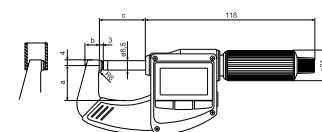
- Measuring surfaces: spherical anvil, flatar spindle
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Measuring surface	Spindle thread pitch
		mm	inch	mm/inch	μm		N	mm			mm
4157130	40 EWri-R	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863–3	5 – 10	10	flat, spherical	carbide	0,5
4157131	40 EWri-R	25 – 50	1 – 2"	0,001 / .00005"	4	DIN 863–3	5 – 10	10	flat, spherical	carbide	0,5

Order no.	a	b	c
	mm	mm	mm
4157130	23	9,5	31,5
4157131	32	11,5	57

40 EWri-R



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4158000	41 H	Stand, for holding outside micrometers



i-Stick



41 H

Micromar 40 EWR-R

Digital micrometer

REF
system

IP 65

#ID

#ID

Digimatic

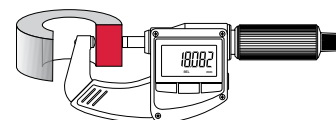
ABS

ABS

TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

For measuring the thickness of pipe walls

FEATURES

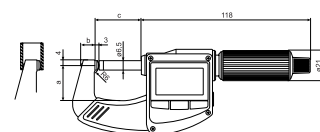
- Measuring surfaces: spherical anvil, flat, spindle
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: setting standard (measuring range of 25–50 mm), battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Measuring surface	Spindle thread pitch
4157030	40 EWR-R	0 – 25	0 – 1"	0,001 / .00005"	4	DIN 863–3	5 – 10	10	flat, spherical	carbide	0,5
4157031	40 EWR-R	25 – 50	1 – 2"	0,001 / .00005"	4	DIN 863–3	5 – 10	10	flat, spherical	carbide	0,5

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.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4158000	41 H	Stand, for holding outside micrometers



41 H

Micromar 40 EWRI-K

Digital micrometer

REF
system

IP 65

(())

#ID

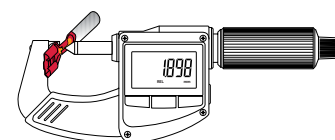
ABS

LOCK

TOL

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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:
For measuring crimp heights

FEATURES

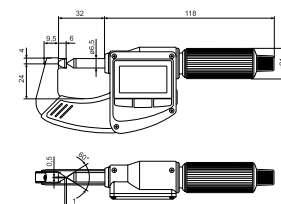
- Measuring surfaces: Anvil with narrow web, pointed spindle
- High contrast digit display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide-tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: battery, test certificate, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring of digits	Height of digits	Contact surface	Measuring surface	Spindle thread pitch
		mm	inch	mm/inch	μm		N	mm			mm
4157140	40 EWRI-K	0 – 20	0 – 0,8"	0,001 / .00005"	4	Factory standard	5 – 10	10	Blade, taper	carbide	0,5

Order no.	a	b	c
	mm	mm	mm
4157140	23	9,5	31,5

40 EWRI(K)-K



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4158000	41 H	Stand, for holding outside micrometers



i-Stick

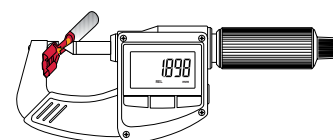


41 H

Digital micrometer



- 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 Input)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

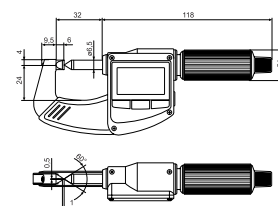


For measuring crimp heights on crimp contacts and end splices

- Measuring surfaces: Anvil with narrow web, pointed spindle
- High contrast digit 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
- IP protection category: IP 65
- Energy supply: Battery, battery life life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: battery, test certificate, instruction manual, case
- Software: MarCom Professional
free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Measuring force	Height of digits	Contact surface	Measuring surface	Spindle thread pitch
4157040	40 EWR-K	mm 0 – 20	inch 0 – 0,8"	mm/inch 0,001 / .00005"	µm 4	Factory standard	N 5 – 10	mm 10	Blade, taper	carbide	mm 0,5

Order no.	a	b	c
	mm	mm	mm
4157040	23	9,5	31,5



Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4158000	41 H	Stand, for holding outside micrometers



41 H

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 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- Package contains: instruction manual, allen key, key for replacing measuring heads (from 30 mm), case

Application:

For measuring:

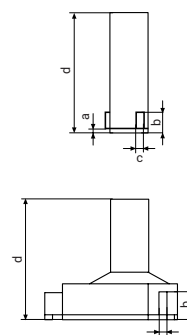
- Through holes
- Blind holes
- Centering shoulders



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Readings	Error limit	Standard	Spindle thread pitch	Measuring depth	Measuring depth with extension
		mm	mm	μm		mm	mm	mm
4190310	44 A	6 – 8	0,001	4	DIN 863-4	0,5	58	133
4190311	44 A	8 – 10	0,001	4	DIN 863-4	0,5	58	133
4190312	44 A	10 – 12	0,001	4	DIN 863-4	0,5	58	133
4190313	44 A	12 – 16	0,001	4	DIN 863-4	0,5	64	139
4190314	44 A	16 – 20	0,001	4	DIN 863-4	0,5	64	139
4190315	44 A	20 – 25	0,005	4	DIN 863-4	0,5	68	218
4190316	44 A	25 – 30	0,005	4	DIN 863-4	0,5	68	218
4190317	44 A	30 – 40	0,005	4	DIN 863-4	0,5	76	226
4190319	44 A	40 – 50	0,005	4	DIN 863-4	0,5	76	226
4190320	44 A	50 – 60	0,005	5	DIN 863-4	0,5	79	229
4190321	44 A	60 – 70	0,005	5	DIN 863-4	0,5	79	229
4190012	44 A	70 – 85	0,005	5	DIN 863-4	0,5	97	247
4190013	44 A	85 – 100	0,005	5	DIN 863-4	0,5	97	247
4190014	44 A	100 – 125	0,005	6	DIN 863-4	0,5	132	282
4190015	44 A	125 – 150	0,005	6	DIN 863-4	0,5	132	282
4190016	44 A	150 – 175	0,005	7	DIN 863-4	0,5	132	282
4190017	44 A	175 – 200	0,005	7	DIN 863-4	0,5	132	282

Order no.	a	b	c	d	Order no.	a	b	c	d
	mm	mm	mm	mm		mm	mm	mm	mm
4190310	1,5	4	1,5	58	4190320		18	5	79
4190311	1,8	4,3	1,5	58	4190321		18	5	79
4190312	1,8	4,3	1,5	58	4190012		23	7	97
4190313		6,5	4	64	4190013		23	7	97
4190314		6,5	4	64	4190014		27	7	132
4190315		9	4	68	4190015		27	7	132
4190316		9	4	68	4190016		27	7	132
4190317		15	5	76	4190017		27	7	132
4190319		15	5	76					



ACCESSORIES

Order no.	Type	Description
4710026	355 E	Setting ring DIN 2250 C, Ø 8 mm
4710030	355 E	Setting ring DIN 2250 C, Ø 10 mm
4710032	355 E	Setting ring DIN 2250 C, Ø 12 mm
4710036	355 E	Setting ring DIN 2250 C, Ø 16 mm
4710040	355 E	Setting ring DIN 2250 C, Ø 20 mm
4710045	355 E	Setting ring DIN 2250 C, Ø 25 mm
4710050	355 E	Setting ring DIN 2250 C, Ø 30 mm
4710060	355 E	Setting ring DIN 2250 C, Ø 40 mm
4710070	355 E	Setting ring DIN 2250 C, Ø 50 mm
4710080	355 E	Setting ring DIN 2250 C, Ø 60 mm
4710105	355 E	Setting ring DIN 2250 C, Ø 85 mm
4710121	355 E	Setting ring DIN 2250 C, Ø 125 mm
4710122	355 E	Setting ring DIN 2250 C, Ø 175 mm
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1



355 E



44 Av

Micromar 44 AS

3-point inside micrometer - in 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 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- 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

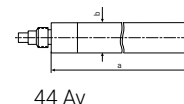


TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Readings	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.	Type	Description
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1



44 Av

Micromar 44 EWri

Digital 3-point inside micrometer



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

Application:

For measuring of:

- Through holes
- Blind holes



FEATURES

- Uniquely user-friendly with practical functions
- Optimal handling due to light-weight and compact basic unit
- Large, high-contrast numerical display with clear tolerance icons
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx 10000 hrs without wireless transmission)
- Battery type: CR 2450N (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: Basic unit 44 EWri-g, measuring head 44 Ak, instruction manual, battery, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

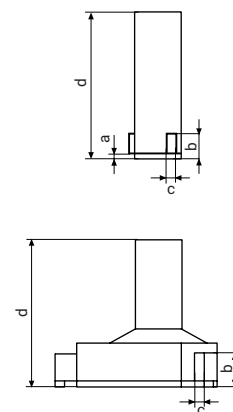
TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Height of digits	Spindle thread pitch	Measuring depth	Measuring depth with extension
		mm	inch	mm/inch	µm		mm	mm	mm	mm
4191305	44 EWri	6 – 8	.25 – .3125"	0,001 / .00005"	4	DIN 863-4	10	1,5	58	133
4191306	44 EWri	8 – 10	.3125 – .4"	0,001 / .00005"	4	DIN 863-4	10	1,5	58	133
4191307	44 EWri	10 – 12	.4 – .4725"	0,001 / .00005"	4	DIN 863-4	10	1,5	58	133
4191308	44 EWri	12 – 16	.4725 – .625"	0,001 / .00005"	4	DIN 863-4	10	1,5	64	139
4191309	44 EWri	16 – 20	.625 – .775"	0,001 / .00005"	4	DIN 863-4	10	1,5	64	139
4191310	44 EWri	20 – 25	.775 – 1"	0,001 / .00005"	4	DIN 863-4	10	1,5	68	218
4191311	44 EWri	25 – 30	1 – 1.2"	0,001 / .00005"	4	DIN 863-4	10	1,5	68	218
4191312	44 EWri	30 – 40	1.2 – 1.6"	0,001 / .00005"	4	DIN 863-4	10	1,5	76	226
4191313	44 EWri	40 – 50	1.6 – 2"	0,001 / .00005"	4	DIN 863-4	10	1,5	76	226
4191314	44 EWri	50 – 60	2 – 2.35"	0,001 / .00005"	5	DIN 863-4	10	1,5	79	229
4191315	44 EWri	60 – 70	2.35 – 2.75"	0,001 / .00005"	5	DIN 863-4	10	1,5	79	229
4191316	44 EWri	70 – 85	2.75 – 3.35"	0,001 / .00005"	5	DIN 863-4	10	1,5	97	247
4191317	44 EWri	85 – 100	3.35 – 4"	0,001 / .00005"	5	DIN 863-4	10	1,5	97	247
4191318	44 EWri	100 – 125	4 – 4.9"	0,001 / .00005"	6	DIN 863-4	10	1,5	132	282
4191319	44 EWri	125 – 150	4.9 – 5.9"	0,001 / .00005"	6	DIN 863-4	10	1,5	132	282
4191320	44 EWri	150 – 175	5.9 – 6.9"	0,001 / .00005"	7	DIN 863-4	10	1,5	132	282
4191321	44 EWri	175 – 200	6.9 – 7.9"	0,001 / .00005"	7	DIN 863-4	10	1,5	132	282

Micromar 44 EWRi

Digital 3-point inside micrometer

Order no.	a	b	c	d
	mm	mm	mm	mm
4191305	1,5	4	1,5	58
4191306	1,8	4,3	1,5	58
4191307	1,8	4,3	1,5	58
4191308		6,5	4	64
4191309		6,5	4	64
4191310		9	4	68
4191311		9	4	68
4191312		15	5	76
4191313		15	5	76
4191314		18	5	79
4191315		18	5	79
4191316		23	7	97
4191317		23	7	97
4191318		27	7	132
4191319		27	7	132
4191320		27	7	132
4191321		27	7	132

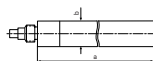


ACCESSORIES

Order no.	Type	Description
4710022	355 E	Setting ring DIN 2250 C, Ø 6 mm
4710026	355 E	Setting ring DIN 2250 C, Ø 8 mm
4710030	355 E	Setting ring DIN 2250 C, Ø 10 mm
4710032	355 E	Setting ring DIN 2250 C, Ø 12 mm
4710036	355 E	Setting ring DIN 2250 C, Ø 16 mm
4710040	355 E	Setting ring DIN 2250 C, Ø 20 mm
4710045	355 E	Setting ring DIN 2250 C, Ø 25 mm
4710050	355 E	Setting ring DIN 2250 C, Ø 30 mm
4710060	355 E	Setting ring DIN 2250 C, Ø 40 mm
4710070	355 E	Setting ring DIN 2250 C, Ø 50 mm
4710080	355 E	Setting ring DIN 2250 C, Ø 60 mm
4710090	355 E	Setting ring DIN 2250 C, Ø 70 mm
4710105	355 E	Setting ring DIN 2250 C, Ø 85 mm
4710120	355 E	Setting ring DIN 2250 C, Ø 100 mm
4710121	355 E	Setting ring DIN 2250 C, Ø 125 mm
4710122	355 E	Setting ring DIN 2250 C, Ø 175 mm
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1
4190400	44 EWR-gs	Clamping plate for (8)44 EWR(i)-g (incl. 2 fastening screws) for installation in holder 41 H
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless



i-Stick



44 Av



355 E



44 EWR-gs



44 EWR-gs

Micromar 44 EWR

Digital 3-point inside micrometer



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:
For measuring of:

- Through holes
- Blind holes



FEATURES

- Uniquely user-friendly with practical functions
- Optimal handling due to light-weight and compact basic unit
- Large, high-contrast numerical display with clear tolerance icons
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx. 10000 hrs)
- Battery type: CR 2450N (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: Basic unit 44 EWR-g, measuring head 44 Ak, instruction manual, battery, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

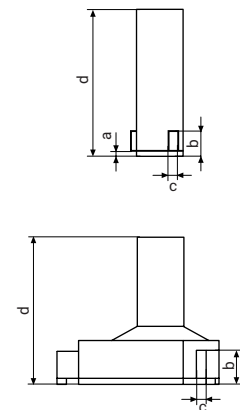
TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Height of digits	Spindle thread pitch	Measuring depth	Measuring depth with extension
		mm	inch	mm/inch	µm		mm	mm	mm	mm
4191205	44 EWR	6 – 8	.25 – .3125"	0,001 / .00005"	4	DIN 863-4	10	1,5	58	133
4191206	44 EWR	8 – 10	.3125 – .4"	0,001 / .00005"	4	DIN 863-4	10	1,5	58	133
4191207	44 EWR	10 – 12	.4 – .4725"	0,001 / .00005"	4	DIN 863-4	10	1,5	58	133
4191208	44 EWR	12 – 16	.4725 – .625"	0,001 / .00005"	4	DIN 863-4	10	1,5	64	139
4191209	44 EWR	16 – 20	.625 – .775"	0,001 / .00005"	4	DIN 863-4	10	1,5	64	139
4191210	44 EWR	20 – 25	.775 – 1"	0,001 / .00005"	4	DIN 863-4	10	1,5	68	218
4191211	44 EWR	25 – 30	1 – 1.2"	0,001 / .00005"	4	DIN 863-4	10	1,5	68	218
4191212	44 EWR	30 – 40	1.2 – 1.6"	0,001 / .00005"	4	DIN 863-4	10	1,5	76	226
4191213	44 EWR	40 – 50	1.6 – 2"	0,001 / .00005"	4	DIN 863-4	10	1,5	76	226
4191214	44 EWR	50 – 60	2 – 2.35"	0,001 / .00005"	5	DIN 863-4	10	1,5	79	229
4191215	44 EWR	60 – 70	2.35 – 2.75"	0,001 / .00005"	5	DIN 863-4	10	1,5	79	229
4191216	44 EWR	70 – 85	2.75 – 3.35"	0,001 / .00005"	5	DIN 863-4	10	1,5	97	247
4191217	44 EWR	85 – 100	3.35 – 4"	0,001 / .00005"	5	DIN 863-4	10	1,5	97	247
4191218	44 EWR	100 – 125	4 – 4.9"	0,001 / .00005"	6	DIN 863-4	10	1,5	132	282
4191219	44 EWR	125 – 150	4.9 – 5.9"	0,001 / .00005"	6	DIN 863-4	10	1,5	132	282
4191220	44 EWR	150 – 175	5.9 – 6.9"	0,001 / .00005"	7	DIN 863-4	10	1,5	132	282
4191221	44 EWR	175 – 200	6.9 – 7.9"	0,001 / .00005"	7	DIN 863-4	10	1,5	132	282

Micromar 44 EWR

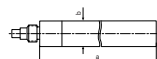
Digital 3-point inside micrometer

Order no.	a	b	c	d
	mm	mm	mm	mm
4191205	1,5	4	1,5	58
4191206	1,8	4,3	1,5	58
4191207	1,8	4,3	1,5	58
4191208		6,5	4	64
4191209		6,5	4	64
4191210		9	4	68
4191211		9	4	68
4191212		15	5	76
4191213		15	5	76
4191214		18	5	79
4191215		18	5	79
4191216		23	7	97
4191217		23	7	97
4191218		27	7	132
4191219		27	7	132
4191220		27	7	132
4191221		27	7	132



ACCESSORIES

Order no.	Type	Description
4710022	355 E	Setting ring DIN 2250 C, Ø 6 mm
4710026	355 E	Setting ring DIN 2250 C, Ø 8 mm
4710030	355 E	Setting ring DIN 2250 C, Ø 10 mm
4710032	355 E	Setting ring DIN 2250 C, Ø 12 mm
4710036	355 E	Setting ring DIN 2250 C, Ø 16 mm
4710040	355 E	Setting ring DIN 2250 C, Ø 20 mm
4710045	355 E	Setting ring DIN 2250 C, Ø 25 mm
4710050	355 E	Setting ring DIN 2250 C, Ø 30 mm
4710060	355 E	Setting ring DIN 2250 C, Ø 40 mm
4710070	355 E	Setting ring DIN 2250 C, Ø 50 mm
4710080	355 E	Setting ring DIN 2250 C, Ø 60 mm
4710090	355 E	Setting ring DIN 2250 C, Ø 70 mm
4710105	355 E	Setting ring DIN 2250 C, Ø 85 mm
4710120	355 E	Setting ring DIN 2250 C, Ø 100 mm
4710121	355 E	Setting ring DIN 2250 C, Ø 125 mm
4710122	355 E	Setting ring DIN 2250 C, Ø 175 mm
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1
4190400	44 EWR-gs	Clamping plate for (8)44 EWR(i)-g (incl. 2 fastening screws) for installation in holder 41 H
4102606	DK-D1	Data cable Digimatic (2 m)
4102603	DK-U1	Data cable USB bidirectional (2 m)



44 Av



355 E



44 EWR-gs



44 EWR-gs

Micromar 44 EWri

Digital 3-point inside micrometer - in Set



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

Application:

For measuring of:

- Through holes
- Blind holes



FEATURES

- Uniquely user-friendly with practical functions
- Optimal handling due to light-weight and compact basic unit
- Large, high-contrast numerical display with clear tolerance icons
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx 10000 hrs without wireless transmission)
- Battery type: CR 2450N (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: Basic unit 44 EWri-g, measuring heads 44 Ak, setting rings, battery, instruction manual, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

TECHNICAL DATA

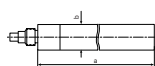
Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Height of digits	Spindle thread pitch	Number of measuring heads 44 Ak	Setting rings
		mm	inch	mm/inch	µm		mm	mm		
4191340	44 EWri	6 – 12	.25 – .4725"	0,001 / .00005"	4	DIN 863–4	10	1,5	3	8 mm, 10 mm
4191341	44 EWri	12 – 20	.4725 – .775"	0,001 / .00005"	4	DIN 863–4	10	1,5	2	16 mm
4191342	44 EWri	20 – 50	.775 – 2"	0,001 / .00005"	4	DIN 863–4	10	1,5	4	25 mm, 40 mm
4191343	44 EWri	50 – 100	2 – 4"	0,001 / .00005"	5	DIN 863–4	10	1,5	4	60 mm, 85 mm

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190400	44 EWR-gs	Clamping plate for (8)44 EWR(i)-g (incl. 2 fastening screws) for installation in holder 41 H
4191360	44 EWri-g	Digital inside micrometer - Basic unit for Measuring span of indicator 6 – 20 mm
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1
4191361	44 EWri-g	Digital inside micrometer - Basic unit for Measuring span of indicator 20 – 100 mm



i-Stick



44 Av



44 EWR-gs



44 EWR-gs



44 EWri-g;
44 EWR-g



44 EWri-g;
44 EWR-g

Micromar 44 EWR

Digital 3-point inside micrometer - in Set



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

Application:

For measuring of:

- Through holes
- Blind holes



FEATURES

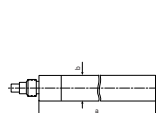
- Uniquely user-friendly with practical functions
- Optimal handling due to light-weight and compact basic unit
- Large, high-contrast numerical display with clear tolerance icons
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx. 10000 hrs)
- Battery type: CR 2450N (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: Basic unit 44 EWR-g, measuring heads 44 Ak, setting rings, battery, instruction manual, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Height of digits	Spindle thread pitch	Number of measuring heads 44 Ak	Setting rings
		mm	inch	mm/inch	µm		mm	mm		
4191240	44 EWR	6 – 12	.25 – .4725"	0,001 / .00005"	4	DIN 863-4	10	1,5	3	8 mm, 10 mm
4191241	44 EWR	12 – 20	.4725 – .775"	0,001 / .00005"	4	DIN 863-4	10	1,5	2	16 mm
4191242	44 EWR	20 – 50	.775 – 2"	0,001 / .00005"	4	DIN 863-4	10	1,5	4	25 mm, 40 mm
4191243	44 EWR	50 – 100 mm	2 – 4"	0,001 / .00005"	5	DIN 863-4	10	1,5	4	60 mm, 85 mm

ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190400	44 EWR-gs	Clamping plate for (8)44 EWR(i)-g (incl. 2 fastening screws) for installation in holder 41 H
4191260	44 EWR-g	Digital inside micrometer - Basic unit for Measuring span of indicator 6 – 20 mm
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1
4191261	44 EWR-g	Digital inside micrometer - Basic unit for Measuring span of indicator 20 – 100 mm



44 Av



44 EWR-gs



44 EWR-gs



44 EWRi-g;
44 EWR-g



44 EWRi-g;
44 EWR-g

Micromar 844 EWRI

Digital 3-point inside measuring instrument



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

- Fast measurements by lever retraction (covers the complete application range of the respective measuring head) from:
- through holes
- blind holes

FEATURES

- Outstanding handling thanks to ergonomically shaped pistol grip
- Reliable reading of measured values on the large, high-contrast and rotating display
- Best performance: 2 data keys integrated in the lever for optimum handling in all measuring directions
- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx 10000 hrs without wireless transmission)
- Battery type: CR 2450N (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: Basic unit 844 EWR-g, Shock protection ring 1086 sr, measuring head 44 Ak, instruction manual, battery, Hexagonal wrench, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

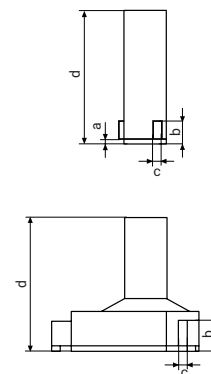
TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Height of digits	Measuring depth	Measuring depth with extension
		mm	inch	mm/inch	µm		mm	mm	mm
4192305	844 EWRI	6 – 8	.25 – .3125"	0,001 / .00005"	4	Factory standard	11,5	58	133
4192306	844 EWRI	8 – 10	.3125 – .4"	0,001 / .00005"	4	Factory standard	11,5	58	133
4192307	844 EWRI	10 – 12	.4 – .4725"	0,001 / .00005"	4	Factory standard	11,5	58	133
4192308	844 EWRI	12 – 16	.4725 – .625"	0,001 / .00005"	4	Factory standard	11,5	64	139
4192309	844 EWRI	16 – 20	.625 – .775"	0,001 / .00005"	4	Factory standard	11,5	64	139
4192310	844 EWRI	20 – 25	.775 – 1"	0,001 / .00005"	4	Factory standard	11,5	68	218
4192311	844 EWRI	25 – 30	1 – 1.2"	0,001 / .00005"	4	Factory standard	11,5	68	218
4192312	844 EWRI	30 – 40	1.2 – 1.6"	0,001 / .00005"	4	Factory standard	11,5	76	226
4192313	844 EWRI	40 – 50	1.6 – 2"	0,001 / .00005"	4	Factory standard	11,5	76	226
4192314	844 EWRI	50 – 60	2 – 2.35"	0,001 / .00005"	5	Factory standard	11,5	79	229
4192315	844 EWRI	60 – 70	2.35 – 2.75"	0,001 / .00005"	5	Factory standard	11,5	79	229
4192316	844 EWRI	70 – 85	2.75 – 3.35"	0,001 / .00005"	5	Factory standard	11,5	97	247
4192317	844 EWRI	85 – 100	3.35 – 4"	0,001 / .00005"	5	Factory standard	11,5	97	247

Micromar 844 EWRi

Digital 3-point inside measuring instrument

Order no.	a	b	c	d
	mm	mm	mm	mm
4192305	1,5	4	1,5	58
4192306	1,8	4,3	1,5	58
4192307	1,8	4,3	1,5	58
4192308		6,5	4	64
4192309		6,5	4	64
4192310		9	4	68
4192311		9	4	68
4192312		15	5	76
4192313		15	5	76
4192314		18	5	79
4192315		18	5	79
4192316		23	7	97
4192317		23	7	97

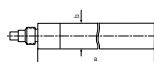


ACCESSORIES

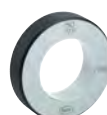
Order no.	Type	Description
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4710022	355 E	Setting ring DIN 2250 C, Ø 6 mm
4710032	355 E	Setting ring DIN 2250 C, Ø 12 mm
4710040	355 E	Setting ring DIN 2250 C, Ø 20 mm
4710050	355 E	Setting ring DIN 2250 C, Ø 30 mm
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1
4190400	44 EWR-gs	Clamping plate for (8)44 EWR(i)-g (incl. 2 fastening screws) for installation in holder 41 H
4102606	DK-D1	Data cable Digimatic (2 m)
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless



i-Stick



44 Av



355 E



44 EWR-gs



44 EWR-gs



1086 sr



1086 sf

Micromar 844 EWR

Digital 3-point inside measuring instrument



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

- Fast measurements by lever retraction (covers the complete application range of the respective measuring head) from:
- through holes
- blind holes



FEATURES

- Outstanding handling thanks to ergonomically shaped pistol grip
- Reliable reading of measured values on the large, high-contrast and rotating display
- Best performance: 2 data keys integrated in the lever for optimum handling in all measuring directions
- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx. 10000 hrs)
- Battery type: CR 2450N (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: Basic unit 844 EWR-g, Shock protection ring 1086 sr, measuring head 44 Ak, instruction manual, battery, Hexagonal wrench, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

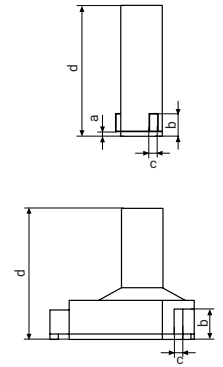
TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Height of digits	Measuring depth	Measuring depth with extension
		mm	inch	mm/inch	µm		mm	mm	mm
4192205	844 EWR	6 – 8	.25 – .3125"	0,001 / .00005"	4	Factory standard	11,5	58	133
4192206	844 EWR	8 – 10	.3125 – .4"	0,001 / .00005"	4	Factory standard	11,5	58	133
4192207	844 EWR	10 – 12	.4 – .4725"	0,001 / .00005"	4	Factory standard	11,5	58	133
4192208	844 EWR	12 – 16	.4725 – .625"	0,001 / .00005"	4	Factory standard	11,5	64	139
4192209	844 EWR	16 – 20	.625 – .775"	0,001 / .00005"	4	Factory standard	11,5	64	139
4192210	844 EWR	20 – 25	.775 – 1"	0,001 / .00005"	4	Factory standard	11,5	68	218
4192211	844 EWR=	25 – 30	1 – 1.2"	0,001 / .00005"	4	Factory standard	11,5	68	218
4192212	844 EWR	30 – 40	1.2 – 1.6"	0,001 / .00005"	4	Factory standard	11,5	76	226
4192213	844 EWR	40 – 50	1.6 – 2"	0,001 / .00005"	4	Factory standard	11,5	76	226
4192214	844 EWR	50 – 60	2 – 2.35"	0,001 / .00005"	5	Factory standard	11,5	79	229
4192215	844 EWR	60 – 70	2.35 – 2.75"	0,001 / .00005"	5	Factory standard	11,5	79	229
4192216	844 EWR	70 – 85	2.75 – 3.35"	0,001 / .00005"	5	Factory standard	11,5	97	247
4192217	844 EWR	85 – 100	3.35 – 4"	0,001 / .00005"	5	Factory standard	11,5	97	247

Micromar 844 EWR

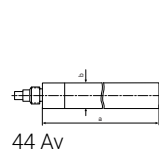
Digital 3-point inside measuring instrument

Order no.	a	b	c	d
	mm	mm	mm	mm
4192205	1,5	4	1,5	58
4192206	1,8	4,3	1,5	58
4192207	1,8	4,3	1,5	58
4192208		6,5	4	64
4192209		6,5	4	64
4192210		9	4	68
4192211		9	4	68
4192212		15	5	76
4192213		15	5	76
4192214		18	5	79
4192215		18	5	79
4192216		23	7	97
4192217		23	7	97



ACCESSORIES

Order no.	Type	Description
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4710022	355 E	Setting ring DIN 2250 C, Ø 6 mm
4710032	355 E	Setting ring DIN 2250 C, Ø 12 mm
4710040	355 E	Setting ring DIN 2250 C, Ø 20 mm
4710050	355 E	Setting ring DIN 2250 C, Ø 30 mm
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1
4190400	44 EWR-gs	Clamping plate for (8)44 EWR(i)-g (incl. 2 fastening screws) for installation in holder 41 H
4102606	DK-D1	Data cable Digimatic (2 m)
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless



Micromar 844 EWRi

Digital 3-point inside measuring instrument - in Set



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

Application:

- Fast measurements by lever retraction (covers the complete application range of the respective measuring head) from:
- through holes
- blind holes



FEATURES

- Outstanding handling thanks to ergonomically shaped pistol grip
- Reliable reading of measured values on the large, high-contrast and rotating display
- Best performance: 2 data keys integrated in the lever for optimum handling in all measuring directions
- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx 10000 hrs without wireless transmission)
- Battery type: CR 2450N (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: Basic unit 844 EWR-g, Shock protection ring 1086 sr, measuring head 44 Ak, instruction manual, battery, Hexagonal wrench, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

TECHNICAL DATA

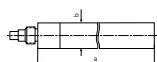
Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Height of digits	Number of measuring heads 44 Ak	Setting rings
		mm	inch	mm/inch	µm		mm		
4192340	844 EWRi	6 – 12	.25 – .4725"	0,001 / .00005"	4	Factory standard	11,5	3	8 mm, 10 mm
4192341	844 EWRi	12 – 20	.4725 – .775"	0,001 / .00005"	4	Factory standard	11,5	2	16 mm
4192342	844 EWRi	20 – 50	.775 – 2"	0,001 / .00005"	4	Factory standard	11,5	4	25 mm, 40 mm
4192343	844 EWRi	50 – 100	2 – 4"	0,001 / .00005"	5	Factory standard	11,5	4	60 mm, 85 mm

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190400	44 EWR-gs	Clamping plate for (8)44 EWR(i)-g (incl. 2 fastening screws) for installation in holder 41 H
4192360	844 EWRi-g	Inside measuring instrument - Basic unit with lever retraction for Measuring span of indicator 6 – 20 mm
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1
4192361	844 EWRi-g	Inside measuring instrument - Basic unit with lever retraction for Measuring span of indicator 20 – 100 mm



i-Stick



44 Av



44 EWR-gs



44 EWR-gs



844 EWRi-g;
844 EWR-g



844 EWR-g;
844 EWRi-g



1086 sr



1086 sf

Micromar 844 EWR

Digital 3-point inside measuring instrument - in Set



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

- Fast measurements by lever retraction (covers the complete application range of the respective measuring head) from:
- through holes
- blind holes



FEATURES

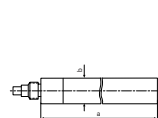
- Outstanding handling thanks to ergonomically shaped pistol grip
- Reliable reading of measured values on the large, high-contrast and rotating display
- Best performance: 2 data keys integrated in the lever for optimum handling in all measuring directions
- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx. 10000 hrs)
- Battery type: CR 2450N (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: Basic unit 844 EWR-g, Shock protection ring 1086 sr, measuring head 44 Ak, instruction manual, battery, Hexagonal wrench, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Error limit	Standard	Height of digits	Number of measuring heads 44 Ak	Setting rings
		mm	inch	mm/inch	µm		mm		
4192240	844 EWR	6 – 12	.25 – .4725"	0,001 / .00005"	4	Factory standard	11,5	3	8 mm, 10 mm
4192241	844 EWR	12 – 20	.4725 – .775"	0,001 / .00005"	4	Factory standard	11,5	2	16 mm
4192242	844 EWR	20 – 50	.775 – 2"	0,001 / .00005"	4	Factory standard	11,5	4	25 mm, 40 mm
4192243	844 EWR	50 – 100	2 – 4"	0,001 / .00005"	5	Factory standard	11,5	4	60 mm, 85 mm

ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4190090	44 Av	Extensions 75 mm (6 – 12 mm), Ø 5,8 mm, M5x0.5
4190400	44 EWR-gs	Clamping plate for (8)44 EWR(i)-g (incl. 2 fastening screws) for installation in holder 41 H
4192260	844 EWR-g	Inside measuring instrument - Basic unit with lever retraction for Measuring span of indicator 6 – 20 mm
4190091	44 Av	Extensions 75 mm (12 – 20 mm), Ø 8,5 mm, M5x0.5
4190092	44 Av	Extensions 150 mm (20 – 30 mm), Ø 19 mm, M12x1
4190093	44 Av	Extensions 150 mm (30 – 200 mm), Ø 22 mm, M12x1
4192261	844 EWR-g	Inside measuring instrument - Basic unit with lever retraction for Measuring span of indicator 20 – 100 mm



44 Av



44 EWR-gs



44 EWR-gs



844 EWRi-g;
844 EWR-g



844 EWR-g;
844 EWRi-g



1086 sr



1086 sf

Micromar 44 EWRI-g

Digital inside micrometer - Basic unit



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

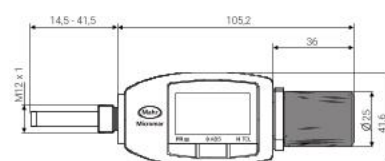
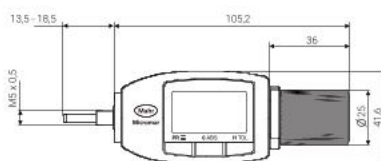


FEATURES

- Uniquely user-friendly with practical functions
- Optimal handling due to light-weight and compact basic unit
- Large, high-contrast numerical display with clear tolerance icons
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx 10000 hrs without wireless transmission)
- Battery type: CR 2450N (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: Basic unit 44 EWRI-g, instruction manual, battery, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Standard	Connection thread
		mm	inch	mm/inch		
4191360	44 EWRI-g	6 – 20	.25 – .775"	0,001 / .00005"	DIN 863-4	M5 x 0,5
4191361	44 EWRI-g	20 – 100	.775 – 4.0"	0,001 / .00005"	DIN 863-4	M12 x 1
4191362	44 EWRI-g	100 – 200	4.0 – 7.9"	0,001 / .00005"	DIN 863-4	M12 x 1



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4190042	44 Ak	3-Point Measuring head, 70 – 85 mm mm
4190043	44 Ak	3-Point Measuring head, 85 – 100 mm mm
4190044	44 Ak	3-Point Measuring head, 100 – 125 mm mm
4190045	44 Ak	3-Point Measuring head, 125 – 150 mm mm
4190046	44 Ak	3-Point Measuring head, 150 – 175 mm mm
4190047	44 Ak	3-Point Measuring head, 175 – 200 mm mm
4190330	44 Ak	3-Point Measuring head, 6 – 8 mm mm
4190331	44 Ak	3-Point Measuring head, 8 – 10 mm mm
4190332	44 Ak	3-Point Measuring head, 10 – 12 mm mm
4190333	44 Ak	3-Point Measuring head, 12 – 16 mm mm
4190334	44 Ak	3-Point Measuring head, 16 – 20 mm mm
4190335	44 Ak	3-Point Measuring head, 20 – 25 mm mm
4190336	44 Ak	3-Point Measuring head, 25 – 30 mm mm
4190337	44 Ak	3-Point Measuring head, 30 – 40 mm mm
4190339	44 Ak	3-Point Measuring head, 40 – 50 mm mm
4190340	44 Ak	3-Point Measuring head, 50 – 60 mm mm
4190341	44 Ak	3-Point Measuring head, 60 – 70 mm mm



i-Stick

Micromar 44 EWR-g

Digital inside micrometer - Basic unit



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

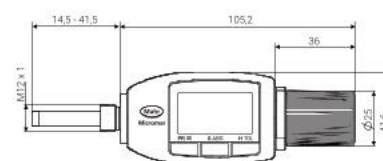
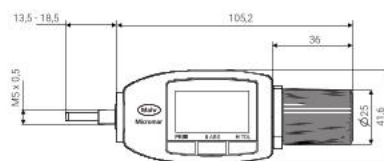


FEATURES

- Uniquely user-friendly with practical functions
- Optimal handling due to lightweight and compact basic unit
- Large, high-contrast numerical display with clear tolerance icons
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx. 10000 hrs)
- Battery type: CR 2450N (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: Basic unit 44 EWR-g, instruction manual, battery, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Standard	Connection thread
		mm	inch	mm/inch		
4191260	44 EWR-g	6 – 20	.25 – .775"	0,001 / .00005"	DIN 863-4	M5 x 0,5
4191261	44 EWR-g	20 – 100	.775 – 4.0"	0,001 / .00005"	DIN 863-4	M12 x 1
4191262	44 EWR-g	100 – 200	4.0 – 7.9"	0,001 / .00005"	DIN 863-4	M12 x 1



ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4190042	44 Ak	3-Point Measuring head, 70 – 85 mm mm
4190043	44 Ak	3-Point Measuring head, 85 – 100 mm mm
4190044	44 Ak	3-Point Measuring head, 100 – 125 mm mm
4190045	44 Ak	3-Point Measuring head, 125 – 150 mm mm
4190046	44 Ak	3-Point Measuring head, 150 – 175 mm mm
4190047	44 Ak	3-Point Measuring head, 175 – 200 mm mm
4190330	44 Ak	3-Point Measuring head, 6 – 8 mm mm
4190331	44 Ak	3-Point Measuring head, 8 – 10 mm mm
4190332	44 Ak	3-Point Measuring head, 10 – 12 mm mm
4190333	44 Ak	3-Point Measuring head, 12 – 16 mm mm
4190334	44 Ak	3-Point Measuring head, 16 – 20 mm mm
4190335	44 Ak	3-Point Measuring head, 20 – 25 mm mm
4190336	44 Ak	3-Point Measuring head, 25 – 30 mm mm
4190337	44 Ak	3-Point Measuring head, 30 – 40 mm mm
4190339	44 Ak	3-Point Measuring head, 40 – 50 mm mm
4190340	44 Ak	3-Point Measuring head, 50 – 60 mm mm
4190341	44 Ak	3-Point Measuring head, 60 – 70 mm mm

Micromar 844 EWRI-g

Inside measuring instrument - Basic unit with lever retraction



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

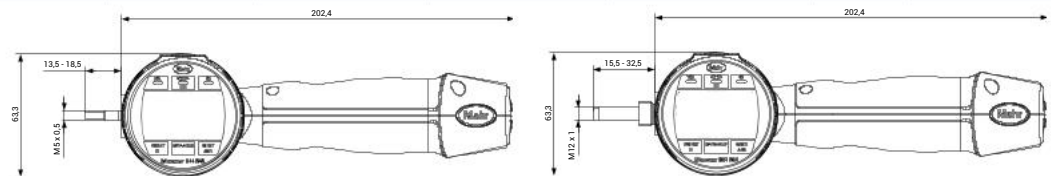
- Fast measurements by lever retraction (covers the complete application range of the respective measuring head)

FEATURES

- Optimal handling thanks to ergonomically shaped pistol grip
- Reliable reading of measured values on the large, high-contrast and rotating display
- Best performance: 2 data keys integrated in the lever for optimum handling in all measuring directions
- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx 10000 hrs without wireless transmission)
- Battery type: CR 2450N (3V Lithium)
- Data interface: Integrated Wireless
- Package contains: Basic unit 844 EWRI-g, Shock protection ring 1086 sr, instruction manual, battery, case
- Software: MarCom 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.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Standard	Connection thread
		mm	inch	mm/inch		
4192360	844 EWRI-g	6 – 20	.25 – .775"	0,001 / .00005"	DIN 863-4	M5 x 0,5
4192361	844 EWRI-g	20 – 100	.775 – 4.0"	0,001 / .00005"	DIN 863-4	M12 x 1



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4190042	44 Ak	3-Point Measuring head, 70 – 85 mm mm
4190043	44 Ak	3-Point Measuring head, 85 – 100 mm mm
4190330	44 Ak	3-Point Measuring head, 6 – 8 mm mm
4190331	44 Ak	3-Point Measuring head, 8 – 10 mm mm
4190332	44 Ak	3-Point Measuring head, 10 – 12 mm mm
4190333	44 Ak	3-Point Measuring head, 12 – 16 mm mm
4190334	44 Ak	3-Point Measuring head, 16 – 20 mm mm
4190335	44 Ak	3-Point Measuring head, 20 – 25 mm mm
4190336	44 Ak	3-Point Measuring head, 25 – 30 mm mm
4190337	44 Ak	3-Point Measuring head, 30 – 40 mm mm
4190339	44 Ak	3-Point Measuring head, 40 – 50 mm mm
4190340	44 Ak	3-Point Measuring head, 50 – 60 mm mm
4190341	44 Ak	3-Point Measuring head, 60 – 70 mm mm
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation



i-Stick



1086 sr



1086 sf

Micromar 844 EWR-g

Inside measuring instrument - Basic unit with lever retraction



FUNCTIONS

- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- LOCK function (key lock)
- HOLD (freeze current measured value)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)



Application:

- Fast measurements by lever retraction (covers the complete application range of the respective measuring head)



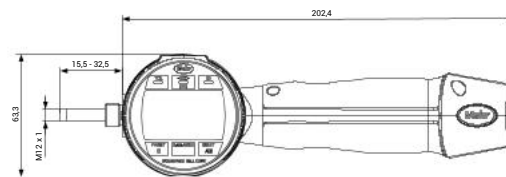
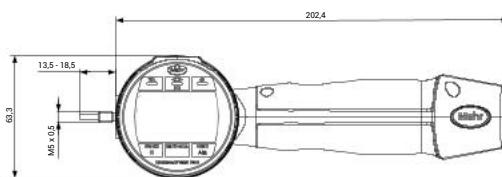
FEATURES

- Optimal handling thanks to ergonomically shaped pistol grip
- Reliable reading of measured values on the large, high-contrast and rotating display
- Best performance: 2 data keys integrated in the pull-back lever for optimum handling in all measuring directions
- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium
- IP protection category: IP 65
- Energy supply: Battery, battery life up to 4 years (approx. 10000 hrs)
- Battery type: CR 2450N (3V Lithium)
- Data interface: MarConnect (bidirectional), USB, Digimatic
- Package contains: Basic unit 844 EWR-g, Shock protection ring 1086 sr, instruction manual, battery, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

TECHNICAL DATA

202.4

Order no.	Type	Measuring span of indicator	Measuring span of indicator	Resolution	Standard	Connection thread
		mm	inch	mm/inch		
4192260	844 EWR-g	6 – 20	.25 – .775"	0,001 / .00005"	DIN 863-4	M5 x 0,5
4192261	844 EWR-g	20 – 100	.775 – 4.0"	0,001 / .00005"	DIN 863-4	M12 x 1



202.4

ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4190042	44 Ak	3-Point Measuring head, 70 – 85 mm mm
4190043	44 Ak	3-Point Measuring head, 85 – 100 mm mm
4190330	44 Ak	3-Point Measuring head, 6 – 8 mm mm
4190331	44 Ak	3-Point Measuring head, 8 – 10 mm mm
4190332	44 Ak	3-Point Measuring head, 10 – 12 mm mm
4190333	44 Ak	3-Point Measuring head, 12 – 16 mm mm
4190334	44 Ak	3-Point Measuring head, 16 – 20 mm mm
4190335	44 Ak	3-Point Measuring head, 20 – 25 mm mm
4190336	44 Ak	3-Point Measuring head, 25 – 30 mm mm
4190337	44 Ak	3-Point Measuring head, 30 – 40 mm mm
4190339	44 Ak	3-Point Measuring head, 40 – 50 mm mm
4190340	44 Ak	3-Point Measuring head, 50 – 60 mm mm
4190341	44 Ak	3-Point Measuring head, 60 – 70 mm mm
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation



1086 sr



1086 sf

Micromar 44 Ak

3-point measuring head

FEATURES

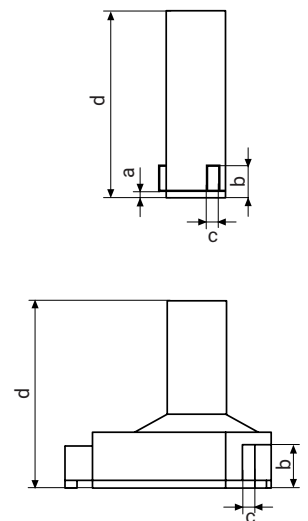
- Self-centering measuring head consists of 3 anvils (offset 3 x 120°)
- Measuring anvils from 12 mm are carbide tipped
- From 12 mm measuring anvils for measurements up to the bottom of the bore
- From 40 mm measuring head housing made of anodized aluminium



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	
		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 44 Cm / 44 Cms 1 / 44 Cms 2 / 44 Cms 3 / 44 Cms 4

DIN
863-4

Measuring head

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



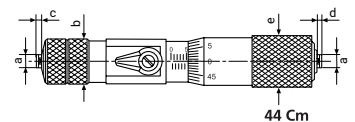
Application:

For measuring inside diameters and distance dimensions, as well as use as a adjustable gage for setting parallel distances

TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Readings	Error limit	Error limit	Standard	Spindle thread pitch	Extensions 44 Cv
		mm	mm	μm	μm		mm	mm
4168001	44 Cm	100 – 125	0,01	6		DIN 863-4	0,5	
4168020	44 Cms 1	100 – 150	0,01		Manufacturing tolerance of extensions 44 CV: ISO 286 js2	DIN 863-4	0,5	25
4168021	44 Cms 2	100 – 300	0,01		Manufacturing tolerance of extensions 44 CV: ISO 286 js2	DIN 863-4	0,5	25 / 50 / 100
4168022	44 Cms 3	100 – 500	0,01		Manufacturing tolerance of extensions 44 CV: ISO 286 js2	DIN 863-4	0,5	25 / 50 / 100 / 200
4168023	44 Cms 4	100 – 900	0,01		Manufacturing tolerance of extensions 44 CV: ISO 286 js2	DIN 863-4	0,5	25 / 50 / 100 / 200 / 400

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



ACCESSORIES

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

MarTest | Test indicators and touch probes

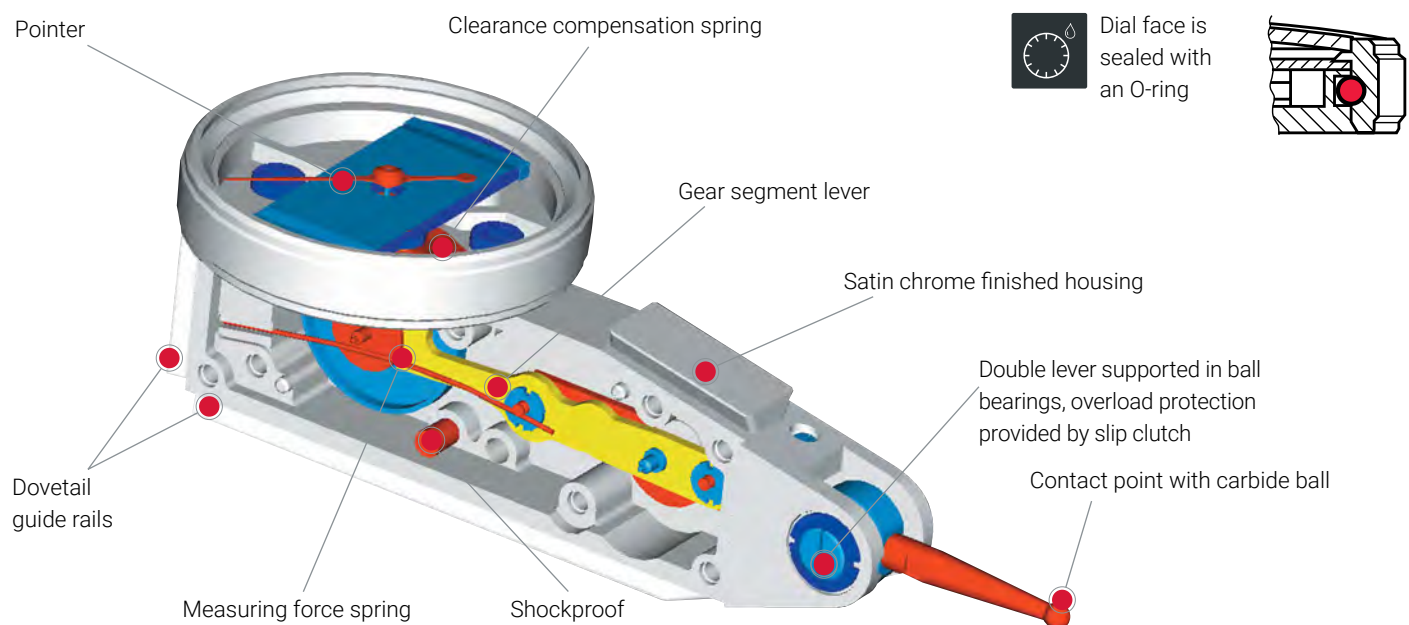
Dial test indicators from Mahr are ideal for delicate measuring tasks. Their sensitive measuring mechanism ensures maximum security and precision. The display has a hardened mineral glass panel and seal to protect it in harsh workshop conditions.



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MarTest

Terms



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

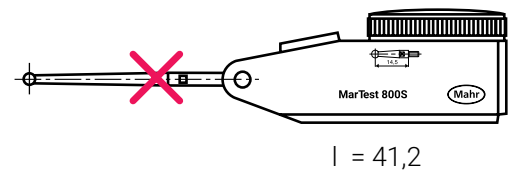
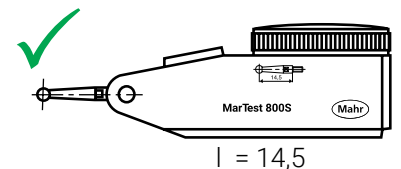
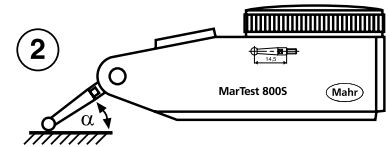
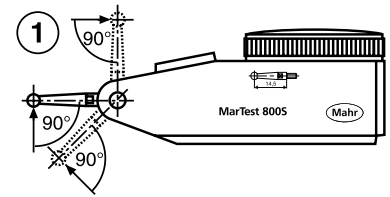
Example:

Angle α : 30° (estimated)

Reading on dial: 0.38 mm

Meas. values: $0.38 \times 0.87 = 0.33$ mm

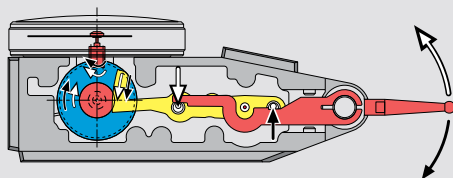
Please use only the provided measuring insert length for the type of device (e.g. 800 S)



MarTest

Automatic switch of measuring direction

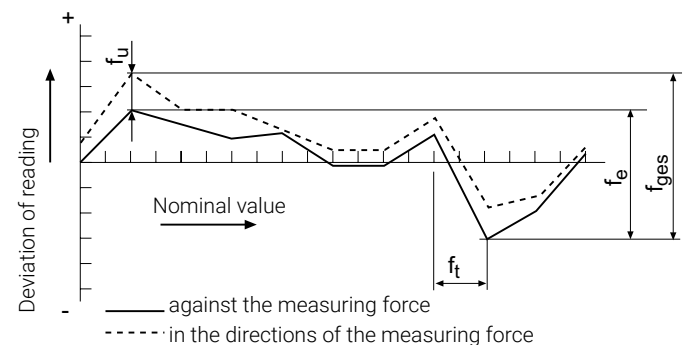
Measurement in both directions is possible without switch. The pointer moves clockwise. This guarantees clear and errorless reading.



Functional depiction

MarTest

Metrological characteristics



MarTest

Versions

Standard model
800 S



800 EWR



Extra long styli
800 SL



800 EWR



Higher resolution
800 SM



Larger measuring
range
800 SR



Horizontal model
800 H



Vertical model
800 V



TECHNICAL DATA

Order no.	Type	Measuring range	Measuring range	Readings	Readings	Deviation range f _e	Deviation range f _e	Dial color	Scale diameter	Scale diameter	Housing design	Measuring anvil length
4308220	800 SGE	± 0,07	-	0,001	-	3 µm	-	Yellow	38 mm	-	standard model	9,15 mm
4308150	800 SM	± 0,1	-	0,002	-	3 µm	-	Yellow	28 mm	-	standard model	14,5 mm
4308200	800 SGM	± 0,1	-	0,002	-	3 µm	-	Yellow	38 mm	-	standard model	14,5 mm
4308250	800 SRM	± 0,2	-	0,002	-	3 µm	-	Yellow	38 mm	-	standard model	14,5 mm
4306200	800 SL	± 0,25	-	0,01	-	10 µm	-	Yellow	28 mm	-	standard model	41,24 mm
4306250	800 SGL	± 0,25	-	0,01	-	10 µm	-	Yellow	38 mm	-	standard model	41,24 mm
4301200	800 SA	± 0,25	-	0,01	-	5 µm	-	Yellow	28 mm	-	standard model	14,5 mm
4301250	800 SGA	± 0,25	-	0,01	-	5 µm	-	Yellow	38 mm	-	standard model	14,5 mm
4303200	800 H	± 0,4	-	0,01	-	10 µm	-	Yellow	28 mm	-	horizontal model	14,5 mm
4305200	800 S	± 0,4	-	0,01	-	10 µm	-	Yellow	28 mm	-	standard model	14,5 mm
4307200	800 SG	± 0,4	-	0,01	-	10 µm	-	Yellow	38 mm	-	standard model	14,5 mm
4302200	800 V	± 0,4	-	0,01	-	10 µm	-	Yellow	28 mm	-	vertical model	14,5 mm
4301300	800 SGB	± 0,5	-	0,01	-	10 µm	-	Yellow	38 mm	-	standard model	32,3 mm
4307250	800 SR	± 0,8	-	0,01	-	10 µm	-	Yellow	38 mm	-	standard model	14,5 mm
4308985	801 SGE	-	± .004"	-	0,00005 inch	-	0,0004 inch	Green	-	1,5 inch	standard model	14,5 mm
4308960	801 SM	-	± .004"	-	0,0001 inch	-	0,00012 inch	Green	-	1,1 inch	standard model	14,5 mm
4308970	801 SGM	-	± .004"	-	0,0001 inch	-	0,00012 inch	Green	-	1,5 inch	standard model	14,5 mm
4308980	801 SRM	-	± .008"	-	0,0001 inch	-	0,00012 inch	Green	-	1,5 inch	standard model	14,5 mm
4306950	801 SL	-	± .010"	-	0,0005 inch	-	0,0004 inch	Green	-	1,1 inch	standard model	41,24 mm
4306960	801 SGL	-	± .010"	-	0,0005 inch	-	0,0004 inch	Green	-	1,5 inch	standard model	41,24 mm
4303950	801 H	-	± .015"	-	0,0005 inch	-	0,0004 inch	Green	-	1,1 inch	horizontal model	14,5 mm
4305950	801 S	-	± .015"	-	0,0005 inch	-	0,0004 inch	Green	-	1,1 inch	standard model	14,5 mm
4305960	801 S1	-	± .015"	-	0,0005 inch	-	0,0004 inch	Green	-	1,5 inch	standard model	14,5 mm
4307950	801 SG	-	± .015"	-	0,0005 inch	-	0,0004 inch	Green	-	1,1 inch	standard model	14,5 mm
4302950	801 V	-	± .015"	-	0,0005 inch	-	0,0004 inch	Green	-	1,1 inch	vertical model	14,5 mm
4307960	801 SR	-	± .030"	-	0,0005 inch	-	0,0004 inch	Green	-	1,5 inch	standard model	14,5 mm
4307970	801 SGI	± 0,3	± .015"	0,01	0,0005 inch	-	0,0004 inch	Green	-	1,5 inch	standard model	14,5 mm

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

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 dove-tail 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: spanner for changing the styli, stylus dia. $\varnothing 2$ mm, mounting shaft 800a8, test certificate, instruction manual, case

Application:

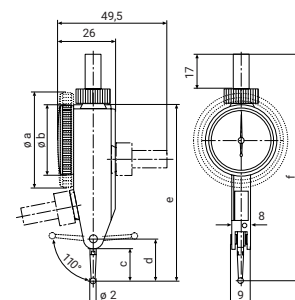
- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces



TECHNICAL DATA

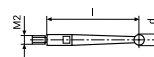
Order no.		4305200	4307200	4307250	4301200	4301250
Type		800 S	800 SG	800 SR	800 SA	800 SGA
Measuring range	mm	± 0,4		± 0,8	± 0,25	
Range per turn	mm	0,8			0,5	
Readings	mm	0,01				
Deviation range f _e	µm	10			5	
Total deviation range f _{ges}	µm	13		14	8	
Partial measuring span f _t	µm	5				
Measuring value hysteresis f _u	µm	3		4	3	
Repeatability f _w	µm	3				
Standard		DIN 2270		Factory standard		
Measuring force	N	0,15			0,1	
Figur on dial face		40-0-40			25-0-25	
Dial color		Yellow				
Scale diameter	mm	28	38		28	38
Measuring anvil length	mm	14,5				
Measuring surface		carbide				

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4305200		30	13,6	17,8	75	99
4307200	40,5		13,6	17,8	75	99
4307250	40,5		13,6	17,8	75	99
4301200		30	13,6	17,8	75	99
4301250	40,5		13,6	17,8	75	99



ACCESSORIES

Order no.	Type	Description
4305870	800 ts	Stylus $\varnothing 1,0$ mm, carbide, $l = 14,5$ mm
4305850	800 ts	Stylus $\varnothing 2,0$ mm, carbide, $l = 14,5$ mm
4305871	800 ts	Stylus $\varnothing 3,0$ mm, carbide, $l = 14,5$ mm
4309051	800 tsr	Stylus $\varnothing 2,0$ mm, ruby, $l = 14,5$ mm
4305868		Spanner



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

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 dove-tail 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: spanner for changing the styli, stylus dia. $\varnothing$ 2 mm, mounting shaft 800a6 (800 SA/SGA/SGB), mounting shaft 800a8, test certificate, instruction manual, case

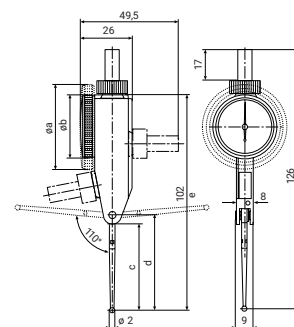
Application:

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

TECHNICAL DATA

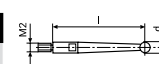
Order no.		4301300	4306200	4306250
Type		800 SGB	800 SL	800 SGL
Measuring range	mm	± 0,5	± 0,25	
Range per turn	mm	1	0,5	
Readings	mm	0,01		
Deviation range f _e	µm	10		
Total deviation range f _{ges}	µm	13		
Partial measuring span f _t	µm	5		
Measuring value hysteresis f _u	µm	4	5	
Repeatability f _w	µm	3		
Standard		Factory standard		
Measuring force	N	0,07		
Figur on dial face		50–0–50	25–0–25	
Dial color		Yellow		
Scale diameter	mm	38	28	38
Measuring anvil length	mm	32,3	41,24	
Measuring surface		carbide		

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4301300	40,5		31,4	35,7	93	117
4306200		30	40,3	44,6	102	126
4306250	40,5		40,3	44,6	102	126



ACCESSORIES

Order no.	Type	Description
4301851	800 tb	Stylus $\varnothing$ 1,0 mm, carbide, l = 32,3 mm
4301850	800 tb	Stylus $\varnothing$ 2,0 mm, carbide, l = 32,3 mm
4301852	800 tb	Stylus $\varnothing$ 3,0 mm, carbide, l = 32,3 mm
4309052	800 tbr	Stylus $\varnothing$ 2,0 mm, ruby, l = 32,3 mm
4305868		Spanner
4306851	800 tl	Stylus $\varnothing$ 1,0 mm, carbide, l = 41,24 mm
4306850	800 tl	Stylus $\varnothing$ 2,0 mm, carbide, l = 41,24 mm
4306853	800 tl	Stylus $\varnothing$ 3,0 mm, carbide, l = 41,24 mm
4309053	800 tlr	Stylus $\varnothing$ 2,0 mm, ruby, l = 41,24 mm



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

MarTest 800 SM / 800 SGM / 800 SRM

Test indicator



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 dove-tail 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: spanner for changing the styli, stylus dia. $\varnothing 2$ mm, mounting shaft 800a8, test certificate, instruction manual, case

Application:

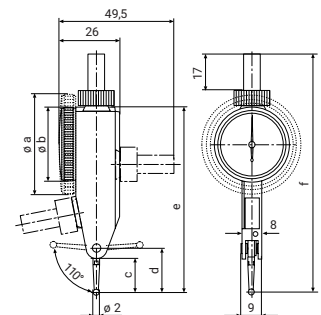
- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces



TECHNICAL DATA

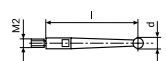
Order no.		4308150	4308200	4308250
Type		800 SM	800 SGM	800 SRM
Measuring range	mm	$\pm 0,1$		$\pm 0,2$
Range per turn	mm	0,2		
Readings	mm	0,002		
Deviation range f_e	μm	3		
Total deviation range f_{ges}	μm	4		5
Partial measuring span f_t	μm	2		
Measuring value hysteresis f_u	μm	2		3
Repeatability f_w	μm	1,5		
Standard		DIN 2270		Factory standard
Measuring force	N	0,15		
Figur on dial face		100-0-100		
Dial color		Yellow		
Scale diameter	mm	28		38
Measuring anvil length	mm	14,5		
Measuring surface		carbide		

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4308150		30	13,6	17,8	75	99
4308200	40,5		13,6	17,8	75	99
4308250	40,5		13,6	17,8	75	99



ACCESSORIES

Order no.	Type	Description
4305870	800 ts	Stylus $\varnothing 1,0$ mm, carbide, $l = 14,5$ mm
4305850	800 ts	Stylus $\varnothing 2,0$ mm, carbide, $l = 14,5$ mm
4305871	800 ts	Stylus $\varnothing 3,0$ mm, carbide, $l = 14,5$ mm
4309051	800 tsr	Stylus $\varnothing 2,0$ mm, ruby, $l = 14,5$ mm
4305868		Spanner



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

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: spanner for changing the styli, stylus dia. $\varnothing$ 2 mm, mounting shaft 800a8, test certificate, instruction manual, case

Application:

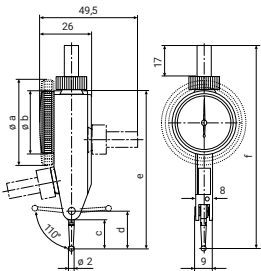
- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces



TECHNICAL DATA

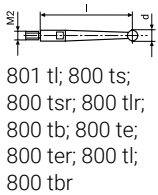
Order no.		4308220	
Type		800 SGE	
Measuring range	mm	$\pm 0,07$	
Range per turn	mm	0,14	
Readings	mm	0,001	
Deviation range f_e	μm	3	
Total deviation range f_{ges}	μm	4	
Partial measuring span f_t	μm	2	
Measuring value hysteresis f_u	μm	2	
Repeatability f_w	μm	1,5	
Standard		Factory standard	
Measuring force	N	0,2	
Figur on dial face		70–0–70	
Dial color		Yellow	
Scale diameter	mm	38	
Measuring anvil length	mm	9,15	
Measuring surface		carbide	

Order no.	a	c	d	e	f
	mm	mm	mm	mm	mm
4308220	40,5	8,3	12,5	70	94



ACCESSORIES

Order no.	Type	Description
4308851	800 te	Stylus $\varnothing$ 1,0 mm, carbide, l = 9,1 mm
4308850	800 te	Stylus $\varnothing$ 2,0 mm, carbide, l = 9,1 mm
4308852	800 te	Stylus $\varnothing$ 3,0 mm, carbide, l = 9,1 mm
4309050	800 ter	Stylus $\varnothing$ 2,0 mm, ruby, l = 9,1 mm
4305868		Spanner



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

FEATURES

- For high-precision measurements
- High-contrast dial face, sealed with O-ring
- Mineral glass viewing panel for best protection:
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 - optimum resistance to solvents
- Matt chrome-plated protective casing with three integrated dove-tail 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: spanner for changing the styli, stylus dia. $\varnothing$ 2 mm, mounting shaft 800a3/8, test certificate, instruction manual, case

Application:

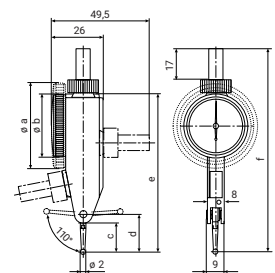
- Measurement of concentricity, alignment, parallelism and flatness
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- Parallel or perpendicular alignment of work pieces



TECHNICAL DATA

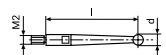
Order no.		4308960	4308970	4308980	4308985
Type		801 SM	801 SGM	801 SRM	801 SGE
Measuring range	inch	± .004"		± .008"	± .004"
Range per turn	inch	0,0080			
Readings	inch	0,0001			0,00005
Deviation range f _e	inch	0,00012			0,0004
Total deviation range f _{ges}	inch	0,00016		0,0002	0,0005
Partial measuring span f _t	inch	0,00008			0,0002
Measuring value hysteresis f _u	inch	0,00008		0,00012	0,00008
Repeatability f _w	inch	0,0001			
Standard		Factory standard			
Measuring force	N	0,15			
Figur on dial face		4-0-4			
Dial color		Green			
Scale diameter	inch	1,1	1,5		
Measuring anvil length	mm	14,5			
Measuring surface		carbide			

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4308960		30	13,6	17,8	75	99
4308970	40,5		13,6	17,8	75	99
4308980	40,5		13,6	17,8	75	99
4308985	40,5		13,6	17,8	75	99



ACCESSORIES

Order no.	Type	Description
4305850	800 ts	Stylus $\varnothing$ 2,0 mm, carbide, l = 14,5 mm
4305870	800 ts	Stylus $\varnothing$ 1,0 mm, carbide, l = 14,5 mm
4305871	800 ts	Stylus $\varnothing$ 3,0 mm, carbide, l = 14,5 mm
4309051	800 tsr	Stylus $\varnothing$ 2,0 mm, ruby, l = 14,5 mm
4305868		Spanner



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

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: spanner for changing the styli, stylus dia. $\varnothing 2$ mm, mounting shaft 800a3/8, test certificate, instruction manual, case

Application:

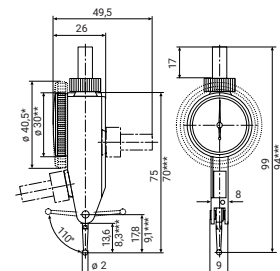
- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces



TECHNICAL DATA

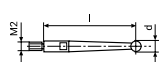
Order no.		4305950	4305960	4307950	4307960	4307970
Type		801 S	801 S1	801 SG	801 SR	801 SGI
Measuring range	mm					$\pm 0,3$
Measuring range	inch		$\pm .015''$		$\pm .030''$	$\pm .015''$
Range per turn	mm					0,6
Range per turn	inch			0,0300		
Readings	mm					0,01
Readings	inch			0,0005		
Deviation range f_e	inch			0,0004		
Total deviation range f_{ges}	inch			0,0005		
Partial measuring span f_i	inch			0,0002		
Measuring value hysteresis f_u	inch		0,00012		0,00016	0,00012
Repeatability f_w	inch			0,0001		
Standard		Factory standard				
Measuring force	N			0,15		
Figur on dial face				15-0-15		
Dial color				Green		
Scale diameter	inch	1,1	1,5	1,1		1,5
Measuring anvil length	mm			14,5		
Measuring surface				carbide		

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4305950		30	13,6	17,8	75	99
4305960		30	13,6	17,8	75	99
4307950	40,5		13,6	17,8	75	99
4307960	40,5		13,6	17,8	75	99
4307970	40,5		13,6	17,8	75	99



ACCESSORIES

Order no.	Type	Description
4305870	800 ts	Stylus $\varnothing 1,0$ mm, carbide, $l = 14,5$ mm
4305850	800 ts	Stylus $\varnothing 2,0$ mm, carbide, $l = 14,5$ mm
4305871	800 ts	Stylus $\varnothing 3,0$ mm, carbide, $l = 14,5$ mm
4309051	800 tsr	Stylus $\varnothing 2,0$ mm, ruby, $l = 14,5$ mm
4305868		Spanner



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

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 dove-tail 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: spanner for changing the styli, stylus dia. $\varnothing$ 2 mm, mounting shaft 800a3/8, test certificate, instruction manual, case

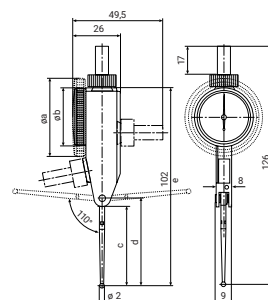
Application:

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

TECHNICAL DATA

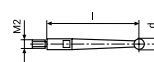
Order no.		4306950	4306960
Type		801 SL	801 SGL
Measuring range	inch	$\pm .010''$	
Range per turn	inch	0,0200	
Readings	inch	0,0005	
Deviation range f_e	inch	0,0004	
Total deviation range f_{ges}	inch	0,0005	
Partial measuring span f_t	inch	0,0002	
Measuring value hysteresis f_u	inch	0,0002	
Repeatability f_w	inch	0,0001	
Standard		Factory standard	
Measuring force	N	0,07	
Figur on dial face		10-0-10	
Dial color		Green	
Scale diameter	inch	1,1	1,5
Measuring anvil length	mm	41,24	
Measuring surface		carbide	

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4306950		30	40,3	44,6	102	126
4306960	40,5		40,3	44,6	102	126



ACCESSORIES

Order no.	Type	Description
4306851	800 tl	Stylus $\varnothing$ 1,0 mm, carbide, l = 41,24 mm
4306850	800 tl	Stylus $\varnothing$ 2,0 mm, carbide, l = 41,24 mm
4306853	800 tl	Stylus $\varnothing$ 3,0 mm, carbide, l = 41,24 mm
4309053	800 tlr	Stylus $\varnothing$ 2,0 mm, ruby, l = 41,24 mm
4305868		Spanner



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

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: spanner for changing the styli, stylus dia. $\varnothing$ 2 mm, mounting shaft 800a8, test certificate, instruction manual, case

Application:

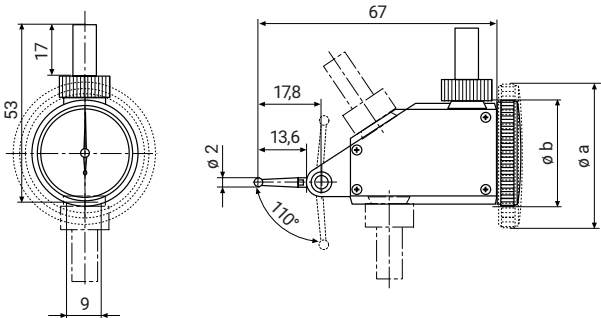
- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces



TECHNICAL DATA

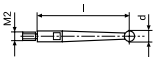
Order no.		4302200	
Type		800 V	
Measuring range	mm	$\pm 0,4$	
Range per turn	mm	0,8	
Readings	mm	0,01	
Deviation range f_e	μm	10	
Total deviation range f_{ges}	μm	13	
Partial measuring span f_t	μm	5	
Measuring value hysteresis f_u	μm	3	
Repeatability f_w	μm	3	
Standard		DIN 2270	
Measuring force	N	0,2	
Figur on dial face		40-0-40	
Dial color		Yellow	
Scale diameter	mm	28	
Measuring anvil length	mm	14,5	
Measuring surface		carbide	

Order no.	b
	mm
4302200	30



ACCESSORIES

Order no.	Type	Description
4305870	800 ts	Stylus $\varnothing$ 1,0 mm, carbide, l = 14,5 mm
4305850	800 ts	Stylus $\varnothing$ 2,0 mm, carbide, l = 14,5 mm
4305871	800 ts	Stylus $\varnothing$ 3,0 mm, carbide, l = 14,5 mm
4309051	800 tsr	Stylus $\varnothing$ 2,0 mm, ruby, l = 14,5 mm
4305868		Spanner



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



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 dove-tail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensuring infallible readings
- Ball bearing mounted double lever
- Protection clutch overload protection
- Package contains: spanner for changing the styli, stylus dia. $\varnothing$ 2 mm, mounting shaft 800a3/8, test certificate, instruction manual, case



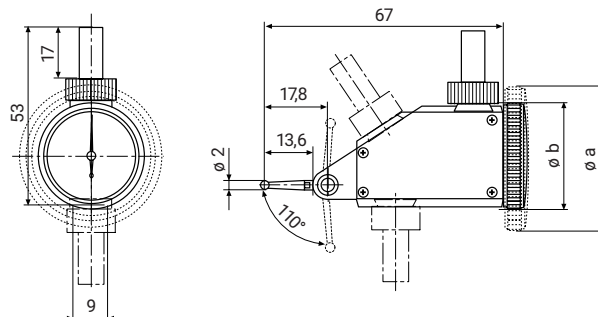
Application:

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

TECHNICAL DATA

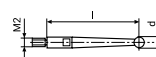
Order no.	4302950	
Type		801 V
Measuring range	inch	± .015"
Range per turn	inch	0,0300
Readings	inch	0,0005
Deviation range f_e	inch	0,0004
Total deviation range f_{ges}	inch	0,0005
Partial measuring span f_t	inch	0,0002
Measuring value hysteresis f_u	inch	0,00012
Repeatability f_w	inch	0,0001
Standard		Factory standard
Measuring force	N	0,2
Figur on dial face		15–0–15
Dial color		Green
Scale diameter	inch	1,1
Measuring anvil length	mm	14,5
Measuring surface		carbide

Order no.	b
	mm
4302950	30



ACCESSORIES

Order no.	Type	Description
4305870	800 ts	Stylus ø 1,0 mm, carbide, l = 14,5 mm
4305850	800 ts	Stylus ø 2,0 mm, carbide, l = 14,5 mm
4305871	800 ts	Stylus ø 3,0 mm, carbide, l = 14,5 mm
4309051	800 tsr	Stylus ø 2,0 mm, ruby, l = 14,5 mm
4305868		Spanner



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

MarTest 800 H / 801 H

Test indicator

FUNCTIONS

- Functions 801 H:
- Functions 800 H:
- 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

FEATURES 801 H:

- Package contains: spanner for changing the styli, stylus dia. $\varnothing 2$ mm, mounting shaft 800a3/8, test certificate, instruction manual, case

FEATURES 800 H:

- Package contains: mounting shaft 800a8



Application:

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

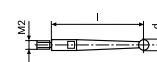
TECHNICAL DATA

Order no.		4303950	4303200
Type		801 H	800 H
Measuring range	mm		$\pm 0,4$
Measuring range	inch	$\pm .015"$	
Range per turn	mm		0,8
Range per turn	inch	0,0300	
Readings	mm		0,01
Readings	inch	0,0005	
Deviation range f_e	μm		10
Deviation range f_e	inch	0,0004	
Total deviation range f_{ges}	μm		13
Total deviation range f_{ges}	inch	0,0005	
Partial measuring span f_t	μm		5
Partial measuring span f_t	inch	0,0002	
Measuring value hysteresis f_u	μm		3
Measuring value hysteresis f_u	inch	0,00012	
Repeatability f_w	μm		3
Repeatability f_w	inch	0,0001	
Standard		Factory standard	DIN 2270
Measuring force	N	0,25	
Figur on dial face		15-0-15	40-0-40
Dial color		Green	Yellow
Scale diameter	mm		28
Scale diameter	inch	1,1	
Measuring anvil length	mm	14,5	
Measuring surface		carbide	

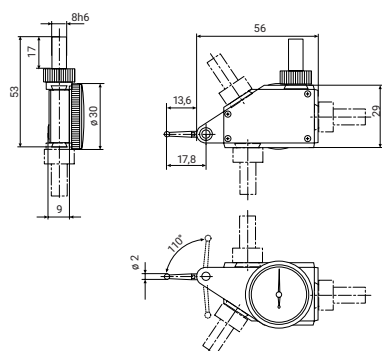
Order no.	a
	mm
4303200	30
4303950	30

ACCESSORIES

Order no.	Für Messgerät	Type	Description
4305850	800 H, 801 H	800 ts	Stylus $\varnothing 2,0$ mm, carbide, $l = 14,5$ mm
4305868	800 H, 801 H		Spanner
4305870	800 H, 801 H	800 ts	Stylus $\varnothing 1,0$ mm, carbide, $l = 14,5$ mm
4305871	800 H, 801 H	800 ts	Stylus $\varnothing 3,0$ mm, carbide, $l = 14,5$ mm
4309051	800 H, 801 H	800 tsr	Stylus $\varnothing 2,0$ mm, ruby, $l = 14,5$ mm



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



MarTest 800 EWR

Digital test indicator



FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- MAX/MIN memory for searching the reversal point
- (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 280°
- 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
- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: Opto RS-232C, USB
- Package contains: spanner for changing the styli, stylus dia. $\varnothing$ 2 mm, mounting shaft 800a8, test certificate, instruction manual, battery, case
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

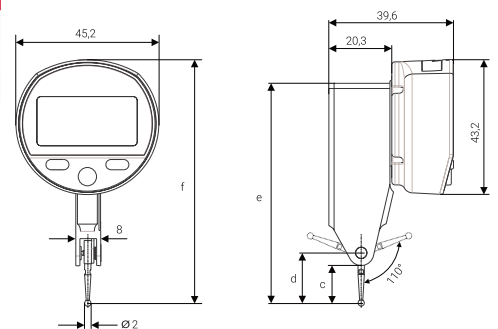
Application:

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

TECHNICAL DATA

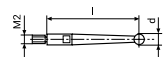
Order no.		4306130	4306140
Type		800 EWR	
Measuring range	mm	$\pm 0,9$	$\pm 2,2$
Measuring range	inch	$\pm .0354"$	$\pm .0433"$
Resolution	mm / inch	0,001 / .00005"	
Deviation range f_e	μm	5	10
Total deviation range f_{ges}	μm	6	12
Partial measuring span f_t	μm	2	3
Measuring value hysteresis f_u	μm	3	5
Repeatability f_w	μm	2	
Measuring force	N	0,15	0,06
Height of digits	mm	6	
Measuring anvil length	mm	14,5	41,24
Measuring surface		carbide	

Order no.	c	d	e	f
	mm	mm	mm	mm
4306130	14,2	17,7	72	79,7
4306140	41	44,5	98,8	106,5



ACCESSORIES

Order no.	Type	Description
4305870	800 ts	Stylus $\varnothing$ 1,0 mm, carbide, l = 14,5 mm
4305850	800 ts	Stylus $\varnothing$ 2,0 mm, carbide, l = 14,5 mm
4305871	800 ts	Stylus $\varnothing$ 3,0 mm, carbide, l = 14,5 mm
4305122	800 EWr	Data connection cable RS232C (2 m)
4305121	800 EWu	800 EWu Data connection cable USB (2 m)
4309051	800 tsr	Stylus $\varnothing$ 2,0 mm, ruby, l = 14,5 mm
4306850	800 tl	Stylus $\varnothing$ 2,0 mm, carbide, l = 41,24 mm
4306851	800 tl	Stylus $\varnothing$ 1,0 mm, carbide, l = 41,24 mm
4306853	800 tl	Stylus $\varnothing$ 3,0 mm, carbide, l = 41,24 mm
4309053	800 tlr	Stylus $\varnothing$ 2,0 mm, ruby, l = 41,24 mm



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

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

Mounting shaft

FEATURES

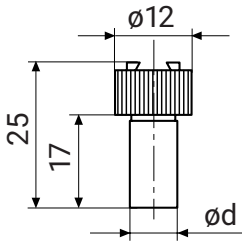
- Clamping shafts on the housing can be moved on dovetail guide rails
- Clamping in any position with milled nut (no tools required)



TECHNICAL DATA

Order no.	Type
4305885	800 a4
4301865	800 a6
4305865	800 a8
4305875	800 a3/8
4305895	800 a1/4"

Order no.	Mounting shaft	Mounting shaft
	inch	mm
4305885		4
4301865		6
4305865		8
4305875	0,375	
4305895	0,25	



MarTest 800 h1

Holder

FEATURES

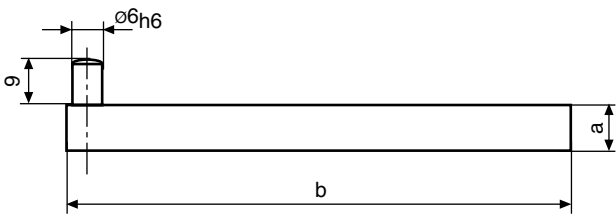
- Used for holding dial test indicator measuring devices on machine tools in conjunction with the 800k universal clamp



TECHNICAL DATA

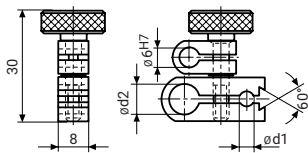
Order no.	Type
4305888	800 h1

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



ACCESSORIES

Order no.	Type	Description
4305891	800 k8	Universal clamp, ϕ d1 = 4 mm, ϕ d2 = 8 mm, dovetail clamp



800 k8; 800 k3/8"

MarTest 800 hs8

Universal holder with ball joint and dovetail clamp

FEATURES

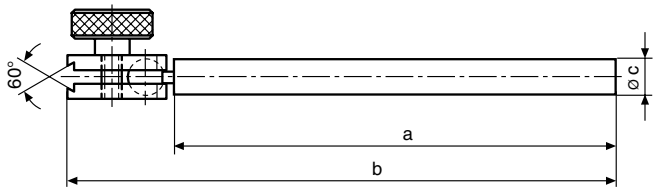
- For aligning and centering work pieces on machine tools
- Pivoting holding clamp for dovetail



TECHNICAL DATA

Order no.	Type
4305886	800 hs8

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



MarTest 801 v

Measuring and centering arm

FEATURES

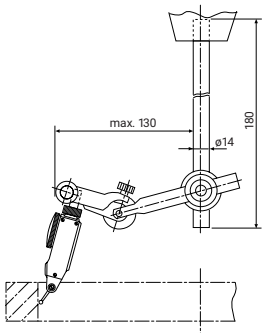
- For aligning and centering work pieces on machine tools
- Pivoting holding clamp with integrated precision adjustment
- Stainless steel struts



TECHNICAL DATA

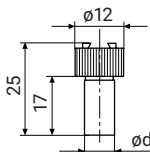
Order no.	Type
4309070	801 v

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



ACCESSORIES

Order no.	Type	Description
4305865	800 a8	Mounting shaft ø 8 mm



800 a4; 800 a3/8;
800 a8; 800 a6;
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.		Type			
4309090		801 p			

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

MarTest 800 b

Universal centering support frame

FEATURES

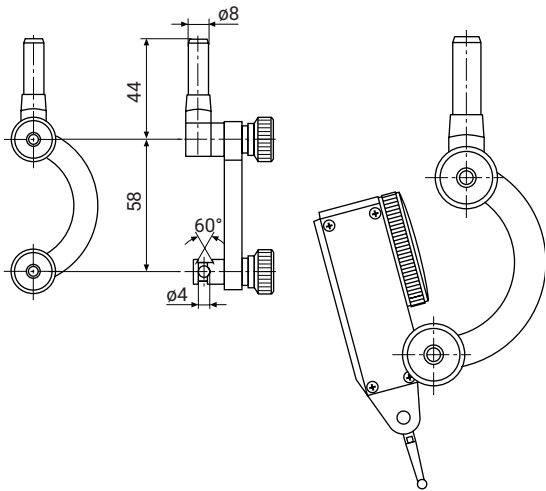
- For aligning and centering work pieces on machine tools
- Pivoting holding clamp



TECHNICAL DATA

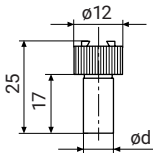
Order no.	Type
4305893	800 b

Order no.	Mounting hole
4305893	4 mm



ACCESSORIES

Order no.	Type	Description
4305885	800 a4	Mounting shaft $\varnothing$ 4 mm



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

MarTest 802 EW

Digital 3D touch probe



FUNCTIONS

- AUTO-ON/OFF
- mm/inch
- Resolution selectable

FEATURES

- Very clear readability of the large and high-contrast digits
- Practical adjustment aid thanks to coloured LED display:
 - Green LED flashing from a value of -0.1 mm
 - Fast flashing frequency of green LED from -0.05 mm
 - Permanent green LED signal at 0.00 mm
 - Red LED signal when exceeding > 0.00 mm
- 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 67
- Energy supply: battery operation
- Battery type: CR 2 (3V Lithium)
- Package contains: battery, instruction manual, stylus 802 EWt

Application:

Use in milling and eroding machines to

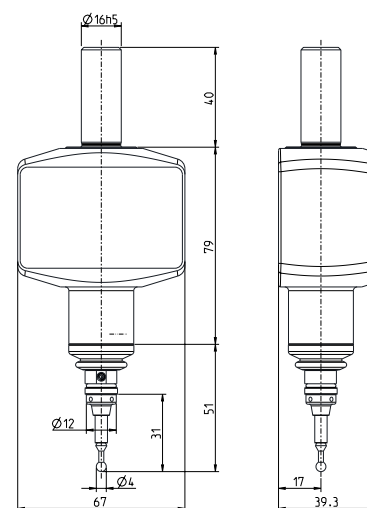
- determine the zero position on workpieces
- determine the center of bores
- determine and correct the alignment of a workpiece and for the measurement with defined measuring force (by moving the machine tool axes in X/Y and Z) of
 - lengths
 - widths
 - distances
 - depths



TECHNICAL DATA

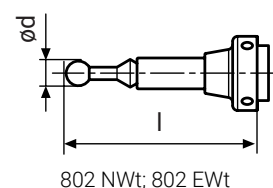
Order no.		4304280
Type		802 EW
Working areas, X-, Y-, Z-axis		X - 2 to 3,5 mm
		Y - 2 to 3,5 mm
		Z - 2 to 4 mm
Resolution	mm	0,001, 0,005
Resolution	inch	0,0001, 0,0005
Repeatability at zero point, unidirectional	mm	± 0,005
Standard		Factory standard
Height of digits	mm	15
Measuring surface		carbide

Order no.	Ball diameter	Mounting shaft
	mm	mm
4304280	4	16



ACCESSORIES

Order no.	Type	Description
4304320	802 EWt	Stylus Ø 4,0 mm, l = 31 mm



MarTest 802 NW

Mechanical 3D touch probe



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:

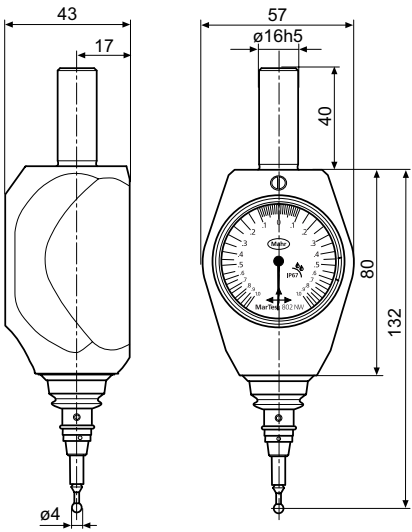
- Use in milling and eroding machines to
- determine the zero position on workpieces
 - determine the center of bores
 - determine and correct the alignment of a workpiece and for the measurement with defined measuring force (by moving the machine tool axes in X/Y and Z) of
 - lengths
 - widths
 - distances
 - depths



TECHNICAL DATA

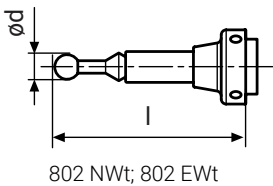
Order no.		4304311
Type		802 NW
Working areas, X-, Y-, Z-axis		6,6 mm
Readings	mm	0,01
Repeatability at zero point, unidirectional	mm	± 0,01mm
Standard		Factory standard
Measuring surface		carbide

Order no.	Ball diameter	Mounting shaft
	mm	mm
4304311	4	16



ACCESSORIES

Order no.	Type	Description
4304320	802 EWt	Stylus ø 4,0 mm, l = 31 mm
4304321	802 NWt	Stylus ø 6 mm, l = 56,6 mm



MarCator | Dial and digital indicators

Whether mechanical or digital, dial indicators rank as some of the most commonly used measuring instruments. They serve as transducers and displays in tripods, measuring tables, comparative measuring instruments and much more.

The MarCator dial gages are characterized by precise measurement results, simple, intuitive operation and a robust design.



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MarCator

Digital dial gages with touch operation

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.



Touch operating keys

With the practical touch function, a gentle touch of the surface is enough to operate the dial indicator safely – ideal for sensitive measuring tasks.



1087 BRi
for dynamic comparative inner/outer measurements



Unique measurement classification

The innovative colored LED display is used to quickly and unambiguously identify good products and waste, as well as reworks or warning limits. Icons also show this information on the display.



For static and dynamic measuring tasks

The moving pointer of the additional analog scale display allows the dynamic measuring movement and tolerance limits of the MarCator 1087 models to be reliably identified visually. The MarCator 1086 models are designed for purely static measuring tasks.



Optimum connectivity

Convenient and secure wireless data transmission (Ri models) or USB data cable with bidirectional data transfer (R and Ri models). You can also benefit from the handy option of setting the dial indicator very easily and clearly via a PC and the remote control option in conjunction with the free MarCom Professional software.



Best protection

The robust hardened glass display with non-wearing touch operating keys makes the dial indicators even more durable and less susceptible to damage. In addition, the large LCD displays allow all measured values and icons to be read off directly and at a glance.



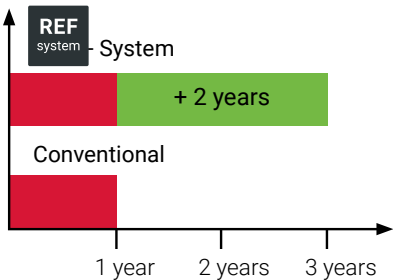
IP protection class IP54 (optional)

- Protective cap at the end of the measuring pin
- Rubber bellows on measuring pin
- Sealed battery compartment

Code Letters	IP	International Protection
First numeral	6	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

MarCator

One-time zeroing

REF
system

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.

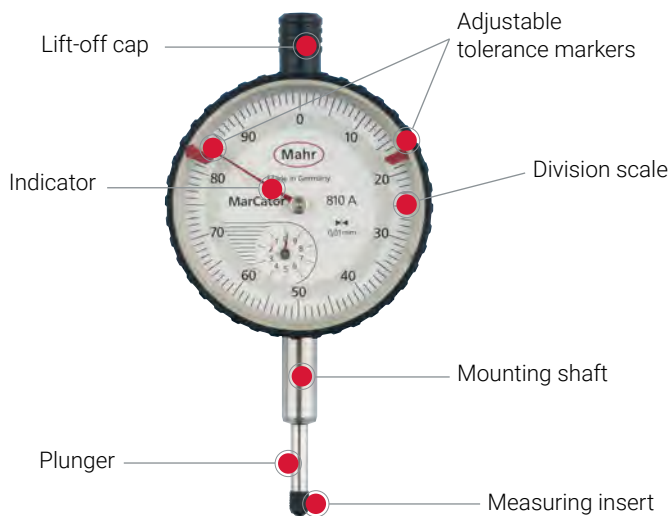
MarConnect Integrated Wireless – wireless transmission at the price of a cable



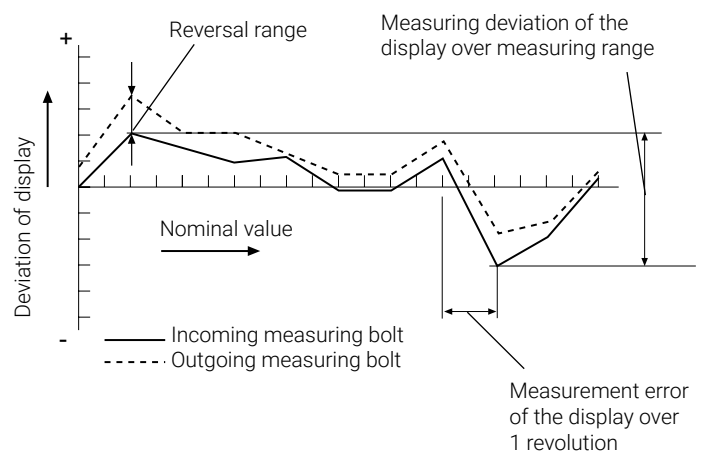
With Integrated Wireless, you get wireless data transmission for the price of a cable. Data acquisition with indicators is now even easier: Transfer your measurement data simply and without annoying cables directly into Microsoft® Office Excel® or via keyboard code into any Windows® program.

MarCator

Terms



Metrological characteristics



MarCator

Models

Small dial indicator
803 S



Dial indicator 810 S



Digital indicator 1075 R



Digital indicator 1087 Ri



TECHNICAL DATA

Application	Standard functions	ABS/REL-switchable	Tolerance display	Dynamic functions	Start/Stop for dynamic functions	Display	Type	Measuring span								
		ABS						mm (*)	inch (*)							
For static measurements 	ON/OFF Zero setting mm/inch PRESET Counting direction Key lock					non-rotatable	1075R	12,5	(.5")							
For static measuring tasks Touch key version Push button version	ON/OFF Zero setting mm/inch PRESET Counting direction Key lock					rotatable through 280°	1086Ri	12,5	(.5")							
								25	(1")							
								12,5	(.5")							
								25	(1")							
								50	(2")							
								100	(4")							
							1086 ZRi	25	(1")							
								(12,5)	.5"							
							1086 R	(25)	1"							
								12,5	(.5")							
								25	(1")							
								50	(2")							
								100	(4")							
								12,5	(.5")							
							1086 ZR	25	(1")							
								50	(2")							
							1086 Ri-HR	100	(4")							
								12,5	(.5")							
							1086 R-HR	25	(1")							
								50	(2")							
							1086 WRi	100	(4")							
								12,5	(.5")							
							1086 WR	25	(1")							
								12,5	(.5")							
For static and dynamic measuring tasks Touch key version Push button version 	ON/OFF Zero setting mm/inch PRESET Counting direction Key lock					rotatable through 280°	1087 Ri	12,5	(.5")							
								25	(1")							
								50	(2")							
							1087 ZRi	(12,5)	.5"							
								(25)	1"							
							μMaxμm, 1087 Ri	6,35	(.25")							
								μMaxμm, 1087 ZRi	(6,35)	.25"						
							1087 R	12,5	(.5")							
								25	(1")							
								50	(2")							
							1087 ZR	(12,5)	.5"							
								(25)	1"							
							1087 Ri-HR	12,5	(.5")							
								25	(1")							
							1087 R-HR	12,5	(.5")							
								25	(1")							
							1087 WRi	12,5	(.5")							
								1087 BRi	12,5	(.5")						
							Special design for dynamic comparative measurement e.g., inside measuring devices							1087 BR	12,5	(.5")

Resolution		Error limit	Cable interface	Wireless interface	Protection catagory	Mounting shaft Ø	Order no.	Catalog page	Order no.	Catalog page				
mm	inch	µm					Touch keys 		Push buttons					
0,01	.0005"	20			IP 52	8 mm			4336010	152				
0,005	.0001"	15							4336020					
0,001	.00005"	10							4336030					
0,01	.0005"	20				8 mm	4337790	153	4337134	156				
0,0005 ... 0,01	.00002"0005"	4					4337791		4337 135					
							4337720		4337624					
			4337721	4337625										
			4337722	4337626										
		8				4337723		4337627						
						4337731	4337628							
		4				3,8"	4337910							
						4337911								
0,01	.0005"	20			IP 42	8 mm	4337780	155	4337130	157				
0,0005 ... 0,01	.00002"0005"	4					4337781		4337131					
							4337782		4337132					
			4337783	4337133										
			4337700	4337620										
		7				4337701		4337621						
						4337702	4337622							
						4337703	4337623							
		8				3,8"		4337650						
0,0001 ... 0,01	.00001"0005"	1,8								8 mm	4337770	158	4337697	160
			1,8	4337698										
			2,4											
0,0005 ... 0,01	.00002"0005"	4			IP 64 (** IP54)	8 mm	4337750	161	4337142**	163				
							4337751		4337143**					
							4337740		4337640**					
							4337741		4337641**					
0,0005 ... 0,01	.00002"0005"	4			IP 42	8 mm	4337820	164	4337663	170				
		4337821					4337665							
		4337822					4337667							
		4337970												
		3,8"				4337971	166							
						4337819								
						4337969								
						4337800		168		4337660	171			
4337801	4337661													
	4337666													
	4337670													
0,0001 ... 0,01	.00001"0005"	4			IP 42		4337850	172	4337695	174				
		2,4												
		1,8									4337696			
		2,4												
0,0005 ... 0,01	.00002"0005"	4			IP 64	8 mm	4337830	176		180				
							IP 42		4337870		4337664			
									4337860		4337662			

Digital dial indicators with unique connectivity

The latest generation of digital dial indicators in the MarCator range boasts innovative features: Touch operating keys, extra hardened glass fronts, colored LEDs for measurement classification and unrivalled remote control and connectivity ensure unique convenience when measuring and setting the device.

Highest level of assistance: Thanks to the new features, the MarCator dial indicators are ideal companions in any working environment. The large display with hardened glass front, the extra large numerical display and the touch operating keys with practical direct functions make recording measured values easier and more reliable than ever before.

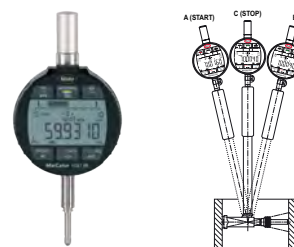
The digital dial indicators are available for a wide range of measuring tasks, both for static measurements such as lengths, distances and length differences, as well as for dynamic measurements such as radial run-out, straightness and flatness.

In addition, special versions meet particular requirements such as inner and outer comparative measurements, even higher accuracy or special IP protection.



Touch operating keys

With the practical touch function, a gentle touch of the surface is enough to operate the dial indicator safely – ideal for sensitive measuring tasks.



1087 BRi
for dynamic comparative
inner/outer measurements



Advantages

- Simple operation using touch function keys
- Settings, individual locking functions and remote control conveniently by PC using the free MarCom Professional software
- Preset: 3 PRESET and tolerance values possible
- A wide range of model variants for the most diverse applications, e.g. MarCator 1087 BR(i) for inner and outer comparative measuring instruments via reversing point search, other devices with even higher accuracy or with special IP protection.



MarCator 1086 R(i) / 1087 R(i)

Digital indicator



Unique measurement classification

The innovative colored LED display is used to quickly and unambiguously identify good products and waste, as well as reworks or warning limits. Icons also show this information on the display.



For static and dynamic measuring tasks

The moving pointer of the additional analog scale display allows the dynamic measuring movement and tolerance limits of the MarCator 1087 models to be reliably identified visually. The MarCator 1086 models are designed for purely static measuring tasks.

Best protection

The robust hardened glass display with non-wearing touch operating keys makes the dial indicators even more durable and less susceptible to damage. In addition, the large LCD displays allow all measured values and icons to be read off directly and at a glance.



Optimum connectivity

Convenient and secure wireless data transmission (Ri models) or USB data cable with bidirectional data transfer (R and Ri models). You can also benefit from the handy option of setting the dial indicator very easily and clearly via a PC and the remote control option in conjunction with the free MarCom Professional software.

Further information on the product, product variants and accessories can be found on our website:

metrology.mahr.com/marcator-digital-dial-indicators



MarCator 1075 R

Digital indicator



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 display, thus very clear and safe to read
- Hermetically sealed protective measuring spindle cap
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 52
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2032 (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

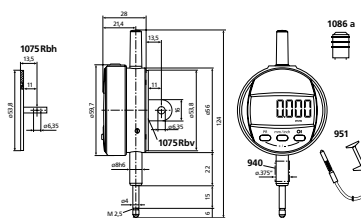
Application:

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

TECHNICAL DATA

Order no.		4336010		4336020		4336030	
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	
Standard		Factory standard					
Measuring force	N	0,5 – 1					
Height of digits	mm	12					
Data interface		Digimatic, Opto RS– 232C, USB					
Protective cap over measuring pin		•					

Order no.	Connection thread	Mounting shaft
		mm
4336010	M2,5	8
4336020	M2,5	8
4336030	M2,5	8



ACCESSORIES

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

MarCator 1086 Ri / 1086 ZRi

Digital indicator



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- <0> (Icon mode of the tolerance display)
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuringstands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Clear tolerance symbols and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework
- LED signals (red, green, yellow) in mode:
 - powered by battery: flashing signal
 - powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel

Application:

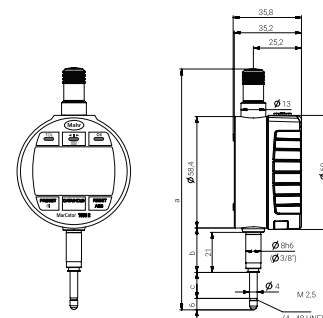
- Extensive measuring functions for static measurements e.g. lengths, distances and length differences

TECHNICAL DATA

Order no.		4337790	4337791	4337720	4337721	4337722	4337723	4337731	4337910	4337911
Type		1086 Ri							1086 ZRi	
Measuring span	mm	12,5	25	12,5	25	50	100	25	12,5	25
Measuring span	inch	.5"	1"	.5"	1"	2"	4"	1"	.5"	1"
Resolution	mm	0,01		0,0005, 0,001, 0,002, 0,005, 0,01						
Resolution	inch	.0005"		.00002", .00005", .0001", .0002", .0005"						
Error limit	mm	0,02		0,004		0,007	0,008	0,004		
Error limit over 50 graduations	mm			0,002						
Standard		Factory standard								
Measuring force	N	0,65 – 0,9	0,65 – 1,15	0,65 – 0,9	0,65 – 1,15	1,25 – 2,7	1,8 – 3,5	-	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	11,5								
Data interface		USB, Digimatic								
Lifting protection cap		•								

Order no.	a	b	c	Connection thread	Mounting shaft	Mounting shaft
	mm	mm	mm		inch	mm
4337790	126,2	23,3	13,6	M 2,5		8
4337791	151,8	23,3	26,5	M 2,5		8
4337720	126,2	23,3	13,6	M 2,5		8
4337721	151,8	23,3	26,5	M 2,5		8
4337722	267,7	39,8	52,5	M 2,5		8
4337723	420,7	90,8	103,5	M 2,5		8
4337731	151,8	23,3	26,5	M 2,5		8
4337910	126,2	23,3	13,6	4 – 48 UNF	0,375	
4337911	151,8	23,3	26,5	4 – 48 UNF	0,375	

- IP protection category: IP 42
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



MarCator 1086 Ri / 1086 ZRi

Digital indicator

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back
4336230	1082 p	Pneumatic lifting (50 + 100 mm)



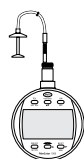
i-Stick



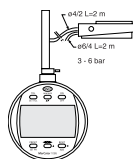
1086 sf



1086 sr



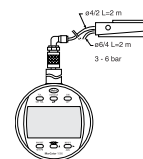
1085 a



1082 p



1086 b



1082 p

MarCator 1086 R

Digital indicator



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- <0> (Icon mode of the tolerance display)
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)

Application:

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

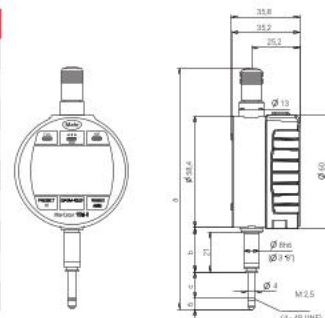
TECHNICAL DATA

Order no.		4337780	4337781	4337782	4337783	4337700	4337701	4337702	4337703
Type		1086 R							
Measuring span	mm	12,5	25	50	100	12,5	25	50	100
Measuring span	inch	.5"	1"	2"	4"	.5"	1"	2"	4"
Resolution	mm	0,01				0,0005, 0,001, 0,002, 0,005, 0,01			
Resolution	inch	.0005"				.00002", .00005", .0001", .0002", .0005"			
Error limit	mm	0,02				0,004		0,007	0,008
Error limit over 50 graduations	mm					0,002			
Standard		Factory standard							
Measuring force	N	0,65 – 0,9	0,65 – 1,15	1,25 – 2,7	1,6 – 3,5	0,65 – 0,9	0,65 – 1,15	1,25 – 2,7	1,8 – 3,5
Height of digits	mm	11,5							
Data interface		USB, Digimatic							
Lifting protection cap		•							

FEATURES

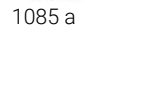
- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuringstands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Clear tolerance symbols and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework
- LED signals (red, green, yellow) in mode:
 - powered by battery: flashing signal
 - powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 42
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337780	126,2	23,3	13,6	M 2,5	8
4337781	151,8	23,3	26,5	M 2,5	8
4337782	267,7	39,8	52,5	M 2,5	8
4337783	420,7	90,8	103,5	M 2,5	8
4337700	126,2	23,3	13,6	M 2,5	8
4337701	151,8	23,3	26,5	M 2,5	8
4337702	267,7	39,8	52,5	M 2,5	8
4337703	420,7	90,8	103,5	M 2,5	8



ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back
4336230	1082 p	Pneumatic lifting (50 + 100 mm)



MarCator 1086 Ri

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)
- <0> (Icon mode of the tolerance display)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission)
- Factor (Multiplier for measuring travel)
- 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
- IP protection category: IP 42
- Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

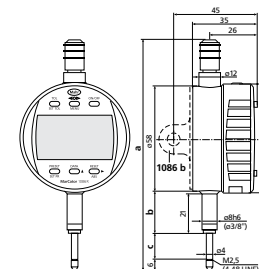
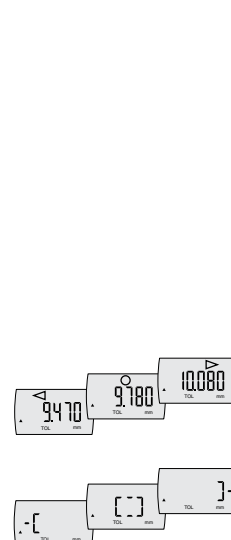
Application:

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

TECHNICAL DATA

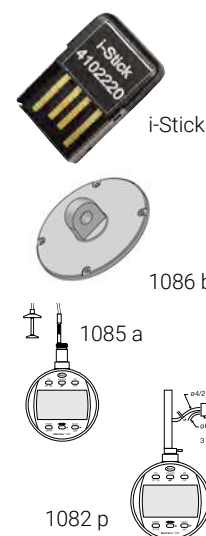
Order no.		4337624	4337625	4337626	4337627	4337628	4337134	4337135
Type		1086 Ri						
Measuring span	mm	12,5	25	50	100	25	12,5	25
Measuring span	inch	.5"	1"	2"	4"	1"	.5"	1"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01						0,01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"						.0005"
Error limit	mm	0,004		0,007	0,008	0,004	0,02	
Error limit over 50 graduations	mm	0,002						0,02
Standard		Factory standard						
Measuring force	N	0,65 – 0,9	0,65 – 1,15	1,25 – 2,7	1,8 – 3,5	0 – 0	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	11						
Data interface		Integrated Wireless, USB, Digimatic, Opto RS-232C						
Lifting protection cap		•						

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337624	126,3	23	13,5	M 2,5	8
4337625	153,4	26,8	26,5	M 2,5	8
4337626	267,3	40	52	M 2,5	8
4337627	420,3	91	103	M 2,5	8
4337628	153,4	26,8	26,5	M 2,5	8
4337134	126,3	23	13,5	M 2,5	8
4337135	153,4	26,8	26,5	M 2,5	8



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4375004	1086 s	Protective cap for 1075 R / 1086 R / 1087 R
4337421	1086 b	Lug back
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



MarCator 1086 R / 1086 ZR

Digital indicator

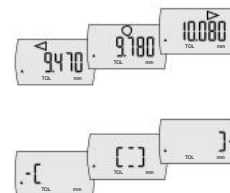


FUNCTIONS

- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (Icon mode of the tolerance display)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (Multiplier for measuring travel)
- LOCK (individual key lock)

Application:

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



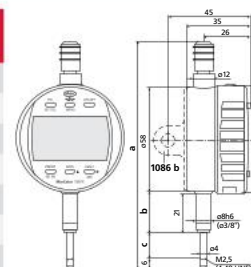
FEATURES

- High contrast LCD display, thus very clear and safe to read
- 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
- IP protection category: IP 42
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

TECHNICAL DATA

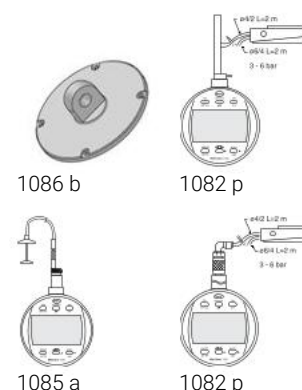
Order no.		4337620	4337621	4337622	4337623	4337650	4337651	4337130	4337131	4337132	4337133
Type		1086 R				1086 ZR		1086 R			
Measuring span	mm	12,5	25	50	100	12,5	25	12,5	25	50	100
Measuring span	inch	.5"	1"	2"	4"	.5"	1"	.5"	1"	2"	4"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01						0,01			
Resolution	inch	.00002", .00005", .0001", .0002", .0005"						.0005"			
Error limit	mm	0,004		0,007	0,008	0,004		0,02			
Error limit over 50 graduations	mm	0,002						0,02			
Standard		Factory standard									
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	0,65 – 0,9	0,65 – 1,15	1,25 – 2,7	1,6 – 3,5
Height of digits	mm	11		3,5	11	1,1	11				
Data interface		Digimatic, Opto RS– 232C, USB									
Lifting protection cap		•									

Order no.	a	b	c	Connection thread	Mounting shaft	Mounting shaft
	mm	mm	mm		inch	mm
4337620	126,3	23	13,5	M 2,5		8
4337621	153,4	26,8	26,5	M 2,5		8
4337622	267,3	40	52	M 2,5		8
4337623	420,3	91	103	M 2,5		8
4337650	126,3	23	13,5	4-48 UNF	0,375	
4337651	153,4	26,8	26,5	4-48 UNF	0,375	
4337130	126,3	23	13,5	M 2,5		8
4337131	153,4	26,8	26,5	M 2,5		8
4337132	267,3	40	52	M 2,5		8
4337133	420,3	91	103	M 2,5		8



ACCESSORIES

Order no.	Type	Description
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4375004	1086 s	Protective cap for 1075 R / 1086 R / 1087 R
4337421	1086 b	Lug back
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back
4336230	1082 p	Pneumatic lifting (50 + 100 mm)
4884464		Battery 3 V, CR 2450, Type CR 2450



MarCator 1086 Ri-HR

Digital indicator



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- <0> (Icon mode of the tolerance display)
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)



Application:

- For highest accuracy requirements
- Indicator with lowest possible error limit and finest resolution: Resolution 0.1 µm (.00001")
- Extensive measuring functions for static measurements e.g. lengths, distances and length differences

TECHNICAL DATA

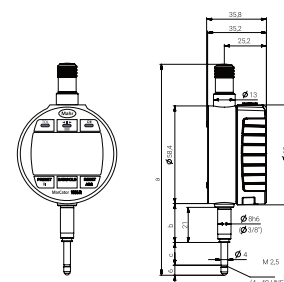
Order no.		4337770	4337771
Type		1086 Ri-HR	
Measuring span	mm	12,5	25
Measuring span	inch	.5"	1"
Resolution	mm	0,0001, 0,0005, 0,001, 0,002, 0,005, 0,01	
Resolution	inch	.00001", .00002", .00005", .0001", .0002", .0005"	
Error limit	mm	0,0018	0,0024
Error limit over 50 graduations	mm	0,0005	
Standard		Factory standard	
Measuring force	N	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	11,5	
Data interface		USB, Digimatic	
Lifting protection cap		•	

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuringstands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Clear tolerance symbols and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework
- LED signals (red, green, yellow) in mode:
 - powered by battery: flashing signal
 - powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337770	126,2	23,3	13,6	M 2,5	8
4337771	151,8	23,3	26,5	M 2,5	8

- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 42
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



MarCator 1086 Ri-HR

Digital indicator

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



i-Stick



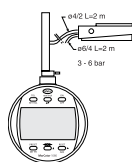
1086 sf



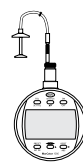
1086 sr



1086 b



1082 p



1085 a

MarCator 1086 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)
- <0> (Icon mode of the tolerance display)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (Multiplier for measuring travel)
- LOCK (individual key lock)



Application:

- For highest accuracy requirements
- Indicator with lowest possible error limit and finest resolution: Resolution 0.1 µm (.00001")
- Extensive measuring functions for static measurements e.g. lengths, distances and length differences

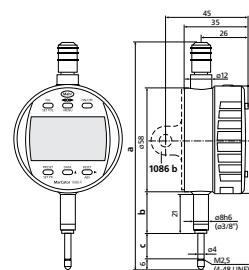
FEATURES

- High contrast LCD display, thus very clear and safe to read
- 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
- IP protection category: IP 42
- Special product features:
- High-resolution measuring system with 0.1 µm resolution
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom 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.		4337697	4337698
Type		1086 R-HR	
Measuring span	mm	12,5	25
Measuring span	inch	.5"	1"
Resolution	mm	0,0001, 0,0005, 0,001, 0,002, 0,005, 0,01	
Resolution	inch	.00001", .00002", .00005", .0001", .0002", .0005"	
Error limit	mm	0,0018	0,0024
Error limit over 50 graduations	mm	0,0005	
Standard		Factory standard	
Measuring force	N	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	11	
Data interface		Digimatic, Opto RS-232C, USB	
Lifting protection cap		•	

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337697	126,3	23	13,5	M 2,5	8
4337698	153,4	26,8	26,5	M 2,5	8

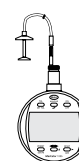


ACCESSORIES

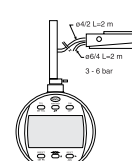
Order no.	Type	Description
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4375004	1086 s	Protective cap for 1075 R / 1086 R / 1087 R
4337421	1086 b	Lug back
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



1086 b



1085 a



1082 p

MarCator 1086 WRi/1086 WR

Digital indicator



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- PRESET (dimension presetting) – 3 values possible
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- <0> (Icon mode of the tolerance display)
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Clear tolerance symbols and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework
- LED signals (red, green, yellow) in mode:
 - powered by battery: flashing signal
 - powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 64
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

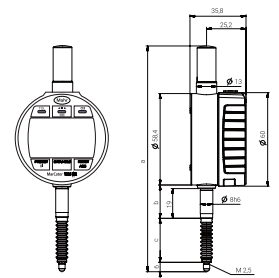
Application:

- Special design with IP protection against liquids and dust
- Ideal for use in particularly challenging environments where the dial gage is highly contaminated or exposed to splash water
- Comprehensive measuring functions for Static measurements such as lengths, distances and length differences

TECHNICAL DATA

Order no.		4337750	4337751	4337740	4337741
Type		1086 WRi		1086 WR	
Measuring span	mm	12,5	25	12,5	25
Measuring span	inch	.5"	1"	.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			
Standard		Factory standard			
Measuring force	N	0,65 – 1,4	1 – 2,25	0,65 – 1,4	1 – 2,25
Height of digits	mm	11,5			
Data interface		Integrated Wireless, USB, Digimatic			USB, Digimatic
Protective cap over measuring pin		•			

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337750	144,2	21,3	28,1	M 2,5	8
4337751	191,9	21,3	50	M 2,5	8
4337740	144,2	21,3	28,1	M 2,5	8
4337741	191,9	21,3	50	M 2,5	8



MarCator 1086 WRi / 1086 WR

Digital indicator

ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Rückwand mit zylindrischer Aufnahme
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless



i-Stick



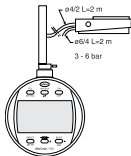
1086 sf



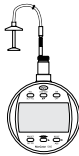
1086 sr



1086 b



1082 p



1085 a

MarCator 1086 WRi / 1086 WR

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)
- <0> (Icon mode of the tolerance display)
- ABS (display can be set to zero without losing reference to preset)
- DATA (data transmission via connection cable)
- Factor (Multiplier for measuring travel)
- LOCK (individual key lock)



Application:

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

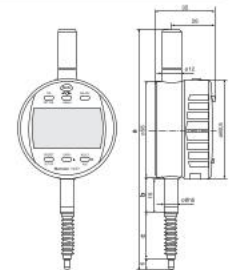
FEATURES

- High contrast LCD display, thus very clear and safe to read
- 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
- IP protection category: IP 54
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom 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.		4337142	4337143	4337640	4337641
Type		1086 WRi		1086 WR	
Measuring span	mm	12,5	25	12,5	25
Measuring span	inch	.5"	1"	.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			
Standard		Factory standard			
Measuring force	N	0,65 – 1,4	1 – 2,25	0,65 – 1,4	1 – 2,25
Height of digits	mm	11			
Data interface		Integrated Wireless, Digimatic, Opto RS– 232C, USB		Digimatic, Opto RS– 232C, USB	
Protective cap over measuring pin		•			

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337142	144,3	21	28,5	M 2,5	8
4337143	193,2	24,8	50	M 2,5	8
4337640	144,3	21	28,5	M 2,5	8
4337641	193,2	24,8	50	M 2,5	8



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4375004	1086 s	Protective cap for 1075 R / 1086 R / 1087 R
4337421	1086 b	Lug back
4336311	1085 a	Cable release (12,5 + 25 mm)
4310103	940	Adapter bushing (.375" / 8 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337472-E		Rubber bellows (12,5 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back
4337474-E		rubber bellows (25 mm)
4884464		Battery 3 V, CR 2450, Type CR 2450



i-Stick



1086 b



1085 a

1082 p





FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- 0 (set the analog scale display to zero)
- PRESET (dimension presetting) – 3 values possible
- MAX/MIN memory for searching the reversal point
- (MAX-MIN) for testing flatness and concentricity
- Analog scale (display with pointer or as a bargraph)
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Analog scale display for visual recognition of the measuring movement during dynamic measurement tasks
- Clear tolerance limits in the scale display and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework
- LED signals (red, green, yellow) in mode:

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

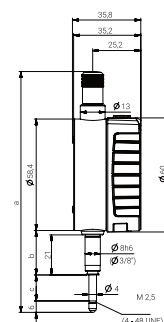
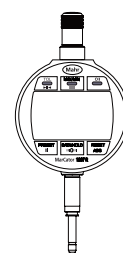
TECHNICAL DATA

Order no.		4337820	4337821	4337822	4337970	4337971
Type		1087 Ri			1087 ZRi	
Measuring span	mm	12,5	25	50	12,5	25
Measuring span	inch	.5"	1"	2"	.5"	
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01				
Error limit	mm	0,004		0,007	0,004	
Error limit over 50 graduations	mm	0,002				
Standard		Factory standard				
Measuring force	N	0,65 – 0,9	0,65 – 1,15	1,25 – 2,7	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	9				
Data interface		Integrated Wireless, USB, Digimatic				
Lifting protection cap		•				

Order no.	a	b	c	Connection thread	Mounting shaft	Mounting shaft
	mm	mm	mm		inch	mm
4337820	126,2	23,3	13,6	M 2,5		8
4337821	151,8	23,3	26,5	M 2,5		8
4337822	267,7	39,8	52,5	M 2,5		8
4337970	126,2	23,3	13,6	4–48 UNF	0,375	
4337971	126,2	23,3	13,6	4–48 UNF	0,375	

- powered by battery: flashing signal
- powered by data cable DK-U1: permanent

- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 42
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back
4336230	1082 p	Pneumatic lifting (50 + 100 mm)



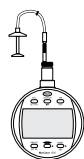
i-Stick



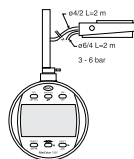
1086 sf



1086 sr



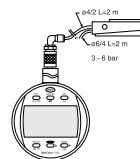
1085 a



1082 p



1086 b



1082 p



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- 0 (set the analog scale display to zero)
- PRESET (dimension presetting) – 3 values possible
- MAX/MIN memory for searching the reversal point
- (MAX-MIN) for testing flatness and concentricity
- Analog scale (display with pointer or as a bargraph)
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Analog scale display for visual recognition of the measuring movement during dynamic measurement tasks
- Clear tolerance limits in the scale display and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework
- LED signals (red, green, yellow) in mode:

Application:

- For highest accuracy requirements
- Indicator with extra low error limit
- Extensive measuring functions for:
 - Static measurement e.g. lengths, distances and length differences
 - Dynamic measurement e.g. radial run-out, straightness and flatness, by means of MAX/MIN/MAX-MIN functions

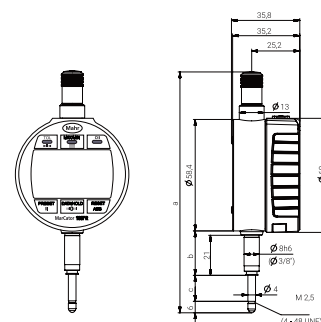


TECHNICAL DATA

Order no.	4337819	4337969
Type	1087 Ri	1087 ZRi
Measuring span	mm	6,35
Measuring span	inch	.25"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01
Error limit	mm	0,0025
Error limit over 50 graduations	mm	0,002
Standard		Factory standard
Measuring force	N	0,55 – 0,7
Height of digits	mm	9
Data interface		Integrated Wireless, USB, Digimatic
Lifting protection cap		•

Order no.	a	b	c	Connection thread	Mounting shaft	Mounting shaft
	mm	mm	mm		inch	mm
4337819	120,2	23,3	7,6	M 2,5		8
4337969	120,2	23,3	7,6	4-48 UNF	0,375	

- powered by battery: flashing signal
- powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 42
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



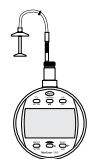
i-Stick



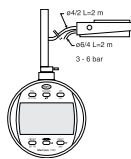
1086 sf



1086 sr



1085 a



1082 p



1086 b

MarCator 1087 R

Digital indicator



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- 0 (set the analog scale display to zero)
- PRESET (dimension presetting) – 3 values possible
- MAX/MIN memory for searching the reversal point
- (MAX-MIN) for testing flatness and concentricity
- Analog scale (display with pointer or as a bargraph)
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)



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

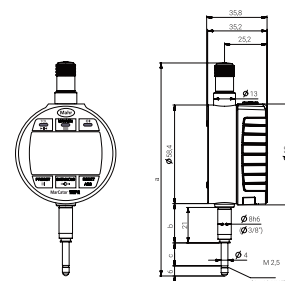
Order no.		4337800	4337801
Type		1087 R	
Measuring span	mm	12,5	25
Measuring span	inch	.5"	1"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01	
Error limit	mm	0,004	
Error limit over 50 graduations	mm	0,002	
Standard		Factory standard	
Measuring force	N	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	9	
Data interface		USB, Digimatic	
Lifting protection cap		•	

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Analog scale display for visual recognition of the measuring movement during dynamic measurement tasks
- Clear tolerance limits in the scale display and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework
- LED signals (red, green, yellow) in mode:

- powered by battery: flashing signal
- powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 42
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337800	126,2	23,3	13,6	M 2,5	8
4337801	151,8	23,3	26,5	M 2,5	8



MarCator 1087 R

Digital indicator

ACCESSORIES

Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



1086 sf

1086 sr

1086 b

1082 p

1085 a

MarCator 1087 Ri

Digital indicator



FUNCTIONS

- 0 (set the analog scale display to zero)
- ABS (display can be set to zero without losing reference to preset)
- AUTO-ON/OFF
- DATA (data transmission)
- Factor (Multiplier for measuring travel)
- 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)
- (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
- IP protection category: IP 42
- Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

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

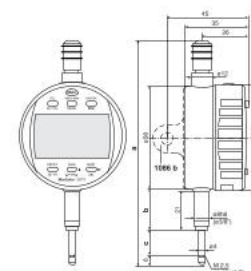
TECHNICAL DATA

Order no.		4337663	4337665	4337667
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"		
Scale graduation values	mm	0,0005, 0,001, 0,002, 0,005, 0,01		
Graduation values	inch	.000002", .00005", .0001", .0002", .0005"		
Error limit	mm	0,004		0,007
Error limit over 50 graduations	mm		0,002	
Standard		Factory standard		
Measuring force	N	0,65 – 0,85	0,65 – 0,9	1,25 – 2,7
Height of digits	mm	8,5		
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2		
Range of analog display	inch	± .0004", ± .001", ± .002", ± .004", ± .01"		
Data interface		Integrated Wireless, USB, Digimatic, Opto RS-232C		
Lifting protection cap		•		

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337663	126,3	23	13,5	M 2,5	8
4337665	153,4	26,8	26,5	M 2,5	8
4337667	267,3	40	52	M 2,5	8

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4375004	1086 s	Protective cap for 1075 R / 1086 R / 1087 R
4337421	1086 b	Lug back
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4336311	1085 a	Cable release (12,5 + 25 mm)
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



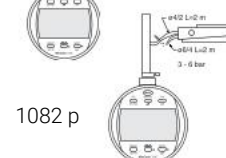
i-Stick



1086 b



1085 a



1082 p

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
- (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 (Multiplier for measuring travel)
- LOCK (individual key lock)



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

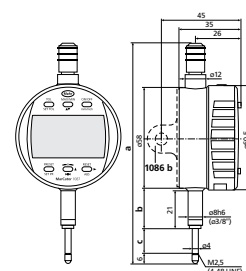
TECHNICAL DATA

Order no.		4337660	4337661	4337666	4337670	4337671
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"				
Scale graduation values	mm	0,0005, 0,001, 0,002, 0,005, 0,01				
Graduation values	inch	.000002", .00005", .0001", .0002", .0005"				
Error limit	mm	0,004		0,007	0,004	
Error limit over 50 graduations	mm	0,002				
Standard		Factory standard				
Measuring force	N	0,65 – 0,9	0,65 – 1,15	1,25 – 2,7	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	8,5				
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2				
Range of analog display	inch	± .0004", ± .001", ± .002", ± .004", ± .01"				
Data interface		Opto RS– 232C, Digimatic, USB				
Lifting protection cap		•				

FEATURES

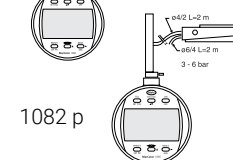
- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Immediate measurements due to the Reference System
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 42
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Order no.	a	b	c	Connection thread	Mounting shaft	Mounting shaft
	mm	mm	mm		inch	mm
4337660	126,3	23	13,5	M 2,5		8
4337661	153,4	26,8	26,5	M 2,5		8
4337666	267,3	40	52	M 2,5		8
4337670	126,3	23	13,5	4-48 UNF	0.375	
4337671	153,4	26,8	26,5	4-48 UNF	0.375	



ACCESSORIES

Order no.	Type	Description
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4375004	1086 s	Protective cap for 1075 R / 1086 R / 1087 R
4337421	1086 b	Lug back
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4336311	1085 a	Cable release (12,5 + 25 mm)
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back
4336230	1082 p	Pneumatic lifting (50 + 100 mm)



MarCator 1087 Ri-HR

Digital indicator



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- 0 (set the analog scale display to zero)
- PRESET (dimension presetting) – 3 values possible
- MAX/MIN memory for searching the reversal point
- (MAX-MIN) for testing flatness and concentricity
- Analog scale (display with pointer or as a bargraph)
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Analog scale display for visual recognition of the measuring movement during dynamic measurement tasks
- Clear tolerance limits in the scale display and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework

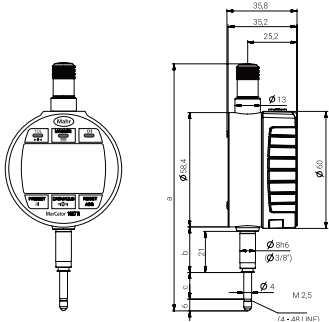
Application:

- For highest accuracy requirements
- Indicator with lowest possible error limit and finest resolution: Resolution 0.1 μm (.00001")
- 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.		4337850	4337851
Type		1087 Ri-HR	
Measuring span	mm	12,5	25
Measuring span	inch	.5"	1"
Resolution	mm	0,0001, 0,0005, 0,001, 0,002, 0,005, 0,01	
Error limit	mm	0,0018	0,0024
Error limit over 50 graduations	mm	0,0005	
Standard		Factory standard	
Measuring force	N	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	9	
Data interface		Integrated Wireless, USB, Digimatic	
Lifting protection cap		•	

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337850	126,2	23,3	13,6	M 2,5	8
4337851	151,8	23,3	26,5	M 2,5	8



- LED signals (red, green, yellow) in mode:
 - powered by battery: flashing signal
 - powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 42
- Special product features:
 - High-resolution measuring system with 0.1 μm resolution
 - Battery type: CR 2450N (3V Lithium)
 - Package contains: battery, test certificate, instruction manual, Cardboard box
 - Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

MarCator 1087 Ri-HR

Digital indicator

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



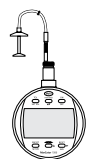
i-Stick



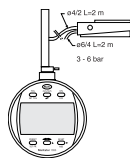
1086 sf



1086 sr



1085 a



1082 p



1086 b

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
- (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 (Multiplier for measuring travel)
- LOCK (individual key lock)



Application:

- 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

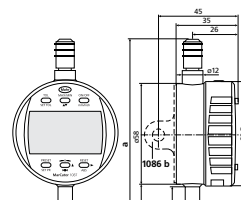
FEATURES

- High contrast LCD display, thus very clear and safe to read
- 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
- IP protection category: IP 42
- Special product features:
- High-resolution measuring system with 0.1 µm resolution
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom 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.		4337695	4337696
Type		1087 R-HR	
Measuring span	mm	12,5	25
Measuring span	inch	.5"	1"
Resolution	mm	0,0001, 0,0005, 0,001, 0,002, 0,005, 0,01	
Resolution	inch	.00001", .00002", .00005", .0001", .0002", .0005"	
Error limit	mm	0,0018	0,0024
Error limit over 50 graduations	mm	0,0005	
Standard		Factory standard	
Measuring force	N	0,65 – 0,9	0,65 – 1,15
Height of digits	mm	8,5	
Range of analog display	mm	± 0.002, ± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2	
Range of analog display	inch	± .0002", ± .0004", ± .001", ± .002", ± .004", ± .01"	
Data interface		Opto RS-232C, Digimatic, USB	
Lifting protection cap		•	

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337695	126,3	23	13,5	M 2,5	8
4337696	153,4	26,8	26,5	M 2,5	8



MarCator 1087 R-HR

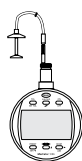
Digital indicator

ACCESSORIES

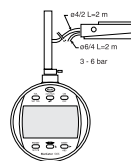
Order no.	Type	Description
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4375004	1086 s	Protective cap for 1075 R / 1086 R / 1087 R
4337421	1086 b	Lug back
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



1086 b



1085 a



1082 p



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- 0 (set the analog scale display to zero)
- PRESET (dimension presetting) – 3 values possible
- MAX/MIN memory for searching the reversal point
- (MAX-MIN) for testing flatness and concentricity
- Analog scale (display with pointer or as a bargraph)
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Analog scale display for visual recognition of the measuring movement during dynamic measurement tasks
- Clear tolerance limits in the scale display and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework
- LED signals (red, green, yellow) in mode:

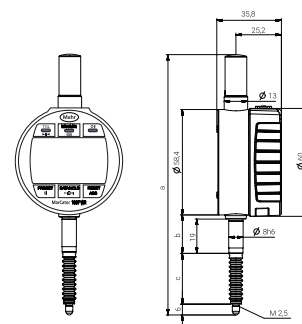
Application:

- Designed with especially IP protection against liquids and dust
- Ideal for use in particularly challenging environments where the dial gage is highly contaminated or exposed to splash water
- 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.		4337830
Type		1087 WRi
Measuring span	mm	12,5
Measuring span	inch	.5"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01
Error limit	mm	0,004
Error limit over 50 graduations	mm	0,002
Standard		Factory standard
Measuring force	N	0,65 – 1,4
Height of digits	mm	9
Data interface		Integrated Wireless, USB, Digimatic
Protective cap over measuring pin		•

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337830	144,2	21,3	28,1	M 2,5	8



- powered by battery: flashing signal
- powered by data cable DK-U1: permanent

- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel

- IP protection category: IP 64
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back



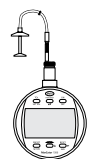
i-Stick



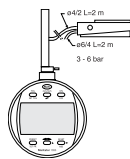
1086 sf



1086 sr



1085 a



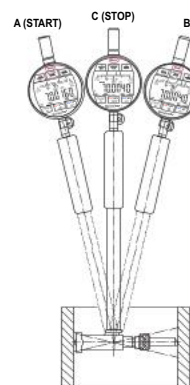
1082 p



1086 b

FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- 0 (set the analog scale display to zero)
- PRESET (dimension presetting)
- in MAX/MIN measuring mode assignment to the last dynamically determined reversal point)
 - 3 values possible
- MAX/MIN memory for searching the reversal point
- START/STOP search for reversal point
- Analog scale (display with pointer or as a bargraph)
- TOL (Tolerance and warning limit setting) – 3 tolerances possible
- ABS (display can be set to zero without losing reference to preset)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- Resolution selectable
- LOCK function (general key lock in the menu and individual key and menu locks for process-safe measurements via MarCom software)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)
- Remote-controllable by MarCom software
- DATA (data transmission)
- HOLD (freeze current measured value)



Application:

- Especially for dynamic comparative inside/outside measuring instruments
- Very easy to set up:
- The reversal point is automatically determined for a 2-point inside or outside measurement by oscillation in dynamic measuring mode, then the PRESET value (usually corresponds to the exact dimension of the setting standard) is assigned to this reference point with just one press of a button.
- During the measurement, the determined extreme value (length measurement) is recorded by the MIN or MAX function and shown on the display.
- In order to be able to carry out fast measuring movements with corresponding measuring reliability, the type 1087 BR(i) internally processes 64 measured

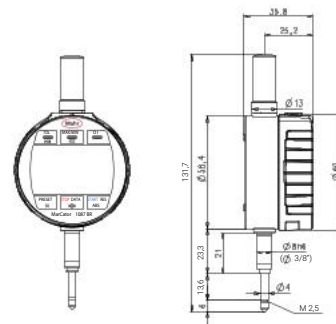
TECHNICAL DATA

Order no.		4337870	4337860
Type		1087 BRi	1087 BR
Measuring span	mm	12,5	
Measuring span	inch	.5"	
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01	
Error limit	mm	0,004	
Error limit over 50 graduations	mm	0,002	
Standard		Factory standard	
Measuring force	N	0,65 – 0,9	
Height of digits	mm	9	
Data interface		Integrated Wireless, USB, Digimatic	USB, Digimatic
Protective cap over measuring pin		•	

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Analog scale display for visual recognition of the measuring movement during dynamic measurement tasks
- Clear tolerance limits in the scale display and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: NoGo/Go/Warning-Limit
 - without warning limit input selectable: NoGo/Go or NoGo/Go/Rework

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337870	126,2	23,3	13,6	M 2,5	8
4337860	126,2	23,3	13,6	M 2,5	8



- LED signals (red, green, yellow) in mode:
 - powered by battery: flashing signal
 - powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Operating and display unit (bezel) can be rotated through 280°
- Mounting Shank and measuring spindle are both made of hardened stainless steel
- IP protection category: IP 42
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

MarCator 1087 BRi / 1087 BR

Digital indicator

ACCESSORIES

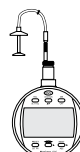
Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4336311	1085 a	Cable release (12,5 + 25 mm)
4336237	1082 p	Pneumatic lifting (12,5 + 25 mm)
4337421	1086 b	Lug back
4310103	940	Adapter bushing (.375" / 8 mm)



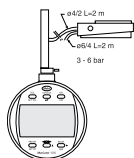
1086 sf



1086 sr



1085 a



1082 p



1086 b



i-Stick

MarCator 1087 BR / 1087 BRi

Digital indicator



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 scale display to zero)
- DATA (data transmission via connection cable)
- Factor (Multiplier for measuring travel)

FEATURES

- High contrast LCD display, thus very clear and safe to read
- 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
- IP protection category: IP 42
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2450N (3V Lithium)
- Package contains: battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

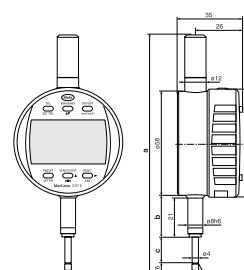
Application:

- 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	4337664
Type		1087 BR	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"	
Scale graduation values	mm	0,0005, 0,001, 0,002, 0,005, 0,01	
Graduation values	inch	.000002", .00005", .0001", .0002", .0005"	
Error limit	mm	0,004	
Error limit over 50 graduations	mm	0,002	
Standard		Factory standard	
Measuring force	N	0,65 – 0,9	
Height of digits	mm	8,5	
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2	
Range of analog display	inch	± .0004", ± .001", ± .002", ± .004", ± .01"	
Data interface		Opto RS-232C, Digimatic, USB	Integrated Wireless, USB, Digimatic, Opto RS-232C
Lifting protection cap		•	

Order no.	a	b	c	Connection thread	Mounting shaft
	mm	mm	mm		mm
4337662	126,3	23	13,5	M 2,5	8
4337664	126,3	23	13,5	M 2,5	8



MarCator 1087 BR / 1087 BRi

Digital indicator

ACCESSORIES

Order no.	Type	Description
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)
4375004	1086 s	Protective cap for 1075 R / 1086 R / 1087 R
4310103	940	Adapter bushing (.375" / 8 mm)
2246308		Adjustable back
2254939		Screw back
2255653		Rack back
2255778		Adjustable back for 75B
2255936		Post back
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless



i-Stick

TECHNICAL DATA

Order no.	Type	Figure	Indicator range	Indicator resolution value	Dial plate	
4331000	810 AX		10 mm	0,1 mm	0-10	
4324250	803 SB		0,4 mm ($\pm 0,2$ mm)	0,01 mm	0-20-0	
4317000	810 SB		0,8 mm ($\pm 0,4$)	0,01 mm	0-40-0	
4324050	803 A		3 mm	0,01 mm	0-50	
4324000	803 S		3 mm	0,01 mm	0-50	
4326000	803 SW		3 mm	0,01 mm	0-50	
4324060	805 A		5 mm	0,01 mm	0-100	
4311050	810 A		10 mm	0,01 mm	0-100	
4311000	810 S		10 mm	0,01 mm	0-100	
4311060	810 AT		10 mm	0,01 mm	0-100	
4315000	810 SW		10 mm	0,01 mm	0-100	
4329050	810 AU		10 mm	0,01 mm	100-0	
4322000	810 AG		10 mm	0,01 mm	0-100	
4321000	810 SV		40 mm	0,01 mm	0-100	
4311070	810 SM		1 mm	0,001 mm	0-100	
4311080	810 SRM		5 mm	0,001 mm	0-100	
4324900	803 AZ		.120"	.0005"	0-20	
4311900	810 AZ		.400"	.0005"	0-45	

MarCator

Mechanical dial indicators

Scale ø	Special feature	Standard	Shockproof	Protection class	Page
58 mm		Factory standard			187
44 mm	Safety dial indicator	DIN 878	x		189
58 mm	Safety dial indicator	DIN 878	x		189
40 mm		DIN 878			184
40 mm		DIN 878	x		184
44 mm	Water and oil protected	DIN 878	x		188
40 mm		DIN 878			184
58 mm		DIN 878			185
58 mm		DIN 878	x		185
58 mm	Reverse counting direction for depth measurements	DIN 878			185
61 mm	Water and oil protected	DIN 878	x		188
58 mm	Reverse spring force, acting upwards	Factory standard			185
112 mm	Large display	Factory standard			191
58 mm		Factory standard	x		185
58 mm		Factory standard	x		186
58 mm		Factory standard	x		186
40 mm		Factory standard			190
58 mm		Factory standard			190

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



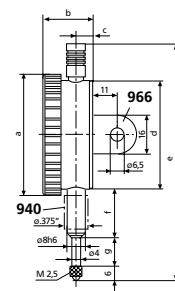
Application:

- 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
Type		803 S	803 A	805 A
Measuring span	mm	3		5
Readings	mm		0,01	
Range per turn	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	
Measuring value hysteresis f_u	µm		3	
Repeatability f_w	µm		3	
Standard			DIN 878	
Measuring force incoming measuring pin	N		0,7 – 1,1	
Figure on dial face		0 – 50	0 – 50	0 – 100
Dial color			White	
Scale diameter	mm		34	
Shockproof movement		•		
Lifting protection cap			•	
Free stroke	mm		0,1	

Order no.	a	b	c	d	e	f	g	Connection thread	Mounting shaft
	mm	mm	mm	mm	mm	mm	mm		mm
4324000	40	20,6	6,8	37	80	15,5	5,5	M 2,5	8
4324050	40	20,6	6,8	37	83	15	8	M 2,5	8
4324060	40	20,6	6,8	37	83	15	8	M 2,5	8



ACCESSORIES

Order no.	Type	Description
4310103	940	Adapter bushing (.375" / 8 mm)
4375020	966	Lug back, vertical, for 803
4375021	967	Lug back, horizontal, for 803

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

DIN
878

Mechanical 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



Application:

- 810 AU: The measuring pin is retracted by spring, contacting and the measuring force are triggered manually by pressing on the upper sleeve

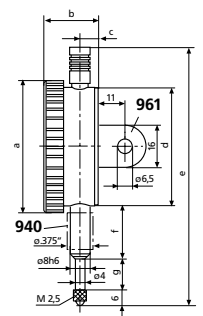
TECHNICAL DATA

Order no.		4311000	4311050	4311060	4321000	4329050
Type		810 S	810 A	810 AT	810 SV	810 AU
Measuring span	mm	10			40	10
Readings	mm	0,01				
Range per turn	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				
Measuring value hysteresis f_u	µm	3			6	
Repeatability f_w	µm	3				5
Standard		DIN 878			Factory standard	
Measuring force incoming measuring pin	N	0,7 – 1,3			0,8 – 1,8	-
Reverse measuring force direction						•
Generation of measuring force						manual
Figure on dial face		0 – 100		100 – 0	0 – 100	100 – 0
Dial color		White				
Scale diameter	mm	50				
Shockproof movement		•			•	
Lifting protection cap		•				
Free stroke	mm	0,1		0,8	0,1	

Order no.	a	b	c	d	e	f	g	Connection thread	Mounting shaft
	mm	mm	mm	mm	mm	mm	mm		mm
4311000	58	23	7,5	52	112	21	16	M 2,5	8
4311050	58	23	7,5	52	112	22	15	M 2,5	8
4311060	58	23	7,5	52	112	22	15	M 2,5	8
4321000	58	24,2	8,7	52	169	22	45	M 2,5	8
4329050	58	23	7,5	52	112	22	4,5	M 2,5	8

ACCESSORIES

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



Mechanical dial indicator

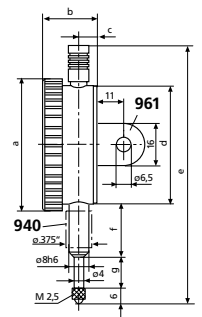
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precise mechanism with a combined gear lever transmission
- High accuracy with a minimum span of error
- Package contains: case



Order no.		4311070	4311080
Type		810 SM	810 SRM
Measuring span	mm	1	5
Readings	mm	0,001	
Range per turn	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	4
Error limit, 1/10 revolution	µm	1	3
Measuring value hysteresis f_u	µm	1,5	3
Repeatability f_w	µm	1,5	3
Standard		Factory standard	
Measuring force incoming measuring pin	N	1,3 – 1,8	1,2 – 1,7
Figure on dial face		0–100	0–100–0
Scale diameter	mm	50	
Shockproof movement		•	
Lifting protection cap		•	
Free stroke	mm	4	0,1

Order no.	a	b	c	d	e	f	g	Connection thread	Mounting shaft
	mm	mm	mm	mm	mm	mm	mm		mm
4311070	58	23	8,5	52	111,5	22	15	M 2,5	8
4311080	58	23	7,5	52	111,5	22	15	M 2,5	8

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



MarCator 810 AX

Mechanical dial indicator

FEATURES

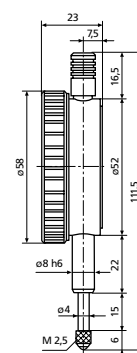
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- Package contains: case



TECHNICAL DATA

Order no.		4331000
Type		810 AX
Measuring span	mm	10
Readings	mm	0,1
Range per turn	mm	10
Error limit, measuring range	µm	50
Error limit, 1 revolution	µm	50
Error limit, 1/2 revolution	µm	40
Error limit, 1/10 revolution	µm	30
Measuring value hysteresis f_u	µm	15
Repeatability f_w	µm	15
Standard		Factory standard
Measuring force incoming measuring pin	N	0,7 – 1,3
Figure on dial face		0 – 10
Dial color		White
Scale diameter	mm	50
Lifting protection cap		•
Free stroke	mm	0,5

Order no.	Connection thread	Mounting shaft
4331000	M 2,5	8



ACCESSORIES

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

MarCator 810 SW / 803 SW

Dial indicator with IP protection



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:

- Special design with IP protection against liquids and dust
- Ideal for use in particularly challenging environments where the dial gauge is highly contaminated or exposed to splash water

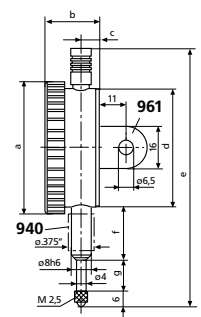
TECHNICAL DATA

Order no.		4315000	4326000
Type		810 SW	803 SW
Measuring span	mm	10	3
Readings	mm	0,01	
Range per turn	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	
Measuring value hysteresis f_u	µm	3	
Repeatability f_w	µm	3	
Standard		DIN 878	
Measuring force incoming measuring pin	N	0,7 – 1,6	0,7 – 1,7
Figure on dial face		0 – 100	0 – 50
Dial color		White	
Shockproof movement		•	
Protective cap over measuring pin		•	
Free stroke	mm	0,1	

Order no.	a	b	c	d	e	f	g	Connection thread	Mounting shaft
	mm	mm	mm	mm	mm	mm	mm		mm
4315000	61	24,2	7,9	52	127,6	22	22,1	M 2,5	8
4326000	44	21,6	7,1	37	86	15	11	M 2,5	8

ACCESSORIES

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



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.

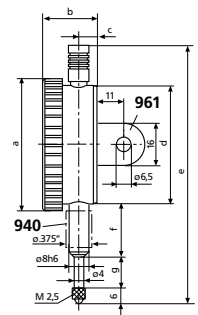
TECHNICAL DATA

Order no.		4317000	4324250
Type		810 SB	803 SB
Measuring span	mm	0,8	0,4
Readings	mm	0,01	
Range per turn	mm	0,8	
Error limit, measuring range	µm	7	
Error limit, 1/2 revolution	µm	6	
Error limit, 1/10 revolution	µm	5	
Measuring value hysteresis f_u	µm	3	
Repeatability f_w	µm	3	
Standard		DIN 878	
Measuring force incoming measuring pin	N	0,9 – 1,1	0,7 – 1,1
Figure on dial face		40 – 0 – 40	20 – 0 – 20
Dial color		White	
Shockproof movement		•	
Protective cap over measuring pin		•	
Free stroke	mm	9	4,5

Order no.	a	b	c	d	e	f	g	Connection thread	Mounting shaft
	mm	mm	mm	mm	mm	mm	mm		mm
4317000	58	23	7,5	52	120	22	15	M 2,5	8
4324250	44	21,6	6,8	37	83	15,5	8	M 2,5	8

ACCESSORIES

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



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



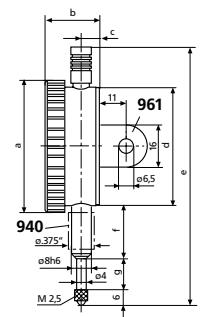
TECHNICAL DATA

Order no.		4311900	4324900
Type		810 AZ	803 AZ
Measuring span	inch	.400"	.120"
Scale graduation value	inch	.0005"	
Range per turn	inch	.05"	.02"
Error limit	inch	.0005"	.0004"
Error limit, 1/10 revolution	inch	.0002"	
Measuring value hysteresis f_u	inch	.00012"	
Repeatability f_w	inch	.00012"	
Standard		Factory standard	
Measuring force incoming measuring pin	N	0,9 – 1,5	0,7 – 1,1
Figure on dial face		0 – 50	0 – 20
Dial color		White	
Scale diameter	inch	1,97	1,4
Lifting protection cap		•	
Free stroke	inch		0,008000

Order no.	a	b	c	d	e	f	g	Connection thread	Mounting shaft	Mounting shaft
	mm	mm	mm	mm	mm	mm	mm		inch	mm
4311900	58	23	7,5	52	111,5	22	15	M 2,5	0,375	8
4324900	40	20,6	6,8	37	83	15,5	8	M 2,5	0,375	8

ACCESSORIES

Order no.	Type	Description
4310103	940	Adapter bushing (.375" / 8 mm)
4373020	955	Splash proof cap (58 mm)
4375010	961	Lug back, vertical, for 810
4375011	962	Lug back, horizontal, for 810
4375020	966	Lug back, vertical, for 803
4375021	967	Lug back, horizontal, for 803

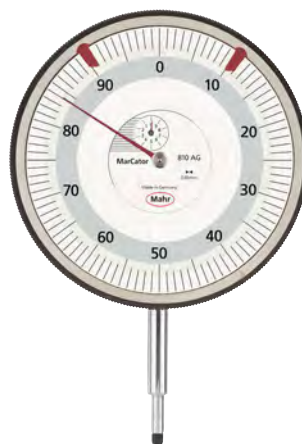


MarCator 810 AG

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
- Package contains: Cardboard box



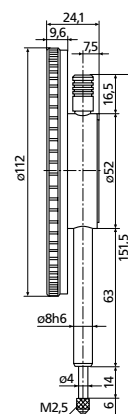
Application:

- Ideal for long reading distance and in poorly lit conditions

TECHNICAL DATA

Order no.		4322000
Type		810 AG
Measuring span	mm	10
Readings	mm	0,01
Range per turn	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
Measuring value hysteresis f_u	µm	5
Repeatability f_w	µm	3
Standard		Factory standard
Measuring force incoming measuring pin	N	1,3 – 2,2
Figure on dial face		0 – 100
Dial color		White
Scale diameter	mm	112
Lifting protection cap		•
Free stroke	mm	0,1

Order no.	Connection thread	Mounting shaft
		mm
4322000	M 2,5	8



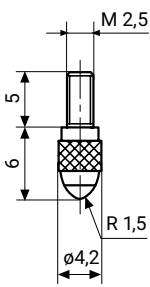
ACCESSORIES

Order no.	Type	Description
4310103	940	Adapter bushing (.375" / 8 mm)

MarCator 901 / 901 H / 901 R

Standard contact point

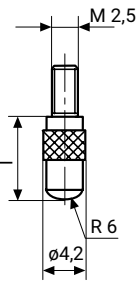
Order no.	Type	l		Measurement surface radius		Measuring surface
		mm		mm		
4360001	901	6		1,5		Steel
4360002	901 H	6		1,5		Carbide
4360003	901 R	6		1,5		Ruby



MarCator 902

Spherical contact point

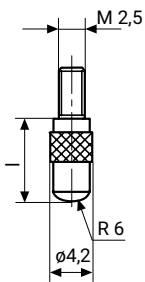
Order no.	Type	l		Model Contact surface	Measuring surface-ø	Measurement surface radius	Measuring surface
		mm					
4360007	902	4		spherical	4	6	hardened steel
4360009	902	6		spherical	4	6	hardened steel
4360010	902	8		spherical	4	6	hardened steel
4360011	902	10		spherical	4	6	hardened steel
4360012	902	12		spherical	4	6	hardened steel
4360013	902	15		spherical	4	6	hardened steel
4360014	902	20		spherical	4	6	hardened steel
4360015	902	25		spherical	4	6	hardened steel
4360018	902	50		spherical	4	6	hardened steel



MarCator 902 H

Spherical contact point

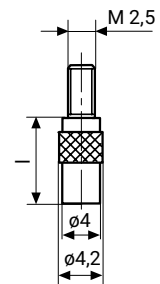
Order no.	Type	l	Model Contact surface	Measuring surface-ø	Measurement surface radius	Measuring surface
		mm		mm	mm	
4360040	902 H	8	spherical	4,2	6	Carbide
4360041	902 H	10	spherical	4,2	6	Carbide
4360042	902 H	12	spherical	4,2	6	Carbide
4360043	902 H	15	spherical	4,2	6	Carbide
4360044	902 H	20	spherical	4,2	6	Carbide
4360045	902 H	25	spherical	4,2	6	Carbide
4360048	902 H	50	spherical	4,2	6	Carbide



MarCator 903 / 903 H

Flat contact point

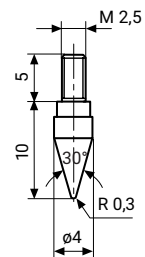
Order no.	Type	l	Measuring surface ϕ	Measuring surface
		mm	mm	
4360070	903	4	4	Steel
4360071	903	6	4	Steel
4360072	903	8	4	Steel
4360073	903	10	4	Steel
4360074	903	12	4	Steel
4360075	903	15	4	Steel
4360076	903	20	4	Steel
4360077	903	25	4	Steel
4360300	903	30	4	Steel
4360078	903	35	4	Steel
4360079	903	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

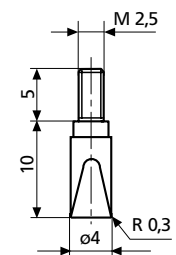
Order no.	Type	l	Measurement surface radius	Angle α	Measuring surface
		mm	mm	°	
4360130	904	10	0,3	30	Steel
4360131	904 H	10	0,3	30	Carbide



MarCator 905 / 905 H

Wedge shaped contact points

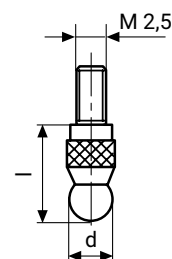
Order no.	Type	l	Measuring surface ϕ	Measurement surface radius	Measuring surface
		mm	mm	mm	
4360140	905	10	4	0,3	Steel
4360141	905 H	10	4	0,3	Carbide



MarCator 906 H

Ball contact points

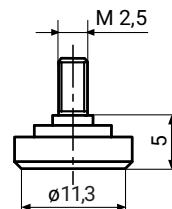
Order no.	Type	d	l	Measuring surface
		mm	mm	
4360150	906 H	1	8,5	Carbide
4360151	906 H	1,25	8,5	Carbide
4360152	906 H	1,5	8,5	Carbide
4360153	906 H	1,75	8,5	Carbide
4360154	906 H	2	8,5	Carbide
4360155	906 H	2,5	8,5	Carbide
4360156	906 H	3	8,5	Carbide
4360157	906 H	3,5	8,5	Carbide
4360158	906 H	4	8,5	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

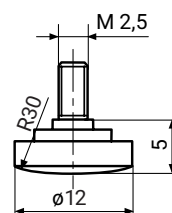
Order no.	Type	l	Measuring surface	Measuring surface-ø	Measuring surface
		mm	cm²	mm	
4360200	907	5	1	11,3	Steel
4360201	907 H	5		7	Carbide



MarCator 908 / 908 H

Spherical contact plates, steel

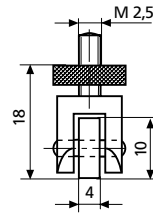
Order no.	Type	l	Measuring surface-ø	Measurement surface radius	Measuring surface
		mm	mm	mm	
4360210	908	5	12	30	Steel
4360211	908 H	5	12	30	Carbide



MarCator 909 A / 909 B

Measuring rollers

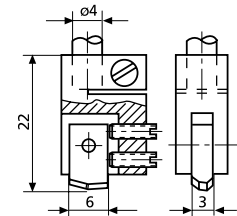
Order no.	Type	l	Measurement surface radius	Permissible radial run-out deviation	Measuring surface
		mm	mm	µm	
4360220	909 A	18		3	Steel
4360221	909 B	18	5	3	Steel



MarCator 910 H

Measuring attachment

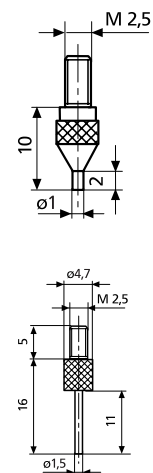
Order no.	Type	l	Measuring surface
		mm	
4360230	910 H	22	Carbide



MarCator 911 H1 / 911 H2 / 911

Pin contact point

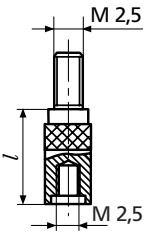
Order no.	Type	l	Measuring surface ø	Measuring surface
		mm	mm	
4360240	911 H1	2	1	Carbide
4360241	911 H2	11	1,5	Carbide
4360280	911	15	1,5	Steel
4360281	911	20	1,5	Steel
4360282	911	25	1,5	Steel
4360283	911	30	1,5	Steel
4360284	911	35	1,5	Steel
4360285	911	40	1,5	Steel
4360286	911	50	1,5	Steel



MarCator 912

Measuring spindle extension

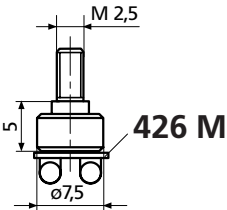
Order no.	Type	d mm	l mm
4360250	912	4	10
4360251	912	4	15
4360252	912	4	20
4360253	912	4	25
4360254	912	4	35
4360255	912	4	50
4360256	912	4	75
4360257	912	4	100



MarCator 913

Flat contact point

Order no.	Type	Measuring surface $\varnothing$ mm
4360400	913	7,5



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.

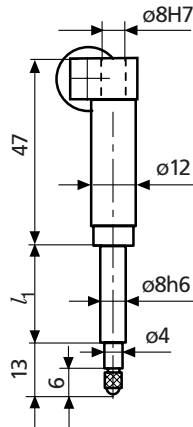
- Package contains: contact point 901

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	Type	Transmission
	mm		
4365000	25	941 G	3 mm
4365001	50	941 G	3 mm
4365002	75	941 G	3 mm



MarCator 941 W

Angular holder

FEATURES

For measuring devices and in combination with standard measuring instruments, where tilting of the measuring instrument is required.

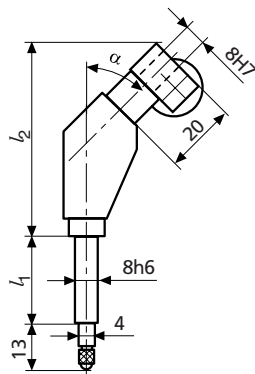
- Package contains: contact point 901, contact point 903 (l = 10 mm)

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	Länge l2	Type	Transmission	Angle α
	mm	mm			
4365010	25	53,7	941 W	3 mm	45
4365011	50	53,7	941 W	3 mm	45
4365012	75	53,7	941 W	3 mm	45
4365020	25	49,3	941 W	3 mm	60
4365021	50	49,3	941 W	3 mm	60
4365022	75	49,3	941 W	3 mm	60
4365030	25	34,5	941 W	3 mm	90
4365031	50	34,5	941 W	3 mm	90
4365032	75	34,5	941 W	3 mm	90



MarCator 943

Sensor level

FEATURES

- Touch lever device for dial gauges
- Lever transmission ratio 1:1
- Manual lifting device
- Interchangeable measuring anvil
- Package contains: contact point 901, excludes indicator

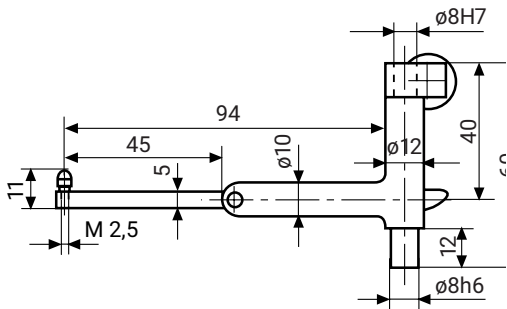


Application:

- For testing concentricity in bore holes
- Measurement of difficult to reach outside diameters
- With clamping shaft Ø 8 mm for mounting in measuring stands

TECHNICAL DATA

Order no.	Type	Transmission	Error limit
4367000	943	+/- 1mm	1% of measuring path



MarCator 837

Dial indicator depth measuring bridge

FEATURES

- Measuring surface plane and precision lapped
- Holder for dial indicators with shaft diameter 8 mm
- Made of hardened steel, hard chrome plated
- Package contains: depth measuring bridge, contact point 902 (l = 12 mm), excludes indicator



Application:

- For precise depth measurement using dial indicator

TECHNICAL DATA

Order no.		4494010		4494011	4494012
Type		837			
Mounting hole for dial indicator	mm	8			
Measuring bridge length	mm	80	100	150	
Measuring bridge width	mm	16			20

ACCESSORIES

Order no.	Type	Description
4311060	810 AT	Mechanical dial indicator 10 mm / 0,01 mm
4336010	1075 R	Digital indicator 12,5 mm / 0,01 mm
4337791	1086 Ri	Digital indicator 25 mm / 0,01 mm
4360011	902	Spherical contact point, hardened steel, l = 10 mm, r = 6 mm
4360014	902	Spherical contact point, hardened steel, l = 20 mm, r = 6 mm
4360015	902	Spherical contact point, hardened steel, l = 25 mm, r = 6 mm
4360018	902	Spherical contact point, hardened steel, l = 50 mm, r = 6 mm



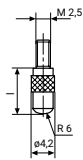
810 AT



1075 R



1086 Ri



902

Millimess | Digital and dial comparators

Millimess dial comparators differ from conventional dial indicators through more precise components, greater accuracy and a much improved hysteresis. The digital Millimess dial indicators achieve their uniquely high accuracy in particular through their special measuring system, similar to an inductive length probe.

Millimess dial indicators are particularly suitable for concentricity tests, straightness and flatness measurements as well as comparative measurements.



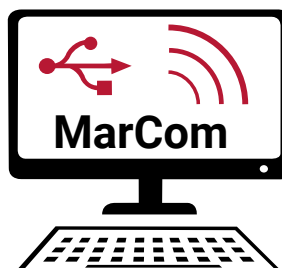
Millimess overview	202
Dial comparator	
Millimess 2000 W / 2000 Wi	206
Inductive dial comparator	
Millimess 2001 W / 2001 Wi	208
Inductive dial comparator	
Mechanical dial comparator	
Millimess 1003 / 1003 T	212
Mechanical dial comparator	
Millimess 1004 / 1004 T / 1003 XL / 1003 XLT	213
Mechanical dial comparator	
Millimess 1003	214
Mechanical dial comparator with special measuring force	
Millimess 1000 A / 1000 B	215
Mechanical dial comparator	
Millimess 1010 / 1010 T	216
Mechanical dial comparatorr	
Millimess 1010 Z / 1010 ZT / 1004 Z / 1004 ZT / 1003 Z / 1003 ZT / 1002 Z / 1002 ZT	217
Mechanical dial comparator	

Millimess 2001 Wi: Everything under control! **A digital comparator – highest level of precision due to inductive measuring system**



Integrated Wireless

- Integrated Wireless interface
- Sending and receiving measuring data and various parameters



Can be configured and controlled remotely using MarCom Professional Software



First digital comparator indicator with touch operation



Unique touch operation – even works with gloves

Extensive advantages:

- Keys react even with the slightest touch
- This prevents a measuring device from being adjusted or deformed
- **Maximum measuring certainty**

Hardened glass front

- Scratch and impact-resistant surface
- Excellent protection against scratches and penetrating liquids
- Wear-free keys react to the slightest touch



IP 64

Protection rating IP 64

Excellent protection against dust and splash water from all directions ensures optimum workshop compatibility at all times



High-precision ball-bearing guide

Maximum sensitivity of the measuring system, long service life, and high loading capacity

Millimess

Comparators

Bidirectional data interface via USB

- Sending and receiving measuring data and various parameters
- Permanent power supply via data cable
- Possible to retrieve the device ID

#ID

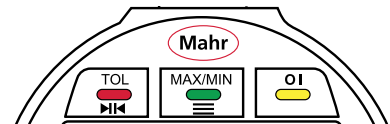
Data interface via Digimatic

- To send measuring data



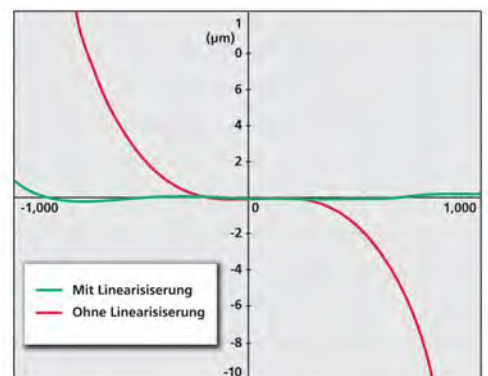
Convenient tolerance functions

- Clear tolerance symbols
- Colorful LED signals (red, green, yellow) to classify the measuring values
 - No go/Go/warning limit
 - No go/Go/rework



High-precision inductive measuring system

Lowest measuring deviations thanks to linearization



ABS
system

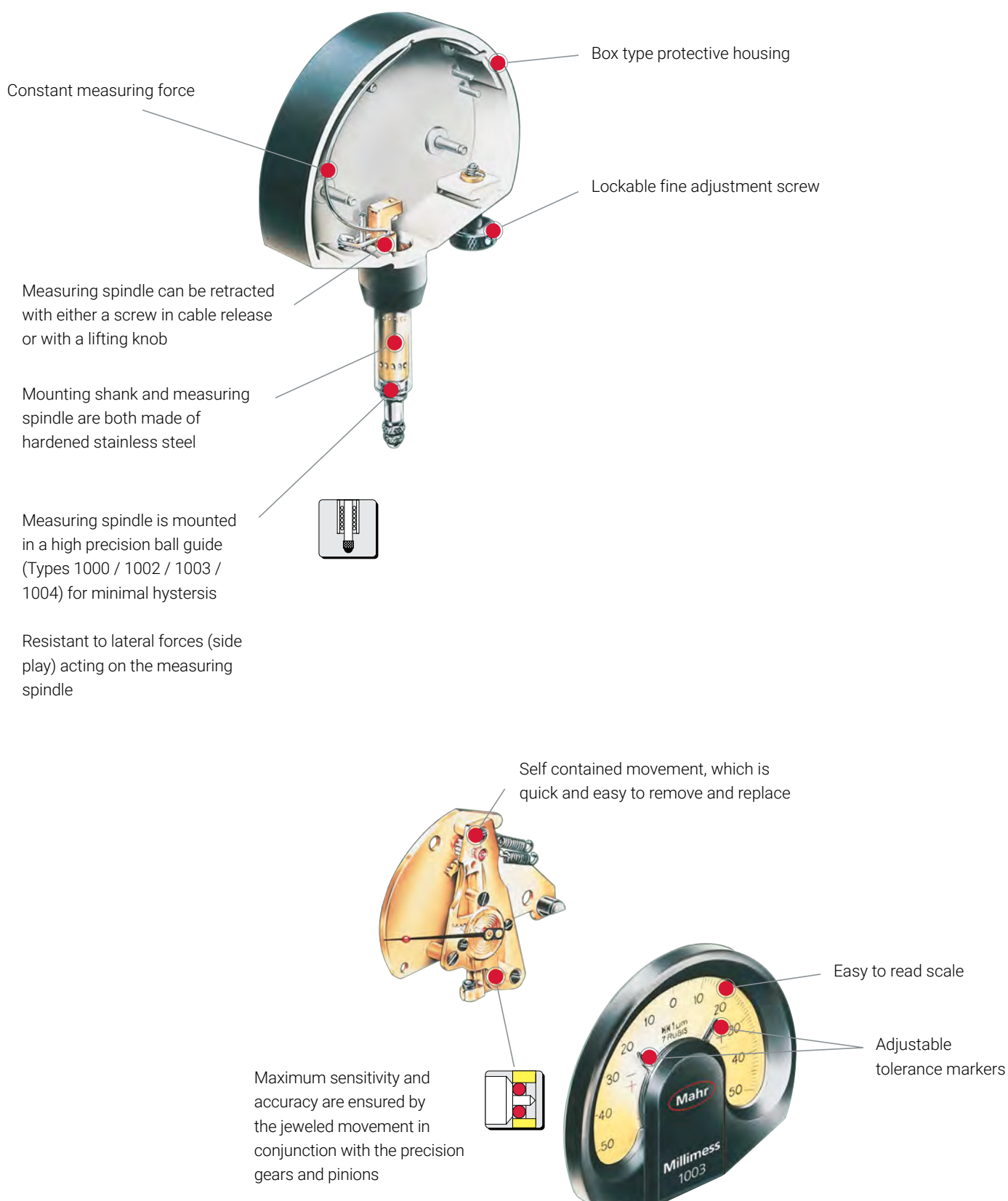
Absolute measuring system

The reference to the electric zero point is not lost when the device is switched off



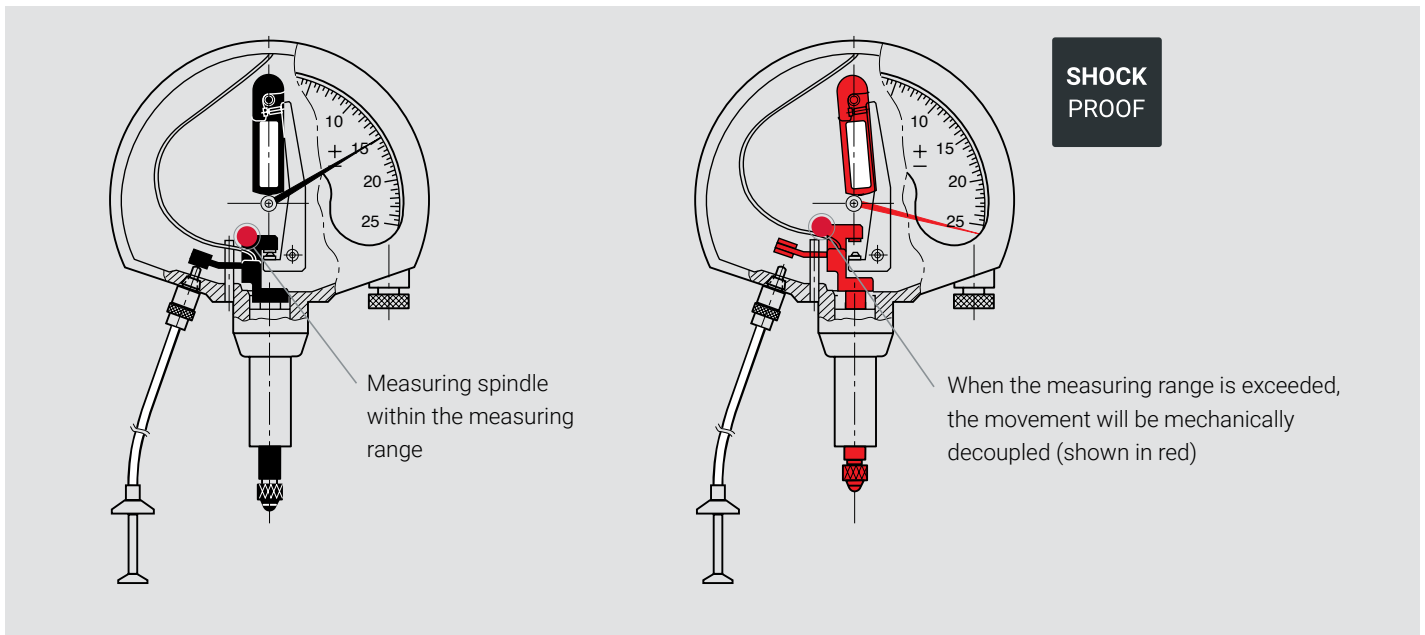
Millimess

Dial comparators – design



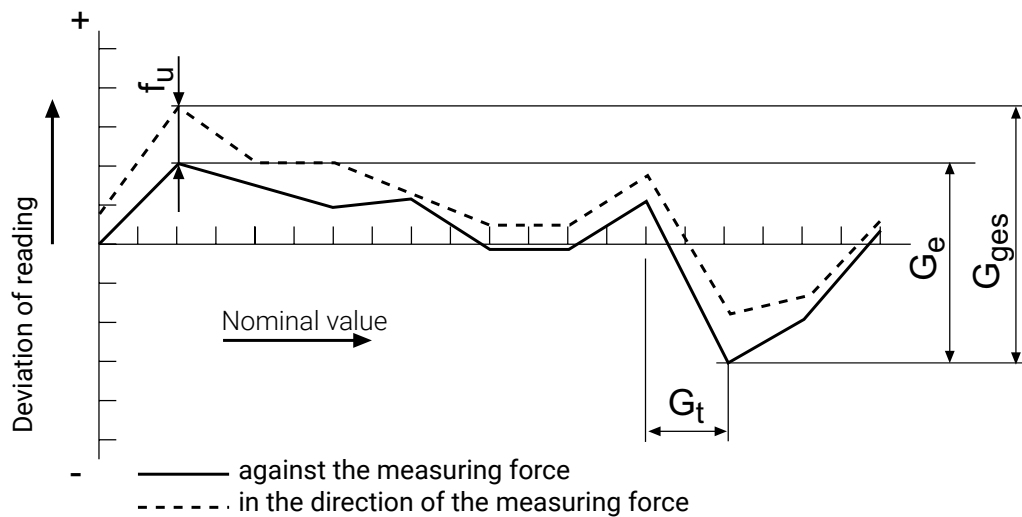
Millimess

Shockproof mechanism



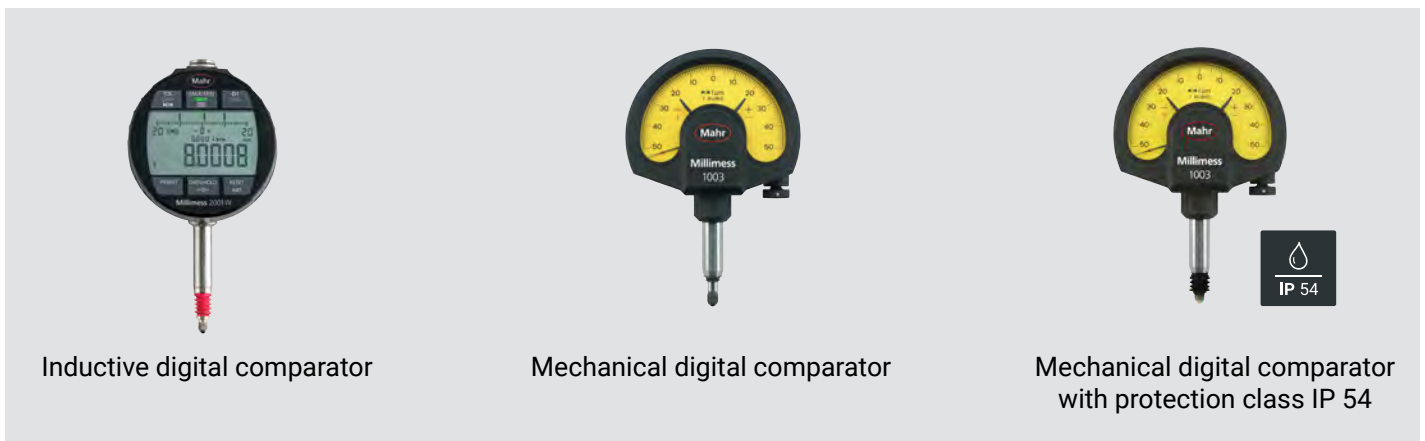
Millimess

Metrological characteristics



Millimess

Versions



Millimess 2000 W / 2000 Wi

Inductive dial comparator



#ID



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- ABS (reference to the electrical zero point)
- Resolution selectable
- TOL (Tolerance and Warning Limits Input)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- HOLD (freeze current measured value)
- LOCK function (key lock)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
- - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- High contrast LCD display, thus very clear and safe to read
- Clear tolerance symbols and coloured LED signals (red, green, yellow) for measured value classification
 - with warning limit input: No Go/Go/Warning Limit
 - without warning limit input: No Go/Go/Rework
- Operating and display unit (bezel) can be rotated through 280°
- 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
- Linearized inductive absolute measuring system
- Measuring force spring is interchangeable
- Lower stop is adjustable
- Energy supply: Integrated rechargeable accumulator (up to 4 weeks) or powered by USB Data Cable

Application:

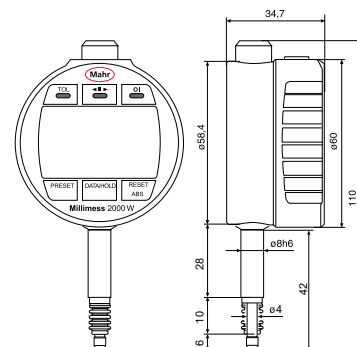
For static measuring tasks

TECHNICAL DATA

Order no.	4346700	4346701
IP protection category	IP 64	
Standard	Factory standard	
Type	2000 W	2000 Wi
Measuring range	mm	± 1
Measuring range	inch	± .04"
Resolution	mm	0,0001, 0,0002, 0,0005, 0,001, 0,002, 0,005, 0,01
Resolution	inch	.000005", .00001", .00002", .00005", .0001", .0002", .0005"
Error limit	µm	± (0.2 + L/2) L in mm
Measuring value hysteresis f_u	µm	0,3
Repeatability f_w	µm	0,1
Measuring force	N	0.9 ± 0.1 (at the electrical zero point)
Height of digits	mm	11,5
Supply voltage	100–240 V	
Data interface	USB, Digimatic	Integrated Wireless, USB, Digimatic
Free stroke	mm	2,5

Order no.	Connection thread	Mounting shaft
		mm
4346700	M 2,5	8
4346701	M 2,5	8

- Battery type: Lithium polymer accu 3.7 V
- Package contains: USB data and charging cable type DK-U1, Plug-in power supply (with 4 interchangeable adapters) for USB, rubber bellows, Screwdriver for pre-stroke adjustment (hexagon socket 0.9 mm), test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

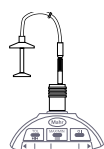


Millimess 2000 W / 2000 Wi

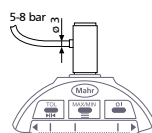
Inductive dial comparator

ACCESSORIES

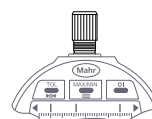
Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4310103	940	Adapter bushing (.375"/8 mm)
4346010	2000 h	Manual lifer with cable release
4346011	2000 p	Pneumatic lifter
4346012	2000 m	Measuring force adjuster
4337421	1086 b	Lug back
4346050		Measuring force spring 0.25 N
4346051		Measuring force spring 0.50 N
4882284		Measuring force spring 0.75 N
4346052		Measuring force spring 1.00 N
4346053		Measuring force spring 1.50 N
4346054		Measuring force spring 2.00 N
4346055		Measuring force spring 2.50 N
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless



2000 h



2000 p



2000 m



1086 b



1086 sf



1086 sr



i-Stick

Millimess 2001 W / 2001 Wi

Inductive dial comparator



FUNCTIONS

- ON/OFF
- mm/inch
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- ABS (reference to the electrical zero point)
- Resolution selectable
- TOL (Tolerance and Warning Limits Input)
- RANGE (switch the measuring range and resolution)
- MAX/MIN memory for searching the reversal point
- (f) for testing flatness and concentricity
- 0 (set the analog scale display to zero)
- Factor (Multiplier for measuring travel)
- Reversal of counting direction
- HOLD (freeze current measured value)
- LOCK function (key lock)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

FEATURES

- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Clear tolerance limits in the scale display and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: No Go / Go / Warning Limit
 - without warning limit input: No Go/Go/Rework
- LED signals (red, green, yellow) in mode:
 - powered by Accumulator: flashing signal
 - powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Analog scale display for visual recognition of the measuring movement during dynamic measuring tasks

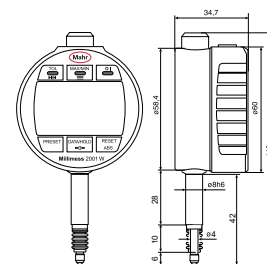
Application:

For static and dynamic measuring tasks

TECHNICAL DATA

Order no.	4346800	4346801
IP protection category	IP 64	
Standard	Factory standard	
Type	2001 W	2001 Wi
Measuring range	mm	± 1
Measuring range	inch	$\pm .04"$
Resolution	mm	0,0001, 0,0002, 0,0005, 0,001, 0,002, 0,005, 0,01
Resolution	inch	.000005", .00001", .00002", .00005", .0001", .0002", .0005"
Error limit	μm	$\pm (0,2 + L/2) L \text{ in mm}$
Measuring value hysteresis f_u	μm	0,3
Repeatability f_w	μm	0,1
Measuring force	N	$0,9 \pm 0,1$ (at the electrical zero point)
Range of analog display	mm	$\pm 0.002, \pm 0,004, \pm 0,01, \pm 0,02, \pm 0,04, \pm 0,1, \pm 0,2$
Height of digits	mm	9
Supply voltage	100–240 V	
Data interface	USB, Digimatic	Integrated Wireless, USB, Digimatic
Free stroke	mm	2,5

Order no.	Connection thread	Mounting shaft
		mm
4346800	M 2,5	8
4346801	M 2,5	8

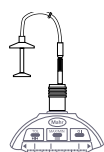


- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Linearized inductive absolute measuring system
- Measuring force spring is interchangeable
- Lower stop is adjustable
- Energy supply: Integrated rechargeable accumulator (up to 4 weeks) or powered by USB data cable

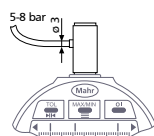
- Battery type: Lithium polymer accu 3.7 V
- Package contains: USB data and charging cable type DK-U1, plug-in power supply (with 4 interchangeable adapters) for USB, rubber bellows, screwdriver for pre-stroke adjustment (hexagon socket 0.9 mm), test certificate, instruction manual, cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

ACCESSORIES

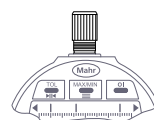
Order no.	Type	Description
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4310103	940	Adapter bushing (.375"/8 mm)
4346010	2000 h	Manual lifer with cable release
4346011	2000 p	Pneumatic lifter
4346012	2000 m	Measuring force adjuster
4337421	1086 b	Lug back
4346050		Measuring force spring 0.25 N
4346051		Measuring force spring 0.50 N
4882284		Measuring force spring 0.75 N
4346052		Measuring force spring 1.00 N
4346053		Measuring force spring 1.50 N
4346054		Measuring force spring 2.00 N
4346055		Measuring force spring 2.50 N
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless



2000 h



2000 p



2000 m



1086 b



1086 sf



1086 sr



i-Stick

Inductive dial comparator



- ON/OFF
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- ABS (reference to the electrical zero point)
- Resolution selectable
- TOL (Tolerance and Warning Limits Input)
- RANGE (switch the measuring range and resolution)
- MAX/MIN memory for searching the reversal point
- (MAX/MIN) for testing flatness and concentricity
- 0 (set the analog scale display to zero)
- Factor (multiplier for measuring travel)
- Reversal of counting direction
- HOLD (freeze current measured value)
- LOCK function (key lock)
- DATA (data transmission)
- Bi-directional data interface (for data retrieval - transfer of parameters - remote control - individual function locks via MarCom software)

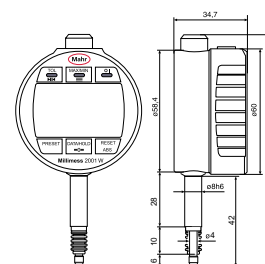
- Unit of measurement METRIC only (no INCH)
- Tempered glass front with touch control panels with enormous advantages:
 - scratch and impact resistant surface
 - excellent protection against dust, coolants and lubricants
 - wear-free touch operating keys
 - improved safety of measurement values in measuring stands, as only a light touch of the key - no keystroke - is required, thus no adjustment or deformation of the measuring device
- Clear tolerance limits in the scale display and colored LED signals (red, green, yellow) for measured value classification
 - with warning limit input: No Go/Go/Warning Limit
 - without warning limit input: No Go/Go/Rework
- LED signals (red, green, yellow) in mode:
 - powered by Accumulator: flashing signal
 - powered by data cable DK-U1: permanent
- High contrast LCD display, thus very clear and safe to read
- Analog scale display for visual recognition of the measuring movement during dynamic measurement tasks



For static and dynamic measuring tasks
Version: Unit of measurement only METRIC (without INCH)

Order no.	4346811	
IP protection category		IP 64
Standard		Factory standard
Type		2001 Wi
Measuring range	mm	± 1
Measuring range	inch	Metric
Resolution	mm	0,0001, 0,0002, 0,0005, 0,001, 0,002, 0,005, 0,01
Error limit	µm	± (0,2 + L/2) <i>L in mm</i>
Measuring value hysteresis f _u	µm	0,3
Repeatability f _w	µm	0,1
Measuring force	N	0,9 ±0,1 (at theelectrical zero point)
Range of analog display	mm	± 0.002, ± 0.004, ± 0.01, ± 0.02, ± 0.04, ± 0.1, ± 0.2
Height of digits	mm	9
Supply voltage		100– 240 V
Data interface		Integrated Wireless, USB, Digimatic
Free stroke	mm	2,5

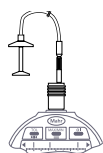
Order no.	Connection thread	Mounting shaft
		mm
4346811	M 2.5	8



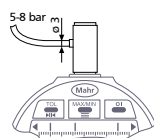
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Linearized inductive absolute measuring system
- Measuring force spring is interchangeable
- Lower stop is adjustable
- Energy supply: Integrated rechargeable accumulator (up to 4 weeks) or powered by USB Data Cable
- Battery type: Lithium polymer accumulator 3.7 V
- Package contains: USB data and charging cable type DK-U1, plug-in power supply (with 4 interchangeable adapters) for USB, rubber bellows, screwdriver for pre-stroke adjustment (hexagon socket 0.9 mm), test certificate, instruction manual, cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

ACCESSORIES

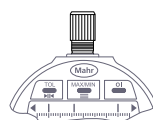
Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4310103	940	Adapter bushing (.375"/8 mm)
4346010	2000 h	Manual lifer with cable release
4346011	2000 p	Pneumatic lifter
4346012	2000 m	Measuring force adjuster
4337421	1086 b	Lug back
4346050		Measuring force spring 0.25 N
4346051		Measuring force spring 0.50 N
4882284		Measuring force spring 0.75 N
4346052		Measuring force spring 1.00 N
4346053		Measuring force spring 1.50 N
4346054		Measuring force spring 2.00 N
4346055		Measuring force spring 2.50 N
4337900	1086 sf	Display protection film, anti reflective frosted, made of extra hard hybrid glass, to protect against scratches and reflections
4346606	1086 sr	Shock protection ring made of hard rubber for dial indicators with touch operation



2000 h



2000 p



2000 m



1086 b



1086 sf



1086 sr



i-Stick

Millimess 1003 / 1003 T / 1002 / 1002 T

Mechanical dial comparator



FEATURES

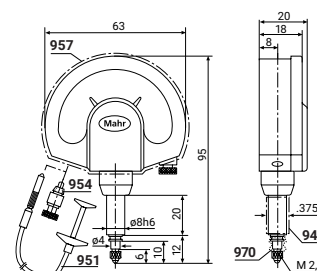
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral 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: test certificate, case



TECHNICAL DATA

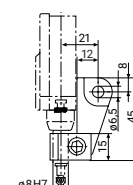
Order no.		4334000	4334005	4334102	4334103	4335000	4335005
IP protection category			IP 54				IP 54
Standard		DIN 879–1		Factory standard	DIN 879–1	Factory standard	
Type		1003	1003 T	1002	1003	1002	1002 T
Measuring range	mm	± 0,05		± 0,03	± 0,05	± 0,03	
Scale graduation value of dial comparator	μm	1		0,5	1	0,5	
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	
Measuring value hysteresis f _u	μm	0,5		0,3	0,5	0,3	
Repeatability f _w	μm	0,5		0,3	0,5	0,3	
Measuring force	N	1					
Figur on dial face		50–0–50		25–0–25	50–0–50	25–0–25	
Dial color		Yellow		White		Yellow	
Scale diameter	mm	50					
Free stroke	mm	2,8					

Order no.	Connection thread	Mounting shaft
		mm
4334000	M 2,5	8
4334005	M 2,5	8
4334102	M 2,5	8
4334103	M 2,5	8
4335000	M 2,5	8
4335005	M 2,5	8



ACCESSORIES

Order no.	Type	Description
4310103	940	Adapter bushing (.375"/8 mm)
4372000	951	Cable release (250 mm)
4372030	954	Lifting knob
4373030	957	Splash guard cover
4334786	970	Rubber bellows
4375002	963	Lug back to mount on mounting shank 8h6 mm



963

Millimess 1004 / 1004 T / 1003 XL / 1003 XLT

Mechanical dial comparator



FEATURES

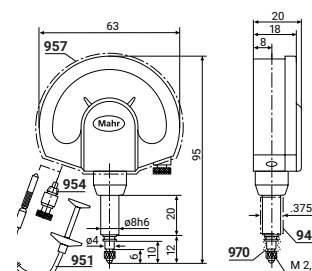
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral 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: test certificate, case



TECHNICAL DATA

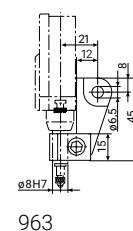
Order no.		4333000	4333005	4334001	4334006
IP protection category			IP 54		IP 54
Standard		Factory standard			
Type		1004	1004 T	1003 XL	1003 XLT
Measuring range	mm	± 0,13			
Scale graduation value of dial comparator	µm	5		2	
Error limit G_e	µm	3,5		2	
Error limit G_{ges}	µm	4		2,4	
Error limit G_t	µm	3		1,4	
Measuring value hysteresis f_u	µm		1		
Repeatability f_w	µm		1		
Measuring force	N		1		
Figur on dial face			130-0-130		
Dial color		White		Yellow	
Scale diameter	mm		50		
Free stroke	mm		2,5		

Order no.	Connection thread	Mounting shaft
		mm
4333000	M 2,5	8
4333005	M 2,5	8
4334001	M 2,5	8
4334006	M 2,5	8



ACCESSORIES

Order no.	Type	Description
4310103	940	Adapter bushing (.375"/8 mm)
4372000	951	Cable release (250 mm)
4372030	954	Lifting knob
4373030	957	Splash guard cover
4334786	970	Rubber bellows
4375002	963	Lug back to mount on mounting shank 8h6 mm



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: test certificate, case

Application:

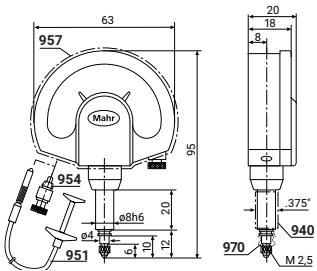
- Models with reduced / increased measuring force
- for measurements on thin walled, soft materials or delicate surfaces



TECHNICAL DATA

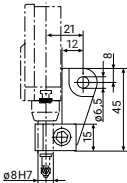
Order no.		4334075 4334070 4334050 4334076 4334071 4334010 4334011						
Standard		DIN 879-1						Factory standard
Type		1003						
Measuring range	mm	± 0,05						
Scale graduation value of dial comparator	µm	1						
Error limit G _e	µm	1						
Error limit G _{ges}	µm	1,2						
Error limit G _i	µm	0,7						
Measuring value hysteresis f _u	µm	0,5						
Repeatability f _w	µm	0,5						
Measuring force	N	0,3	0,4	0,5	0,6	0,7	2	3
Figur on dial face		50-0-50						
Dial color		Yellow						
Scale diameter	mm	50						
Free stroke	mm	2,8						

Order no.	Connection thread	Mounting shaft
		mm
4334075	M 2,5	8
4334070	M 2,5	8
4334050	M 2,5	8
4334076	M 2,5	8
4334071	M 2,5	8
4334010	M 2,5	8
4334011	M 2,5	8



ACCESSORIES

Order no.	Type	Description
4310103	940	Adapter bushing (.375"/8 mm)
4372000	951	Cable release (250 mm)
4372030	954	Lifting knob
4373030	957	Splash guard cover
4334786	970	Rubber bellows
4375002	963	Lug back to mount on mounting shank 8h6 mm



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, test certificate, case



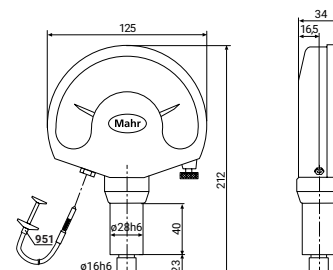
Application:

- 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

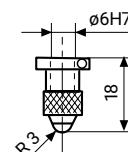
Order no.		4338100	4339100
Standard		Factory standard	
Type		1000 A	1000 B
Measuring range	mm	± 0,12	± 0,05
Scale graduation value of dial comparator	µm	1	
Error limit G_e	µm	1,5	
Error limit G_{ges}	µm	2	
Error limit G_t	µm	0,7	
Measuring value hysteresis f_u	µm	1	
Repeatability f_w	µm	0,5	
Measuring force	N	3,5	
Figur on dial face		120–0–120	50–0–50
Dial color		Yellow	
Scale diameter	mm	110	
Free stroke	mm	4	

Order no.	Connection thread	Mounting shaft
		mm
4338100	M 2,5	28
4339100	M 2,5	28



ACCESSORIES

Order no.	Type	Description
4362001	921	Contact point, Steel ball
4362002	921 R	Contact point, Ruby ball
4372000	951	Cable release (250 mm)
4338008		Rubber bellows for 1000 A/B



921 R;921

FEATURES

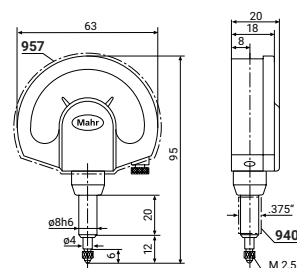
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral 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: test certificate, case



TECHNICAL DATA

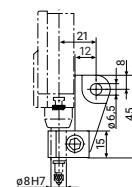
Order no.		4332000	4332005
IP protection category			IP 54
Standard		Factory standard	
Type		1010	1010 T
Measuring range	mm	± 0,25	
Readings	mm	0,01	
Error limit G _e	µm	7	
Error limit G _{ges}	µm	8	
Error limit G _t	µm	4	
Measuring value hysteresis f _u	µm	2	
Repeatability f _w	µm	2	
Measuring force	N	1	
Figur on dial face		25–0–25	
Dial color		White	
Scale diameter	mm	50	
Free stroke	mm	2,5	

Order no.	Connection thread	Mounting shaft
		mm
4332000	M 2,5	8
4332005	M 2,5	8



ACCESSORIES

Order no.	Type	Description
4310103	940	Adapter bushing (.375"/8 mm)
4372000	951	Cable release (250 mm)
4372030	954	Lifting knob
4373030	957	Splash guard cover
4375002	963	Lug back to mount on mounting shank 8h6 mm



963

FEATURES

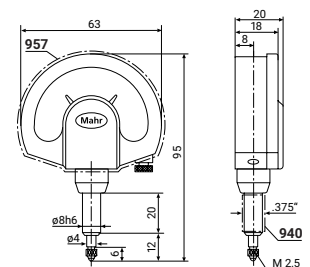
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Resistant to lateral 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: adapter bush 940, 8 mm to 3/8", test certificate, case



TECHNICAL DATA

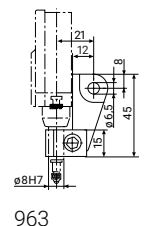
Order no.	4332900 4332905 4333900 4333905 4334900 4334905 4335900 4335905								
IP protection category		IP 54		IP 54		IP 54		IP 54	
Standard		Factory standard							
Type		1010 Z	1010 ZT	1004 Z	1004 ZT	1003 Z	1003 ZT	1002 Z	1002 ZT
Measuring range	inch	± .0100"		± .0050"		± .0020"		± .0010"	
Readings	inch	0,0005		0,0001		0,00005		0,00002	
Error limit G _e	inch	0,00035		0,0001		0,00005		0,00002	
Error limit G _{ges}	inch	0,0004		0,00012		0,00006		0,00003	
Error limit G _t	inch	0,000250		0,000050		0,000035		0,000014	
Measuring value hysteresis f _u	inch	0,0001		0,00003				0,00001	
Repeatability f _w	inch	0,0001		0,0000					
Measuring force	N	1							
Figur on dial face		.01"—0—.01"		.005"—0—.005"		.002"—0—.002"		.001"—0—.001"	
Dial color		White							
Scale diameter	mm	50							
Free stroke	mm	2,5							

Order no.	Connection thread	Mounting shaft	Mounting shaft
		inch	mm
4332900	M 2,5	0,375	8
4332905	M 2,5	0,375	8
4333900	M 2,5	0,375	8
4333905	M 2,5	0,375	8
4334900	M 2,5	0,375	8
4334905	M 2,5	0,375	8
4335900	M 2,5	0,375	8
4335905	M 2,5	0,375	8



ACCESSORIES

Order no.	Type	Description
4310103	940	Adapter bushing (.375"/8 mm)
4372000	951	Cable release (250 mm)
4372030	954	Lifting knob
4373030	957	Splash guard cover
4375002	963	Lug back to mount on mounting shank 8h6 mm
4334786	970	Rubber bellows



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 product family	220
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Flexible measurement in production with the new generation of the Millimar family

The components of the Millimar series are optimized to make measuring processes in production as simple and precise as possible. This is achieved primarily through the individual composition of the measuring devices – because every production environment brings with it different focal points, spatial characteristics or measurement-related requirements.

Millimar products are specially developed for these kinds of requirements of modern quality assurance. Here, the focus is primarily on simplifying handling, accelerating processes and, at the same time, integrating fully into complex working environments.

- Flexible and modular product combinations for solving customer-specific measurement tasks
- Different modules for different measurement requirements
- Wide selection of measurement sensors enables the performance of diverse measurement tasks
- Use in a wide range of applications
- Realization of highly dynamic measurements due to extremely high data transmission rate

Millimar

Evaluation units



C 1200



N1700 modules



Cockpit Software

Millimar

Inductive probes



P1300 M

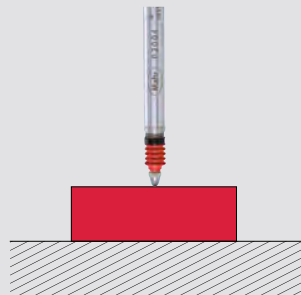


P2004 M

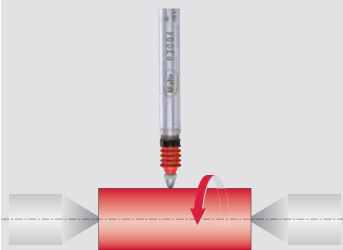
Single measurement with one probe

- 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.

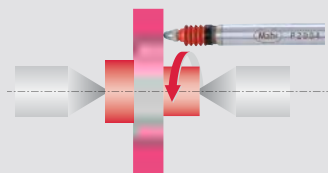
Thickness measurement



Radial runout



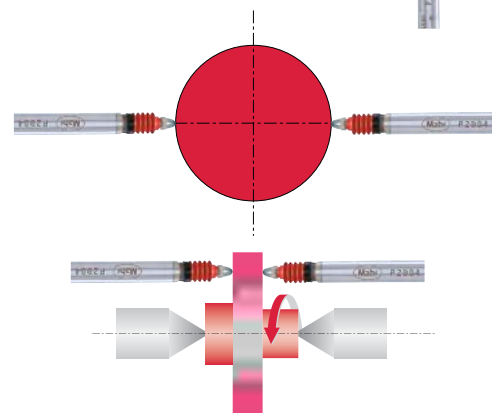
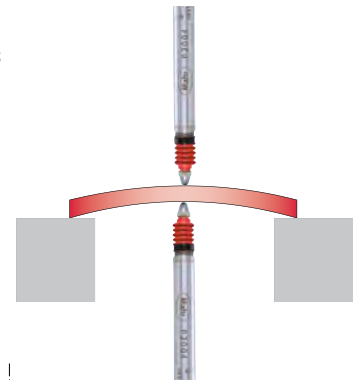
Axial runout



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.

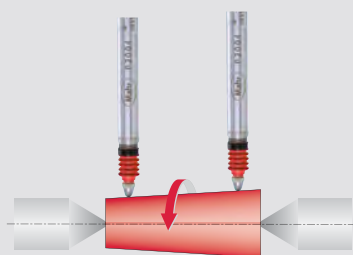
Thickness measurement



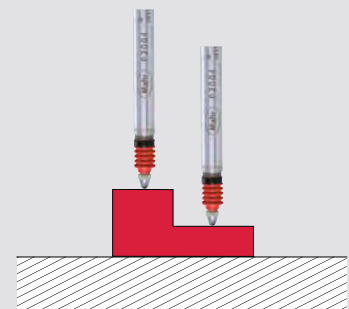
Difference measurement with 2 probes

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.

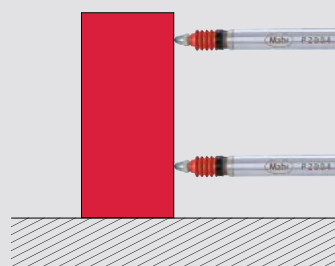
Form measurement of wedges, cones



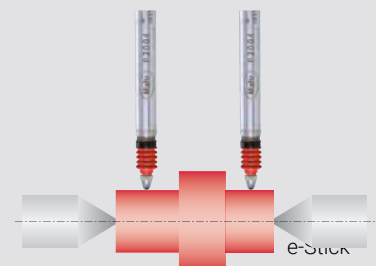
Height difference between 2 steps



Perpendicularity measurement



Concentricity measurement on 2 shaft diameters



Millimar C 1202

Compact amplifier

Flexible evaluation and display anywhere

The Millimar C 1202 compact instrument is versatile and suitable for use with a variety of sensors.

The Millimar C 1202 represents the next generation of multi-channel compact instruments for length metrology. Due to its sophisticated features such as the tilting easy-to-read display, clear menu navigation and flexible representation of measuring values, it offers maximum ergonomics and user-friendliness. Combine with an easy to change module from the N 1700 series to create just the right measuring instrument for your measuring task. Thanks to its wide range of functions, the Millimar C 1202 is extremely versatile. It can be used to tackle a multitude of measuring tasks, e.g. static and dynamic measurements as well as cone calculations. Moreover, depending on the module, measuring probes by other manufacturers may also be compatible, which will reduce your costs.

Tilting display

Measuring values can be read clearly and effortlessly from all viewing angles. The display also features a backlight.

Sturdy plastic housing

As the Millimar C 1202 is impervious to external influences, it is ideal for use in production.

Interchangeable modules

The Millimar C 1202 can be easily converted to handle different measuring tasks.

Configuring C 1202

Possible combinations with N 1700 modules

N 1702 M/M-HR/T/U

N 1702 VPP

N 1701 PF/PM

End plate included in delivery of Millimar C 1202

1x N 170x module or
2x N 1701 PF/PM

C 1202

Extension rail,
2x N 1701 PF/PM

Millimar C 1202

Compact amplifier

9

Different N 1700 modules can be combined with Millimar C 1202



Interpret measuring results with ease

The high-contrast color display provides a clear presentation of the measuring results.

Large keys

The Millimar C 1202 can also be reliably operated with gloves. Even dirt does not impede its function.



Advantages

- Three features can be displayed at the same time – for even more static and dynamic measuring tasks
- Two independent inputs via N 1700 module for the optional connection of measuring probes and pneumatic transducers
- Interchangeable modules for flexibility and compatibility
- Digimatic and USB ports for easy connection to data collection systems and evaluation software
- Programmable measuring sequences for greater productivity and reliability

Flexible setup options

Users can position the instrument on the table or fix it to the wall.

Millimar C 1200 T / C 1200 M / C 1202 / C 1751 PC

Device comparison



Millimar overview	5312011	5312012	5312024	5312025	5312871
Type	C 1200 T	C 1200 M	C 1202 metric version	C 1202 metric/Inch version	C 1751 PC
Mesuring span of indicator	± 2mm		Depending on the N 1700 measuring module used		
Resolution	0,1		0,01, 0,1, 1		0,01
Length units	mm, µm, inch		mm, µm	mm, µm, inch	
Angle units	-	-	degrees, Degrees : Minutes : Seconds, radians		
Display	TFT color display, 110 mm (4.3"), 480 x 272 pixels				Vertical bar graph Horizontal bar graph Analog display or round scale Digital display Any combination of display types can be chosen for each feature
Measuring combination	+A, -A		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B		Predefined formula templates for standard features Links entered via comprehensive formula editor
Features	1		3		128
Dynamic functions	Max, Min, Max-Min		Max, Min, TIR (Max-Min), (Max+Min)/2, Average		Max, Min, Max-Min, Max+Min, temperature compensation
Energy supply:	Power source, 230 V/115 V; 50/60 Hz, battery operation		Power source, 230 V/115 V; 50/60 Hz		230 V/115 V; 50/60 Hz
Probe inputs	1		2		64
Compatibility	Tesa	Mahr	Millimar N 1700		USB, Integrated Wireless, Millimar N 1700
Hardware interfaces	Opto RS– 232C, USB, Digimatic, wireless		USB, Digimatic, Control input, RS– 485, Micro SD slot for SD / SDHC cards up to 32 GB		4x USB 3.1 Gen. 2, 3x Ethernet (10/100/1000 Mbit/s), Display port
Number of connectable measuring instruments with USB interface	-	-	-	-	64
Number of connectable wireless receivers for i-Stick	-	-	-	-	1
Control inputs	-	-	• 1 Control input C 1202 • programmable • (functions and function sequences) • 4 control inputs via N 1704 I/O		via N 1704 I/O
Control outputs	-	-	4 control outputs via N 1704 I/O		via N 1704 I/O



For more information, please visit our website: www.mahr.com

Millimar C 1200 T / C 1200 M

Compact amplifier



FUNCTIONS

- ON/OFF
- mm/inch
- Reversal of counting direction
- Selectable measuring range
- MAX/MIN memory for searching the reversal point
- (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- PRESET (for entering a numerical value)
- Resolution selectable
- Factor (multiplier for measuring travel)
- 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*UNDEFINED TEXT*
- Battery type: 5 x LR6 (1,5V Mignon AA) possible
- Package contains: power source, instruction manual
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Application:

Millimar C 1200, now in 2 versions

- M for inductive probes with the compatibility M
- T for inductive probes with the compatibility T



TECHNICAL DATA

Order no.		5312011	5312012
Type		C 1200 T	C 1200 M
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"	
Mesuring span of indicator	mm	± 2mm	
Resolution	µm	0,1	
Resolution	inch	.000005"	
Scale graduation value	µm	500, 200, 100, 20, 10, 2, 1, 0,2	
Scale graduation value	inch	.019", .007", .002", .001", .0002", .0001", .00002", .00001"	
Length units		mm, µm, inch	
Error limit, digital display		0.3% (min. 0.2 µm)	
Error limit, analog display		0.25% of the end scale value / 0.3% of the displayed value	
Display		TFT color display, 110 mm (4.3"), 480 x 272 pixels	
Refresh rate	fps	40	
Measuring combination		+A, -A	
Features		1	
Dynamic functions		Max, Min, Max-Min	
Configuration		Keyboard	
Energy supply:		Power source, 230 V/115 V; 50/60 Hz, battery operation	
Probe inputs		1	
Compatibility		Tesa	Mahr
Data transmission rate	Hz	30	
Data interface		Opto RS-232C, USB, Digimatic, wireless	
IP protection category		IP 42	

Order no.	Width	Height	Depth
	mm	mm	mm
5312011	130	170	150
5312012	130	170	150

ACCESSORIES

Order no.	Type	Description
4346023	2000 USB	Data connection cable USB (2 m)
4346021	2000 d	Data cable Digimatic (2 m)
4346020	2000 r	Data connection cable RS232C (2 m)

Millimar C 1202

Compact amplifier



FUNCTIONS

- 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
- Length and angle measurement
- HOLD (freeze current measured value)
- Resolution selectable
- Factor (Multiplier for measuring travel)
- 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
- Control inputs and outputs via N 1704 I/O module
- C1202 Firmware v.: 1.2.0.0 or higher
- 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 N 1700 measuring modules
 - for connecting up to 2 measuring sensors
- Please note:
- N 1700 measuring modules are necessary additional accessories



TECHNICAL DATA

Order no.		5312024	5312025
Type		C 1202 Metric version	C 1202 Metric/Inch version
Range of digital display	µm	± 999 999.9	
Range of digital display	inch	± 39"	
Range of analog display	µm	± 5000, ± 2000, ± 1000, ± 300, ± 100, ± 30, ± 10, ± 3	
Range of analog display	inch	± .19", ± .07", ± .03", ± .01", ± .003", ± .001", ± .0004", ± .0001"	
Mesuring span of indicator	mm	Depending on the N 1700 measuring module used	
Resolution	µm	0,01, 0,1, 1	
Resolution	inch	.000005"	
Scale graduation value	µm	500, 200, 100, 20, 10, 2, 1, 0,2	
Scale graduation value	inch	.019", .007", .002", .001", .0002", .0001", .00002", .00001"	
Length units		mm, µm	mm, µm, inch
Angle units		degrees, Degrees: Minutes: Seconds, radians	
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	
Display		TFT color display, 110 mm (4.3"), 480 x 272 pixels	
Refresh rate	fps	30	
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	
Configuration		Keyboard	
Energy supply:		Power source, 230 V/115 V; 50/60 Hz	
Probe inputs		2	
Compatibility		Millimar N 1700	
Data transmission rate	Hz	30	
Data interface		USB, Digimatic	
Control inputs		• 1 Control input C 1202 • programmable (functions and function sequences)) • 4 control inputs via N 1704 I/O	
Control outputs		4 control outputs via N 1704 I/O	
IP protection category		IP 42	

Order no.	Width	Height	Depth
	mm	mm	mm
5312024	130	175	145
5312025	130	175	145

Millimar C 1202

Compact amplifier

ACCESSORIES

Order no.	Type	Description
5331120	N 1702 M	Module for inductive probes
5331125	N 1702 M-HR	Module for inductive probes
5331121	N 1702 T	Module for inductive probes
5331122	N 1702 U	Module for inductive probes
5331123	N 1702 F	Module for inductive probes
5331161	N 1702 VPP	Module for incremental sensors
5331155	N 1701 PF- 2500/5000	Module for pneumatic gages
5331157	N 1701 PF- 10000	Module for pneumatic gages
5331134	N 1704 I/O	I/O module
5312950		Extension rail for Millimar C 1202 to fit two N 1701 PF/PM modules
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)
4102058	16 ESf	Foot switch to trigger data transmission with jack plug 3.5mm
2258471		Air filter/precision pressure regulator kit for measuring module N 1701 PF



N 1702 M



N 1702 M-HR



N 1704 I/O



N 1701 PF- 2500/5000;
N 1701 PM- 2500;
N 1701 PM- 5000;
N 1701 PM- 10000;
N 1701 PF- 2500/5000- 4;
N 1701 PF- 10000

Millimar C 1751 PC

Measuring computer

FEATURES

- Robust 15.6" touch PC with Celeron 4305UE 2.0 GHz processor
- 8GB memory, industrial 128GB SSD
- Interfaces:
 - 4x USB 3.1, 3x Ethernet, 1x DisplayPort++ (1.2)
- IP65 housing
- Interactive, touch-sensitive software
- Very simple and intuitive to use
- User-friendly creation of measuring tasks
- Access to predefined wizards 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 measuring values
- Simultaneous display of 128 digital or analog measurement values
- The Millimar N 1700 modules support a wide range of inductive measuring probes as well as Mahr instruments with a data interface
- Connection of Mahr measuring technologies via Integrated Wireless
- Data export to MS Excel or in qd-Stat format (dfq or dfx/dfd format)
- Password-protected user levels (3 levels)
- Online help (operating instructions) can be accessed directly from the software
- Option: Temperature compensation of the measured values
- Battery type: CR 2032 (3V Lithium)
- Package contains: Millimar Cockpit Software, Mahr license key



Application:

Convenient measuring computer with smart and universal software for complex measuring tasks in the manufacturing sector

TECHNICAL DATA

Order no.		5312871
Type		C 1751 PC
Range of analog display	µm	± 10000, ± 5000, ± 2000, ± 1000, ± 500, ± 200, ± 100, ± 50, ± 20, ± 10, tolerance related
Range of analog display	inch	± .5", ± .2", ± .1", ± .05", ± .02", ± .01", ± .005", ± .002", ± .001", ± .0005", tolerance related
Mesuring span of indicator	mm	Depending on the N 1700 measuring module used
Resolution	µm	0,01
Resolution	inch	.0000001"
Length units		mm, µm, inch
Angle units		degrees, Degrees : Minutes : Seconds, radians
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)
Measuring combination		Predefined formula templates for standard features Links entered via comprehensive formula editor
Features		128
Dynamic functions		Max, Min, Max-Min, Max+Min, temperature compensation
Classification		Max. 20 classes
Energy supply:		230 V/115 V; 50/60 Hz
Probe inputs		64
Compatibility		USB, Integrated Wireless, Millimar N 1700
Control inputs		via N 1704 I/O
Control outputs		via N 1704 I/O
IP protection category		IP 65

Order no.	Width	Height	Depth
	mm	mm	mm
5312871	400	270	80

ACCESSORIES

Order no.	Type	Description
5312802	Measured value/master value history	Option for Millimar Cockpit
5312866	Temperature compensation	Option for Millimar Cockpit 14
5331130	N 1701 USB	USB connecting module
5331120	N 1702 M	Module for inductive probes
5331125	N 1702 M-HR	Module for inductive probes
5331140	N 1704 M	Module for inductive probes
5331121	N 1702 T	Module for inductive probes
5331141	N 1704 T	Module for inductive probes
5331122	N 1702 U	Module for inductive probes
5331142	N 1704 U	Module for inductive probes
5331161	N 1702 VPP	Module for incremental sensors
5331155	N 1701 PF-2500/5000	Module for pneumatic gages
5331157	N 1701 PF-10000	Module for pneumatic gages
5331133	N 1701 PS	Power supply module
5331134	N 1704 I/O	I/O module
4102220	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EXu	Data connection cable USB (2 m)
4346023	2000 USB	Data connection cable USB (2 m)
4102331	Millimar - USB	Millimar - USB Adapter cable RS-232-USB (0,2 m)
7024634	RS232C 0-Modem Kabel	Data connection cable RS232C (3 m)



Messwert-/
Meisterwerthistorie



N 1701 USB



N 1702 M



N 1702 M-HR



N 1704 M



N 1704 T



N 1704 U



N 1701 PF-2500/5000;
N 1701 PM-2500;
N 1701 PM-5000;
N 1701 PM-10000;
N 1701 PF-2500/5000-4;
N 1701 PF-10000



N 1701 PS



N 1704 I/O



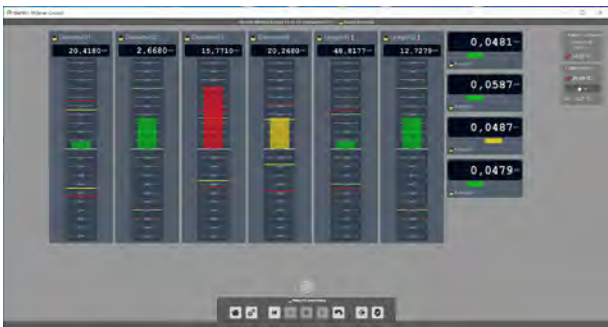
i-Stick

Millimar Cockpit 14

Measuring software

FEATURES

- Interactive, touch-enabled software
- Easy and intuitive operation
- User-friendly creation of measurement tasks
- Easiest operation through access to predefined formula templates
- Management of measurement tasks (storage and loading function)
- Linking the measurement task with images or drawings
- Static and dynamic measurement value acquisition
- Supported by graphical control elements
- Live visualization of measured values
- Digit and scale displays of up to 128 features simultaneously
- Connection of Millimar N 1700 modules in conjunction with inductive probes as well as Mahr measuring instruments with data interface
- Connection of Mahr measuring instruments with Integrated Wireless
- Data paging in MS-Excel or as qs-Stat data format (dfq or dfx resp. dfd format)
- Password-protected operator levels (3 levels)
- Online help (operating instructions) directly accessible from the software
- Package contains: Mahr license key, installation disk, operating instructions (online help)



Application:
Smart and universally applicable software for complex measurement tasks in the manufacturing sector



TECHNICAL DATA

Order no.		5312865
Type		Cockpit 14
Range of analog display	µm	± 10000, ± 5000, ± 2000, ± 1000, ± 500, ± 200, ± 100, ± 50, ± 20, ± 10, tolerance related
Range of analog display	inch	± .5", ± .2", ± .1", ± .05", ± .02", ± .01", ± .005", ± .002", ± .001", ± .0005", tolerance related
Mesuring span of indicator	mm	Depending on the measuring device
Resolution	µm	0,01
Resolution	inch	.0000001"
Length units		mm, µm, inch
Angle units		degrees, Degrees : Minutes : Seconds, radians
Display		Vertical bar display Horizontal bar display Analog display or round scale Digital display Display types per feature freely combinable
Tolerance display		Upper and lower tolerance limit (per characteristic) Upper and lower warning limit (per characteristic)
Measuring combination		Predefined formula templates for standard characteristics Input of links via extensive formula editor
Features		128
Dynamic functions		Max, Min, Max-Min, Max+Min, Temperature compensation
Classification		max. 20 classes
Compatibility		USB, Integrated Wireless, Millimar N 1700
Control inputs		via N 1704 I/O module (5331134)
Control outputs		via N 1704 I/O module (5331134)

ACCESSORIES

Order no.	Type	Description
5312802	Measured value/master value history	Option for Millimar Cockpit
5312866	Temperature compensation	Option for Millimar Cockpit 14
5331130	N 1701 USB	USB connecting module
5331120	N 1702 M	Module for inductive probes
5331125	N 1702 M-HR	Module for inductive probes
5331140	N 1704 M	Module for inductive probes
5331121	N 1702 T	Module for inductive probes
5331141	N 1704 T	Module for inductive probes
5331122	N 1702 U	Module for inductive probes
5331142	N 1704 U	Module for inductive probes
5331161	N 1702 VPP	Module for incremental sensors
5331155	N 1701 PF-2500/5000	Module for pneumatic gages
5331157	N 1701 PF-10000	Module for pneumatic gages
5331133	N 1701 PS	Power supply module
5331134	N 1704 I/O	I/O module
4102220	i-Stick	Wireless receiver for measuring instruments with Integrated Wireless
4102357	16 EXu	Data connection cable USB (2 m)
4346023	2000 USB	Data connection cable USB (2 m)
4102331	Millimar - USB	Millimar - USB Adapter cable RS-232-USB (0,2 m)
7024634	RS232C 0-Modem Kabel	Data connection cable RS232C (3 m)



Messwert-/
Meisterwerthistorie



N 1701 USB



N 1702 M



N 1702 M-HR



N 1704 M



N 1704 T



N 1704 U



N 1701 PF-2500/5000;
N 1701 PM-2500;
N 1701 PM-5000;
N 1701 PM-10000;
N 1701 PF-2500/5000-4;
N 1701 PF-10000



N 1701 PS



N 1704 I/O



i-Stick

Millimar N 1702 / N 1704 / N 1702 VPP / N 1701 PF / N 1704 I/O / N 1701 USB

Device comparison



Order no.		5331120	5331121	5331122	5331123	5331125	5331140	5331141
Type	-	N 1702 M	N 1702 T	N 1702 U	N 1702 F	N 1702 M-HR	N 1704 M	N 1704 T
Mesuring span of indicator	mm	-	-	-	-	-	-	-
Mesuring range, inductive probe	µm	± 5000, ± 2000, ± 1000, ± 500			± 200		± 5000, ± 2000, ± 1000, ± 500	
Resolution	µm	0,1			0,01		0,1	
Error limit	-	0,3 % (min. 0,2 µm)			0,3 % (min. 0,04 µm)		0,3 % (min. 0,2 µm)	
Energy supply:	-	+ 5V vom N 1700 Bus						
Current supply	mA	-	-	-	-	-	-	-
Current consumption	mA	115	95	115	140	115	180	150
Probe inputs	-	2					4	
Inputs for pneumatic measuring equipment	-	-	-	-	-	-	-	-
Compatibility	-	Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT	Tesa	Marposs	Federal	Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT	Mahr, Mahr half-bridge, Mahr LVDT, Mahr VLDT	Tesa
Magnification	-	-	-	-	-	-	-	-
Control inputs	-	-	-	-	-	-	-	-
Control outputs	-	-	-	-	-	-	-	-



For more information, please visit our website: www.mahr.com



5331142	5331161	5331155	5331156	5331157	5331134	5331130	5331133
N 1704 U	N 1702 VPP	N 1701 PF– 2500/5000	N 1701 PF– 2500/5000– 4	N 1701 PF– 10000	N 1704 I/O	N 1701 USB	N 1701 PS
-	30 bit counter Dependent on the signal period of the sensor and set interpo- lation. Adjustable interpolation factors 256, 128, 64 or 32.	± 40 µm (±0.0015 inch) /± 20 µm (±0.00075 inch),tooling dependent		± 8 µm	-	-	-
	-	-	-	-	-	-	-
	0,01, 0,1	0,1			-	-	-
	-	± 0.8 µm in the range ± 38 µm and ± 0.5 µm in the range ± 25 µm			-	-	-
						via USB interface	230 V/115 V; 50/60 Hz
-	-	-	-	-	-	430	2000
180	350	32			70	-	-
	2	-	-	-	-	-	-
-	-	1			-	-	-
Marposs	Incremental 1 Vss	Mahr-Federal			-	-	-
-	-	2500:1, 5000:1		10000:1	-	-	-
-	-	-	-	-	4 inputs, 10 – 30 V	-	-
-	-	-	-	-	4 outputs, 10 – 30 V ESD protected, short-circuit proof	-	-

Millimar N 1702 / N 1704

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
- Can be used as a measuring module on the C 1202
- 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	5331121	5331122	5331123	5331125	5331140	5331141	5331142
Type		N 1702 M	N 1702 T	N 1702 U	N 1702 F	N 1702 M-HR	N 1704 M	N 1704 T	N 1704 U
Measuring range	mm	±5,0			±0,2		±5,0		
Measuring range, inductive probe	µm	± 5000, ± 2000, ± 1000, ± 500			± 200		± 5000, ± 2000, ± 1000, ± 500		
Resolution	µm	0,1			0,01		0,1		
Resolution	inch	.000005"			.0000001"		.0000005"		.000005"
Error limit		0,3 % (min. 0,2 µm)			0,3 % (min. 0,04 µm)		0,3 % (min. 0,2 µm)		
Configuration		Millimar Cockpit Software, C 1202	Millimar Cockpit Software		Millimar Cockpit Software, C 1202	Millimar Cockpit Software			
Energy supply:		+ 5V vom N 1700 Bus							
Current consumption	mA	115	95	115	140	115	180	150	180
Probe inputs		2					4		
Compatibility		Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT	Tesa	Marposs	Federal	Mahr, Mahr 1340, Mahr half-bridge, Mahr LVDT, Mahr VLDT	Mahr, Mahr half-bridge, Mahr LVDT, Mahr VLDT	Tesa	Marposs
Data transmission rate	Hz	4189							
Data interface		RS-485							
IP protection category		IP 42							

Order no.	Width	Height	Depth
	mm	mm	mm
5331120	77	54,8	66
5331121	77	54,8	66
5331122	77	54,8	66
5331125	77	54,8	66
5331140	116,5	54,8	66
5331141	116,5	54,8	66
5331142	116,5	54,8	66

Millimar N 1702 / N 1704

Module for inductive probes

ACCESSORIES

Order no.	Type	Description
5313010	1301	Inductive probe , ± 1 mm
5313030	1303	Inductive probe , ± 1 mm
5313049	1304 K	Inductive probe , ± 1 mm
5313180	1318	Inductive probe , -0,3 ... 1 mm
5313400	1340	Inductive probe , ± 2 mm
4400180	P1300 MA	Inductive probe , ± 2 mm
4400182	P1300 MA without cable	Inductive probe , ± 2 mm
4400181	P1300 MB	Inductive probe , ± 2 mm
4400183	P1300 MB without cable	Inductive probe , ± 2 mm
5323040	P2001 M	Inductive probe , ± 0,5 mm
5323210	P2002 M	Inductive probe , ± 1 mm
5323220	P2002 MA	Inductive probe , ± 1 mm
5323230	P2002 MB	Inductive probe , ± 1 mm
5323010	P2004 M	Inductive probe , ± 2 mm
5323020	P2004 MA	Inductive probe , ± 2 mm
5323030	P2004 MB	Inductive probe , ± 2 mm
5324010	P2010 M	Inductive probe , ± 5 mm
5324020	P2010 MA	Inductive probe , ± 5 mm
5324030	P2010 MB	Inductive probe , ± 5 mm
5324070	P2104 MA	Inductive probe , ± 2 mm
5324080	P2104 MB	Inductive probe , ± 2 mm
4400190	P1300 TA	Inductive probe , ± 2 mm
4400191	P1300 TB	Inductive probe , ± 2 mm
5323011	P2004 T	Inductive probe , ± 2 mm
5323021	P2004 TA	Inductive probe , ± 2 mm
5323031	P2004 TB	Inductive probe , ± 2 mm
5324021	P2010 TA	Inductive probe , ± 5 mm
5324031	P2010 TB	Inductive probe , ± 5 mm
5324071	P2104 TA	Inductive probe , ± 2 mm
5324081	P2104 TB	Inductive probe , ± 2 mm
5323013	P2004 U	Inductive probe , ± 2 mm
5323023	P2004 UA	Inductive probe , ± 2 mm
5323033	P2004 UB	Inductive probe , ± 2 mm
5324023	P2010 UA	Inductive probe , ± 5 mm
5324033	P2010 UB	Inductive probe , ± 5 mm
5324073	P2104 UA	Inductive probe , ± 2 mm
5324083	P2104 UB	Inductive probe , ± 2 mm
4400192	P1300 TA without cable	Inductive probe , ± 2 mm
4400193	P1300 TB without cable	Inductive probe , ± 2 mm



1301



1340



P1300 MA



P1300 MA without cable; P1300 TA without cable



P1300 MB



P1300 TB without cable; P1300 MB without cable



1303



P2001 M; P2001 T; P2001 F; P2001 USB



P2004 MA; P2004 TA; P2004 UA; P2004 FA



P2004 MB; P2004 UB; P2004 FB; P2004 TB



P2010 M



P2010 TA; P2010 UA; P2010 FA; P2010 MA



1318



P2010 UB; P2010 TB; P2010 MB; P2010 FB



P2104 MA; P2104 UA; P2104 FA; P2104 TA



P2104 UB; P2104 MB; P2104 FB; P2104 TB



P1300 TA



P1300 MA without cable; P1300 TA without cable

Millimar N 1702 VPP

Module for incremental probes

FEATURES

- Flexibly combinable RS–485 bus modules
- Powerful connection modules for evaluating
- incremental measuring probes or encoders
- Reference point evaluation
- Synchronous data retrieval from multiple connected measuring probes
- Can be used as a measuring module on the Millimar C 1202 as of firmware version 1.1.0.0
- Connection of N 1700 modules via USB interface to the smart, universal evaluation and configuration software Millimar Cockpit as of version 14.40
- Connects all compatible measuring 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.		5331161
Type		N 1702 VPP
Mesuring span of indicator	mm	30 bit counter Dependent on the signal period of the sensor and set interpolation. Adjustable interpolation factors 256, 128, 64 or 32.
Mesuring range	mm	30 bit counter Dependent on the signal period of the sensor and set interpolation. Adjustable interpolation factors 256, 128, 64 or 32.
Resolution	µm	0,01, 0,1
Configuration		Millimar C 1202 as of FW version 1.1.0.0
Energy supply:		+ 5V from N 1700 Bus
Current consumption	mA	350
Probe inputs		2
Compatibility		Incremental 1 Vss
Data transmission rate	Hz	4189
Data interface		RS–485
IP protection category		IP 42

Order no.	Width	Height	Depth
	mm	mm	mm
5331161	77	53	66

ACCESSORIES

Order no.	Type	Description
5315081	P 1512 V	Incremental measuring probe P 1512 V
5315311	P 1530 V	Incremental measuring probe P 1530 V

Millimar N 1701 PM

Module for pneumatic gages

FEATURES

- Flexibly configurable RS-485 bus modules
- Powerful connection modules for evaluating measuring sensors (pneumatic)
- Can be used as a measuring module on the C 1202
- Connection of the N 1700 modules to the smart and universally applicable Millimar Cockpit Software via USB interface
- 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.	5331150	5331151	5331152	5331155	5331156	5331157	
Type		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
Measuring span	µm	100	50	25			
Mesuring span of indicator	mm	± 50 µm (±0.00196 inch)	± 25 µm (±0.00098 inch)	± 12.5 µm (±0.00049 inch)	± 40 µm (±0.0015 inch) / ± 20 µm (±0.00075 inch),tooling dependent		± 8 µm (±0.0003 inch)
Resolution	µm	0,1					
Resolution	inch				.000005"		
Error limit		± 0.8 µm in the range ± 38 µm and ± 0.5 µm in the range ± 25 µm					
Compressed air setting duration		≤ 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)	≤ 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)	
Configuration		Millimar Cockpit Software					
Energy supply:		+ 5V vom N 1700 Bus					
Current consumption	mA	32					
Inputs for pneumatic measuring equipment		1					
Compatibility		Mahr			Mahr-Federal		
Air supply connection					3/8– 32 Male		9/32– 40 male
Air pressure		2,0 bar ± 5 %			2,1 bar ± 5 %		
Air consumption in l/h		ca. 1– 2 m³					
Magnification		2500:1	5000:1	10000:1	2500:1, 5000:1		10000:1
Data transmission rate	Hz	4189					
Data interface		RS– 485					
Zero setter		Electrical					

Order no.	Width	Height	Depth
	mm	mm	mm
5331150	90	50	66
5331151	90	50	66
5331152	90	50	66
5331155	90	50	66
5331156	90	50	66
5331157	90	50	66

ACCESSORIES

Order no.	Description
2258476	Air filter/precision pressure regulator kit for measuring module N 1701 PM
2258471	Air filter/precision pressure regulator kit for measuring module N 1701 PF

Millimar N 1704 I/O

I/O module

FEATURES

- Flexible combination of RS485 bus modules
- Synchronous data scan of all switching inputs
- Powerful connection module as a link to control Systems
- Can be used as a control module on the C 1202 from firmware 1.2.0.0
- Ability to connect the N 1700 modules to the smart and universally applicable Millimar Cockpit Software
- 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
Type		N 1704 I/O
Configuration		Millimar Cockpit Software
Energy supply:		+ 5V from N 1700 Bus
Current consumption	mA	70
Data interface		RS- 485
Control inputs		4 inputs, 10 – 30 V
Control outputs		4 outputs, 10 – 30 V ESD protected, short-circuit proof

Order no.	Width	Height	Depth
	mm	mm	mm
5331134	77	54	66

ACCESSORIES

Order no.	Type	Description
5331139	N 1700 RS485	Extension cable, length 1 m

Millimar N 1701 USB

USB connecting module

FEATURES

- Flexibel combination of RS-485-bus-modules
- Capable modules for the evaluation of measuring 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
- Software: The Millimar Cockpit evaluation and configuration software (optional accessory) is required for connection to Windows PC.



Application:

Smart and flexible combination of measuring modules and software for solving customer-specific measuring tasks.

TECHNICAL DATA

Order no.		5331130
Type		N 1701 USB
Configuration		Millimar Cockpit Software
Energy supply:		via USB interface
Current supply	mA	430
Data interface		USB, RS-485

Order no.	Width	Height	Depth
	mm	mm	mm
5331130	54	54	66

ACCESSORIES

Order no.	Type	Description
4102058	16 ESf	Foot switch to trigger data transmission with jack plug 3.5mm
5331139	N 1700 RS485	Extension cable, length 1 m

Millimar N 1701 PS

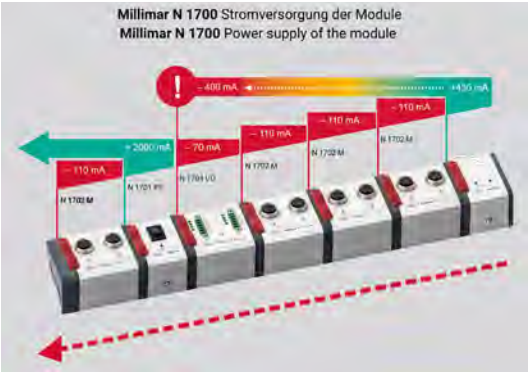
Power supply module

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
Type		N 1701 PS
Configuration		Millimar Cockpit Software
Energy supply:		230 V/115 V; 50/60 Hz
Current supply	mA	2000
Data interface		RS- 485

Order no.	Width	Height	Depth
	mm	mm	mm
5331133	57	55	66

ACCESSORIES

Order no.	Type	Description
5331139	N 1700 RS485	Extension cable, length 1 m

Millimar A 1701 M

Amplifier with analog output

Signal converter **for automation**

The new Millimar A 1701 M module ensures that signals from length measurements are processed and relayed reliably and error-free. Combinable with all of Mahr's inductive probes or compatible products by other manufacturers. The resulting measuring system is suitable for inspection tasks in automated processes and can be easily integrated into an existing production infrastructure, for example in plant engineering.

Equipped with an input for inductive probes, the Millimar A 1701 M picks up the incoming carrier frequency signal and converts it to a standardized analog signal, for example ± 10 volts or 0 to 10 volts. An LED display provides information on the operating status at all times. The compact and robust housing facilitates use in production environments and can be mounted on a rail if required.



Advantages

- Process measuring data reliably and error-free
- Easily adjustable measuring ranges and filters
- Different standard signal outputs in one device
- Compact and robust design
- Can be easily mounted on a rail



Millimar A 1701 M

Amplifier with analog output



FEATURES

- Output voltage: $\pm 10\text{ V}$ or 0 V – 10 V at end of measuring range, with toggle.
- Supply voltage $12 \dots 30\text{ V, DC}$ voltage
- Connection: One input for Mahr-compatible inductive probes
- 6 measuring range toggle
- Zero point and amplification can be adjusted using potentiometer
- 3 setting range options for the zero point
- Package contains: instruction manual, 4-pin M9 male cable connector



Application:
The measuring amplifier A 1701 M 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 frequency signal into output voltage

TECHNICAL DATA

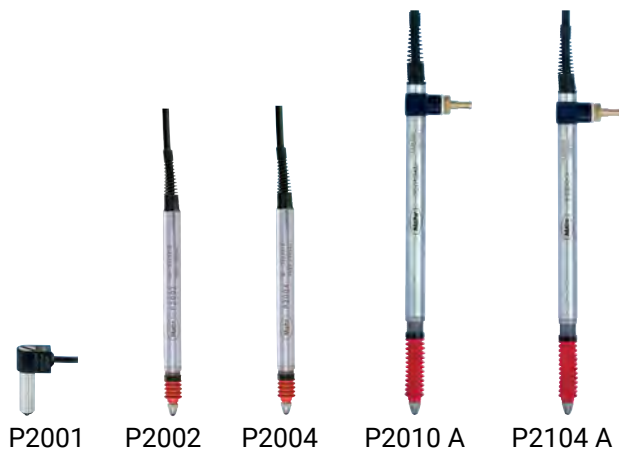
Order no.		5331135
Type		A 1701 M
Measuring range, inductive probe	μm	$\pm 50, \pm 100, \pm 200, \pm 500, \pm 1000, \pm 2000$
Error limit, analog output		$0.2\text{ }\mu\text{m}$ and 0.3% respectively (the larger value applies)
Display		No display, amplifier with analog output
Features		1
Energy supply:		$12 \dots 30\text{ V, DC}$
Current consumption	mA	150
Probe inputs		1
Compatibility		Mahr
Data interface		analog, $\pm 10\text{V}, 0 - 10\text{V}$
Analog output		Voltage output at end of range: • $\pm 10\text{ V}$ • $0 - 10\text{ V}$
Reference temperature	$^{\circ}\text{C}$	20
IP protection category		IP 42

Order no.	Width	Height	Depth
	mm	mm	mm
5331135	82	55	66

Millimar

Electrical length measuring instruments - inductive probe program

Millimar – P2000 series



- 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)

Millimar – P1300 series (Mahr half-bridge)



- Available in Mahr and Tesa compatibilities
- Well-proven and established Mahr half-bridge technology
- Easy to service: cable and probe can be separated via the plug-in connector
- Simple to change to pneumatic lifting
- Measuring spindle runs in rotary stroke bearings

Millimar – 1301 / 1303 / 1304 K / 1318 (Mahr-LVDT)



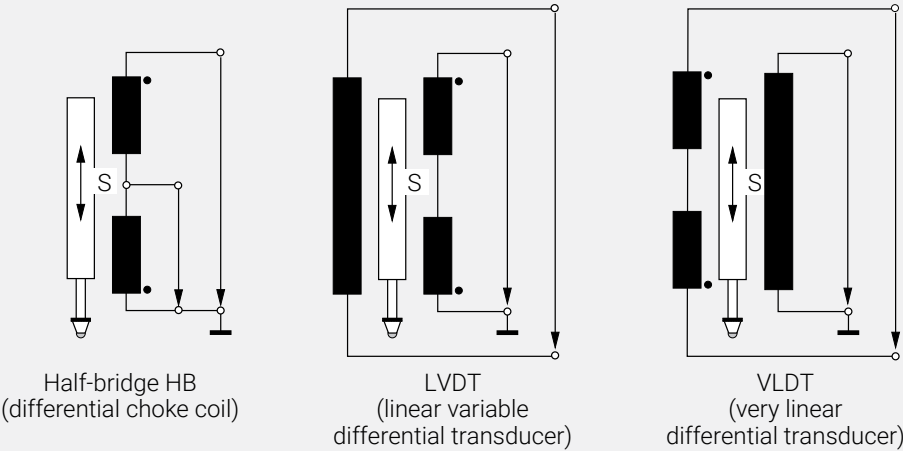
- Extremely robust in all operating conditions; measuring system is offset to guide and mounting shank
- Excellent clamping characteristics
- Measuring spindle runs in rotary stroke bearings (except 1318)
- Measuring spindle can be lifted with a cable release (1301/1303)

Millimar – 1340 Mahr high-precision probe



- Can be used with Millimar C 1202 + N 1702 M-HR compact length gage
- Probe protected against dirt and moisture, therefore use in production-related areas possible
- Unprecedented measuring accuracy and minimum linearity error < 0.01 %, i.e. 0.4 µm over the total measuring range

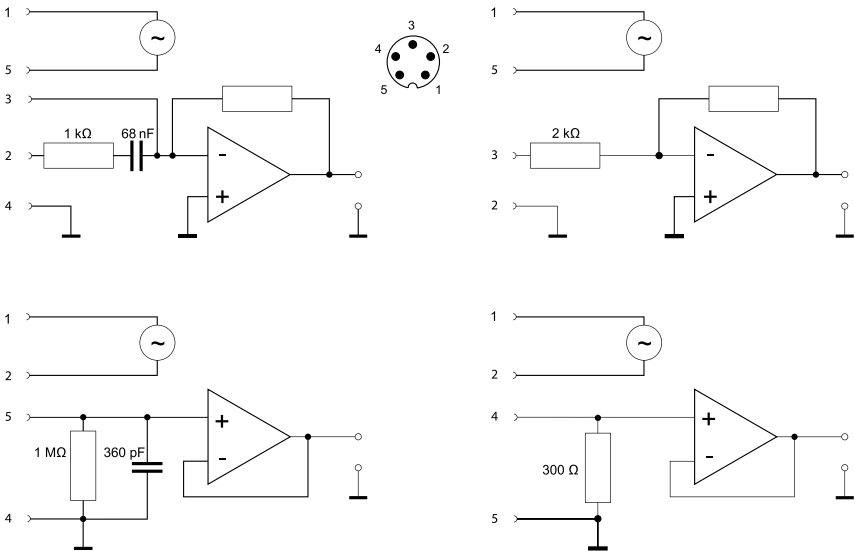
General technical data of inductive probes



Electrical specification of various compatibilities

		Typ	Mahr	Tesa	Marposs	Mahr-Federal
Carrier frequency	KHz		19,4	13	7,5	5
Sensitivity	mV / V / mm	P2001 P2002 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



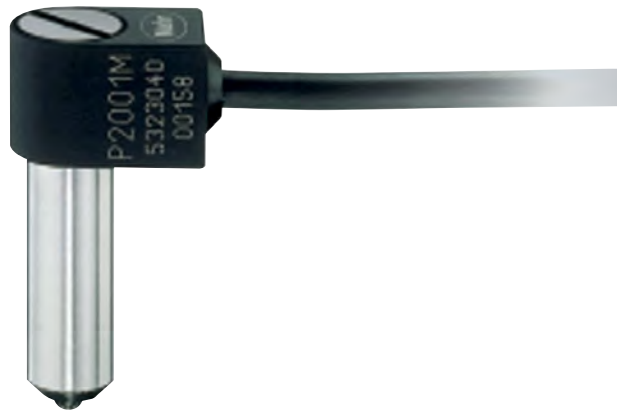
Millimar P2001 M

Inductive probe



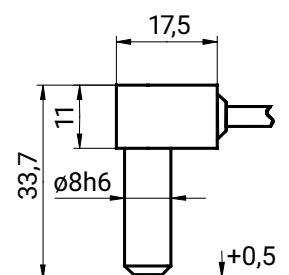
FEATURES

- 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 aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual



TECHNICAL DATA

Order no.		5323040
Type		P2001 M
Measuring range	mm	± 0,5
Measuring range	inch	± .020"
Linearity deviation within +/- 0,1 mm	µm	0,6
Linearity deviation within +/- 0,5 mm	µm	1,5
Linearity deviation within +/- .0039"	inch	24 µ"
Linearity deviation within +/- .020"	inch	60 µ"
Repeatability f_w	µm	0,15
Measuring value hysteresis f_u	µm	0,2
Sensitivity deviation	%	0,3
Measuring force	N	0,75 N +/- 0,15 N
Increase in measuring force	N/mm	0,1 N/mm
Compatibility		Mahr VLDT
Cable length	m	2,5
Reference temperature	°C	20
Temperature coefficient	µm/°C	0,15
IP protection category		IP 40



ACCESSORIES

Order no.	Type	Description
5323130	C2025 M	Extension cable 2.5 m (Mahr VLDT)
5323140	C2050 M	Extension cable 5 m (Mahr VLDT)
5323150	C2075 M	Extension cable 7.5 m (Mahr VLDT)
5323160	C2100 M	Extension cable 10 m (Mahr VLDT)

FEATURES

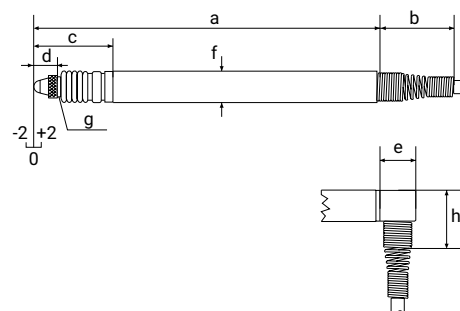
- Variant without and with pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.	5323210	5323211
Type	P2002 M	P2002 T
Measuring range	mm	± 1
Distance to upper stop	mm...mm	1.2 ... 2.4
Distance to lower stop	mm...mm	- 1.2 ... 0
Linearity deviation within +/- 0,5 mm	µm	0,2
Linearity deviation within +/- 1,0 mm	µm	0,9
Repeatability f_w	µm	0,1
Measuring value hysteresis f_u	µm	0,3
Sensitivity deviation	%	0,3
Measuring force	N	0.75 N +/- 0.15 N
Increase in measuring force	N/mm	0.2 N/mm
Compatibility	Mahr VLDT	Tesa
Lifter / retraction	Standard model	
Cable length	m	2,5
Reference temperature	°C	20
Temperature coefficient	µm/°C	0,15
IP protection category	IP 64	

Order no.	a	b	c	d	e	f	h	Connection thread
5323210	mm	mm	mm	mm	mm	mm	mm	M 2,5
5323211	88,7	28	21,3	6	9,2	8	14	M 2,5



FEATURES

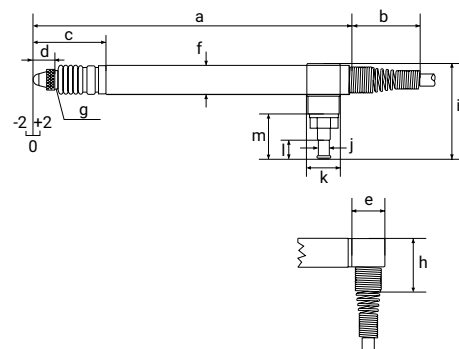
- Variant without and with pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.	5323220	5323221
Type	P2002 MA	P2002 TA
Measuring range	mm	± 1
Distance to upper stop	mm...mm	1.2 ... 2.4
Distance to lower stop	mm...mm	-1.2 ... 0
Linearity deviation within +/- 0,5 mm	µm	0,2
Linearity deviation within +/- 1,0 mm	µm	0,9
Repeatability f_w	µm	0,1
Measuring value hysteresis f_u	µm	0,3
Sensitivity deviation	%	0,3
Measuring force	N	0.75 N +/- 0.15 N
Increase in measuring force	N/mm	0.2 N/mm
Compatibility	Mahr VLDT	Tesa
Lifter / retraction	Vacuum lifter	
Cable length	m	2,5
Reference temperature	°C	20
Temperature coefficient	µm/°C	0,15
IP protection category	IP 64	

Order no.	a	b	c	d	e	f	h	i	j	k	l	m	Connection thread
5323220	88,7	28	21,3	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5323221	88,7	28	21,3	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5





FEATURES

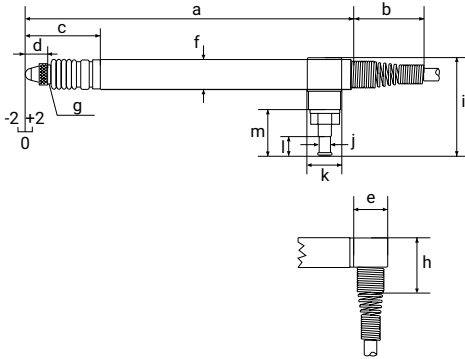
- Variant without and with pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5323230	5323231
Type		P2002 MB	P2002 TB
Measuring range	mm	± 1	
Distance to upper stop	mm...mm	1.2 ... 2.4	
Distance to lower stop	mm...mm	- 1.2 ... 0	
Linearity deviation within +/- 0,5 mm	µm	0,2	
Linearity deviation within +/- 1,0 mm	µm	0,9	
Repeatability f _w	µm	0,1	
Measuring value hysteresis f _u	µm	0,3	
Sensitivity deviation	%	0,3	
Measuring force	N	Dependent on compressed air	
Compatibility		Mahr VLDT	Tesa
Lifter / retraction		Compressed air retraction (max. 1 bar)	
Cable length	m	2,5	
Reference temperature	°C	20	
Temperature coefficient	µm/°C	0,15	
IP protection category		IP 64	

Order no.	a	b	c	d	e	f	h	i	j	k	l	m	Connection thread
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
5323230	88,7	28	21,3	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5323231	88,7	28	21,3	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5



FEATURES

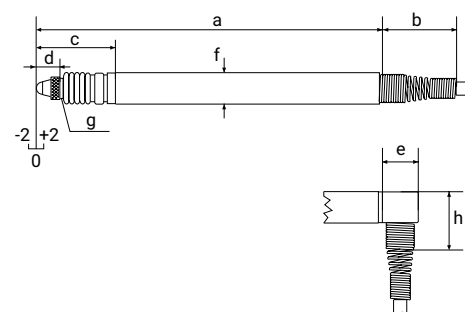
- Models with or without pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.	5323010	5323011	5323013
Type	P2004 M	P2004 T	P2004 U
Measuring range	mm	± 2	
Measuring range	inch	$\pm .079"$	
Distance to upper stop	mm...mm	+2,2 ... 4,4	
Distance to upper stop	inch...inch	+ .09173"	
Distance to lower stop	mm...mm	-2,2 ... 0	
Distance to lower stop	inch...inch	- .09 ... 0"	
Linearity deviation within $\pm 0,5$ mm	μm	0,4	
Linearity deviation within $\pm 1,0$ mm	μm	1,5	
Linearity deviation within $\pm 2,0$ mm	μm	3	
Linearity deviation within $\pm .020"$	inch	16 $\mu"$	
Linearity deviation within $\pm .039"$	inch	60 $\mu"$	
Linearity deviation within $\pm .079"$	inch	120 $\mu"$	
Repeatability f_w	μm	0,1	
Measuring value hysteresis f_u	μm	0,5	
Sensitivity deviation	%	0,3	
Measuring force	N	0,75 N $\pm$ 0,15 N	
Increase in measuring force	N/mm	0,2 N/mm	
Compatibility		Mahr VLDT	Tesa Marposs
Lifter / retraction		Standard model	
Cable length	m	2,5	
Reference temperature	$^{\circ}\text{C}$	20	
Temperature coefficient	$\mu\text{m}/^{\circ}\text{C}$	0,15	
IP protection category		IP 64	

Order no.	a	b	c	d	e	f	f	h	Connection thread
	mm	mm	mm	mm	mm	inch	mm	mm	
5323010	88,7	28	21,3	6	9,2	0,315	8	14	M 2,5
5323011	88,7	28	21,3	6	9,2	0,315	8	14	M 2,5
5323013	88,7	28	21,3	6	9,2	0,315	8	14	M 2,5



FEATURES

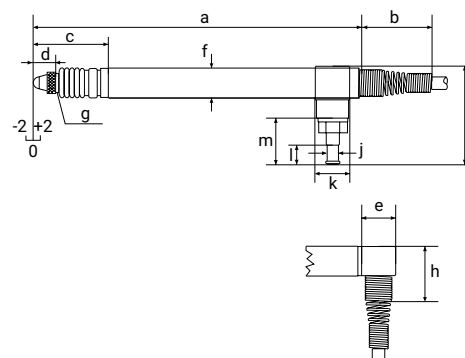
- Models with or without pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5323020	5323021	5323023
Type		P2004 MA	P2004 TA	P2004 UA
Measuring range	mm	± 2		
Measuring range	inch	± .079"		
Distance to upper stop	mm...mm	+2,2 ... 4,4		
Distance to upper stop	inch...inch	+ .09173"		
Distance to lower stop	mm...mm	-2,2 ... 0		
Distance to lower stop	inch...inch	- .09 ... 0"		
Linearity deviation within +/- 0,5 mm	µm	0,4		
Linearity deviation within +/- 1,0 mm	µm	1,5		
Linearity deviation within +/- 2,0 mm	µm	3		
Linearity deviation within +/- .020"	inch	16 µ"		
Linearity deviation within +/- .039"	inch	60 µ"		
Linearity deviation within +/- .079"	inch	120 µ"		
Repeatability f_w	µm	0,1		
Measuring value hysteresis f_u	µm	0,5		
Sensitivity deviation	%	0,3		
Measuring force	N	0,75 N +/- 0,15 N		
Increase in measuring force	N/mm	0,2 N/mm		
Compatibility		Mahr VLDT	Tesa	Marposs
Lifter / retraction		Vacuum lifter		
Cable length	m	2,5		
Reference temperature	°C	20		
Temperature coefficient	µm/°C	0,15		
IP protection category		IP 64		

Order no.	a	b	c	d	e	f	f	h	i	j	k	l	m	Connection thread
	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm	mm	mm	mm	
5323020	88,7	28	21,3	6	9,2	0,315	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5323021	88,7	28	21,3	6	9,2	0,315	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5323023	88,7	28	21,3	6	9,2	0,315	8	14	26,5	3,6	9	8,3	12,5	M 2,5



Millimar P2004 MB / P2004 TB / P2004 UB

Inductive probe



FEATURES

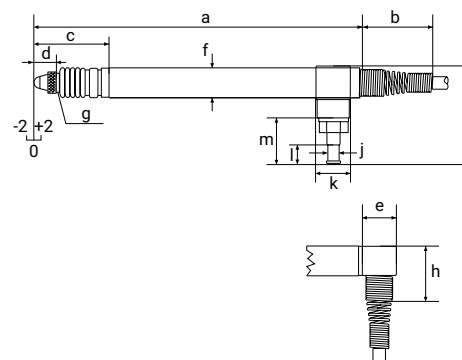
- Models with or without pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5323030	5323031	5323033
Type		P2004 MB	P2004 TB	P2004 UB
Measuring range	mm	± 2		
Measuring range	inch	± .079"		
Distance to upper stop	mm...mm	+2,2 ... 4,4		
Distance to upper stop	inch...inch	+ .09173"		
Distance to lower stop	mm...mm	-2,2 ... 0		
Distance to lower stop	inch...inch	- .09 ... 0"		
Linearity deviation within +/- 0,5 mm	µm	0,4		
Linearity deviation within +/- 1,0 mm	µm	1,5		
Linearity deviation within +/- 2,0 mm	µm	3		
Linearity deviation within +/- .020"	inch	16 µ"		
Linearity deviation within +/- .039"	inch	60 µ"		
Linearity deviation within +/- .079"	inch	120 µ"		
Repeatability f _w	µm	0,1		
Measuring value hysteresis f _v	µm	0,5		
Sensitivity deviation	%	0,3		
Measuring force	N	Depending upon air pressure		
Compatibility		Mahr VLDT	Tesa	Marposs
Lifter / retraction		Compressed air retraction (max. 1 bar)		
Cable length	m	2,5		
Reference temperature	°C	20		
Temperature coefficient	µm/°C	0,15		
IP protection category:		IP 64		

Order no.	a	b	c	d	e	f	f	h	i	j	k	l	m	Connection thread
	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm	mm	mm	mm	
5323030	88,7	28	21,3	6	9,2	0,315	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5323031	88,7	28	21,3	6	9,2	0,315	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5323033	88,7	28	21,3	6	9,2	0,315	8	14	26,5	3,6	9	8,3	12,5	M 2,5



FEATURES

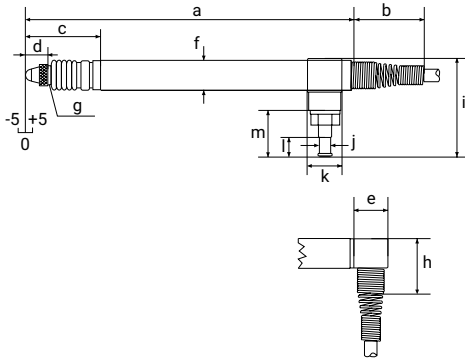
- Models with or without pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5324010
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"
Linearity deviation within +/- 2,0 mm	µm	4
Linearity deviation within +/- 5,0 mm	µm	20
Linearity deviation within +/- .079"	inch	160 µ"
Linearity deviation within +/- .197"	inch	780 µ"
Repeatability f _w	µm	0,2
Measuring value hysteresis f _u	µm	1
Sensitivity deviation	%	0,3
Measuring force	N	0.75 N +/- 0.15N
Increase in measuring force	N/mm	0,1 N/mm
Compatibility		Mahr
Lifter / retraction		Standard model
Cable length	m	2,5
Reference temperature	°C	20
Temperature coefficient	µm/°C	0,15
IP protection category		IP 64

Order no.	a	b	c	d	e	f	h	Connection thread
	mm	mm	mm	mm	mm	mm	mm	
5324010	125,7	28	34	6	9,2	8	14	M 2,5



FEATURES

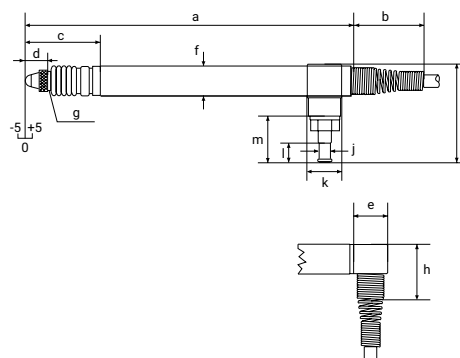
- Models with or without pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.	5324020	5324021	5324023
Type	P2010 MA	P2010 TA	P2010 UA
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"	
Linearity deviation within +/- 2,0 mm	µm	4	
Linearity deviation within +/- 5,0 mm	µm	20	
Linearity deviation within +/- .079"	inch	160 µ"	
Linearity deviation within +/- .197"	inch	780 µ"	
Repeatability f_w	µm	0,2	
Measuring value hysteresis f_u	µm	1	
Sensitivity deviation	%	0,3	
Measuring force	N	0,75 N +/- 0,15 N	
Increase in measuring force	N/mm	0,1 N/mm	
Compatibility		Mahr VLDT	Tesa Marposs
Lifter / retraction		Vacuum lifter	
Cable length	m	2,5	
Reference temperature	°C	20	
Temperature coefficient	µm/°C	0,15	
IP protection category		IP 64	

Order no.	a	b	c	d	e	f	h	i	j	k	l	m	Connection thread
5324020	125,7	28	34	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5324021	125,7	28	34	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5324023	125,7	28	34	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5



FEATURES

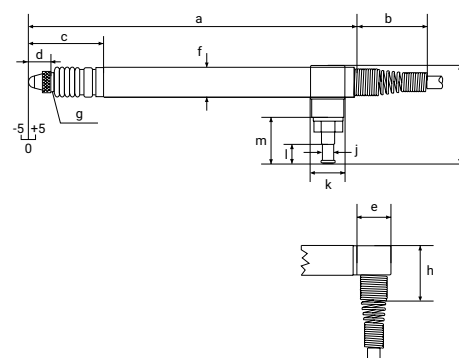
- Models with or without pneumatic lifter or load
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5324030	5324031	5324033
Type		P2010 MB	P2010 TB	P2010 UB
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"		
Linearity deviation within +/- 2,0 mm	µm	4		
Linearity deviation within +/- 5,0 mm	µm	20		
Linearity deviation within +/- .079"	inch	160 µ"		
Linearity deviation within +/- .197"	inch	780 µ"		
Repeatability f_w	µm	0,2		
Measuring value hysteresis f_u	µm	1		
Sensitivity deviation	%	0,3		
Measuring force	N	Depending upon air pressure		
Compatibility		Mahr VLDT	Tesa	Marposs
Lifter / retraction		Compressed air retraction (max. 1 bar)		
Cable length	m	2,5		
Reference temperature	°C	20		
Temperature coefficient	µm/°C	0,15		
IP protection category		IP 64		

Order no.	a	b	c	d	e	f	h	i	j	k	l	m	Connection thread
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
5324030	125,7	28	34	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5324031	125,7	28	34	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5324033	125,7	28	34	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5



FEATURES

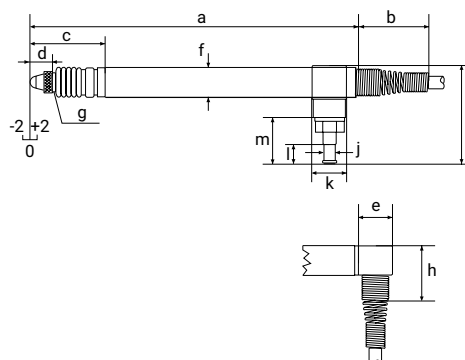
- Models with pneumatic lifter or vacuum retraction
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.	5324070	5324071	5324073
Type	P2104 MA	P2104 TA	P2104 UA
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+8,4 ... 10,4	
Distance to upper stop	inch...inch	.3341"	
Distance to lower stop	mm...mm	-2,2 ... 0	
Distance to lower stop	inch...inch	-.09 ... 0"	
Linearity deviation within +/- 0,5 mm	µm	0,5	
Linearity deviation within +/- 1,0 mm	µm	2	
Linearity deviation within +/- 2,0 mm	µm	4	
Linearity deviation within +/- .020"	inch	20 µ"	
Linearity deviation within +/- .039"	inch	80 µ"	
Linearity deviation within +/- .079"	inch	160 µ"	
Repeatability f_w	µm	0,2	
Measuring value hysteresis f_u	µm	1	
Sensitivity deviation	%	0,3	
Measuring force	N	0,75 N +/- 0,15 N	
Increase in measuring force	N/mm	0,1 N/mm	
Compatibility		Mahr VLDT	Tesa Marposs
Lifter / retraction		Vacuum lifter	
Cable length	m	2,5	
Reference temperature	°C	20	
Temperature coefficient	µm/°C	0,15	
IP protection category		IP 64	

Order no.	a	b	c	d	e	f	h	i	j	k	l	m	Connection thread
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
5324070	128,7	28	37	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5324071	128,7	28	37	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5324073	128,7	28	37	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5



Millimar P2104 MB / P2104 TB / P2104 UB

Inductive probe



FEATURES

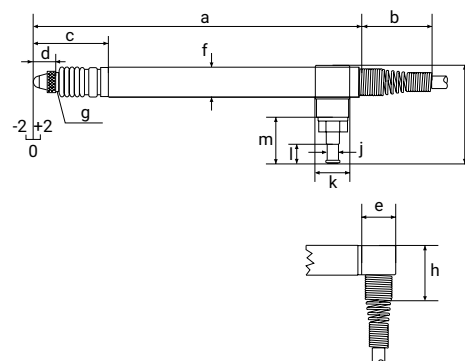
- Models with pneumatic lifter or vacuum retraction
- Measuring pin mounted in rotary stroke bearing
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, cap for radial cable output, spanner for preliminary stroke setting



TECHNICAL DATA

Order no.		5324080	5324081	5324083
Type		P2104 MB	P2104 TB	P2104 UB
Measuring range	mm	± 2		
Measuring range	inch	$\pm .079''$		
Distance to upper stop	mm...mm	+8,4 ... 10,4		
Distance to upper stop	inch...inch	.3341''		
Distance to lower stop	mm...mm	-2,2 ... 0		
Distance to lower stop	inch...inch	-.09 ... 0''		
Linearity deviation within $\pm 0,5$ mm	μm	0,5		
Linearity deviation within $\pm 1,0$ mm	μm	2		
Linearity deviation within $\pm 2,0$ mm	μm	4		
Linearity deviation within $\pm .020''$	inch	20 μm		
Linearity deviation within $\pm .039''$	inch	80 μm		
Linearity deviation within $\pm .079''$	inch	160 μm		
Repeatability f_w	μm	0,2		
Measuring value hysteresis f_u	μm	1		
Sensitivity deviation	%	0,3		
Measuring force	N	Depending upon air pressure		
Compatibility		Mahr VLDT	Tesa	Marposs
Lifter / retraction		Compressed air retraction (max. 1 bar)		
Cable length	m	2,5		
Reference temperature	$^{\circ}\text{C}$	20		
Temperature coefficient	$\mu\text{m}/^{\circ}\text{C}$	0,15		
IP protection category		IP 64		

Order no.	a	b	c	d	e	f	h	i	j	k	l	m	Connection thread
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
5324080	128,7	28	37	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5324081	128,7	28	37	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5
5324083	128,7	28	37	6	9,2	8	14	26,5	3,6	9	8,3	12,5	M 2,5



ACCESSORIES

Order no.	Type	Description	For measuring instrument
5313419	1340/1F	Pneumatic foot switch for max. 4 probes	P2002 TA, P2002 MA, P2004 TA, P2004 MA, P2004 UA, P2010 UA, P2010 MA, P2010 TA, P2104 UA, P2104 TA, P2104 MA
5313420	1340/1	Pneumatic hand lifter for 1 probe	P2002 TA, P2002 MA, P2004 TA, P2004 MA, P2004 UA, P2010 UA, P2010 MA, P2010 TA, P2104 UA, P2104 TA, P2104 MA
5323130	C2025 M	Extension cable 2.5 m (Mahr VLDT)	P2002 MA, P2002 M, P2004 M, P2002 MB, P2004 MA, P2004 MB, P2010 M, P2010 MA, P2104 MA, P2010 MB, P2104 MB
5323131	C2025 T	Extension cable 2.5 m (Tesa)	P2002 TA, P2002 T, P2002 TB, P2004 T, P2004 TA, P2004 TB, P2010 TA, P2010 TB, P2104 TA, P2104 TB
5323140	C2050 M	Extension cable 5 m (Mahr VLDT)	P2002 MA, P2002 M, P2004 M, P2002 MB, P2004 MA, P2004 MB, P2010 M, P2010 MA, P2104 MA, P2010 MB, P2104 MB
5323141	C2050 T	Extension cable 5 m (Tesa)	P2002 TA, P2002 T, P2002 TB, P2004 T, P2004 TA, P2004 TB, P2010 TA, P2010 TB, P2104 TA, P2104 TB
5323150	C2075 M	Extension cable 7.5 m (Mahr VLDT)	P2002 MA, P2002 M, P2004 M, P2002 MB, P2004 MA, P2004 MB, P2010 M, P2010 MA, P2104 MA, P2010 MB, P2104 MB
5323151	C2075 T	Extension cable 7.5 m (Tesa)	P2002 TA, P2002 T, P2002 TB, P2004 T, P2004 TA, P2004 TB, P2010 TA, P2010 TB, P2104 TA, P2104 TB
5323160	C2100 M	Extension cable 10 m (Mahr VLDT)	P2002 MA, P2002 M, P2004 M, P2002 MB, P2004 MA, P2004 MB, P2010 M, P2010 MA, P2104 MA, P2010 MB, P2104 MB
5323161	C2100 T	Extension cable 10 m (Tesa)	P2002 TA, P2002 T, P2002 TB, P2004 T, P2004 TA, P2004 TB, P2010 TA, P2010 TB, P2104 TA, P2104 TB
7021546		Sealing bellows for probes with measuring spring	P2002 TA, P2002 MA, P2002 T, P2002 M, P2004 M, P2004 U, P2004 T, P2004 TA, P2004 MA, P2004 UA
7025505		Measuring spring 1.25 N	P2002 TA, P2002 MA, P2002 T, P2002 M, P2004 M, P2004 U, P2004 T, P2004 TA, P2004 MA, P2004 UA
7025579		Measuring spring 1.0 N	P2002 TA, P2002 MA, P2002 T, P2002 M, P2004 M, P2004 U, P2004 T, P2004 TA, P2004 MA, P2004 UA
7026827		Measuring spring 0.25 N	P2002 TA, P2002 MA, P2002 T, P2002 M, P2004 M, P2004 U, P2004 T, P2004 TA, P2004 MA, P2004 UA
7026828		Measuring spring 0.5 N	P2002 TA, P2002 MA, P2002 T, P2002 M, P2004 M, P2004 U, P2004 T, P2004 TA, P2004 MA, P2004 UA
7026849		Measuring spring 0.75 N	P2002 TA, P2002 MA, P2002 T, P2002 M, P2004 M, P2004 U, P2004 T, P2004 TA, P2004 MA, P2004 UA
7027758		Sealing bellows long for probes with measuring spring	P2010 UA, P2010 M, P2010 MA, P2010 TA, P2104 UA, P2104 TA, P2104 MA
7028220		Sealing bellows for probes with air retraction	P2002 TB, P2002 MB, P2004 MB, P2004 UB, P2004 TB
7028221		Sealing bellows long for probes with air retraction	P2010 TB, P2010 UB, P2010 MB, P2104 UB, P2104 TB, P2104 MB

Millimar P1300 MA / P1300 MA without cable

Inductive probe



FEATURES

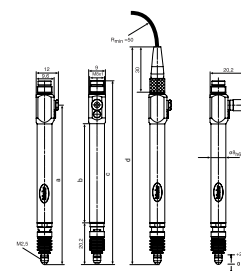
- Mahr compatibility
- Proven Mahr half-bridge technology
- Very easy to service: cables and probes can be separated via the plug-in connector
- Easy to convert to pneumatic lifting
- Measuring pin mounted in rotary stroke bearing
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, spanner for preliminary stroke setting, hose connector for compressed air



TECHNICAL DATA

Order no.		4400180	4400182
Type		P1300 MA	P1300 MA without cable
Measuring range	mm	± 2	
Measuring range	inch	$\pm .079"$	
Distance to upper stop	mm...mm	+2,2 ... 4,4	
Distance to upper stop	inch...inch	+ .09173"	
Distance to lower stop	mm...mm	-2,2 ... 0	
Distance to lower stop	inch...inch	- .09 ... 0"	
Linearity deviation within $\pm 0,5$ mm	μm	0,4	
Linearity deviation within $\pm 1,0$ mm	μm	1,5	
Linearity deviation within $\pm 2,0$ mm	μm	3	
Linearity deviation within $\pm .020"$	inch	16 $\mu"$	
Linearity deviation within $\pm .039"$	inch	60 $\mu"$	
Linearity deviation within $\pm .079"$	inch	120 $\mu"$	
Repeatability f_w	μm	0,1	
Measuring value hysteresis f_u	μm	0,5	
Sensitivity deviation	%	0,3	
Measuring force	N	0,75 N $\pm 0,15$ N	
Increase in measuring force	N/mm	0,3 N/mm	
Compatibility		Mahr half-bridge	
Lifter / retraction		Vacuum lifter (standard option)	
Cable length	m	2,5	
Temperature coefficient	$\mu\text{m}/^\circ\text{C}$	0,15	
IP protection category		IP 64	

Order no.	a	b	c	d	Connection thread
	mm	mm	mm	mm	
4400180	85,6	53,3	98,6	125	M 2,5
4400182	85,6	53,3	98,6	125	M 2,5



ACCESSORIES

Order no.	Description
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
4400270	Compressed air connection angled 90° for P1300
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



FEATURES

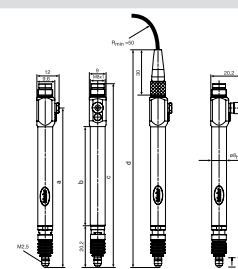
- Mahr compatibility
- Proven Mahr half-bridge technology
- with compressed-air push
- Very easy to service: cables and probes can be separated via the plug-in connector
- Measuring pin mounted in rotary stroke bearing
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, spanner for preliminary stroke setting, hose connector for compressed air



TECHNICAL DATA

Order no.		4400181	4400183
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	+ .09173"	
Distance to lower stop	mm...mm	-2,2 ... 0	
Distance to lower stop	inch...inch	- .09 ... 0"	
Linearity deviation within +/- 0,5 mm	µm	0,4	
Linearity deviation within +/- 1,0 mm	µm	1,5	
Linearity deviation within +/- 2,0 mm	µm	3	
Linearity deviation within +/- .020"	inch	16 µ"	
Linearity deviation within +/- .039"	inch	60 µ"	
Linearity deviation within +/- .079"	inch	120 µ"	
Repeatability f_w	µm	0,1	
Measuring value hysteresis f_u	µm	0,5	
Sensitivity deviation	%	0,3	
Measuring force	N	Depending upon air pressure	
Compatibility		Mahr half-bridge	
Lifter / retraction		Pneumatic jacking (max. 1 bar)	
Cable length	m	2,5	
Temperature coefficient	µm/°C	0,15	
IP protection category		IP 64	

Order no.	a	b	c	d	Connection thread
	mm	mm	mm	mm	
4400181	85,6	53,3	98,6	125	M 2,5
4400183	85,6	53,3	98,6	125	M 2,5



ACCESSORIES

Order no.	Description
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
4400270	Compressed air connection angled 90° for P1300
7028220	Sealing bellows for probes with air retraction

Millimar P1300 TA / P1300 TA without cable

Inductive probe



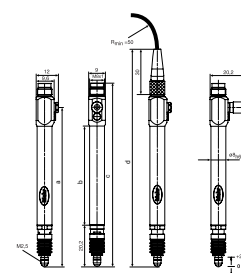
FEATURES

- 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 rotary stroke bearing
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, spanner for preliminary stroke setting, hose connector for compressed air



Order no.		4400190	4400192
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	+ .09173"	
Distance to lower stop	mm...mm	-2,2 ... 0	
Distance to lower stop	inch...inch	- .09 ... 0"	
Linearity deviation within +/- 0,5 mm	µm	1	
Linearity deviation within +/- 1,0 mm	µm	3	
Linearity deviation within +/- .020"	inch	40 µ"	
Linearity deviation within +/- .039"	inch	120 µ"	
Repeatability f _w	µm	0,1	
Measuring value hysteresis f _u	µm	0,5	
Sensitivity deviation	%	0,3	
Measuring force	N	0,75 N +/- 0,15 N	
Increase in measuring force	N/mm	0,3 N/mm	
Compatibility		Tesa	
Lifter / retraction		Vacuum lifter (standard option)	
Cable length	m	2,5	
Temperature coefficient	µm/°C	0,15	
IP protection category		IP 64	

Order no.	a	b	c	d	Connection thread
	mm	mm	mm	mm	
4400190	94,2	61,9	107,2	133,6	M 2,5
4400192	94,2	61,9	107,2	133,6	M 2,5



TECHNICAL DATA

ACCESSORIES

Order no.	Description
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
4400270	Compressed air connection angled 90° for P1300
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



FEATURES

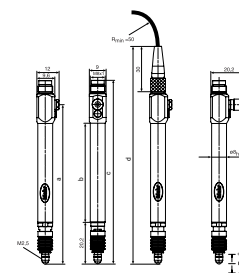
- Tesa compatibility
- Tesa half-bridge technology
- with compressed-air push
- Very easy to service: cables and probes can be separated via the plug-in connector
- Measuring pin mounted in rotary stroke bearing
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual, spanner for preliminary stroke setting, hose connector for compressed air



TECHNICAL DATA

Order no.		4400191	4400193
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	+ .09173"	
Distance to lower stop	mm...mm	-2,2 ... 0	
Distance to lower stop	inch...inch	- .09 ... 0"	
Linearity deviation within +/- 0,5 mm	µm	1	
Linearity deviation within +/- 1,0 mm	µm	3	
Linearity deviation within +/- .020"	inch	40 µ"	
Linearity deviation within +/- .039"	inch	120 µ"	
Repeatability f_w	µm	0,1	
Measuring value hysteresis f_u	µm	0,5	
Sensitivity deviation	%	0,3	
Measuring force	N	Depending upon air pressure	
Compatibility		Tesa	
Lifter / retraction		Compressed air retraction (max. 1 bar)	
Cable length	m	2,5	
Temperature coefficient	µm/°C	0,15	
IP protection category		IP 64	

Order no.	a	b	c	d	Connection thread
	mm	mm	mm	mm	
4400191	94,2	61,9	107,2	133,6	M 2,5
4400193	94,2	61,9	107,2	133,6	M 2,5



ACCESSORIES

Order no.	Description
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
4400270	Compressed air connection angled 90° for P1300
7028220	Sealing bellows for probes with air retraction

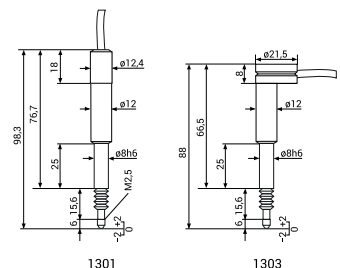
FEATURES

- Highly robust as the measuring system is recessed from the guide and mounting shaft
- Outstanding clamping properties
- Measuring pin mounted in rotary stroke bearing
- Measuring pin can be lifted using wire lifter
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: spanner for preliminary stroke setting, test certificate, instruction manual



TECHNICAL DATA

Order no.		5313010	5313030
Type		1301	1303
Measuring range	mm	± 1	
Measuring range	inch	$\pm .039"$	
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"	
Linearity deviation within $\pm 0,5$ mm	μm	0,5	
Linearity deviation within $\pm 1,0$ mm	μm	2	
Linearity deviation within $\pm .020"$	inch	20 μm	
Linearity deviation within $\pm .039"$	inch	80 μm	
Repeatability f_w	μm	0,1	
Measuring value hysteresis f_u	μm	0,2	
Sensitivity deviation	%	0,3	
Measuring force	N	0,75 N $\pm$ 0,15 N	
Increase in measuring force	N/mm	0,4 N/mm	
Compatibility		Mahr LVDT	
Lifter / retraction		Cable release	
Cable length	m	2,5	
Temperature coefficient	$\mu\text{m}/^\circ\text{C}$	0,09	
IP protection category		IP 64	



ACCESSORIES

Order no.	Type	Description
5312881	1288/1	Extension cable 1 m (Mahr LVDT)
5312882	1288/2,5	Extension cable 2.5 m (Mahr LVDT)
5312885	1288/5	Extension cable 5 m (Mahr LVDT)
5312887	1288/7,5	Extension cable 7.5 m (Mahr LVDT)
5312889	1288/10	Extension cable 10 m (Mahr LVDT)
5313990	1399	Cable release with clamp for 1301 / 1303

Inductive probe



Technical drawing of a shaft-hub assembly. The shaft has a diameter of $\varnothing 8h6$ and a length of 19. The hub has an inner diameter of $\varnothing 8h6$ and a length of 12. The total length of the assembly is 44. The shaft is shown with a tolerance of $\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ mm. The hub has a tolerance of $\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ mm. The shaft is shown with a tolerance of $\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ mm. The hub has a tolerance of $\begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ mm.

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Millimar 1318

Inductive probe

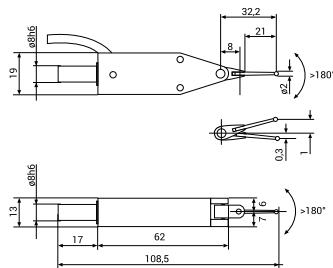
FEATURES

- Dial test indicator inductive probe
- Flexible probe adjustment to contact surface
- Highly robust as the measuring system is recessed from the guide and mounting shaft
- Outstanding clamping properties
- Chemical resistance data: resistant to oil, gasoline, water and aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual



TECHNICAL DATA

Order no.		5313180
Type		1318
Measuring range	mm	-0,3 ... 1
Measuring range	inch	-.012 ... +.039"
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"
Linearity deviation within +/- 0,3 mm	µm	0,9
Linearity deviation within +/- .012"	inch	36 µ"
Repeatability f _w	µm	0,03
Measuring value hysteresis f _u	µm	0,5
Sensitivity deviation	%	0,5
Measuring force	N	0,25 N +/- 0,05 N
Increase in measuring force	N/mm	0,04 N/mm
Compatibility		Mahr LVDT
Cable length	m	1,5
IP protection category		IP 50



ACCESSORIES

Order no.	Type	Description
5312881	1288/1	Extension cable 1 m (Mahr LVDT)
5312882	1288/2,5	Extension cable 2.5 m (Mahr LVDT)
5312885	1288/5	Extension cable 5 m (Mahr LVDT)
5312887	1288/7,5	Extension cable 7.5 m (Mahr LVDT)
5312889	1288/10	Extension cable 10 m (Mahr LVDT)
7003901		Stylus ø 0,5 mm, l = 21 mm
7003902		Stylus ø 1,0 mm, l = 21 mm
3005223		Stylus ø 2,0 mm, l = 21 mm
7003903		Stylus ø 3,0 mm, l = 21 mm
8004231		Stylus ø 2,0 mm, l = 21 mm

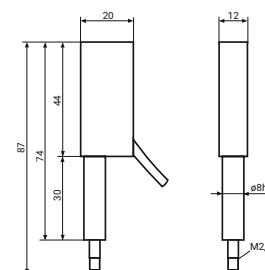
FEATURES

- Only for use in conjunction with the Millimar C 1240 M compact length measuring instrument,
- Millimar C 1202 + N 1702 M-HR or Millimar C 1202 + N 1702 M
- 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 aliphatic compounds. Moderately resistant to acids, bases, solvents and ozone
- Package contains: test certificate, instruction manual



TECHNICAL DATA

Order no.		5313400
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"
Linearity deviation within +/– 1,0 mm	µm	0,15
Linearity deviation within +/– 2,0 mm	µm	0,4
Linearity deviation within +/– .039"	inch	6 µ"
Linearity deviation within +/– .079"	inch	16 µ"
Repeatability f _w	µm	0,08
Measuring value hysteresis f _u	µm	0,08
Sensitivity deviation	%	0,3
Measuring force	N	0,75 N
Increase in measuring force	N/mm	0,08 N/mm
Compatibility		Mahr 1340
Lifter / retraction		Vacuum lifter
Cable length	m	1,5
Reference temperature	°C	20
Temperature coefficient	µm/°C	0,6
IP protection category		IP 64



ACCESSORIES

Order no.	Type	Description
5313420	1340/1	Pneumatic hand lifter for 1 probe
5313419	1340/1F	Pneumatic foot switch for max. 4 probes

Millimar EHE– 2048

Inductive probe

FEATURES

- For ease of positioning the measuring tip mounted to the coupling can be tilted by 280°.
- When positioning the measuring tip within a range of up to 20° the cosine error in the measuring signal is corrected automatically.
- Can be used with Millimar C 1202 + N 1702 F (Federal)

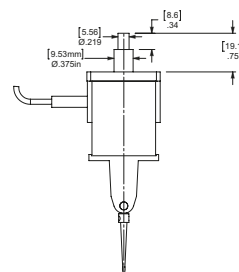


Application:

For use on test stands, surface plate work, or where light pressure is needed

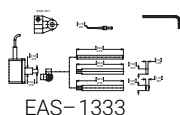
TECHNICAL DATA

Order no.		2120417
Type		EHE– 2048
Measuring range	mm	± 0,25
Measuring range	inch	± .010"
Repeatability f_w	µm	0,1
Repeatability f_w	inch	4 µ"
Measuring force	N	0,04 N (.14 oz.) in either direction
Increase in measuring force	N/mm	0,001 N / 25µm
Compatibility		Federal
Cable length	m	1,2

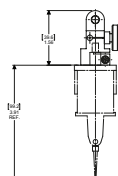


ACCESSORIES

Order no.	Type	Description
2216178	EPT– 1004	Stylus ø 1.6 mm/.062", l = 27,6 mm/1.085", 1:1 ratio
2216180	EPT– 1008	Stylus ø 1.6 mm/.062" involute, , l = 27,6 mm/1.085", 1:1 ratio up to 20°, involute tip
2216179	EPT– 1007	Stylus ø 0.787 mm/.031", l = 27,6 mm/1.085", 1:1 ratio
2216184	EPT– 1013	Stylus ø 0.787 mm/.031", l = 27,6 mm/1.085", 1:1 ratio
2216217	EPT– 1059-W1	Stylus ø 1.6 mm/.062", l = 27,6 mm/1.085", 1:1 ratio
2185448	EPT– 1059-W4	Stylus ø 1.6 mm/.062", l = 122,8 mm/4.835", 4:1 ratio
2216218	EPT– 1059-W2	Stylus ø 1.6 mm/.062", l = 59,3 mm/2.335", 2:1 ratio
2185449	EPT– 1059-W5	Stylus ø 1.6 mm/.062", l = 154,6 mm/6.085", 5:1 ratio
2216219	EPT– 1059-W3	Stylus ø 1.6 mm/.062", l = 91,1 mm/3.585", 3:1 ratio
2208685	EAM– 1071	Adaptor to mount EHE– 2048 on model 2400 stand
2208910	EAS– 1333	Accessories kit for EHE– 2048. Includes EAM– 1071, CP– 116, EPT– 1013, two rectangular holding bars and a holding rod
2210400	EAT– 1026	Fine adjust attachememt for EHE– 2048
2206061	CP– 116	Clamp for mounting EHE– 2048 on model 2300 stand



EAS– 1333



EAT– 1026

Millimar EHE– 2050

Inductive probe

FEATURES

- For ease of positioning the measuring tip mounted to the coupling can be tilted by 280°.
- When positioning the measuring tip within a range of up to 20° the cosine error in the measuring signal is corrected automatically.
- Can be used with Millimar C 1202 + N 1702 F (Federal)

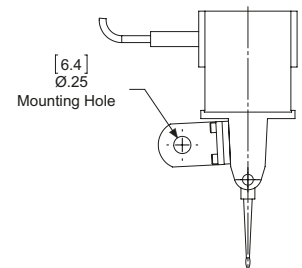


Application:

For use on test stands, surface plate work, or where light pressure is needed

TECHNICAL DATA

Order no.		2120419
Type		EHE– 2050
Measuring range	mm	± 0,25
Measuring range	inch	± .010"
Repeatability f_w	µm	0,1
Repeatability f_w	inch	4 µ"
Measuring force	N	0,04 N (.14 oz.) in either direction
Increase in measuring force	N/mm	0,001 N / 25µm
Compatibility		Federal
Cable length	m	1,2



ACCESSORIES

Order no.	Type	Description
2216178	EPT– 1004	Stylus ø 1.6 mm/.062", l = 27,6 mm/1.085", 1:1 ratio
2216180	EPT– 1008	Stylus ø 1.6 mm/.062" involute, , l = 27,6 mm/1.085", 1:1 ratio up to 20°, involute tip
2216179	EPT– 1007	Stylus ø 0.787 mm/.031", l = 27,6 mm/1.085", 1:1 ratio
2216184	EPT– 1013	Stylus ø 0.787 mm/.031", l = 27,6 mm/1.085", 1:1 ratio
2216217	EPT– 1059-W1	Stylus ø 1.6 mm/.062", l = 27,6 mm/1.085", 1:1 ratio
2185448	EPT– 1059-W4	Stylus ø 1.6 mm/.062", l = 122,8 mm/4.835", 4:1 ratio
2216218	EPT– 1059-W2	Stylus ø 1.6 mm/.062", l = 59,3 mm/2.335", 2:1 ratio
2185449	EPT– 1059-W5	Stylus ø 1.6 mm/.062", l = 154,6 mm/6.085", 5:1 ratio
2216219	EPT– 1059-W3	Stylus ø 1.6 mm/.062", l = 91,1 mm/3.585", 3:1 ratio
2208685	EAM– 1071	Adaptor to mount EHE– 2048 on model 2400 stand

Millimar EHE– 2052

Inductive probe

FEATURES

- For ease of positioning the measuring tip mounted to the coupling can be tilted by 280°.
- When positioning the measuring tip within a range of up to 20° the cosine error in the measuring signal is corrected automatically.
- Can be used with Millimar C 1202 + N 1702 F (Federal)

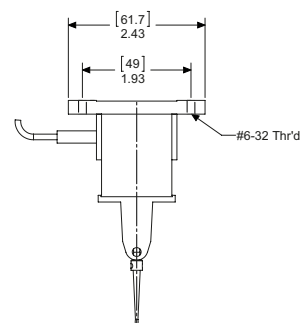


Application:

For use on test stands, surface plate work, or where light pressure is needed

TECHNICAL DATA

Order no.		2120420
Type		EHE– 2052
Measuring range	mm	± 0,25
Measuring range	inch	± .010"
Repeatability f_w	μm	0,1
Repeatability f_w	inch	4 μ"
Measuring force	N	0,04 N (.14 oz.) in either direction
Increase in measuring force	N/mm	0,001 N / 25μm
Compatibility		Federal
Cable length	m	1,2



ACCESSORIES

Order no.	Type	Description
2216178	EPT– 1004	Stylus ø 1.6 mm/.062", l = 27,6 mm/1.085", 1:1 ratio
2216180	EPT– 1008	Stylus ø 1.6 mm/.062" involute, , l = 27,6 mm/1.085", 1:1 ratio up to 20°, involute tip
2216179	EPT– 1007	Stylus ø 0.787 mm/.031", l = 27,6 mm/1.085", 1:1 ratio
2216184	EPT– 1013	Stylus ø 0.787 mm/.031", l = 27,6 mm/1.085", 1:1 ratio
2216217	EPT– 1059-W1	Stylus ø 1.6 mm/.062", l = 27,6 mm/1.085", 1:1 ratio
2185448	EPT– 1059-W4	Stylus ø 1.6 mm/.062", l = 122,8 mm/4.835", 4:1 ratio
2216218	EPT– 1059-W2	Stylus ø 1.6 mm/.062", l = 59,3 mm/2.335", 2:1 ratio
2185449	EPT– 1059-W5	Stylus ø 1.6 mm/.062", l = 154,6 mm/6.085", 5:1 ratio
2216219	EPT– 1059-W3	Stylus ø 1.6 mm/.062", l = 91,1 mm/3.585", 3:1 ratio
2208685	EAM– 1071	Adaptor to mount EHE– 2048 on model 2400 stand
2215585	EPL– 1140	Back plate mounting bracket for EHE– 2052

Millimar EHE– 2056

Inductive probe

FEATURES

- For ease of positioning the measuring tip mounted to the coupling can be tilted by 280°.
- When positioning the measuring tip within a range of up to 20° the cosine error in the measuring signal is corrected automatically.
- Can be used with Millimar C 1202 + N 1702 F (Federal)

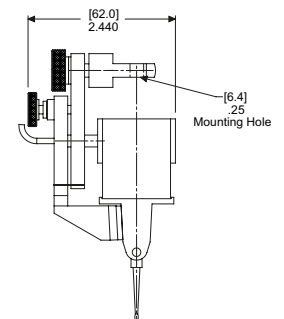


Application:

For use on test stands, surface plate work, or where light pressure is needed

TECHNICAL DATA

Order no.		2120422
Type		EHE– 2056
Measuring range	mm	± 0,25
Measuring range	inch	± .010"
Repeatability f_w	μm	0,1
Repeatability f_w	inch	4 μ"
Measuring force	N	0,04 N (.14 oz.) in either direction
Increase in measuring force	N/mm	0,001 N / 25μm
Compatibility		Federal
Cable length	m	1,2



ACCESSORIES

Order no.	Type	Description
2216178	EPT– 1004	Stylus ø 1.6 mm/.062", l = 27,6 mm/1.085", 1:1 ratio
2216180	EPT– 1008	Stylus ø 1.6 mm/.062" involute, l = 27,6 mm/1.085", 1:1 ratio up to 20°, involute tip
2216179	EPT– 1007	Stylus ø 0.787 mm/.031", l = 27,6 mm/1.085", 1:1 ratio
2216184	EPT– 1013	Stylus ø 0.787 mm/.031", l = 27,6 mm/1.085", 1:1 ratio
2216217	EPT– 1059-W1	Stylus ø 1.6 mm/.062", l = 27,6 mm/1.085", 1:1 ratio
2185448	EPT– 1059-W4	Stylus ø 1.6 mm/.062", l = 122,8 mm/4.835", 4:1 ratio
2216218	EPT– 1059-W2	Stylus ø 1.6 mm/.062", l = 59,3 mm/2.335", 2:1 ratio
2185449	EPT– 1059-W5	Stylus ø 1.6 mm/.062", l = 154,6 mm/6.085", 5:1 ratio
2216219	EPT– 1059-W3	Stylus ø 1.6 mm/.062", l = 91,1 mm/3.585", 3:1 ratio
2210399	EAT– 1010	Adjustable nose mounting bracket for EHE– 2056

Millimar EHE– 2049

Inductive probe

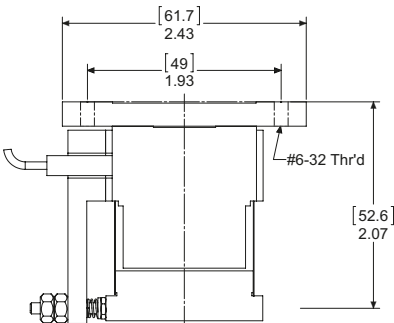
FEATURES

- Frictionless straight movement
- Adjustable pre-travel
- Measuring force adjustable via external spring
- Cable length 2.4m
- Can be used with Millimar C 1202 + N 1702 F (Federal)



TECHNICAL DATA

Order no.		2120418
Type		EHE – 2049
Mesuring span of indicator	mm	± 0.25
Measuring range	mm	± 0,25
Measuring range	inch	± .010"
Repeatability f _w	µm	0,01
Repeatability f _w	inch	5 µ"
Measuring force	N	Adjustable 0,85 – 4N (3oz. – 14 oz.)
Compatibility		Federal
Cable length	m	2,4



Millimar EHE– 2053

Inductive probe

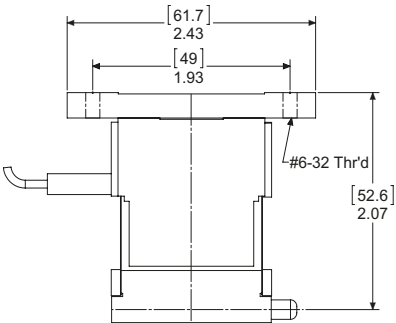
FEATURES

- Frictionless straight movement
- Adjustable pre-travel
- Measuring force adjustable via external spring
- Cable length 2.4m
- Can be used with Millimar C 1202 + N 1702 F (Federal)



TECHNICAL DATA

Order no.		2120421
Type		EHE– 2053
Mesuring span of indicator	mm	± 0.25
Measuring range	mm	± 0,25
Measuring range	inch	± .010"
Repeatability f _w	µm	0,01
Repeatability f _w	inch	5 µ"
Measuring force	N	Adjustable 0,85 – 4N (3oz. – 14 oz.)
Compatibility		Federal
Cable length	m	2,4



Millimar P 1512 V / P 1530 V

Incremental probe



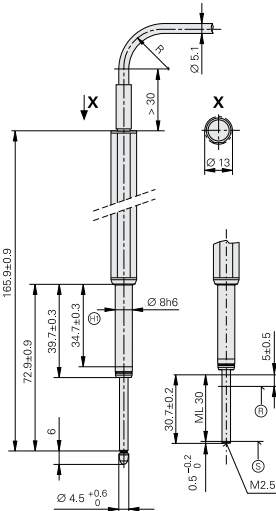
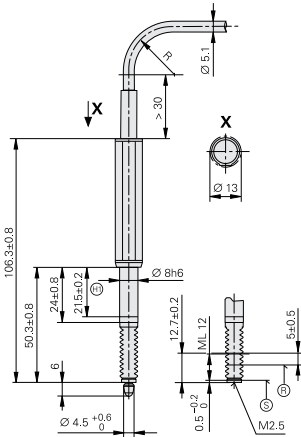
FEATURES

- Maximum measuring accuracy for long measuring length
- Compact dimensions
- Particularly durable ball bearing guide
- Reference mark for position determination
- 8 mm clamping shaft
- Any operating orientation
- Usable with Millimar N 1702 VSS
- Package contains: instruction manual, test certificate



TECHNICAL DATA

Order no.		5315081	5315311
Type		P 1512 V	P 1530 V
Measuring span	mm	12	30
Measuring span	inch	0,47	1,18
System accuracy	µm	1,0	
measuring speed max. (m/s)	m/s	0,5	
Measuring force	N	0.6 – 1.2 N	0.4 – 1 N
Output signal		1 Vpp	
Scale division		20 µm	
Measuring system execution		DIADUR-glass scale with incremental graduation	
Cable length	m	1,5	
Reference temperature	°C	20	
IP protection category		IP 67	IP 64
Max. shear force	N	0,8	



ACCESSORIES

Order no.	Type	Description
5312025	C 1202 Metric/Inch version	Compact amplifier
5331161	N 1702 VPP	Module for incremental sensors

Millimar

Pneumatic metrology

Technical features

Millimar evaluation instruments work according to the differential pressure measurement principle. The pressure difference is measured between two pressure chambers. While one of the two chambers delivers a constant reference pressure, the pressure of the other chamber (measuring chamber) is calculated from the distance of the measuring nozzles of a pneumatic probe from the testpiece. Millimar evaluation instruments feature two connection points, each of which is directly connected to one of the two pressure chambers. This records and then digitizes the measured value directly via a Piezo pressure sensor without conversion.

Ratios from 2500:1 to 10000:1 are possible thanks to interchangeable instrument nozzles.

Millimar measuring instruments must be supplied with constant air pressure via a fine pressure regulator. Measuring instruments with a fine pressure regulator can be connected to all compressed air lines with operating pressures of 3.5 bar to 10 bar overpressure; an air filter should be connected in between.

The compressed air must be dry and free from oil.



- Universal, reliable, tried-and-tested, extremely powerful
- High measuring accuracy and reproducibility of the measuring results: 0.5 μm to 2 μm depending on ratio
- Non-contact measurement with measuring nozzles, no damage to workpieces
- Reliable measurement, even of workpieces that have not been cleaned, have oil or grease applied to their surface, or have been lapped. Clean measuring points with measuring air
- Sturdy design for use in the workshop. Wide selection of models for all applications.
- Special models for special measuring tasks

Millimar

Pneumatic measuring equipment



N 1701 PF-xxx



Nozzle ring gage

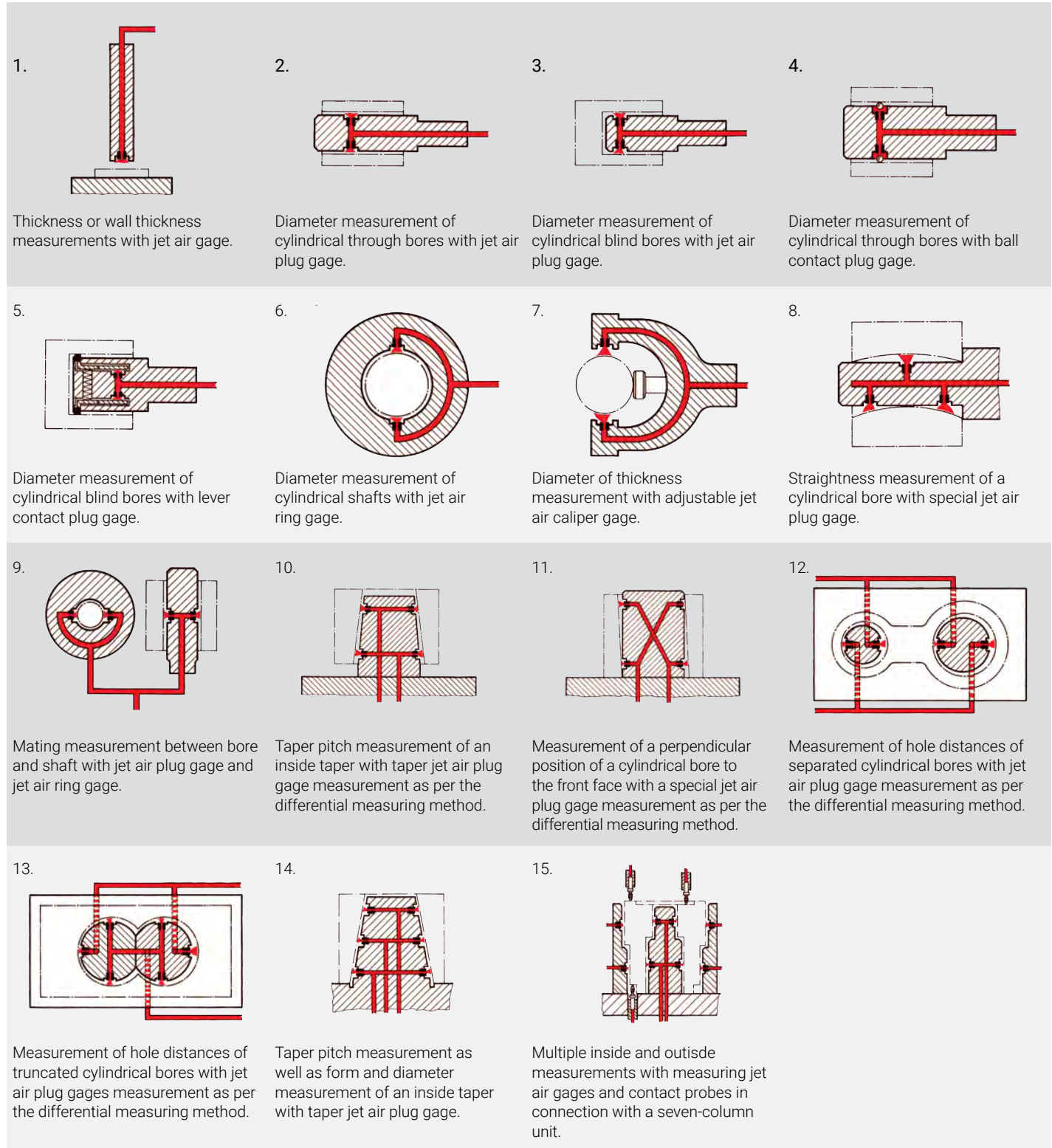


Nozzle plug gages

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 relatively short but very linear measuring range.



Millimar DP20 / DP50 / DP60

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 PVD coated (optional) body extends life of the air plug
- Air jets are recessed into the plug body, protecting them from damage
- Large jet size eliminates clogging from dirt and oils
- Other lengths for air plug body (L2) and position of measuring jets (B) on request

>Please always state when ordering:

- Transmission ratio of the display unit (e.g. DP50/2500:1)
- Nominal size to be measured
- Specified workpiece tolerance
- Whether the air plug body is to be finished without or with PVD coating

Application:
Measurement of through holes



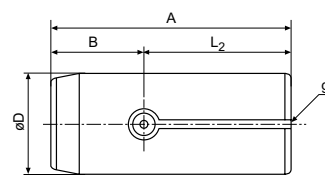
TECHNICAL DATA

Order no.	Type	Nominal size	Model	Magnification	Measuring span	Compatibility	Clearance	Minimum bore length	Including handle
		mm			µm		µm	mm	
2115000	DP20 DP50 DP60	3,000 – 6,000	hardened steel	5000:1, 2500:1, 1260:1	13 – 25 (DP20) 25 – 51 (DP50) 51 – 102 (DP60) depending on diameter	Federal	15 – 20 (DP20) 20 – 33 (DP50) 30 – 61 (DP60) depending on diameter	4,75	
2115000PVD	DP20 DP50 DP60	3,000 – 6,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	13 – 25 (DP20) 25 – 51 (DP50) 51 – 102 (DP60) depending on diameter	Federal	15 – 20 (DP20) 20 – 33 (DP50) 30 – 61 (DP60) depending on diameter	4,75	
2115001	DP20 DP50 DP60	6,000 – 10,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115001PVD	DP20 DP50 DP60	6,000 – 10,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115002	DP20 DP50 DP60	10,000 – 13,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115002PVD	DP20 DP50 DP60	10,000 – 13,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115003	DP20 DP50 DP60	13,000 – 15,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115003PVD	DP20 DP50 DP60	13,000 – 15,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115004	DP20 DP50 DP60	15,000 – 40,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115004PVD	DP20 DP50 DP60	15,000 – 40,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115005	DP20 DP50 DP60	40,000 – 60,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115005PVD	DP20 DP50 DP60	40,000 – 60,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115006	DP20 DP50 DP60	60,000 – 75,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	58 (DP20) 81 (DP50) 89 (DP60)	6,35	
2115006PVD	DP20 DP50 DP60	60,000 – 75,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	58 (DP20) 81 (DP50) 89 (DP60)	6,35	
2115027	DP20 DP50 DP60	75,000 – 90,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115027PVD	DP20 DP50 DP60	75,000 – 90,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115028	DP20 DP50 DP60	90,000 – 100,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115028PVD	DP20 DP50 DP60	90,000 – 100,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115029	DP20 DP50 DP60	100,000 – 115,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115029PVD	DP20 DP50 DP60	100,000 – 115,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•

Millimar DP20 / DP50 / DP60

Nozzle through-hole pin

Order no.	A	B	L ₂	Connection thread	Nominal size
	mm	mm	mm		mm
2115000	38,1	12,70	25,4	3/8"-32	3,000 - 6,000
2115000PVD	38,1	12,70	25,4	3/8"-32	3,000 - 6,000
2115001	38,1	12,70	25,4	3/8"-32	6,000 - 10,000
2115001PVD	38,1	12,70	25,4	3/8"-32	6,000 - 10,000
2115002	38,1	12,70	25,4	3/8"-32	10,000 - 13,000
2115002PVD	38,1	12,70	25,4	3/8"-32	10,000 - 13,000
2115003	44,5	19,10	25,4	3/8"-32	13,000 - 15,000
2115003PVD	44,5	19,10	25,4	3/8"-32	13,000 - 15,000
2115004	44,5	19,10	25,4	3/8"-32	15,000 - 40,000
2115004PVD	44,5	19,10	25,4	3/8"-32	15,000 - 40,000
2115005	44,5	19,10	25,4	3/8"-32	40,000 - 60,000
2115005PVD	44,5	19,10	25,4	3/8"-32	40,000 - 60,000
2115006	44,5	19,10	25,4	3/8"-32	60,000 - 75,000
2115006PVD	44,5	19,10	25,4	3/8"-32	60,000 - 75,000
2115027	44,5	19,10	25,4	3/8"-32	75,000 - 90,000
2115027PVD	44,5	19,10	25,4	3/8"-32	75,000 - 90,000
2115028	44,5	19,10	25,4	3/8"-32	90,000 - 100,000
2115028PVD	44,5	19,10	25,4	3/8"-32	90,000 - 100,000
2115029	44,5	19,10	25,4	3/8"-32	100,000 - 115,000
2115029PVD	44,5	19,10	25,4	3/8"-32	100,000 - 115,000



ACCESSORIES

Order no.	Type	Description
2260835		Connecting hose set, complete, 2 m
2261280		Connecting hose set, complete, 4 m
2202010	AHA-4	Extension for nominal sizes up to 76.3 mm, D = 12 mm, L = 102 mm
2202011	AHA-5	Extension for nominal sizes up to 76.3 mm, D = 12 mm, L = 51 mm
2237666		Standard plastic handle
2237873		Depth stop ring for Federal nozzle plug gage
2239307		Universal bench mount
2240993		Shut off slide valve



Millimar DP20 / DP50 / DP60

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 PVD coated (optional) body extends life of the air plug
- Air jets are recessed into the plug body, protecting them from damage
- Large jet size eliminates clogging from dirt and oils
- Other lengths for air plug body (L2) and position of measuring jets (B) on request

>Please always state when ordering:

- Transmission ratio of the display unit (e.g. DP50/2500:1)
- Nominal size to be measured
- Specified workpiece tolerance
- Whether the air plug body is to be finished without or with PVD coating

Application:
Measurement of blind holes



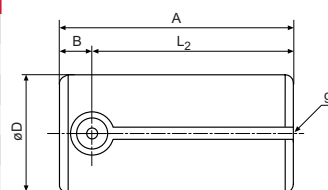
TECHNICAL DATA

Order no.	Type	Nominal size	Model	Magnification	Measuring span	Compatibility	Clearance	Minimum bore length	Including handle
		mm			µm		µm	mm	
2115007	DP20 DP50 DP60	3,000 – 6,000	hardened steel	5000:1, 2500:1, 1260:1	13 – 25 (DP20) 25 – 51 (DP50) 51 – 102 (DP60) depending on diameter	Federal	15 – 20 (DP20) 20 – 33 (DP50) 30 – 61 (DP60) depending on diameter	6,35	
2115007PVD	DP20 DP50 DP60	3,000 – 6,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	13 – 25 (DP20) 25 – 51 (DP50) 51 – 102 (DP60) depending on diameter	Federal	15 – 20 (DP20) 20 – 33 (DP50) 30 – 61 (DP60) depending on diameter	6,35	
2115008	DP20 DP50 DP60	6,000 – 10,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115008PVD	DP20 DP50 DP60	6,000 – 10,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115009	DP20 DP50 DP60	10,000 – 13,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115009PVD	DP20 DP50 DP60	10,000 – 13,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115010	DP20 DP50 DP60	13,000 – 15,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115010PVD	DP20 DP50 DP60	13,000 – 15,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115011	DP20 DP50 DP60	15,000 – 40,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115011PVD	DP20 DP50 DP60	15,000 – 40,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115012	DP20 DP50 DP60	40,000 – 60,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115012PVD	DP20 DP50 DP60	40,000 – 60,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	33 (DP20) 56 (DP50) 81 (DP60)	6,35	
2115013	DP20 DP50 DP60	60,000 – 75,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	58 (DP20) 81 (DP50) 89 (DP60)	6,35	
2115013PVD	DP20 DP50 DP60	60,000 – 75,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	58 (DP20) 81 (DP50) 89 (DP60)	6,35	
2115030	DP20 DP50 DP60	75,000 – 90,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115030PVD	DP20 DP50 DP60	75,000 – 90,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115031	DP20 DP50 DP60	90,000 – 100,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115031PVD	DP20 DP50 DP60	90,000 – 100,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115032	DP20 DP50 DP60	100,000 – 115,000	hardened steel	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•
2115032PVD	DP20 DP50 DP60	100,000 – 115,000	PVD coated based on AlCrN	5000:1, 2500:1, 1260:1	38 (DP20) 76 (DP50) 152 (DP60)	Federal	122 (DP20) 122 (DP50) 122 (DP60)	6,35	•

Millimar DP20 / DP50 / DP60

2-jet blind hole air plug HCC

Order no.	A	B	L ₂	Connection thread	Nominal size
	mm	mm	mm		mm
2115007	29,4	4,00	25,4	3/8"-32	3,000 - 6,000
2115007PVD	29,4	4,00	25,4	3/8"-32	3,000 - 6,000
2115008	29,4	4,00	25,4	3/8"-32	6,000 - 10,000
2115008PVD	29,4	4,00	25,4	3/8"-32	6,000 - 10,000
2115009	29,4	4,00	25,4	3/8"-32	10,000 - 13,000
2115009PVD	29,4	4,00	25,4	3/8"-32	10,000 - 13,000
2115010	29,4	4,00	25,4	3/8"-32	13,000 - 15,000
2115010PVD	29,4	4,00	25,4	3/8"-32	13,000 - 15,000
2115011	29,4	4,00	25,4	3/8"-32	15,000 - 40,000
2115011PVD	29,4	4,00	25,4	3/8"-32	15,000 - 40,000
2115012	29,4	4,00	25,4	3/8"-32	40,000 - 60,000
2115012PVD	29,4	4,00	25,4	3/8"-32	40,000 - 60,000
2115013	29,4	4,00	25,4	3/8"-32	60,000 - 75,000
2115013PVD	29,4	4,00	25,4	3/8"-32	60,000 - 75,000
2115030	29,4	4,00	25,4	3/8"-32	75,000 - 90,000
2115030PVD	29,4	4,00	25,4	3/8"-32	75,000 - 90,000
2115031	29,4	4,00	25,4	3/8"-32	90,000 - 100,000
2115031PVD	29,4	4,00	25,4	3/8"-32	90,000 - 100,000
2115032	29,4	4,00	25,4	3/8"-32	100,000 - 115,000
2115032PVD	29,4	4,00	25,4	3/8"-32	100,000 - 115,000



ACCESSORIES

Order no.	Type	Description
2260835		Connecting hose set, complete, 2 m
2261280		Connecting hose set, complete, 4 m
2202010	AHA-4	Extension for nominal sizes up to 76.3 mm, D = 12 mm, L = 102 mm
2202011	AHA-5	Extension for nominal sizes up to 76.3 mm, D = 12 mm, L = 51 mm
2237666		Standard plastic handle
2237873		Depth stop ring for Federal nozzle plug gage
2239307		Universal bench mount
2240993		Shut off slide valve



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
- Due 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 work-piece tolerance



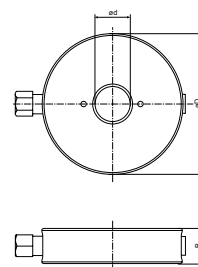
TECHNICAL DATA

Order no.	Type	Nominal size	Model	Compatibility
		mm		
2116000	Through style	6,301 – 8,000	hardened steel	Federal
2116001	Through style	8,001 – 21,000	hardened steel	Federal
2116002	Through style	21,001 – 25,000	hardened steel	Federal
2116003	Through style	25,001 – 44,000	hardened steel	Federal
2116004	Through style	44,001 – 50,000	hardened steel	Federal
2116010	Shoulder style	6,301 – 8,000	hardened steel	Federal
2116011	Shoulder style	8,001 – 21,000	hardened steel	Federal
2116012	Shoulder style	21,001 – 25,000	hardened steel	Federal
2116013	Shoulder style	25,001 – 44,000	hardened steel	Federal
2116014	Shoulder style	44,001 – 50,000	hardened steel	Federal
2116020	Counterbore style	6,301 – 8,000	hardened steel	Federal
2116021	Counterbore style	8,001 – 21,000	hardened steel	Federal
2116022	Counterbore style	21,001 – 25,000	hardened steel	Federal
2116023	Counterbore style	25,001 – 44,000	hardened steel	Federal
2116024	Counterbore style	44,001 – 50,000	hardened steel	Federal

Millimar DR50 / DR20

2-jet air ring gage

Order no.	A	B	Nominal size
	mm	mm	mm
2116000	75	25,40	6,301 – 8,000
2116001	75	25,40	8,001 – 21,000
2116002	75	25,40	21,001 – 25,000
2116003	100	25,40	25,001 – 44,000
2116004	100	25,40	44,001 – 50,000
2116010	75	25,40	6,301 – 8,000
2116011	75	25,40	8,001 – 21,000
2116012	75	25,40	21,001 – 25,000
2116013	100	25,40	25,001 – 44,000
2116014	100	25,40	44,001 – 50,000
2116020	75	25,40	6,301 – 8,000
2116021	75	25,40	8,001 – 21,000
2116022	75	25,40	21,001 – 25,000
2116023	100	25,40	25,001 – 44,000
2116024	100	25,40	44,001 – 50,000



ACCESSORIES

Order no.	Description
2260835	Connecting hose set, complete, 2 m
2237666	Standard plastic handle
2240993	Shut off slide valve
2239307	Universal bench mount

Millimar DR50– 3 / DR20– 3

3-nozzle ring gage

FEATURES

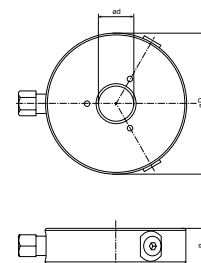
- Mahr / Mahr Federal nozzle ring gages have a large clearance tolerance, making them easier to insert into the bore to be measured and allowing a greater measuring range
- Due to a larger plug gage spacing and (optional) hard chrome-plated finish to the body, the nozzle plug gage has an extended service 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 work-piece tolerance



TECHNICAL DATA

Order no.	Type	Nominal size	Model	Compatibility
		mm		
2116005	Through style	6,301 – 8,000	hardened steel	Federal
2116006	Through style	8,001 – 21,000	hardened steel	Federal
2116007	Through style	21,001 – 25,000	hardened steel	Federal
2116008	Through style	25,001 – 44,000	hardened steel	Federal
2116009	Through style	44,001 – 50,000	hardened steel	Federal
2116015	Shoulder style	6,301 – 8,000	hardened steel	Federal
2116016	Shoulder style	8,001 – 21,000	hardened steel	Federal
2116017	Shoulder style	21,001 – 25,000	hardened steel	Federal
2116018	Shoulder style	25,001 – 44,000	hardened steel	Federal
2116019	Shoulder style	44,001 – 50,000	hardened steel	Federal
2116025	Counterbore style	6,301 – 8,000	hardened steel	Federal
2116026	Counterbore style	8,001 – 21,000	hardened steel	Federal
2116027	Counterbore style	21,001 – 25,000	hardened steel	Federal
2116028	Counterbore style	25,001 – 44,000	hardened steel	Federal
2116029	Counterbore style	44,001 – 50,000	hardened steel	Federal

Order no.	A	B	Nominal size
	mm	mm	mm
2116005	75	25,40	6,301 – 8,000
2116006	75	25,40	8,001 – 21,000
2116007	75	25,40	21,001 – 25,000
2116008	100	25,40	25,001 – 44,000
2116009	100	25,40	44,001 – 50,000
2116015	75	25,40	6,301 – 8,000
2116016	75	25,40	8,001 – 21,000
2116017	75	25,40	21,001 – 25,000
2116018	100	25,40	25,001 – 44,000
2116019	100	25,40	44,001 – 50,000
2116025	75	25,40	6,301 – 8,000
2116026	75	25,40	8,001 – 21,000
2116027	75	25,40	21,001 – 25,000
2116028	100	25,40	25,001 – 44,000
2116029	100	25,40	44,001 – 50,000



ACCESSORIES

Order no.	Description
2237666	Standard plastic handle
2239307	Universal bench mount
2240993	Shut off slide valve
2260835	Connecting hose set, complete, 2 m

Millimar AAT– 19 / AAT– 20

Single jet probe

FEATURES

- Jet probes can be easily integrated as a pneumatic measuring system into handheld measuring devices or measuring fixtures.
- Compact design, making it easy to use in hard-to-reach measuring points.
- The jet probes are calibrated for immediate use with 2,500/5,000:1 Millimar air measuring systems calibrate - simply set the zero point and measure!
- Available as a single jet probe or as a matched pair of jet probes.
- Ideal for non-contact flatness measurement of surfaces, or for installation in measuring devices.
- Can be used with Millimar N 1701 PF– 2500/5000 measuring modules.
- The scope of delivery includes the AHO– 1 air hose, a zeroing valve and mounting material.



TECHNICAL DATA

Order no.		2086612	2086613
Description		Single jet probe	Jet probes matched pair
Type		AAT– 19	AAT– 20
Design		Single jet probe	Matched jet probe pair
Magnification		2500:1	
Measuring span	µm	76 (DP50)	
Compatibility		Federal	
Ø	mm	9.5 mm / 0.375"	

Millimar 6105 N

Adjustment ring

FEATURES

- Meticulously hardened, aged, ground and lapped
- Manufacturing tolerance JS3
- Uncertainty of the labeled actual size: 0.5 x IT1
- Including calibration certificate as per VDI/VDE/DGO 2618
- Setting of pneumatic measuring instruments (nozzle plug gages)
- Order information: It is recommended you use the average tolerance of the specified workpiece tolerance as the nominal diameter of the adjustment ring



TECHNICAL DATA

Order no.	Ø (mm)	Cylindricity tolerance
2105300	2 – 3	0,1 x IT4
2105301	3,001 – 4	0,1 x IT4
2105302	4,001 – 6	0,1 x IT4
2105303	6,001 – 7	0,1 x IT4
2105304	7,001 – 10	0,1 x IT4
2105305	10,001 – 11	0,1 x IT4
2105306	11,001 – 18	0,1 x IT4
2105307	18,001 – 21	0,1 x IT4
2105308	21,001 – 28	0,1 x IT4
2105309	28,001 – 32	0,1 x IT4
2105310	32,001 – 40	0,1 x IT4
2105311	40,001 – 47	0,1 x IT4
2105312	47,001 – 50	0,1 x IT4
2105313	50,001 – 55	0,1 x IT4
2105314	55,001 – 58	0,1 x IT4
2105315	58,001 – 60	0,1 x IT4
2105316	60,001 – 65	0,1 x IT4
2105317	65,001 – 68	0,1 x IT4
2105318	68,001 – 70	0,1 x IT4
2105319	70,001 – 72	0,1 x IT4
2105320	72,001 – 75	0,1 x IT4
2105321	75,001 – 78	0,1 x IT4
2105322	78,001 – 80	0,1 x IT4
2105323	80,001 – 82	0,1 x IT4
2105324	82,001 – 85	0,1 x IT4
2105325	85,001 – 88	0,1 x IT4
2105326	88,001 – 90	0,1 x IT4
2105327	90,001 – 92	0,1 x IT4
2105328	92,001 – 95	0,1 x IT4
2105329	95,001 – 98	0,1 x IT4
2105330	98,001 – 100	0,1 x IT4
2105331	100,001 – 105	0,1 x IT4
2105332	105,001 – 110	0,1 x IT4
2105333	110,001 – 115	0,1 x IT4
2105334	115,001 – 120	0,1 x IT4
2105335	120,001 – 125	0,1 x IT4
2105336	125,001 – 130	0,1 x IT4
2105337	130,001 – 135	0,1 x IT4
2105338	135,001 – 140	0,1 x IT4
2105339	140,001 – 145	0,1 x IT4
2105340	145,001 – 150	0,1 x IT4
2105341	150,001 – 155	0,1 x IT4
2105342	155,001 – 160	0,1 x IT4
2105343	160,001 – 165	0,1 x IT4
2105344	165,001 – 170	0,1 x IT4
2105345	170,001 – 175	0,1 x IT4
2105346	175,001 – 180	0,1 x IT4
2105347	180,001 – 185	0,1 x IT4

Millimar 6107 S

Adjustment ring

FEATURES

- Meticulously hardened, aged, ground and lapped
- Manufacturing tolerance JS3
- Uncertainty of the labeled actual size: 0.5 x IT1
- Including calibration certificate as per VDI/VDE/DGO 2618
- Setting of pneumatic measuring instruments (nozzle plug gages)
- Order information:
- It is recommended you use the average tolerance of the specified workpiece tolerance as the nominal diameter of the adjustment ring



Order no.	Ø (mm)	Cylindricity tolerance
2105400	3 – 4	0,1 x IT3
2105401	4,001 – 6	0,1 x IT3
2105402	6,001 – 8	0,1 x IT3
2105403	8,001 – 10	0,1 x IT3
2105404	10,001 – 18	0,1 x IT3
2105405	18,001 – 23	0,1 x IT3
2105406	23,001 – 24	0,1 x IT3
2105407	24,001 – 25	0,1 x IT3
2105408	25,001 – 26	0,1 x IT3
2105409	26,001 – 27	0,1 x IT3
2105410	27,001 – 28	0,1 x IT3
2105411	28,001 – 30	0,1 x IT3
2105412	30,001 – 32	0,1 x IT3
2105413	32,001 – 34	0,1 x IT3
2105414	34,001 – 37	0,1 x IT3
2105415	37,001 – 42	0,1 x IT3
2105416	42,001 – 44	0,1 x IT3
2105417	44,001 – 45	0,1 x IT3
2105418	45,001 – 46	0,1 x IT3
2105419	46,001 – 48	0,1 x IT3
2105420	48,001 – 50	0,1 x IT3
2105421	50,001 – 52	0,1 x IT3
2105422	52,001 – 55	0,1 x IT3
2105423	55,001 – 58	0,1 x IT3
2105424	58,001 – 60	0,1 x IT3
2105425	60,001 – 62	0,1 x IT3
2105426	62,001 – 65	0,1 x IT3
2105427	65,001 – 68	0,1 x IT3
2105428	68,001 – 70	0,1 x IT3
2105429	70,001 – 72	0,1 x IT3
2105430	72,001 – 75	0,1 x IT3
2105431	75,001 – 78	0,1 x IT3
2105432	78,001 – 80	0,1 x IT3
2105433	80,001 – 82	0,1 x IT3
2105434	82,001 – 85	0,1 x IT3
2105435	85,001 – 88	0,1 x IT3
2105436	88,001 – 90	0,1 x IT3
2105437	90,001 – 92	0,1 x IT3
2105438	92,001 – 95	0,1 x IT3
2105439	95,001 – 98	0,1 x IT3
2105440	98,001 – 100	0,1 x IT3
2105441	100,001 – 102	0,1 x IT3

Millimar 6400

Adjustment pin

FEATURES

- Meticulously hardened, aged, ground and lapped
- Manufacturing tolerance JS3
- Uncertainty of the labeled actual size: 0.5 x IT1
- Setting of pneumatic measuring instruments (nozzle ring gages)
- Order information: It is recommended you use the average tolerance of the specified workpiece tolerance as the nominal diameter of the master setting plug



Order no.	Ø (mm)	Cylindricity tolerance
5264020	2 – 3	0,1 x IT4
5264021	3,001 – 4	0,1 x IT4
5264022	4,001 – 6	0,1 x IT4
5264001	6,001 – 12	0,1 x IT4
5264002	12,001 – 18	0,1 x IT4
5264003	18,001 – 24	0,1 x IT4
5264004	24,001 – 30	0,1 x IT4
5264005	30,001 – 35	0,1 x IT4
5264006	35,001 – 40	0,1 x IT4
5264007	40,001 – 45	0,1 x IT4
5264008	45,001 – 50	0,1 x IT4
5264009	50,001 – 55	0,1 x IT4
5264010	55,001 – 60	0,1 x IT4
5264011	60,001 – 65	0,1 x IT4
5264012	65,001 – 70	0,1 x IT4
5264013	70,001 – 75	0,1 x IT4
5264014	75,001 – 80	0,1 x IT4
5264015	80,001 – 85	0,1 x IT4
5264016	85,001 – 90	0,1 x IT4
5264017	90,001 – 95	0,1 x IT4
5264018	95,001 – 100	0,1 x IT4

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.

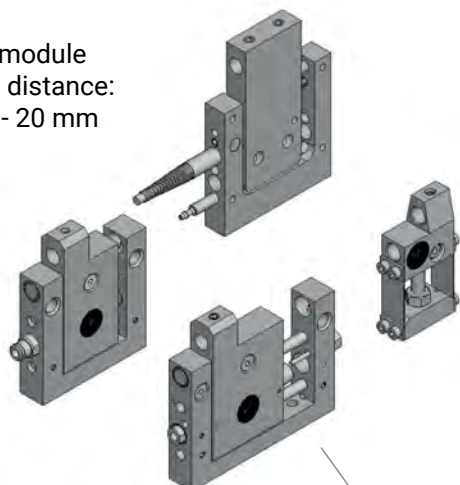
Below are just a few examples of the many factors that contribute to the cost effectiveness of the Millimar standard elements:

- 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.

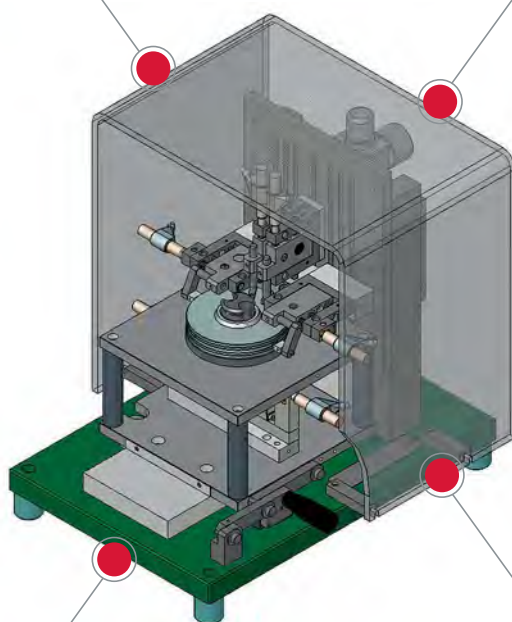
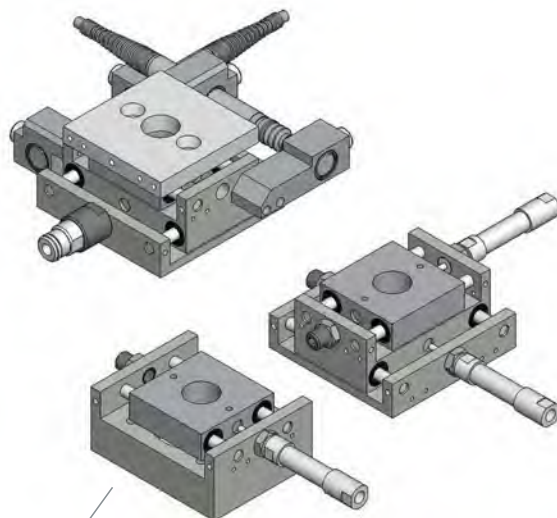
Millimar

Standard elements

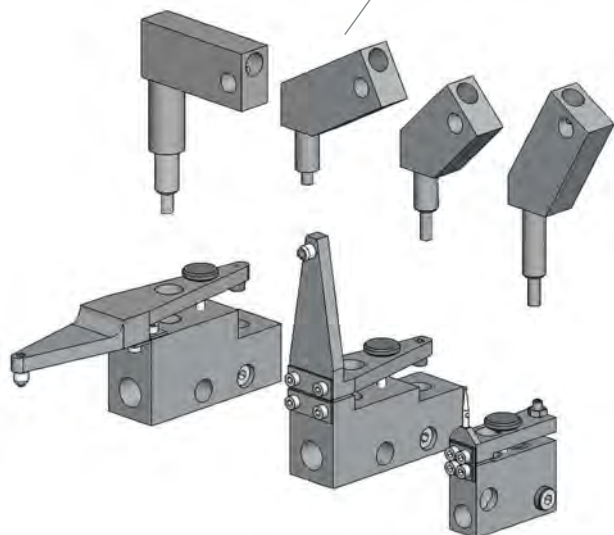
Gage module
Travel distance:
5 - 10 - 20 mm



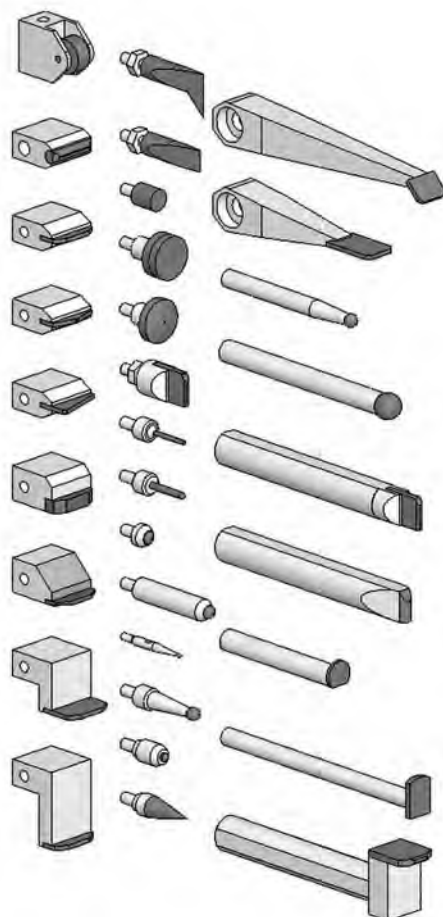
XY tables
Travel distance: 2.5 - 5 - 7 mm



Angular adjustment
0 - 30 - 45 - 60 - 90°



Styli



MarStand | Measuring tables, measuring tripods, radial runout gages

MarStand measuring stands, measuring tables and radial runout 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.



Measuring stands

MarStand 815 GN 290
Measuring stand with triangular pedestal

MarStand 815 MA / 815 MB / 815 P / 815 MG / 815 MF 291
Measuring tripod with magnetic base

Indicator stand

MarStand 815 XMA / 815 XMB / 815 XMS / 815 XN / 815 XP / 815 YM / 815 YP 296
With screw-in thread and/or t-slot nut

Measuring tables

MarStand 820 NC / 820 FC 297
Small ceramic measuring table

MarStand 820 NG / 820 FG 298
Small measuring table, granite measuring plate

MarStand 821 NG / 821 FG 299
Large granite measuring table

MarStand 824 FT / 824 GT 300
Heavy measuring table

Measuring table systems

MarStand 827 302
Heavy measuring table in the modular unit

Test plates

MarStand 107 G 304
Granite test plate

Radial runout gages

MarStand 818 307
Radial runout gage with center supports

MarStand 818 P 308
Radial runout gage with vee supports

MarStand 818 R 309
Radial runout gage with balancing supports

MarStand 815 GN

Measuring tripod with triangular pedestal

FEATURES

- Measuring tripod with triangular pedestal
- 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 $\pm 90^\circ$
 - Easy to move without vibration
 - Front of the base is ground to allow movement along edges and rulers
- Package contains:**
excludes indicator

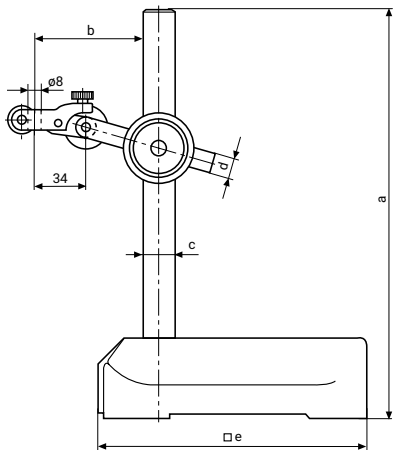
Application:
For use on measuring and control plates



TECHNICAL DATA

Order no.		4413000	4413001	4413005	4413050	4413051	4413052
Type		815 GN					
Total height	mm	300	500	750	300	500	750
Total height	inch	12"	20"	30"	12"	20"	30"
Projection (max.)	inch	7.28"	7.87"	9.06"	7.28"	7.87"	9.06"
Projection (max.)	mm	185	200	230	185	200	230
Precision adjustment range	mm	2					
Mounting hole		8H7			.375"		
Product weight	kg	4,20	9,00	10,00	4,20	9,00	10,00

Order no.	a	b	c	d	Base surface
	mm	mm	mm	mm	
4413000	300	185	18	14	150 x 150 mm
4413001	500	200	25	18	190 x 180 mm
4413005	750	230	35	25	190 x 180 mm
4413050	300	185	18	14	150 x 150 mm
4413051	500	200	25	18	190 x 180 mm
4413052	750	230	35	25	190 x 180 mm

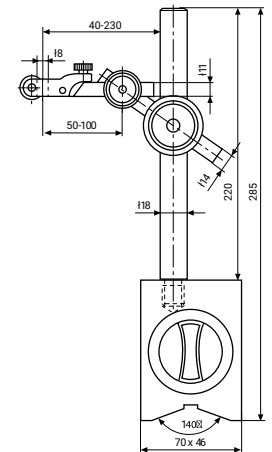


Measuring tripod with magnetic base

- 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

A digital depth gauge with a circular dial and a vertical rod, mounted on a base. The dial has a black face with white markings and a red needle. The brand name 'Mitutoyo' and the word 'Millimeters' are visible on the dial. The vertical rod is made of polished metal and is mounted on a black base. The gauge is shown in a side profile view.

Order no.		4416000	4416050
Type			815 MA
Total height	mm		285
Total height	inch		11.2"
Projection (max.)	inch		9.06"
Projection (max.)	mm		230
Precision adjustment range	mm		2
V-block for shaft diameter	mm		20 – 100
Adhesive force prism	N		450
Mounting hole		8H7	.375"
Product weight	kg		2,50



Order no.	Description
4416001	Wooden case

MarStand 815 MB

Measuring tripod with magnetic base

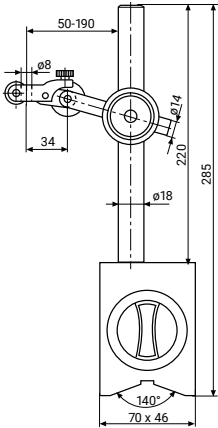
FEATURES

- 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 $\pm 90^\circ$
- Package contains:**
excludes indicator



TECHNICAL DATA

Order no.		4417000	4417050
Type		815 MB	
Total height	mm	285	
Total height	inch	11.2"	
Projection (max.)	inch	7.48"	
Projection (max.)	mm	190	
Precision adjustment range	mm	2	
V-block for shaft diameter	mm	20 – 100	
Adhesive force prism	N	450	
Mounting hole		8H7	.375"
Product weight	kg	2,20	



ACCESSORIES

Order no.	Description
4416001	Wooden case

MarStand 815 P

Measuring tripod with magnetic base

FEATURES

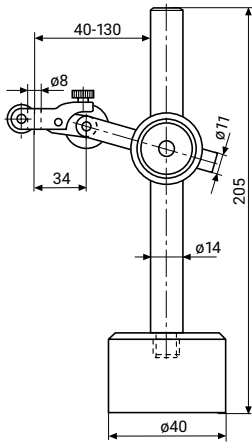
- Measuring tripod with magnetic base
- Support arm has one joint
 - Sturdy circular base with permanent magnet
 - Post and support arm are made of stainless steel
 - Support arm can be finely adjusted
 - Indicating instrument can be rotated through $\pm 90^\circ$

Package contains:
excludes indicator



TECHNICAL DATA

Order no.		4422000	4422050
Type		815 P	
Total height	mm	205	
Total height	inch	8"	
Projection (max.)	inch	5.12"	
Projection (max.)	mm	130	
Precision adjustment range	mm	1,5	
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

Application:

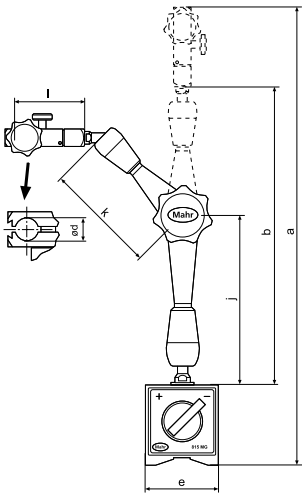
- For general measuring tasks in production and workshops
- High flexibility and stability, ideal for display devices with a resolution of up to 0.01 mm (.0005") such as dial gages or test indicators



TECHNICAL DATA

Order no.		4420350	4420360	4420370
Type		815 MG		
Total height	mm	222	310	390
Total height	inch	8.74	12.2	15.35
Projection (max.)	inch	5,12	7.87	11.02
Projection (max.)	mm	130	200	280
Precision adjustment range	mm	5		
V-block for shaft diameter	mm	6 – 120		
Adhesive force prism	N	300	800	
Mounting hole		8H7		

Order no.	a	b	d	j	k	l	Base surface
	mm	mm	mm	mm	mm	mm	
4420350	222	130	8	70	60	49	36 x 30 x 35 mm
4420360	310	200	8	120	80	49	60 x 50 x 55 mm
4420370	390	280	8	170	110	49	60 x 50 x 55 mm



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 very precise fine adjustment
- Special made for high precise measuring instruments like indicators, comparators, inductive probes with μm resolution

TECHNICAL DATA

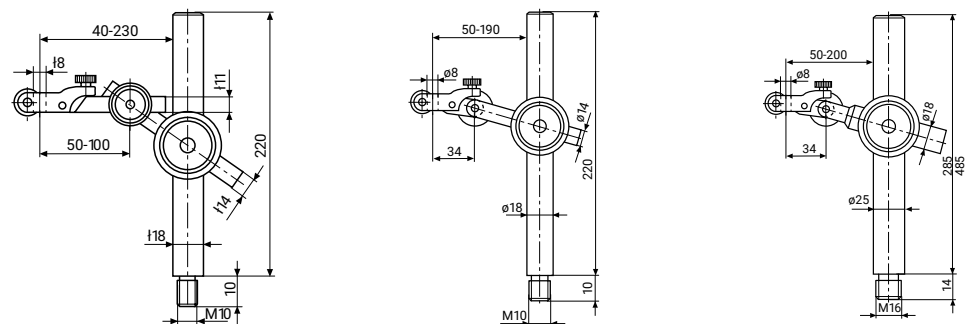
Order no.		4420385	4420386	4420387	4420388
Type		815 MF			
Total height	mm	228	317	399	444
Total height	inch	8,97	12,48	15,70	17,48
Projection (max.)	inch	5,12	8,03	11,3	12,99
Projection (max.)	mm	130	204	287	330
Precision adjustment range	mm	2			
V-block for shaft diameter	mm	6 – 120			
Adhesive force prism	N	300	800	1000	
Mounting hole		8H7			

Order no.	a	b	d	j	k	l	Base surface
	mm	mm	mm	mm	mm	mm	
4420385	228	130	8	71	59	49	40 x 40 x 40 mm
4420386	317	204	8	116	88	49	60 x 50 x 55 mm
4420387	399	287	8	172	115	49	60 x 50 x 55 mm
4420388	444	330	8	201	129	49	73 x 50 x 55 mm

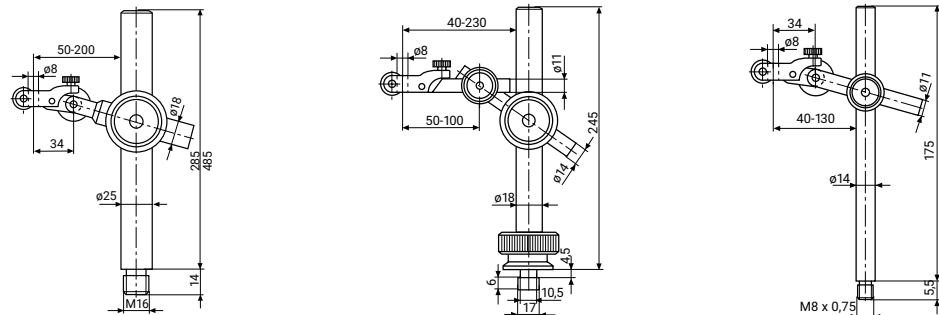
MarStand

Post and support assemblies

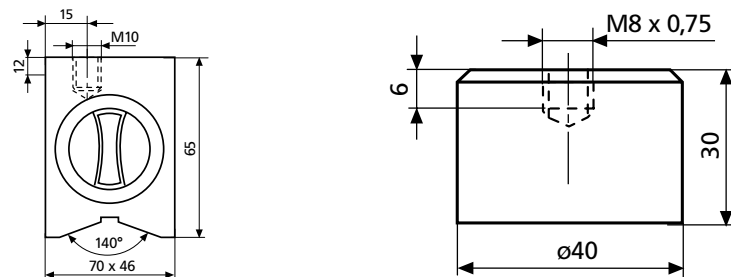
OVERVIEW



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



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



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 NC / 820 FC

Small ceramic comparator stand

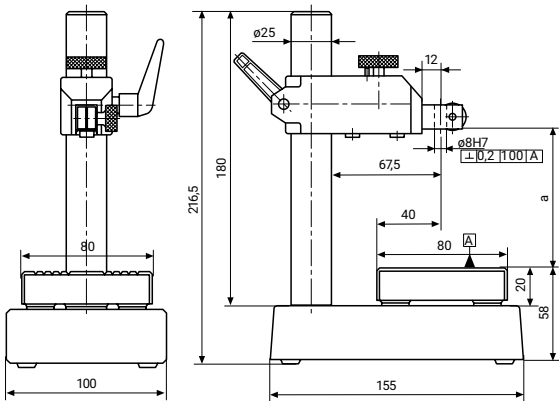
FEATURES

- 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
Type		820 NC		820 FC	
Working range a	mm	0 – 110			
Working range a	inch	0 – 4.3"			
Flatness tolerance		t ₁ = 2(1 + L/1000) μm, L in mm			
Grade		DIN 876/00			
Precision adjustment range	mm			0,4	
Mounting hole		8H7	3/8"	8H7	3/8"
Plate size	mm	80 x 80			
Product weight	kg	4,00			



MarStand 820 NG / 820 FG

Small comparator stand, plate made of granite

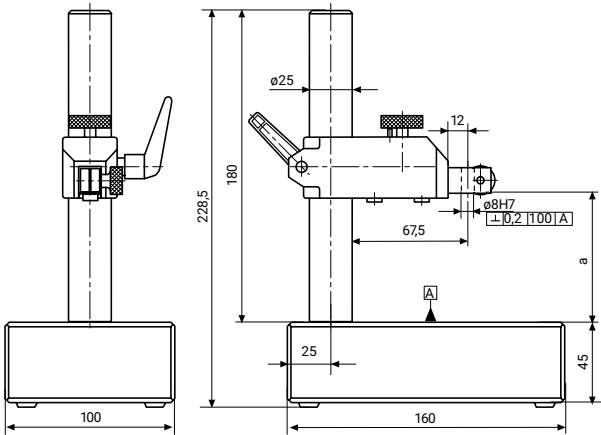
FEATURES

- 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
Type		820 NG		820 FG	
Working range a	mm	0 – 130			
Working range a	inch	0 – 5.1"			
Flatness tolerance		$t_1 = 4(1 + L/1000) \mu\text{m}$, L in mm			
Grade		DIN 876/0			
Precision adjustment range	mm			0,4	
Mounting hole		8H7	3/8"	8H7	3/8"
Plate size	mm	160 x 100			
Product weight	kg	3,20			



MarStand 821 NG / 821 FG

Large granite measuring table

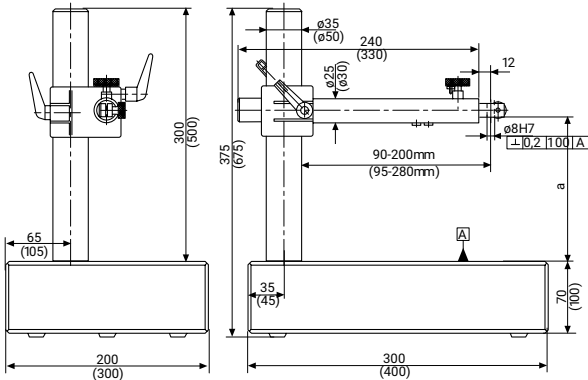
FEATURES

- Large granite measuring table
- 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
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		t ₁ = 4(1 + L/1000) μm, L in mm							
Flatness tolerance		DIN 876/0							
Grade	mm	0,4		0,4		0,4		0,4	
Precision adjustment range		8H7				3/8"			
Mounting hole		.		.		.		.	
Plate size	mm	300 x 200		400 x 300		300 x 200		400 x 300	
Product weight	kg	15,80		48,00		15,80		48,00	



MarStand 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

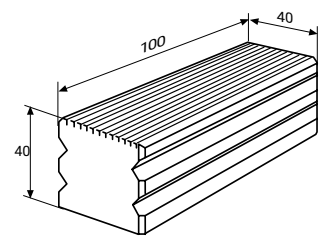
Order no.		4443100	4443105	4444200
Type		824 FT		824 GT
Working range a	mm	0 – 210		0 – 200
Working range a	inch	0 – 8.2"		0 – 8.0"
Precision adjustment range	mm	0,4		3
Mounting hole		8H7	3/8"	28H7
Product weight	kg	19,00		18,00

MarStand 824 FT / 824 GT

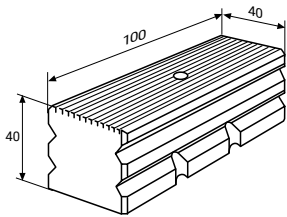
Heavy measuring table

ACCESSORIES

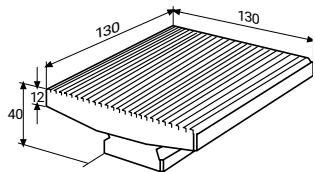
Order no.	Type	Description
4082731	827 b 31	Plate for single measurement (100 x 40 mm)
4082732	827 b 32	Plate for sum measurement (100 x 40 mm)
4082733	827 b 33	Plate for single measurement (130 x 130 mm)
4082734	827 b 34	Plate for sum measurement (130 x 130 mm)
4346111	941 G / Ø 28 mm	941 G holder Ø 28mm, length 100mm, range 3mm (with mount bore for indicators with shaft Ø 8mm)



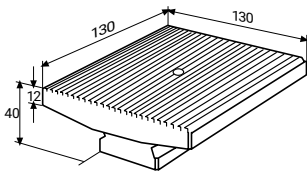
827 b 31



827 b 32



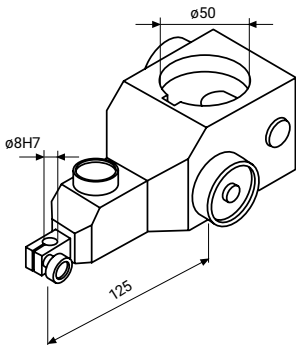
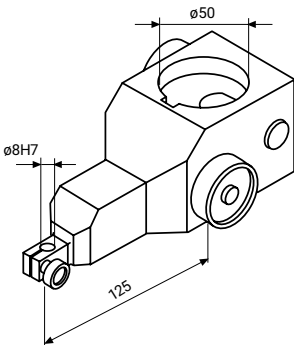
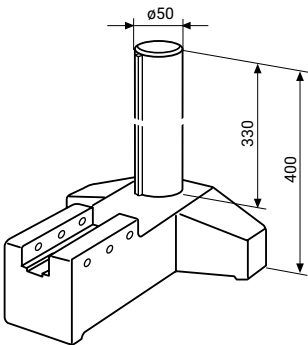
827 b 33



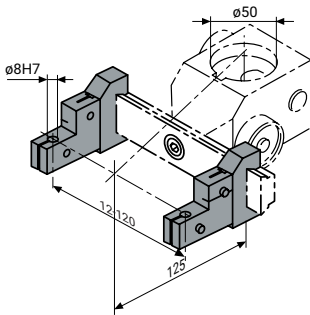
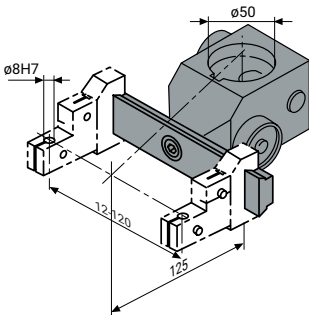
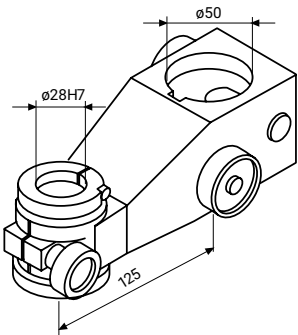
827 b 34



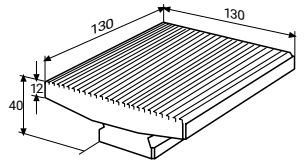
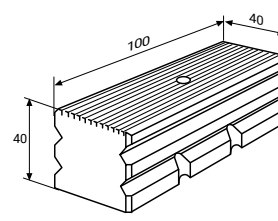
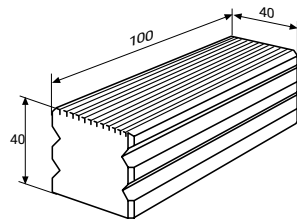
941 G / Ø 28 mm



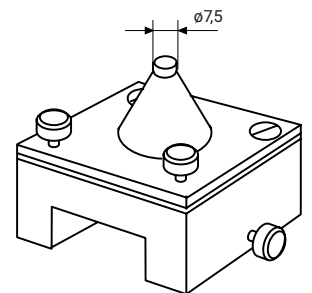
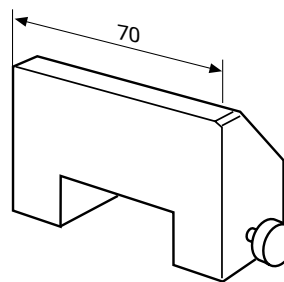
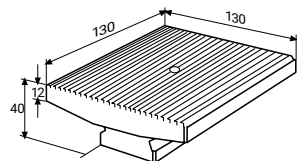
Type	827 b 5	827 b 16	827 b 17
Order no.	4082705	4082716	4082717
Product features	- Measuring table base with column - T-shaped base made from special cast iron - Chrome-plated column	- Support arm without fine adjustment - Rugged construction for exceptionally high bending resistance - Locked against rotation and height adjustable via rack - Mounting hole 8 mm	- Support arm with fine adjustment - Rugged construction for exceptionally high bending resistance - Locked against rotation and height adjustable via rack - Mounting hole 8 mm
Projection (max.)	125 mm	125 mm	125 mm



Type	827 b 18	827 b 19	827 b 14
Order no.	4082718	4082719	4082714
Product features	- Support arm with fine adjustment - Rugged construction for exceptionally high bending resistance - Locked against rotation and height adjustable via rack - Mounting hole for big comparators with stem diameter 28 mm, for example Millimes 1000 A	- Support arm with dovetail guide - Rugged construction for exceptionally high bending resistance - Locked against rotation and height adjustable via rack	- Probe holder - For mounting on dovetail guide of support arm 827 b 19 - Mounting hole 8 mm
Projection (max.)	125 mm	125 mm	125 mm



Type	827 b 31	827 b 32	827 b 33
Order no.	4082731	4082732	4082733
Product features	• Plate for single measurement • Hardened and lapped • Reversible • One measuring surface with longitudinal ribbing • Both sides face lapped	• Plate for compound measurement • Hardened and lapped • With 8 mm mounting bore and clamping device for inductive probes • Measuring surface with longitudinal ribbing	• Plate for single measurement • Hardened and lapped • Reversible • Large measuring surface with longitudinal ribbing • Both sides face lapped
Sum measurement		•	
Flatness deviation	1 µm	1 µm	1 µm
Mounting hole		8H7	



Type	827 b 34	827 b 35	827 b 36
Order no.	4082734	4082735	4082736
Product features	• Plate for compound measurement • Hardened and lapped • With 8 mm mounting bore and clamping device for inductive probes • Large measuring surface with longitudinal ribbing	• Adjustable stop • Ensures that a workpiece is correctly positioned • To be attached to plates 827 b 31 and 827 b 32	• Attachment stand • 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
Sum measurement	•		
Flatness deviation	1 µm		
Mounting hole	8H7		

MarStand 107 G

Surface plate made from granite

FEATURES

- Surface plate made from granite
- 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

Package contains: Calibration certificate



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
Type		107 G								
Tolerance class		00								
Flatness tolerance		$t_f = 2(1 + L/1000) \mu\text{m}$, L in mm								
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
Product weight	kg	18,00	29,00	60,00	95,00	120,00	190,00	432,00	675,00	1200,00

ACCESSORIES

Order no.	Type	Description
4221560	107 Us	Cabinet underframe with edge protection, 630 x 400 mm
4221570	107 Ug	Open underframe with edge protection, 630 x 400 mm
4221069	107 Asa	Adjustable support element for test plates
4221561	107 Us	Cabinet underframe with edge protection, 630 x 630 mm
4221571	107 Ug	Open underframe with edge protection, 630 x 630 mm
4221562	107 Us	Cabinet underframe with edge protection, 800 x 500 mm
4221572	107 Ug	Open underframe with edge protection, 800 x 500 mm
4221563	107 Us	Cabinet underframe with edge protection, 1000 x 630 mm
4221573	107 Ug	Open underframe with edge protection, 1000 x 630 mm
4221564	107 Us	Cabinet underframe with edge protection, 1200 x 800 mm
4221574	107 Ug	Open underframe with edge protection, 1200 x 800 mm
4221565	107 Us	Cabinet underframe with edge protection, 1500 x 1000 mm
4221575	107 Ug	Open underframe with edge protection, 1500 x 1000 mm
4221566	107 Us	Cabinet underframe with edge protection, 2000 x 1000 mm
4221576	107 Ug	Open underframe with edge protection, 2000 x 1000 mm



107 G; 107 Us



107 Ug

MarStand 107 G

Surface plate made from granite

FEATURES

Surface plate made from granite

- 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

Package contains: Calibration certificate

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
Type		107 G								
Tolerance class		0								
Flatness tolerance		$t_1 = 4(1 + L/1000) \mu\text{m}$, L in mm								
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
Product weight	kg	18,00	29,00	60,00	95,00	120,00	190,00	432,00	675,00	1200,00

ACCESSORIES

Order no.	Type	Description
4221560	107 Us	Cabinet underframe with edge protection, 630 x 400 mm
4221570	107 Ug	Open underframe with edge protection, 630 x 400 mm
4221069	107 Asa	Adjustable support element for test plates
4221561	107 Us	Cabinet underframe with edge protection, 630 x 630 mm
4221571	107 Ug	Open underframe with edge protection, 630 x 630 mm
4221562	107 Us	Cabinet underframe with edge protection, 800 x 500 mm
4221572	107 Ug	Open underframe with edge protection, 800 x 500 mm
4221563	107 Us	Cabinet underframe with edge protection, 1000 x 630 mm
4221573	107 Ug	Open underframe with edge protection, 1000 x 630 mm
4221564	107 Us	Cabinet underframe with edge protection, 1200 x 800 mm
4221574	107 Ug	Open underframe with edge protection, 1200 x 800 mm
4221565	107 Us	Cabinet underframe with edge protection, 1500 x 1000 mm
4221575	107 Ug	Open underframe with edge protection, 1500 x 1000 mm
4221566	107 Us	Cabinet underframe with edge protection, 2000 x 1000 mm
4221576	107 Ug	Open underframe with edge protection, 2000 x 1000 mm



107 G; 107 Us



107 Ug

MarStand 107 G

Surface plate made from granite

FEATURES

- Surface plate made from granite
- 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

Package contains: Calibration certificate



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
Type		107 G								
Tolerance class		1								
Flatness tolerance		$t_1 = 10(1 + L/1000) \mu\text{m}$, L in mm								
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
Product weight	kg	18,00	29,00	60,00	95,00	120,00	190,00	432,00	675,00	1200,00

ACCESSORIES

Order no.	Type	Description
4221560	107 Us	Cabinet underframe with edge protection, 630 x 400 mm
4221570	107 Ug	Open underframe with edge protection, 630 x 400 mm
4221069	107 Asa	Adjustable support element for test plates
4221561	107 Us	Cabinet underframe with edge protection, 630 x 630 mm
4221571	107 Ug	Open underframe with edge protection, 630 x 630 mm
4221562	107 Us	Cabinet underframe with edge protection, 800 x 500 mm
4221572	107 Ug	Open underframe with edge protection, 800 x 500 mm
4221563	107 Us	Cabinet underframe with edge protection, 1000 x 630 mm
4221573	107 Ug	Open underframe with edge protection, 1000 x 630 mm
4221564	107 Us	Cabinet underframe with edge protection, 1200 x 800 mm
4221574	107 Ug	Open underframe with edge protection, 1200 x 800 mm
4221565	107 Us	Cabinet underframe with edge protection, 1500 x 1000 mm
4221575	107 Ug	Open underframe with edge protection, 1500 x 1000 mm
4221566	107 Us	Cabinet underframe with edge protection, 2000 x 1000 mm
4221576	107 Ug	Open underframe with edge protection, 2000 x 1000 mm



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



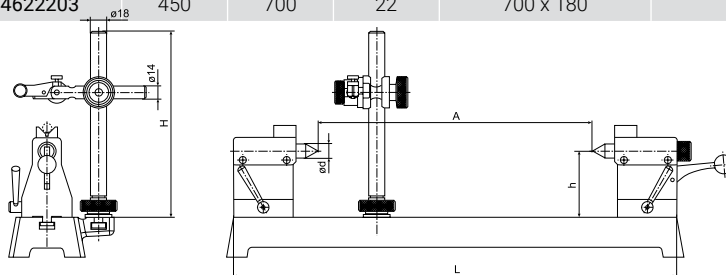
Application:

- 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
Type		818			
Permitted height difference	mm	0,05			
Permitted lateral difference	mm	0,05			
Height of centers	mm	50	75	100	150
Distance between centers	mm	0 – 200	0 – 350	0 – 450	
Max. workpiece load per tailstock	kg	5		20	
Mounting hole		8H7			
T-groove width	mm	10H7		12H7	
Product weight	kg	8,00	12,00	35,00	38,00

Order no.	A	L	d	Structural dimensions (L x W)	Column Ø	Column height
	mm	mm	mm	mm	mm	mm
4622200	200	350	16	350 x 110	18	205
4622201	350	500	16	500 x 110	18	205
4622202	450	700	22	700 x 180	18	260
4622203	450	700	22	700 x 180	18	360



ACCESSORIES



Order no.	Type	Description
4622210	818 pe	V-support anvils in pairs, Diameter range 3 – 15 mm, suitable for peak height 50 / 75 mm
4622275	818 XNB	Support arm, Column height 205 mm, T-groove width 10 mm
4622220	818 ab	Roller supports in pairs, Diameter range 3 – 30 mm, T-groove width 10 mm
4622215	818 pb	V-support in pairs, Diameter range 5 – 20 mm, T-groove width 10 mm
4622276	818 XNB	Support arm, Column height 260 mm, T-groove width 12 mm
4622211	818 pe	V-support anvils in pairs, Diameter range 8 – 45 mm, suitable for peak height 100 mm
4622277	818 XNB	Support arm, Column height 360 mm, T-groove width 12 mm
4622221	818 ab	Roller supports in pairs, Diameter range 4 – 60 mm, T-groove width 12 mm
4622216	818 pb	V-support in pairs, Diameter range 5 – 45 mm, T-groove width 12 mm

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:

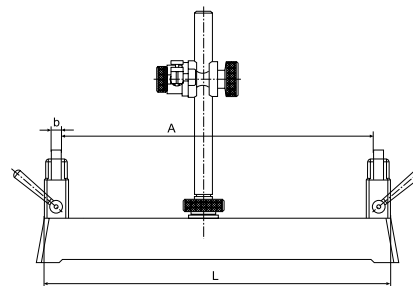
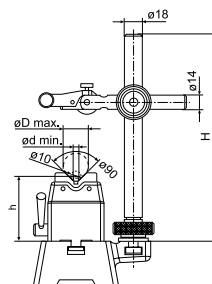
- Fast and easy radial runout testing of V-blocks
- Perfect for parts without a central bore
- During this test procedure, the reference axis is formed by the cylindricity (circumferential surface) of an actual bearing point, e.g. at a transmission shaft. Possible roundness deviations of the cylindrical surface are included in the radial runout 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
Type		818 P		
Diameter range	mm	5 – 25	5 – 20	5 – 45
Permitted height difference	mm	0,05		
Permitted lateral difference	mm	0,05		
Height of V-supports	mm	70		120
Mounting hole		8H7		
T-groove width	mm	10H7		12H7
Product weight	kg	6,50	9,50	30,00

Order no.	A	D	L	b	d	Structural dimensions (L x W)	Column Ø	Column height
	mm	mm	mm	mm	mm	mm	mm	mm
4622260	315	25	350	9,6	5	350 x 110	18	205
4622261	465	25	500	9,6	5	500 x 110	18	205
4622262	650	50	700	13,6	5	700 x 180	18	260



ACCESSORIES

Order no.	Type	Description
4622275	818 XNB	Support arm, Column height 205 mm, T-groove width 10 mm
4622276	818 XNB	Support arm, Column height 260 mm, T-groove width 12 mm
4622277	818 XNB	Support arm, Column height 360 mm, T-groove width 12 mm

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:

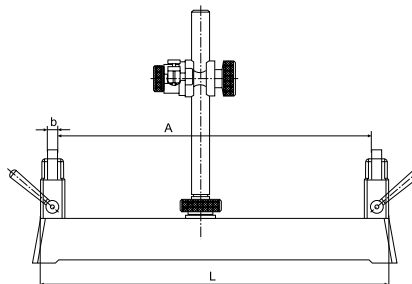
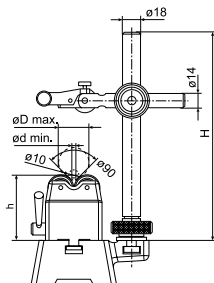
- Fast and easy radial runout testing of anti-friction bearing mounted rollers
- Perfect for smooth-running and seamless rotation of the workpiece, especially heavy parts without a central bore
- During this test procedure, the reference axis is formed by the cylindricity (circumferential surface) of an actual bearing point, e.g. at a transmission shaft. Possible roundness deviations of this cylindrical surface can be included in the radial runout 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
Type		818 R		
Diameter range	mm	3 – 30		4 – 60
Permissible radial run-out deviation	µm	3		4
Permitted height difference	mm		0,05	
Permitted lateral difference	mm		0,05	
Height of roller supports	mm	65		100
Mounting hole			8H7	
T-groove width	mm	10H7		12H7
Product weight	kg	6,50	9,50	30,00

Order no.	A	D	L	b	d	Structural dimensions (L x W)	Column Ø	Column height
	mm	mm	mm	mm	mm	mm	mm	mm
4622250	315	25	350	8	3	350 x 110	18	205
4622251	465	25	500	8	3	500 x 110	18	205
4622252	650	50	700	12	5	700 x 180	18	260



ACCESSORIES

Order no.	Type	Description
4622275	818 XNB	Support arm, Column height 205 mm, T-groove width 10 mm
4622276	818 XNB	Support arm, Column height 260 mm, T-groove width 12 mm
4622277	818 XNB	Support arm, Column height 360 mm, T-groove width 12 mm

Marameter | Indicating measuring instruments

Marameter is the ideal modular measuring system for a wide range of precise measurements, from internal and external dimensions, to 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. The digital Multimar convinces as the most universal caliper in its class.



Indicating measuring instruments

External dimensions, precision point snap gage overview **312**

Marameter 840 F / 840 FC / 840 FH / 840 FG / 840 FM **316**

Indicating snap gages

Marameter 840 FS **321**

For precise measurements of large dimensions

Marameter 840 E **322**

Indicating snap gage

Marameter OMI 301P / M 301P **323**

Indicating snap gage

Marameter 852 TS / 852 TSZ / 852 / 853 **327**

For threads, thread tools, gears

Marameter XLI **334**

Portable thickness gages

Caliper gages

Marameter 838 TAZ/ 838 TA / 838 EA / 838 TIZ / 838 TI / 838 EI **338**

Outer and inner probe with digital and scale display

Comparative measuring instruments for inside dimensions

Marameter 844 D **344**

Bore plug gages and accessories

Marameter 844 K **376**

Self-centering inner measuring devices, sets and modular system

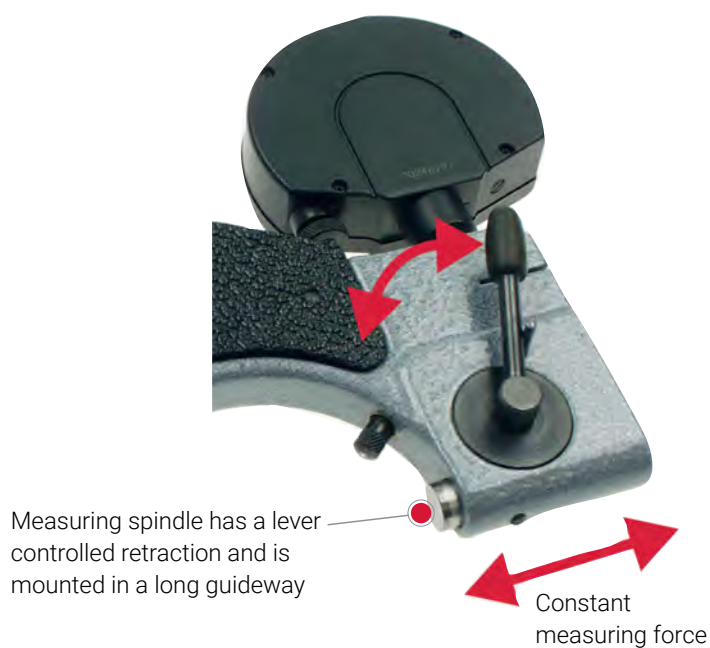
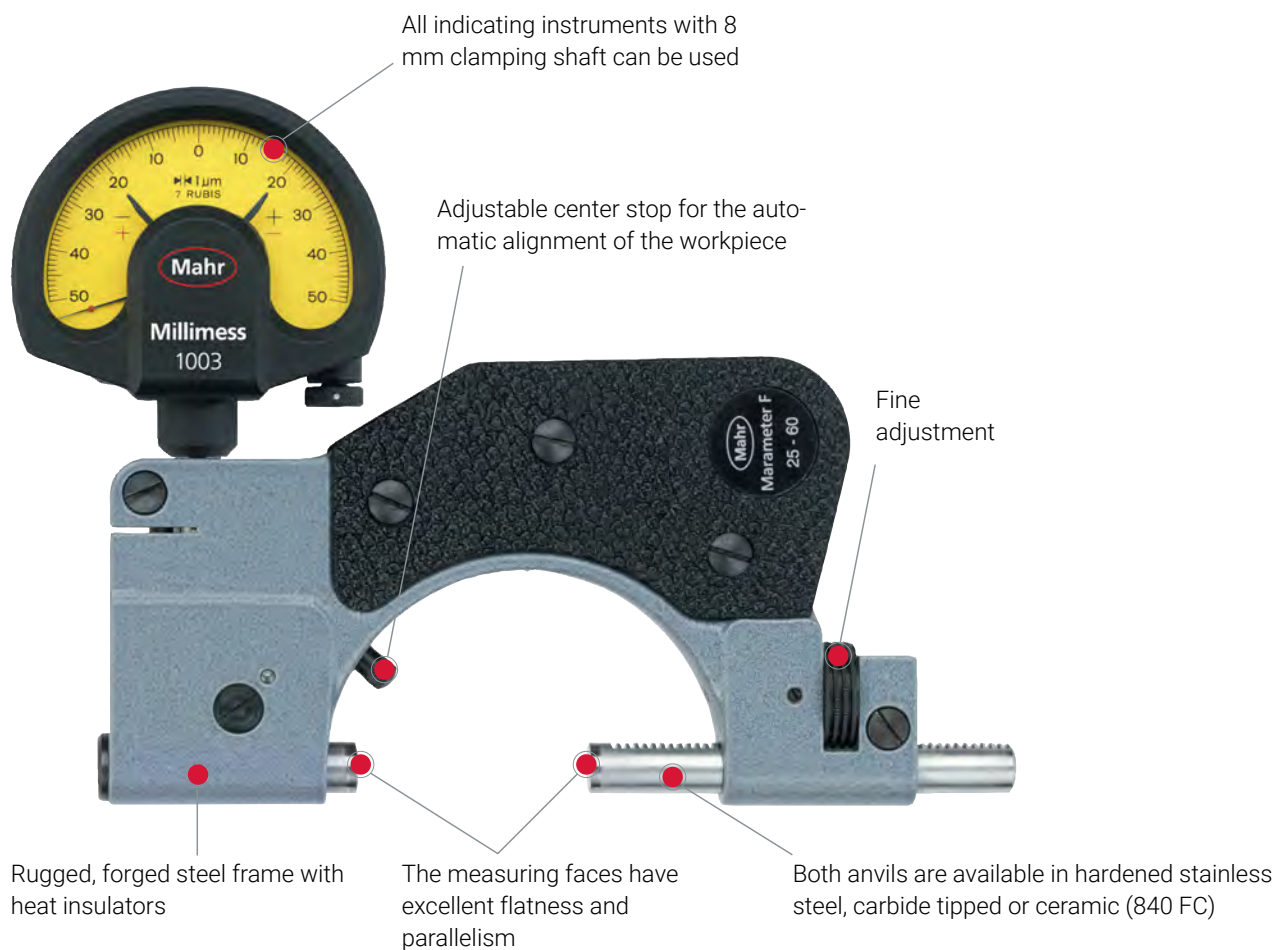
Marameter 844 N / 844 NH / 844 NB **400**

Self-centering inner measuring devices

Marameter

Indicating snap gages 840 F / 840 FC

The Marameter 840 F / 840 FC indicating snap gages are ideal for highly accurate and reliable results on cylindrical workpieces with a narrow tolerance.

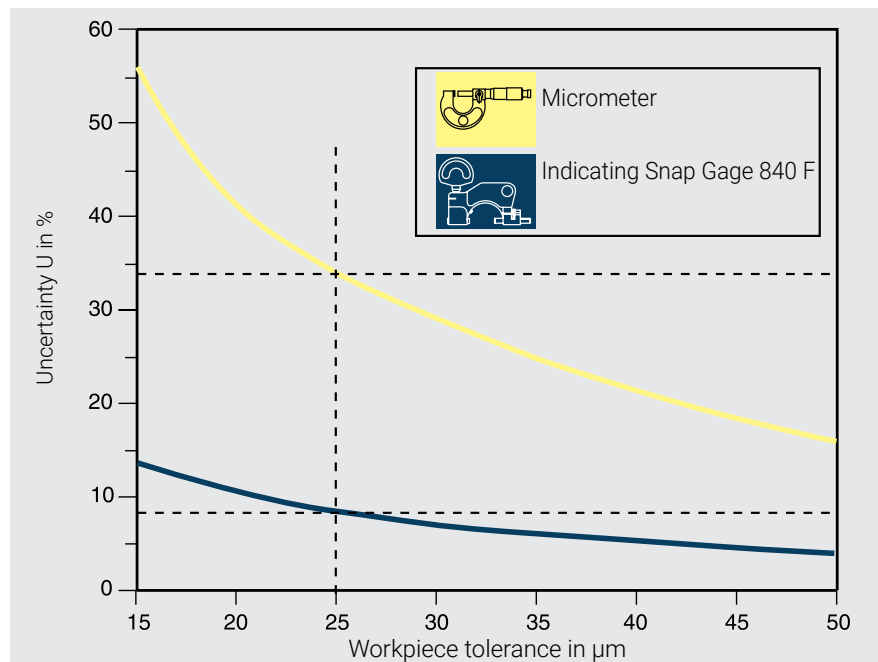


Marameter

Advantages of the 840 F snap gage compared to a micrometer

- Reduced measuring uncertainty

The Marameter indicating snap gages have a notably reduced measuring uncertainty in comparison to a micrometer.

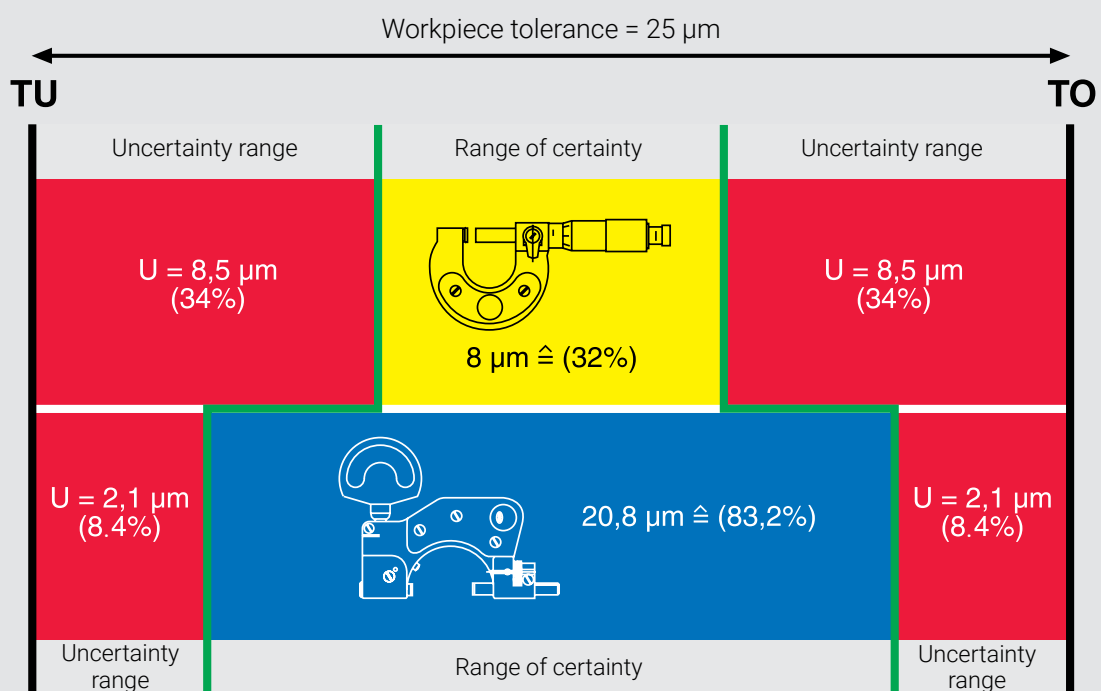


Measuring Uncertainty U is dependent upon the tolerance of the workpiece

- 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 840 F indicating snap gage, 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 production costs.

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



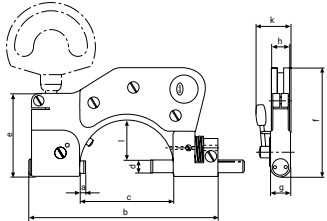
Application:

- 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.	Type	Application range	Measuring span	Repeatability f_w	Flatness deviation	Parallelism deviation	Measuring force	Frame size
		mm	mm	μm	μm	μm	N	
4450000	840 F	0 – 25	2	0,5	0,2	1	7,5	1
4450001	840 F	25 – 60	2	0,5	0,2	2	7,5	2
4450002	840 F	50 – 100	2,5	1	0,2	2	7,5	3
4450003	840 F	100 – 150	2,5	1	0,2	2	9	4
4450004	840 F	150 – 200	2,5	1	0,2	2	9	5

Order no.	a	b	c	d	e	f	g	h	k	l
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4450000	5	97	34	8	54	65	12	13	23	14
4450001	5	140	68	9	60	77	13	13	25	30
4450002	6,5	193	110	10	60	103	14	13	28	54
4450003	6,5	258	162	12	70	141	16	12	31	81
4450004	6,5	316	212	12	75	171	16	12	31	106



ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator 5 μm / $\pm$ 130 μm
4334000	1003	Mechanical dial comparator 1 μm / $\pm$ 50 μm
4334001	1003 XL	Mechanical dial comparator 2 μm / $\pm$ 130 μm
4335000	1002	Mechanical dial comparator 0,5 μm / $\pm$ 25 μm
4337620	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337624	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm
4450020	840 Ff	Base for stationary application
4450050	840 Fk/1	Holder, Frame size 1
4450051	840 Fk/2	Holder, Frame size 2
4450052	840 Fk/3	Holder, Frame size 3
4450053	840 Fk/4	Holder, Frame size 4 + 5



1086 R-HR;
1086 R;
1086 ZR



840 Ff



840 Fk/2



1004



1003



1002

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



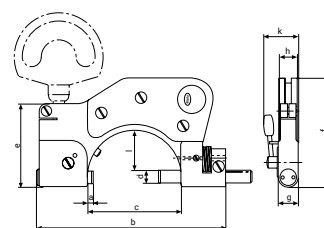
Application:

- 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.	Type	Application range	Measuring span	Repeatability f_w	Flatness deviation	Parallelism deviation	Measuring force	Frame size
		mm	mm	μm	μm	μm	N	
4450100	840 FC	0 – 25	2	1	0,2	1	7,5	1
4450101	840 FC	25 – 60	2	1	0,2	2	7,5	2

Order no.	a	b	c	d	e	f	g	h	k	l
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4450100	5	97	34	8	54	65	12	13	23	14
4450101	5	140	68	9	60	77	13	13	25	30



ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator $5 \mu\text{m} / \pm 130 \mu\text{m}$
4334000	1003	Mechanical dial comparator $1 \mu\text{m} / \pm 50 \mu\text{m}$
4334001	1003 XL	Mechanical dial comparator $2 \mu\text{m} / \pm 130 \mu\text{m}$
4335000	1002	Mechanical dial comparator $0,5 \mu\text{m} / \pm 25 \mu\text{m}$
4337620	1086 R	Digital indicator $12,5 \text{ mm} / 0,0005 \text{ mm}$
4337624	1086 Ri	Digital indicator $12,5 \text{ mm} / 0,0005 \text{ mm}$
4450020	840 Ff	Base for stationary application
4450050	840 Fk/1	Holder, Frame size 1
4450051	840 Fk/2	Holder, Frame size 2



1086 R-HR;
1086 R;
1086 ZR



840 Ff



840 Fk/2



1004



1003



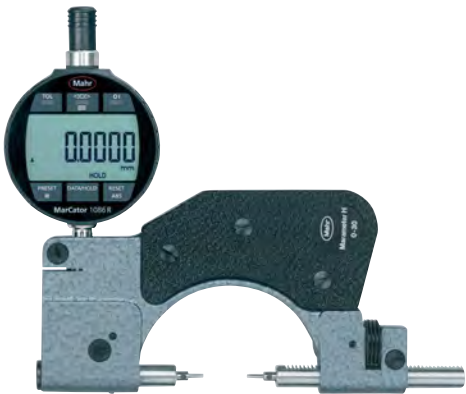
1002

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



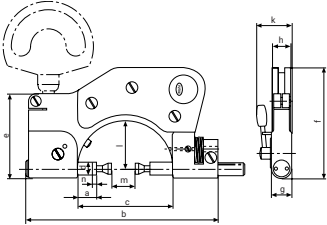
Application:

- 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.	Type	Application range	Measuring span	Repeatability f_w	Measuring force	Frame size
		mm	mm	μm	N	
4451000	840 FH	0 – 30	2	1	7,5	2
4451005	840 FH	30 – 80	2,5	1	7,5	3

Order no.	a	b	c	d	e	f	g	h	k	l	n
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4451000	12,5	140	68	9	60	77	13	13	25	34	2
4451005	7,5	193	110	10	60	103	13	13	28	59	2,5



Marameter 840 FH

Indicating snap gage

ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator 5 μm / $\pm 130 \mu\text{m}$
4334000	1003	Mechanical dial comparator 1 μm / $\pm 50 \mu\text{m}$
4334001	1003 XL	Mechanical dial comparator 2 μm / $\pm 130 \mu\text{m}$
4335000	1002	Mechanical dial comparator 0,5 μm / $\pm 25 \mu\text{m}$
4337620	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337624	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm
4880210		Spanner for 840 FH, to loosen anvils
4450051	840 Fk/2	Holder, Frame size 2
4450020	840 Ff	Base for stationary application
4152036	40 He 0H	Measuring anvils, End faces, carbide design
4152011	40 He 1	Measuring anvils, recessed plane surfaces
4152033	40 He 1H	Measuring anvils, recessed end faces, carbide
4152012	40 He 2	Measuring anvils, recessed plane surfaces
4152031	40 He 2H	Measuring anvils, recessed end faces, carbide
4152013	40 He 3	Measuring anvils, Disk-shaped measuring surfaces
4152014	40 He 4	Measuring anvils, Disk-shaped measuring surfaces with V-shaped grooves
4152015	40 He 5	Measuring anvils, Measuring blades
4152016	40 He 6	Measuring anvils, Wing-shaped measuring surfaces
4152017	40 He 7	Measuring anvils, recessed measuring blades
4152018	40 He 8	Measuring anvils, recessed end faces with V-grooves on sleeve
4152019	40 He 9	Measuring anvils, recessed end faces with attachable support table
4152020	40 He 10	Measuring anvils, with centric bores
4152021	40 He 11	Measuring anvils, with tips
4450052	840 Fk/3	Holder, Frame size 3



1004



1003



1002



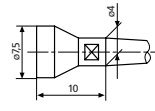
1086 R-HR;
1086 R;
1086 ZR



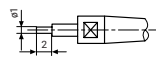
840 Fk/2



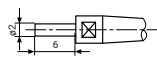
840 Ff



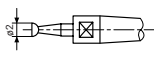
40 He 0H



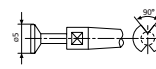
40 He 1;
40 He 1H



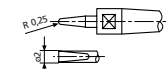
40 He 2;
40 He 2H



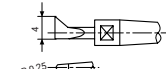
40 He 3



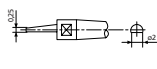
40 He 4



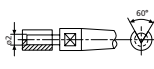
40 He 5



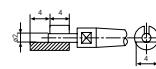
40 He 6



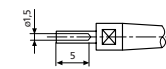
40 He 7



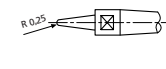
40 He 8



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



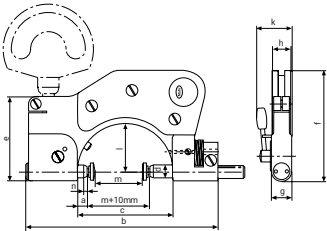
Application:

- 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.	Type	Application range	Measuring span	Repeatability f_w	Measuring force	Frame size
		mm	mm	μm	N	
4454000	840 FG	0 – 50	2	1	7,5	2
4454001	840 FG	40 – 90	2,5	1	7,5	3

Order no.	a	b	c	d	e	f	g	h	k	l	n
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4454000	5	140	68	9	60	77	13	13	25	34	2
4454001	6,5	193	110	10	60	103	14	13	28	59	2,5



Marameter 840 FG

Indicating snap gage

ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator 5 μm / $\pm 130 \mu\text{m}$
4334000	1003	Mechanical dial comparator 1 μm / $\pm 50 \mu\text{m}$
4334001	1003 XL	Mechanical dial comparator 2 μm / $\pm 130 \mu\text{m}$
4335000	1002	Mechanical dial comparator 0,5 μm / $\pm 25 \mu\text{m}$
4337620	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337624	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm
4450051	840 Fk/2	Holder, Frame size 2
4450020	840 Ff	Base for stationary application
4360002	901 H	Standard contact point, carbide, r = 1,5 mm
4360041	902 H	Spherical contact point, carbide, l = 10 mm, r = 6 mm
4360043	902 H	Spherical contact point, carbide, l = 15 mm, r = 6 mm
4360044	902 H	Spherical contact point, carbide, l = 20 mm, r = 6 mm
4360101	903 H	Flat contact point, carbide, l = 6 mm
4360103	903 H	Flat contact point, carbide, l = 10 mm
4360105	903 H	Flat contact point, carbide, l = 15 mm
4360106	903 H	Flat contact point, carbide, l = 20 mm
4360131	904 H	Conical contact point, carbide, r = 0,3 mm
4360150	906 H	Ball contact points, carbide, l = 8,5 mm, d = 1,0 mm
4360151	906 H	Ball contact points, carbide, l = 8,5 mm, d = 1,25 mm
4360152	906 H	Ball contact points, carbide, l = 8,5 mm, d = 1,5 mm
4360153	906 H	Ball contact points, carbide, l = 8,5 mm, d = 1,75 mm
4360154	906 H	Ball contact points, carbide, l = 8,5 mm, d = 2,0 mm
4360155	906 H	Ball contact points, carbide, l = 8,5 mm, d = 2,5 mm
4360156	906 H	Ball contact points, carbide, l = 8,5 mm, d = 3,0 mm
4360157	906 H	Ball contact points, carbide, l = 8,5 mm, d = 3,5 mm
4360158	906 H	Ball contact points, carbide, l = 8,5 mm, d = 4,0 mm
4360159	906 H	Ball contact points, carbide, l = 8,5 mm, d = 4,5 mm
4360160	906 H	Ball contact points, carbide, l = 9 mm, d = 5,0 mm
4360161	906 H	Ball contact points, carbide, l = 9 mm, d = 5,5 mm
4360162	906 H	Ball contact points, carbide, l = 9 mm, d = 6 mm
4360163	906 H	Ball contact points, carbide, l = 9 mm, d = 6,35 mm
4360164	906 H	Ball contact points, carbide, l = 10 mm, d = 6,5 mm
4360165	906 H	Ball contact points, carbide, l = 10 mm, d = 7 mm
4360166	906 H	Ball contact points, carbide, l = 11 mm, d = 7,5 mm
4360167	906 H	Ball contact points, carbide, l = 11 mm, d = 8,0 mm
4360168	906 H	Ball contact points, carbide, l = 12 mm, d = 8,5 mm
4360169	906 H	Ball contact points, carbide, l = 12 mm, d = 9,0 mm
4360170	906 H	Ball contact points, carbide, l = 13 mm, d = 10,0 mm
4360200	907	Flat contact plates, steel, Measuring surface $\varnothing 11,3$ mm
4360201	907 H	Flat contact plates, carbide, Measuring surface $\varnothing 7$ mm
4360210	908	Spherical contact plates, steel, steel, Measuring surface $\varnothing 12$ mm
4360211	908 H	Spherical contact plates, steel, carbide, Measuring surface $\varnothing 12$ mm
4360240	911 H1	Pin contact point, carbide, l = 2 mm, Measuring surface $\varnothing 1$ mm
4450052	840 Fk/3	Holder, Frame size 3



1004



1003



1002



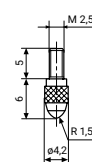
1086 R-HR
1086 R;
1086 ZR



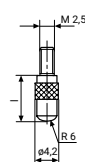
840 Fk/2



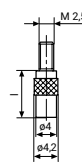
840 Ff



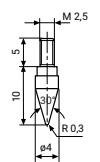
901 H; 901;
901 R



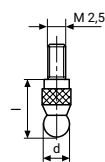
902; 902 H



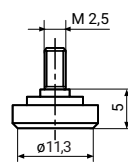
903; 903 H



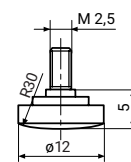
904; 904 H



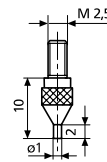
906 H



907



908; 908 H



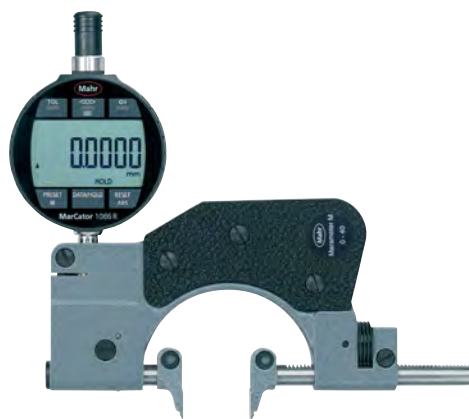
911 H1

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



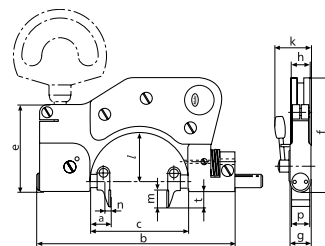
Application:

- For inspection of diameters of small hubs, registers and shoulders on shafts
- Can be used to inspect tooth span W_k 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.		4452000	4452001	4452002	4452003
Type		840 FM			
Application range mm	mm	0 – 40	40 – 80	80 – 130	130 – 180
Application range	inch	0 – 1.57"	1.57 – 3"	3 – 5"	5 – 7"
Measuring span	mm	2		2,5	
Repeatability f_w	μm			1	
Flatness deviation	μm			0,5	
Parallelism deviation	μm	2		3	
Measuring force	N		7,5		9
Base tangent lengths starting from module m			0,5		1
Size of measuring surface			12 x 12 mm		15 x 17 mm
Frame size		2	3	4	5

Order no.	a	b	c	e	f	g	h	k	l	m	p	t
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4452000	14	140	68	60	77	13	13	25	34	12	12	11
4452001	14	193	110	60	103	14	13	28	59	12	12	11
4452002	19	258	162	70	141	16	20	31	87	17	15	17
4452003	15	316	212	75	171	16	20	31	112	17	15	17



ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator $5 \mu\text{m} / \pm 130 \mu\text{m}$
4334000	1003	Mechanical dial comparator $1 \mu\text{m} / \pm 50 \mu\text{m}$
4334001	1003 XL	Mechanical dial comparator $2 \mu\text{m} / \pm 130 \mu\text{m}$
4335000	1002	Mechanical dial comparator $0,5 \mu\text{m} / \pm 25 \mu\text{m}$
4337620	1086 R	Digital indicator $12,5 \text{ mm} / 0,0005 \text{ mm}$
4337624	1086 Ri	Digital indicator $12,5 \text{ mm} / 0,0005 \text{ mm}$
4450051	840 Fk/2	Holder, Frame size 2
4450020	840 Ff	Base for stationary application
4450052	840 Fk/3	Holder, Frame size 3
4450053	840 Fk/4	Holder, Frame size 4 + 5



1004



1003



1002



1086 R-HR;
1086 R; 1086 ZR



840 Fk/2



840 Ff

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



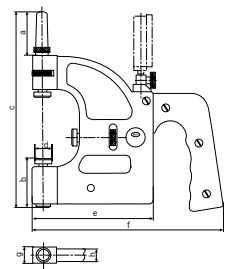
Application:

- 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.	Type	Application range	Measuring span	Repeatability f_w	Flatness deviation	Parallelism deviation	Measuring force	Product weight
		mm	mm	μm	μm	μm	N	kg
4455000	840 FS	10 – 30	0,7	1	0,5	3	13,5	0,60
4455001	840 FS	30 – 60	0,7	1	0,5	3	13,5	0,90
4455002	840 FS	60 – 100	0,7	1	0,5	3	13,5	1,30
4455003	840 FS	100 – 150	0,7	1	0,5	3	15	1,70
4455004	840 FS	150 – 200	0,7	1	0,5	3	15	2,00
4455005	840 FS	200 – 250	0,7	1	0,5	3	15	2,20
4455006	840 FS	250 – 300	0,7	1	0,5	3	15	2,50
4455007	840 FS	300 – 350	0,7	1	0,5	4	15	3,30
4455008	840 FS	350 – 400	0,7	1	0,5	4	15	3,30
4455009	840 FS	400 – 450	0,7	1	0,5	4	15	4,30
4455010	840 FS	450 – 500	0,7	1	0,5	4	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



ACCESSORIES

Order no.	Type	Description
4335000	1002	Mechanical dial comparator 0,5 μm / $\pm 25 \mu\text{m}$
4334000	1003	Mechanical dial comparator 1 μm / $\pm 50 \mu\text{m}$
4334001	1003 XL	Mechanical dial comparator 2 μm / $\pm 130 \mu\text{m}$
4333000	1004	Mechanical dial comparator 5 μm / $\pm 130 \mu\text{m}$
4337620	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337624	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm



1004



1003



1002



1086 R-HR;
1086 R; 1086 ZR

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.	Type	Application range	Measuring span	Readings/Selectable resolution down to	Repeatability f_w	Parallelism deviation	Measuring force	Measuring surface $\varnothing$	Measuring Frame size
4453000	840 E	mm 0 – 25	mm 0,5	μm 0,01	μm 0,1	μm 0,3	N 4,5	mm 7,5	1

ACCESSORIES

Order no.	Type	Description
5312012	C 1200 M	Compact amplifier
5312025	C 1202	Compact amplifier
5331120	N 1702 M	Module for inductive probes
5331125	N 1702 M-HR	Module for inductive probes
4450020	840 Ff	Base for stationary application



C 1200 M



C 1202



N 1702 M



N 1702 M-HR



840 Ff

Marameter OMI 301P

Indicating snap gage

FEATURES

- Large carbide measuring surfaces (with front chamfer for safe slide-on) for secure centering on the workpiece
- Lifting Lever: The upper spring forced measuring contact can be lifted via a lever, making it easier to insert it onto the workpiece without contact
- To adjust the measuring range, the adjustable slide element is positioned and clamped at any point using the enclosed allen key
- The adjustable centering stop is used to set up repeatable measuring positions on the workpiece
- The patented "Channel Lock" design assures the high parallelism requirements over the range of adjustment
- Package contains: allen key, excludes indicator

Application:

- For quick measurements on cylindrical parts
- For diameter and length measurements



TECHNICAL DATA

Order no.	Type	Application range	Measuring span	Parallelism deviation	Measuring force	Mounting hole for indicator	Size of measuring surface
		inch	inch	μm	N	inch	mm
2054300	OMI 301P	0 – 1"	0,02	4	18	0,375	15,5 x 15,5
2054301	OMI 301P	9 – 10"	0,02	4	18	0,375	15,5 x 15,5
2054302	OMI 301P	10 – 11"	0,02	4	18	0,375	15,5 x 15,5
2054303	OMI 301P	11 – 12"	0,02	4	18	0,375	15,5 x 15,5
2054304	OMI 301P	12 – 13"	0,02	4	18	0,375	15,5 x 15,5
2054305	OMI 301P	13 – 14"	0,02	4	18	0,375	15,5 x 15,5
2054306	OMI 301P	1 – 2"	0,02	4	18	0,375	15,5 x 15,5
2054307	OMI 301P	2 – 3"	0,02	4	18	0,375	15,5 x 15,5
2054313	OMI 301P	3 – 4"	0,02	4	18	0,375	15,5 x 15,5
2054314	OMI 301P	4 – 5"	0,02	4	18	0,375	15,5 x 15,5
2054315	OMI 301P	5 – 6"	0,02	4	18	0,375	15,5 x 15,5
2054316	OMI 301P	6 – 7"	0,02	4	18	0,375	15,5 x 15,5
2054317	OMI 301P	7 – 8"	0,02	4	18	0,375	15,5 x 15,5
2054318	OMI 301P	8 – 9"	0,02	4	18	0,375	15,5 x 15,5
2063415	OMI 301P	14 – 15"	0,02	4	18	0,375	15,5 x 15,5
2063416	OMI 301P	15 – 16"	0,02	4	18	0,375	15,5 x 15,5
2063417	OMI 301P	16 – 17"	0,02	4	18	0,375	15,5 x 15,5
2063418	OMI 301P	17 – 18"	0,02	4	18	0,375	15,5 x 15,5
2063419	OMI 301P	18 – 19"	0,02	4	18	0,375	15,5 x 15,5
2063420	OMI 301P	19 – 20"	0,02	4	18	0,375	15,5 x 15,5

ACCESSORIES

Order no.	Type	Description
4333900	1004 Z	Mechanical dial comparator .0001" / ± .0050"
4332900	1010 Z	Mechanical dial comparator .0005" / ± .0100"
4337910	1086 ZRi	Digital indicator 12,5 mm / 0,0005 mm



1004 Z



1010 Z



1086 ZRi

Marameter M 301P

Indicating snap gage

FEATURES

- Large carbide measuring surfaces (with front chamfer for safe slide-on) for secure centering on the workpiece
- Lifting Lever: The upper spring forced measuring contact can be lifted via a lever, making it easier to insert it onto the workpiece without contact
- To adjust the measuring range, the adjustable slide element is positioned and clamped at any point using the enclosed allen key
- The adjustable centering stop is used to set up repeatable measuring positions on the workpiece
- The patented "Channel Lock" design assures the high parallelism requirements over the range of adjustment
- Package contains: allen key, excludes indicator

Application:

- For quick measurements on cylindrical parts
- For diameter and length measurements



TECHNICAL DATA

Order no.	Type	Application range	Application range	Measuring span	Parallelism deviation	Measuring force	Mounting hole for indicator	Size of measuring surface
		mm	inch	mm	μm	N	mm	mm
2003110	M 301P	0 – 25	0 – 1"	0,5	4	18	8	15,5 x 15,5
2003111	M 301P	25 – 51	1 – 2"	0,5	4	18	8	15,5 x 15,5
2003112	M 301P	51 – 76	2 – 3"	0,5	4	18	8	15,5 x 15,5
2003113	M 301P	76 – 102	3 – 4"	0,5	4	18	8	15,5 x 15,5
2003114	M 301P	102 – 127	4 – 5"	0,5	4	18	8	15,5 x 15,5
2003115	M 301P	127 – 152	5 – 6"	0,5	4	18	8	15,5 x 15,5
2003116	M 301P	152 – 178	6 – 7"	0,5	4	18	8	15,5 x 15,5
2003117	M 301P	178 – 203	7 – 8"	0,5	4	18	8	15,5 x 15,5
2003118	M 301P	203 – 229	8 – 9"	0,5	4	18	8	15,5 x 15,5
2064110	M 301P	229 – 254	9 – 10"	0,5	4	18	8	15,5 x 15,5
2064111	M 301P	254 – 279	10 – 11"	0,5	4	18	8	15,5 x 15,5
2064112	M 301P	279 – 305	11 – 12"	0,5	4	18	8	15,5 x 15,5
2064113	M 301P	305 – 330	12 – 13"	0,5	4	18	8	15,5 x 15,5
2064114	M 301P	330 – 356	13 – 14"	0,5	4	18	8	15,5 x 15,5
2064115	M 301P	356 – 381	14 – 15"	0,5	4	18	8	15,5 x 15,5
2064116	M 301P	381 – 406	15 – 16"	0,5	4	18	8	15,5 x 15,5
2064117	M 301P	406 – 432	16 – 17"	0,5	4	18	8	15,5 x 15,5
2064118	M 301P	432 – 457	17 – 18"	0,5	4	18	8	15,5 x 15,5
2064119	M 301P	457 – 483	18 – 19"	0,5	4	18	8	15,5 x 15,5
2064120	M 301P	483 – 508	19 – 20"	0,5	4	18	8	15,5 x 15,5

ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator 5 μm / ± 130 μm
4332000	1010	Mechanical dial comparator 0,01 mm / ± 0,25 mm
4337700	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337720	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm



1004



1086 R



1086 Ri

Marameter OMI 301P - with blade anvils

Indicating snap gage

FEATURES

- With narrow carbide measuring surfaces (with front chamfer for safe slide-on)
- Lifting Lever: The upper spring forced measuring contact can be lifted via a lever, making it easier to insert it onto the workpiece without contact
- To adjust the measuring range, the adjustable slide element is positioned and clamped at any point using the enclosed allen key
- The adjustable centering stop is used to set up repeatable measuring positions on the workpiece
- The patented "Channel Lock" design assures the high parallelism requirements over the range of adjustment
- Package contains: allen key, excludes indicator

Application:

- Equipped with narrow measuring surfaces, ideal for measuring in recesses or confined spaces
- For quick measurements on cylindrical parts
- For diameters and lengths



TECHNICAL DATA

Order no.	Type	Application range	Measuring span	Parallelism deviation	Measuring force	Mounting hole for indicator	Size of measuring surface
		inch	inch	μm	N	inch	mm
2054308	OMI 301P - with blade anvils	0 – 1"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")
2054309	OMI 301P - with blade anvils	1 – 2"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")
2054310	OMI 301P - with blade anvils	2 – 3"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")
2054311	OMI 301P - with blade anvils	3 – 4"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")
2054312	OMI 301P - with blade anvils	4 – 5"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")
2063436	OMI 301P - with blade anvils	5 – 6"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")
2063437	OMI 301P - with blade anvils	6 – 7"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")
2063438	OMI 301P - with blade anvils	7 – 8"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")
2063439	OMI 301P - with blade anvils	8 – 9"	0,02	4	18	0,375	2.13 x 6.35 (.61"x.61")

ACCESSORIES

Order no.	Type	Description
4333900	1004 Z	Mechanical dial comparator .0001" / ± .0050"
4332900	1010 Z	Mechanical dial comparator .0005" / ± .0100"
4337910	1086 ZRi	Digital indicator 12,5 mm / 0,0005 mm



1004 Z



1010 Z



1086 ZRi

Marameter M 301P - with blade anvils

Indicating snap gage

FEATURES

- With narrow carbide measuring surfaces (with front chamfer for safe slide-on)
- Lifting Lever: The upper spring forced measuring contact can be lifted via a lever, making it easier to insert it onto the workpiece without contact
- To adjust the measuring range, the adjustable slide element is positioned and clamped at any point using the enclosed allen key
- The adjustable centering stop is used to set up repeatable measuring positions on the workpiece
- The patented "Channel Lock" design assures the high parallelism requirements over the range of adjustment
- Package contains: allen key, excludes indicator

Application:

- Equipped with narrow measuring surfaces, ideal for measuring in recesses or confined spaces
- For quick measurements on cylindrical parts
- For diameters and lengths



TECHNICAL DATA

Order no.	Type	Application range	Application range	Measuring span	Parallelism deviation	Measuring force	Mounting hole for indicator	Size of measuring surface
		mm	inch	mm	µm	N	mm	
2064131	M 301 P - with blade anvils	0 – 25	0 – 1"	0,5	4	18	8	2.13 x 6.35
2064132	M 301 P - with blade anvils	25 – 51	1 – 2"	0,5	4	18	8	2.13 x 6.35
2064133	M 301 P - with blade anvils	51 – 76	2 – 3"	0,5	4	18	8	2.13 x 6.35
2064134	M 301 P - with blade anvils	76 – 102	3 – 4"	0,5	4	18	8	2.13 x 6.35
2064135	M 301 P - with blade anvils	102 – 127	4 – 5"	0,5	4	18	8	2.13 x 6.35
2064136	M 301 P - with blade anvils	127 – 152	5 – 6"	0,5	4	18	8	2.13 x 6.35
2064137	M 301 P - with blade anvils	152 – 178	6 – 7"	0,5	4	18	8	2.13 x 6.35
2064138	M 301 P - with blade anvils	178 – 203	7 – 8"	0,5	4	18	8	2.13 x 6.35
2064139	M 301 P - with blade anvils	203 – 229	8 – 9"	0,5	4	18	8	2.13 x 6.35

ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator 5 µm / ± 130 µm
4332000	1010	Mechanical dial comparator 0,01 mm / ± 0,25 mm
4337700	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337720	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm



1004



1086 R



1086 Ri

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
Type		852 TS		852 TSZ
Application range mm	mm	0 – 80		
Application range	inch	0 – 3.15"		
Measuring span	mm	1,2		
Flatness deviation	µm	0,3		
Parallelism deviation	µm	2		
Measuring force	N	7,5		
Mounting hole for indicator	mm	8		
Mounting hole for indicator	inch			0,375

ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator 5 µm / ± 130 µm
4334000	1003	Mechanical dial comparator 1 µm / ± 50 µm
4334001	1003 XL	Mechanical dial comparator 2 µm / ± 130 µm
4335000	1002	Mechanical dial comparator 0,5 µm / ± 25 µm
4337620	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337624	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm



1004



1003



1002



1086 R-HR;
1086 R;
1086 ZR

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



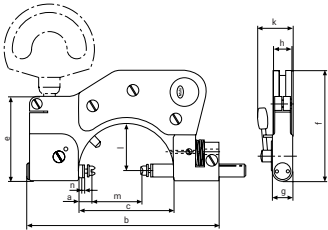
Application:

- 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
Type		852			
Application range mm	mm	0 – 45	45 – 85	85 – 140	140 – 190
Application range	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.	a	b	c	e	f	g	h	k	l
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4510000	13	140	68	60	77	13	13	25	34
4510001	8	193	11	60	103	14	13	28	59
4510002	10	258	162	70	141	16	12	31	87
4510003	6	316	212	75	171	16	12	31	112



ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator 5 µm / ± 130 µm
4334000	1003	Mechanical dial comparator 1 µm / ± 50 µm
4334001	1003 XL	Mechanical dial comparator 2 µm / ± 130 µm
4335000	1002	Mechanical dial comparator 0,5 µm / ± 25 µm
4337620	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337624	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm
4450051	840 Fk/2	Holder, Frame size 2
4450020	840 Ff	Base for stationary application
4173210	40 Za	Anvil flat, hardened steel, Ø 7.5 mm
4511190	40 Za	Anvil flat, carbide tipped, Ø 7.5 mm
4450052	840 Fk/3	Holder, Frame size 3
4450053	840 Fk/4	Holder, Frame size 4 + 5



1004



1003



1002



1086 R-HR;
1086 R;
1086 ZR



840 Fk/2



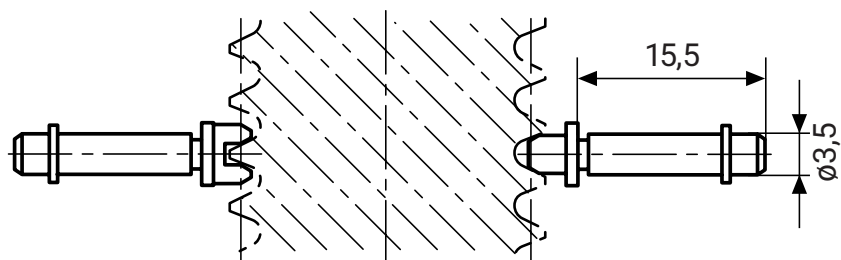
840 Ff

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.



ACCESSORIES

Thread pitch	Blade Order no.	V-anvil Order no.
Pitch diameter, external thread		
Metric 60°		
0,2	4173007	4173707
0,25	4173008	4173708
0,3	4173009	4173709
0,35	4173010	4173710
0,4	4173011	4173711
0,45	4173012	4173712
0,5 – 0,7	4173000	4173700
0,7 – 1	4173001	4173701
1,25 – 2	4173002	4173702
2 – 3,5	4173003	4173703
3,5 – 5	4173004	4173704
5 – 7	4173005	4173705

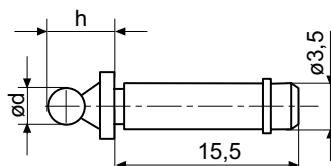
Thread pitch in TPI	Blade Order no.	V-anvil Order no.
UST 60°		
10 – 7	4173120	4173820
14 – 10	4173119	4173819
18 – 14	4173118	4173818
24 – 18	4173117	4173817
32 – 24	4173116	4173816
4,5 – 3	4173122	4173822
40 – 32	4173115	4173815
48 – 40	4173114	4173814
7 – 4,5	4173121	4173821
Whitworth 55°		
10 – 7	4173048	4173748
14 – 10	4173047	4173747
18 – 14	4173046	4173746
24 – 18	4173045	4173745
3 – 2,5	4179408	4179410
32 – 24	4173044	4173744
4,5 – 3	4173050	4173750
40 – 32	4173043	4173743
7 – 4,5	4173049	4173749

Marameter

Ball contact

FEATURES

- For gear measurement and for special tasks
- Carbide measuring balls
- Cylindrical mounting shank with circlip for mounting in the mounting bore of the micrometer or indicating snap gage



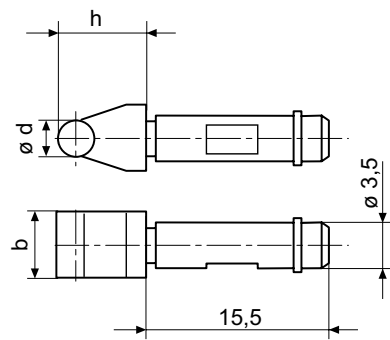
Order no.	d mm	h mm	Measuring surface
4179150	0,5	5	Carbide
4179151	0,551	5,1	Carbide
4179152	0,62	5,1	Carbide
4179153	0,623	5,1	Carbide
4179154	0,63	5,1	Carbide
4179155	0,722	5,2	Carbide
4179156	0,862	5,4	Carbide
4179157	0,895	5,4	Carbide
4179158	0,965	5,5	Carbide
4170550	1	5,5	Carbide
4179159	1,1	5,6	Carbide
4179160	1,118	5,6	Carbide
4170551	1,25	5,8	Carbide
4179161	1,125	5,6	Carbide
4179162	1,35	5,9	Carbide
4179163	1,372	5,9	Carbide
4179164	1,385	5,9	Carbide
4170552	1,5	6	Carbide
4179165	1,524	6	Carbide
4179166	1,54	6	Carbide
4179167	1,6	6,1	Carbide
4179168	1,65	6,2	Carbide
4179169	1,7	6,2	Carbide
4170553	1,75	6,3	Carbide
4179170	1,782	6,3	Carbide
4179171	1,8	6,3	Carbide
4179172	1,829	6,3	Carbide
4179173	1,9	6,4	Carbide
4170554	2	6,5	Carbide
4170568	2,032	6,5	Carbide
4170569	2,2	6,7	Carbide
4170564	2,25	6,8	Carbide
4179174	2,284	6,8	Carbide
4179175	2,386	6,9	Carbide
4179176	2,438	6,9	Carbide
4170556	2,5	7	Carbide
4179177	2,667	7,2	Carbide
4179178	2,704	7,2	Carbide
4179179	2,713	7,2	Carbide
4179180	2,721	7,2	Carbide
4179181	2,743	7,2	Carbide
4170565	2,75	7,3	Carbide
4170557	3	7,5	Carbide
4179182	3,048	7,5	Carbide
4170570	3,2	7,7	Carbide
4170566	3,25	7,8	Carbide
4179183	3,4	7,9	Carbide
4170558	3,5	8	Carbide
4179184	3,658	8,2	Carbide
4170571	3,7	8,2	Carbide
4170559	4	8,5	Carbide
4170560	4,5	9	Carbide
4179185	4,835	9,3	Carbide
4170561	5	9,5	Carbide
4179186	5,25	9,8	Carbide
4179187	5,486	10	Carbide
4170562	5,5	10	Carbide
4170563	6	10,5	Carbide
4179188	6,096	10,6	Carbide
4179189	6,35	10,9	Carbide
4170567	6,5	11	Carbide
4170572	7	11,5	Carbide
4170573	8	12,5	Carbide
4170574	9	13,5	Carbide
4170575	10	14,5	Carbide

Marameter

Carbide roller blades

FEATURES

- For gear measurement and for special tasks
- Carbide contact roller
- Cylindrical mounting shank with circlip for mounting in the mounting bore of the micrometer or indicating snap gage



Order no.	b mm	d mm	h mm	Measuring surface
4510200	5	1	5,5	Carbide
4510201	5	1,25	5,8	Carbide
4510202	5	1,5	6	Carbide
4510203	5	1,75	6,3	Carbide
4510204	5	2	6,5	Carbide
4510206	5,5	2,5	7	Carbide
4510207	5,5	3	7,5	Carbide
4510208	5,5	3,5	8	Carbide
4510209	5,5	4	8,5	Carbide
4510210	5,5	4,5	9	Carbide
4510211	6	5	9,5	Carbide
4510212	6	5,5	10	Carbide
4510213	6	6	10,5	Carbide

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:

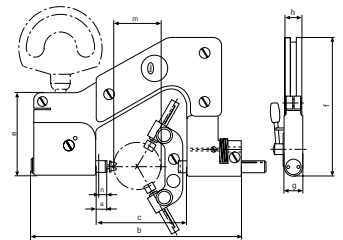
- For pitch, root and outside diameters on taps in conjunction with interchangeable anvils
- Universally applicable and extremely versatile; each instrument spans a broad measuring range



TECHNICAL DATA

Order no.	4511000		4511001
Type			853
Application range mm	mm	1,2 – 35	35 – 75
Application range	inch	.04 – 1.37"	1.37 – 3"
Measuring span	mm	8	
Repeatability f_w	μm	2	
Measuring force	N	7,5	

Order no.	a	b	c	e	f	g	h	n
	mm	mm	mm	mm	mm	mm	mm	mm
4511000	12	152	66	60	98	14	11,5	8
4511001	11,5	192	110	65	125	14	14	8



ACCESSORIES

Order no.	Type	Description
4334001	1003 XL	Mechanical dial comparator 2 μm / $\pm 130 \mu\text{m}$
4333000	1004	Mechanical dial comparator 5 μm / $\pm 130 \mu\text{m}$
4332000	1010	Mechanical dial comparator 0,01 mm / $\pm 0,25 \text{ mm}$
4337620	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337624	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm
4511024	853 qk 3	Interchangeable support yoke 3 flutes of taps for 1.2–35 mm range
4511025	853 qg 3	Interchangeable support yoke 3 flutes of taps for range 35–75mm
4511026	853 qk 5	Interchangeable support yoke 5 flutes of taps for 1.2–35 mm range
4511027	853 qg 5	Interchangeable support yoke 5 flutes of taps for 35–75 mm range
4511028	853 qk 7	Interchangeable support yoke 7 flutes of taps for 1.2–35 mm range
4511029	853 qg 7	Interchangeable support yoke 7 flutes of taps for 35–75 mm range
4511190	40 Za	Anvil flat, carbide tipped, $\varnothing 7.5 \text{ mm}$
4173210	40 Za	Anvil flat, hardened steel, $\varnothing 7.5 \text{ mm}$



1004



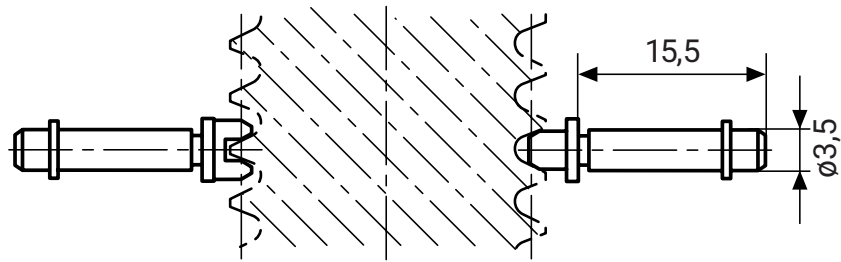
1086 R-HR;
1086 R;
1086 ZR

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	Blade Order no.	V-anvil Order no.
Pitch diameter, external thread		
Metric 60°		
0,2	4173051	4174007
0,25	4173052	4174008
0,3	4173053	4174009
0,35	4173054	4174010
0,4	4173055	4174011
0,45	4173056	4174012
0,5 – 0,7	4173000	4174000
0,7 – 1	4173001	4174001
1,25 – 2	4173002	4174002
2 – 3,5	4173003	4174003
3,5 – 5	4173004	4173704
5 – 7	4173005	4174005

Thread pitch in TPI	Blade Order no.	V-anvil Order no.
UST 60°		
48 – 40	4173125	4176114
40 – 32	4173115	4176115
32 – 24	4173116	4176116
24 – 18	4173117	4176117
18 – 14	4173118	4176118
14 – 10	4173119	4176119
10 – 7	4173120	4176120
7 – 4,5	4173121	4176121
4,5 – 3	4173122	4176122
Whitworth 55 °		
40 – 32	4173043	4176043
32 – 24	4173044	4176044
24 – 18	4173045	4176045
18 – 14	4173046	4176046
14 – 10	4173047	4176047
10 – 7	4173048	4176048
7 – 4,5	4173049	4176049
4,5 – 3	4173050	4176050
3 – 2,5	4179408	4179411

Marameter XLI- 22P- 20

Portable thickness gages



FUNCTIONS

- 0 (set the analog scale display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- ABS (display can be set to zero without losing reference to preset)
- TOL (enter tolerance limit values)
- Factor (Multiplier for measuring travel)
- DATA (data transmission)
- LOCK (individual key lock)



FEATURES

- Flat measuring contacts made of stainless steel
- Indicator built into gage frame for maximum ruggedness
- Lift lever for one hand operation
- Digital indicator 1086 ZRi with data output for cable and Integrated Wireless
- Clear reading on the high-contrast, large display of the indicator (digit height 11 mm)
- Energy supply: battery operation
- Battery type: CR 2450N (3V Lithium)
- Data interface: Integrated Wireless, USB, Digimatic
- Package contains: Indicator, battery, instruction manual

Application:

- Fast measurement of small parts, sheets, foils and other thin materials

TECHNICAL DATA

Order no.		2057541
Type		XLI- 22P- 20
Mesuring span of indicator	mm	0 – 25 mm
Mesuring span of indicator	inch	0 – 1"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"
Measuring force	N	0.65 – 1.15
Size of measuring surface		Ø 6.3 mm (.25")
Jaw depth	mm	50
Jaw depth	inch	2"
Indicating instrument (included in package)		1086 ZRi

Marameter XLI-57B-1/XLI-57B-12

Thickness gage



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
- Digital indicator 1086 ZRi with data output for cable and Integrated Wireless
- Energy supply: battery operation
- Battery type: CR 2450N (3V Lithium)
- Data interface: USB, Digimatic, Integrated Wireless
- Package contains: Indicator, battery, instruction manual



Application:

- For precise measurement of material thickness

TECHNICAL DATA

Order no.		2057548	2057549
Type		XLI-57B-11	XLI-57B-12
Mesuring span of indicator	mm	0 - 25 mm	0 - 12,5 mm
Mesuring span of indicator	inch	0 - 1"	0 - .5"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01	
Resolution	inch	.00002", .00005", .0001", .0002", .0005"	
Jaw depth	mm	102	
Throat depth inch	inch	4	
Jaw depth	inch	4"	
Indicating instrument (included in package)		MarCator 1086 ZRi	

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)



i-Stick

Marameter XLI- 57B- 15

Thickness gage



FUNCTIONS

- 0 (set the analog scale display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- ABS (display can be set to zero without losing reference to preset)
- TOL (enter tolerance limit values)
- Factor (Multiplier for measuring travel)
- DATA (data transmission)
- LOCK (individual key lock)

FEATURES

- Constant measuring force over the full measuring range due to attached load weight
- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- Extra deep throat depth with sufficient clearance even for large workpieces
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Digital indicator 1086 Ri with data output for cable and Integrated Wireless
- Probe lifting via lever for easy positioning of the workpiece
- Energy supply: battery operation
- Battery type: CR 2450N (3V Lithium)
- Data interface: USB, Digimatic, Integrated Wireless
- Package contains: Indicator, battery, instruction manual

Application:

- For precision thickness measurement of for example foils, plastik parts with constant measuring force requiring dead weight load



TECHNICAL DATA

Order no.		2057551
Type		XLI- 57B- 15
Mesuring span of indicator	mm	0 – 25 mm
Mesuring span of indicator	inch	0 – 1"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"
Parallelism deviation	µm	3
Measuring force	N	2.78 N (10 oz dead weight)
Measuring surface diameter, upper	mm	10
Measuring surface diameter, lower	mm	54
Measuring surface diameter, upper	inch	.407"
Measuring surface diameter, lower	inch	2.125"
Jaw depth	mm	102
Throat depth inch	inch	4
Jaw depth	inch	4"
Indicating instrument (included in package)		MarCator 1086 Ri

ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)



i-Stick

Marameter XLI- 57B- 13

Thickness gage



FEATURES

- Using the basic design of Model 57B- 13, 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 0.25 N
- Digital indicator 1086 Ri with data output for cable and Integrated Wireless
- Energy supply: battery operation
- Battery type: CR 2450N (3V Lithium)
- Data interface: USB, Digimatic, Integrated Wireless
- Package contains: Indicator, battery, instruction manual

Application:

- For checking wall thickness of wire insulation and other small diameter tubular parts



TECHNICAL DATA

Order no.		2057550
Type		XLI- 57B- 13
Mesuring span of indicator	mm	0 – 7,5 mm
Mesuring span of indicator	inch	0 – .30"
Resolution	mm	0,0005, 0,001, 0,002, 0,005, 0,01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"
Measuring force	N	0,25
Jaw depth	mm	102
Throat depth inch	inch	4
Jaw depth	inch	4"
Indicating instrument (included in package)		MarCator 1086 Ri

ACCESSORIES

Order no.	Type	Description
2225698	PS- 43	Replacement rod for PT- 103 Pin, 0.043" diameter 0.687" length
2225741	PT- 103	Pin, Ø=1.10mm / .043", lower contact 1.10 mm / 0.043" diameter pin, lower contact assembly
2225869	PT- 2245	Pin, Ø=0.05mm / .02", lower contact 0.050 mm / 0.020 in diameter pin, lower contact assembly
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102603	DK-U1	Data cable USB bidirectional (2 m)
4102606	DK-D1	Data cable Digimatic (2 m)



i-Stick

Marameter 838 TAZ

Caliper gage for external measurement



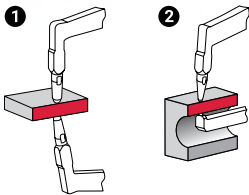
FEATURES

- Contact points made of carbide
- Absolute measuring instrument
- Easy-to-read tolerance markers
- Easy to operate, portable and user-friendly
- Package contains: test certificate



Application:

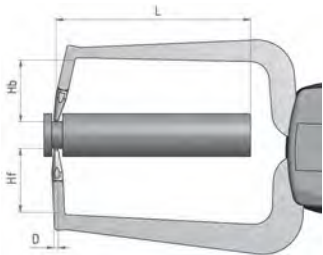
- For measuring thicknesses and wall thicknesses



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Error limit G _e	Measuring force	Form of measuring contacts
		inch	inch	N	
4495950	838 TAZ	0 – .40"	0.0008	0,8 – 1,2	1
4495951	838 TAZ	0 – .80"	0.0015	1,1 – 1,6	1
4495952	838 TAZ	0 – .80"	0.0015	1,1 – 1,6	2
4495955	838 TAZ	0 – 2.0"	0.002	0,8 – 1,7	1
4495956	838 TAZ	0 – 2.0"	0.002	0,8 – 1,7	2

Order no.	Dimension L in inches
	inch
4495950	1.37"
4495951	3.2"
4495952	3.2"
4495955	6.6"
4495956	6.7"



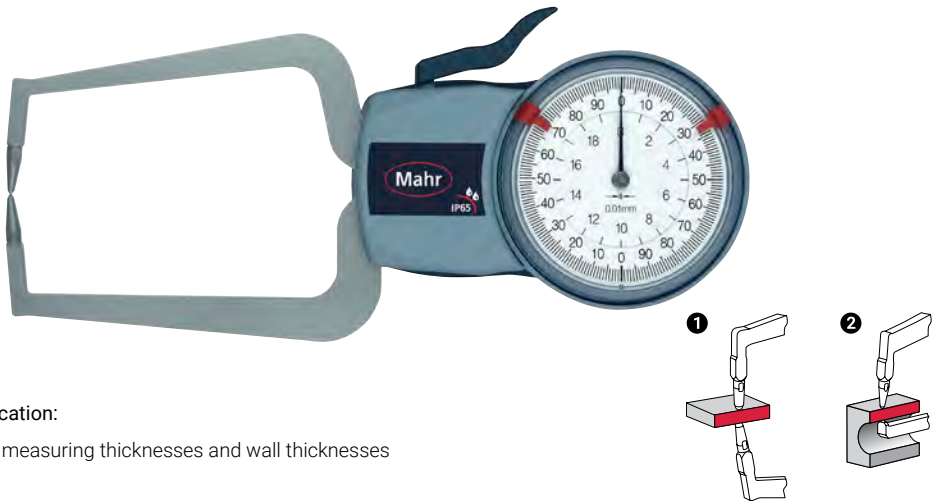
Marameter 838 TA

Caliper gage for external measurement



FEATURES

- Contact points made of carbide
- Absolute measuring instrument
- Easy-to-read tolerance markers
- Easy to operate, portable and user-friendly
- Package contains: test certificate

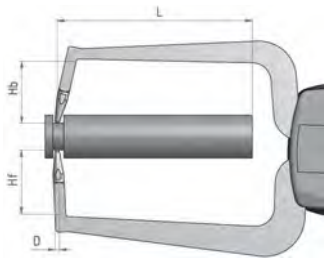


- Application:
- For measuring thicknesses and wall thicknesses

TECHNICAL DATA

Order no.	Dimension L in inches (text)	Type	Mesuring span of indicator	Error limit G _e	Measuring force	Form of measuring contacts	Measuring depth
	inch		inch	inch	N		inch
4495950	1.37"	838 TAZ	0 – .40"	0.0008	0,8 – 1,2	1	1.37"
4495951	3.2"	838 TAZ	0 – .80"	0.0015	1,1 – 1,6	1	3.2"
4495952	3.2"	838 TAZ	0 – .80"	0.0015	1,1 – 1,6	2	3.2"
4495955	6.6"	838 TAZ	0 – 2.0"	0.002	0,8 – 1,7	1	6.6"
4495956	6.7"	838 TAZ	0 – 2.0"	0.002	0,8 – 1,7	2	6.7"

Order no.	D	Hb	Hf	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 EA

Digital outer quick probe



FUNCTIONS

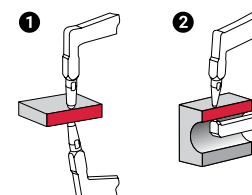
- ON/OFF
- mm/inch
- TOL (enter tolerance limit values)
- ABS (display can be set to zero without losing reference to preset)
- DATA (in connection with data interface)

FEATURES

- High contrast analog and digital LCD
- Tolerance displayed via LED (red/green)
- Energy supply: Battery operation (2x 1.5V AAA)
- Data interface: USB, Digimatic
- Package contains: instruction manual, battery, test certificate

Application:

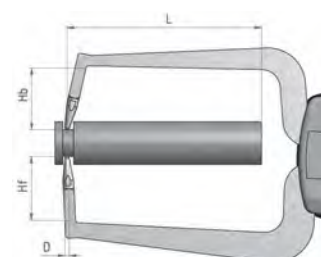
- Specified measuring programs according to application
- Absolute/relative measuring program



TECHNICAL DATA

Order no.	4495450	4495451	4495452	4495453	4495454	4495455	4495456
Type	838 EA						
Mesuring span of indicator	mm	0 – 10 mm	0 – 20 mm	0 – 30 mm	0 – 50 mm	0 – 30 mm	0 – 50 mm
Resolution	mm	0,001, 0,002, 0,005, 0,01, 0,02, 0,05					
Resolution	inch	.00005", .0001", .0002", .0005", .001", .002"					
Error limit	mm	0,015	0,03	0,04	0,05	0,04	0,05
Repeatability	mm	0,005	0,01	0,02	0,03	0,02	0,03
Measuring force	N	0,8 – 1,2	1,1 – 1,6	0,9 – 1,6	0,8 – 1,7	0,9 – 1,6	0,8 – 1,7
Form of measuring contacts		1	2	1		2	
Measuring contact ball diameter	mm	1,5		3			
Max. measuring depth	mm	35	85	116	167	116	169

Order no.	D	Hb	Hf	L
	mm	mm	mm	mm
4495450	1,5	19,1	18,6	35
4495451	1,5	24,6	24,6	85
4495452	1,5	24,6	2,5	85
4495453	3	30	30	116
4495454	3	30	30	167
4495455	3	30	4	116
4495456	3	30	4,3	169



ACCESSORIES

Order no.	Type	Description
4495083	838 di (A)	Interface adapter with data cable Digimatic (1,5 m)
4495079	838 USB	838 USB Interface adapter with data connection cable USB (1,5 m)

Marameter 838 TIZ

Caliper gage for internal measurement



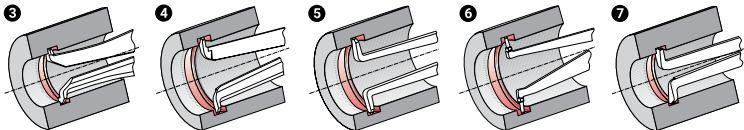
FEATURES

- Contact points made of carbide
- Absolute measuring instrument
- Easy-to-read tolerance markers
- Package contains: test certificate



Application:

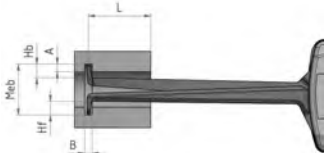
- For measuring bores and internal grooves
- Easy to operate, portable and user-friendly



TECHNICAL DATA

Order no.		4495980	4495981	4495982	4495983	4495984	4495985	4495986	4495987
Type		838 TIZ							
Mesuring span of indicator	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"
Error limit G _e	inch	0.0008	0.0015					0.002	
Measuring force	N	0,8 – 1,2	1,1 – 1,6					0,9 – 1,9	
Form of measuring contacts		4		5		6		7	6
Measuring depth	inch	1.37"	3.2"					7.5"	7.6"

Order no.	Dimension L in inches
	inch
4495980	1.37"
4495981	3.2"
4495982	3.2"
4495983	3.2"
4495984	3.2"
4495985	3.2"
4495986	7.5"
4495987	7.6"



Marameter 838 TI

Caliper gage for internal measurement



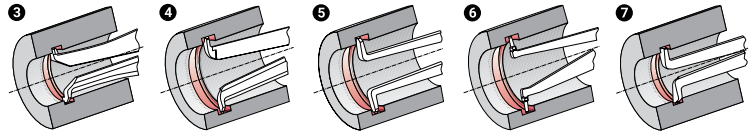
FEATURES

- Contact points made of carbide
- Absolute measuring instrument
- Easy-to-read tolerance markers
- Package contains: test certificate



Application:

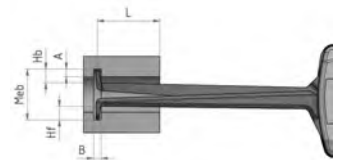
- For measuring bores and internal grooves
- Easy to operate, portable and user-friendly



TECHNICAL DATA

Order no.		4495580	4495581	4495582	4495583	4495584	4495585	4495586	4495587
Type		838 TI							
Mesuring span of indicator	mm	5 – 15 mm	10 – 30 mm	20 – 40 mm	30 – 50 mm	40 – 60 mm	50 – 70 mm	15 – 65 mm	40 – 90 mm
Readings	mm	0,005	0,01				0,05		
Error limit	mm	0,015	0,03				0,05		
Repeatability	mm	0,005	0,01				0,025		
Measuring force	N	0,8 – 1,2	1,1 – 1,6				0,9 – 1,9		
Form of measuring contacts		4		5		6		7	6
Measuring contact ball diameter	mm	0,6	1				1,5		2
Groove width	mm	0,8	1,2				1,9		2,4
Groove depth	mm	2,3	5,2	7		8,3		5,5	8,3
Max. measuring depth	mm	35	85				188		192

Order no.	A	B	D	Hb	Hf	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 EI

Digital inside quick probe



FUNCTIONS

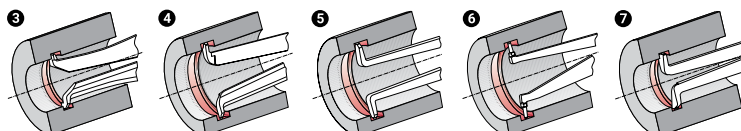
- ON/OFF
- mm/inch
- TOL (enter tolerance limit values)
- ABS (display can be set to zero without losing reference to preset)
- DATA (in connection with data interface)

FEATURES

- High contrast analog and digital LCD
- Tolerance displayed via LED (red/green)
- Energy supply: Battery operation (2x 1.5V AAA)
- Data interface: USB, Digimatic
- Package contains: instruction manual, battery, test certificate

Application:

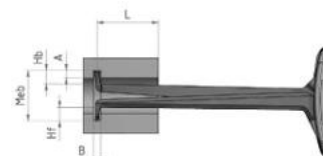
- Specified measuring programs according to application
- Absolute/relative measuring program



TECHNICAL DATA

Order no.		4495460	4495461	4495462	4495463	4495464	4495465	4495468	4495469	4495470	
Type		838 EI									
Mesuring span of indicator	mm	5 – 15 mm	10 – 30 mm	20 – 40 mm	30 – 50 mm	40 – 60 mm	50 – 70 mm	13 – 43 mm	30 – 60 mm	50 – 80 mm	
Resolution	mm	0,001, 0,002, 0,005, 0,01, 0,02, 0,05									
Resolution	inch	.00005", .0001", .0002", .0005", .001", .002"									
Error limit	mm	0,015	0,03						0,04		
Repeatability	mm	0,005	0,01						0,02		
Measuring force	N	0,8 – 1,2	1,1 – 1,6						1,2 – 1,7		
Form of measuring contacts		4		5		6		4	6		
Measuring contact ball diameter	mm	0,6	1						1,3	1,5	2
Groove width	mm	0,8	1,2						1,6	1,8	2,4
Groove depth	mm	2,3	5,2	7		8,3		5,7	6,2	8,3	
Max. measuring depth	mm	35	85						127	132	

Order no.	A	B	D	Hb	Hf	L
	mm	mm	mm	mm	mm	mm
4495460	2,3	0,80	0,6	2,5	2,5	35
4495461	5,2	1,20	1	5,4	5,4	85
4495462	7	1,20	1	7,3	7,3	85
4495463	7	1,20	1	7,3	7,3	85
4495464	8,3	1,20	1	12,2	12,2	85
4495465	8,3	1,20	1	12,2	12,2	85
4495468	5,7	1,60	1,3	5,7	5,7	127
4495469	6,2	1,80	1,5	6,5	6,5	132
4495470	8,3	2,40	2	8,5	8,5	132



ACCESSORIES

Order no.	Type	Description
4495083	838 di (A)	Interface adapter with data cable Digimatic (1,5 m)
4495079	838 USB	838 USB Interface adapter with data connection cable USB (1,5 m)

Marameter

844 D indicating plug gage system

Indicating measurement in highest precision

Plug gages of the 844 D family are 2-point indicating gages, combined with a precisely ground guide cylinder, which centers itself exactly in bores. This means that no reversal point needs to be determined by rocking. The measured value is displayed reliably, precisely and immediately.

The adjustment to a respective nominal dimension is achieved with setting rings.

Benefits:

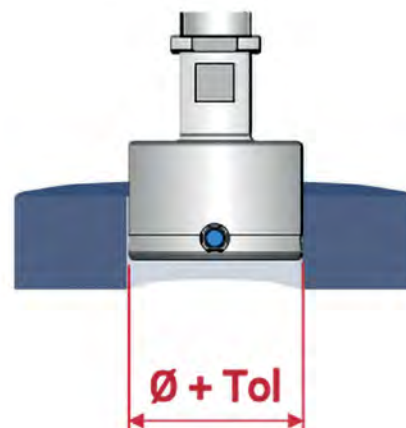
- Fast and easy to use - best performance
- No operator influence
- Self-centering - no rocking required to determine the reversal point
- Especially suitable with use of digital indicators for processing the measured values

The following must be indicated with each order

- Order number
- Bore diameter
- Bore tolerance (ISO or numerical value spec.)

Examples

- | | |
|-------------|---|
| 1 x 4484016 | 844 D indicating plug gage
Nominal bore size Ø 34.5 mm
Bore tolerance H8 |
| 1 x 4484048 | 844 DR indicating plug gage
Nominal bore size Ø 74.55 mm
Bore tolerance +0.05 / -0.03 |



Modular System

By combining with a wide range of accessories (indicators, holders, extensions and right angle attachment), the indicating plug gage becomes a high precision measuring instrument, adapted to the measuring task.

Samples of application configurations



Standard configuration

- Comparator
- Holder 844 Dg
- Plug gage



Configuration for defined measuring depth

- Comparator
- Holder 844 Dg
- Extension 844 Dv
- Depth stop 844 Dt-3
- Plug gage

Configuration for sideways measuring in defined measuring depth

- Comparator
- Holder 844 Dg
- Angle attachment 844 Dw
- Plug gage
- Stop ring 844 Dt-R



Marameter

844 D indicating plug gage system

Basic types

Guide cylinder hard chrome-plated, measuring surfaces made of carbide

844 D

Standard version for general applications

- For quick inspection of precise bores



844 DS

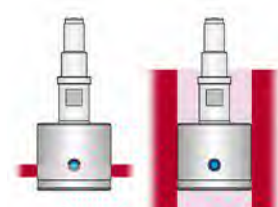
Version for blind holes

- For measurements close to the base of the hole

844 DR

Version for through holes and thin-walled holes (metal sheet)

- With extended guide cylinder



Variants

Variant C: 844 D-C / 844 DR-C / 844 DS-C

Measuring surfaces hard-chrome plated: For sensitive surfaces of non-ferrous metals and aluminum alloys

Variant R: 844 D-R / 844 DR-R / 844 DS-R

Measuring surfaces ruby-tipped: For very sensitive surfaces of non-ferrous metals and aluminum alloys

Variant D: 844 D-D / 844 DR-D

Measuring surfaces diamond-tipped: For very sensitive surfaces of soft non-ferrous metals and aluminum alloys

Variant FD: 844 D-FD / 844 DR-FD

Different front distance „e“: Reducing the guide cylinder to measure closer, or at a defined position, to the ground of the bore

Variant M: 844 D-M / 844 DR-M / 844 DS-M

Extended measuring range: For measuring of larger tolerance fields

Variant HR: 844 D-HR / 844 DR-HR / 844 DS-HR

High resolution for very narrow bore tolerance zones < 10 µm.

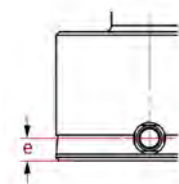
More precise manufacturing tolerance of the guide cylinder for tighter gap in the bore, thus reducing axial and radial measuring influences.

Variant F: 844 DS-F

Only with front chamfer (no centering groove): For measuring very short blind holes

Variant 3: 844 D-3 / 844 DR-3

3-point contact (3 x 120°): For fast measurement of interrupted diameters and detection of shape defects in a polygon



Marameter 844 D

Indicating plug gage

FEATURES

- Measuring head has a hard, stainless 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

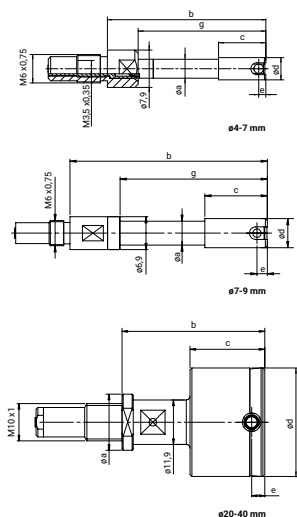
- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones 10 µm and more
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f _w	Linearity deviation fe	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	µm		mm / mm	
4484007	844 D	2- <3	0,15	1	1 %, mind. 1 µm	-0,015 / -0,025	M6x0,75 / M3,5x0,35
4484008	844 D	3- 4	0,2	1	1 %, mind. 1 µm	-0,015 / -0,025	M6x0,75 / M3,5x0,35
4484009	844 D	>4- 7	0,2	1	1 %, mind. 1 µm	-0,015 / -0,025	M6x0,75 / M3,5x0,35
4484010	844 D	>7- 9	0,2	1	1 %, mind. 1 µm	-0,015 / -0,025	M6x0,75
4484011	844 D	>9- 12	0,2	1	1 %, mind. 1 µm	-0,015 / -0,025	M6x0,75
4484012	844 D	>12- 13	0,2	1	1 %, mind. 1 µm	-0,015 / -0,025	M6x0,75
4484013	844 D	>13- 16	0,2	1	1 %, mind. 1 µm	-0,015 / -0,025	M6x0,75
4484014	844 D	>16- 20	0,2	1	1 %, mind. 1 µm	-0,015 / -0,025	M10x1
4484015	844 D	>20- 30	0,2	1	1 %, mind. 1 µm	-0,02 / -0,03	M10x1
4484016	844 D	>30- 40	0,2	1	1 %, mind. 1 µm	-0,02 / -0,03	M10x1
4484017	844 D	>40- 60	0,2	1	1 %, mind. 1 µm	-0,02 / -0,03	M10x1
4484018	844 D	>60- 80	0,2	1	1 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484019	844 D	>80- 100	0,2	1	1 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484020	844 D	>100- 110	0,2	1	1 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484021	844 D	>110- 120	0,2	1	1 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484022	844 D	>120- 130	0,2	1	1 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484023	844 D	>130- 140	0,2	1	1 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484024	844 D	>140- 150	0,2	1	1 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484025	844 D	>150- 160	0,2	1	1 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484026	844 D	>160- 170	0,2	1	1 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484027	844 D	>170- 180	0,2	1	1 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484028	844 D	>180- 190	0,2	1	1 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484029	844 D	>190- 200	0,2	1	1 %, mind. 1 µm	-0,035 / -0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484007		21,5	15	1,5	15	M6x0,75 / M3,5x0,35
4484008		33,5	24	1,5	24	M6x0,75 / M3,5x0,35
4484009	4	33,5	10	1,5	27	M6x0,75 / M3,5x0,35
4484010	6,9	47	15	2,5	35	M6x0,75
4484011	7,9	47	15	2,5	47	M6x0,75
4484012	7,9	47	15	2,5	47	M6x0,75
4484013	11,9	47	15	2,5	47	M6x0,75
4484014	15	37,3	15	2,5		M10x1
4484015	15	38,2	20	3,5		M10x1
4484016	15	38,2	20	3,5		M10x1
4484017	15	38,2	28	3,5		M10x1
4484018	17,9	38,8	33	4		M10x1
4484019	17,9	38,8	33	4		M10x1
4484020	17,9	38,8	33	4		M10x1
4484021	17,9	38,8	33	4		M10x1
4484022	17,9	38,8	33	4		M10x1
4484023	17,9	38,8	33	4		M10x1
4484024	17,9	38,8	33	4		M10x1
4484025	17,9	38,8	33	4		M10x1
4484026	17,9	39	40	4		M10x1
4484027	17,9	39	40	4		M10x1
4484028	17,9	39	40	4		M10x1
4484029	17,9	39	40	4		M10x1



Marameter 844 DR

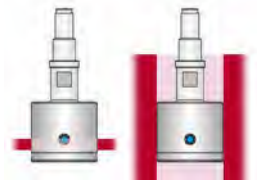
Indicating plug gage

FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

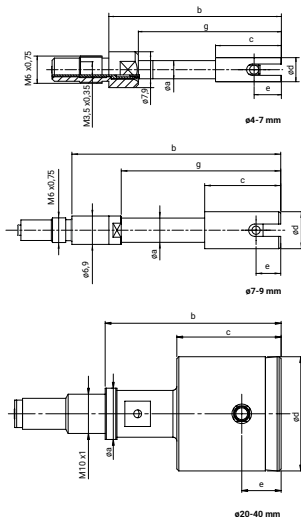
- Model for through holes and narrow parts
- With extended guide cylinder for measuring through holes and bores of narrow parts e.g. sheets
- For the rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones 10 µm and more
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	µm		mm / mm	
4484039	844 DR	4–7	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484040	844 DR	>7–9	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M6x0,75
4484041	844 DR	>9–12	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M6x0,75
4484042	844 DR	>12–13	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M6x0,75
4484043	844 DR	>13–16	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M6x0,75
4484044	844 DR	>16–20	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484045	844 DR	>20–30	0,2	1	1 %, mind. 1 µm	–0,02 / –0,03	M10x1
4484046	844 DR	>30–40	0,2	1	1 %, mind. 1 µm	–0,02 / –0,03	M10x1
4484047	844 DR	>40–60	0,2	1	1 %, mind. 1 µm	–0,02 / –0,03	M10x1
4484048	844 DR	>60–80	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484049	844 DR	>80–100	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484050	844 DR	>100–110	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484051	844 DR	>110–120	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484052	844 DR	>120–130	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484053	844 DR	>130–140	0,2	1	1 %, mind. 1 µm	–0,035 / –0,045	M10x1
4484054	844 DR	>140–150	0,2	1	1 %, mind. 1 µm	–0,035 / –0,045	M10x1
4484055	844 DR	>150–160	0,2	1	1 %, mind. 1 µm	–0,035 / –0,045	M10x1
4484056	844 DR	>160–170	0,2	1	1 %, mind. 1 µm	–0,035 / –0,045	M10x1
4484057	844 DR	>170–180	0,2	1	1 %, mind. 1 µm	–0,035 / –0,045	M10x1
4484058	844 DR	>180–190	0,2	1	1 %, mind. 1 µm	–0,035 / –0,045	M10x1
4484059	844 DR	>190–200	0,2	1	1 %, mind. 1 µm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484039	4	38	14,5	6	31,5	M6x0,75 / M3,5x0,35
4484040	6,9	50,5	18,5	6	38,5	M6x0,75
4484041	7,9	54,5	22,5	10	54,5	M6x0,75
4484042	7,9	54,5	22,5	10	54,5	M6x0,75
4484043	11,9	54,5	22,5	10	54,5	M6x0,75
4484044	15	44,8	22,5	10		M10x1
4484045	15	44,7	27	10		M10x1
4484046	15	44,7	27	10		M10x1
4484047	15	44,7	28	10		M10x1
4484048	17,9	44,8	33	10		M10x1
4484049	17,9	44,8	33	10		M10x1
4484050	17,9	44,8	33	10		M10x1
4484051	17,9	44,8	33	10		M10x1
4484052	17,9	44,8	33	10		M10x1
4484053	17,9	44,8	33	10		M10x1
4484054	17,9	44,8	33	10		M10x1
4484055	17,9	44,8	33	10		M10x1
4484056	17,9	45	40	10		M10x1
4484057	17,9	45	40	10		M10x1
4484058	17,9	45	40	10		M10x1
4484059	17,9	45	40	10		M10x1



Marameter 844 DS

Indicating plug gage

FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Model for blind holes

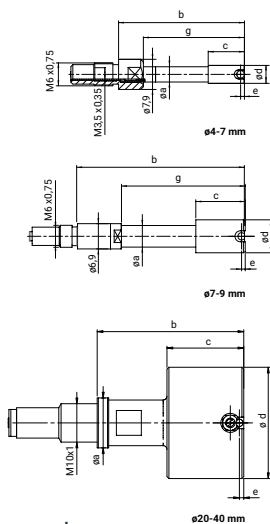
- For measurements close to the base of the hole
- For the rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones 10 µm and more
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	µm		mm / mm	
4484067	844 DS	2- <3	0,15	1	1,5 %, mind. 1 µm	-0,015 / -0,025	M6x0,75 / M3,5x0,35
4484068	844 DS	3-4	0,2	1	1,5 %, mind. 1 µm	-0,015 / -0,025	M6x0,75 / M3,5x0,35
4484069	844 DS	>4-7	0,2	1	1,5 %, mind. 1 µm	-0,015 / -0,025	M6x0,75 / M3,5x0,35
4484070	844 DS	>7-9	0,2	1	1,5 %, mind. 1 µm	-0,015 / -0,025	M6x0,75
4484071	844 DS	>9-12	0,2	1	1,5 %, mind. 1 µm	-0,015 / -0,025	M6x0,75
4484072	844 DS	>12-13	0,2	1	1,5 %, mind. 1 µm	-0,015 / -0,025	M6x0,75
4484073	844 DS	>13-16	0,2	1	1,5 %, mind. 1 µm	-0,015 / -0,025	M6x0,75
4484074	844 DS	>16-20	0,2	1	1,5 %, mind. 1 µm	-0,015 / -0,025	M10x1
4484075	844 DS	>20-30	0,2	1	1,5 %, mind. 1 µm	-0,02 / -0,03	M10x1
4484076	844 DS	>30-40	0,2	1	1,5 %, mind. 1 µm	-0,02 / -0,03	M10x1
4484077	844 DS	>40-60	0,2	1	1,5 %, mind. 1 µm	-0,02 / -0,03	M10x1
4484078	844 DS	>60-80	0,2	1	1,5 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484079	844 DS	>80-100	0,2	1	1,5 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484080	844 DS	>100-110	0,2	1	1,5 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484081	844 DS	>110-120	0,2	1	1,5 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484082	844 DS	>120-130	0,2	1	1,5 %, mind. 1 µm	-0,025 / -0,035	M10x1
4484083	844 DS	>130-140	0,2	1	1,5 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484084	844 DS	>140-150	0,2	1	1,5 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484085	844 DS	>150-160	0,2	1	1,5 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484086	844 DS	>160-170	0,2	1	1,5 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484087	844 DS	>170-180	0,2	1	1,5 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484088	844 DS	>180-190	0,2	1	1,5 %, mind. 1 µm	-0,035 / -0,045	M10x1
4484089	844 DS	>190-200	0,2	1	1,5 %, mind. 1 µm	-0,035 / -0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484067		20,7	14,2	0,7	14,2	M6x0,75 / M3,5x0,35
4484068		33	23,5	1	23,5	M6x0,75 / M3,5x0,35
4484069	4	33	9,5	1	26,5	M6x0,75 / M3,5x0,35
4484070	6,9	45,5	13,5	1	33,5	M6x0,75
4484071	7,9	45,5	13,5	1	45,5	M6x0,75
4484072	7,9	45,5	13,5	1	45,5	M6x0,75
4484073	11,9	45,5	13,5	1	45,5	M6x0,75
4484074	15	35,8	13,5	1		M10x1
4484075	15	38,2	20	1,2		M10x1
4484076	15	38,2	20	1,2		M10x1
4484077	15	38,2	28	1,2		M10x1
4484078	17,9	39	33	1,2		M10x1
4484079	17,9	39	33	1,2		M10x1
4484080	17,9	39	33	1,2		M10x1
4484081	17,9	39	33	1,2		M10x1
4484082	17,9	39	33	1,2		M10x1
4484083	17,9	39	33	1,2		M10x1
4484084	17,9	39	33	1,2		M10x1
4484085	17,9	39	33	1,2		M10x1
4484086	17,9	38,6	40	1,2		M10x1
4484087	17,9	38,6	40	1,2		M10x1
4484088	17,9	38,6	40	1,2		M10x1
4484089	17,9	38,6	40	1,2		M10x1



Marameter 844 D-C

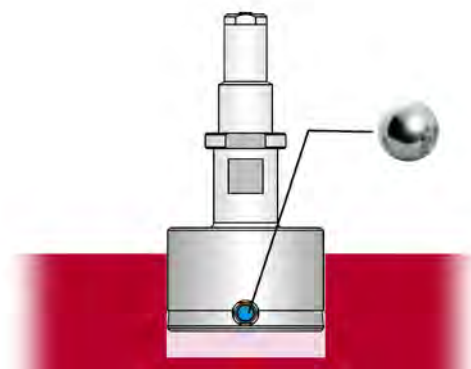
Indicating plug gage

FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

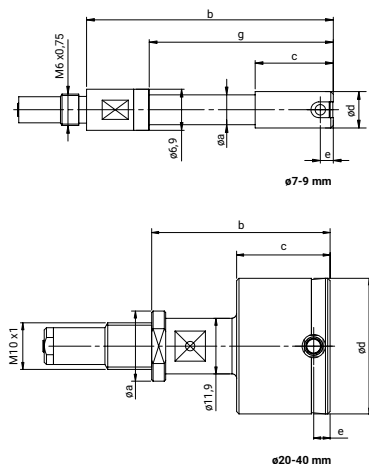
- Standard model, measuring surfaces hard chrome-plated
- Preferred application on sensitive surfaces of non-ferrous metals and aluminium alloys
- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore 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.	Type	Mesuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484100	844 D-C	8–9	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484101	844 D-C	>9–12	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484102	844 D-C	>12–13	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484103	844 D-C	>13–16	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484104	844 D-C	>16–20	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484105	844 D-C	>20–30	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484106	844 D-C	>30–40	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484107	844 D-C	>40–60	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484108	844 D-C	>60–80	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484109	844 D-C	>80–100	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484110	844 D-C	>100–110	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484111	844 D-C	>110–120	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484112	844 D-C	>120–130	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484113	844 D-C	>130–140	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484114	844 D-C	>140–150	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484115	844 D-C	>150–160	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484116	844 D-C	>160–170	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484117	844 D-C	>170–180	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484118	844 D-C	>180–190	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484119	844 D-C	>190–200	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484100	5,7	47	15	2,5	35	M6x0,75
4484101	7,9	47	15	2,5	47	M6x0,75
4484102	7,9	47	15	2,5	47	M6x0,75
4484103	11,9	47	15	2,5	47	M6x0,75
4484104	15	37,3	15	2,5		M10x1
4484105	15	38,2	20	3,5		M10x1
4484106	15	38,2	20	3,5		M10x1
4484107	15	38,2	28	3,5		M10x1
4484108	17,9	38,8	33	4		M10x1
4484109	17,9	38,8	33	4		M10x1
4484110	17,9	38,8	33	4		M10x1
4484111	17,9	38,8	33	4		M10x1
4484112	17,9	38,8	33	4		M10x1
4484113	17,9	38,8	33	4		M10x1
4484114	17,9	38,8	33	4		M10x1
4484115	17,9	38,8	33	4		M10x1
4484116	17,9	39	40	4		M10x1
4484117	17,9	39	40	4		M10x1
4484118	17,9	39	40	4		M10x1
4484119	17,9	39	40	4		M10x1



Marameter 844 DR-C

Indicating plug gage

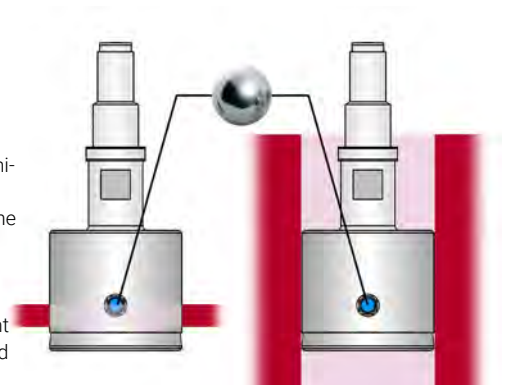
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Design for through-holes, hard chrome plated measuring surfaces
Preferred use on sensitive surfaces of non-ferrous metals and aluminum alloys

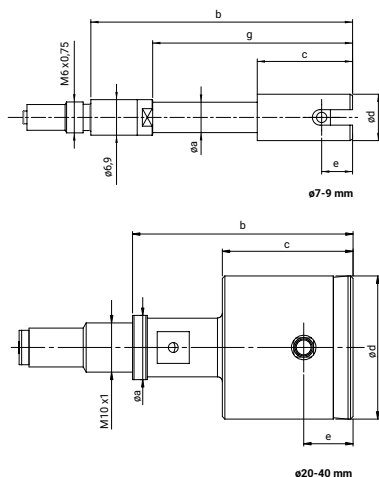
- With extended guide cylinder for measuring through holes from the edge of the hole
- For the rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance fields
- No rocking in the bore is necessary to determine the reversal point
- Therefore ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484130	844 DR-C	8–9	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484131	844 DR-C	>9–12	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484132	844 DR-C	>12–13	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484133	844 DR-C	>13–16	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484134	844 DR-C	>16–20	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484135	844 DR-C	>20–30	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484136	844 DR-C	>30–40	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484137	844 DR-C	>40–60	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484138	844 DR-C	>60–80	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484139	844 DR-C	>80–100	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484140	844 DR-C	>100–110	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484141	844 DR-C	>110–120	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484142	844 DR-C	>120–130	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484143	844 DR-C	>130–140	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484144	844 DR-C	>140–150	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484145	844 DR-C	>150–160	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484146	844 DR-C	>160–170	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484147	844 DR-C	>170–180	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484148	844 DR-C	>180–190	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484149	844 DR-C	>190–200	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484130	5,7	50,5	18,5	6	38,5	M6x0,75
4484131	7,9	54,5	22,5	10	54,5	M6x0,75
4484132	7,9	54,5	22,5	10	54,5	M6x0,75
4484133	11,9	54,5	22,5	10	54,5	M6x0,75
4484134	15	44,8	22,5	10		M10x1
4484135	15	44,7	27	10		M10x1
4484136	15	44,7	27	10		M10x1
4484137	15	44,7	28	10		M10x1
4484138	17,9	44,8	33	10		M10x1
4484139	17,9	44,8	33	10		M10x1
4484140	17,9	44,8	33	10		M10x1
4484141	17,9	44,8	33	10		M10x1
4484142	17,9	44,8	33	10		M10x1
4484143	17,9	44,8	33	10		M10x1
4484144	17,9	44,8	33	10		M10x1
4484145	17,9	44,8	33	10		M10x1
4484146	17,9	45	40	10		M10x1
4484147	17,9	45	40	10		M10x1
4484148	17,9	45	40	10		M10x1
4484149	17,9	45	40	10		M10x1



Marameter 844 DS-C

Indicating plug gage

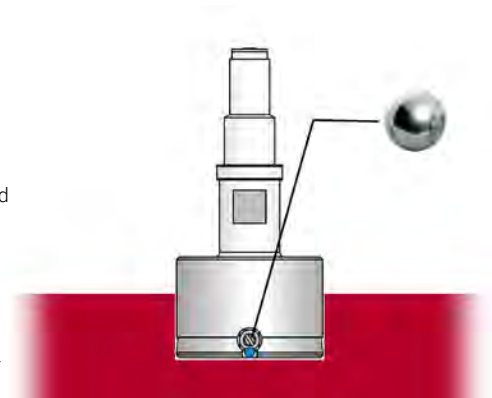
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force as a result of built-in spring, eliminating user influence
- Measuring head, measuring instrument holder, depth extensions, right angle attachments and depth stops form a comprehensive modular system

Application:

Model for blind holes, measuring surfaces hard chrome-plated
Preferred application on sensitive surfaces of non-ferrous metals and aluminium alloys

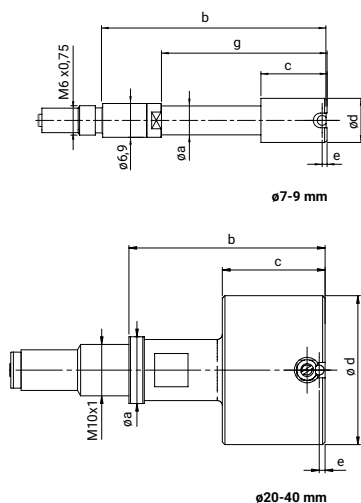
- For measurements close to the base of the hole
- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is unnecessary to determine the reversal point
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484160	844 DS-C	8–9	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484161	844 DS-C	>9–12	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484162	844 DS-C	>12–13	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484163	844 DS-C	>13–16	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484164	844 DS-C	>16–20	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484165	844 DS-C	>20–30	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484166	844 DS-C	>30–40	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484167	844 DS-C	>40–60	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484168	844 DS-C	>60–80	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484169	844 DS-C	>80–100	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484170	844 DS-C	>100–110	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484171	844 DS-C	>110–120	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484172	844 DS-C	>120–130	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484173	844 DS-C	>130–140	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484174	844 DS-C	>140–150	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484175	844 DS-C	>150–160	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484176	844 DS-C	>160–170	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484177	844 DS-C	>170–180	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484178	844 DS-C	>180–190	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484179	844 DS-C	>190–200	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484160	5,7	45,5	13,5	1	33,5	M6x0,75
4484161	7,9	45,5	13,5	1	45,5	M6x0,75
4484162	7,9	45,5	13,5	1	45,5	M6x0,75
4484163	11,9	45,5	13,5	1	45,5	M6x0,75
4484164	15	35,8	13,5	1		M10x1
4484165	15	38,2	20	1,2		M10x1
4484166	15	38,2	20	1,2		M10x1
4484167	15	38,2	28	1,2		M10x1
4484168	17,9	39	33	1,2		M10x1
4484169	17,9	39	33	1,2		M10x1
4484170	17,9	39	33	1,2		M10x1
4484171	17,9	39	33	1,2		M10x1
4484172	17,9	39	33	1,2		M10x1
4484173	17,9	39	33	1,2		M10x1
4484174	17,9	39	33	1,2		M10x1
4484175	17,9	39	33	1,2		M10x1
4484176	17,9	38,6	40	1,2		M10x1
4484177	17,9	38,6	40	1,2		M10x1
4484178	17,9	38,6	40	1,2		M10x1
4484179	17,9	38,6	40	1,2		M10x1



Marameter 844 D-R

Indicating plug gage

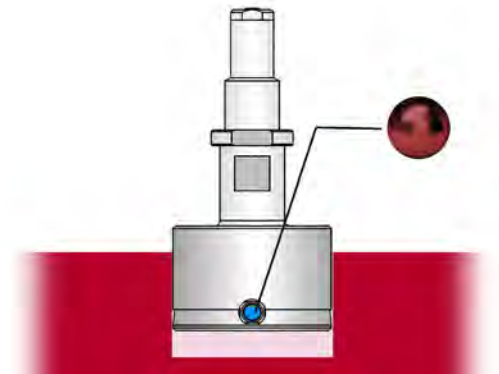
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and ruby-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

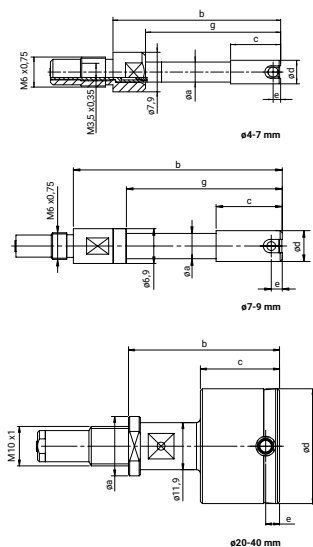
Standard model, measuring surfaces ruby-tipped
Preferred application on sensitive surfaces of non-ferrous metals and aluminium alloys

- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484208	844 D-R	3–4	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484209	844 D-R	>4–7	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484210	844 D-R	>7–9	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484211	844 D-R	>9–12	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484212	844 D-R	>12–13	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484213	844 D-R	>13–16	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484214	844 D-R	>16–20	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484215	844 D-R	>20–30	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484216	844 D-R	>30–40	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484217	844 D-R	>40–60	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484218	844 D-R	>60–80	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484219	844 D-R	>80–100	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484220	844 D-R	>100–110	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484221	844 D-R	>110–120	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484222	844 D-R	>120–130	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484223	844 D-R	>130–140	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484224	844 D-R	>140–150	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484225	844 D-R	>150–160	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484226	844 D-R	>160–170	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484227	844 D-R	>170–180	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484228	844 D-R	>180–190	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484229	844 D-R	>190–200	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1



Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484208		33,5	24	1,5	24	M6x0,75 / M3,5x0,35
4484209	4	33,5	10	1,5	27	M6x0,75 / M3,5x0,35
4484210	6,9	47	15	2,5	35	M6x0,75
4484211	7,9	47	15	2,5	47	M6x0,75
4484212	7,9	47	15	2,5	47	M6x0,75
4484213	11,9	47	15	2,5	47	M6x0,75
4484214	15	37,3	15	2,5		M10x1
4484215	15	38,2	20	3,5		M10x1
4484216	15	38,2	20	3,5		M10x1
4484217	15	38,2	28	3,5		M10x1
4484218	17,9	38,8	33	4		M10x1
4484219	17,9	38,8	33	4		M10x1
4484220	17,9	38,8	33	4		M10x1
4484221	17,9	38,8	33	4		M10x1
4484222	17,9	38,8	33	4		M10x1
4484223	17,9	38,8	33	4		M10x1
4484224	17,9	38,8	33	4		M10x1
4484225	17,9	38,8	33	4		M10x1
4484226	17,9	39	40	4		M10x1
4484227	17,9	39	40	4		M10x1
4484228	17,9	39	40	4		M10x1
4484229	17,9	39	40	4		M10x1

Marameter 844 DR-R

Indicating plug gage

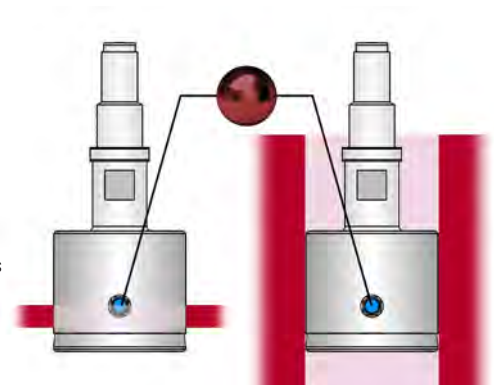
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and ruby-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

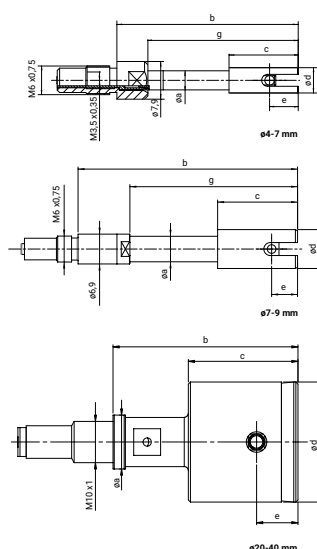
Design for through-holes, ruby-tipped measuring surfaces
Preferred use on sensitive surfaces of non-ferrous metals and aluminum alloys

- 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 tolerance fields
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484239	844 DR-R	4–7	0,2	1	1 %, mind. 1 μm	–0,015 / – 0,025	M6x0,75 / M3,5x0,35
4484240	844 DR-R	>7–9	0,2	1	1 %, mind. 1 μm	–0,015 / – 0,025	M6x0,75
4484241	844 DR-R	>9–12	0,2	1	1 %, mind. 1 μm	–0,015 / – 0,025	M6x0,75
4484242	844 DR-R	>12–13	0,2	1	1 %, mind. 1 μm	–0,015 / – 0,025	M6x0,75
4484243	844 DR-R	>13–16	0,2	1	1 %, mind. 1 μm	–0,015 / – 0,025	M6x0,75
4484244	844 DR-R	>16–20	0,2	1	1 %, mind. 1 μm	–0,015 / – 0,025	M10x1
4484245	844 DR-R	>20–30	0,2	1	1 %, mind. 1 μm	–0,02 / – 0,03	M10x1
4484246	844 DR-R	>30–40	0,2	1	1 %, mind. 1 μm	–0,02 / – 0,03	M10x1
4484247	844 DR-R	>40–60	0,2	1	1 %, mind. 1 μm	–0,02 / – 0,03	M10x1
4484248	844 DR-R	>60–80	0,2	1	1 %, mind. 1 μm	–0,025 / – 0,035	M10x1
4484249	844 DR-R	>80–100	0,2	1	1 %, mind. 1 μm	–0,025 / – 0,035	M10x1
4484250	844 DR-R	>100–110	0,2	1	1 %, mind. 1 μm	–0,025 / – 0,035	M10x1
4484251	844 DR-R	>110–120	0,2	1	1 %, mind. 1 μm	–0,025 / – 0,035	M10x1
4484252	844 DR-R	>120–130	0,2	1	1 %, mind. 1 μm	–0,025 / – 0,035	M10x1
4484253	844 DR-R	>130–140	0,2	1	1 %, mind. 1 μm	–0,035 / – 0,045	M10x1
4484254	844 DR-R	>140–150	0,2	1	1 %, mind. 1 μm	–0,035 / – 0,045	M10x1
4484255	844 DR-R	>150–160	0,2	1	1 %, mind. 1 μm	–0,035 / – 0,045	M10x1
4484256	844 DR-R	>160–170	0,2	1	1 %, mind. 1 μm	–0,035 / – 0,045	M10x1
4484257	844 DR-R	>170–180	0,2	1	1 %, mind. 1 μm	–0,035 / – 0,045	M10x1
4484258	844 DR-R	>180–190	0,2	1	1 %, mind. 1 μm	–0,035 / – 0,045	M10x1
4484259	844 DR-R	>190–200	0,2	1	1 %, mind. 1 μm	–0,035 / – 0,045	M10x1



Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484239	4	38	14,5	6	31,5	M6x0,75 / M3,5x0,35
4484240	6,9	50,5	18,5	6	38,5	M6x0,75
4484241	7,9	54,5	22,5	10	54,5	M6x0,75
4484242	7,9	54,5	22,5	10	54,5	M6x0,75
4484243	11,9	54,5	22,5	10	54,5	M6x0,75
4484244	15	44,8	22,5	10		M10x1
4484245	15	44,7	27	10		M10x1
4484246	15	44,7	27	10		M10x1
4484247	15	44,7	28	10		M10x1
4484248	17,9	44,8	33	10		M10x1
4484249	17,9	44,8	33	10		M10x1
4484250	17,9	44,8	33	10		M10x1
4484251	17,9	44,8	33	10		M10x1
4484252	17,9	44,8	33	10		M10x1
4484253	17,9	44,8	33	10		M10x1
4484254	17,9	44,8	33	10		M10x1
4484255	17,9	44,8	33	10		M10x1
4484256	17,9	45	40	10		M10x1
4484257	17,9	45	40	10		M10x1
4484258	17,9	45	40	10		M10x1
4484259	17,9	45	40	10		M10x1

Marameter 844 DS-R

Indicating plug gage

FEATURES

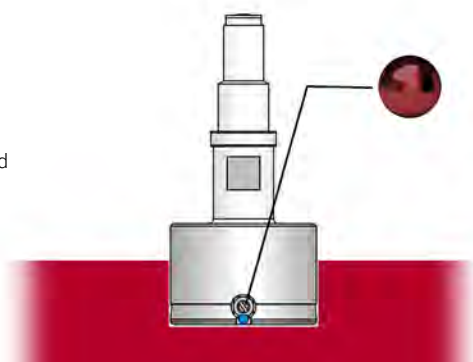
- Measuring probe made of hardened, stainless guide cylinder and ruby-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Model for blind holes, measuring surfaces ruby-tipped

Preferred application on sensitive surfaces of non-ferrous metals and aluminium alloys

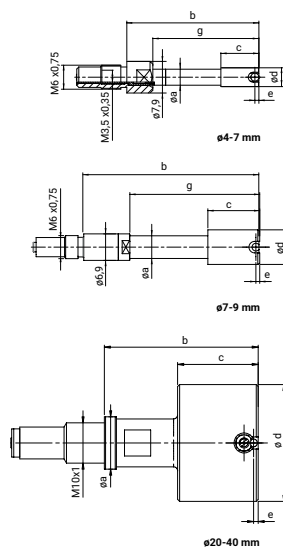
- For measurements close to the base of the hole
- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484268	844 DS-R	3–4	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484269	844 DS-R	>4–7	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484270	844 DS-R	>7–9	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484271	844 DS-R	>9–12	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484272	844 DS-R	>12–13	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484273	844 DS-R	>13–16	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484274	844 DS-R	>16–20	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484275	844 DS-R	>20–30	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484276	844 DS-R	>30–40	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484277	844 DS-R	>40–60	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484278	844 DS-R	>60–80	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484279	844 DS-R	>80–100	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484280	844 DS-R	>100–110	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484281	844 DS-R	>110–120	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484282	844 DS-R	>120–130	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484283	844 DS-R	>130–140	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484284	844 DS-R	>140–150	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484285	844 DS-R	>150–160	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484286	844 DS-R	>160–170	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484287	844 DS-R	>170–180	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484288	844 DS-R	>180–190	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484289	844 DS-R	>190–200	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484268		33	23,5	1	23,5	M6x0,75 / M3,5x0,35
4484269	4	33	9,5	1	26,5	M6x0,75 / M3,5x0,35
4484270	6,9	45,5	13,5	1	33,5	M6x0,75
4484271	7,9	45,5	13,5	1	45,5	M6x0,75
4484272	7,9	45,5	13,5	1	45,5	M6x0,75
4484273	11,9	45,5	13,5	1	45,5	M6x0,75
4484274	15	35,8	13,5	1		M10x1
4484275	15	38,2	20	1,2		M10x1
4484276	15	38,2	20	1,2		M10x1
4484277	15	38,2	28	1,2		M10x1
4484278	17,9	39	33	1,2		M10x1
4484279	17,9	39	33	1,2		M10x1
4484280	17,9	39	33	1,2		M10x1
4484281	17,9	39	33	1,2		M10x1
4484282	17,9	39	33	1,2		M10x1
4484283	17,9	39	33	1,2		M10x1
4484284	17,9	39	33	1,2		M10x1
4484285	17,9	39	33	1,2		M10x1
4484286	17,9	38,6	40	1,2		M10x1
4484287	17,9	38,6	40	1,2		M10x1
4484288	17,9	38,6	40	1,2		M10x1
4484289	17,9	38,6	40	1,2		M10x1



Marameter 844 D-D

Indicating plug gage

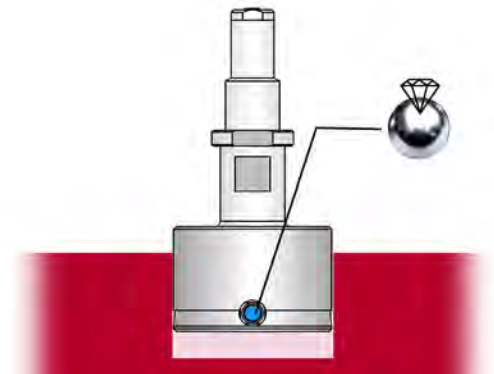
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and diamond-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Standard model, measuring surfaces diamond-tipped
Preferred application on very sensitive surfaces of soft non-ferrous metals and aluminium alloys

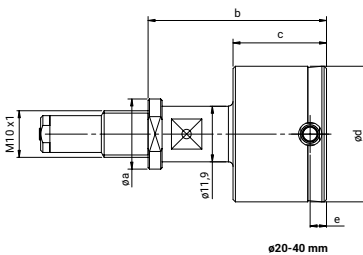
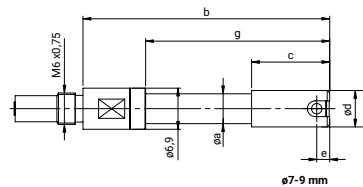
- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484300	844 D-D	8–9	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484301	844 D-D	>9–12	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484302	844 D-D	>12–13	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484303	844 D-D	>13–16	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484304	844 D-D	>16–20	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484305	844 D-D	>20–30	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484306	844 D-D	>30–40	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484307	844 D-D	>40–60	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484308	844 D-D	>60–80	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484309	844 D-D	>80–100	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484310	844 D-D	>100–110	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484311	844 D-D	>110–120	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484312	844 D-D	>120–130	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484313	844 D-D	>130–140	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484314	844 D-D	>140–150	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484315	844 D-D	>150–160	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484316	844 D-D	>160–170	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484317	844 D-D	>170–180	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484318	844 D-D	>180–190	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484319	844 D-D	>190–200	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484300	5,7	47	15	2,5	35	M6x0,75
4484301	7,9	47	15	2,5	47	M6x0,75
4484302	7,9	47	15	2,5	47	M6x0,75
4484303	11,9	47	15	2,5	47	M6x0,75
4484304	15	37,3	15	2,5		M10x1
4484305	15	38,2	20	3,5		M10x1
4484306	15	38,2	20	3,5		M10x1
4484307	15	38,2	28	3,5		M10x1
4484308	17,9	38,8	33	4		M10x1
4484309	17,9	38,8	33	4		M10x1
4484310	17,9	38,8	33	4		M10x1
4484311	17,9	38,8	33	4		M10x1
4484312	17,9	38,8	33	4		M10x1
4484313	17,9	38,8	33	4		M10x1
4484314	17,9	38,8	33	4		M10x1
4484315	17,9	38,8	33	4		M10x1
4484316	17,9	39	40	4		M10x1
4484317	17,9	39	40	4		M10x1
4484318	17,9	39	40	4		M10x1
4484319	17,9	39	40	4		M10x1



Marameter 844 DR-D

Indicating plug gage

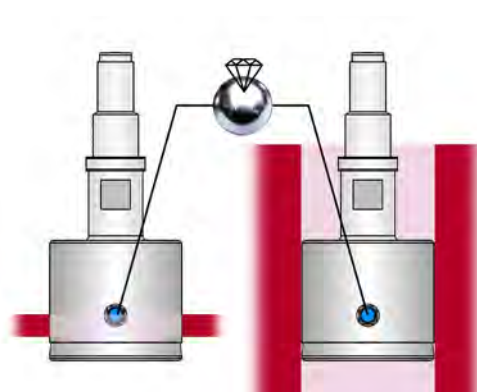
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and diamond-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Model for through holes, measuring surfaces diamond-tipped
Preferred application on very sensitive surfaces of soft non-ferrous metals and aluminium alloys

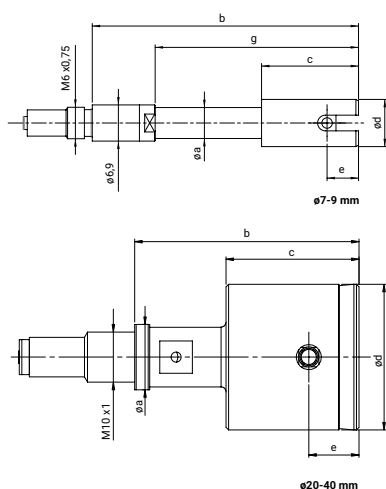
- With extended guide cylinder for measuring through holes from the edge of the hole
- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484330	844 DR-D	8–9	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484331	844 DR-D	>9–12	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484332	844 DR-D	>12–13	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484333	844 DR-D	>13–16	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484334	844 DR-D	>16–20	0,2	1	1 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484335	844 DR-D	>20–30	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484336	844 DR-D	>30–40	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484337	844 DR-D	>40–60	0,2	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484338	844 DR-D	>60–80	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484339	844 DR-D	>80–100	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484340	844 DR-D	>100–110	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484341	844 DR-D	>110–120	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484342	844 DR-D	>120–130	0,2	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484343	844 DR-D	>130–140	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484344	844 DR-D	>140–150	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484345	844 DR-D	>150–160	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484346	844 DR-D	>160–170	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484347	844 DR-D	>170–180	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484348	844 DR-D	>180–190	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484349	844 DR-D	>190–200	0,2	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484330	5,7	50,5	18,5	6	38,5	M6x0,75
4484331	7,9	54,5	22,5	10	54,5	M6x0,75
4484332	7,9	54,5	22,5	10	54,5	M6x0,75
4484333	11,9	54,5	22,5	10	54,5	M6x0,75
4484334	15	44,8	22,5	10		M10x1
4484335	15	44,7	27	10		M10x1
4484336	15	44,7	27	10		M10x1
4484337	15	44,7	28	10		M10x1
4484338	17,9	44,8	33	10		M10x1
4484339	17,9	44,8	33	10		M10x1
4484340	17,9	44,8	33	10		M10x1
4484341	17,9	44,8	33	10		M10x1
4484342	17,9	44,8	33	10		M10x1
4484343	17,9	44,8	33	10		M10x1
4484344	17,9	44,8	33	10		M10x1
4484345	17,9	44,8	33	10		M10x1
4484346	17,9	45	40	10		M10x1
4484347	17,9	45	40	10		M10x1
4484348	17,9	45	40	10		M10x1
4484349	17,9	45	40	10		M10x1



Marameter 844 D-FD

Indicating plug gage

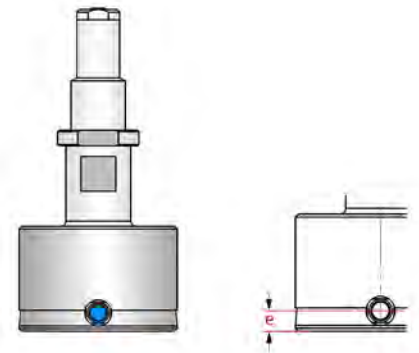
FEATURES

- The face distance dimension "e" must be set between minimum dimension e and standard dimension. Please specify when placing an order!
- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Standard version, measuring contacts with customer-specified face distance dimension "e"
Shorter guide cylinder for measuring closer to the bottom of the hole or at a defined spot

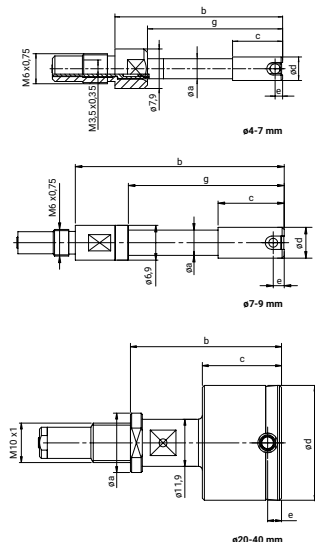
- For the rapid testing of diameter, roundness and conicity of holes
- Especially suitable for testing batches with tight tolerance fields
- Rocking in the bore is not required to determine diameter
- Therefore ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484387	844 D-FD	2–2,999	0,15	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484388	844 D-FD	3–4	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484389	844 D-FD	>4–7	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484390	844 D-FD	>7–9	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484391	844 D-FD	>9–12	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484392	844 D-FD	>12–13	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484393	844 D-FD	>13–16	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484394	844 D-FD	>16–20	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484395	844 D-FD	>20–30	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484396	844 D-FD	>30–40	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484397	844 D-FD	>40–60	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484398	844 D-FD	>60–80	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484399	844 D-FD	>80–100	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484400	844 D-FD	>100–110	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484401	844 D-FD	>110–120	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484402	844 D-FD	>120–130	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484403	844 D-FD	>130–140	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484404	844 D-FD	>140–150	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484405	844 D-FD	>150–160	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484406	844 D-FD	>160–170	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484407	844 D-FD	>170–180	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484408	844 D-FD	>180–190	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484409	844 D-FD	>190–200	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484387		20,7	14,2	0,8 – 1,4	14,2	M6x0,75 / M3,5x0,35
4484388		33	23,5	1,1 – 1,4	23,5	M6x0,75 / M3,5x0,35
4484389	4	33	9,5	1,1 – 1,4	26,5	M6x0,75 / M3,5x0,35
4484390	6,9	45,5	13,5	1,1 – 2,4	33,5	M6x0,75
4484391	7,9	45,5	13,5	1,1 – 2,4	45,5	M6x0,75
4484392	7,9	45,5	13,5	1,1 – 2,4	45,5	M6x0,75
4484393	11,9	45,5	13,5	1,1 – 2,4	45,5	M6x0,75
4484394	15	35,8	13,5	1,1 – 2,4		M10x1
4484395	15	38,2	20	1,3 – 3,4		M10x1
4484396	15	38,2	20	1,3 – 3,4		M10x1
4484397	15	38,2	28	1,3 – 3,4		M10x1
4484398	17,9	39	33	1,3 – 3,9		M10x1
4484399	17,9	39	33	1,3 – 3,9		M10x1
4484400	17,9	39	33	1,3 – 3,9		M10x1
4484401	17,9	39	33	1,3 – 3,9		M10x1
4484402	17,9	39	33	1,3 – 3,9		M10x1
4484403	17,9	39	33	1,3 – 3,9		M10x1
4484404	17,9	39	33	1,3 – 3,9		M10x1
4484405	17,9	39	33	1,3 – 3,9		M10x1
4484406	17,9	38,6	40	1,3 – 3,9		M10x1
4484407	17,9	38,6	40	1,3 – 3,9		M10x1
4484408	17,9	38,6	40	1,3 – 3,9		M10x1
4484409	17,9	37	40	1,3 – 3,9		M10x1



Marameter 844 DR-FD

Indicating plug gage

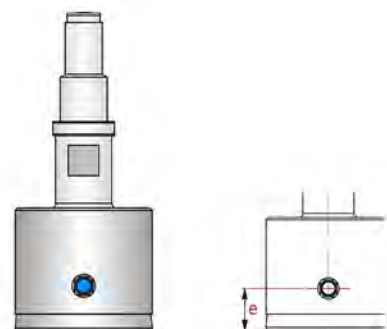
FEATURES

- The face distance dimension "e" must be set between minimum dimension e and standard dimension. Please specify when placing an order!
- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Model for through holes, anvils with customer-specified location "e"
Reducing the guide cylinder to measure closer, or at a defined position, to the ground of the bore

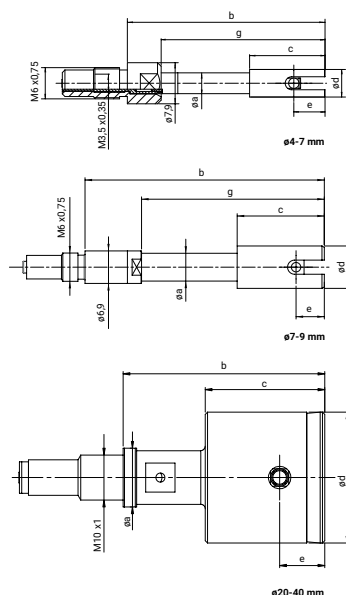
- With extended guide cylinder for measuring through holes from the edge of the hole
- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484419	844 DR-FD	4-7	0,2	1	1 %, mind. 1 μm	-0,015 / -0,025	M6x0,75 / M3,5x0,35
4484420	844 DR-FD	>7-9	0,2	1	1 %, mind. 1 μm	-0,015 / -0,025	M6x0,75
4484421	844 DR-FD	>9-12	0,2	1	1 %, mind. 1 μm	-0,015 / -0,025	M6x0,75
4484422	844 DR-FD	>12-13	0,2	1	1 %, mind. 1 μm	-0,015 / -0,025	M6x0,75
4484423	844 DR-FD	>13-16	0,2	1	1 %, mind. 1 μm	-0,015 / -0,025	M6x0,75
4484424	844 DR-FD	>16-20	0,2	1	1 %, mind. 1 μm	-0,015 / -0,025	M10x1
4484425	844 DR-FD	>20-30	0,2	1	1 %, mind. 1 μm	-0,02 / -0,03	M10x1
4484426	844 DR-FD	>30-40	0,2	1	1 %, mind. 1 μm	-0,02 / -0,03	M10x1
4484427	844 DR-FD	>40-60	0,2	1	1 %, mind. 1 μm	-0,02 / -0,03	M10x1
4484428	844 DR-FD	>60-80	0,2	1	1 %, mind. 1 μm	-0,025 / -0,035	M10x1
4484429	844 DR-FD	>80-100	0,2	1	1 %, mind. 1 μm	-0,025 / -0,035	M10x1
4484430	844 DR-FD	>100-110	0,2	1	1 %, mind. 1 μm	-0,025 / -0,035	M10x1
4484431	844 DR-FD	>110-120	0,2	1	1 %, mind. 1 μm	-0,025 / -0,035	M10x1
4484432	844 DR-FD	>120-130	0,2	1	1 %, mind. 1 μm	-0,025 / -0,035	M10x1
4484433	844 DR-FD	>130-140	0,2	1	1 %, mind. 1 μm	-0,035 / -0,045	M10x1
4484434	844 DR-FD	>140-150	0,2	1	1 %, mind. 1 μm	-0,035 / -0,045	M10x1
4484435	844 DR-FD	>150-160	0,2	1	1 %, mind. 1 μm	-0,035 / -0,045	M10x1
4484436	844 DR-FD	>160-170	0,2	1	1 %, mind. 1 μm	-0,035 / -0,045	M10x1
4484437	844 DR-FD	>170-180	0,2	1	1 %, mind. 1 μm	-0,035 / -0,045	M10x1
4484438	844 DR-FD	>180-190	0,2	1	1 %, mind. 1 μm	-0,035 / -0,045	M10x1
4484439	844 DR-FD	>190-200	0,2	1	1 %, mind. 1 μm	-0,035 / -0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484419	4	38	14,5	1,6 - 5,9	31,5	M6x0,75 / M3,5x0,35
4484420	6,9	50,5	18,5	2,6 - 5,9	38,5	M6x0,75
4484421	7,9	54,5	22,5	2,6 - 9,9	54,5	M6x0,75
4484422	7,9	54,5	22,5	2,6 - 9,9	54,5	M6x0,75
4484423	11,9	54,5	22,5	2,6 - 9,9	54,5	M6x0,75
4484424	15	44,8	22,5	2,6 - 9,9		M10x1
4484425	15	44,7	27	3,6 - 9,9		M10x1
4484426	15	44,7	27	3,6 - 9,9		M10x1
4484427	15	44,7	28	3,6 - 9,9		M10x1
4484428	17,9	44,8	33	4,1 - 9,9		M10x1
4484429	17,9	44,8	33	4,1 - 9,9		M10x1
4484430	17,9	44,8	33	4,1 - 9,9		M10x1
4484431	17,9	44,8	33	4,1 - 9,9		M10x1
4484432	17,9	44,8	33	4,1 - 9,9		M10x1
4484433	17,9	44,8	33	4,1 - 9,9		M10x1
4484434	17,9	44,8	33	4,1 - 9,9		M10x1
4484435	17,9	44,8	33	4,1 - 9,9		M10x1
4484436	17,9	45	40	4,1 - 9,9		M10x1
4484437	17,9	45	40	4,1 - 9,9		M10x1
4484438	17,9	45	40	4,1 - 9,9		M10x1
4484439	17,9	45	40	4,1 - 9,9		M10x1



Marameter 844 D-M

Indicating plug gage

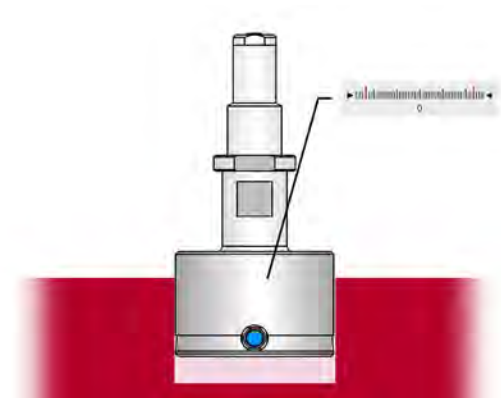
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

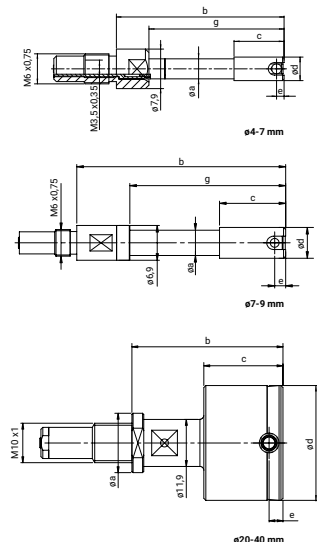
Standard model, with extended measuring range

- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with wide tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484448	844 D-M	3–4	0,4	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484449	844 D-M	>4–7	0,4	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484450	844 D-M	>7–9	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484451	844 D-M	>9–12	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484452	844 D-M	>12–13	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484453	844 D-M	>13–16	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484454	844 D-M	>16–20	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484455	844 D-M	>20–30	0,6	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484456	844 D-M	>30–40	0,6	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484457	844 D-M	>40–60	0,6	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484458	844 D-M	>60–80	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484459	844 D-M	>80–100	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484460	844 D-M	>100–110	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484461	844 D-M	>110–120	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484462	844 D-M	>120–130	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484463	844 D-M	>130–140	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484464	844 D-M	>140–150	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484465	844 D-M	>150–160	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484466	844 D-M	>160–170	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484467	844 D-M	>170–180	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484468	844 D-M	>180–190	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484469	844 D-M	>190–200	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1



Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484448		33,5	24	1,5	24	M6x0,75 / M3,5x0,35
4484449	4	33,5	10	1,5	27	M6x0,75 / M3,5x0,35
4484450	6,9	47	15	2,5	35	M6x0,75
4484451	7,9	47	15	2,5	47	M6x0,75
4484452	7,9	47	15	2,5	47	M6x0,75
4484453	11,9	47	15	2,5	47	M6x0,75
4484454	15	37,3	15	2,5		M10x1
4484455	15	38,2	20	3,5		M10x1
4484456	15	38,2	20	3,5		M10x1
4484457	15	38,2	28	3,5		M10x1
4484458	17,9	38,8	33	4		M10x1
4484459	17,9	38,8	33	4		M10x1
4484460	17,9	38,8	33	4		M10x1
4484461	17,9	38,8	33	4		M10x1
4484462	17,9	38,8	33	4		M10x1
4484463	17,9	38,8	33	4		M10x1
4484464	17,9	38,8	33	4		M10x1
4484465	17,9	38,8	33	4		M10x1
4484466	17,9	39	40	4		M10x1
4484467	17,9	39	40	4		M10x1
4484468	17,9	39	40	4		M10x1
4484469	17,9	39	40	4		M10x1

Marameter 844 DR-M

Indicating plug gage

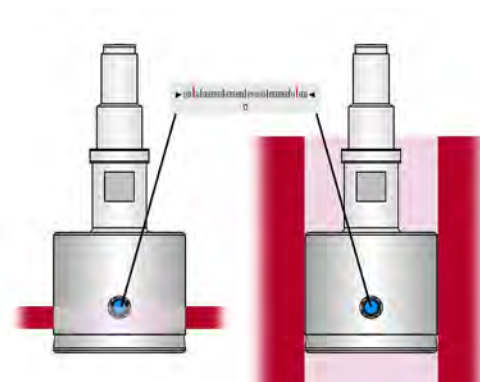
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Model for through holes, with extended measuring range

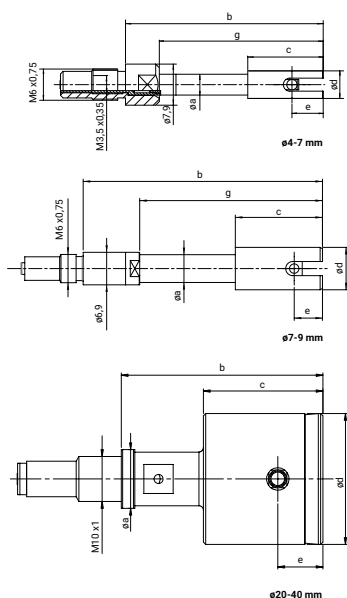
- With extended guide cylinder for measuring through holes from the edge of the hole
- For the rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with wide tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484479	844 DR-M	4–7	0,4	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484480	844 DR-M	>7–9	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484481	844 DR-M	>9–12	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484482	844 DR-M	>12–13	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484483	844 DR-M	>13–16	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484484	844 DR-M	>16–20	0,6	1	1 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484485	844 DR-M	>20–30	0,6	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484486	844 DR-M	>30–40	0,6	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484487	844 DR-M	>40–60	0,6	1	1 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484488	844 DR-M	>60–80	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484489	844 DR-M	>80–100	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484490	844 DR-M	>100–110	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484491	844 DR-M	>110–120	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484492	844 DR-M	>120–130	0,6	1	1 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484493	844 DR-M	>130–140	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484494	844 DR-M	>140–150	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484495	844 DR-M	>150–160	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484496	844 DR-M	>160–170	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484497	844 DR-M	>170–180	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484498	844 DR-M	>180–190	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484499	844 DR-M	>190–200	0,6	1	1 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484479	4	38	14,5	6	31,5	M6x0,75 / M3,5x0,35
4484480	6,9	50,5	18,5	6	38,5	M6x0,75
4484481	7,9	54,5	22,5	10	54,5	M6x0,75
4484482	7,9	54,5	22,5	10	54,5	M6x0,75
4484483	11,9	54,5	22,5	10	54,5	M6x0,75
4484484	15	44,8	22,5	10		M10x1
4484485	15	44,7	27	10		M10x1
4484486	15	44,7	27	10		M10x1
4484487	15	44,7	28	10		M10x1
4484488	17,9	44,8	33	10		M10x1
4484489	17,9	44,8	33	10		M10x1
4484490	17,9	44,8	33	10		M10x1
4484491	17,9	44,8	33	10		M10x1
4484492	17,9	44,8	33	10		M10x1
4484493	17,9	44,8	33	10		M10x1
4484494	17,9	44,8	33	10		M10x1
4484495	17,9	44,8	33	10		M10x1
4484496	17,9	45	40	10		M10x1
4484497	17,9	45	40	10		M10x1
4484498	17,9	45	40	10		M10x1
4484499	17,9	45	40	10		M10x1



Marameter 844 DS-M

Indicating plug gage

FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments, and depth stops form a comprehensive modular system
- To protect the measuring contacts during entry into the hole the use of a holder with lifter (844 Kga or 844 Dga) is recommended

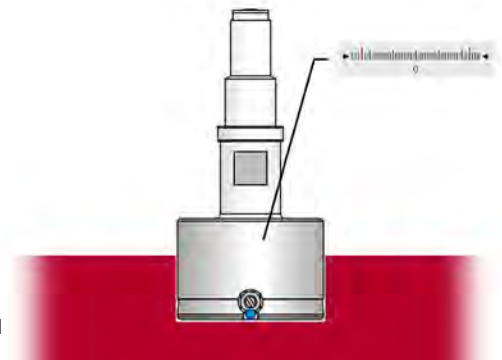
Application:

Model for blind holes with expanded measuring range

Recommendation:

To protect the measuring contacts during entry into the hole the use of a holder with lifter (844 Kga or 844 Dga) is recommended

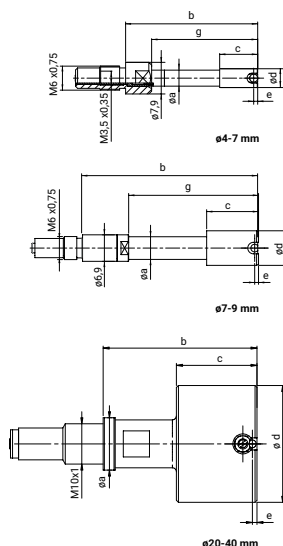
- For measurements close to the bottom of the bore
- For the rapid testing of diameter, roundness and conicity of bores
- Ideal for testing batches with large tolerance fields
- No rocking in the bore is required to determine the reversing point
- Therefore ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484508	844 DS-M	3–4	0,4	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484509	844 DS-M	>4–7	0,4	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484510	844 DS-M	>7–9	0,6	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484511	844 DS-M	>9–12	0,6	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484512	844 DS-M	>12–13	0,6	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484513	844 DS-M	>13–16	0,6	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484514	844 DS-M	>16–20	0,6	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484515	844 DS-M	>20–30	0,6	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484516	844 DS-M	>30–40	0,6	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484517	844 DS-M	>40–60	0,6	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484518	844 DS-M	>60–80	0,6	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484519	844 DS-M	>80–100	0,6	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484520	844 DS-M	>100–110	0,6	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484521	844 DS-M	>110–120	0,6	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484522	844 DS-M	>120–130	0,6	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484523	844 DS-M	>130–140	0,6	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484524	844 DS-M	>140–150	0,6	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484525	844 DS-M	>150–160	0,6	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484526	844 DS-M	>160–170	0,6	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484527	844 DS-M	>170–180	0,6	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484528	844 DS-M	>180–190	0,6	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484529	844 DS-M	>190–200	0,6	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484508		33	23,5	1	23,5	M6x0,75 / M3,5x0,35
4484509	4	33	9,5	1	26,5	M6x0,75 / M3,5x0,35
4484510	6,9	45,5	13,5	1	33,5	M6x0,75
4484511	7,9	45,5	13,5	1	45,5	M6x0,75
4484512	7,9	45,5	13,5	1	45,5	M6x0,75
4484513	11,9	45,5	13,5	1	45,5	M6x0,75
4484514	15	35,8	13,5	1		M10x1
4484515	15	38,2	20	1,2		M10x1
4484516	15	38,2	20	1,2		M10x1
4484517	15	38,2	28	1,2		M10x1
4484518	17,9	39	33	1,2		M10x1
4484519	17,9	39	33	1,2		M10x1
4484520	17,9	39	33	1,2		M10x1
4484521	17,9	39	33	1,2		M10x1
4484522	17,9	39	33	1,2		M10x1
4484523	17,9	39	33	1,2		M10x1
4484524	17,9	39	33	1,2		M10x1
4484525	17,9	39	33	1,2		M10x1
4484526	17,9	38,6	40	1,2		M10x1
4484527	17,9	38,6	40	1,2		M10x1
4484528	17,9	38,6	40	1,2		M10x1
4484529	17,9	38,6	40	1,2		M10x1



Marameter 844 D-HR

Indicating plug gage

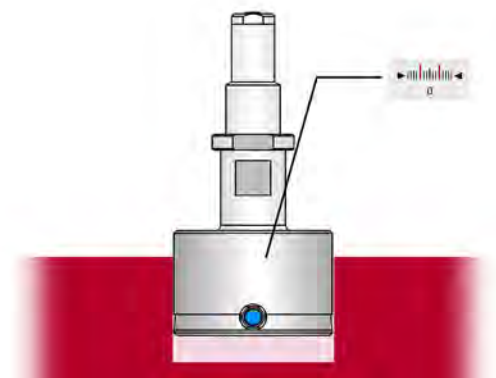
FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Standard version for very tight tolerance fields less than 10 µm
Manufacturing tolerance of the guide cylinder reduced to 0.01 mm (±5 µm) to reduce the axial and radial measuring influences

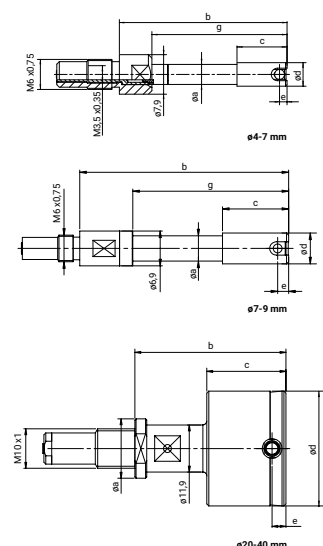
- For the rapid testing of diameter, roundness and conicity of bores
- Ideal for testing batches with very tight tolerance fields less than 10 µm
- Rocking in the bore is not required to determine diameter
- Therefore ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	µm		mm / mm	
4484538	844 D-HR	3–4	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75 / M3,5x0,35
4484539	844 D-HR	>4–7	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75 / M3,5x0,35
4484540	844 D-HR	>7–9	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484541	844 D-HR	>9–12	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484542	844 D-HR	>12–13	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484543	844 D-HR	>13–16	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484544	844 D-HR	>16–20	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M10x1
4484545	844 D-HR	>20–30	0,2	1	1 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484546	844 D-HR	>30–40	0,2	1	1 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484547	844 D-HR	>40–60	0,2	1	1 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484548	844 D-HR	>60–80	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484549	844 D-HR	>80–100	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484550	844 D-HR	>100–110	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484551	844 D-HR	>110–120	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484552	844 D-HR	>120–130	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484553	844 D-HR	>130–140	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484554	844 D-HR	>140–150	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484555	844 D-HR	>150–160	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484556	844 D-HR	>160–170	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484557	844 D-HR	>170–180	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484558	844 D-HR	>180–190	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484559	844 D-HR	>190–200	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1

Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484538		33,5	24	1,5	24	M6x0,75 / M3,5x0,35
4484539	4	33,5	10	1,5	27	M6x0,75 / M3,5x0,35
4484540	6,9	47	15	2,5	35	M6x0,75
4484541	7,9	47	15	2,5	47	M6x0,75
4484542	7,9	47	15	2,5	47	M6x0,75
4484543	11,9	47	15	2,5	47	M6x0,75
4484544	15	37,3	15	2,5		M10x1
4484545	15	38,2	20	3,5		M10x1
4484546	15	38,2	20	3,5		M10x1
4484547	15	38,2	28	3,5		M10x1
4484548	17,9	38,8	33	4		M10x1
4484549	17,9	38,8	33	4		M10x1
4484550	17,9	38,8	33	4		M10x1
4484551	17,9	38,8	33	4		M10x1
4484552	17,9	38,8	33	4		M10x1
4484553	17,9	38,8	33	4		M10x1
4484554	17,9	38,8	33	4		M10x1
4484555	17,9	38,8	33	4		M10x1
4484556	17,9	39	40	4		M10x1
4484557	17,9	39	40	4		M10x1
4484558	17,9	39	40	4		M10x1
4484559	17,9	39	40	4		M10x1



Marameter 844 DR-HR

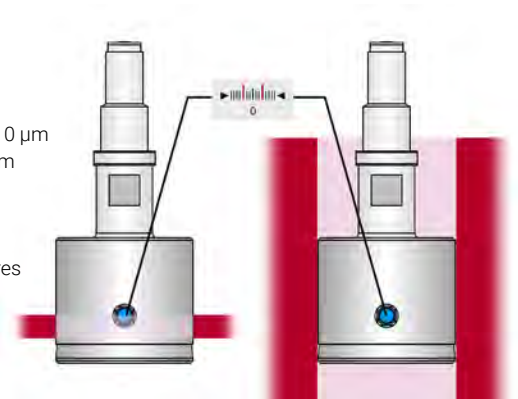
Indicating plug gage

FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

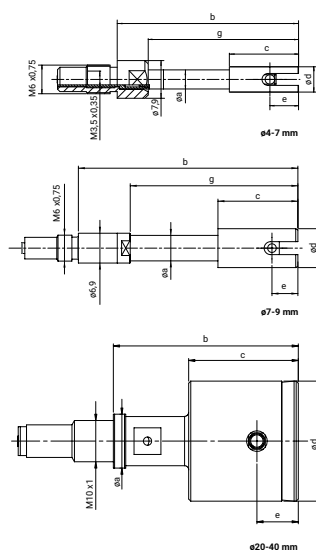
Application:

- Model for through holes, for very tight tolerance fields less than 10 µm
- Manufacturing tolerance of the guide cylinder reduced to 0.01 mm (±5 µm) to reduce the axial and radial measuring influences
- 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
- Ideal for testing batches with very tight tolerance fields less than 10 µm
- Rocking in the bore is not required to determine diameter
- Therefore ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Measuring Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	µm		mm / mm	
4484569	844 DR-HR	4–7	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75 / M3,5x0,35
4484570	844 DR-HR	>7–9	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484571	844 DR-HR	>9–12	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484572	844 DR-HR	>12–13	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484573	844 DR-HR	>13–16	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484574	844 DR-HR	>16–20	0,2	1	1 %, mind. 1 µm	–0,005 / –0,015	M10x1
4484575	844 DR-HR	>20–30	0,2	1	1 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484576	844 DR-HR	>30–40	0,2	1	1 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484577	844 DR-HR	>40–60	0,2	1	1 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484578	844 DR-HR	>60–80	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484579	844 DR-HR	>80–100	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484580	844 DR-HR	>100–110	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484581	844 DR-HR	>110–120	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484582	844 DR-HR	>120–130	0,2	1	1 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484583	844 DR-HR	>130–140	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484584	844 DR-HR	>140–150	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484585	844 DR-HR	>150–160	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484586	844 DR-HR	>160–170	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484587	844 DR-HR	>170–180	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484588	844 DR-HR	>180–190	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484589	844 DR-HR	>190–200	0,2	1	1 %, mind. 1 µm	–0,025 / –0,035	M10x1



Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484569	4	38	14,5	6	31,5	M6x0,75 / M3,5x0,35
4484570	6,9	50,5	18,5	6	38,5	M6x0,75
4484571	7,9	54,5	22,5	10	54,5	M6x0,75
4484572	7,9	54,5	22,5	10	54,5	M6x0,75
4484573	11,9	54,5	22,5	10	54,5	M6x0,75
4484574	15	44,8	22,5	10		M10x1
4484575	15	44,7	27	10		M10x1
4484576	15	44,7	27	10		M10x1
4484577	15	44,7	28	10		M10x1
4484578	17,9	44,8	33	10		M10x1
4484579	17,9	44,8	33	10		M10x1
4484580	17,9	44,8	33	10		M10x1
4484581	17,9	44,8	33	10		M10x1
4484582	17,9	44,8	33	10		M10x1
4484583	17,9	44,8	33	10		M10x1
4484584	17,9	44,8	33	10		M10x1
4484585	17,9	44,8	33	10		M10x1
4484586	17,9	45	40	10		M10x1
4484587	17,9	45	40	10		M10x1
4484588	17,9	45	40	10		M10x1
4484589	17,9	45	40	10		M10x1

Marameter 844 DS-HR

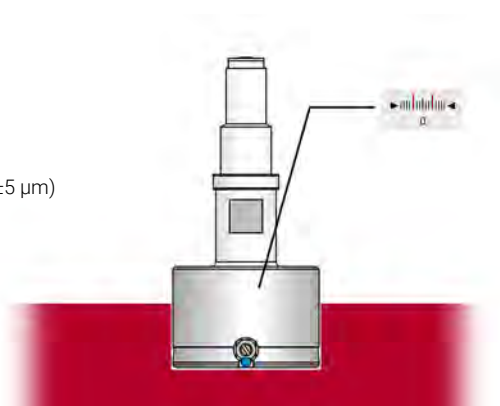
Indicating plug gage

FEATURES

- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

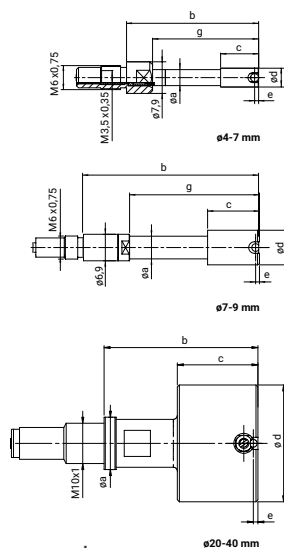
Application:

- Model for blind holes, for very tight tolerance fields less than 10 µm
Manufacturing tolerance of the guide cylinder reduced to 0.01 mm (±5 µm) to reduce the axial and radial measuring influences
- For measurements close to the base of the hole
 - For the rapid testing of diameter, roundness and conicity of bores
 - Ideal for testing batches with very tight tolerance fields less than 10 µm
 - Rocking in the bore is not required to determine diameter
 - Therefore ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	µm		mm / mm	
4484598	844 DS-HR	3–4	0,2	1	1,5 %, mind. 1 µm	–0,005 / –0,015	M6x0,75 / M3,5x0,35
4484599	844 DS-HR	>4–7	0,2	1	1,5 %, mind. 1 µm	–0,005 / –0,015	M6x0,75 / M3,5x0,35
4484600	844 DS-HR	>7–9	0,2	1	1,5 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484601	844 DS-HR	>9–12	0,2	1	1,5 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484602	844 DS-HR	>12–13	0,2	1	1,5 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484603	844 DS-HR	>13–16	0,2	1	1,5 %, mind. 1 µm	–0,005 / –0,015	M6x0,75
4484604	844 DS-HR	>16–20	0,2	1	1,5 %, mind. 1 µm	–0,005 / –0,015	M10x1
4484605	844 DS-HR	>20–30	0,2	1	1,5 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484606	844 DS-HR	>30–40	0,2	1	1,5 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484607	844 DS-HR	>40–60	0,2	1	1,5 %, mind. 1 µm	–0,01 / –0,02	M10x1
4484608	844 DS-HR	>60–80	0,2	1	1,5 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484609	844 DS-HR	>80–100	0,2	1	1,5 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484610	844 DS-HR	>100–110	0,2	1	1,5 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484611	844 DS-HR	>110–120	0,2	1	1,5 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484612	844 DS-HR	>120–130	0,2	1	1,5 %, mind. 1 µm	–0,015 / –0,025	M10x1
4484613	844 DS-HR	>130–140	0,2	1	1,5 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484614	844 DS-HR	>140–150	0,2	1	1,5 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484615	844 DS-HR	>150–160	0,2	1	1,5 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484616	844 DS-HR	>160–170	0,2	1	1,5 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484617	844 DS-HR	>170–180	0,2	1	1,5 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484618	844 DS-HR	>180–190	0,2	1	1,5 %, mind. 1 µm	–0,025 / –0,035	M10x1
4484619	844 DS-HR	>190–200	0,2	1	1,5 %, mind. 1 µm	–0,025 / –0,035	M10x1



Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484598		33	23,5	1	23,5	M6x0,75 / M3,5x0,35
4484599	4	33	9,5	1	26,5	M6x0,75 / M3,5x0,35
4484600	6,9	45,5	13,5	1	33,5	M6x0,75
4484601	7,9	45,5	13,5	1	45,5	M6x0,75
4484602	7,9	45,5	13,5	1	45,5	M6x0,75
4484603	11,9	45,5	13,5	1	45,5	M6x0,75
4484604	15	35,8	13,5	1		M10x1
4484605	15	38,2	20	1,2		M10x1
4484606	15	38,2	20	1,2		M10x1
4484607	15	38,2	28	1,2		M10x1
4484608	17,9	39	33	1,2		M10x1
4484609	17,9	39	33	1,2		M10x1
4484610	17,9	39	33	1,2		M10x1
4484611	17,9	39	33	1,2		M10x1
4484612	17,9	39	33	1,2		M10x1
4484613	17,9	39	33	1,2		M10x1
4484614	17,9	39	33	1,2		M10x1
4484615	17,9	39	33	1,2		M10x1
4484616	17,9	38,6	40	1,2		M10x1
4484617	17,9	38,6	40	1,2		M10x1
4484618	17,9	38,6	40	1,2		M10x1
4484619	17,9	38,6	40	1,2		M10x1

Marameter 844 DS-F

Indicating plug gage

FEATURES

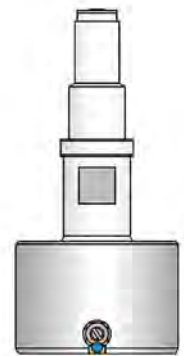
- Measuring probe made of hardened, stainless guide cylinder and carbide-tipped probes
- Carbide driving needle transfers radial measuring movement to the display unit
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments and depth stops form a comprehensive modular system

Application:

Model for blind holes, with front chamfer

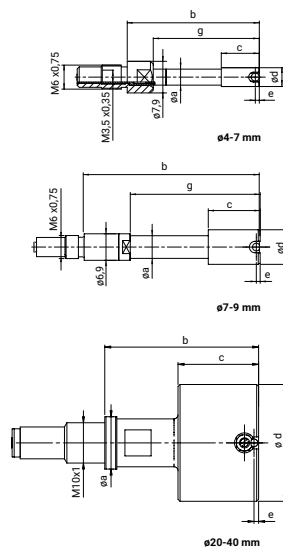
For measuring very short bores

- For measurements close to the base of the hole
- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484627	844 DS-F	2–2,999	0,15	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484628	844 DS-F	3–4	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484629	844 DS-F	>4–7	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484630	844 DS-F	>7–9	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484631	844 DS-F	>9–12	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484632	844 DS-F	>12–13	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484633	844 DS-F	>13–16	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484634	844 DS-F	>16–20	0,2	1	1,5 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484635	844 DS-F	>20–30	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484636	844 DS-F	>30–40	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484637	844 DS-F	>40–60	0,2	1	1,5 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484638	844 DS-F	>60–80	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484639	844 DS-F	>80–100	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484640	844 DS-F	>100–110	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484641	844 DS-F	>110–120	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484642	844 DS-F	>120–130	0,2	1	1,5 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484643	844 DS-F	>130–140	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484644	844 DS-F	>140–150	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484645	844 DS-F	>150–160	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484646	844 DS-F	>160–170	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484647	844 DS-F	>170–180	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484648	844 DS-F	>180–190	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1
4484649	844 DS-F	>190–200	0,2	1	1,5 %, mind. 1 μm	–0,035 / –0,045	M10x1



Order no.	a	b	c	e	g	Connection thread
	mm	mm	mm	mm	mm	
4484627		20,7	14,2	0,7	14,2	M6x0,75 / M3,5x0,35
4484628		33	23,5	1	23,5	M6x0,75 / M3,5x0,35
4484629	4	33	9,5	1	26,5	M6x0,75 / M3,5x0,35
4484630	6,9	45,5	13,5	1	33,5	M6x0,75
4484631	7,9	45,5	13,5	1	45,5	M6x0,75
4484632	7,9	45,5	13,5	1	45,5	M6x0,75
4484633	11,9	45,5	13,5	1	45,5	M6x0,75
4484634	15	35,8	13,5	1		M10x1
4484635	15	38,2	20	1,2		M10x1
4484636	15	38,2	20	1,2		M10x1
4484637	15	38,2	28	1,2		M10x1
4484638	17,9	39	33	1,2		M10x1
4484639	17,9	39	33	1,2		M10x1
4484640	17,9	39	33	1,2		M10x1
4484641	17,9	39	33	1,2		M10x1
4484642	17,9	39	33	1,2		M10x1
4484643	17,9	39	33	1,2		M10x1
4484644	17,9	39	33	1,2		M10x1
4484645	17,9	39	33	1,2		M10x1
4484646	17,9	38,6	40	1,2		M10x1
4484647	17,9	38,6	40	1,2		M10x1
4484648	17,9	38,6	40	1,2		M10x1
4484649	17,9	38,6	40	1,2		M10x1

Marameter 844 D–3

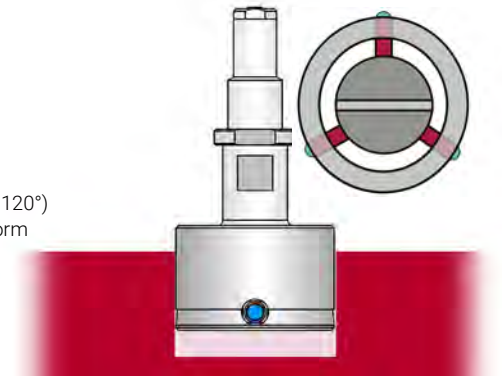
Indicating plug gage

FEATURES

- Measuring head has hard, stainless cylinder guide and carbide-tipped anvils (spaced at $3 \times 120^\circ$)
- 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:

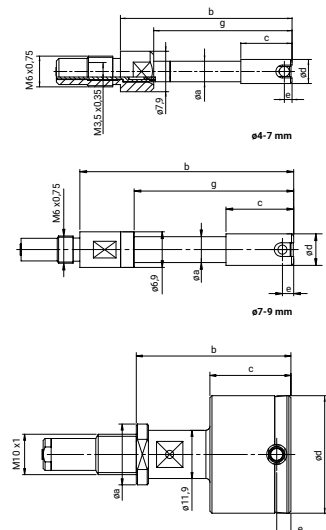
- Standard model, with 3-point contact (gaging contacts spaced $3 \times 120^\circ$)
- For fast measurement of interrupted diameters and detection of form deviations in a polygon
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Measuring span	Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484659	844 D–3	4–7	0,2	1	2 %, mind. 1 μm	–0,015 / –0,025	M6x0,75 / M3,5x0,35
4484660	844 D–3	>7–9	0,2	1	2 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484661	844 D–3	>9–12	0,2	1	2 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484662	844 D–3	>12–13	0,2	1	2 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484663	844 D–3	>13–16	0,2	1	2 %, mind. 1 μm	–0,015 / –0,025	M6x0,75
4484664	844 D–3	>16–20	0,2	1	2 %, mind. 1 μm	–0,015 / –0,025	M10x1
4484665	844 D–3	>20–30	0,2	1	2 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484666	844 D–3	>30–40	0,2	1	2 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484667	844 D–3	>40–60	0,2	1	2 %, mind. 1 μm	–0,02 / –0,03	M10x1
4484668	844 D–3	>60–80	0,2	1	2 %, mind. 1 μm	–0,025 / –0,035	M10x1
4484669	844 D–3	>80–100	0,2	1	2 %, mind. 1 μm	–0,025 / –0,035	M10x1

Order no.	a	b	c	e	Connection thread
	mm	mm	mm	mm	
4484659	4	33,5	10	1,5	M6x0,75 / M3,5x0,35
4484660	6,9	47	15	2,5	M6x0,75
4484661	7,9	47	15	2,5	M6x0,75
4484662	7,9	47	15	2,5	M6x0,75
4484663	11,9	47	15	2,5	M6x0,75
4484664	15	37	15	2,5	M10x1
4484665	15	38,2	20	3,5	M10x1
4484666	15	38,2	20	3,5	M10x1
4484667	15	38,2	28	3,5	M10x1
4484668	17,9	38,8	33	4	M10x1
4484669	17,9	38,8	33	4	M10x1



Marameter 844 DR-3

Indicating plug gage

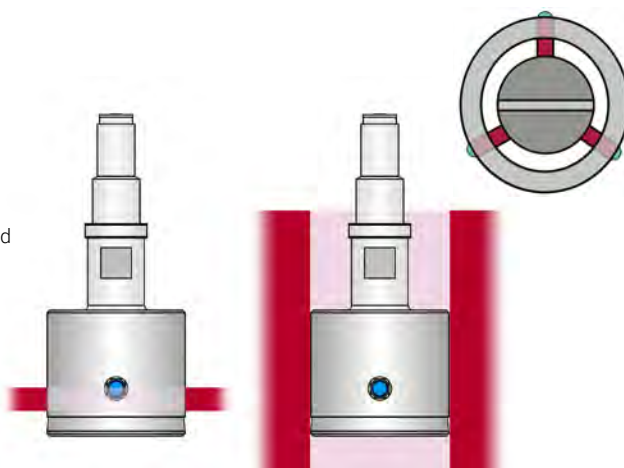
FEATURES

- Measuring head has hard, stainless cylinder guide and carbide-tipped anvils (spaced at $3 \times 120^\circ$)
- 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 3-point contact (gaging contacts spaced $3 \times 120^\circ$)
For fast measurement of interrupted diameters and detection of form deviations in a polygon

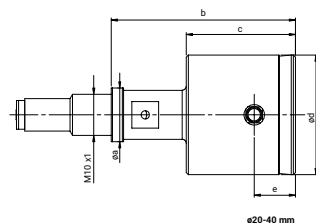
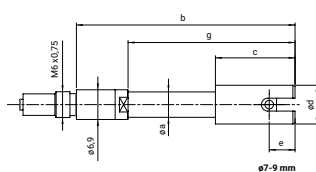
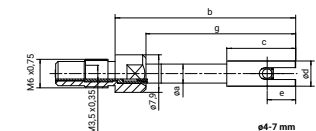
- Especially suitable for testing batches with tight tolerance zones
- Rocking in the bore is not required to determine diameter
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Measuring span	Measuring Repeatability f_w	Linearity deviation f_e	Manufacturing tolerance guide cylinder	Connection thread
		mm	mm	μm		mm / mm	
4484689	844 DR-3	4-7	0,2	1	2 %, mind. 1 μm	-0,015 / -0,025	M6x0,75 / M3,5x0,35
4484690	844 DR-3	>7-9	0,2	1	2 %, mind. 1 μm	-0,015 / -0,025	M6x0,75
4484691	844 DR-3	>9-12	0,2	1	2 %, mind. 1 μm	-0,015 / -0,025	M6x0,75
4484692	844 DR-3	>12-13	0,2	1	2 %, mind. 1 μm	-0,015 / -0,025	M6x0,75
4484693	844 DR-3	>13-16	0,2	1	2 %, mind. 1 μm	-0,015 / -0,025	M6x0,75
4484694	844 DR-3	>16-20	0,2	1	2 %, mind. 1 μm	-0,015 / -0,025	M10x1
4484695	844 DR-3	>20-30	0,2	1	2 %, mind. 1 μm	-0,02 / -0,03	M10x1
4484696	844 DR-3	>30-40	0,2	1	2 %, mind. 1 μm	-0,02 / -0,03	M10x1
4484697	844 DR-3	>40-60	0,2	1	2 %, mind. 1 μm	-0,02 / -0,03	M10x1
4484698	844 DR-3	>60-80	0,2	1	2 %, mind. 1 μm	-0,025 / -0,035	M10x1
4484699	844 DR-3	>80-100	0,2	1	2 %, mind. 1 μm	-0,025 / -0,035	M10x1

Order no.	a	b	c	e	Connection thread
	mm	mm	mm	mm	
4484689	4	38	14,5	6	M6x0,75 / M3,5x0,35
4484690	6,9	50,5	18,5	6	M6x0,75
4484691	7,9	54,5	22,5	10	M6x0,75
4484692	7,9	54,5	22,5	10	M6x0,75
4484693	11,9	54,5	22,5	10	M6x0,75
4484694	15	44,6	22,5	10	M10x1
4484695	15	44,7	27	10	M10x1
4484696	15	44,7	27	10	M10x1
4484697	15	44,7	28	10	M10x1
4484698	17,9	44,8	33	10	M10x1
4484699	17,9	44,8	33	10	M10x1



Marameter 844 Dg.. / 844 Kg

Holder for plug gage

FEATURES

- The measuring instrument holder comprises a handle with a transfer rod, other properties:
 - Holder for upper cylinder shaft Ø 8 mm, for display unit e.g. dial comparator or digital dial indicator
 - Lower connecting thread to hold a bore plug gage 844 D / 844 DR / 844 DS



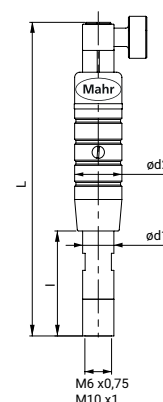
Application:

- Type 844 Dga: Special model with clearance button, useful e.g. for sensitive workpieces for inserting a bore plug gage into blind hole model 844 DS more easily. Recommended for small and sensitive holes.
- Type 844 Dg-XL: Heavy duty and stable design for large bore plug gages (possible from Ø 60 mm), especially when using measuring depth extensions 844 Dv (Ø 18 mm) for large measuring depths.

TECHNICAL DATA

Order no.	Type	Length	Connection thread	Mounting hole
		mm		mm
4473400	844 Kg	73,00	M6 x 0,75	8 mm
4484750	844 Dgk	59,00	M10 x 1	8 mm
4484751	844 Dga	83,00	M10 x 1	8 mm
4484752	844 Dg	109,00	M6 x 0,75	8 mm
4484753	844 Dg	109,00	M10 x 1	8 mm
4484754	844 Dg	239,00	M6 x 0,75	8 mm
4484755	844 Dg	249,00	M10 x 1	8 mm
4484756	844 Dg-XL	154,00	M10 x 1	8 mm
4484757	844 Dg-XL	244,00	M10 x 1	8 mm
4484758	844 Dgk-Z	59,00	M10 x 1	3/8"
4484759	844 Dg-Z	109,00	M10 x 1	3/8"

Order no.	L	d1	d2	l
	mm	mm	mm	mm
4473400	73	10	14	23
4484750	59	11,9	18	11
4484751	83	11,9	18	36
4484752	109	11,9	18	30
4484753	109	11,9	18	40
4484754	239	11,9	18	137
4484755	249	11,9	18	147
4484756	154	17,9	26	38
4484757	244	17,9	26	128
4484758	59	11,9	18	11
4484759	109	11,9	18	30



ACCESSORIES

Order no.	Type	Description
4334000	1003	Mechanical dial comparator 1 µm / ± 50 µm
4334102	1002	Mechanical dial comparator 0,5 µm / ± 25 µm
4337700	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337720	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm
4337910	1086 Ri	Digital indicator 12,5 mm / 0,0005 mm
4337969	1087 ZRi	Digital indicator 6,35 mm / 0,0005 mm
4346700	2000 W	Inductive dial comparator, ± 1 µm
4346701	2000 Wi	Inductive dial comparator, ± 1 µm



1003



2000 W



2000 Wi



1086 ZRi



1087 ZRi



1086 R



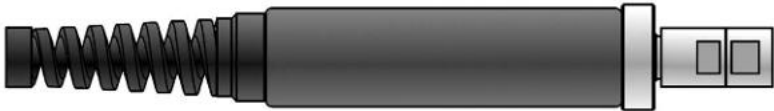
1086 Ri

Marameter 844 Dge

Plug gage holder for inductive probe

FEATURES

- The plug gage holders for inductive probes consist of a handle with cable protection on top.
- Fixture (in the handle) for an inductive probe Ø 8 mm e.g. P2004-M for connection to an amplifire e.g. C1200-M
- Integrated fine adjustment for best probe setting
- Connection thread at the bottom to mount a bore gauge 844 D / 844 DR / 844 DS

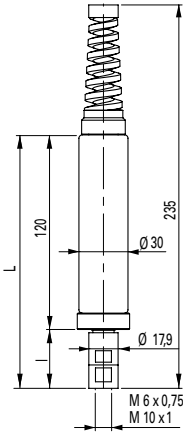


- Application:**
Special plug gage holders for precise measurements with inductive probes
- Mounting element in the holder for inductive probes with cylindrical shaft Ø 8 mm
 - Cable socket with bend protection
 - Fine adjustment attachment for the inductive probe
 - Connection thread at the bottom for mounting a plug gage 844 D / 844 DR / 844 DS

TECHNICAL DATA

Order no.	Type	Length	Connection thread
		mm	
4484760	844 Dge	146,00	M6 x 0,75
4484761	844 Dge	156,00	M10 x 1

Order no.	L	I
	mm	mm
4484760	146	26
4484761	156	36



ACCESSORIES

Order no.	Type	Description
5312012	C 1200 M	Compact length measuring device
5323010	P2004 M	Inductive probe ± 2 mm



P2004 U; P2004 T;
P2004 M;P2004 F



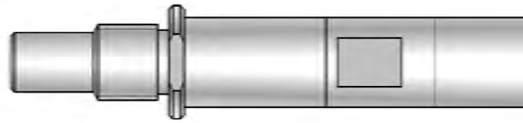
C 1200 M

Marameter 844 Dv

Extension for measuring depth

FEATURES

- The 844 Dv depth extensions are screwed in between holder 844 Dg and plug gage 844 D / 844 DR / 844 DS (if necessary right angle attachment 844 Dw)



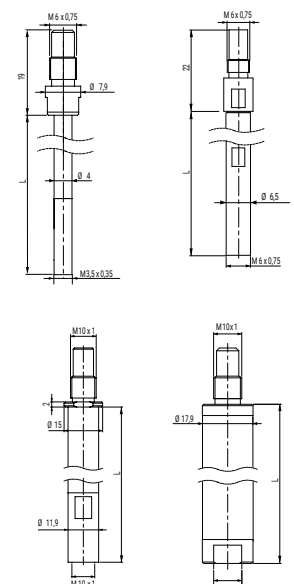
Application:

- For bore measurement at larger depths
- Practical additional function as clamping shank for depth measuring stops 844 Dt

TECHNICAL DATA

Order no.	Type	Length	Connection thread
		mm	
4484770	844 Dv	49,00	M6 x 0,75 / M3,5 x 0,35
4484771	844 Dv	99,00	M6 x 0,75 / M3,5 x 0,35
4484772	844 Dv	149,00	M6 x 0,75 / M3,5 x 0,35
4484773	844 Dv	249,00	M6 x 0,75 / M3,5 x 0,35
4484774	844 Dv	50,00	M6 x 0,75
4484775	844 Dv	100,00	M6 x 0,75
4484776	844 Dv	150,00	M6 x 0,75
4484777	844 Dv	250,00	M6 x 0,75
4484778	844 Dv	500,00	M6 x 0,75
4484779	844 Dv	48,00	M10 x 1
4484780	844 Dv	98,00	M10 x 1
4484781	844 Dv	248,00	M10 x 1
4484782	844 Dv	498,00	M10 x 1
4484783	844 Dv	750,00	M10 x 1
4484784	844 Dv	1000,00	M10 x 1
4484785	844 Dv	100,00	M10 x 1
4484786	844 Dv	250,00	M10 x 1
4484787	844 Dv	500,00	M10 x 1
4484788	844 Dv	750,00	M10 x 1
4484789	844 Dv	1000,00	M10 x 1

Order no.	L	d1	d2
	mm	mm	mm
4484770	49	4	7,9
4484771	99	4	7,9
4484772	149	4	7,9
4484773	249	4	7,9
4484774	50	6,5	7,9
4484775	100	6,5	7,9
4484776	150	6,5	7,9
4484777	250	6,5	7,9
4484778	500	6,5	7,9
4484779	48	11,9	15
4484780	98	11,9	15
4484781	248	11,9	15
4484782	498	11,9	15
4484783	750	11,9	15
4484784	1000	11,9	15
4484785	100	17,9	
4484786	250	17,9	
4484787	500	17,9	
4484788	750	17,9	
4484789	1000	17,9	

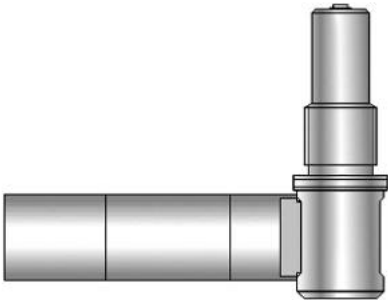


Marameter 844 Dw

Right angle attachments

FEATURES

The 844 Dw right angle attachment are screwed in between holder 844 Dg and plug gage 844 D / 844 DR / 844 DS (if necessary extensions 844 Dv)



Application:

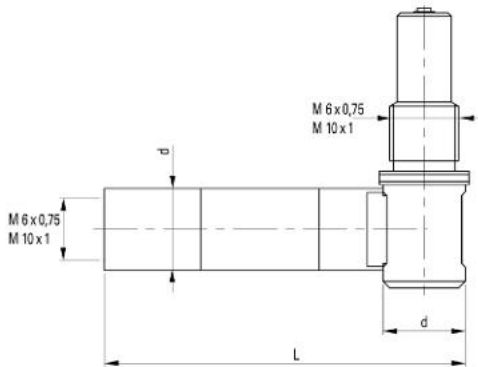
For space-saving and side entering measurement of bores
Typical measuring problem situations:

- Narrow conditions in turning and grinding machines
- Side outgoing bores or bearing points in housings.

TECHNICAL DATA

Order no.	Type	Length	Connection thread
		mm	
4484790	844 Dw	53,00	M10 x 1
4484791	844 Dw	56,00	M10 x 1

Order no.	L	d
	mm	mm
4484790	53	11,9
4484791	56	17,9

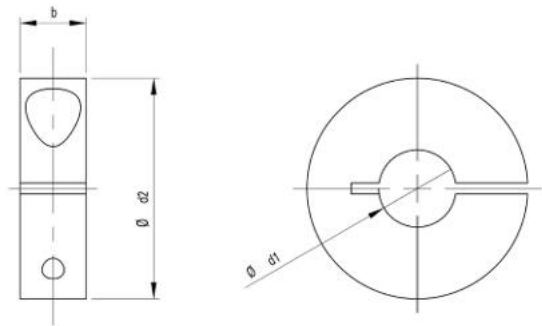


Marameter 844 Dt-R

Depth stop ring

FEATURES

- For clamping directly on guide cylinder of plug gage 844 D / 844 DR / 844 DS



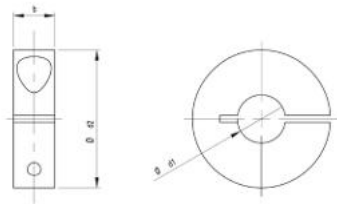
Application:

- For measuring at a defined and repeatable measuring depth and to eliminate a tilt error

TECHNICAL DATA

Order no.	Type	Application range
		mm
4484800	844 Dt-R	for plug gages Ø 3 – 40 mm
4484801	844 Dt-R	for plug gages Ø >40 – 60 mm
4484802	844 Dt-R	for plug gages Ø >60 – 90 mm
4484803	844 Dt-R	for plug gages Ø >90 – 105 mm

Order no.	b	Dimension d1	Comment	d1	d2
4484800	6 mm 10 mm 10 mm 12 mm 12 mm 12 mm 12 mm 12 mm	Adjusted according to the guide cylinder diameter of the plug gage	3– 5 mm >5– 9 mm >9– 14 mm >14– 18 mm >18– 24 mm >24– 28 mm >28– 35 mm >35– 40 mm	12 mm 25 mm 32 mm 40 mm 45 mm 50 mm 56 mm 63 mm	
4484801	14 mm 14 mm 16 mm	Adjusted according to the guide cylinder diameter of the plug gage	>40– 45 mm >45– 55 mm >55– 60 mm	70 mm 80 mm 90 mm	
4484802	16 mm 20 mm	Adjusted according to the guide cylinder diameter of the plug gage	>60– 70 mm >70– 90 mm	100 mm 125 mm	
4484803	25 mm	Adjusted according to the guide cylinder diameter of the plug gage	>90– 105 mm	140 mm	

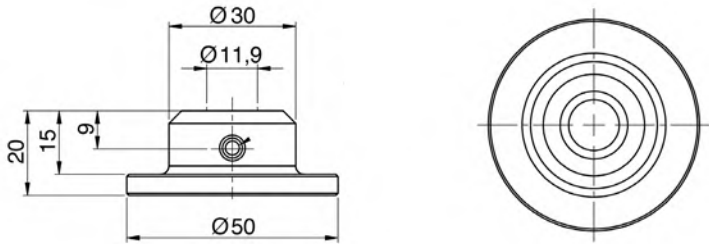


Marameter 844 Dt-S

Depth stop disc

FEATURES

- Full round design
- For clamping on the shaft of the plug gage holder 844 Dg or measuring depth extension 844 Dv



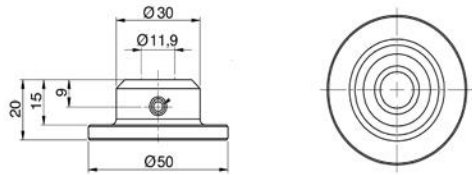
Application:

- For measuring at a defined and repeatable measuring depth and to eliminate a tilt error

TECHNICAL DATA

Order no.	Type	Application range	Mounting hole
		mm	mm
4484820	844 Dt-S	for plug gages Ø 16 – 40 mm	Ø 11,9 mm

Order no.	Stop surfaces Ø A
	mm
4484820	Full round design, diameter 50 mm

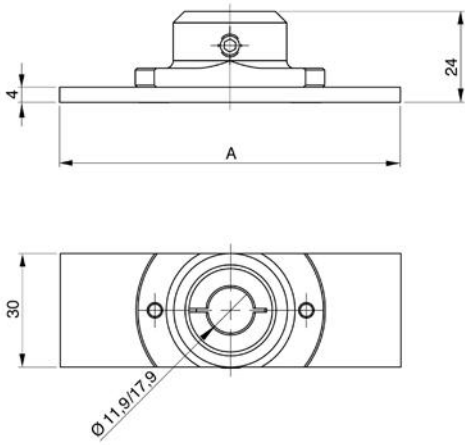


Marameter 844 Dt-B

Depth stop bridge

FEATURES

- For clamping on the shaft of the plug gage holder 844 Dg or measuring depth extension 844 Dv



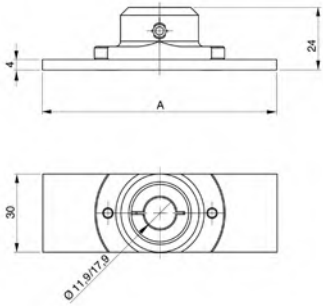
Application:

- For measuring at a defined and repeatable measuring depth and to eliminate a tilt error

TECHNICAL DATA

Order no.	Type	Application range mm
		mm
4484821	844 Dt-B	for plug gages Ø 40 – 60 mm
4484822	844 Dt-B	for plug gages Ø >60 – 80 mm
4484823	844 Dt-B	for plug gages Ø >80 – 100 mm
4484824	844 Dt-B	for plug gages Ø >100 – 160 mm

Order no.	Stop surfaces Ø A
	mm
4484821	Bore plug gage diameter + 10 mm
4484822	Bore plug gage diameter + 10 mm
4484823	Bore plug gage diameter + 10 mm
4484824	Bore plug gage diameter + 10 mm

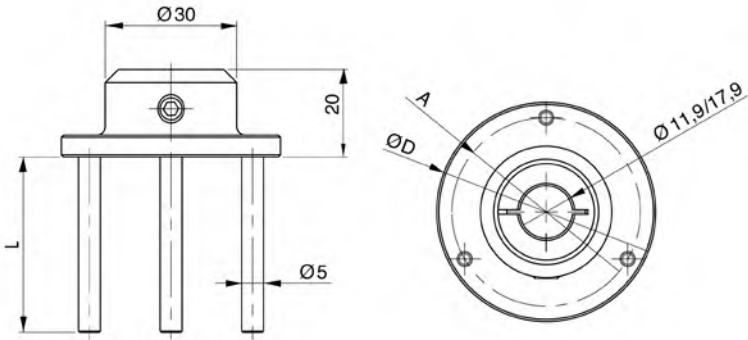


Marameter 844 Dt- 3

Depth stop with 3-point contacting

FEATURES

- For clamping on the shaft of the plug gage holder 844 Dg or measuring depth extension 844 Dv



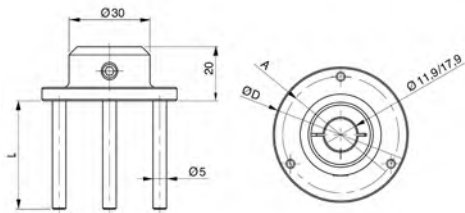
Application:

- For measuring at a defined and repeatable measuring depth and to eliminate a tilt error

TECHNICAL DATA

Order no.	Type	Application range mm
		mm
4484810	844 Dt- 3	for plug gages Ø 20 – 60 mm
4484811	844 Dt- 3	for plug gages Ø >60 – 80 mm
4484812	844 Dt- 3	for plug gages Ø >80 – 100 mm
4484813	844 Dt- 3	for plug gages Ø >100 – 150 mm

Order no.	ØD	L mm	Stop surfaces Ø A
			mm
4484810	Diameter plug gage + 14 mm	Individual adaptation/specification in case to plug gage	Diameter plug gage + 7 mm
4484811	Diameter plug gage + 14 mm	Individual adaptation/specification in case to plug gage	Diameter plug gage + 7 mm
4484812	Diameter plug gage + 14 mm	Individual adaptation/specification in case to plug gage	Diameter plug gage + 7 mm
4484813	Diameter plug gage + 14 mm	Individual adaptation/specification in case to plug gage	Diameter plug gage + 7 mm



Marameter

Self-centering inner measuring device 844 K

High-precision comparative measurements of holes

Inside measuring probes from the 844 K family are 2-point comparative measuring instruments used to determine a reversal point in a bore by oscillation. This reversal point equates to the minimum and thus the exact bore diameter.

Measuring process

The measuring value is displayed with 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 reversal point using the MIN function and display an absolute measuring value on the screen due 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 size.

Typical applications of self-centering inside measuring probes

- Rapid testing of hole diameters



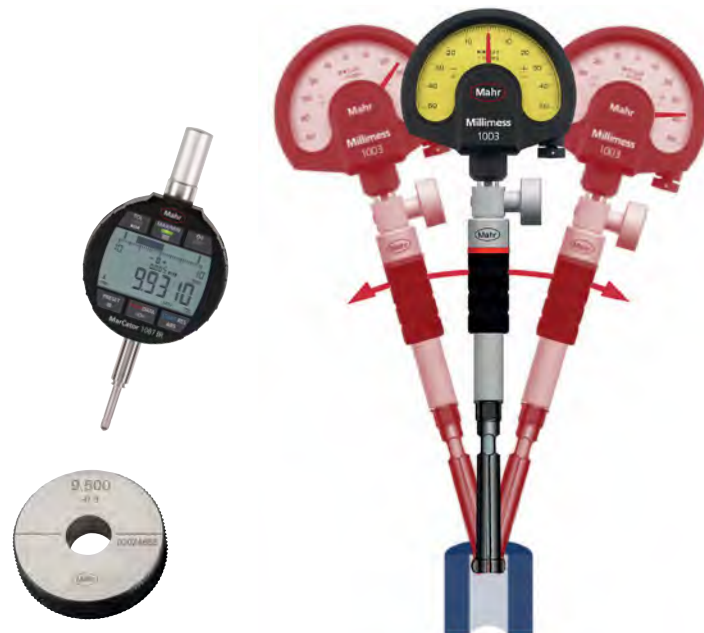
- Determining roundness and cylindricity deviations by rotating and moving to other bore depths



Special advantages

Setting rings are used to set the instrument to the respective nominal size.

- Self-centering in the hole
- Fast determination of reversal point by oscillation
- Measuring value displayed immediately
- Ideal for processing measuring values directly especially when used with digital indicating instruments



Measuring process

The reversal point (minimum value) is calculated by rocking in a bore.



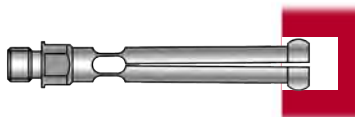
Marameter

Self-centering inner measuring device 844 K

Inside measuring probe models (split-ball probe)

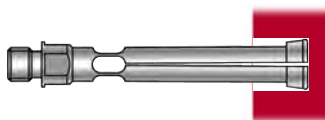
844 K standard for common hole shapes

- Split-ball probe made of hardened steel
- Hard chrome-plated measuring surfaces



844 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



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 on sensitive or abrasive surfaces
- For common hole shapes



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 on 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
- **Excellent corrosion prevention**

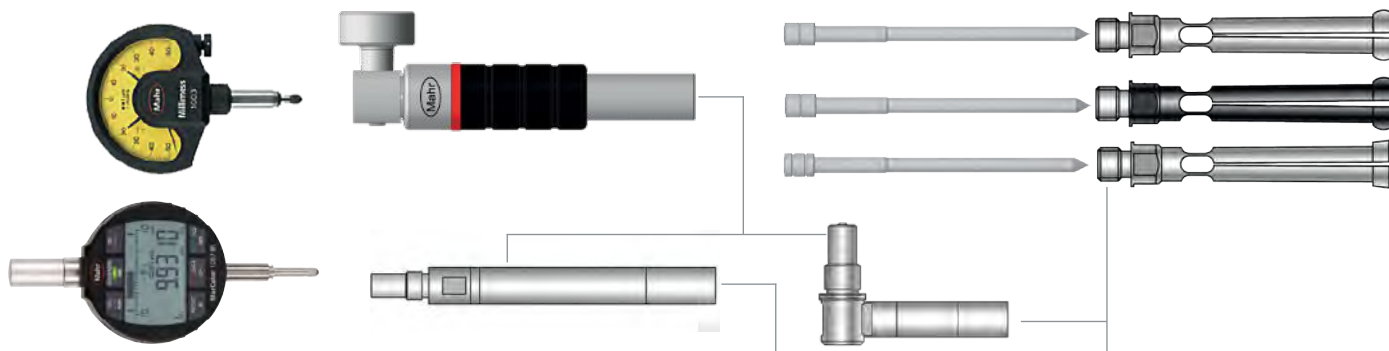
Ideal equipment for long-term accuracy

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 over a long period of time, Mahr drive needles are generally 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 hardened 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
 - 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 measurement of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point by rocking in the bore

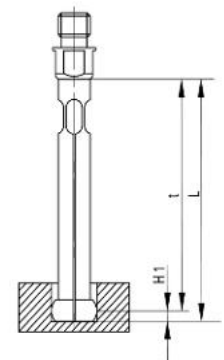
TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Individual probe measuring range	Nominal size	Repeatability f_w	Linearity deviation f_e	Number of measuring probes
		mm	mm	mm	μm		
4473105	844 KC	0,95 – 1,55 mm	0,95 – 1,15 1,07 – 1,25 1,17 – 1,35 1,27 – 1,45 1,37 – 1,55	1,00 1,10 1,20 1,30 1,40	1	2 %, min. 1 μm	5
4473106	844 KC	1,5 – 3,95 mm	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	1,75 2,00 2,25 2,50 2,75 3,00 3,25 3,50 3,75	1	1 %, min. 1 μm	9
4473107	844 KC	3,7 – 9,8 mm	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	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	1 %, min. 1 μm	12
4473108	844 KC	1,5 – 9,8 mm	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	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	1 %, min. 1 μm	21
4473109	844 KC	9,4 – 20,6 mm	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	10,00 11,00 12,00 13,00 14,00 15,00 16,00 17,00 18,00 19,00 20,00	1	1 %, min. 1 μm	11

Marameter 844 KC

Self-centering dial bore gage

Order no.	H1 mm	L mm	Individual probe measuring range	Nominal size	Measuring depth
			mm	mm	mm
4473105	0,6	19,50	0,95 – 1,15	1,00	10,5
	0,6	19,50	1,07 – 1,25	1,10	10,5
	0,6	19,50	1,17 – 1,35	1,20	10,5
	0,6	19,50	1,27 – 1,45	1,30	10,5
	0,6	19,50	1,37 – 1,55	1,40	10,5
4473106	0,9	25,30	1,50 – 1,90	1,75	16
	0,9	25,30	1,80 – 2,20	2,00	16
	0,9	25,30	2,05 – 2,45	2,25	16
	1,2	30,60	2,30 – 2,70	2,50	21
	1,2	30,60	2,55 – 2,95	2,75	21
	1,2	30,60	2,80 – 3,20	3,00	21
	1,2	30,60	3,05 – 3,45	3,25	21
	1,2	30,60	3,30 – 3,70	3,50	21
	1,2	30,60	3,55 – 3,95	3,75	21
4473107	2,0	47,30	3,70 – 4,30	4,00	38
	2,0	47,30	4,20 – 4,80	4,50	38
	2,0	47,30	4,70 – 5,30	5,00	38
	2,0	47,30	5,20 – 5,80	5,50	38
	2,0	47,30	5,70 – 6,30	6,00	38
	2,0	47,30	6,20 – 6,80	6,50	38
	2,0	47,30	6,70 – 7,30	7,00	38
	2,0	47,30	7,20 – 7,80	7,50	38
	2,0	47,30	7,70 – 8,30	8,00	38
	2,0	47,30	8,20 – 8,80	8,50	38
	2,0	47,30	8,70 – 9,30	9,00	38
	2,0	47,30	9,20 – 9,80	9,50	38
4473108	0,9	25,30	1,50 – 1,90	1,75	16
	0,9	25,30	1,80 – 2,20	2,00	16
	0,9	25,30	2,05 – 2,45	2,25	16
	1,2	30,60	2,30 – 2,70	2,50	21
	1,2	30,60	2,55 – 2,95	2,75	21
	1,2	30,60	2,80 – 3,20	3,00	21
	1,2	30,60	3,05 – 3,45	3,25	21
	1,2	30,60	3,30 – 3,70	3,50	21
	1,2	30,60	3,55 – 3,95	3,75	21
	2,0	47,30	3,70 – 4,30	4,00	38
	2,0	47,30	4,20 – 4,80	4,50	38
	2,0	47,30	4,70 – 5,30	5,00	38
	2,0	47,30	5,20 – 5,80	5,50	38
	2,0	47,30	5,70 – 6,30	6,00	38
	2,0	47,30	6,20 – 6,80	6,50	38
	2,0	47,30	6,70 – 7,30	7,00	38
	2,0	47,30	7,20 – 7,80	7,50	38
	2,0	47,30	7,70 – 8,30	8,00	38
	2,0	47,30	8,20 – 8,80	8,50	38
	2,0	47,30	8,70 – 9,30	9,00	38
	2,0	47,30	9,20 – 9,80	9,50	38
4473109	3,3	48,50	9,40 – 10,60	10,00	45
	3,3	48,50	10,40 – 11,60	11,00	45
	3,3	48,50	11,40 – 12,60	12,00	45
	3,3	48,50	12,40 – 13,60	13,00	45
	3,3	48,50	13,40 – 14,60	14,00	45
	3,3	48,50	14,40 – 15,60	15,00	45
	3,3	48,50	15,40 – 16,60	16,00	45
	3,3	48,50	16,40 – 17,60	17,00	45
	3,3	48,50	17,40 – 18,60	18,00	45
	3,3	48,50	18,40 – 19,60	19,00	45
	3,3	48,50	19,40 – 20,60	20,00	45



Marameter 844 KC

Self-centering dial bore gage

ACCESSORIES

Order no.	Type	Description
4335000	1002	Mechanical dial comparator 0,5 µm / ± 25 µm
4334000	1003	Mechanical dial comparator 1 µm / ± 50 µm
4333000	1004	Mechanical dial comparator 5 µm / ± 130 µm
4337860	1087 BR	Digital indicator 12,5 mm / 0,0005 mm
4337870	1087 BRi	Digital indicator 12,5 mm / 0,0005 mm
4473375	844 Ke	Setting rings in set for measuring range 1 – 1,4 mm
4473376	844 Ke	Setting rings in set for measuring range 1,75 – 3,75 mm
4473377	844 Ke	Setting rings in set for measuring range 4 – 9,5 mm
4473378	844 Ke	Setting rings in set for measuring range 1,75 – 9,5 mm
4473379	844 Ke	Setting rings in set for measuring range 10 – 20 mm
4473400	844 Kg	844 Kg Holder for indicator, Ø 8 mm / M6 x 0.75
4473401	844 Kga	844 Kga Holder for indicator, Ø 8 mm / M6 x 0.75
4473402	844 Kgz	844 Kgz Holder for indicator, Ø .375" / M6 x 0.75
4473405	844 Kv	844 Kv Extension for measuring depth, length 50 mm
4473406	844 Kv	844 Kv Extension for measuring depth, length 100 mm
4473407	844 Kv	844 Kv Extension for measuring depth, length 250 mm
4473409	844 Kw	844 Kw Right angle attachment, M6 x 0.75



1004



1003



1002



844 Ke



844 Kg; 844 Kgz



844 Kga



844 Kv



844 Dw; 844 Kw

Marameter 844 K

Self-centering dial bore gage

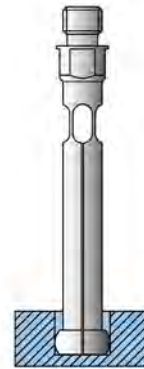
FEATURES

- Measuring head made of hardened 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 measurement of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point by rocking in the bore



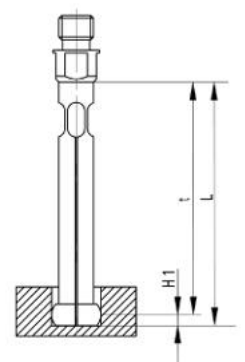
TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Individual probe measuring range	Nominal size	Repeatability f_w	Linearity deviation f_e	Number of measuring probes
		mm	mm	mm	μm		
4473005	844 K	0,95 – 1,55 mm	0,95 – 1,15	1,00	1	2 %, min. 1 μm	5
			1,07 – 1,25	1,10			
			1,17 – 1,35	1,20			
			1,27 – 1,45	1,30			
			1,37 – 1,55	1,40			
4473006	844 K	1,5 – 3,95 mm	1,50 – 1,90	1,75	1	1 %, min. 1 μm	9
			1,80 – 2,20	2,00			
			2,05 – 2,45	2,25			
			2,30 – 2,70	2,50			
			2,55 – 2,95	2,75			
			2,80 – 3,20	3,00			
			3,05 – 3,45	3,25			
			3,30 – 3,70	3,50			
			3,55 – 3,95	3,75			
4473007	844 K	3,7 – 9,8 mm	3,70 – 4,30	4,00	1	1 %, min. 1 μm	12
			4,20 – 4,80	4,50			
			4,70 – 5,30	5,00			
			5,20 – 5,80	5,50			
			5,70 – 6,30	6,00			
			6,20 – 6,80	6,50			
			6,70 – 7,30	7,00			
			7,20 – 7,80	7,50			
			7,70 – 8,30	8,00			
			8,20 – 8,80	8,50			
			8,70 – 9,30	9,00			
			9,20 – 9,80	9,50			
4473008	844 K	1,5 – 9,8 mm	1,50 – 1,90	1,75	1	1 %, min. 1 μm	21
			1,80 – 2,20	2,00			
			2,05 – 2,45	2,25			
			2,30 – 2,70	2,50			
			2,55 – 2,95	2,75			
			2,80 – 3,20	3,00			
			3,05 – 3,45	3,25			
			3,30 – 3,70	3,50			
			3,55 – 3,95	3,75			
			3,70 – 4,30	4,00			
			4,20 – 4,80	4,50			
			4,70 – 5,30	5,00			
			5,20 – 5,80	5,50			
			5,70 – 6,30	6,00			
			6,20 – 6,80	6,50			
			6,70 – 7,30	7,00			
			7,20 – 7,80	7,50			
			7,70 – 8,30	8,00			
			8,20 – 8,80	8,50			
			8,70 – 9,30	9,00			
			9,20 – 9,80	9,50			
4473009	844 K	9,4 – 20,6 mm	9,40 – 10,60	10,00	1	1 %, min. 1 μm	11
			10,40 – 11,60	11,00			
			11,40 – 12,60	12,00			
			12,40 – 13,60	13,00			
			13,40 – 14,60	14,00			
			14,40 – 15,60	15,00			
			15,40 – 16,60	16,00			
			16,40 – 17,60	17,00			
			17,40 – 18,60	18,00			
			18,40 – 19,60	19,00			
			19,40 – 20,60	20,00			

Marameter 844 K

Self-centering dial bore gage

Order no.	H1 mm	L mm	Individual probe measuring range	Nominal size	Measuring depth
			mm	mm	mm
4473005	0,6	19,50	0,95 – 1,15	1,00	10,5
	0,6	19,50	1,07 – 1,25	1,10	10,5
	0,6	19,50	1,17 – 1,35	1,20	10,5
	0,6	19,50	1,27 – 1,45	1,30	10,5
	0,6	19,50	1,37 – 1,55	1,40	10,5
4473006	0,9	25,30	1,50 – 1,90	1,75	16
	0,9	25,30	1,80 – 2,20	2,00	16
	0,9	25,30	2,05 – 2,45	2,25	16
	1,2	30,60	2,30 – 2,70	2,50	21
	1,2	30,60	2,55 – 2,95	2,75	21
	1,2	30,60	2,80 – 3,20	3,00	21
	1,2	30,60	3,05 – 3,45	3,25	21
	1,2	30,60	3,30 – 3,70	3,50	21
	1,2	30,60	3,55 – 3,95	3,75	21
4473007	2,0	47,30	3,70 – 4,30	4,00	38
	2,0	47,30	4,20 – 4,80	4,50	38
	2,0	47,30	4,70 – 5,30	5,00	38
	2,0	47,30	5,20 – 5,80	5,50	38
	2,0	47,30	5,70 – 6,30	6,00	38
	2,0	47,30	6,20 – 6,80	6,50	38
	2,0	47,30	6,70 – 7,30	7,00	38
	2,0	47,30	7,20 – 7,80	7,50	38
	2,0	47,30	7,70 – 8,30	8,00	38
	2,0	47,30	8,20 – 8,80	8,50	38
	2,0	47,30	8,70 – 9,30	9,00	38
	2,0	47,30	9,20 – 9,80	9,50	38
4473008	0,9	25,30	1,50 – 1,90	1,75	16
	0,9	25,30	1,80 – 2,20	2,00	16
	0,9	25,30	2,05 – 2,45	2,25	16
	1,2	30,60	2,30 – 2,70	2,50	21
	1,2	30,60	2,55 – 2,95	2,75	21
	1,2	30,60	2,80 – 3,20	3,00	21
	1,2	30,60	3,05 – 3,45	3,25	21
	1,2	30,60	3,30 – 3,70	3,50	21
	1,2	30,60	3,55 – 3,95	3,75	21
	2,0	47,30	3,70 – 4,30	4,00	38
	2,0	47,30	4,20 – 4,80	4,50	38
	2,0	47,30	4,70 – 5,30	5,00	38
	2,0	47,30	5,20 – 5,80	5,50	38
	2,0	47,30	5,70 – 6,30	6,00	38
	2,0	47,30	6,20 – 6,80	6,50	38
	2,0	47,30	6,70 – 7,30	7,00	38
	2,0	47,30	7,20 – 7,80	7,50	38
	2,0	47,30	7,70 – 8,30	8,00	38
	2,0	47,30	8,20 – 8,80	8,50	38
	2,0	47,30	8,70 – 9,30	9,00	38
	2,0	47,30	9,20 – 9,80	9,50	38
4473009	3,3	48,50	9,40 – 10,60	10,00	45
	3,3	48,50	10,40 – 11,60	11,00	45
	3,3	48,50	11,40 – 12,60	12,00	45
	3,3	48,50	12,40 – 13,60	13,00	45
	3,3	48,50	13,40 – 14,60	14,00	45
	3,3	48,50	14,40 – 15,60	15,00	45
	3,3	48,50	15,40 – 16,60	16,00	45
	3,3	48,50	16,40 – 17,60	17,00	45
	3,3	48,50	17,40 – 18,60	18,00	45
	3,3	48,50	18,40 – 19,60	19,00	45
	3,3	48,50	19,40 – 20,60	20,00	45



Marameter 844 K

Self-centering dial bore gage

ACCESSORIES

Order no.	Type	Description
4335000	1002	Mechanical dial comparator 0,5 μm / $\pm 25 \mu\text{m}$
4334000	1003	Mechanical dial comparator 1 μm / $\pm 50 \mu\text{m}$
4333000	1004	Mechanical dial comparator 5 μm / $\pm 130 \mu\text{m}$
4337860	1087 BR	Digital indicator 12,5 mm / 0,0005 mm
4337870	1087 BRi	Digital indicator 12,5 mm / 0,0005 mm
4473375	844 Ke	Setting rings in set for measuring range 1 – 1,4 mm
4473376	844 Ke	Setting rings in set for measuring range 1,75 – 3,75 mm
4473377	844 Ke	Setting rings in set for measuring range 4 – 9,5 mm
4473378	844 Ke	Setting rings in set for measuring range 1,75 – 9,5 mm
4473379	844 Ke	Setting rings in set for measuring range 10 – 20 mm
4473400	844 Kg	844 Kg Holder for indicator, $\varnothing 8 \text{ mm}$ / M6 x 0.75
4473401	844 Kga	844 Kga Holder for indicator, $\varnothing 8 \text{ mm}$ / M6 x 0.75
4473402	844 Kgz	844 Kgz Holder for indicator, $\varnothing .375''$ / M6 x 0.75
4473405	844 Kv	844 Kv Extension for measuring depth, length 50 mm
4473406	844 Kv	844 Kv Extension for measuring depth, length 100 mm
4473407	844 Kv	844 Kv Extension for measuring depth, length 250 mm
4473409	844 Kw	844 Kw Right angle attachment, M6 x 0.75



1004



1003



1002



844 Ke



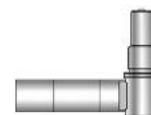
844 Kg; 844 Kgz



844 Kga



844 Kv



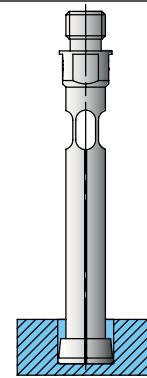
844 Dw; 844 Kw

Marameter 844 KS

Self-centering dial bore gage

FEATURES

- Measuring head made of hardened 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

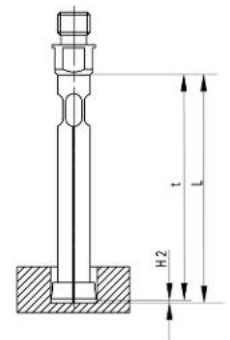
For measurements near to the bottom of bores

- For indicating measurement of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point by rocking in the bore

TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Individual probe measuring range	Nominal size	Repeatability f_w	Linearity deviation f_e	Number of measuring probes
		mm	mm	mm	μm		
4473207	844 KS	3,7 – 9,8 mm	3,70 – 4,30	4,00	1	1 %, min. 1 μm	12
			4,20 – 4,80	4,50			
			4,70 – 5,30	5,00			
			5,20 – 5,80	5,50			
			5,70 – 6,30	6,00			
			6,20 – 6,80	6,50			
			6,70 – 7,30	7,00			
			7,20 – 7,80	7,50			
			7,70 – 8,30	8,00			
			8,20 – 8,80	8,50			
			8,70 – 9,30	9,00			
			9,20 – 9,80	9,50			
4473209	844 KS	9,4 – 20,6 mm	9,40 – 10,60	10,00	1	1 %, min. 1 μm	11
			10,40 – 11,60	11,00			
			11,40 – 12,60	12,00			
			12,40 – 13,60	13,00			
			13,40 – 14,60	14,00			
			14,40 – 15,60	15,00			
			15,40 – 16,60	16,00			
			16,40 – 17,60	17,00			
			17,40 – 18,60	18,00			
			18,40 – 19,60	19,00			
			19,40 – 20,60	20,00			

Order no.	H1 mm	L mm	Nominal size	Measuring depth
			mm	mm
4473207	0,5	47,30	4,00	38
	0,5	47,30	4,50	38
	0,5	47,30	5,00	38
	0,5	47,30	5,50	38
	0,5	47,30	6,00	38
	0,5	47,30	6,50	38
	0,5	47,30	7,00	38
	0,5	47,30	7,50	38
	0,5	47,30	8,00	38
	1,0	48,50	8,50	45
	1,0	48,50	9,00	45
	1,0	48,50	9,50	45
4473209	1,0	48,50	10,00	45
	1,0	48,50	11,00	45
	1,0	48,50	12,00	45
	1,0	48,50	13,00	45
	1,0	48,50	14,00	45
	1,0	48,50	15,00	45
	1,0	48,50	16,00	45
	1,0	48,50	17,00	45
	1,0	48,50	18,00	45
	1,0	48,50	19,00	45
	1,0	48,50	20,00	45



Marameter 844 KS

Self-centering dial bore gage

ACCESSORIES

Order no.	Type	Description
4335000	1002	Mechanical dial comparator 0,5 μm / $\pm 25 \mu\text{m}$
4334000	1003	Mechanical dial comparator 1 μm / $\pm 50 \mu\text{m}$
4333000	1004	Mechanical dial comparator 5 μm / $\pm 130 \mu\text{m}$
4337860	1087 BR	Digital indicator 12,5 mm / 0,0005 mm
4337870	1087 BRi	Digital indicator 12,5 mm / 0,0005 mm
4473377	844 Ke	Setting rings in set for measuring range 4 – 9,5 mm
4473379	844 Ke	Setting rings in set for measuring range 10 – 20 mm
4473400	844 Kg	844 Kg Holder for indicator, $\varnothing 8 \text{ mm}$ / M6 x 0.75
4473401	844 Kga	844 Kga Holder for indicator, $\varnothing 8 \text{ mm}$ / M6 x 0.75
4473402	844 Kgz	844 Kgz Holder for indicator, $\varnothing .375''$ / M6 x 0.75
4473405	844 Kv	844 Kv Extension for measuring depth, length 50 mm
4473406	844 Kv	844 Kv Extension for measuring depth, length 100 mm
4473407	844 Kv	844 Kv Extension for measuring depth, length 250 mm
4473409	844 Kw	844 Kw Right angle attachment, M6 x 0.75



1004



1003



1002



844 Ke



844 Kg; 844 Kgz



844 Kga



844 Kv



844 Dw; 844 Kw

Marameter 844 KCK

Inside measuring probe

FEATURES

- Measuring head made in hardened 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

Application:

Standard form with extremely wear resistant DLC-coated surface, ideal also for scratch-sensitive surfaces

- For indicating measurement of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point by rocking in the bore



TECHNICAL DATA

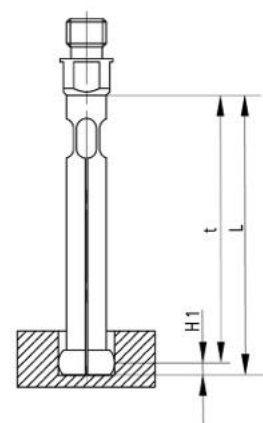
Order no.	Type	Mesuring span of indicator	Nominal size	Measuring depth	Connection thread
		mm	mm	mm	
4473130	844 KCK	0,95 – 1,15 mm	1	10,5	M6 x 0,75
4473131	844 KCK	1,07 – 1,25 mm	1,1	10,5	M6 x 0,75
4473132	844 KCK	1,17 – 1,35 mm	1,2	10,5	M6 x 0,75
4473133	844 KCK	1,27 – 1,45 mm	1,3	10,5	M6 x 0,75
4473134	844 KCK	1,37 – 1,55 mm	1,4	10,5	M6 x 0,75
4473135	844 KCK	1,5 – 1,9 mm	1,75	16	M6 x 0,75
4473136	844 KCK	1,8 – 2,2 mm	2	16	M6 x 0,75
4473137	844 KCK	2,05 – 2,45 mm	2,25	16	M6 x 0,75
4473138	844 KCK	2,3 – 2,7 mm	2,5	21	M6 x 0,75
4473139	844 KCK	2,55 – 2,95 mm	2,75	21	M6 x 0,75
4473140	844 KCK	2,8 – 3,2 mm	3	21	M6 x 0,75
4473141	844 KCK	3,05 – 3,45 mm	3,25	21	M6 x 0,75
4473142	844 KCK	3,3 – 3,7 mm	3,5	21	M6 x 0,75
4473143	844 KCK	3,55 – 3,95 mm	3,75	21	M6 x 0,75
4473145	844 KCK	3,7 – 4,3 mm	4	38	M6 x 0,75
4473146	844 KCK	4,2 – 4,8 mm	4,5	38	M6 x 0,75
4473147	844 KCK	4,7 – 5,3 mm	5	38	M6 x 0,75
4473148	844 KCK	5,2 – 5,8 mm	5,5	38	M6 x 0,75
4473149	844 KCK	5,7 – 6,3 mm	6	38	M6 x 0,75
4473150	844 KCK	6,2 – 6,8 mm	6,5	38	M6 x 0,75
4473151	844 KCK	6,7 – 7,3 mm	7	38	M6 x 0,75
4473152	844 KCK	7,2 – 7,8 mm	7,5	38	M6 x 0,75
4473153	844 KCK	7,7 – 8,3 mm	8	38	M6 x 0,75
4473154	844 KCK	8,2 – 8,8 mm	8,5	45	M6 x 0,75
4473155	844 KCK	8,7 – 9,3 mm	9	45	M6 x 0,75
4473156	844 KCK	9,2 – 9,8 mm	9,5	45	M6 x 0,75
4473158	844 KCK	9,4 – 10,6 mm	10	45	M6 x 0,75
4473159	844 KCK	10,4 – 11,6 mm	11	45	M6 x 0,75
4473160	844 KCK	11,4 – 12,6 mm	12	45	M6 x 0,75
4473161	844 KCK	12,4 – 13,6 mm	13	45	M6 x 0,75
4473162	844 KCK	13,4 – 14,6 mm	14	45	M6 x 0,75
4473163	844 KCK	14,4 – 15,6 mm	15	45	M6 x 0,75
4473164	844 KCK	15,4 – 16,6 mm	16	45	M6 x 0,75
4473165	844 KCK	16,4 – 17,6 mm	17	45	M6 x 0,75
4473166	844 KCK	17,4 – 18,6 mm	18	45	M6 x 0,75
4473167	844 KCK	18,4 – 19,6 mm	19	45	M6 x 0,75
4473168	844 KCK	19,4 – 20,6 mm	20	45	M6 x 0,75

Marameter 844 KČk

Inside measuring probe

TECHNICAL DATA

Order no.	H1	L	Connection thread
	mm	mm	
4473130	0,6	19,5	M6 x 0,75
4473131	0,6	19,5	M6 x 0,75
4473132	0,6	19,5	M6 x 0,75
4473133	0,6	19,5	M6 x 0,75
4473134	0,6	19,5	M6 x 0,75
4473135	0,9	25,3	M6 x 0,75
4473136	0,9	25,3	M6 x 0,75
4473137	0,9	25,3	M6 x 0,75
4473138	1,2	30,6	M6 x 0,75
4473139	1,2	30,6	M6 x 0,75
4473140	1,2	30,6	M6 x 0,75
4473141	1,2	30,6	M6 x 0,75
4473142	1,2	30,6	M6 x 0,75
4473143	1,2	30,6	M6 x 0,75
4473145	2	47,3	M6 x 0,75
4473146	2	47,3	M6 x 0,75
4473147	2	47,3	M6 x 0,75
4473148	2	47,3	M6 x 0,75
4473149	2	47,3	M6 x 0,75
4473150	2	47,3	M6 x 0,75
4473151	2	47,3	M6 x 0,75
4473152	2	47,3	M6 x 0,75
4473153	2	47,3	M6 x 0,75
4473154	2	47,3	M6 x 0,75
4473155	2	47,3	M6 x 0,75
4473156	2	47,3	M6 x 0,75
4473158	3,3	48,5	M6 x 0,75
4473159	3,3	48,5	M6 x 0,75
4473160	3,3	48,5	M6 x 0,75
4473161	3,3	48,5	M6 x 0,75
4473162	3,3	48,5	M6 x 0,75
4473163	3,3	48,5	M6 x 0,75
4473164	3,3	48,5	M6 x 0,75
4473165	3,3	48,5	M6 x 0,75
4473166	3,3	48,5	M6 x 0,75
4473167	3,3	48,5	M6 x 0,75
4473168	3,3	48,5	M6 x 0,75



Order no.	Description
4473093	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 0,95 – 1,55 mm
4473094	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 1,5 – 2,45 mm
4473095	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 2,3 – 3,95 mm
4473096	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 3,7 – 9,8 mm
4473097	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 9,4 – 20,6 mm



Marameter 844 Kk

Inside measuring probe

FEATURES

- Measuring head made of hardened 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

Application:

Standard model

- For indicating measurement of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point by rocking in the bore



TECHNICAL DATA

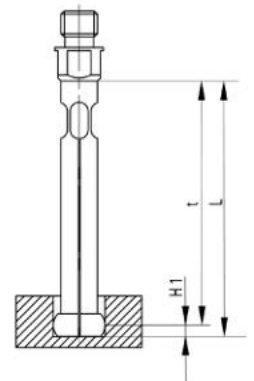
Order no.	Type	Mesuring span of indicator	Nominal size	Measuring depth	Connection thread
		mm	mm	mm	
4473030	844 Kk	0,95 – 1,15 mm	1	10,5	M6 x 0,75
4473031	844 Kk	1,07 – 1,25 mm	1,1	10,5	M6 x 0,75
4473032	844 Kk	1,17 – 1,35 mm	1,2	10,5	M6 x 0,75
4473033	844 Kk	1,27 – 1,45 mm	1,3	10,5	M6 x 0,75
4473034	844 Kk	1,37 – 1,55 mm	1,4	10,5	M6 x 0,75
4473035	844 Kk	1,5 – 1,9 mm	1,75	16	M6 x 0,75
4473036	844 Kk	1,8 – 2,2 mm	2	16	M6 x 0,75
4473037	844 Kk	2,05 – 2,45 mm	2,25	16	M6 x 0,75
4473038	844 Kk	2,3 – 2,7 mm	2,5	21	M6 x 0,75
4473039	844 Kk	2,55 – 2,95 mm	2,75	21	M6 x 0,75
4473040	844 Kk	2,8 – 3,2 mm	3	21	M6 x 0,75
4473041	844 Kk	3,05 – 3,45 mm	3,25	21	M6 x 0,75
4473042	844 Kk	3,3 – 3,7 mm	3,5	21	M6 x 0,75
4473043	844 Kk	3,55 – 3,95 mm	3,75	21	M6 x 0,75
4473045	844 Kk	3,7 – 4,3 mm	4	38	M6 x 0,75
4473046	844 Kk	4,2 – 4,8 mm	4,5	38	M6 x 0,75
4473047	844 Kk	4,7 – 5,3 mm	5	38	M6 x 0,75
4473048	844 Kk	5,2 – 5,8 mm	5,5	38	M6 x 0,75
4473049	844 Kk	5,7 – 6,3 mm	6	38	M6 x 0,75
4473050	844 Kk	6,2 – 6,8 mm	6,5	38	M6 x 0,75
4473051	844 Kk	6,7 – 7,3 mm	7	38	M6 x 0,75
4473052	844 Kk	7,2 – 7,8 mm	7,5	38	M6 x 0,75
4473053	844 Kk	7,7 – 8,3 mm	8	38	M6 x 0,75
4473054	844 Kk	8,2 – 8,8 mm	8,5	45	M6 x 0,75
4473055	844 Kk	8,7 – 9,3 mm	9	45	M6 x 0,75
4473056	844 Kk	9,2 – 9,8 mm	9,5	45	M6 x 0,75
4473058	844 Kk	9,4 – 10,6 mm	10	45	M6 x 0,75
4473059	844 Kk	10,4 – 11,6 mm	11	45	M6 x 0,75
4473060	844 Kk	11,4 – 12,6 mm	12	45	M6 x 0,75
4473061	844 Kk	12,4 – 13,6 mm	13	45	M6 x 0,75
4473062	844 Kk	13,4 – 14,6 mm	14	45	M6 x 0,75
4473063	844 Kk	14,4 – 15,6 mm	15	45	M6 x 0,75
4473064	844 Kk	15,4 – 16,6 mm	16	45	M6 x 0,75
4473065	844 Kk	16,4 – 17,6 mm	17	45	M6 x 0,75
4473066	844 Kk	17,4 – 18,6 mm	18	45	M6 x 0,75
4473067	844 Kk	18,4 – 19,6 mm	19	45	M6 x 0,75
4473068	844 Kk	19,4 – 20,6 mm	20	45	M6 x 0,75

Marameter 844 Kk

Inside measuring probe

TECHNICAL DATA

Order no.	H1	L	Connection thread
	mm	mm	
4473030	0,6	19,5	M6 x 0,75
4473031	0,6	19,5	M6 x 0,75
4473032	0,6	19,5	M6 x 0,75
4473033	0,6	19,5	M6 x 0,75
4473034	0,6	19,5	M6 x 0,75
4473035	0,9	25,3	M6 x 0,75
4473036	0,9	25,3	M6 x 0,75
4473037	0,9	25,3	M6 x 0,75
4473038	1,2	30,6	M6 x 0,75
4473039	1,2	30,6	M6 x 0,75
4473040	1,2	30,6	M6 x 0,75
4473041	1,2	30,6	M6 x 0,75
4473042	1,2	30,6	M6 x 0,75
4473043	1,2	30,6	M6 x 0,75
4473045	2	47,3	M6 x 0,75
4473046	2	47,3	M6 x 0,75
4473047	2	47,3	M6 x 0,75
4473048	2	47,3	M6 x 0,75
4473049	2	47,3	M6 x 0,75
4473050	2	47,3	M6 x 0,75
4473051	2	47,3	M6 x 0,75
4473052	2	47,3	M6 x 0,75
4473053	2	47,3	M6 x 0,75
4473054	2	47,3	M6 x 0,75
4473055	2	47,3	M6 x 0,75
4473056	2	47,3	M6 x 0,75
4473058	3,3	48,5	M6 x 0,75
4473059	3,3	48,5	M6 x 0,75
4473060	3,3	48,5	M6 x 0,75
4473061	3,3	48,5	M6 x 0,75
4473062	3,3	48,5	M6 x 0,75
4473063	3,3	48,5	M6 x 0,75
4473064	3,3	48,5	M6 x 0,75
4473065	3,3	48,5	M6 x 0,75
4473066	3,3	48,5	M6 x 0,75
4473067	3,3	48,5	M6 x 0,75
4473068	3,3	48,5	M6 x 0,75



Order no.	Description
4473093	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 0,95 – 1,55 mm
4473094	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 1,5 – 2,45 mm
4473095	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 2,3 – 3,95 mm
4473096	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 3,7 – 9,8 mm
4473097	Transfer Pin made of carbide for inside measuring probe 844 K and 844 KC, size 9,4 – 20,6 mm



Marameter 844 KSk

Blind hole measuring probe

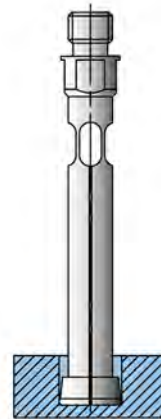
FEATURES

- Measuring head made of hardened 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

Application:

Model for Blind Holes

- For measurements near to the bottom of bores
- For indicating measurement of diameter and testing for roundness and conicity of bores
- Especially suitable for testing batches
- Determine the reversal point by rocking in the bore



TECHNICAL DATA

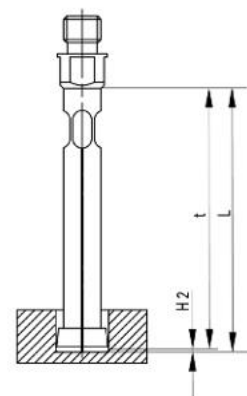
Order no.	Type	Mesuring span of indicator	Nominal size	Measuring depth	Connection thread
		mm	mm	mm	
4473245	844 KSk	3,7 – 4,3 mm	4	38	M6 x 0,75
4473246	844 KSk	4,2 – 4,8 mm	4,5	38	M6 x 0,75
4473247	844 KSk	4,7 – 5,3 mm	5	38	M6 x 0,75
4473248	844 KSk	5,2 – 5,8 mm	5,5	38	M6 x 0,75
4473249	844 KSk	5,7 – 6,3 mm	6	38	M6 x 0,75
4473250	844 KSk	6,2 – 6,8 mm	6,5	38	M6 x 0,75
4473251	844 KSk	6,7 – 7,3 mm	7	38	M6 x 0,75
4473252	844 KSk	7,2 – 7,8 mm	7,5	38	M6 x 0,75
4473253	844 KSk	7,7 – 8,3 mm	8	38	M6 x 0,75
4473254	844 KSk	8,2 – 8,8 mm	8,5	45	M6 x 0,75
4473255	844 KSk	8,7 – 9,3 mm	9	45	M6 x 0,75
4473256	844 KSk	9,2 – 9,8 mm	9,5	45	M6 x 0,75
4473258	844 KSk	9,4 – 10,6 mm	10	45	M6 x 0,75
4473259	844 KSk	10,4 – 11,6 mm	11	45	M6 x 0,75
4473260	844 KSk	11,4 – 12,6 mm	12	45	M6 x 0,75
4473261	844 KSk	12,4 – 13,6 mm	13	45	M6 x 0,75
4473262	844 KSk	13,4 – 14,6 mm	14	45	M6 x 0,75
4473263	844 KSk	14,4 – 15,6 mm	15	45	M6 x 0,75
4473264	844 KSk	15,4 – 16,6 mm	16	45	M6 x 0,75
4473265	844 KSk	16,4 – 17,6 mm	17	45	M6 x 0,75
4473266	844 KSk	17,4 – 18,6 mm	18	45	M6 x 0,75
4473267	844 KSk	18,4 – 19,6 mm	19	45	M6 x 0,75
4473268	844 KSk	19,4 – 20,6 mm	20	45	M6 x 0,75

Marameter 844 KS

Blind hole measuring probe

TECHNICAL DATA

Order no.	H2	L	Connection thread
	mm	mm	
4473245	0,5	47,3	M6 x 0,75
4473246	0,5	47,3	M6 x 0,75
4473247	0,5	47,3	M6 x 0,75
4473248	0,5	47,3	M6 x 0,75
4473249	0,5	47,3	M6 x 0,75
4473250	0,5	47,3	M6 x 0,75
4473251	0,5	47,3	M6 x 0,75
4473252	0,5	47,3	M6 x 0,75
4473253	0,5	47,3	M6 x 0,75
4473254	0,5	47,3	M6 x 0,75
4473255	0,5	47,3	M6 x 0,75
4473256	0,5	47,3	M6 x 0,75
4473258	1	48,5	M6 x 0,75
4473259	1	48,5	M6 x 0,75
4473260	1	48,5	M6 x 0,75
4473261	1	48,5	M6 x 0,75
4473262	1	48,5	M6 x 0,75
4473263	1	48,5	M6 x 0,75
4473264	1	48,5	M6 x 0,75
4473265	1	48,5	M6 x 0,75
4473266	1	48,5	M6 x 0,75
4473267	1	48,5	M6 x 0,75
4473268	1	48,5	M6 x 0,75



ACCESSORIES

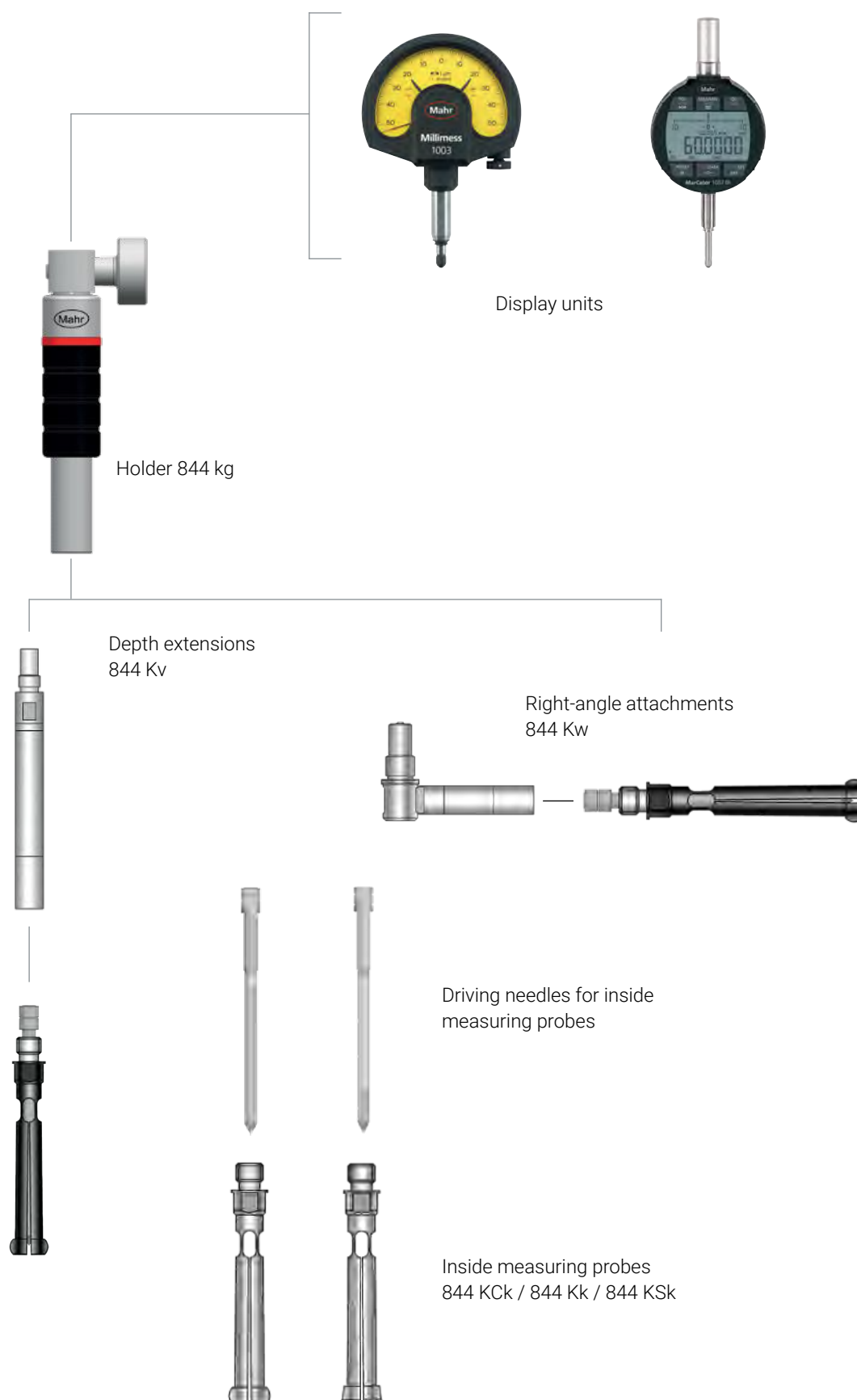
Order no.	Description
4473296	Transfer Pin made of carbide for inside measuring probe 844 KS, size 3,7 – 9,8 mm
4473297	Transfer Pin made of carbide for inside measuring probe 844 KS, size 9,4 – 20,6 mm



Marameter

Modular system

When combined with extensive accessories (display units, 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 Kg / 844 Kga / 844 Kgz

Holder for indicator

FEATURES

- Holder for mounting an indicator (comparator, dial gage or inductive probe) and connection of an 844 K/KC/KS inside measuring probe or corresponding accessories such as 844 Kt measuring depth extensions or 844 Kw right angle attachment

Application:

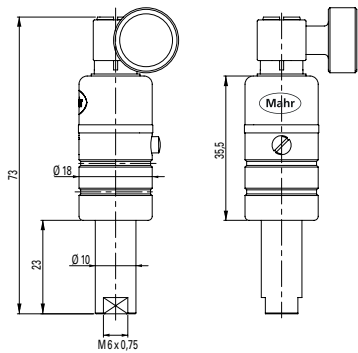
- Type 844 Kga: Special design with retracting button, for easier insertion of the internal measuring probe into bores. Recommended for small and sensitive bores.
- Type 844 Kg: Special design for dial gages with shaft diameter 3/8 inch (typical for dial gages from USA).



TECHNICAL DATA

Order no.	Type	Connection thread	Mounting hole
			mm
4473400	844 Kg	M6 x 0,75	8 mm
4473401	844 Kga	M6 x 0,75	8 mm
4473402	844 Kgz	M6 x 0,75	.375"

Order no.	L	d1	l	Mounting hole
	mm	mm	mm	
4473400	73	10	23	
4473401	73	10	23	
4473402	73	10	23	.375"



Marameter 844 Kv

Extension for measuring depth

FEATURES

- The measuring depth extension is screwed in between the holder (844 Kg/Kga) and the inside probe (844 K/KS/KS)



Application:

- To reach measuring points in deep bores

TECHNICAL DATA

Order no.	Type	Length	Connection thread
		mm	
4473405	844 Kv	50	M6 x 0,75
4473406	844 Kv	100	M6 x 0,75
4473407	844 Kv	250	M6 x 0,75

Order no.	L	d	Connection thread
	mm	mm	
4473405	50	7,9	M6 x 0,75
4473406	100	7,9	M6 x 0,75
4473407	250	7,9	M6 x 0,75



ACCESSORIES

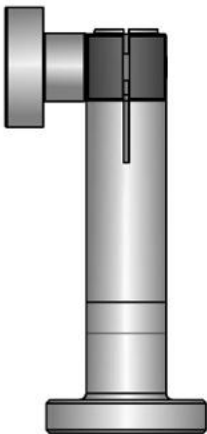
Order no.	Type	Description
4473408	844 Kt	Depth stop for clamping on the shaft Ø 7.9 mm of a measuring depth extension 844 Kv

Marameter 844 Kt

Depth stop

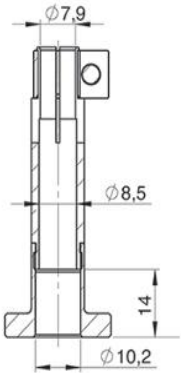
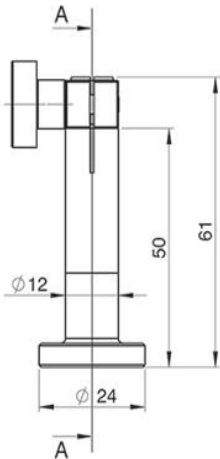
Application:

- For setting the 844 K/KC/KS split ball gauges to a defined and repeatable measuring depth
- Clamping on the cylindrical shaft Ø 7.9 mm of the measuring depth extensions 844 Kv



TECHNICAL DATA

Order no.	Type	Size of measuring surface	Mounting hole
4473408	844 Kt	Ø 24 mm	mm For shaft Ø 7,9 mm



SCHNITT A-A

Marameter 844 Kw

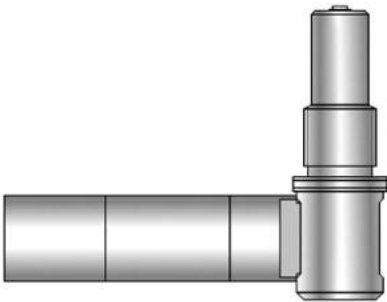
Right angle attachment

FEATURES

- The 844 Kw right-angle attachments are screwed on between holder 844 Kg and inside probe 844 K / 844 KC / 844 KS (any extension 844 Kv)

Application:
For space-saving and side-entering measurement of bores-
Typical measuring problem situations:

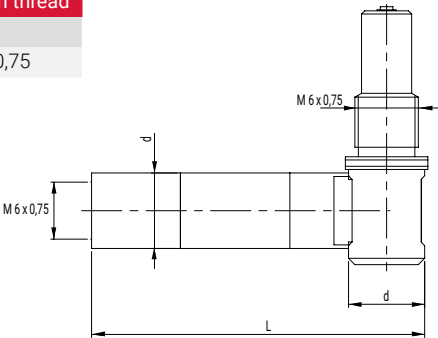
- narrow conditions in turning and grinding machines
- side outgoing bores or bearing points in housings



TECHNICAL DATA

Order no.	Type	Length	Connection thread
		mm	
4473409	844 Kw	29	M6 x 0,75

Order no.	L	d	Connection thread
	mm	mm	
4473409	29	7,9	M6 x 0,75



Marameter 844 Ke

Setting rings in set

FEATURES

- 2 designs
- Setting rings Ø 1.0 – 2.75 mm
made of hardened steel
according to factory standard:
manufacturing tolerance of the
bore: ± 1 µm
 - Setting rings Ø 3 – 20 mm
made of hardened steel
according to DIN 2250 form C

- Application:
- The setting rings are used as dimensional standards
for adjusting the bore gages 844 K/KC/KS to the
respective nominal dimension



TECHNICAL DATA

Order no.	Type	Nominal size	Model	Number of setting rings
		mm		
4473375	844 Ke	1 1,1 1,2 1,3 1,4	hardened steel	5
4473376	844 Ke	1,75 2 2,25 2,5 2,75 3 3,25 3,5 3,75	hardened steel	9
4473377	844 Ke	4 4,5 5 5,5 6 6,5 7 7,5 8 8,5 9 9,5	hardened steel	12
4473378	844 Ke	1,75 2 2,25 2,5 2,75 3 3,25 3,5 3,75 4 4,5 5 5,5 6 6,5 7 7,5 8 8,5 9 9,5	hardened steel	21
4473379	844 Ke	10 11 12 13 14 15 16 17 18 19 20	hardened steel	11

Marameter 844 Ke

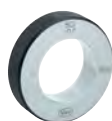
Setting rings in set

ACCESSORIES

Order no.	Type	Description
4473310	844 Ke	Setting ring, Ø 1 mm
4473311	844 Ke	Setting ring, Ø 1,1 mm
4473312	844 Ke	Setting ring, Ø 1,2 mm
4473313	844 Ke	Setting ring, Ø 1,3 mm
4473314	844 Ke	Setting ring, Ø 1,4 mm
4473315	844 Ke	Setting ring, Ø 1,75 mm
4473316	844 Ke	Setting ring, Ø 2 mm
4473317	844 Ke	Setting ring, Ø 2,25 mm
4473318	844 Ke	Setting ring, Ø 2,5 mm
4473319	844 Ke	Setting ring, Ø 2,75 mm
4710014	355 E	Setting ring DIN 2250 C, Ø 3 mm
4710015	355 E	Setting ring DIN 2250 C, Ø 3,25 mm
4710016	355 E	Setting ring DIN 2250 C, Ø 3,5 mm
4710017	355 E	Setting ring DIN 2250 C, Ø 3,75 mm
4710018	355 E	Setting ring DIN 2250 C, Ø 4 mm
4710019	355 E	Setting ring DIN 2250 C, Ø 4,5 mm
4710020	355 E	Setting ring DIN 2250 C, Ø 5 mm
4710021	355 E	Setting ring DIN 2250 C, Ø 5,5 mm
4710022	355 E	Setting ring DIN 2250 C, Ø 6 mm
4710023	355 E	Setting ring DIN 2250 C, Ø 6,5 mm
4710024	355 E	Setting ring DIN 2250 C, Ø 7 mm
4710025	355 E	Setting ring DIN 2250 C, Ø 7,5 mm
4710026	355 E	Setting ring DIN 2250 C, Ø 8 mm
4710027	355 E	Setting ring DIN 2250 C, Ø 8,5 mm
4710028	355 E	Setting ring DIN 2250 C, Ø 9 mm
4710029	355 E	Setting ring DIN 2250 C, Ø 9,5 mm
4710030	355 E	Setting ring DIN 2250 C, Ø 10 mm
4710031	355 E	Setting ring DIN 2250 C, Ø 11 mm
4710032	355 E	Setting ring DIN 2250 C, Ø 12 mm
4710033	355 E	Setting ring DIN 2250 C, Ø 13 mm
4710034	355 E	Setting ring DIN 2250 C, Ø 14 mm
4710035	355 E	Setting ring DIN 2250 C, Ø 15 mm
4710036	355 E	Setting ring DIN 2250 C, Ø 16 mm
4710037	355 E	Setting ring DIN 2250 C, Ø 17 mm
4710038	355 E	Setting ring DIN 2250 C, Ø 18 mm
4710039	355 E	Setting ring DIN 2250 C, Ø 19 mm
4710040	355 E	Setting ring DIN 2250 C, Ø 20 mm



844 Ke



355 E

Marameter 844 KM

Measuring stand

FEATURES

- 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 Kxx inside measuring probes, eliminates need for rocking to find reversal point



TECHNICAL DATA

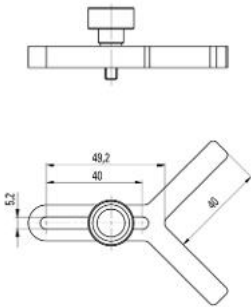
Order no.	Type	Table diameter
		mm
4473420	844 KM	120

ACCESSORIES

Order no.	Type	Description
4473425	844 KMs	Floating holder for measuring stand 844 KM, incl. 2 bushings to clamp shaft Ø 10 mm and Ø 11,9 mm
4473426	844 KMp	Prismatic stop incl. knurled clamping screw for measuring table 844 KM



844 KMs



844 KMp

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

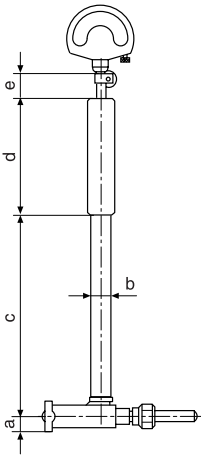
Application:

- Measuring the diameter, roundness and conical form of a bore as well as the distances of parallel plane surfaces

TECHNICAL DATA

Order no.	Type	Mesuring span of indicator		Error limit G_e	Repeatability f_w	Distance of movable anvil	Measuring depth
		mm	inch			mm	mm
4474000	844 N	18 – 50	.7 – 2"	2	0,5	1,3	115
4474001	844 N	35 – 100	1.4 – 4"	2	0,5	1,3	148
4474002	844 N	100 – 250	4 – 10"	2	0,5	1,6	230
4474003	844 N	250 – 400	10 – 16"	3	1,5	2,6	366
4474004	844 N	400 – 800	16 – 32"	3	1,5	2,6	366
4474005	844 N	250 – 800	10 – 32"	3	1,5	2,6	366

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

ACCESSORIES

Order no.	Type	Description
4335000	1002	Mechanical dial comparator 0,5 μm / $\pm 25 \mu\text{m}$
4334000	1003	Mechanical dial comparator 1 μm / $\pm 50 \mu\text{m}$
4333000	1004	Mechanical dial comparator 5 μm / $\pm 130 \mu\text{m}$
4337860	1087 BR	Digital indicator 12,5 mm / 0,0005 mm
4337870	1087 BRi	Digital indicator 12,5 mm / 0,0005 mm
4800120	420 h	Holder, Span width 0 – 70 mm
4800121	420 h	Holder, Span width 0 – 120 mm
4800122	420 h	Holder, Span width 100 – 220 mm
4800123	420 h	Holder, Span width 100 – 420 mm
4800124	420 h	Holder, Span width 400 – 820 mm
4474080	844 Neb	Adjustment bridge (70 x 12 mm), for measuring range - (for 844 N)
4474081	844 Neb	Adjustment bridge (165 x 17 mm), for measuring range - (for 844 N)
4474082	844 Neb	Adjustment bridge (320 x 20 mm), for measuring range - (for 844 N)
4474050	844 Ngk	Short holder (18 – 50 mm)
4474051	844 Ngk	Short holder (35 – 100 mm)
4474052	844 Ngk	Short holder (100 – 250 mm)
4474053	844 Ngk	Short holder (250 – 800 mm)
4474060	844 Nv	Measuring depth extension (250 mm) for measuring range 35 – 100 mm
4474061	844 Nv	Measuring depth extension (250 mm) for measuring range 100 – 250 mm
4474062	844 Nv	Measuring depth extension (500 mm) for measuring range 100 – 250 mm
4474063	844 Nv	Measuring depth extension (250 mm) for measuring range 250 – 800 mm
4474064	844 Nv	Measuring depth extension (500 mm) for measuring range 250 – 800 mm
4474066	844 Nv	Measuring depth extension (250 mm) for measuring range 18 – 50 mm
4474070	844 Nw	Right angle attachment, Bore depth 45mm, for measuring range 18 – 50 mm
4474071	844 Nw	Right angle attachment, Bore depth 55mm, for measuring range 35 – 100 mm
4474072	844 Nw	Right angle attachment, Bore depth 70mm, for measuring range 100 – 250 mm
4470098	844 ef	Base for mounting holder 420 h up to 420 mm
4470095	844 em	Measuring jaw (60 x 9,5 x 9 mm), for measuring range - (for 844 N)



1004



1003



1002



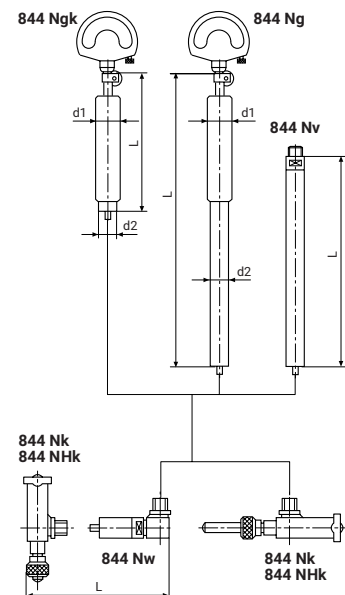
844 em



844 Neb



844 ef



844 Nk; 844 Nw;
844 Ngk; 844 Ng;
844 NHk; 844 Nv

Marameter 844 NH

Self-centering dial bore gage

FEATURES

- Measuring head consists of a carbide-tipped, movable measuring pin and an opposing interchangeable stationary counter probe with carbide ball
- Movements of the measuring pin are transmitted to the indicating instrument via the ring segment
- The broad centering bridge ensures automatic centering in the bore
- Insensitive to temperature due to both the shaft and the transfer rod being made from Invar steel
- Carbide-tipped measuring contacts for high wear resistance
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Universally applicable. Every instrument spans a broad measuring range. Within this range it is quick and easy to adjust to any size
- Measuring head, measuring instrument holder, depth extensions, right-angle attachments, and depth stops form a comprehensive modular system
- Invar steel makes the inner measuring device insensitive to temperature influences of any kind. Body heat from the user or a rise in ambient temperature in the workplace have virtually no influence on measuring results
- Package contains: measuring holder, measuring head, anvil spindle, wooden case, excludes indicator

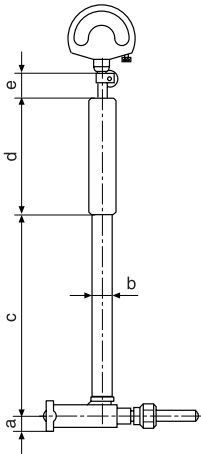
Application:

- Measuring the diameter, roundness and conical form of a bore as well as the distances of parallel plane surfaces

TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Mesuring span of indicator	Error limit G _e	Repeatability f _w	Distance of movable anvil	Measuring depth
		mm	inch	µm	µm	mm	mm
4475000	844 NH	18 – 50	.7 – 2"	2	0,5	1,3	115
4475001	844 NH	35 – 100	1.4 – 4"	2	0,5	1,3	148
4475002	844 NH	100 – 250	4 – 10"	2	0,5	1,6	230
4475003	844 NH	250 – 400	10 – 16"	3	1,5	2,6	336
4475004	844 NH	400 – 800	16 – 32"	3	1,5	2,6	336
4475005	844 NH	250 – 800	10 – 32"	3	1,5	2,6	336

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

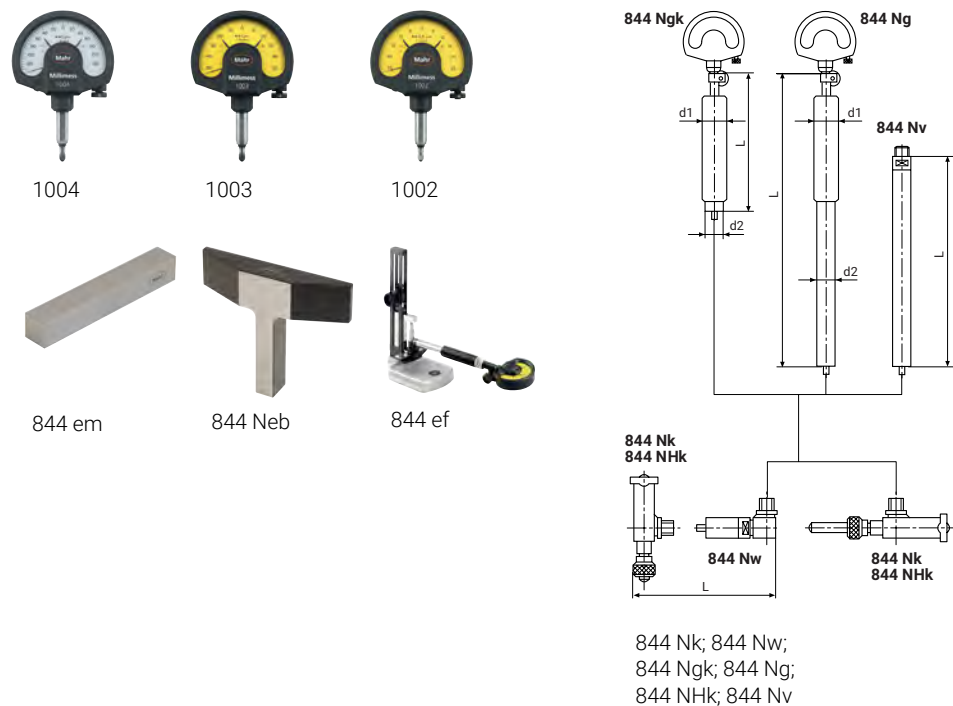


Marameter 844 NH

Self-centering dial bore gage

ACCESSORIES

Order no.	Type	Description
4335000	1002	Mechanical dial comparator 0,5 μm / $\pm 25 \mu\text{m}$
4334000	1003	Mechanical dial comparator 1 μm / $\pm 50 \mu\text{m}$
4333000	1004	Mechanical dial comparator 5 μm / $\pm 130 \mu\text{m}$
4337860	1087 BR	Digital indicator 12,5 mm / 0,0005 mm
4337870	1087 BRi	Digital indicator 12,5 mm / 0,0005 mm
4800120	420 h	Holder, Span width 0 – 70 mm
4800121	420 h	Holder, Span width 0 – 120 mm
4800122	420 h	Holder, Span width 100 – 220 mm
4800123	420 h	Holder, Span width 100 – 420 mm
4800124	420 h	Holder, Span width 400 – 820 mm
4474080	844 Neb	Adjustment bridge (70 x 12 mm), for measuring range - (for 844 N)
4474081	844 Neb	Adjustment bridge (165 x 17 mm), for measuring range - (for 844 N)
4474082	844 Neb	Adjustment bridge (320 x 20 mm), for measuring range - (for 844 N)
4474050	844 Ngk	Short holder (18 – 50 mm)
4474051	844 Ngk	Short holder (35 – 100 mm)
4474052	844 Ngk	Short holder (100 – 250 mm)
4474053	844 Ngk	Short holder (250 – 800 mm)
4474060	844 Nv	Measuring depth extension (250 mm) for measuring range 35 – 100 mm
4474061	844 Nv	Measuring depth extension (250 mm) for measuring range 100 – 250 mm
4474062	844 Nv	Measuring depth extension (500 mm) for measuring range 100 – 250 mm
4474063	844 Nv	Measuring depth extension (250 mm) for measuring range 250 – 800 mm
4474064	844 Nv	Measuring depth extension (500 mm) for measuring range 250 – 800 mm
4474066	844 Nv	Measuring depth extension (250 mm) for measuring range 18 – 50 mm
4474070	844 Nw	Right angle attachment, Bore depth 45mm, for measuring range 18 – 50 mm
4474071	844 Nw	Right angle attachment, Bore depth 55mm, for measuring range 35 – 100 mm
4474072	844 Nw	Right angle attachment, Bore depth 70mm, for measuring range 100 – 250 mm
4470098	844 ef	Base for mounting holder 420 h up to 420 mm
4470095	844 em	Measuring jaw (60 x 9,5 x 9 mm), for measuring range - (for 844 N)



Marameter 844 NB

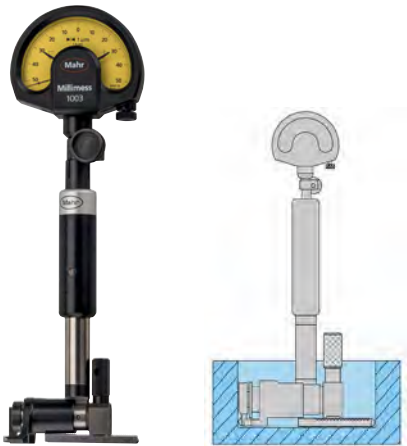
Self-centering dial bore gage

FEATURES

- Measuring head consists of a carbide-tipped, movable measuring pin and an opposing interchangeable stationary measuring probe with carbide ball
- Movements of the measuring pin are transmitted to the indicating instrument via the ring segment
- The broad centering bridge ensures automatic centering in the bore
- Insensitive to temperature due to both the shaft and the transfer rod being made from Invar steel
- Carbide-tipped measuring contacts for high wear resistance
- Constant measuring force thanks to inbuilt measuring force spring. Measuring results are therefore independent of personal sense of touch
- Universally applicable. Every instrument spans a broad measuring range. Within this range it is quick and easy to adjust to any size
- Invar steel makes the inner measuring device insensitive to temperature influences of any kind. Body heat from the user or a rise in ambient temperature in the workplace have virtually no influence on measuring results
- Package contains: measuring holder, measuring head, anvil spindle, wooden case, excludes indicator

Application:

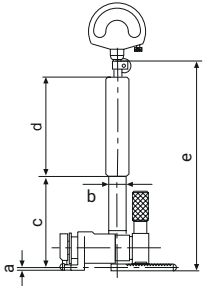
- For blind holes, to measure almost to the base of a bore



TECHNICAL DATA

Order no.		4474179	4474180	4474186
Type		844 NB		
Mesuring span of indicator	mm	20 – 50 mm	50 – 110 mm	110 – 300 mm
Mesuring span of indicator	inch	0.79 – 2"	2 – 4.33"	4.33 – 11.81"
Error limit G _e	µm	3		
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



Marameter 844 NB

Self-centering dial bore gage

ACCESSORIES

Order no.	Type	Description
4333000	1004	Mechanical dial comparator 5 µm / ± 130 µm
4334000	1003	Mechanical dial comparator 1 µm / ± 50 µm
4335000	1002	Mechanical dial comparator 0,5 µm / ± 25 µm
4337860	1087 BR	Digital indicator 12,5 mm / 0,0005 mm
4337870	1087 BRi	Digital indicator 12,5 mm / 0,0005 mm



1004



1003



1002



1087 BR



1087 BRi

Multimar | Universal measuring instruments

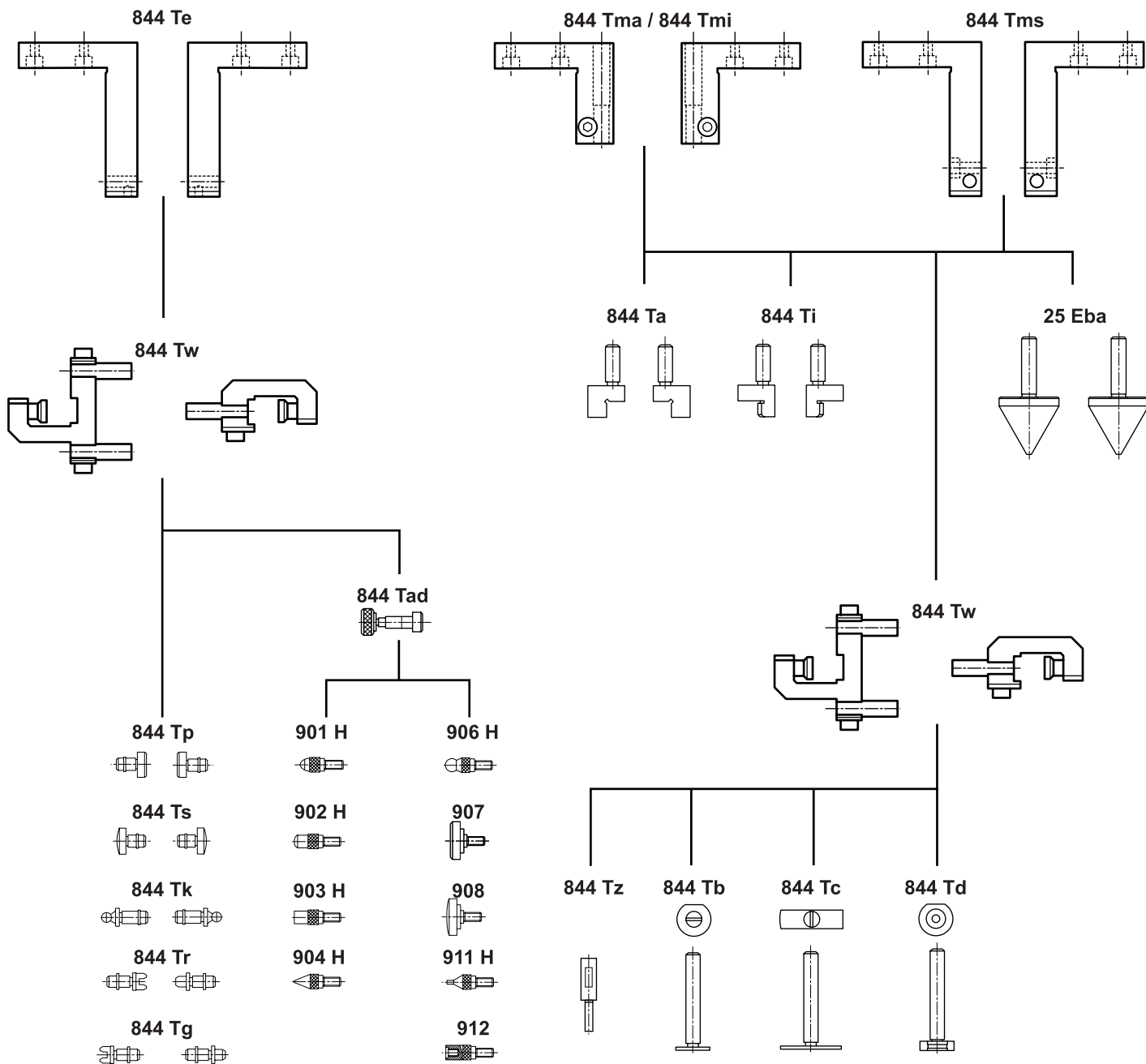
Whether you are measuring gears, threads, cones or grooves, Multimar universal measuring instruments are an ideal solution for almost all internal and external measurements for which standard measuring instruments are unsuitable. A choice of basic units and an extensive range of accessories are available.



Overview Multimar	408
Multimar 25 EWRI / 25 EWR	409
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Multimar 25 EWRI / 25 EWR

Digital universal calipers



Multimar 25 EWR / 25 EWRi

Digital universal calipers

FUNCTIONS

Functions 25 EWR:

- 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)

Functions 25 EWRi:

- ON/OFF
- AUTO-ON/OFF
- HOLD (freeze current measured value)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- Reversal of counting direction
- mm/inch
- LOCK function (key lock)
- DATA (data transmission)
- Can be customized to the measuring task due 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

FEATURES 25 EWRi:

- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 3 years (approx. 0.5 in wireless mode)
- Battery type: CR 2032 (3V Lithium)
- Data interface: Integrated Wireless
- 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 RS-232 interface)

FEATURES 25 EWR:

- IP protection category: IP 65
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: USB, Digimatic, Opto RS-232C, wireless
- 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 RS-232 interface)



Application:

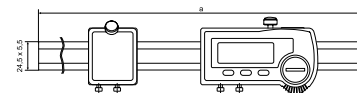
Ideal for universally adapted measuring at difficult measuring points:

- Outer and inner dimensions
- diameters
- Lengths, widths, heights
- Centering shoulders
- Narrow collars
- Outer and inner tapers
- Dovetails
- Recesses
- Bore distances

TECHNICAL DATA

Order no.	Type	Application range, outside	Application range, outside	Resolution	Error limit	Height of digits
		mm	inch	mm/inch	mm	mm
4119000	25 EWR	0 – 300	0 – 12"	0,01 / .0005"	0,03	12,5
4119001	25 EWR	0 – 600	0 – 24"	0,01 / .0005"	0,03	12,5
4119002	25 EWR	0 – 1000	0 – 40"	0,01 / .0005"	0,04	12,5
4119003	25 EWR	0 – 1250	0 – 50"	0,01 / .0005"	0,04	12,5
4119050	25 EWRi	0 – 300	0 – 12"	0,01 / .0005"	0,03	12,5
4119051	25 EWRi	0 – 600	0 – 24"	0,01 / .0005"	0,03	12,5
4119052	25 EWRi	0 – 1000	0 – 40"	0,01 / .0005"	0,04	12,5
4119053	25 EWRi	0 – 1250	0 – 50"	0,01 / .0005"	0,04	12,5

Order no.	a
	mm
4119000	480
4119001	790
4119002	1200
4119003	1450
4119050	480
4119051	790
4119052	1200
4119053	1450

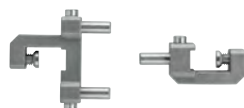


Multimar 25 EWR / 25 EWRi

Digital universal calipers

ACCESSORIES

Order no.	For measuring instrument	Type	Description
4102220	25 EWRi	i-Stick	Wireless receiver for measuring instruments with integrated wireless
4102231	25 EWR	16 EWe	Transmitter for e-Stick
4102357	25 EWR	16 EXu	Data connection cable USB (2 m)
4102410	25 EWR	16 EXr	Data connection cable RS232C (2 m)
4102915	25 EWR	16 EWd	Data cable Digimatic (2 m)
4118520	25 EWR, 25 EWRi	25 Eel	Setting gage
4119010	25 EWR, 25 EWRi	25 Eba	Measuring tip for drill hole intervals, Ø 2–20 mm
4119011	25 EWR, 25 EWRi	25 Eba	Measuring tip for drill hole intervals, Ø 10–40 mm
4503020	25 EWR, 25 EWRi	844 Tzb	Case for accessories
4503024	25 EWR, 25 EWRi	844 Te	Measuring arms, 25 mm
4503025	25 EWR, 25 EWRi	844 Te	Measuring arms, 35 mm
4503026	25 EWR, 25 EWRi	844 Te	Measuring arms, 70 mm
4503027	25 EWR, 25 EWRi	844 Te	Measuring arms, 100 mm
4503030	25 EWR, 25 EWRi	844 Tma	Mounting attachments
4503031	25 EWR, 25 EWRi	844 Tmi	Mounting attachments
4503109	25 EWR, 25 EWRi	844 Tw	Depth stops for 844 Tma, 844 Tmi, 844 Te



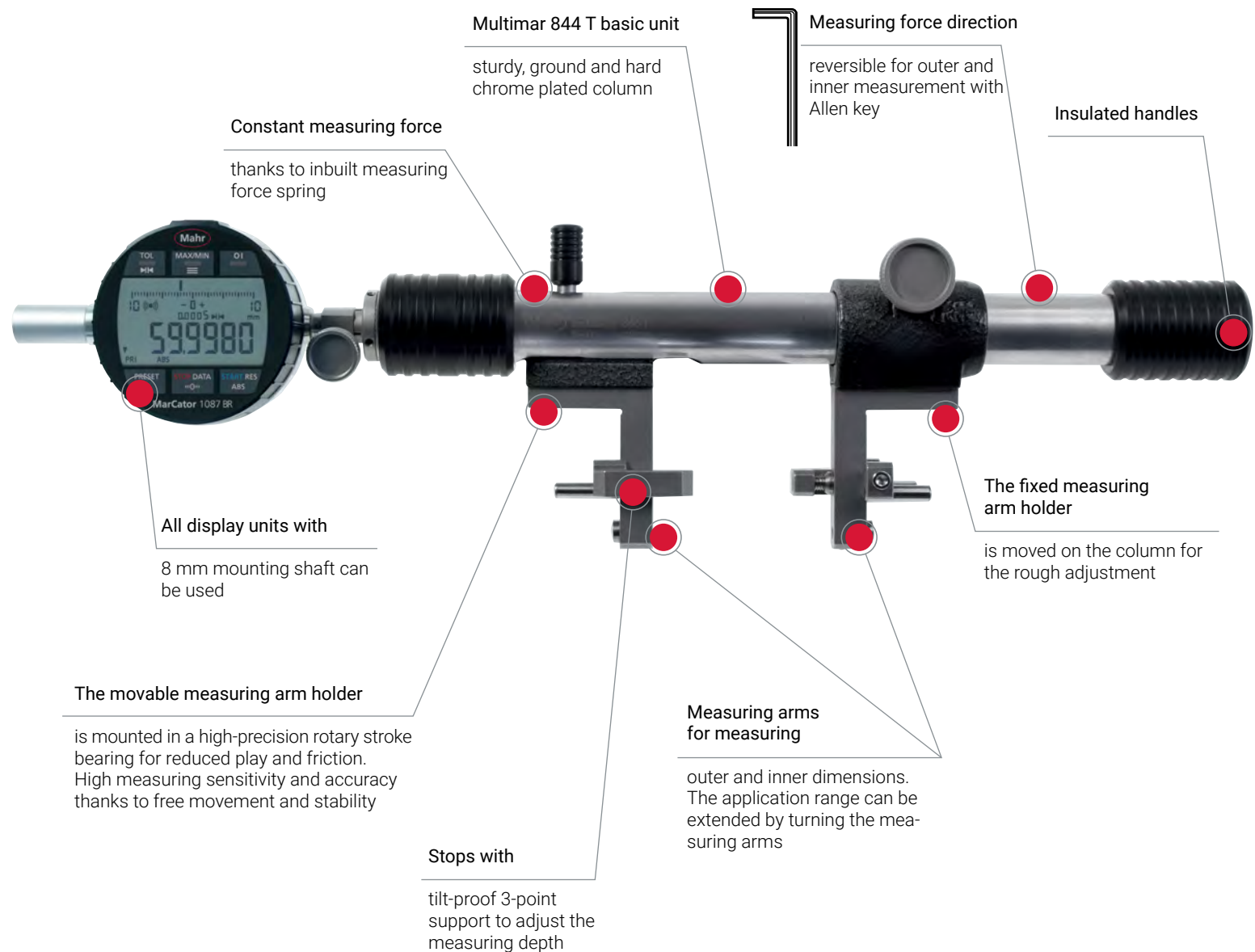
Multimar

Universal gage 844 T for external and internal dimensions

Multimar 844 T universal probe. For easy and universal measuring in all metrology tasks.

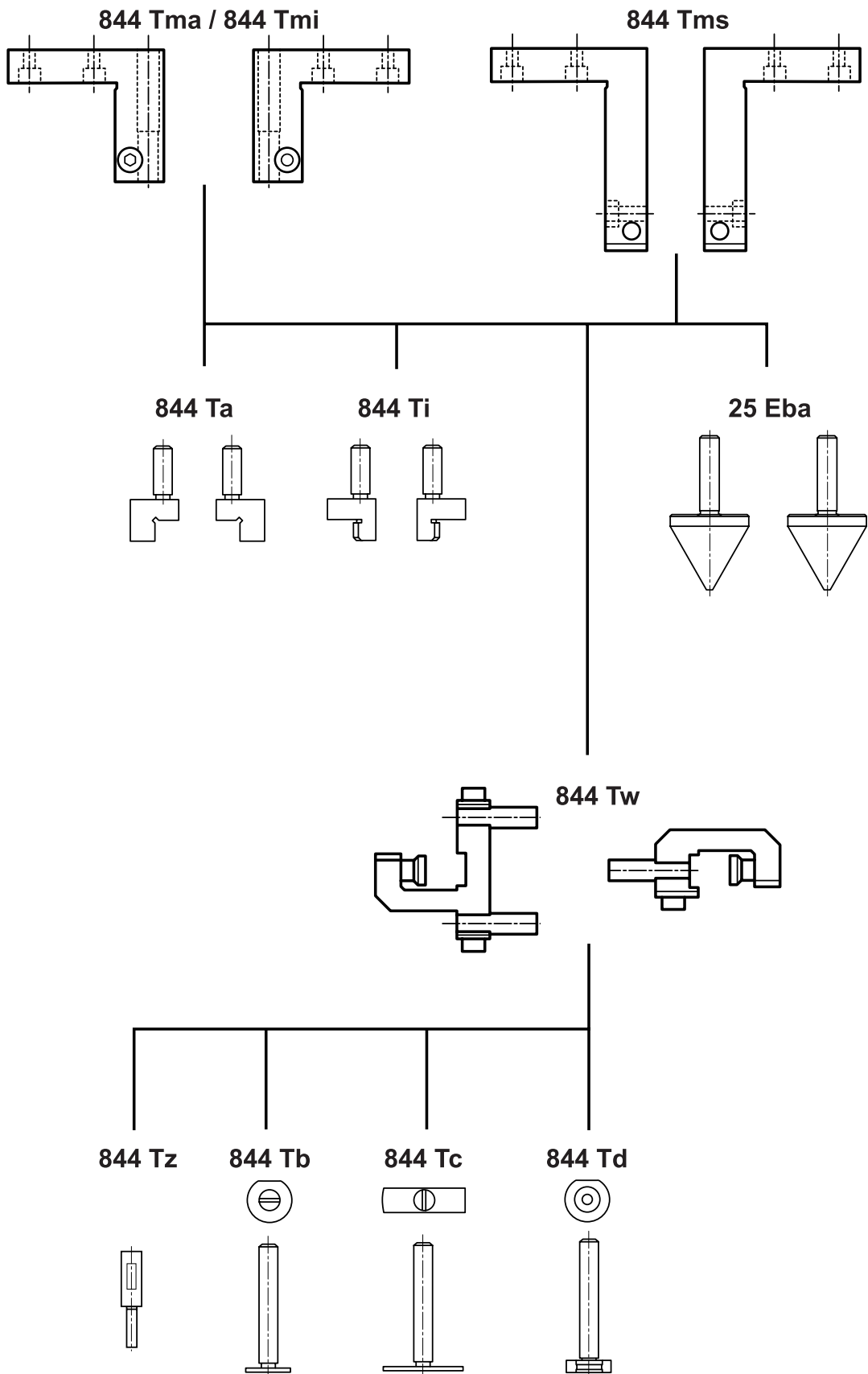
Application

- Outer and inner dimensions
- Outer and inner threads
- Centering shoulders
- Narrow collars, recesses and grooves
- Outer and inner tapers
- Outer and inner gears and much more



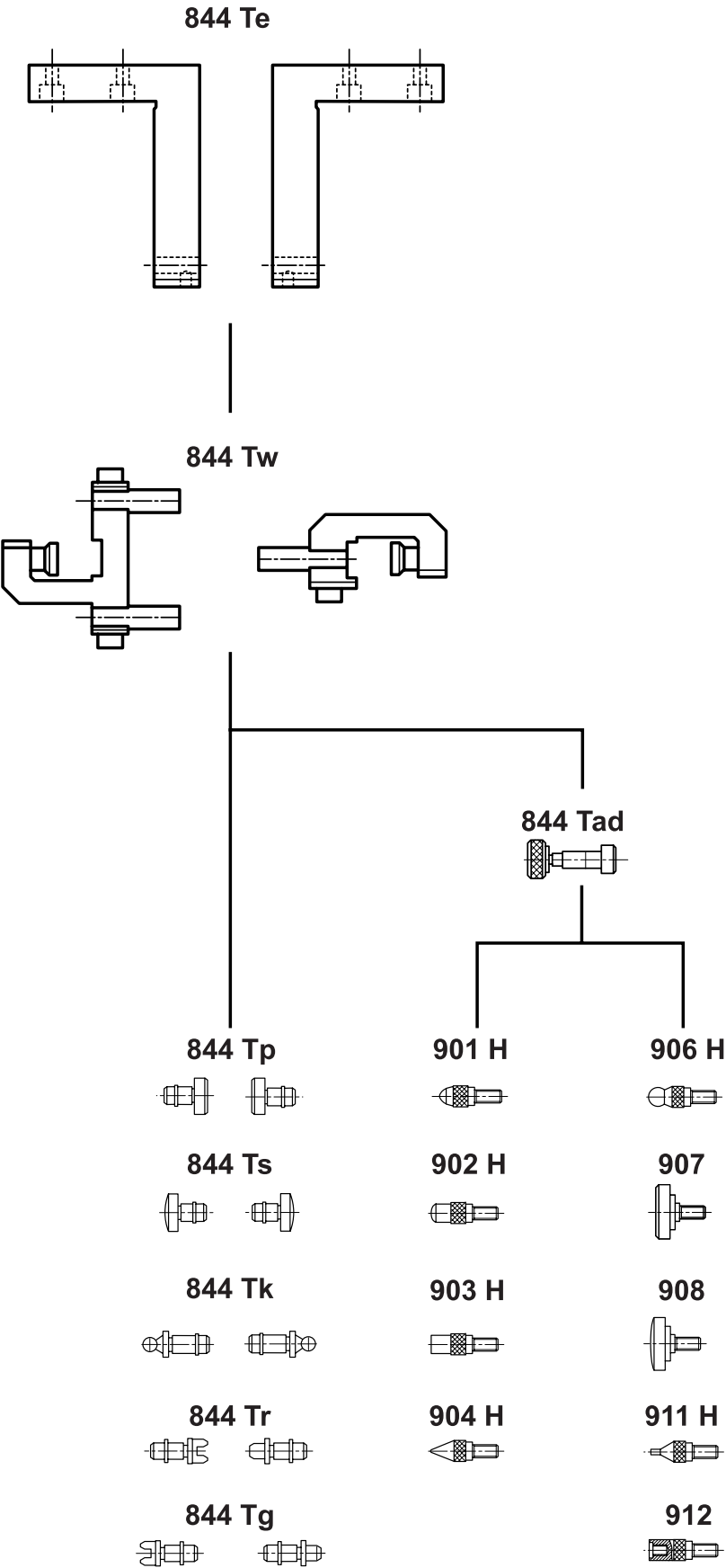
Multimar 844 T

Universal probe



Multimar 844 T

Universal probe



Multimar 844 T

Universal measuring instrument

FEATURES

The Multimar 844 T is a comparison measuring device with very high precision. Its special feature is that it can be converted for a wide variety of measuring tasks as well as for problematic measuring areas.

- 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:**
Ideal for universally adapted measuring at difficult measuring points:
- 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
 - and more

TECHNICAL DATA

Order no.	Type	Application range, outside	Application range, inside	Probe path	Measuring force	Product weight
		mm	mm	mm	N	kg
4503001	844 T	0 – 85	30 – 115	12	5	0,78
4503002	844 T	80 – 235	110 – 265	12	5	1,01
4503003	844 T	230 – 585	260 – 615	12	5	1,59
4503004	844 T	580 – 985	610 – 1015	12	5	2,22
4503005	844 T	970 – 1470	1000 – 1500	12	10	2,52
4503006	844 T	1470 – 1970	1500 – 2000	12	10	2,68
4503007	844 T	1970 – 2470	2000 – 2500	12	10	2,86
4503008	844 T	2470 – 2970	2500 – 3000	12	10	3,26
4503009	844 T	2970 – 3470	3000 – 3500	12	10	3,43
4503010	844 T	3470 – 3970	3500 – 4000	12	10	3,62
4503011	844 T	3970 – 4470	4000 – 4500	12	10	3,81

Multimar 844 T

Universal measuring instrument

ACCESSORIES

Order no.	Type	Quantity unit	Description
4311000	810 S		Mechanical dial indicator 10 mm / 0,01 mm
4333000	1004		Mechanical dial comparator 5 µm / ± 130 µm
4332000	1010		Mechanical dial comparator 0,01 mm / ± 0,25 mm
4337860	1087 BR		Digital indicator 12,5 mm / 0,0005 mm
4337870	1087 BRi		Digital indicator 12,5 mm / 0,0005 mm
4503030	844 Tma	Pair	Mounting attachments
4503031	844 Tmi	Pair	Mounting attachments
4503024	844 Te	Pair	Measuring arms, 25 mm
4503025	844 Te	Pair	Measuring arms, 35 mm
4503026	844 Te	Pair	Measuring arms, 70 mm
4503027	844 Te	Pair	Measuring arms, 100 mm
4503040	844 Tms	Pair	Mounting attachments offset by 90°, 50 mm
4503041	844 Tms	Pair	Mounting attachments offset by 90°, 100 mm
4503109	844 Tw	Pair	Depth stops for 844 Tma, 844 Tmi, 844 Te
4503012	844 Tsb		Guard bracket for display units
4503020	844 Tzb		Case for accessories
4450512	844 Tf		Stand



810 S



1004



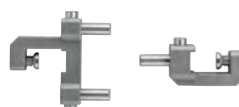
1087 BR



1087 BRi



844 Tma



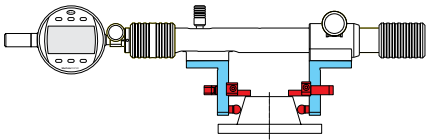
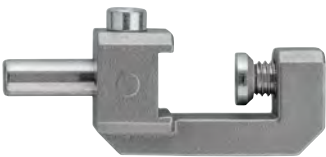
844 Tw

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
- Package contents:– 1 pair of stop pieces with 3 stop pins $\varnothing 5 \times 20$ m
- Additionally 1 stop pin each $\varnothing 5 \times 16$ mm and $\varnothing 5 \times 10$ mm for stop piece 1-point

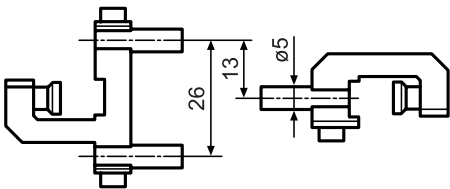


Application:

- 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 setting of the measuring depth (i.e. for taper measurements) gage blocks can be used

TECHNICAL DATA

Order no.	Type	Quantity unit
4503109	844 Tw	Pair

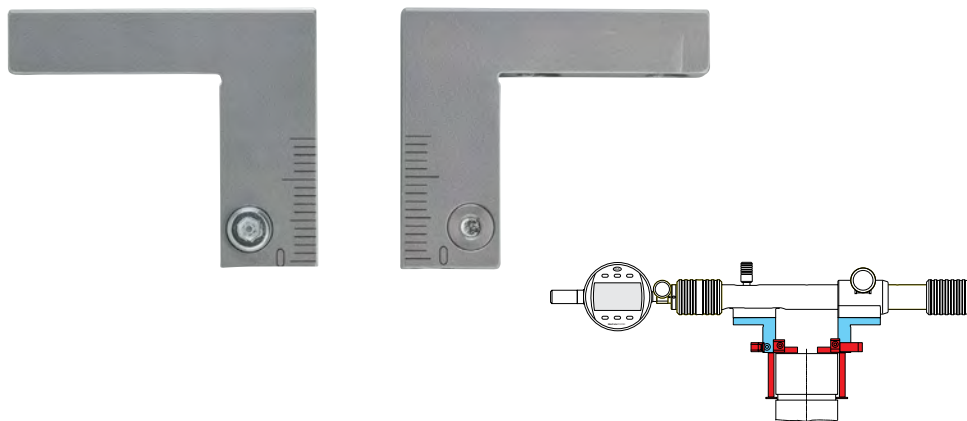


Multimar 844 Tma / 844 Tmi

Mounting attachments

FEATURES

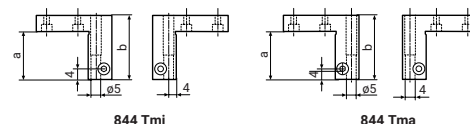
- For outside (844 Tma) and inside diameters (844 Tmi)
- Stainless steel
- Lateral mm scale for easy positioning and adjustment of measuring limit stops
- Reversible measuring arms on measuring arm holders to increase the measuring range
- With $\varnothing 5$ mm mounting bore for inserting interchangeable 844 Ta, 844 Ti, 844 Tb, 844 Tc, 844 Td, 844 Tz and 844 Tv measuring anvils



TECHNICAL DATA

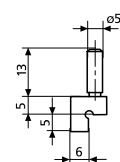
Order no.	Type	Use for	Quantity unit
4503030	844 Tma	External measurement (during standard mounting)	Pair
4503031	844 Tmi	Internal measurement (for standard assembly)	Pair

Order no.	a	b	Mounting hole
	mm	mm	mm
4503030	24	32	5
4503031	24	32	5

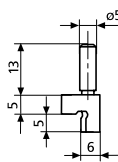


ACCESSORIES

Order no.	Type	Quantity unit	Description
4119010	25 Eba	Piece	Measuring tip for drill hole intervals, $\varnothing 2-20$ mm
4119011	25 Eba	Piece	Measuring tip for drill hole intervals, $\varnothing 10-40$ mm
4500050	844 Ta	Pair	Shoulder anvils, flat, hardened steel
4500055	844 Ti	Pair	Shoulder anvils, spherical, hardened steel
4503015	844 Tb	Piece	Measuring anvil with measuring blades, Platelet diameter 11 mm, Adjustment range 0 – 20 mm
4503016	844 Tb	Piece	Measuring anvil with measuring blades, Platelet diameter 11 mm, Adjustment range 20 – 40 mm
4503017	844 Td	Piece	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 0 – 20 mm
4503018	844 Td	Piece	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 20 – 40 mm
4503109	844 Tw	Pair	Depth stops for 844 Tma, 844 Tmi, 844 Te
4503114	844 Tc	Piece	Measuring anvil with measuring blades, Platelet length 20 mm, Adjustment range 0 – 20 mm
4503115	844 Tc	Piece	Measuring anvil with measuring blades, Platelet length 20 mm, Adjustment range 20 – 40 mm



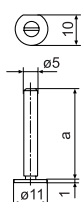
844 Ta



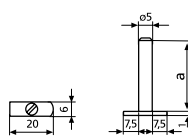
844 Ti



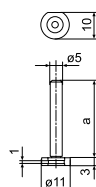
25 Eba



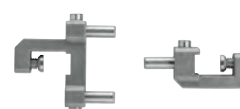
844 Tb



844 Tc



844 Td



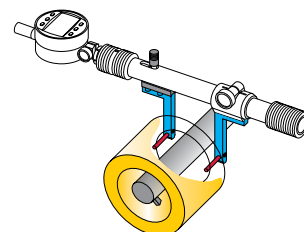
844 Tw

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 $\varnothing 5$ mm holder for inserting interchangeable 844 Ta, 844 Ti, 844 Tb, 844 Tc, 844 Td, 844 Tz and 844 Tv measuring anvils



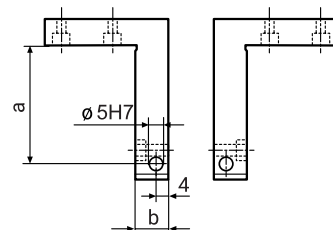
Application:

- 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

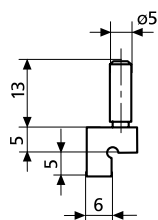
Use for	Type	Use for	Throat depth	Quantity unit
			mm	
4503040	844 Tms	lateral probing	50	Pair
4503041	844 Tms	lateral probing	100	Pair

Order no.	a	b	Mounting hole
	mm	mm	mm
4503040	50	12	5
4503041	100	12	5

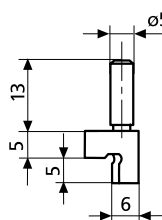


ACCESSORIES

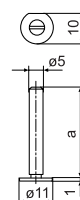
Order no.	Type	Description
4500050	844 Ta	Shoulder anvils, flat, hardened steel
4500055	844 Ti	Shoulder anvils, spherical, hardened steel
4503015	844 Tb	Measuring anvil with measuring blades, Platelet diameter 11 mm, Adjustment range 0 – 20 mm
4503016	844 Tb	Measuring anvil with measuring blades, Platelet diameter 11 mm, Adjustment range 20 – 40 mm
4503017	844 Td	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 0 – 20 mm
4503018	844 Td	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 20 – 40 mm
4503114	844 Tc	Measuring anvil with measuring blades, Platelet length 20 mm, Adjustment range 0 – 20 mm
4503115	844 Tc	Measuring anvil with measuring blades, Platelet length 20 mm, Adjustment range 20 – 40 mm
4503119	844 To	Measuring Anvils, Ball diameter 6 mm, Adjustment range 20 – 40 mm



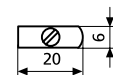
844 Ta



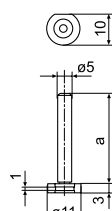
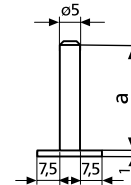
844 Ti



844 Tb



844 Tc



844 Td



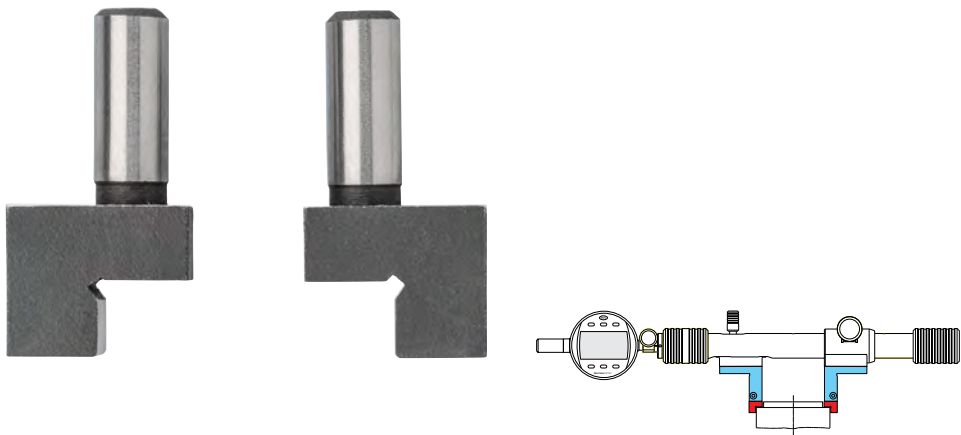
844 To

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

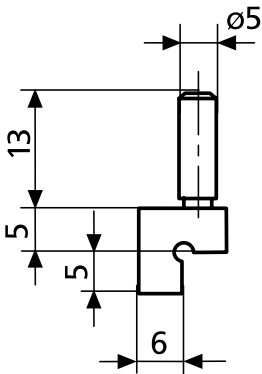


Application:

- For narrow collars such as centering shoulders and other similar measuring tasks

TECHNICAL DATA

Order no.	Type	Shaft diameter	Quantity unit
		mm	
4500050	844 Ta	5	Pair

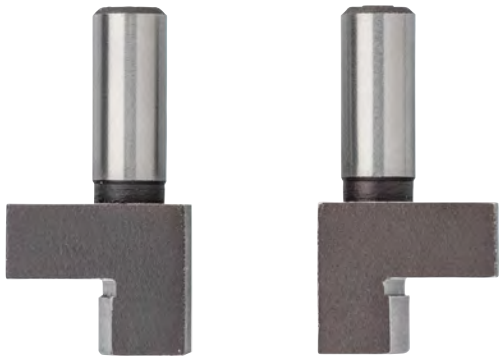


Multimar 844 Ti

Shoulder anvils

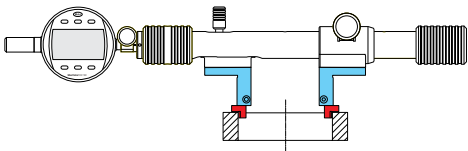
FEATURES

- With cylindrical mounting shaft to attach into mounting attachments 844 Tma, 844 Tmi, 844 Tms
- Semi-cylindrical, for internal diameters
- Made of hardened steel



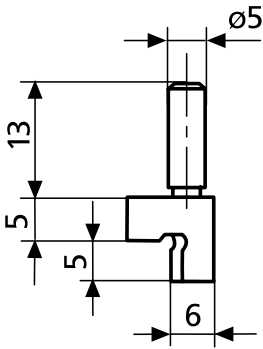
Application

- For narrow collars such as centering shoulders and other similar measuring tasks



TECHNICAL DATA

Order no.	Type	Shaft diameter	Quantity unit
		mm	
4500055	844 Ti	5	Pair

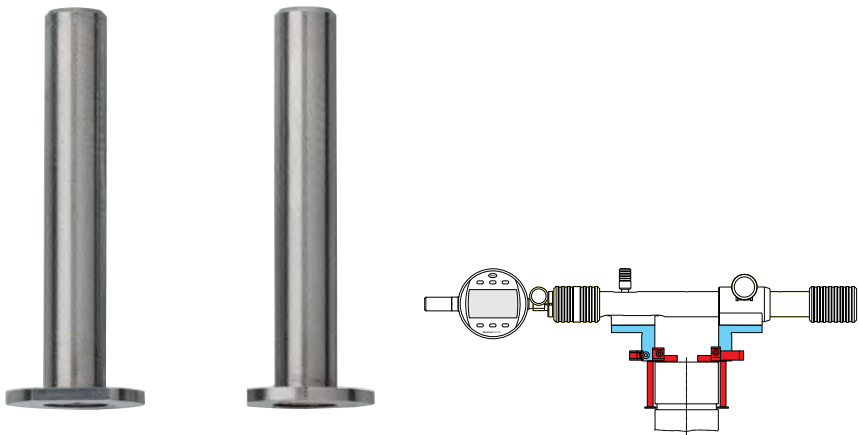


Multimar 844 Tb

Measuring anvil 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



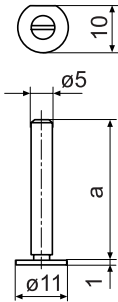
Application:

- For measuring centering shoulders and recesses on internal and external diameters

TECHNICAL DATA

Order no.	Type	Adjustment range	Shaft diameter	Quantity unit
		mm	mm	
4503015	844 Tb	0 – 20	5	Piece
4503016	844 Tb	20 – 40	5	Piece

Order no.	a
	mm
4503015	30
4503016	50



Multimar 844 Tc

Measuring anvil 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



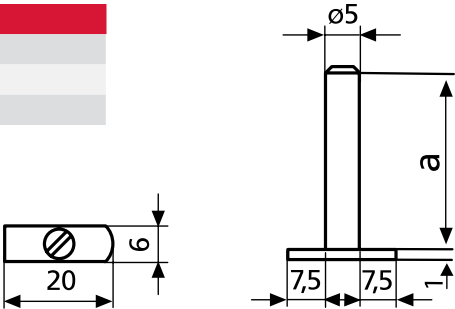
Application:

- For measuring centering shoulders and recesses on internal and external diameters

TECHNICAL DATA

Order no.	Type	Adjustment range	Shaft diameter	Quantity unit
		mm	mm	
4503114	844 Tc	0 – 20	5	Piece
4503115	844 Tc	20 – 40	5	Piece

Order no.	a
	mm
4503114	30
4503115	50



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)



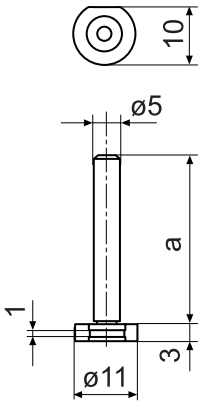
Application:

- For measuring internal and external dimensions on round or cylindrical parts

TECHNICAL DATA

Order no.	Type	Adjustment range	Diameter	Shaft diameter	Quantity unit
		mm	mm	mm	
4503017	844 Td	0 – 20	11	5	Piece
4503018	844 Td	20 – 40	11	5	Piece

Order no.	a
	mm
4503017	30
4503018	50

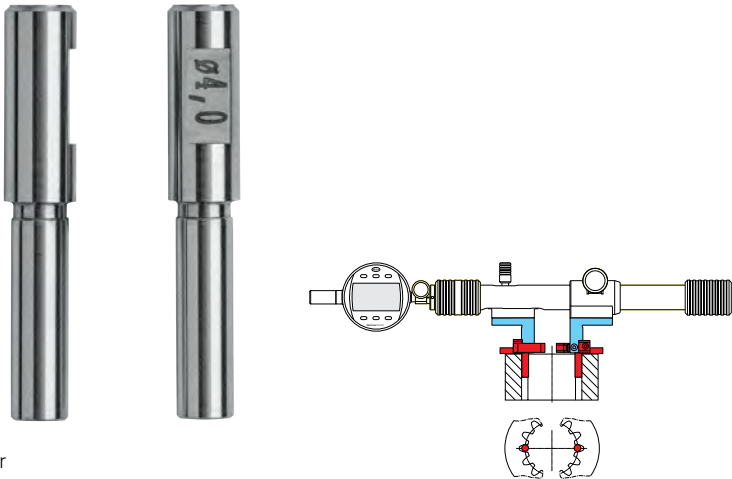


Multimar 844 Tz

Cylindrical measuring pins

FEATURES

- With cylindrical holding shaft for fixing in 844 Tma / 844 Tmi mounting attachments
- Made of hardened steel



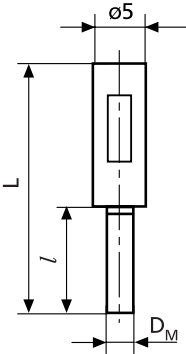
Application:

- Determination of the dimension over 2 pins for inner and outer gears

TECHNICAL DATA

Order no.	Type	Manufacturing tolerance +/-	Diameter	Length	Shaft diameter	Quantity unit
		µm	mm	mm	mm	
4500500	844 Tz	2	1	19,5	5	Pair
4500501	844 Tz	2	1,25	19,5	5	Pair
4500502	844 Tz	2	1,5	19,5	5	Pair
4500503	844 Tz	2	1,75	23,5	5	Pair
4500504	844 Tz	2	2	23,5	5	Pair
4500506	844 Tz	2	2,5	23,5	5	Pair
4500507	844 Tz	2	3	28,5	5	Pair
4500508	844 Tz	2	3,5	28,5	5	Pair
4500509	844 Tz	2	4	28,5	5	Pair
4500510	844 Tz	2	4,5	33,5	5	Pair
4500511	844 Tz	2	5	33,5	5	Pair
4500512	844 Tz	2	5,5	33,5	5	Pair
4500513	844 Tz	2	6	33,5	5	Pair

Order no.	D	L	I
	mm	mm	mm
4500500	1	19,5	6
4500501	1,25	19,5	6
4500502	1,5	19,5	6
4500503	1,75	23,5	10
4500504	2	23,5	10
4500506	2,5	23,5	10
4500507	3	28,5	15
4500508	3,5	28,5	15
4500509	4	28,5	15
4500510	4,5	33,5	20
4500511	5	33,5	20
4500512	5,5	33,5	20
4500513	6	33,5	20



Multimar 844 Te

Measuring arms

FEATURES

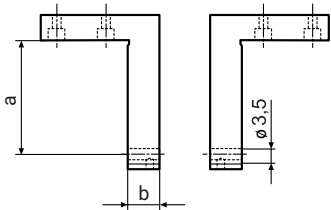
- For outer and inner diameters
- Stainless steel
- Lateral mm scale for easy positioning and adjustment of measuring limit stops
- Reversible measuring arms on measuring arm holder to increase the measuring range
- 3.5 mm diameter holder for inserting interchangeable measuring anvils 844 Tp, 844 Ts, 844 Tk, 844 Tr and 844 Tg



TECHNICAL DATA

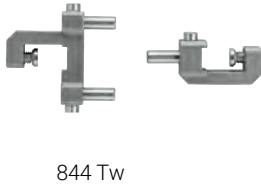
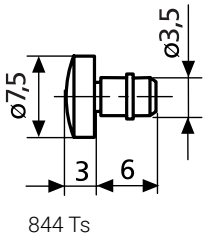
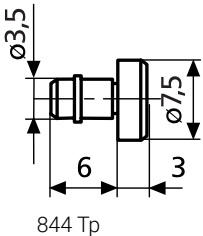
Order no.	Type	Use for	Throat depth	Quantity unit
			mm	
4503024	844 Te	Inner and outer measurements	25	Pair
4503025	844 Te	Inner and outer measurements	35	Pair
4503026	844 Te	Inner and outer measurements	70	Pair
4503027	844 Te	Inner and outer measurements	100	Pair

Order no.	a	b	Mounting hole
	mm	mm	mm
4503024	25	6	3,5
4503025	35	10	3,5
4503026	70	10	3,5
4503027	100	12	3,5



ACCESSORIES

Order no.	Type	Quantity unit	Description
4500040	844 Tp	Piece	Anvils for measuring arms, flat, hardened steel
4500045	844 Ts	Piece	Measuring anvils, spherical, hardened steel
4503080	844 Tad	Piece	Adapter Ø 3,5 - M2,5 for measuring arms 844 Te
4503109	844 Tw	Pair	Depth stops for 844 Tma, 844 Tmi, 844 Te



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	Blade Order no.	Taper Order no.	V-Anvil Order no.
Pitch diameter, external thread			
Metric 60°			
0,5 – 0,7		4501000	4501200
0,7 – 1		4501001	4501201
1,25 – 2		4501002	4501202
2 – 3,5		4501003	4501203
3,5 – 5		4501004	4501204
5 – 7		4501005	4501205
Trapezoid 30°			
1,5		4501151	4501351
2		4501152	4501352
3		4501153	4501353
4		4501154	4501354
5		4501155	4501355
6		4501156	4501356
7		4501157	4501357
8		4501158	4501358
9		4501159	4501359
10		4501160	4501360
12		4501161	4501361
14		4501162	4501362
16		4501163	4501363
18		4501164	4501364
20		4501165	4501365
Pitch diameter, internal thread			
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	
Trapezoid 30°			
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	

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

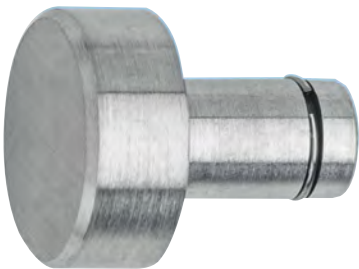
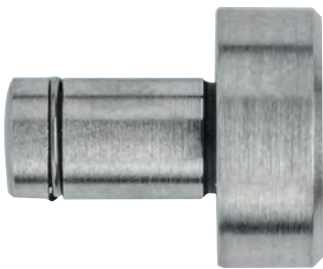
Thread pitch in TPI	Blade Order no.	Taper Order no.	V-Anvil Order no.
Pitch diameter, external thread UST 60°			
40 – 32		4501018	4501418
32 – 24		4501019	4501419
24 – 18		4501020	4501420
18 – 14		4501021	4501421
14 – 10		4501022	4501422
10 – 7		4501023	4501423
7 – 4,5		4501024	4501424
4,5 – 3		4501025	4501425
Whitworth 55 °			
40 – 32		4501007	4501207
32 – 24		4501008	4501208
24 – 18		4501009	4501209
18 – 14		4501010	4501210
14 – 10		4501011	4501211
10 – 7		4501012	4501212
7 – 4,5		4501013	4501213
4,5 – 3		4501014	4501214
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

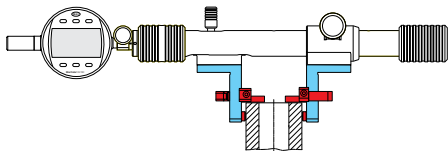
FEATURES

- Made of hardened steel
- With cylindrical mounting shank and retainer ring which allows free rotation inside the bore of measuring arms 844 Te



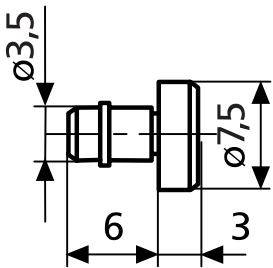
Application:

- Flat; for external diameters, distances and widths



TECHNICAL DATA

Order no.	Type	Contact surface	Shaft diameter	Quantity unit
4500040	844 Tp	flat	mm 3,5	Piece

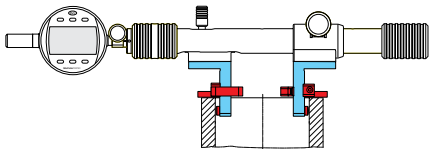
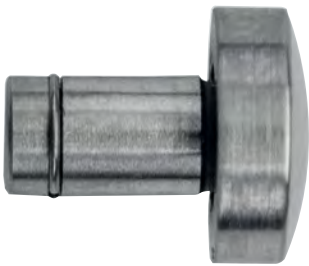


Multimar 844 Ts

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

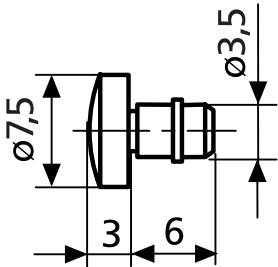


Application:

- Spherical; for internal diameters

TECHNICAL DATA

Order no.	Type	Contact surface	Measurement surface radius	Shaft diameter	Quantity unit
4500045	844 Ts	spherical	mm 9,5	mm 3,5	Piece

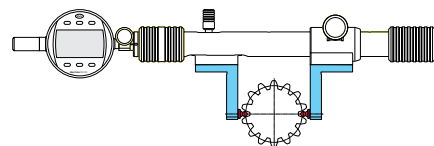


Multimar 844 Tk

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
- Manufacturing tolerance ball $\pm 2 \mu\text{m}$



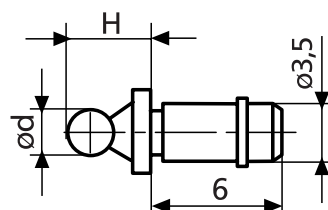
Application:

- Especially suited for the measurement of internal or external helical gear wheels
- Use of convex contours
- Use for cone measurements

TECHNICAL DATA

Order no.	Type	Diameter	Shaft diameter	Shaft Length	Quantity unit	H	d
		mm	mm	mm		mm	mm
4502620	844 Tk	0,5	3,5	6		3	0,5
4502621	844 Tk	0,551	3,5	6	Piece	3,1	0,551
4502622	844 Tk	0,62	3,5	6	Piece	3,1	0,62
4502623	844 Tk	0,623	3,5	6	Piece	3,1	0,623
4502624	844 Tk	0,63	3,5	6	Piece	3,1	0,63
4502625	844 Tk	0,722	3,5	6	Piece	3,2	0,722
4502626	844 Tk	0,862	3,5	6	Piece	3,4	0,862
4502627	844 Tk	0,895	3,5	6	Piece	3,4	0,895
4502628	844 Tk	0,965	3,5	6	Piece	3,5	0,965
4500350	844 Tk	1	3,5	6	Piece	3,5	1
4502629	844 Tk	1,1	3,5	6	Piece	3,6	1,1
4502630	844 Tk	1,118	3,5	6	Piece	3,6	1,118
4502631	844 Tk	1,125	3,5	6	Piece	3,6	1,125
4500351	844 Tk	1,25	3,5	6	Piece	3,8	1,25
4502632	844 Tk	1,35	3,5	6	Piece	3,9	1,35
4502633	844 Tk	1,372	3,5	6	Piece	3,9	1,372
4502634	844 Tk	1,385	3,5	6	Piece	3,9	1,385
4500352	844 Tk	1,5	3,5	6	Piece	4	1,5
4502635	844 Tk	1,524	3,5	6	Piece	4	1,524
4502636	844 Tk	1,54	3,5	6	Piece	4	1,54
4502637	844 Tk	1,6	3,5	6	Piece	4,1	1,6
4502638	844 Tk	1,65	3,5	6	Piece	4,2	1,65
4502639	844 Tk	1,7	3,5	6	Piece	4,2	1,7
4500353	844 Tk	1,75	3,5	6	Piece	4,3	1,75
4502640	844 Tk	1,782	3,5	6	Piece	4,3	1,782
4502641	844 Tk	1,8	3,5	6	Piece	4,3	1,8
4502642	844 Tk	1,829	3,5	6	Piece	4,3	1,829
4502643	844 Tk	1,9	3,5	6	Piece	4,4	1,9
4500354	844 Tk	2	3,5	6	Piece	4,5	2
4502543	844 Tk	2,032	3,5	6	Piece	4,5	2,032
4502540	844 Tk	2,25	3,5	6	Piece	4,8	2,25
4502644	844 Tk	2,284	3,5	6	Piece	4,8	2,284

Order no.	Type	Diameter	Shaft diameter	Shaft Length	Quantity unit	H	d
		mm	mm	mm		mm	mm
4502544	844 Tk	2,3	3,5	6	Piece	4,8	2,3
4502645	844 Tk	2,386	3,5	6	Piece	4,9	2,386
4502646	844 Tk	2,438	3,5	6	Piece	4,9	2,438
4500356	844 Tk	2,5	3,5	6	Piece	5	2,5
4502647	844 Tk	2,667	3,5	6	Piece	5,2	2,667
4502648	844 Tk	2,704	3,5	6	Piece	5,2	2,704
4502649	844 Tk	2,713	3,5	6	Piece	5,2	2,713
4502650	844 Tk	2,721	3,5	6	Piece	5,2	2,721
4502651	844 Tk	2,743	3,5	6	Piece	5,2	2,743
4500618	844 Tk	2,75	3,5	6	Piece	5,3	2,75
4500357	844 Tk	3	3,5	6	Piece	5,5	3
4502652	844 Tk	3,048	3,5	6	Piece	5,5	3,048
4502541	844 Tk	3,25	3,5	6	Piece	5,8	3,25
4502653	844 Tk	3,4	3,5	6	Piece	5,9	3,4
4500358	844 Tk	3,5	3,5	6	Piece	6	3,5
4502654	844 Tk	3,658	3,5	6	Piece	6,2	3,658
4500359	844 Tk	4	3,5	6	Piece	6,5	4
4500360	844 Tk	4,5	3,5	6	Piece	7	4,5
4502655	844 Tk	4,835	3,5	6	Piece	7,3	4,835
4500361	844 Tk	5	3,5	6	Piece	7,5	5
4502656	844 Tk	5,25	3,5	6	Piece	7,8	5,25
4502657	844 Tk	5,486	3,5	6	Piece	8	5,486
4500362	844 Tk	5,5	3,5	6	Piece	8	5,5
4500363	844 Tk	6	3,5	6	Piece	8,5	6
4502658	844 Tk	6,096	3,5	6	Piece	8,6	6,096
4502545	844 Tk	6,35	3,5	6	Piece	8,9	6,35
4502542	844 Tk	6,5	3,5	6	Piece	9	6,5
4502547	844 Tk	7	3,5	6	Piece	9,5	7
4502548	844 Tk	8	3,5	6	Piece	10,5	8
4502549	844 Tk	9	3,5	6	Piece	11,5	9
4502550	844 Tk	10	3,5	6	Piece	12,5	10



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 production or 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
Type			844 S	
Application range, outside	mm	40 – 400	40 – 1150	40 – 2180
Application range, outside	inch	1,57" – 15,8"	1,57" – 45,2"	1,57" – 85,8"
Application range, inside	mm	0 – 360	0 – 1110	0 – 2140
Application range, inside	inch	0" – 14,1"	0" – 43,7"	0" – 84,2"

ACCESSORIES



Order no.	Type	Application:	Product features	Description
4503510	844 Sp	• For the application and exact positioning of the Multimar to measure outer and inner dimension • Measuring arm pairs 844 Tma, 844 Tmi, 844 Tms, 844 Te with depth stops 844 Tw • Shoulder anvils 844 Ta, 844 Ti	Width: 20,000 mm ±1 µm height: 75 mm contact area: 32 mm	T-shaped gage blocks (20 mm) for measuring depth up to 40 mm
4503511	844 Sph	• To elevate the T-shaped gage blocks when using long measuring arms 844 Te, 844 Tms - Application for long measuring arm pairs 844 Te - Required number for: • 844 Te length 70 mm = 1 pair • 844 Te, 844 Tms length 100 mm = 2 pairs	Height: 30 mm con- tact area: 32 mm	Riser blocks 30 mm for extended measuring depths
4474080	844 Neb			Adjustment bridge (70 x 12 mm), for measuring range - (for 844 N)
4474081	844 Neb			Adjustment bridge (165 x 17 mm), for measuring range - (for 844 N)
4470095	844 em			Measuring jaw (60 x 9,5 x 9 mm), for measuring range - (for 844 N)
4503512	844 Sf	• For setting tasks in vertical position of the 844 S: • For application ranges 400 mm and 1150 mm	• L x B x H 200 x 200 x 25 mm • Weight 7,5 kg • incl. 2 table clamps and fastening screws	Base for vertical use, incl. screws and table clamp
4474082	844 Neb			Adjustment bridge (320 x 20 mm), for measuring range - (for 844 N)

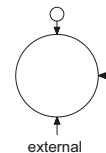
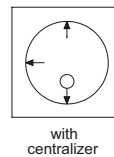
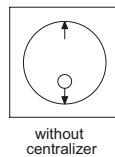


Multimar M36B–10 / M36B–20

Indicating measuring instrument for inner and outer diameters

FEATURES

- High measuring accuracy due to almost friction-free and backlash-free measuring insert carrier
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
 - Table surface can be tilted and clamped between 0° and 90°
 - Adjustable stroke of the movable probe
- Adjustable measuring force
- Package contains: set of jaws JW–9, 2 Mounting elements for shaft Ø 8 mm oder .375" to fit indicators and probes, instruction manual, excludes indicator
- Package contents: With 3-part measuring anvil holder set, type JW–69 (mounting bore for 5 mm shaft), including standard steel measuring anvils and operating instructions.



Application:

- For measuring inside and outside dimensions: diameters, lengths, distances between bores, offsets, etc.
- Measurement in bores, outside surfaces, recesses, centering shoulders, etc.
- Determination of roundness deviations by turning the part (with 3-point set-up)
- T-slots arranged in a T-shape for comparative 2-point measurements or self-centering 3-point measurements
- Measuring setup: 1 movable and 1 or 2 fixed measuring anvils with probe



TECHNICAL DATA

Order no.	2003200	2003201
Type	M36B–10	M36B–20
Application range, outside	mm 6,5 – 125	6,5 – 222
Application range, outside	inch .25 – 5"	.25 – 8.75"
Application range, inside	mm 20 – 130	20 – 197
Application range, inside	inch .75 – 5.1"	.75 – 7.75"
Probe path, adjustable	mm 6 – 10 mm	
Probe path, adjustable	inch .25 – .40"	
Measuring force, adjustable	N 0 – 35	

Order no.	Mounting for indicators and probes
2003200	Clamping elements (interchangeable) for Ø 8 mm or .375"
2003201	Clamping elements (interchangeable) for Ø 8 mm or .375"

ACCESSORIES

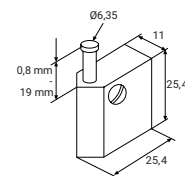
Order no.	Type	Quantity	unit	Description
4337870	1087 BRi			Digital indicator 12,5 mm / 0,0005 mm
4337860	1087 BR			Digital indicator 12,5 mm / 0,0005 mm
2220461	JW–69	Set (= 3 pcs.)		Set of measuring elements with measuring anvils made of hardened steel, for metric version M36B–10 / M36B–20
2225694	PS–276	Piece		Separate measuring anvils for JW–69M / 2220461 measuring elements, Made of hardened steel
2220455	JW–58	Set (= 3 pcs.)		Jaw set of measuring elements, with measuring anvils made of carbide
2225676	PS–226	Piece		Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide
4500050	844 Ta	Pair		Shoulder anvils, flat, hardened steel
4500055	844 Ti	Pair		Shoulder anvils, spherical, hardened steel
4503015	844 Tb	Piece		Measuring anvil with measuring blades, Platelet diameter 11 mm, Adjustment range 0 – 20 mm
4503114	844 Tc	Piece		Measuring anvil with measuring blades, Platelet length 20 mm, Adjustment range 0 – 20 mm
4503017	844 Td	Piece		Anvils with round measuring faces, Diameter 11 mm, Adjustment range 0 – 20 mm



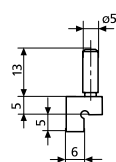
1087 BRi



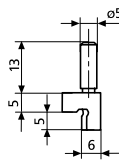
1087 BR



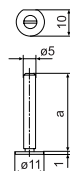
JW–9; JW–58; JW–69



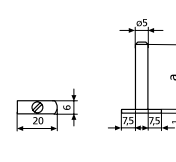
844 Ta



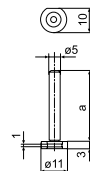
844 Ti



844 Tb



844 Tc



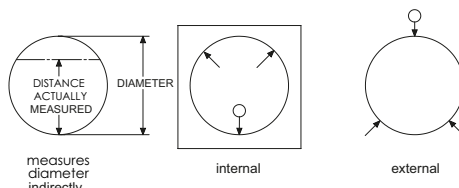
844 Td

Multimar M36B–9 / M36B–19

Indicating measuring instrument for inner and outer diameters

FEATURES

- High measuring accuracy due to almost friction-free and backlash-free measuring insert carrier
- Parallel spring-loaded system for repeatable measuring force
- User-friendly and ergonomic:
 - Table surface can be tilted and clamped between 0° and 90°
- Adjustable measuring force
- Package contains: set of jaws JW–9, instruction manual, excludes indicator



Application:

- For measuring internal and external diameters, narrow shoulders and recesses
- Determining form deviations by turning the workpiece
- V-shaped T-slots for self-centering 3-point detection on the diameter to be measured



TECHNICAL DATA

Order no.		2064506	2064863
Type		M36B–9	M36B–19
Application range, outside	mm	8 – 127	8 – 241
Application range, outside	inch	.312 – 5"	.312 – 9.5"
Application range, inside	mm	21 – 117	21 – 229
Application range, inside	inch	.812 – 4.625"	.812 – 9"
Probe path, adjustable	mm	6 – 10 mm	
Probe path, adjustable	inch	.25" – .40"	
Measuring force, adjustable	N	0 – 35	
Requirement for indicating device		Recommendation: Digital dial gage with factor function	

Order no.		Mounting for indicators and probes
2064506		Clamping elements (interchangeable) for Ø 8 mm or .375"
2064863		Clamping elements (interchangeable) for Ø 8 mm or .375"

ACCESSORIES

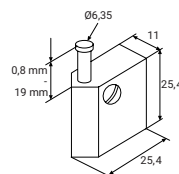
Order no.	Type	Quantity unit	Description
4311000	810 S		Mechanical dial indicator 10 mm / 0,01 mm
4333000	1004		Mechanical dial comparator 5 µm / ± 130 µm
4332000	1010		Mechanical dial comparator 0,01 mm / ± 0,25 mm
4337860	1087 BR		Digital indicator 12,5 mm / 0,0005 mm
4337870	1087 BRi		Digital indicator 12,5 mm / 0,0005 mm
2220455	JW–58	Set (= 3 pcs.)	Jaw set of measuring elements, with measuring anvils made of carbide
2225702	PS–55	Piece	Measuring anvil for JW–9, made of steel
2225676	PS–226	Piece	Separate measuring anvils for JW–58 / 2003211 measuring elements, made of carbide



810 S



1004



JW–9; JW–58; JW–69



1087 BRi



1087 BR

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

436

Parallel gage block sets, steel

MarGage 411 / 415

440

Parallel gage block sets, steel, for caliper calibration

MarGage 402 C / 404 C / 405 C / 406 C / 408 C / 409 C

441

Parallel gage block sets, ceramic

MarGage 418 C / 419 C

444

Parallel gage block sets, ceramic, protective gage blocks
and gage blocks for micrometer calibration

MarGage 417

446

Parallel gage blocks, individual, steel

MarGage 417 C

449

Parallel gage blocks, individual, ceramic

MarGage 420 / 424 / 421

452

Accessories for parallel gage blocks

Pin gages

MarGage 426 A / 426 M / 426 MS

456

Thread pin gages

Setting standards

MarGage 355 E

459

Setting rings

MarGage 390

462

Setting disks

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.
- Coefficient of linear expansion: $11,5 \times 10^{-6} \text{ K}^{-1}$
 - Package contains: wooden case with clear labeling strips, Mahr calibration certificate



TECHNICAL DATA

Order no.	Type	Nominal sizes	Increment	Grade	Tolerance class	Number	Quantity per set
		mm	mm				Pieces
4800400	402	1,005	-	0	0	1	32
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 30	10			3	
		50	-			1	
4800401	402	1,005	-	1	1	1	32
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 30	10			3	
		50	-			1	
4800402	402	1,005	-	2	2	1	32
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 30	10			3	
		50	-			1	
4800403DKS	402	1,005	-	K	K	1	32
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 30	10			3	
		50	-			1	
4800000	404	1,001 – 1,009	0,001	0	0	9	46
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 100	10			10	
4800001	404	1,001 – 1,009	0,001	1	1	9	46
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 100	10			10	
4800002	404	1,001 – 1,009	0,001	2	2	9	46
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 100	10			10	
4800003DKS	404	1,001 – 1,009	0,001	K	K	9	46
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 100	10			10	

ACCESSORIES

Order no.	Type	Description
4800130	424	Gage block maintenance accessories
4800140	421	Optical flat, Ø = 45 mm
4800142	423	Wooden tongs, single, to prevent heat transfer when handling gage blocks



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.

- Coefficient of linear expansion: $11,5 \times 10^{-6} \text{ K}^{-1}$
- Package contains: wooden case with clear labeling strips, Mahr calibration certificate



TECHNICAL DATA

Order no.	Type	Nominal sizes	Increment	Grade	Tolerance class	Number	Quantity per set
		mm	mm				Pieces
4800410	405	1,005	-	0	0	1	47
		1,01 – 1,19	0,01			19	
		1,2 – 1,9	0,1			8	
		1 – 9	1			9	
		10 – 100	10			10	
4800411	405	1,005	-	1	1	1	47
		1,01 – 1,19	0,01			19	
		1,2 – 1,9	0,1			8	
		1 – 9	1			9	
		10 – 100	10			10	
4800412	405	1,005	-	2	2	1	47
		1,01 – 1,19	0,01			19	
		1,2 – 1,9	0,1			8	
		1 – 9	1			9	
		10 – 100	10			10	
4800413DKS	405	1,005	-	K	K	1	47
		1,01 – 1,19	0,01			19	
		1,2 – 1,9	0,1			8	
		1 – 9	1			9	
		10 – 100	10			10	
4800010	406	0,5	-	0	0	1	87
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 9,5	0,5			18	
		10 – 100	10			10	
4800011	406	0,5	-	1	1	1	87
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 9,5	0,5			18	
		10 – 100	10			10	
4800012	406	0,5	-	2	2	1	87
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 9,5	0,5			18	
		10 – 100	10			10	
4800014DKS	406	0,5	-	K	K	1	87
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 9,5	0,5			18	
		10 – 100	10			10	

ACCESSORIES

Order no.	Type	Description
4800130	424	Gage block maintenance accessories
4800140	421	Optical flat, Ø = 45 mm
4800142	423	Wooden tongs, single, to prevent heat transfer when handling gage blocks



423



424

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.

- Coefficient of linear expansion: $11,5 \times 10^{-6} \text{ K}^{-1}$
- Package contains: wooden case with clear labeling strips, Mahr calibration certificate



TECHNICAL DATA

Order no.	Type	Nominal sizes	Increment	Grade	Tolerance class	Number	Quantity per set
		mm	mm				Pieces
4800020	408	0,5	-	0	0	1	111
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 24,5	0,5			48	
		25 – 100	25			4	
4800021	408	0,5	-	1	1	1	111
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 24,5	0,5			48	
		25 – 100	25			4	
4800022	408	0,5	-	2	2	1	111
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 24,5	0,5			48	
		25 – 100	25			4	
4800027DKS	408	0,5	-	K	K	1	111
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 24,5	0,5			48	
		25 – 100	25			4	
4800030	409	0,5	-	0	0	1	121
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1,6 – 1,9	0,1			4	
		1 – 24,5	0,5			48	
		30, 40, 60, 70, 80, 90	10			6	
		25, 50, 75, 100	25			4	
4800031	409	0,5	-	1	1	1	121
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1,6 – 1,9	0,1			4	
		1 – 24,5	0,5			48	
		30, 40, 60, 70, 80, 90	10			6	
		25, 50, 75, 100	25			4	
4800032	409	0,5	-	2	2	1	121
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1,6 – 1,9	0,1			4	
		1 – 24,5	0,5			48	
		30, 40, 60, 70, 80, 90	10			6	
		25, 50, 75, 100	25			4	
4800033DKS	409	0,5	-	K	K	1	121
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1,6 – 1,9	0,1			4	
		1 – 24,5	0,5			48	
		30, 40, 60, 70, 80, 90	10			6	
		25, 50, 75, 100	25			4	

ACCESSORIES

Order no.	Type	Description
4800130	424	Gage block maintenance accessories
4800140	421	Optical flat, Ø = 45 mm
4800142	423	Wooden tongs, single, to prevent heat transfer when handling gage blocks



423



424

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.

- Coefficient of linear expansion: $11,5 \times 10^{-6} \text{ K}^{-1}$
- Package contains: wooden case with clear labeling strips, Mahr calibration certificate



TECHNICAL DATA

Order no.	Type	Nominal sizes	Grade	Tolerance class	Number	Quantity per set
		mm				Pieces
4800425	412	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	0	0	8	8
				Includes Mahr calibration certificate		
4800426	412	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	1	1	8	8
				Includes Mahr calibration certificate		
4800427	412	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	2	2	8	8
				Includes Mahr calibration certificate		
4800430	413	600 / 700 / 800 / 900 / 1000	0	0	5	5
				Includes Mahr calibration certificate		
4800431	413	600 / 700 / 800 / 900 / 1000	1	1	5	5
				Includes Mahr calibration certificate		
4800432	413	600 / 700 / 800 / 900 / 1000	2	2	5	5
				Includes Mahr calibration certificate		
4800428DKS	412	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	K	K	8	8
				Includes DAkkS calibration certificate		
4800433DKS	413	600 / 700 / 800 / 900 / 1000	K	K	5	5
				Includes DAkkS calibration certificate		

ACCESSORIES

Order no.	Type	Description
4800140	421	Optical flat, Ø = 45 mm
4800180	421 P	Optical parallel, Ø = 30 mm
4800142	423	Wooden tongs, single, to prevent heat transfer when handling gage blocks
4800130	424	Gage block maintenance accessories



423



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.
- Coefficient of linear expansion: $11,5 \times 10^{-6} \text{ K}^{-1}$
 - Package contains: wooden case with clear labeling strips, Mahr calibration certificate



- Application:
- For testing and calibrating calipers



TECHNICAL DATA

Order no.	Type	Nominal sizes	Grade	Tolerance class	Number	Quantity per set
		mm				Pieces
4800343	411	30 / 41,3 / 131,4 / 243,5 / 281,2	1	1 Includes Mahr calibration certificate	5	5
4800344	411	30 / 41,3 / 131,4 / 243,5 / 281,2	2	2 Includes Mahr calibration certificate	5	5
4800339	415	30 / 41,3 / 131,4 / 243,5 / 281,2 / 481,1	1	1 Includes Mahr calibration certificate	6	6
4800340	415	30 / 41,3 / 131,4 / 243,5 / 281,2 / 481,1	2	2 Includes Mahr calibration certificate	6	6

MarGage 402 C / 404 C

Rectangular gage block set made of ceramic

FEATURES

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.

Advantages of ceramic:

- For use in metrology rooms as well as harsh workshop environment
- Practical properties: easy to slide, corrosion-free, no need to preserve, lightweight and very scratch-resistant
- Corrosion-resistant. Ceramic is also highly resistant to lyes, acids, oil, grinding water and other aggressive media
- Damage to measuring surfaces from scratches or outbreaks causes no burring. The slide function and dimensional stability are retained
- Extremely wear-resistant. The longest idle periods and highest stability of all gage block materials. Allows for significantly longer gage monitoring intervals
- Coefficient of expansion similar to that of steel. Therefore there are no usage restrictions, in manufacturing or in the laboratory, even in extreme temperature conditions
- Ceramic is antistatic, anti-magnetic and not electrically conductive
- Coefficient of linear expansion: $9,3 \times 10^{-6} \text{ K}^{-1}$
- Package contains: wooden case with clear labeling strips, Mahr calibration certificate



TECHNICAL DATA

Order no.	Type	Nominal sizes	Increment	Grade	Tolerance class	Number	Quantity per set
		mm	mm				Pieces
4800094DKS	402 C	1,005	-	K	K	1	32
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 30	10			3	
		50	-			1	
4800095	402 C	1,005	-	0	0	1	32
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 30	10			3	
		50	-			1	
4800096	402 C	1,005	-	1	1	1	32
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 30	10			3	
		50	-			1	
4800097	402 C	1,005	-	2	2	1	32
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 30	10			3	
		50	-			1	
4800008	404 C	1,001 – 1,009	0,001	0	0	9	46
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 100	10			10	
4800009	404 C	1,001 – 1,009	0,001	1	1	9	46
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 100	10			10	
4800004	404 C	1,001 – 1,009	0,001	2	2	9	46
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 100	10			10	
4800088DKS	404 C	1,001 – 1,009	0,001	K	K	9	46
		1,01 – 1,09	0,01			9	
		1,1 – 1,9	0,1			9	
		1 – 9	1			9	
		10 – 100	10			10	

ACCESSORIES

Order no.	Type	Description
4800130	424	Gage block maintenance accessories
4800140	421	Optical flat, Ø = 45 mm
4800142	423	Wooden tongs, single, to prevent heat transfer when handling gage blocks



MarGage 405 C / 406 C

Rectangular gage block set made of ceramic

FEATURES

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.

Advantages of ceramic:

- For use in metrology rooms as well as harsh workshop environment
- Practical properties: easy to slide, corrosion-free, no need to preserve, lightweight and very scratch-resistant
- Corrosion-resistant. Ceramic is also highly resistant to lyes, acids, oil, grinding water and other aggressive media
- Damage to measuring surfaces from scratches or outbreaks causes no burring. The slide function and dimensional stability are retained
- Extremely wear-resistant. The longest idle periods and highest stability of all gage block materials. Allows for significantly longer gage monitoring intervals
- Coefficient of expansion similar to that of steel. Therefore there are no usage restrictions, in manufacturing or in the laboratory, even in extreme temperature conditions
- Ceramic is antistatic, anti-magnetic and not electrically conductive
- Coefficient of linear expansion: $9,3 \times 10^{-6} \text{ K}^{-1}$
- Package contains: wooden case with clear labeling strips, Mahr calibration certificate



TECHNICAL DATA

Order no.	Type	Nominal sizes	Increment	Grade	Tolerance class	Number	Quantity per set
		mm	mm				Pieces
4800420	405 C	1,005	-	0	0	1	47
		1,01 – 1,19	0,01			19	
		1,2 – 1,9	0,1			8	
		1 – 9	1			9	
		10 – 100	10			10	
4800421	405 C	1,005	-	1	1	1	47
		1,01 – 1,19	0,01			19	
		1,2 – 1,9	0,1			8	
		1 – 9	1			9	
		10 – 100	10			10	
4800422	405 C	1,005	-	2	2	1	47
		1,01 – 1,19	0,01			19	
		1,2 – 1,9	0,1			8	
		1 – 9	1			9	
		10 – 100	10			10	
4800423DKS	405 C	1,005	-	K	K	1	47
		1,01 – 1,19	0,01			19	
		1,2 – 1,9	0,1			8	
		1 – 9	1			9	
		10 – 100	10			10	
4800018	406 C	0,5	-	0	0	1	87
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 9,5	0,5			18	
		10 – 100	10			10	
4800019	406 C	0,5	-	1	1	1	87
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 9,5	0,5			18	
		10 – 100	10			10	
4800017	406 C	0,5	-	2	2	1	87
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 9,5	0,5			18	
		10 – 100	10			10	
4800016DKS	406 C	0,5	-	K	K	1	87
		1,001 – 1,009	0,001			9	
		1,01 – 1,49	0,01			49	
		1 – 9,5	0,5			18	
		10 – 100	10			10	

ACCESSORIES

Order no.	Type	Description
4800130	424	Gage block maintenance accessories
4800140	421	Optical flat, Ø = 45 mm
4800142	423	Wooden tongs, single, to prevent heat transfer when handling gage blocks



423



424

MarGage 408 C / 409 C

Rectangular gage block set made of ceramic

FEATURES

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.

Advantages of ceramic:

- For use in metrology rooms as well as harsh workshop environment
- Practical properties: easy to slide, corrosion-free, no need to preserve, lightweight and very scratch-resistant
- Corrosion-resistant. Ceramic is also highly resistant to lyes, acids, oil, grinding water and other aggressive media
- Damage to measuring surfaces from scratches or outbreaks causes no burring. The slide function and dimensional stability are retained
- Extremely wear-resistant. The longest idle periods and highest stability of all gage block materials. Allows for significantly longer gage monitoring intervals
- Coefficient of expansion similar to that of steel. Therefore there are no usage restrictions, in manufacturing or in the laboratory, even in extreme temperature conditions
- Ceramic is antistatic, anti-magnetic and not electrically conductive
- Coefficient of linear expansion: $9,3 \times 10^{-6} \text{ K}^{-1}$
- Package contains: wooden case with clear labeling strips, Mahr calibration certificate



TECHNICAL DATA

Order no.	Type	Nominal sizes	Increment	Grade	Tolerance class	Number	Quantity per set
		mm	mm				Pieces
4800028	408 C	0,5 1,001 – 1,009 1,01 – 1,49 1 – 24,5 25 – 100	- 0,001 0,01 0,5 25	0	0 Includes Mahr calibration certificate	1 9 49 48 4	111
4800029	408 C	0,5 1,001 – 1,009 1,01 – 1,49 1 – 24,5 25 – 100	- 0,001 0,01 0,5 25	1	1 Includes Mahr calibration certificate	1 9 49 48 4	111
4800026	408 C	0,5 1,001 – 1,009 1,01 – 1,49 1 – 24,5 25 – 100	- 0,001 0,01 0,5 25	2	2 Includes Mahr calibration certificate	1 9 49 48 4	111
4800025DKS	408 C	0,5 1,001 – 1,009 1,01 – 1,49 1 – 24,5 25 – 100	- 0,001 0,01 0,5 25	K	K Includes DAkkS calibration certificate	1 9 49 48 4	111
4800038	409 C	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	0	0 Includes Mahr calibration certificate	1 9 49 4 48 6 4	121
4800039	409 C	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	1 Includes Mahr calibration certificate	1 9 49 4 48 6 4	121
4800037	409 C	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	2	2 Includes Mahr calibration certificate	1 9 49 4 48 6 4	121
4800036DKS	409 C	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	K	K Includes DAkkS calibration certificate	1 9 49 4 48 6 4	121

ACCESSORIES

Order no.	Type	Description
4800130	424	Gage block maintenance accessories
4800140	421	Optical flat, Ø = 45 mm
4800142	423	Wooden tongs, single, to prevent heat transfer when handling gage blocks



MarGage 418 C

Rectangular gage block set made of ceramic

FEATURES

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.

- Advantages of ceramic:**
- For use in metrology rooms as well as harsh workshop environment
 - Practical properties: easy to slide, corrosion-free, no need to preserve, lightweight and very scratch-resistant
 - Corrosion-resistant. Ceramic is also highly resistant to lyes, acids, oil, grinding water and other aggressive media
 - Damage to measuring surfaces from scratches or outbreaks causes no burring. The slide function and dimensional stability are retained
 - Extremely wear-resistant. The longest idle periods and highest stability of all gage block materials. Allows for significantly longer gage monitoring intervals
 - Coefficient of expansion similar to that of steel. Therefore there are no usage restrictions, in manufacturing or in the laboratory, even in extreme temperature conditions
 - Ceramic is antistatic, anti-magnetic and not electrically conductive
 - Coefficient of linear expansion: $9,3 \times 10^{-6} \text{ K}^{-1}$
 - Package contains: wooden case with clear labeling strips, Mahr calibration certificate

Application:

- Pair of protective gage blocks: As outer cover gage blocks where the same gage blocks are in frequent use



TECHNICAL DATA

Order no.	Type	Nominal sizes	Grade	Tolerance class	Number	Quantity per set
		mm				Pieces
4800085	418 C	2	0	0	2	2
				Includes Mahr calibration certificate		
4800086	418 C	2	1	1	2	2
				Includes Mahr calibration certificate		

MarGage 419 C

Rectangular gage block set made of ceramic

FEATURES

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.

Advantages of ceramic:

- For use in metrology rooms as well as harsh workshop environment
- Practical properties: easy to slide, corrosion-free, no need to preserve, lightweight and very scratch-resistant
- Corrosion-resistant. Ceramic is also highly resistant to lyes, acids, oil, grinding water and other aggressive media
- Damage to measuring surfaces from scratches or outbreaks causes no burring. The slide function and dimensional stability are retained
- Extremely wear-resistant. The longest idle periods and highest stability of all gage block materials. Allows for significantly longer gage monitoring intervals
- Coefficient of expansion similar to that of steel. Therefore there are no usage restrictions, in manufacturing or in the laboratory, even in extreme temperature conditions
- Ceramic is antistatic, anti-magnetic and not electrically conductive
- Coefficient of linear expansion: $9,3 \times 10^{-6} \text{ K}^{-1}$
- Package contains: wooden case with clear labeling strips, Mahr calibration certificate

Application:

- For testing and calibrating outside micrometers



TECHNICAL DATA

Order no.	Type	Nominal sizes	Grade	Tolerance class	Number	Quantity per set
4800090	419 C	mm	1	1	10	Pieces
		2,5 / 5,1 / 7,7 / 10,3 / 12,9 / 15,0 / 17,6 / 20,2 / 22,8 / 25 + 421 P, $\varnothing$ 30 mm				10

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
- Coefficient of linear expansion: $11,5 \times 10^{-6} \text{ K}^{-1}$



Nominal size mm	Order no.	Nominal size mm	Order no.	Nominal size mm	Order no.
0,5	4801009	1,28	4801056	12,5	4801104
0,55	4801173	1,29	4801057	13	4801105
0,6	4801174	1,3	4801058	13,5	4801106
0,65	4801175	1,31	4801059	14	4801107
0,7	4801176	1,32	4801060	14,5	4801108
0,75	4801177	1,33	4801061	15	4801109
0,8	4801178	1,34	4801062	15,5	4801110
0,85	4801179	1,35	4801063	16	4801111
0,9	4801180	1,36	4801064	16,5	4801112
0,95	4801181	1,37	4801065	17	4801113
1	4801019	1,38	4801066	17,5	4801114
1,0005	4801720	1,39	4801067	18	4801115
1,001	4801020	1,4	4801068	18,5	4801116
1,002	4801021	1,41	4801069	19	4801117
1,003	4801022	1,42	4801070	19,5	4801118
1,004	4801023	1,43	4801071	20	4801119
1,005	4801024	1,44	4801072	20,5	4801120
1,006	4801025	1,45	4801073	21	4801121
1,007	4801026	1,46	4801074	21,5	4801122
1,008	4801027	1,47	4801075	22	4801123
1,009	4801028	1,48	4801076	22,5	4801124
1,01	4801029	1,49	4801077	23	4801125
1,02	4801030	1,5	4801078	23,5	4801126
1,03	4801031	1,6	4801079	24	4801127
1,04	4801032	1,7	4801080	24,5	4801128
1,05	4801033	1,8	4801081	25	4801129
1,06	4801034	1,9	4801082	30	4801130
1,07	4801035	2	4801083	40	4801131
1,08	4801036	2,5	4801084	50	4801132
1,09	4801037	3	4801085	60	4801133
1,1	4801038	3,5	4801086	70	4801134
1,11	4801039	4	4801087	75	4801135
1,12	4801040	4,5	4801088	80	4801136
1,13	4801041	5	4801089	90	4801137
1,14	4801042	5,5	4801090	100	4801138
1,15	4801043	6	4801091	125	4801139
1,16	4801044	6,5	4801092	150	4801140
1,17	4801045	7	4801093	175	4801141
1,18	4801046	7,5	4801094	200	4801142
1,19	4801047	8	4801095	250	4801143
1,2	4801048	8,5	4801096	300	4801144
1,21	4801049	9	4801097	400	4801146
1,22	4801050	9,5	4801098	500	4801148
1,23	4801051	10	4801099	600	4801149
1,24	4801052	10,5	4801100	700	4801150
1,25	4801053	11	4801101	800	4801151
1,26	4801054	11,5	4801102	900	4801152
1,27	4801055	12	4801103	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
- Coefficient of linear expansion:
 $11,5 \times 10^{-6} \text{ K}^{-1}$



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
1,26	4801254
1,27	4801255
1,28	4801256
1,29	4801257

Nominal size mm	Order no.
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
10,5	4801300
11	4801301
11,5	4801302
12	4801303
12,5	4801304
13	4801305
13,5	4801306
14	4801307

Nominal size mm	Order no.
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
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
- Coefficient of linear expansion:
 $11,5 \times 10^{-6} \text{ K}^{-1}$



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
1,26	4801454
1,27	4801455
1,28	4801456
1,29	4801457

Nominal size mm	Order no.
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
10,5	4801500
11	4801501
11,5	4801502
12	4801503
12,5	4801504
13	4801505
13,5	4801506
14	4801507

Nominal size mm	Order no.
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
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

Advantages of ceramic:

- The outstanding properties of Mahr's ceramic parallel gage blocks offer enormous flexibility in day-to-day use. Ceramic end gages can be used without limitations both in inspection rooms and in the harsh workshop environment
- Easy to handle. No end gage material is easier to handle than ceramic: easy to slide, corrosion-free, no need for lubrication, lightweight and scratch-resistant
- Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Therefore sliding ability is retained
- 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. Ceramic is highly resistant to lyes, acids, oil, grinding water and other aggressive media, even without protective measures
- Coefficient of expansion similar to that of steel. Therefore there are no usage restrictions, in manufacturing or in the laboratory, even in extreme temperature conditions
- Non-magnetizable. Ceramic is antistatic, anti-magnetic and non-conductive. It does not attract dirt or dust and is suitable for use in the vicinity of magnetic fields
- Coefficient of linear expansion: $9,3 \times 10^{-6} \text{ K}^{-1}$



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

Nominal size mm	Order no.
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
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

Nominal size mm	Order no.
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

Advantages of ceramic:

- The outstanding properties of Mahr's ceramic parallel gage blocks offer enormous flexibility in day-to-day use. Ceramic end gages can be used without limitations both in inspection rooms and in the harsh workshop environment
- Easy to handle. No end gage material is easier to handle than ceramic: easy to slide, corrosion-free, no need for lubrication, lightweight and scratch-resistant
- Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Therefore sliding ability is retained
- 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. Ceramic is highly resistant to lyes, acids, oil, grinding water and other aggressive media, even without protective measures
- Coefficient of expansion similar to that of steel. Therefore there are no usage restrictions, in manufacturing or in the laboratory, even in extreme temperature conditions
- Non-magnetizable. Ceramic is antistatic, anti-magnetic and non-conductive. It does not attract dirt or dust and is suitable for use in the vicinity of magnetic fields
- Coefficient of linear expansion: $9,3 \times 10^{-6} \text{ K}^{-1}$



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

Nominal size mm	Order no.
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
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

Nominal size mm	Order no.
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
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

Advantages of ceramic:

- The outstanding properties of Mahr's ceramic parallel gage blocks offer enormous flexibility in day-to-day use. Ceramic end gages can be used without limitations both in inspection rooms and in the harsh workshop environment
- Easy to handle. No end gage material is easier to handle than ceramic: easy to slide, corrosion-free, no need for lubrication, lightweight and scratch-resistant
- Resistant to impact and breakage. Damage to measuring surfaces from scratches or to edges from impact causes minimal burring. Therefore sliding ability is retained
- 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. Ceramic is highly resistant to lyes, acids, oil, grinding water and other aggressive media, even without protective measures
- Coefficient of expansion similar to that of steel. Therefore there are no usage restrictions, in manufacturing or in the laboratory, even in extreme temperature conditions
- Non-magnetizable. Ceramic is antistatic, anti-magnetic and non-conductive. It does not attract dirt or dust and is suitable for use in the vicinity of magnetic fields
- Coefficient of linear expansion: $9,3 \times 10^{-6} \text{ K}^{-1}$



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

Nominal size mm	Order no.
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
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

Nominal size mm	Order no.
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
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 work-pieces and fixtures
- Package contains: wooden case



Application:

- To measure and calibrate setting gages and measuring instruments
- For scribing and marking

TECHNICAL DATA

Order no.	Type
4800100	420

ACCESSORIES

Order no.	Type	Description	Note (Accessory List)
4470095	844 em	Measuring jaw (60 x 9,5 x 9 mm), for measuring range - (for 844 N)	
4474080	844 Neb	Adjustment bridge (70 x 12 mm), for measuring range - (for 844 N)	
4474081	844 Neb	Adjustment bridge (165 x 17 mm), for measuring range - (for 844 N)	
4474082	844 Neb	Adjustment bridge (320 x 20 mm), for measuring range - (for 844 N)	
4800110	420 m	Hemispherical measuring jaws, approach 2 x 2 mm = 4mm	Standard accessory, included in the set
4800111	420 m	Hemispherical measuring jaws, approach 2 x 5 mm = 10 mm	Standard accessory, included in the set
4800112	420 a	Scriber tip	Standard accessory, included in the set
4800113	420 z	Centering point	Standard accessory, included in the set
4800114	420 f	Stand	Standard accessory, included in the set
4800120	420 h	Holder, Span width 0 – 70 mm	Standard accessory, included in the set
4800121	420 h	Holder, Span width 0 – 120 mm	Standard accessory, included in the set
4800122	420 h	Holder, Span width 100 – 220 mm	Standard accessory, included in the set
4800123	420 h	Holder, Span width 100 – 420 mm	Standard accessory, included in the set
4800124	420 h	Holder, Span width 400 – 820 mm	Standard accessory, included in the set



844 Neb



844 em

MarGage 424

Gage block 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 blocks
- Package contains: case



TECHNICAL DATA

Order no.	Type
4800130	424

ACCESSORIES

Order no.	Type	Description
4800142	423	Wooden tongs, single, to prevent heat transfer when handling gage blocks



423

MarGage 421

Optical flat

FEATURES

Made of very wear-resistant crystal hard glass

- Package contains: case

Application:

- 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



TECHNICAL DATA

Order no.	Type	Diameter	Thickness	Flatness deviation
		mm	mm	µm
4800135	421	100	20	0,1
4800140	421	45	11	0,1

MarGage 421 P

Optical parallel

FEATURES

- Made of very wear-resistant crystal hard glass
- Package contains: case

Application:

- For simultaneous testing of parallelism and flatness of plan measuring surfaces of outside micrometers and snap gages by interference method



TECHNICAL DATA

Order no.	Type	Diameter	Thickness	Flatness deviation	Parallelism deviation
4800180	421 P	mm	mm	µm	µm
		30	12	0,15	0,3

MarGage 421 PS

Optical parallels

FEATURES

- Made of very wear-resistant crystal hard glass
- Package contains: case



Application:

- 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)

TECHNICAL DATA

Order no.	Type	Mesuring span of indicator	Nominal size	Diameter	Flatness deviation	Parallelism deviation	Quantity per set
		mm	mm	mm	µm	µm	Pieces
4800185	421 PS	0–25 mm	12	30	0,15	0,3	4
4800186	421 PS	for 25–50 mm	25	30	0,15	0,3	4
4800187	421 PS	for 50–75 mm	50	30	0,15	0,5	4
4800188	421 PS	for 75–100 mm	75	30	0,15	0,5	4

MarGage 426 A

Thread pin gage

FEATURES

- To hang above the testpiece
- Set consists of 3 pin gages
- Manufacturing tolerance $\pm 0.5 \text{ m}$
- Pin gage length: 32 mm

Application:

- For determining pitch diameter of external threads according to the three-wire method



TECHNICAL DATA

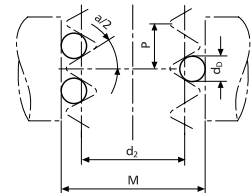
Order no.	Type	Diameter	Metric	Trapezoidoid	Whitworth range per 1 inch	UST heats per 1 inch	Manufacturing tolerance +/-
		mm	mm	mm	TPI	TPI	μm
4821000	426 A	0,17	0,25 / 0,3				0,5
4821001	426 A	0,195				80	0,5
4821002	426 A	0,22	0,35			72	0,5
4821003	426 A	0,25	0,4			64	0,5
4821004	426 A	0,29	0,45 / 0,5			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	3	10 / 9	10 / 9	0,5
4821015	426 A	2,05	3 / 3,5	4	8 / 7	8 / 7	0,5
4821016	426 A	2,55	4 / 4,5	5	6	6	0,5
4821017	426 A	3,2	5 / 5,5	6	5 / 4,5	5 / 4,5	0,5
4821018	426 A	4	6	7	4 / 3,5	4	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 outside 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, the retainer ring can be locked yet the rotating spindle can still rotate
- Pin gages are hardened and lapped. Freely floating in holder to allow proper positioning and contact with thread flanks
- Manufacturing tolerance ± 0.5 mm
- Mounting bore 6.35 mm = $1/4"$, 8 mm on request)
- For threads with outer diameter up to 95 mm



TECHNICAL DATA

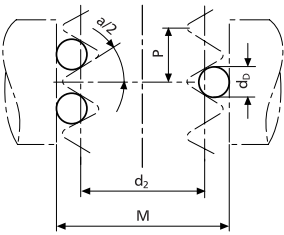
Order no.	Type	Diameter	Metric	Trapezoid	Whitworth range per 1 inch	UST heats per 1 inch	Mounting hole
		mm	mm	mm	TPI	TPI	
4820010	426 M	0,17	0,25 / 0,3				7.5 mm
4820011	426 M	0,195				80	7.5 mm
4820012	426 M	0,22	0,35			72	7.5 mm
4820013	426 M	0,25	0,4			64	7.5 mm
4820014	426 M	0,29	0,45 / 0,5			56	7.5 mm
4820015	426 M	0,335	0,6			48	7.5 mm
4820016	426 M	0,39			40	44 / 40	7.5 mm
4820017	426 M	0,455	0,7 / 0,75 / 0,8		32	36	7.5 mm
4820018	426 M	0,53			28	32 / 28	7.5 mm
4820019	426 M	0,62	1		26 / 24	24	7.5 mm
4820020	426 M	0,725	1,25		22 / 20	20	7.5 mm
4820021	426 M	0,895	1,5		19 / 18 / 16	18	7.5 mm
4820022	426 M	1,1	1,75		14	16 / 14 / 13	7.5 mm
4820023	426 M	1,35	2		12 / 11	12 / 11	7.5 mm
4820024	426 M	1,65	2,5	3	10 / 9	10 / 9	7.5 mm
4820025	426 M	2,05	3 / 3,5	4	8 / 7	8 / 7	7.5 mm
4820026	426 M	2,55	4 / 4,5	5	6	6	7.5 mm
4820027	426 M	3,2	5 / 5,5	6	5 / 4,5	5 / 4,5	7.5 mm
4820028	426 M	4	6	7	4 / 3,5	4	7.5 mm
4820131	426 M	0,25	0,4			64	6.5 mm
4820132	426 M	0,17	0,25 / 0,3				6.5 mm
4820133	426 M	0,22	0,35			72	6.5 mm
4820134	426 M	0,29	0,45 / 0,5			56	6.5 mm
4820135	426 M	0,335	0,6			48	6.5 mm
4820137	426 M	0,455	0,7 / 0,75 / 0,8		32	36	6.5 mm
4820139	426 M	0,62	1		26 / 24	24	6.5 mm
4820140	426 M	0,725	1,25		22 / 20	20	6.5 mm
4820141	426 M	0,895	1,5		19 / 18 / 16	18	6.5 mm
4820142	426 M	1,1	1,75		14	16 / 14 / 13	6.5 mm
4820143	426 M	1,35	2		12 / 11	12 / 11	6.5 mm
4820144	426 M	1,65	2,5	3	10 / 9	10 / 9	6.5 mm
4820145	426 M	2,05	3 / 3,5	4	8 / 7	8 / 7	6.5 mm
4820146	426 M	2,55	4 / 4,5	5	6	6	6.5 mm
4820147	426 M	3,2	5 / 5,5	6	5 / 4,5	5 / 4,5	6.5 mm
4820149	426 M	0,195				80	6.5 mm
4820150	426 M	0,39				44 / 40	6.5 mm
4820151	426 M	0,53				32 / 28	6.5 mm
4820152	426 M	4	6	7			6.5 mm

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

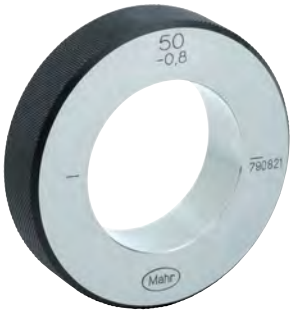
Order no.	Type	Mounting hole
4820000	426 MS	7,5 mm
4820002	426 MS	8,0 mm
4820003	426 MS	6,5 mm
4820004	426 MS	6,35 mm

MarGage 355 E

Setting ring with tolerance class

FEATURES

- Wear-resistant special gage steel, hardened and lapped
- Structural dimensions: DIN 2250, version C
- Manufacturing tolerance: DIN 2250 (JS4)
- Uncertainty of the actual size: 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
47	4710067
48	4710068
49	4710069
50	4710070
51	4710071

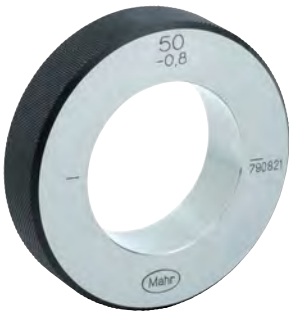
Diameter mm	Order no.
52	4710072
53	4710073
54	4710074
55	4710075
56	4710076
57	4710077
58	4710078
59	4710079
60	4710080
61	4710081
62	4710082
63	4710083
64	4710084
65	4710085
66	4710086
67	4710087
68	4710088
69	4710089
70	4710090
71	4710091
72	4710092
73	4710093
74	4710094
75	4710095
76	4710096
77	4710097
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
93	4710113
94	4710114
95	4710115
96	4710116
97	4710117
98	4710118
99	4710119
100	4710120
125	4710121
175	4710122

MarGage 355 E

Setting ring with tolerance class

FEATURES

- Wear-resistant special gage steel.
Hardened and lapped.
- Structural dimensions: DIN 2250,
version C
- Manufacturing tolerance: DIN
2250 (JS4)
- Uncertainty of the actual size:
1/2 IT 1
- Gradation 1 mm
Please specify diameter when
placing order



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
175 – 180	4714216
181 – 185	4714217
186 – 190	4714218
191 – 195	4714219
196 – 200	4714220

MarGage 355 E

Setting ring with special individual diameter with tolerance class

FEATURES

- Wear-resistant special gage steel.
Hardened and lapped
- Structural dimensions: DIN 2250, version C
- Manufacturing tolerance: DIN 2250 (JS4)
- Uncertainty of the actual size: 1/2 IT 1
- Gradation 0.001 mm
Please specify diameter when placing order



Ø mm	Order no.
1 – 1,8	4732600
1,801 – 2,999	4732641
3,001 – 4,999	4732642
5,001 – 9,999	4732635
10,001 – 14,999	4732602
15,001 – 19,999	4732603
20,001 – 24,999	4732604
25,001 – 31,999	4732605
32,001 – 34,999	4732606
35,001 – 39,999	4732607
40,001 – 44,999	4732608
45,001 – 49,999	4732609
50,001 – 54,999	4732610
55,001 – 59,999	4732611
60,001 – 64,999	4732612
65,001 – 69,999	4732613
70,001 – 74,999	4732614
75,001 – 79,999	4732615
80,001 – 84,999	4732616
85,001 – 89,999	4732617
90,001 – 94,999	4732618
95,001 – 99,999	4732619
100,001 – 104,999	4732620
105,001 – 109,999	4732636
110,001 – 114,999	4732621
115,001 – 119,999	4732637
120,001 – 124,999	4732622
125,001 – 129,999	4732638
130,001 – 134,999	4732623
135,001 – 139,999	4732639
140,001 – 144,999	4732624
145,001 – 149,999	4732640
150,001 – 154,999	4732625
155,001 – 159,999	4732626
160,001 – 164,999	4732627
165,001 – 169,999	4732628
170,001 – 174,999	4732629
175,001 – 179,999	4732630
180,001 – 184,999	4732631
185,001 – 189,999	4732632
190,001 – 194,999	4732633
195,001 – 199,999	4732634

MarGage 390

Setting disc with tolerance class

FEATURES

- Wear-resistant special gage steel.
Hardened and lapped.
- Manufacturing tolerance:
 $\pm 1/2$ IT 2
- Uncertainty of the actual size:
 $1/2$ IT 1



Diameter mm	Order no.
10	4717030
11	4717031
12	4717032
13	4717033
14	4717034
15	4717035
16	4717036
17	4717037
18	4717038
19	4717039
20	4717040
21	4717041
22	4717042
23	4717043
24	4717044
25	4717045
26	4717046
27	4717047
28	4717048
29	4717049
30	4717050
31	4717051
32	4717052
33	4717053
34	4717054
35	4717055
36	4717056
37	4717057
38	4717058
39	4717059
40	4717060
41	4717061
42	4717062
43	4717063
44	4717064
45	4717065
46	4717066
47	4717067
48	4717068
49	4717069
50	4717070
51	4717071
52	4717072
53	4717073
54	4717074
55	4717075

Diameter mm	Order no.
56	4717076
57	4717077
58	4717078
59	4717079
60	4717080
61	4717081
62	4717082
63	4717083
64	4717084
65	4717085
66	4717086
67	4717087
68	4717088
69	4717089
70	4717090
71	4717091
72	4717092
73	4717093
74	4717094
75	4717095
76	4717096
77	4717097
78	4717098
79	4717099
80	4717100
81	4717101
82	4717102
83	4717103
84	4717104
85	4717105
86	4717106
87	4717107
88	4717108
89	4717109
90	4717110
91	4717111
92	4717112
93	4717113
94	4717114
95	4717115
96	4717116
97	4717117
98	4717118
99	4717119
100	4717120

MarGage 390

Setting disc with tolerance class

FEATURES

- Wear-resistant special gage steel.
Hardened and lapped.
- Manufacturing tolerance:
 $\pm 1/2$ IT 2
- Uncertainty of the actual size:
 $1/2$ IT 1
- Gradation 0.001 mm
Please specify diameter when
placing order



Ø mm	Order no.
10,001 – 13,999	4719900
14,001 – 19,999	4719901
20,001 – 29,999	4719902
30,001 – 39,999	4719903
40,001 – 49,999	4719904
50,001 – 59,999	4719905
60,001 – 69,999	4719906
70,001 – 79,999	4719907
80,001 – 89,999	4719908
90,001 – 99,999	4719909

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.



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Digimar 817 CLT: Easy measurements using intuitive touch control



Best connection for secure data

Data can be transferred wirelessly or via USB cable via the MarConnect interface. Quickly print out a series of measurements? The Star Micronics SM-L200 Bluetooth® printer is available for this purpose. Simply choose between complete measuring records in PDF format or save your measuring records as a TXT file.



Interfaces for dial indicators

An interface integrated in the slide enables the error-free measurement of the perpendicularity and straightness using the new Millimes 2000/2001W dial comparators.



Ergonomics that can be measured

Ergonomics means that the methods, processes, and arrangement are designed for people and not the other way around. This is exactly what the new Digimar 817 CLT stands for: The simple moving and scrolling functions of the touchscreen work just like smartphones and tablets. The keys on the display are already arranged in such a way that frequently used functions are particularly easy to access. The measurements on the measuring slide can easily be started by hand via the touch display, the thumbwheel with integrated arrow keys, or using Quick mode. Two push buttons to actuate the air bearings are integrated into the handle enabling the device to be guided safely and sensitively by left- and right-handed operators. Regardless of whether you prefer to sit or stand while working, the touch display is always at eye level and can be rotated and tilted as required. This ensures the measuring process is particularly comfortable and relaxed.





Simple touch measurement

Intuitive operation via large, clearly defined keys to ensure the safe completion on measurements, setting and calculation of functions, and the creation of measuring programs via Drag & Drop.

Pivoting display

10-inch touch panel with turn/tilt joint so that it can be set individually for the work position, height of the operator, and lighting conditions.



Easy handling

The thumbwheel can be used to move the measuring slide quickly and easily start the measurement. The quick measurement function keys also automatically detect surfaces and bores.



Best ergonomics

Ergonomic handles on both sides have an integrated operating key for the air bearing, ensuring the device can be moved accurately and effortlessly on the measuring plate.



Digimar 817 CLT / 816 CLT

Device comparison



Order no.		4429700	4429701	4429702	4429630	4429631
Type		817 CLT			816 CLT	
Function		• Contacting from below/above • Bar width or groove spacing incl. bar or groove center • Bore or shaft diameter incl. bore or shaft center • Reversal point bores (top or bottom) • Reversal point shaft (top or bottom) • Calculate distances or symmetry • Dynamic measurement functions • Right angle measurement • Straightness measurement • Measurement in 2D mode • Measurement programs • Measurement data processing			• Contacting from below/above, • Bar width or groove spacing incl. bar or groove center • Bore or shaft diameter incl. bore or shaft center • Reversal point bores (top or bottom) • Reversal point shaft (top or bottom) • Calculate distances or symmetry • Dynamic measurement functions • Right angle measurement • Straightness measurement • Measurement in 1D mode • Measurement programs • Measurement data processing	
Mesuring span of indicator	mm	0 – 350 mm	0 – 600 mm	0 – 1000 mm	0 – 350 mm	0 – 600 mm
Resolution	mm	0,0001, 0,0005, 0,001, 0,005, 0,01				
Error limit	µm	(1,8 + L/600) L in mm			(2,0 + L/400) L in mm	
Repeatability planes	µm	0,5			1	
Repeatability bores	µm	1			2	
Perpendicularity error	µm	5	6	10	5	8
Data interface	-	3x USB 2.0, wireless				
Drive	-	motorized				

Digimar 814 C-N / 814 C-G / 814 SR

Device comparison



4426580		4426581		4426582		4426583		4426100		4426101		4426104	
814 C-N				814 C-G				814 SR					
• Contacting from below/above • Bar width or groove spacing incl. bar or groove center • Bore or shaft diameter incl. bore or shaft center • Reversal point bores (top or bottom) • Reversal point shaft (top or bottom) • Dynamic measurement 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					
0 – 300 mm		0 – 600 mm		0 – 300 mm		0 – 600 mm		0 – 350 mm		0 – 600 mm		0 – 980 mm	
		0,001, 0,01								0,01			
15		25		15		25		40		50		70	
		10						-		-		-	
-		-		-		-		-		-		-	
-		-		-		-		-		-		-	
USB								Opto RS– 232C, Digimatic, USB					
manual													

Digimar 817 CLT

Height gage



FUNCTIONS

- Contacting from below/above
- Bar width or groove spacing incl. bar or groove center
- Bore or shaft diameter incl. bore or shaft center
- Reversal point bores (top or bottom)
- Reversal point shaft (top or bottom)
- Calculate distances or symmetry
- Dynamic measurement functions
- Right angle measurement
- Straightness measurement
- Measurement in 2D mode
- Measurement programs
- Measurement data processing

FEATURES

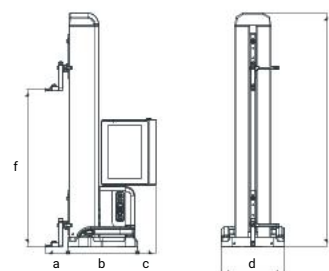
- Large and clear touch display with backlight
- Operator guidance via self-explanatory icons
- Operator guidance in several languages
- Possibility to set additional zero points on workpiece
- Additional measuring device can be connected with MarConnect USB interface
- Future-proof due to update capability
- Automatic stand-by circuit
- Adjustable auto-off function, without loss of measured values
- Excellent measuring accuracy and reliability due to optical incremental measuring system with double reading head
- Dynamic probe system for high repeatability
- Air bearing system for easy, jerk-free displacement
- Measuring head guided in precision ball bearings
- Simple measuring sequences due to motorized measuring slide
- Probe constant remains after switch-off
- Integrated rechargeable battery with high operating time for mains-independent measuring
- Temperature compensation via int. temperature sensor
- Energy supply: Integrated rechargeable battery (up to 14 h) or via power supply unit
- Battery type: Rechargeable Li-Ion battery 7.2 V
- Data interface: 3x USB 2.0, wireless
- Package contains: height measuring instrument incl. operating and display unit, carrier 817h1, probe K6/51, setting block 817 eb, USB cable, instruction manual, power source, protection cover, Calibration certificate
- Software: MarCom 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.		4429700	4429701	4429702
Type		817 CLT		
Mesuring span of indicator	mm	0 – 350 mm	0 – 600 mm	0 – 1000 mm
Mesuring span of indicator	inch	0 – 14"	0 – 24"	0 – 40"
Application range from	mm	170		
Application range up to	mm	520	770	1170
Error limit	µm	(1.8 + L/600) L in mm		
Repeatability planes	µm	0,5		
Repeatability bores	µm	1		
Perpendicularity error	µm	5	6	10
Measuring force	N	1.0 +/- 0.2 N		
Operating time max.	h	16		
Data interface		3x USB 2.0, wireless		
Product weight	kg	28,00	31,00	35,00

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4429700	89	278	77	255	688	356
4429701	89	278	77	255	938	610
4429702	89	278	77	255	1338	1016



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
6910271	DP-B1	Set consisting of Star Micronics SM-L200 Bluetooth® printer and USB wireless adapter
4221525	107 G	Surface plate made from granite, 1000 x 630 mm
4221573	107 Ug	Open underframe with edge protection, 1000 x 630 mm
4221526	107 G	Surface plate made from granite, 1200 x 800 mm
4221574	107 Ug	Open underframe with edge protection, 1200 x 800 mm



i-Stick



107 Ug

Digimar 816 CLT

Height measuring instrument



FUNCTIONS

- Contacting from below/above
- Bar width or groove spacing incl. bar or groove center
- Bore or shaft diameter incl. bore or shaft center
- Reversal point bores (top or bottom)
- Reversal point shaft (top or bottom)
- Calculate distances or symmetry
- Dynamic measurement functions
- Right angle measurement
- Straightness measurement
- Measurement in 1D mode
- Measurement programs
- Measurement data processing

FEATURES

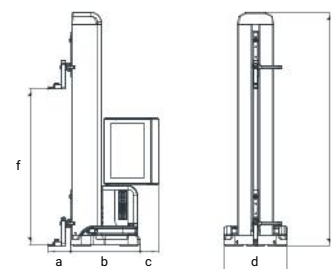
- Large and clearly defined touch display with backlighting
- User guide with self-explanatory icons
- Multilingual user guidance
- Option of setting additional zero points on the workpiece
- Additional measuring instrument can be connected via MarConnect USB port
- Future-proof thanks to software updates
- Automatic activation of standby mode
- Selectable auto-off function, without loss of measured values
- Excellent measuring accuracy and reliability due to the optical incremental measuring system with the double reader head
- Dynamic probe system enabling high repeatability
- Air bearing system for light and smooth movement
- Measuring head guided in precision ball bearings
- Motorized measuring slide simplifies measurement runs
- Probe constant remains after the instrument is switched off
- Integrated rechargeable battery with a long operating life for mains-independent measurement
- Temperature compensation via integrated temperature sensor
- Energy supply: Integrated rechargeable battery (up to 14 h) or via power supply unit
- Battery type: Rechargeable Li-Ion battery 7.2 V
- Data interface: 3x USB 2.0, wireless
- Package contains: height measuring instrument incl. operating and display unit, carrier 817h1, probe K6/51, setting block 817 eb, USB cable, instruction manual, power source, protection cover, Calibration certificate
- Software: MarCom 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.		4429630	4429631
Type		816 CLT	
Measuring span of indicator	mm	0 – 350 mm	0 – 600 mm
Measuring span of indicator	inch	0 – 14"	0 – 24"
Application range from	mm	170	
Application range up to	mm	520	770
Resolution	mm	0,0001, 0,0005, 0,001, 0,005, 0,01	
Resolution	inch	.001", .0005", .0001", .00005", .00001"	
Error limit	µm	(2.0 + L/400) L in mm	
Repeatability planes	µm	1	
Repeatability bores	µm	2	
Perpendicularity error	µm	5	8
Standard		Factory standard	
Measuring force	N	1.0 +/- 0.2 N	
Operating time max.	h	14	
Data interface		3x USB 2.0, wireless	
Product weight	kg	22,00	26,00

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4429630	89	278	77	255	688	356
4429631	89	278	77	255	938	610



ACCESSORIES

Order no.	Type	Description
4102220	i-Stick	Wireless receiver for measuring instruments with integrated wireless
6910271	DP-B1	Set consisting of Star Micronics SM-L200 Bluetooth® printer and USB wireless adapter
4221525	107 G	Surface plate made from granite, 1000 x 630 mm
4221573	107 Ug	Open underframe with edge protection, 1000 x 630 mm
4221526	107 G	Surface plate made from granite, 1200 x 800 mm
4221574	107 Ug	Open underframe with edge protection, 1200 x 800 mm



i-Stick



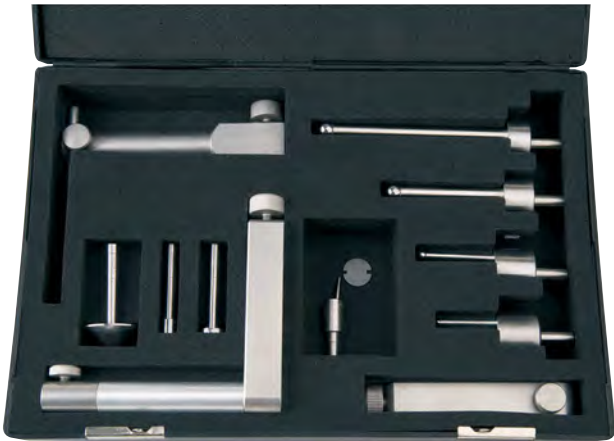
107 Ug

Digimar 817 ts1

Probe set

FEATURES

- Large accessory kit
- 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 M2 dial test indicator measuring anvils
- Carrier incl. 4 spherical probes with shaft holder Ø 8 mm
- Package contains: case

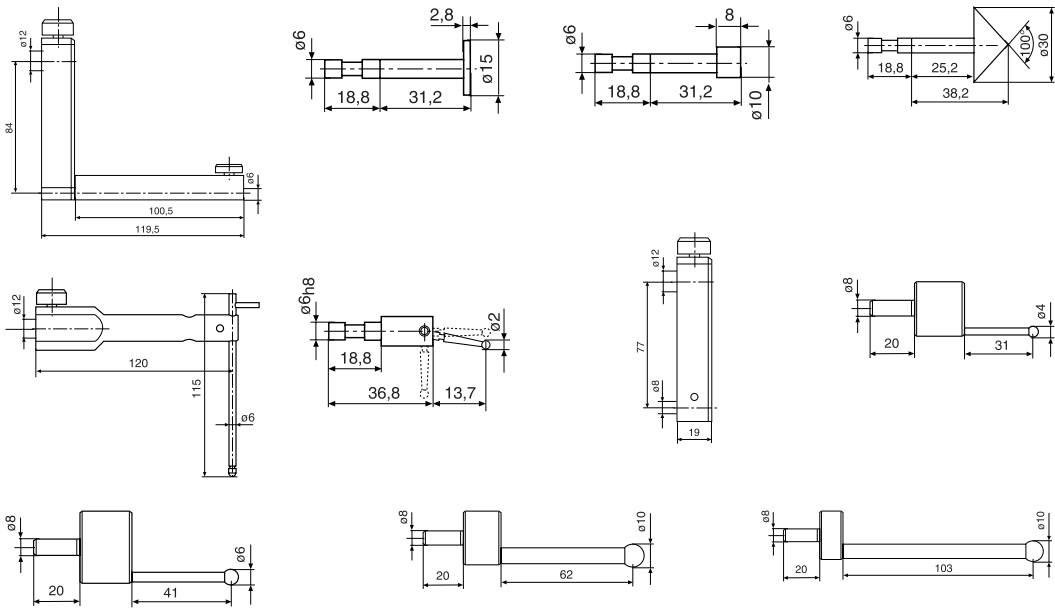


TECHNICAL DATA

Order no.	Type
4429019	817 ts1

COMPONENTS INCLUDED IN SET

Order no.	Type	Description
4429219	817 h2	Probe carriers, Mounting hole 6 mm, a = 100,5 mm, b = 119,5 mm, c = 84 mm
4429226	S15/31,2	Disc probe ø 15 mm
4429227	Z10/31,2	Cylindrical probe ø 10 mm
4429228	MKe 30	Taper probe
4429221	TMT 120	Depth probe incl. holder
4429256	KM 2	Probe with M2 threads for 3 styli positions (0°/10°/90°), incl. styli 800 ts ø 2,0 mm
4429220	817 h4	Probe carriers 817 CLM, Mounting hole 8 mm
7023813	K 4/30	Spherical anvil, ø 4,0 mm
7023816	K 6/40	Spherical anvil, ø 6 mm
7023810	K 10/60	Spherical anvil, ø 10,0 mm
7023615	K 10/100	Spherical anvil, ø 10,0 mm

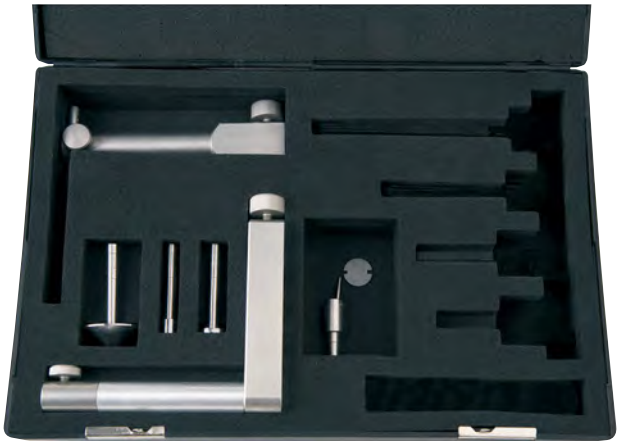


Digimar 817 ts2

Probe set

FEATURES

- Small accessory kit
- 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 M2 dial test indicator measuring anvils
- Package contains: case

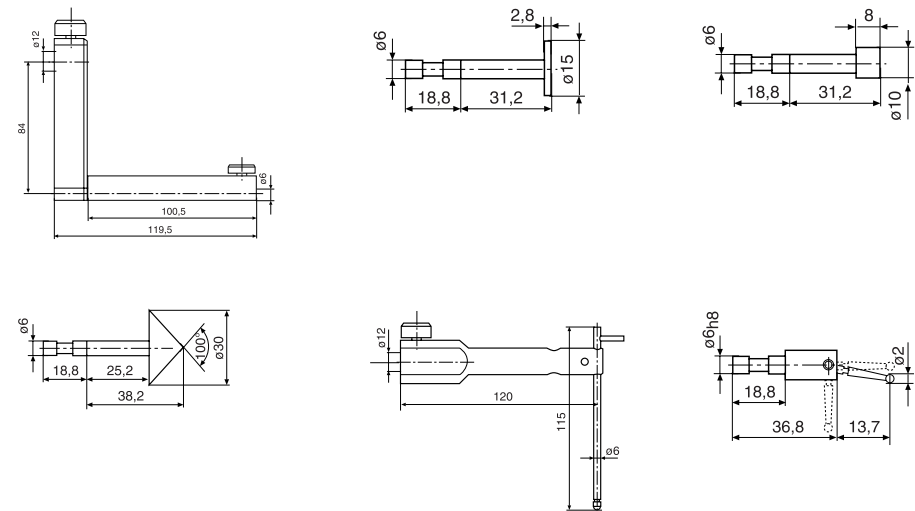


TECHNICAL DATA

Order no.	Type
4429018	817 ts2

COMPONENTS INCLUDED IN SET

Order no.	Type	Description
4429219	817 h2	Probe carriers, Mounting hole 6 mm, a = 100,5 mm, b = 119,5 mm, c = 84 mm
4429226	S15/31,2	Disc probe $\varnothing$ 15 mm
4429227	Z10/31,2	Cylindrical probe $\varnothing$ 10 mm
4429228	MKe 30	Taper probe
4429221	TMT 120	Depth probe incl. holder
4429256	KM 2	Probe with M2 threads for 3 styli positions ($0^{\circ}/10^{\circ}/90^{\circ}$), incl. styli 800 ts $\varnothing$ 2,0 mm



Digimar 817 ts3

Universal probe set

FEATURES

- Accessory kit for small parts and delicate grooves, recesses and bores
- in a practical wooden case
- suitable for 817 h4 carriers with 8 mm mounting bore

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

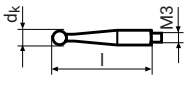
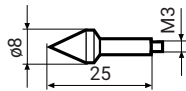
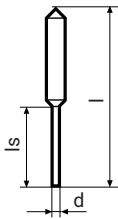
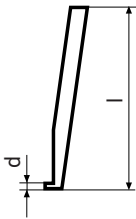
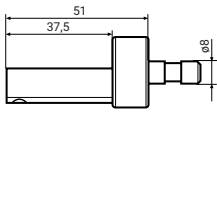


TECHNICAL DATA

Order no.	Type
7034000	817 ts3

COMPONENTS INCLUDED IN SET

Order no.	Type	Description
3015917	Gk/8	Probe carrier
3015918	TS 0,5/78	Measuring crook, d = 0,5 mm, l = 78 mm
3015919	T 1,2/75	Probe pin/tip, d = 1,2 mm, l = 75 mm, ls = 15,5 mm
3015920	MKe 8	Taper probe
3022000	K3/24	Spherical probe, d _k = 3,0 mm, l = 24 mm
3022001	K2/24	Spherical probe, d _k = 2,0 mm, l = 24 mm
3022002	K1/24	Spherical probe, d _k = 1,0 mm, l = 24 mm
3015888	V/M2,5	Extension M3 - M2,5, d = 4 mm, l = 20 mm
3015921	V/M3	Extension M3 - M3, d = 4 mm, l = 20 mm



Digimar 817 h1 / 817 h2 / 817 h5

Probe carriers

FEATURES

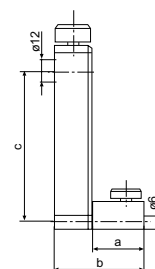
- Carrier for probes with 6 mm holding shaft
- Used for measurements at increased measuring depth (817 h2)
- Pivoting (817 h5) e.g. for aligning a cylindrical measuring probe



TECHNICAL DATA

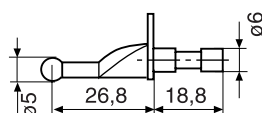
Order no.	Type
4429154	817 h1
4429219	817 h2
4429454	817 h5

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

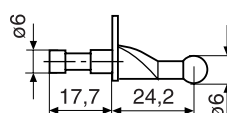


ACCESSORIES

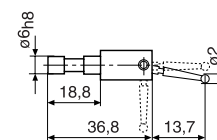
Order no.	Type	Description
4301865	800 a6	Mounting shaft $\varnothing$ 6 mm
4429158	K5/51	Spherical probe, $\varnothing$ 5,0 mm
4429226	S15/31,2	Disc probe $\varnothing$ 15 mm
4429227	Z10/31,2	Cylindrical probe $\varnothing$ 10 mm
4429228	MKe 30	Taper probe
4429254	K6/51	Spherical probe for 817 CLM, $\varnothing$ 6 mm
4429256	KM 2	Probe with M2 threads for 3 styli positions ($0^\circ/10^\circ/90^\circ$), incl. styli 800 ts $\varnothing$ 2,0 mm



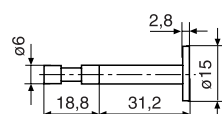
K5/51



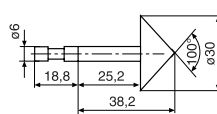
K6/51



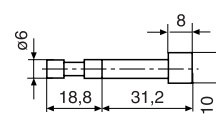
KM 2



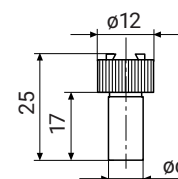
S15/31,2



MKe 30



Z10/31,2



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

Digimar 817 h4

Probe carriers 817 CLM

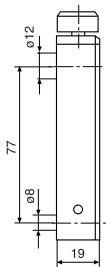
FEATURES

- 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



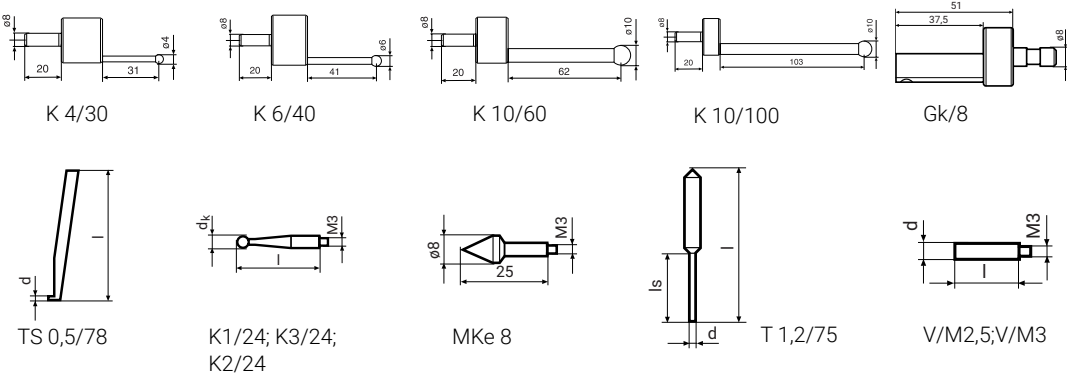
TECHNICAL DATA

Order no.	Type	Mounting hole
4429220	817 h4	8 mm



ACCESSORIES

Order no.	Type	Description
3015888	V/M2,5	Extension M3 - M2,5, d = 4 mm, l = 20 mm
3015917	Gk/8	Probe carrier
3015918	TS 0,5/78	Measuring crook, d = 0,5 mm, l = 78 mm
3015919	T 1,2/75	Probe pin/tip, d = 1,2 mm, l = 75 mm, ls = 15,5 mm
3015920	MKe 8	Taper probe
3015921	V/M3	Extension M3 - M3, d = 4 mm, l = 20 mm
3022000	K3/24	Spherical probe, d _k = 3,0 mm, l = 24 mm
3022001	K2/24	Spherical probe, d _k = 2,0 mm, l = 24 mm
3022002	K1/24	Spherical probe, d _k = 1,0 mm, l = 24 mm
7023615	K 10/100	Spherical anvil, ø 10,0 mm
7023810	K 10/60	Spherical anvil, ø 10,0 mm
7023813	K 4/30	Spherical anvil, ø 4,0 mm
7023816	K 6/40	Spherical anvil, ø 6 mm

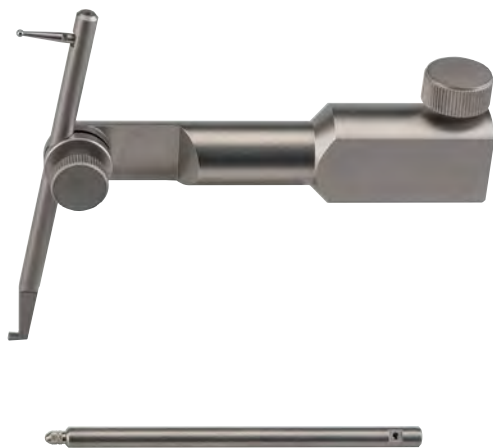


Digimar TMT 120 / TMT 120 S

Depth probe incl. 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
- Pivotal (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)

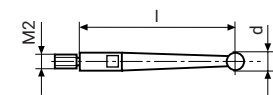


TECHNICAL DATA

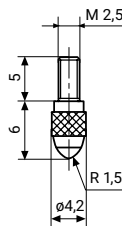
Order no.	Type
4429221	TMT 120
4429421	TMT 120 S

ACCESSORIES

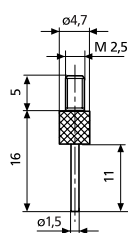
Order no.	Type	Description
4305870	800 ts	Stylus $\varnothing$ 1,0 mm, carbide, l = 14,5 mm
4305850	800 ts	Stylus $\varnothing$ 2,0 mm, carbide, l = 14,5 mm
4305871	800 ts	Stylus $\varnothing$ 3,0 mm, carbide, l = 14,5 mm
4309051	800 tsr	Stylus $\varnothing$ 2,0 mm, ruby, l = 14,5 mm
4360001	901	Standard contact point, steel, r = 1,5 mm
4360002	901 H	Standard contact point, carbide, r = 1,5 mm
4360003	901 R	Standard contact point, ruby, r = 1,5 mm
4360241	911 H2	Pin contact point, carbide, l = 11 mm, Measuring surface $\varnothing$ 1,5 mm



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



901 H; 901; 901 R



911 H2; 911

Digimar 817 h3

Carrier for checking perpendicularity

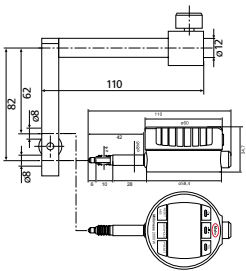
FEATURES

- Carrier for perpendicularity measurement
- Suitable for analog and digital dial indicators
- Ideal with indicator 1086 R



TECHNICAL DATA

Bestell-Nr.	Type	Mounting hole
4429206	817 h3	8 mm



ACCESSORIES

Order no.	Type	Description
4337700	1086 R	Digital indicator 12,5 mm / 0,0005 mm
4337760	1086 Ri-HR	Digital indicator 12,5 mm / 0,0001 mm
4346700	2000 W	Inductive dial comparator, $\pm 1 \mu\text{m}$
4429610	DK-M1	Data connection cable



2000 W



DK-M1

Digimar 814 C-N

Height measuring and scribing instrument

REF
system

MAX
MIN



FUNCTIONS

- Contacting from below/above
- Bar width or groove spacing incl. bar or groove center
- Bore or shaft diameter incl. bore or shaft center
- Reversal point bores (top or bottom)
- Reversal point shaft (top or bottom)
- Dynamic measurement functions

FEATURES

- 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
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: USB
- Package contains: Stylus 814 km, battery, test certificate, instruction manual

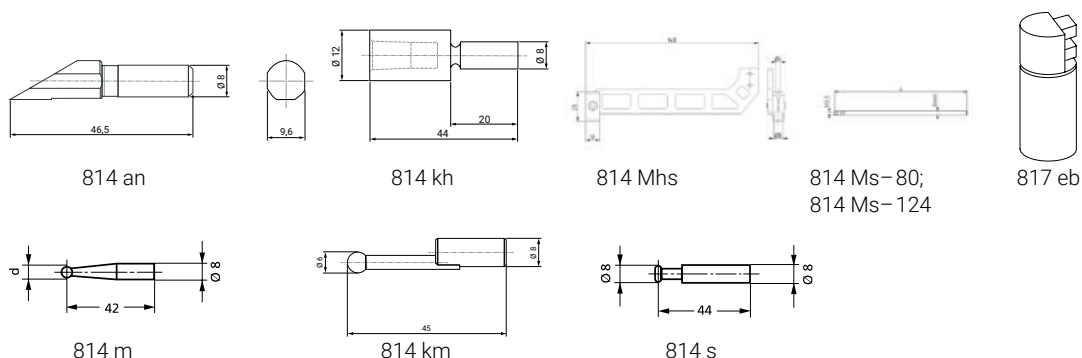
TECHNICAL DATA

Order no.	4426580	4426581
Type	814 C-N	
Mesuring span of indicator	mm	0 – 300 mm
Mesuring span of indicator	inch	0 – 12"
Resolution	mm	0,001, 0,01
Resolution	inch	.00005", .0005"
Error limit	µm	15
Repeatability planes	µm	10
Standard	Factory standard	
Measuring force	N	3
Operating time max.	h	2000
Data interface	USB	
Product weight	kg	7,00

Order no.	a	e
	mm	mm
4426580	30	526
4426581	30	831

ACCESSORIES

Order no.	Type	Description
4426525	814 m	Spherical probe, Ball diameter 2,0 mm
4426526	814 m	Spherical probe, Ball diameter 3,0 mm
4426512	814 m	Spherical probe, Ball diameter 4,0 mm
4426591	814 km	Spherical probe, Ball diameter 6 mm
4426592	814 zm	Cylindrical probe Ø 8 mm
4426513	814 s	Disc probe
4426590	814 an	Scribing needle for heigh measuring instrument 814 C
4426593	814 kh	Holder for measuring taper 817 ks
4426594	814 Mhs	Holder, pivoting, L = 148 mm for Ø8 mm/Ø 4 mm
4426595	814 Ms-80	Pin probe, Ø 4mm, L = 80 mm with thread M2,5
4426596	814 Ms-124	Pin probe, Ø 4mm, L = 124 mm with thread M2,5
4429168	817 eb	Setting block for 817 CLM /816 CL
4102605	DK-U14	Data cable USB bidirectional (2 m)



Digimar 814 C-G

Height measuring and scribing instrument

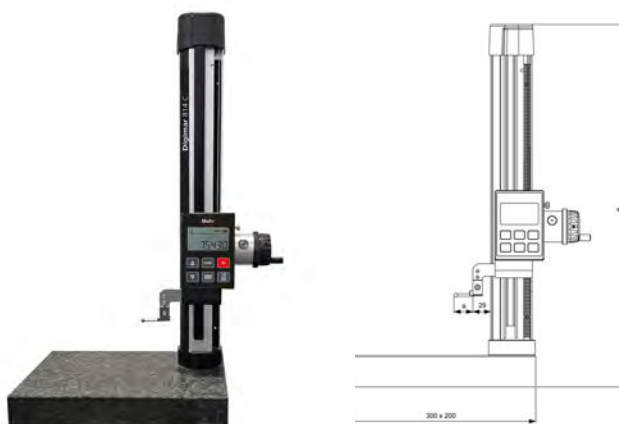


FUNCTIONS

- Contacting from below/above
- Bar width or groove spacing incl. bar or groove center
- Bore or shaft diameter incl. bore or shaft center
- Reversal point bores (top or bottom)
- Reversal point shaft (top or bottom)
- Dynamic measurement functions

FEATURES

- 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
- Energy supply: Battery, battery life approx. 2 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: USB
- Package contains: Stylus 814 km, battery, test certificate, instruction manual



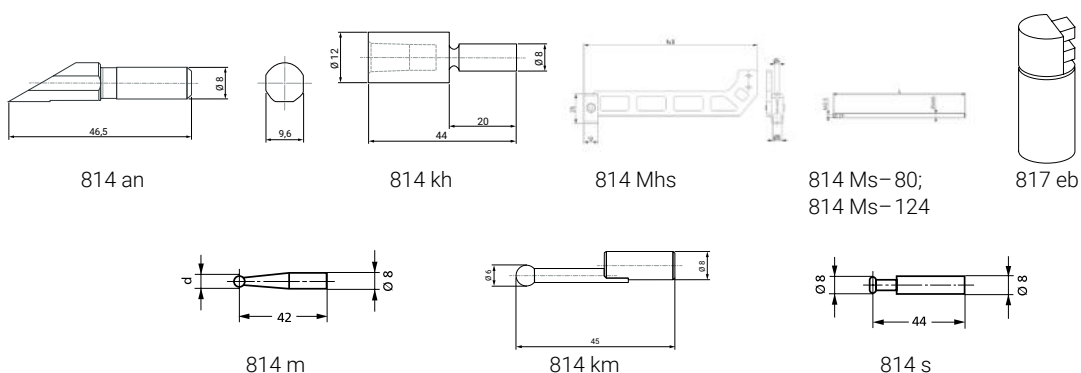
TECHNICAL D.

Order no.	4426582	4426583
Type	814 C-G	
Mesuring span of indicator	mm	0 – 300 mm
Mesuring span of indicator	inch	0 – 12"
Resolution	mm	0,001, 0,01
Resolution	inch	.00005", .0005"
Error limit	µm	15
Repeatability planes	µm	10
Standard	Factory standard	
Measuring force	N	3
Operating time max.	h	2000
Data interface	USB	
Plate size	mm	200 x 300
Product weight	kg	13,40

Order no.	a	e
	mm	mm
4426582	30	576
4426583	30	881

ACCESSORIES

Order no.	Type	Description
4426525	814 m	Spherical probe, Ball diameter 2,0 mm
4426526	814 m	Spherical probe, Ball diameter 3,0 mm
4426512	814 m	Spherical probe, Ball diameter 4,0 mm
4426591	814 km	Spherical probe, Ball diameter 6 mm
4426592	814 zm	Cylindrical probe Ø 8 mm
4426513	814 s	Disc probe
4426590	814 an	Scribing needle for heigh measuring instrument 814 C
4426593	814 kh	Holder for measuring taper 817 ks
4426594	814 Mhs	Holder, pivoting, L = 148 mm for Ø8 mm/Ø 4 mm
4426595	814 Ms-80	Pin probe, Ø 4mm, L = 80 mm with thread M2,5
4426596	814 Ms-124	Pin probe, Ø 4mm, L = 124 mm with thread M2,5
4429168	817 eb	Setting block for 817 CLM /816 CL
4102605	DK-U14	Data cable USB bidirectional (2 m)



Digimar 814 SR

Digital height gage



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

- Interchangeable measuring and scriber tips, carbide-tipped
- Convenient hand wheel for positioning and measuring
- Fine adjustment device with locking screw
- Ergonomic and sturdy machine base
- Hardened and lapped contact surface for smooth and even movement
- Slide and rail are made of hardened stainless steel
- High contrast 12 mm LCD display
- Data output: USB, Opto RS232, Digimatic
- Battery life up to 3 years
- Energy supply: Battery, battery life approx. 3 years
- Battery type: CR 2032 (3V Lithium)
- Data interface: Opto RS-232C, Digimatic, USB
- Package contains: scriber, battery, test certificate, instruction manual, Cardboard box
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)

Application:

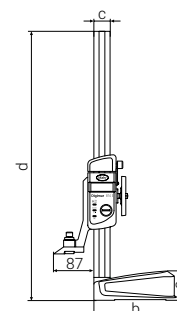
- Scribing and marking of work pieces
- Measuring heights and distances



TECHNICAL DATA

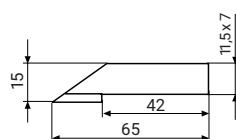
Order no.		4426100	4426101	4426104
Type		814 SR		
Mesuring span of indicator	mm	0 – 350 mm	0 – 600 mm	0 – 980 mm
Mesuring span of indicator	inch	0 – 14"	0 – 24"	0 – 38.5"
Resolution	mm	0,01		
Resolution	inch	.0005"		
Error limit	µm	40	50	70
Standard		Factory standard		
Data interface		Opto RS-232C, Digimatic, USB		
Product weight	kg	7,00	8,00	

Order no.	a	b	c	d
	mm	mm	mm	mm
4426100	62	180	35	580
4426101	62	180	35	835
4426104				

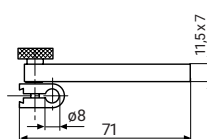


ACCESSORIES

Order no.	Type	Description
4123867	814 SRs	Measuring/scriber point, carbide tipped
4123041	27 Sp	Holder for test indicators
4102357	16 EXu	Data connection cable USB (2 m)
4102915	16 EWd	Data cable Digimatic (2 m)
4102410	16 EXr	Data connection cable RS232C (2 m)



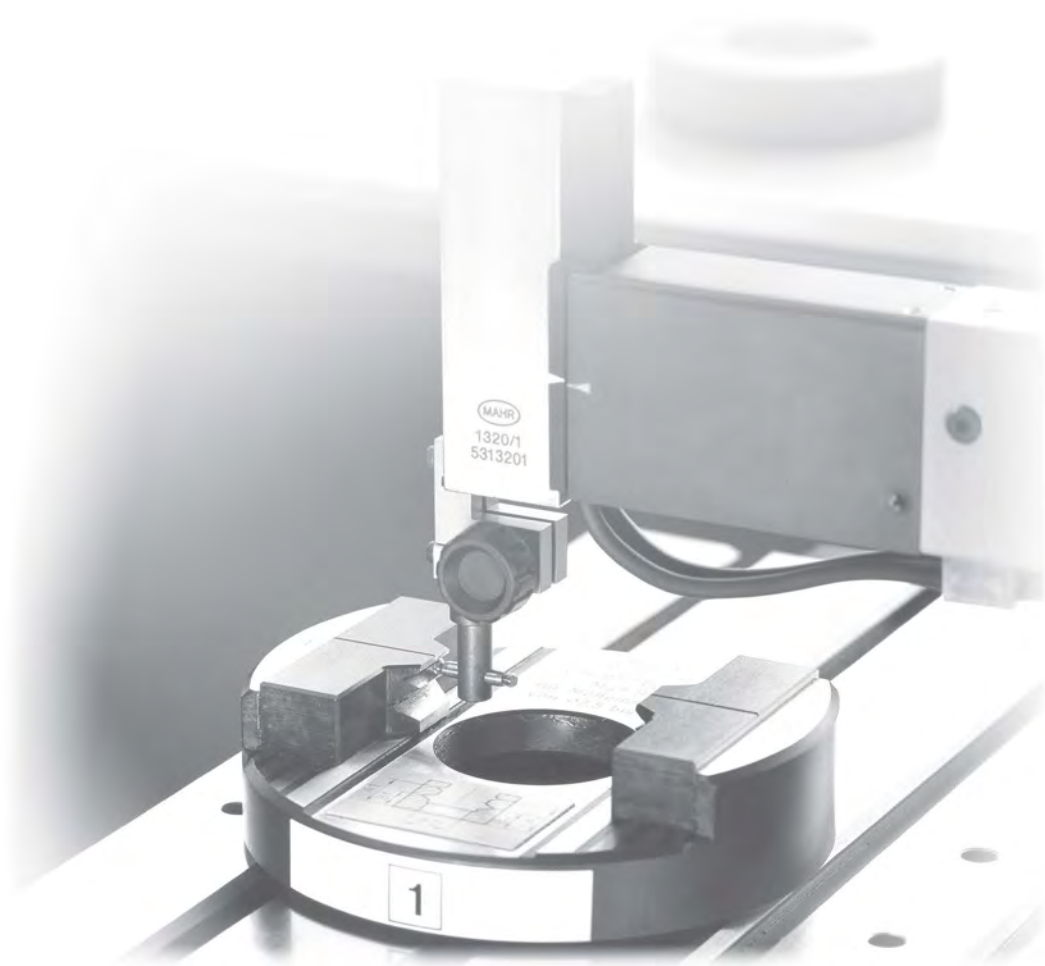
814 SRs; 27 ESh



27 Sp

Precimar | Precision length measurement

Precimar stands for dimensional metrology with the highest precision – both for absolute and relative measurements. Precimar are the high-precision length measuring equipment of the e.g. aerospace and automotive industries as well as the accredited measuring equipment for series testing of test equipment in calibration laboratories.



Precimar 130B-4 / 130B-6	484
Gage block testing	
Precimar ICM 100 IP	486
Dial indicator test device	
Precimar ICM 100	489
Dial indicator test device	
Software and accessories	490
Precimar ICM 25	493
Dial indicator test device	
Precimar SM 60 / SM 60-V	495
Length measuring bench	
Precimar Thread anvils	499
Length measuring bench	
Precimar SM 350 / SM 650 / SM 1150	500
Setting instrument	
Precimar ULM-E	502
Calibration measuring instruments	
Precimar ULM S-E	505
Calibration measuring instruments	
Precimar ULM L-E	506
Calibration measuring instruments	
Precimar PLM 600-E / 1000-E	508
Precision length measuring machine	
Precimar CIM 1000 CNC	511
Precision length measuring machine	

Precimar 130B–24 / 130B–16

Gage block comparator

FEATURES

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
- Energy supply: 230 V/115 V; 50/60 Hz
- Package contains: Desktop computer, Windows software for 130 B, Guide slot 30 x 9 mm, Guide slot 35 x 9 mm, Guide slot square blocks (5 positions)



Application:

- Quick and easy high precision testing of European and US gage blocks

TECHNICAL DATA

Order no.		2150076	2150080
Type		130B–24	130B–16
Application range	mm	2,5 bis 100	2,5 bis 600
Direct measuring range [mm]		± 0,01	

ACCESSORIES

Order no.	Description
2238823	Guide slot for gage blocks (4 positions)
2238826	Guide slot for cross-section 30 x 9 mm (test piece) and gage block (reference end dimension)
2238825	Guide slot for cross-section 35 x 9 mm (test piece) and "square block (reference end dimension)
2240939	Guide slot for gage block (test piece) and (reference end dimension) cross-section 30 x 9 mm
2240940	Guide slot for gage block (test piece) and (referenced dimension) cross-section 35 x 9 mm
2243256	Guide slot for cross-section 30 x 9 mm (test piece) and (reference end dimension) cross-section 30 x 9 mm
2243257	Guide slot for cross-section 35 x 9 mm (test piece) and (reference end dimension) cross-section 30 x 9 mm
2253440	Almemo temperature measurement device with 2 sensors
2240602	Accessory set for gage block test stand
2260985	Gage block set for the calibration of gage block test stands

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. When selecting the Precimar ICM dial gage testers, Mahr offers you practical solutions for both manual and fully automatic testing.



Precimar ICM 100 IP

Fully automated dial indicator test bench

Testing measuring equipment has never been easier!

The tried-and-tested Precimar ICM 100 IP has an even more powerful camera and impressive optimized accuracy.

Fully automatic, cost-effective, efficient: This is the new Precimar ICM 100 IP dial indicator test bench with improved mechanics and new, more powerful camera technology. This now also allows you to measure testpieces with very large dial plates.

Easy handling of the dial indicator test bench with just one hand and the smart software ensure the instrument is the perfect solution for measuring rooms, calibration labs and production testing. Testing measuring equipment has never been as efficient as with the new Precimar ICM 100 IP. The fast image processing, user-friendly software and easy handling ensure time savings of more than 60 percent.

One-handed operation

Quickly adjust the camera and light source to the optimum height and position for your measurement using just one hand and no tools: Fold down the lever, adjust the height continuously – done.



Advantages

- Over 60 percent time saving
- Easy handling and toolless operation
- Versatile for a multitude of measuring devices
- Intuitive, software-assisted operation
- Supports a wide range of standards
- Work effortlessly without losing concentration



For more detailed information,
please visit our website:

metrology.mahr.com/precimar-calibration-machines



Precimar ICM 100 IP

Fully automated dial indicator test bench

New camera

The significantly higher resolution of the new camera now also makes it possible to test large testpieces such as the Millimes 1000A/1000B.

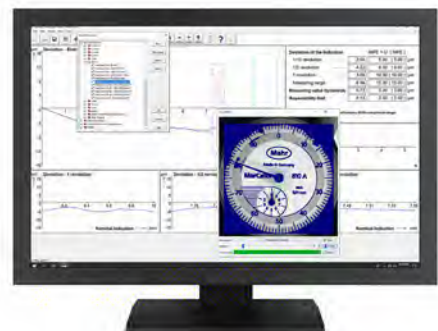


Manual mode

Do you want to check your testpieces manually in individual cases? You can still do so with easy handwheel operation. In manual mode, the camera serves as a magnifying glass.

Optimized accuracy

MPE: $0.1 \mu\text{m} + L/250$



Setup made easy

Good to go in a matter of minutes – thanks to software support with live visualization. You can see at a glance whether the camera is focused and the lighting is sufficient. Visual feedback in real time ensures that every movement is spot on.

Precimar ICM 100 IP

Fully automated dial indicator test bench

FEATURES

You can use Precimar ICM 100 IP to automatically and cost-effectively test dial indicators and dial comparators. Easy handling with one hand and the clever software ensure the test device is the perfect solution for measuring rooms, calibration labs, and production testing.

Testing measuring equipment has never been as efficient as with the Precimar ICM 100 IP: More than 60% time saved thanks to fast image processing, user-friendly software, and simple 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" / 100 mm – dial and 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
- Package contains: RS232C null modem cable, USB cable, Support arm/clamp Ø 12 mm, Reduction clamping bushing Ø 12 mm to Ø 8 mm, power source, Calibration certificate



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Direct measuring range [mm]	Measuring value hysteresis f_u	Measuring uncertainty MPE_{E1} (L in mm) [μm]	Software package
		mm		μm		
5351020	ICM 100 IP	0 – 100 mm		0,1	$\leq (0.1 + L/250)$	Mahr MSW 100
5351021	ICM 100 IP	0 – 100 mm	100	0,1	$\leq (0.1 + L/250)$	QMSOFT® / QM-DIAL

ACCESSORIES

Order no.	Type	Description
3027221	1080p	Monitor 24"
9064905		PRECIMAR-ICM Desktop-PC MarWin 11 int IoT, Dell XE SFF
7023901		Foot switch for the adoption of measuring values
5351083		Deflecting mirror for testing perpendicular indicators
7025703		Holder for dial test indicator measuring devices incl. mounting attachment to calibrate both measuring directions
7011721		Clamping bushing for Ø 3/8" clamping shafts
7011722		Clamping bushing for Ø 10 mm clamping shafts
9043093		Support arm for dial indicators and dial comparators with 30 mm clamping shaft
9043092		Measuring force sensor for ICM 100
9057923		Extended column to reach 100 mm range, if measuring force sensor is used

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

Precimar ICM 100

Motorized dial indicator testing position

FEATURES

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 operating elements are ergonomically arranged
- Complies with Ernst Abbe's comparator principle for maximum measuring accuracies
- Measuring system with error compensation
- Checking of 2-point inner measuring devices with no loss of accuracy
- Pre-positioning: automatic
- Fine positioning: electronic rotary knob
- Energy supply: 230 V/115 V; 50/60 Hz
- Package contains: RS232C null modem cable, USB cable, Support arm/clamp Ø 12 mm, Reduction clamping bushing Ø 12 mm to Ø 8 mm, power source

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
- 2-point bore gages



TECHNICAL DATA

Order no.	Type	Measuring span of indicator	Direct measuring range [mm]	Measuring value hysteresis f_u	Measuring uncertainty MPE_{E1} (L in mm) [μm]	Software package
		mm		μm		
5351015	ICM 100	100 mm, 4 inch (101,66 mm)	100	0,1	$\leq (0.1 + L/250)$	without
5351016	ICM 100	100 mm, 4 inch (101,66 mm)	100	0,1	$\leq (0.1 + L/250)$	Mahr MSW 100
5351017	ICM 100	100 mm, 4 inch (101,66 mm)	100	0,1	$\leq (0.1 + L/250)$	QMSOFT® / QM-DIAL

ACCESSORIES

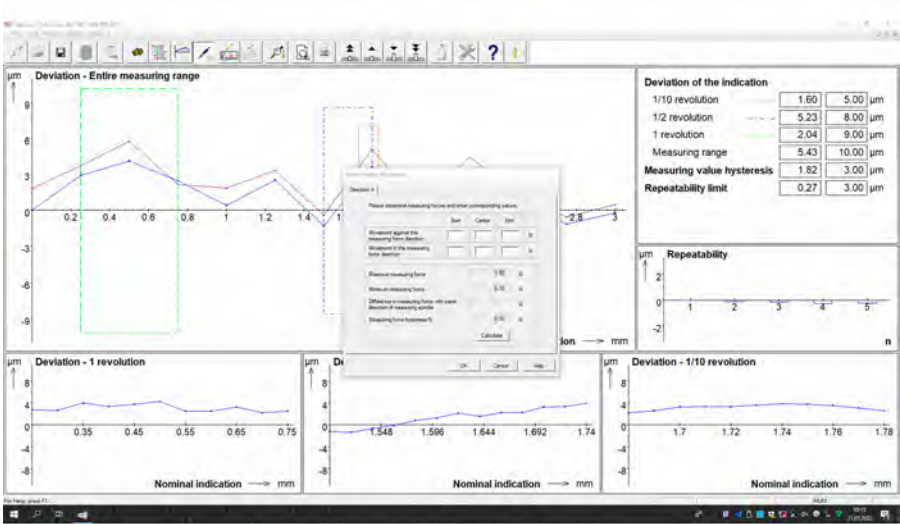
Order no.	Type	Description
3027221	1080p	Monitor 24"
9064905		PRECIMAR-ICM Desktop-PC MarWin 11 int IoT, Dell XE SFF
7023901		Foot switch for the adoption of measuring values
5351083		Deflecting mirror for testing perpendicular indicators
7025703		Holder for dial test indicator measuring devices incl. mounting attachment to calibrate both measuring directions
7011721		Clamping bushing for Ø 3/8" clamping shafts
7011722		Clamping bushing for Ø 10 mm clamping shafts
9043093		Support arm for dial indicators and dial comparators with 30 mm clamping shaft
9043092		Measuring force sensor for ICM 100
9057923		Extended column to reach 100 mm range, if measuring force sensor is used

Precimar MSW 100

Basic software (V14) for ICM 100

FEATURES

- Measurement/testing of dial indicators, dial comparators, dial test indicator measuring devices, and incremental/inductive probes
- Display of deviations curves/values
- Configurable testpiece template
- Preconfigured testpiece template for Mahr products
- Integration of DIN, VDI/VDE, JIS, ANSI, NF, and other standards and guidelines
- Individually adjustable records



TECHNICAL DATA

Order no.	Type	Supported standards
5358011	MSW 100	• ASME B89.1.10M:2001 (Dial indicators, dial comparators, test indicators) • B.S. 907:2008 (Dial indicators) • B.S. 2795:1981 (Test indicators) • DIN 878:2018-06 (Dial indicators) • DIN 879:1999-06 (Dial comparators) • DIN 2270:2017-02 (Test indicators) • DIN EN ISO 463:2006-06 (Dial indicators) • DIN EN ISO 9493:2011-03 (Test indicators) • DIN EN ISO 13102:2012-12 (Digital indicators) • DIN 32 876:1986-04 (Probes) • ISO 13102:2012-08 (Digital indicators) • JIS B 7503:2017 (Dial indicators) • JIS B 7519:1994 (Dial comparators) • JIS B 7533:2015 (Test indicators) • JIS B 7563:2021 (Digital indicators) • JIS B7515- 1982 (Dial bore gages) • JJG 39-2004 (Dial and digital indicators) • JJG 35-2006 (Dial comparators) • JJG 34-2008 ((Dial and digital indicators) • JJG 379-2009 (Test indicators) • NF EN ISO 463:2006-06 (Dial indicators) • NF E 11-056:2016-04 (Digital indicators) • NF E 11-057:2016-04 (Dial indicators und Dial comparators) • NF E 11-053:2013-10 (Test indicators) • XP E 11-053:2000-12 (Test indicators) • XP E 11-056:1996-09 (Digital indicators) • GOST 577 68.01.07.68 (Dial indicators) • VDI/VDE/DGQ 2618 Part 11.1:2014-11 (Dial indicators) • VDI/VDE/DGQ/DKD 2618 Part 11.4:2020-08 (Digital indicators) • VDI/VDE/DGQ/DKD 2618 Part 13.2:2005-11, fig. 2 (Dial bore gages) • Mahr Company Standard WN 2000W(i)_2001W(i) (Digital comparators)

FEATURES

- For the fully automated measurement of the testpiece
- Direct connection of the measuring equipment to the dial indicator test bench
- Measuring instrument interface is recognized automatically in the software



TECHNICAL DATA

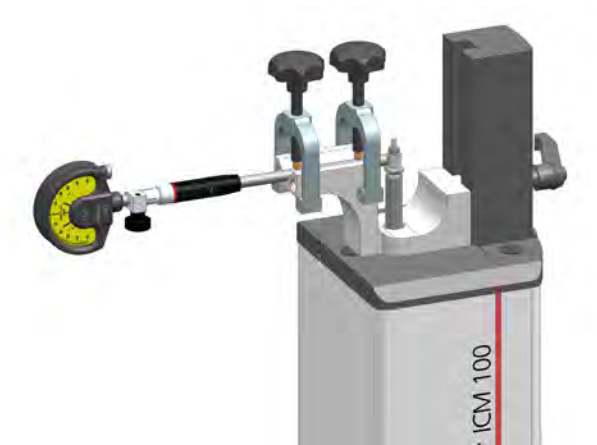
Order no.	For measuring instrument type	For measuring instrument	Data cable needed
7023878	Digital indicators	Mahr MarCator 1075/1075 R Mahr MarCator 1086/1086W/1086 R/ 1086 WR / 1086 Ri /1086 WRi Mahr MarCator 1087/1087 R /1087 Ri / 1087 BR / 1087 BRi	Mahr 16 EXr (Order no. 4102410)
7023913	Digital indicators	Mahr Millitast 1082 TESA DIGICO 10 Sylvac S229 / S213	none
7023909	Digital indicators	Mahr Millitast 1083 / 1085	none
7025985	Digital indicators and comparators	Mahr MarCator 1088 / 1088W Mahr MarCator µMaxµm XL II Mahr Extrameß 2000 / 2001 Mahr Millimeß 2100 Mahr Millimeß µMaxµm II	Mahr 2000 r (Order no. 4346020)
7052174	Digital indicators and comparators	Mahr Federal µMaxµm II / µMaxµm XL II	none
7046954	Digital indicators	Mitutoyo Digimatic indicator	Digimatic data cable of manufacturer
7033860	Digital indicators and test indicators	Mahr Martest 800 EW / 800 EWL TESA DIGICO 12 TESA Tesatast IP 65 Sylvac S233 / Sylvac S234 Sylvac Series S_Dial	Mahr 800 EWr (Order no. 4305122)
7046956	Digital indicators	TESA DIGICO 205 / 305 / 400 / 500 / 600 /705	RS232 data cable of manufacturer
7043260	Digital indicators	Starrett indicator	Data cable of manufacturer
7042301	Digital indicators	Guanglu indicator	Data cable of manufacturer and Mahr RS232 cable (Order no. 7024634)
7023897	Digital amplifier	Mahr Millimar C1208 / C1216 / C1240 Mahr Millimar 1240	Mahr RS232 cable (Order no. 7024634)
7024082	Incremental probes	Mahr Millimar 1512 / 1525	None
7034534	Incremental probes	Heidenhain MT/ST 11µAss w. M23-plug, 9-pin	None
7044324	Incremental probes	Mahr Millimar P1514 / P1526 Heidenhain MT/ST 1Vss w. M23-plug, 12-pin	none
7044325	Incremental probes	Mahr Millimar P1514H Heidenhain MT/ST 1Vss w. D-Sub-plug, 15-pin	none
7051758	Incremental probes	Heidenhain MT/ST TTL w. D-Sub-plug, 15-pin	none
7034512	Digital probes	Solartron Orbit DP1, DP2, LE12	
7053933	Incremental probes	Keyence GT2	Keyence cable connection Keyence RS232C communication unit DL-RS1A

Precimar

Holder for 2-point inner measuring devices

FEATURES

- To secure inner measuring devices (up to max. measuring range of 100 mm and max. clamping diameter of 18 mm) during horizontal operation
- Automatic measurement in connection with software option, inductive probe 1340, and modules N1702 M-HR and N 1701 USB



TECHNICAL DATA

Order no.
5351082

ACCESSORIES

Order no.	Type	Description
5320026		Software option for 2-point inner measuring devices
5331125	N 1702 M-HR	Module for inductive probes
5331130	N 1701 USB	USB connecting module
5313400	1340	Inductive probe, ± 2 mm



N 1702 M-HR



N 1701 USB



1340

Precimar ICM 25

Manual dial indicator testing position

FEATURES

The Precimar ICM 25 is the most cost effective test station for manual testing of digital and dial indicators, dial test indicator measuring devices as well as inductive and incremental measuring probes.

- C 1202 Amplifier with color display (110 mm / 4,3", 480 x 272 pixel)
- Fast height adjustment to adapt indicators according to the measuring range
- Rigid, box-shaped device housing
- For measuring objects with 8 mm, 3/8" shaft diameter
- All control elements are ergonomically arranged
- Complies with Ernst Abbe's comparator principle for maximum measuring accuracy
- Energy supply: 230 V/115 V; 50/60 Hz
- Package contains: Display unit C 1202 + measuring module N 1702 VSS, split bushing BU- 197, mounting shaft 800a3/8

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

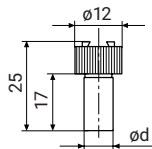


TECHNICAL DATA

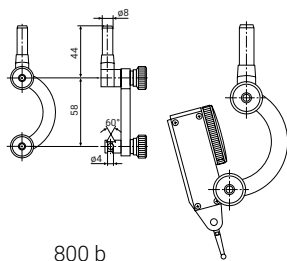
Order no.	Type	Mesuring span of indicator	Measuring uncertainty MPE _{E1} (L in mm) [µm]
		mm	
2062722	ICM 25	25 mm, 2 inch	± 0,2

ACCESSORIES

Order no.	Type	Description
4102058	16 ESf	Foot switch to trigger data transmission with jack plug
4102603	DK-U1	Data cable USB bidirectional (2 m)
4305885	800 a4	Mounting shaft ø 4 mm
4305893	800 b	Universal centering support frame



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



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

FEATURES

The Precimar SM 60 is a user-friendly measuring instrument for fast, precise outside measurements on workpieces.

- Very precise and repeatable measurements thanks to specially mounted measuring spindle and constant spring measuring force
- 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, 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
- Package contains: instruction manual, excludes indicator



TECHNICAL DATA

Order no.		5357360	5357370
Type		SM 60	
Application range	mm	0 – 60	
Measuring span	mm	25	
Parallelism of measuring surfaces		<0,001 mm	
Measuring surface Ø	mm	6	
Measuring forces		1 N + measuring force of measuring system	5 N + measuring force of measuring system
Shaft diameter	mm	8	
Weight	kg	9,00	

Order no.	Width	Height	Length
	mm	mm	mm
5357360	140	120	290
5357370	140	120	290

ACCESSORIES

Order no.	Type	Description
4321000	810 SV	Mechanical dial indicator 40 mm / 0,01 mm
4337711	1086 Ri	Digital indicator 25 mm / 0,0005 mm
4337811	1087 Ri	Digital indicator 25 mm / 0,0005 mm
4337771	1086 Ri-HR	Digital indicator 25 mm / 0,0001 mm
4337851	1087 Ri-HR	Digital indicator 25 mm / 0,0001 mm
5312025	C 1202 Metric/Inch Version	Compact amplifier
5331161	N 1702 VPP	Module for incremental sensors
5315311	P 1530 V	Incremental measuring probe P 1530 V
5355368		Measuring attachment M 2.5
5355410		Measuring attachment with plane surface Ø 2 mm
5355411		Measuring anvil with flat-edged blade 2 x 1 mm
5355412		Measuring anvil with measuring surface radius 20 mm
5355413		Measuring anvil with flat-edged blade 8 x 1.5 mm
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



810 SV



1086 Ri



1087 Ri



1086 Ri-HR



1087 Ri-HR



C1202



N 1702 VPP

Precimar SM 60-V

Length measuring bench

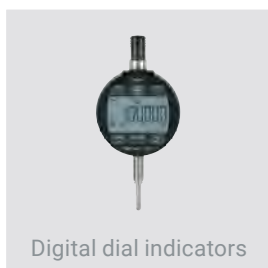
Combination talent for a **wide range of form measurements**

The Precimar SM 60-V mobile measuring bench has **interchangeable anvils**.

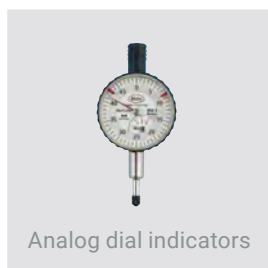
Mahr has developed the new Precimar SM 60-V for quick and easy outer measurements on cylindrical parts or for measuring thickness and length: The length measuring bench is easy to operate and fully showcases its strengths with a wide range of measuring equipment – from the digital dial indicator to measuring probes. Thanks to the interchangeable anvils, it can be individually adapted to a wide variety of measuring tasks. For example, the Precimar SM 60-V can be used for measuring recesses, outer teeth, the pitch diameter on outer threads and many other measuring tasks and is also ideally suited for precise series measurements. Thanks to its robust design, the new length measuring bench can also be used directly in production.

Integrated coupler

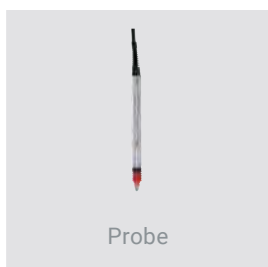
To protect the measuring instrument used, the Precimar SM 60-V has an integrated coupler.



Digital dial indicators



Analog dial indicators



Probe



Adaptable

By selecting the dial indicator or probe, the measuring bench can be individually adapted to the accuracy requirements.

25 mm

Direct measuring range

Precimar SM 60-V

Length measuring bench



Advantages

- Quick adjustment to workpiece diameters up to 60 mm
- Versatile thanks to extensive range of measuring anvils
- Suitable for left- and right-handed operators
- Ideally suited for precise series measurements

In all environments

Thanks to its robust design, the measuring instrument can be used in any measuring environment.



Large support table

The support of the infinitely height-adjustable table has a diameter of 60 mm.

Versatile

The length measuring bench can be adapted to a wide range of measuring tasks thanks to an extensive portfolio of measuring anvils.



Precimar SM 60-V

Length measuring bench

FEATURES

The Precimar SM 60-V is a user-friendly measuring instrument for fast, precise outer measurements on workpieces.

Special advantage:

Individual adaptation for a wide range of measuring tasks through the use and combination of interchangeable anvils (stem $\varnothing$ 3.5 x 15.5 mm).

- Very precise and repeatable measurements thanks to specially mounted measuring spindle and constant spring measuring force
- Simple design of the device
- Quick adaptation to new workpieces
- Can be used close to production due to robust design
- Freely selectable measuring equipment (e.g. digital dial gage, touch probe, etc.)
- Mounting hole for measuring inserts with shank $\varnothing$ 3.5 mm x 15.5 mm
- Protection of the measuring equipment used by built-in coupling
- Operation for left- and right-handers
- Large support table $\varnothing$ 60 mm, variable height adjustment
- Package contains: instruction manual, plan carbide anvils Dia. 3,5 mm



Application:

- For rapid measurements of cylindrical parts (shafts, bolts and shanks)
- Thickness and length measurements
- Ideal adaptation to the measuring contour through individual use/ combination of measuring inserts (flat, spherical, pointed, etc.)
- 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.		5357380
Type		SM 60-V
Application range mm	mm	0 – 60
Measuring span	mm	25
Measuring forces		5 N + measuring force of the measuring system
Shaft diameter	mm	8
Weight	kg	9,00

ACCESSORIES

Order no.	Type	Description
4321000	810 SV	Mechanical dial indicator 40 mm / 0,01 mm
4337711	1086 Ri	Digital indicator 25 mm / 0,0005 mm
4337811	1087 Ri	Digital indicator 25 mm / 0,0005 mm
4337771	1086 Ri-HR	Digital indicator 25 mm / 0,0001 mm
4337851	1087 Ri-HR	Digital indicator 25 mm / 0,0001 mm
5312025	C 1202	Compact amplifier
5331161	N 1702 VPP	Module for incremental sensors
5315311	P 1530 V	Incremental measuring probe P 1530 V
5357311		Measuring insert set (2x each 40Ef/Ea/Et/Er/Ep/Es)
4151794	40 Ef	Plane measuring anvil ($\varnothing$ 6,5 mm)
4151795	40 Ea	Measuring anvil with reduced measuring surface ($\varnothing$ 2 mm x 4 mm)
4151796	40 Et	Measuring anvil plate ($\varnothing$ 11,3 mm)
4151797	40 Er	Measuring anvil with convex measuring surface ($\varnothing$ 7 mm, R=5 mm)
4151798	40 Ep	Measuring anvil with tip (60°)
4151799	40 Es	Measuring anvil with blade (0,75 mm x 4 mm)



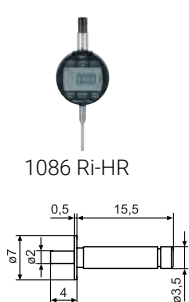
810 SV



1086 Ri



1087 Ri



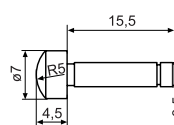
40 Ea



40 Et



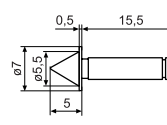
C 1202



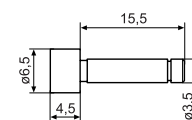
40 Er



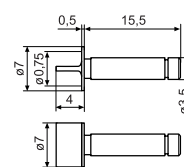
N 1702 VPP



40 Ep



40 Ef



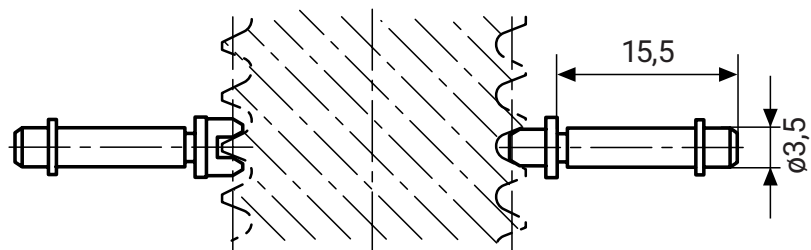
40 Es

Precimar Thread Anvils

Length measuring bench

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.



ACCESSORIES

Thread pitch	Blade Order no.	V-anvil Order no.
Pitch diameter, external thread		
Metric 60°		
0,2	4173007	4173707
0,25	4173008	4173708
0,3	4173009	4173709
0,35	4173010	4173710
0,4	4173011	4173711
0,45	4173012	4173712
0,5 – 0,7	4173000	4173700
0,7 – 1	4173001	4173701
1,25 – 2	4173002	4173702
2 – 3,5	4173003	4173703
3,5 – 5	4173004	4173704
5 – 7	4173005	4173705

Thread pitch in TPI	Blade Order no.	V-anvil Order no.
UST 60°		
10 – 7	4173120	4173820
14 – 10	4173119	4173819
18 – 14	4173118	4173818
24 – 18	4173117	4173817
32 – 24	4173116	4173816
4,5 – 3	4173122	4173822
40 – 32	4173115	4173815
48 – 40	4173114	4173814
7 – 4,5	4173121	4173821
Whitworth 55 °		
10 – 7	4173048	4173748
14 – 10	4173047	4173747
18 – 14	4173046	4173746
24 – 18	4173045	4173745
3 – 2,5	4179408	4179410
32 – 24	4173044	4173744
4,5 – 3	4173050	4173750
40 – 32	4173043	4173743
7 – 4,5	4173049	4173749

Convenient setting of measuring equipment

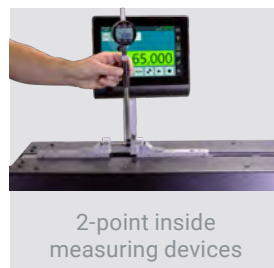
The Precimar SM setting instrument boasts motorized positioning, high accuracy and outstanding ease of use.

Quality assurance experts know that comparative measuring instruments such as indicating snap gages, universal measuring instruments or 2-point inside measuring devices must be regularly set to the dimension to be determined. Mahr has developed the new Precimar SM to avoid complicated and time-consuming calibration with gage block combinations and the need for lots of expensive setting rings: The motorized, horizontal measuring instrument automatically positions itself as a setting standard – eliminating the need for manual, time-consuming adjustment.

The new Precimar SM is conveniently operated via a touch display with a wide range of functions. Creating favorites makes setting even easier. And if you want even more convenience, print a barcode label and stick it on the measuring instrument. Simply scan the label the next time you need to make an adjustment – the setting instrument will automatically move to the desired dimension!

And the best bit: The accuracy of the new Precimar SM is $0.7 \mu\text{m} + L / 1000$ – setting it apart in the league of setting instruments.

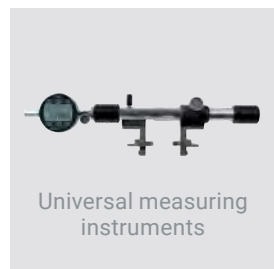
The robust instrument is specially designed for use in production and is available in measuring ranges of 350 mm, 650 mm and 1,150 mm.



2-point inside measuring devices



Indicating snap gages



Universal measuring instruments

Flexible applications

Extensive range of accessories for mounting 2-point inside measuring devices, universal measuring devices (Multimar) and indicating snap gages.



Advantages

- Touch display with intuitive operation
- High level of convenience thanks to the ability to save favorites and read measuring equipment by barcode scanner
- Saves time and money as setting rings and gage blocks are no longer required
- No loss of accuracy compared to setting rings or gage block combinations

Time and cost savings

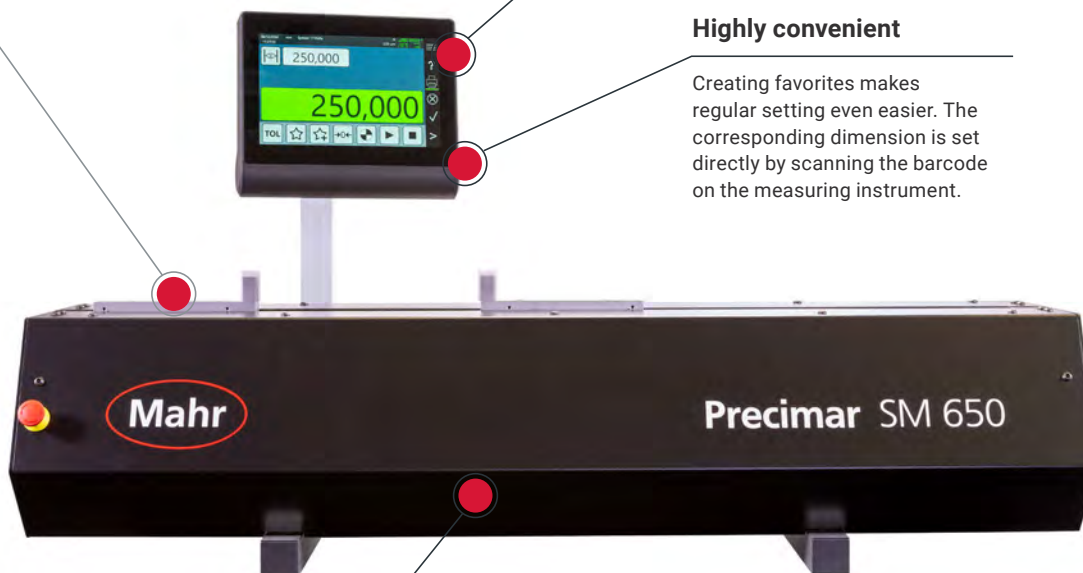
Simply enter the desired reference value and the setting instrument moves to the relevant dimension. No more time-consuming searches for the correct setting ring diameter or compiling gage block combinations.

Set dimensions simply by touch

Intuitive operation via large, clear keys for quick and straightforward adjustment.

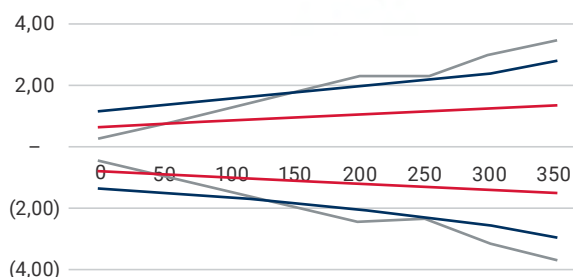
Highly convenient

Creating favorites makes regular setting even easier. The corresponding dimension is set directly by scanning the barcode on the measuring instrument.



Highly accurate

With an accuracy of $0.7 \mu\text{m} + L / 1000$, gage block combinations and setting rings can be easily replaced.



● SM 350 ● Setting ring ● Gage block combination

Accuracy comparison
Setting instrument / gage blocks / setting rings



For more detailed information, please visit our website:

metrology.mahr.com/precimar-calibration-machines

Precimar SM 350 / SM 650 / SM 1150

Setting instrument

FEATURES

- The SM series is particularly well suited as a setting device in production-related use. They enable the precise adjustment of inside and outside comparators, 2-point internal measuring instruments, indicating snap gages and many other measuring instruments. As a variably adjustable dimension, they are the economical alternative to setting gages, settings rings and gage blocks. The decisive advantages are the easy handling with motorized positioning to any material measure.
- Large and clear touch display with backlight
 - User guidance via self-explanatory icons
 - User guidance in several languages
 - Future-proof thanks to update-ability
 - Precise motor control maintains the preset value regardless of the measuring force of the measuring device
 - Base beam made of steel alloy, thus similar thermal behavior to the setting and measuring objects
 - High-precision ground and lapped guide rail
 - Functions
 - Input of setting dimensions for indoor and outdoor measuring instruments
 - Integrated tolerance calculator incl. ISO tolerance tables with quick selection of min, max. and center values
 - Storage of favorites for frequently used settings
 - Accessing favorites by scanning barcodes/QR codes
 - Energy supply: 230 V/115 V; 50/60 Hz
 - Data interface: 3x USB 2.0
 - Package contains: Setting device incl. operating and display element, instruction manual



Application:

- Setting of universal comparators such as Multimar 844 T
- Setting of 2-point internal measuring instruments e.g. Intramess 844 N
- Setting of indicating snap gages e.g. MaraMeter 840 F
- Setting of micrometers
- Setting of inside micrometers



TECHNICAL DATA

Order no.		5357400	5357401	5357402
Type		SM 350	SM 650	SM 1150
Measuring range for outer measurement	mm	40 to 395	40 to 695	40 to 1195
Measuring range for inner measurement	mm	0 to 355	0 to 655	0 to 1155
Measuring span	mm	350	650	1150
Measuring uncertainty MPE _{ei} (L in mm)	µm	≤ (0,7 + l/1000) µm; l in mm		

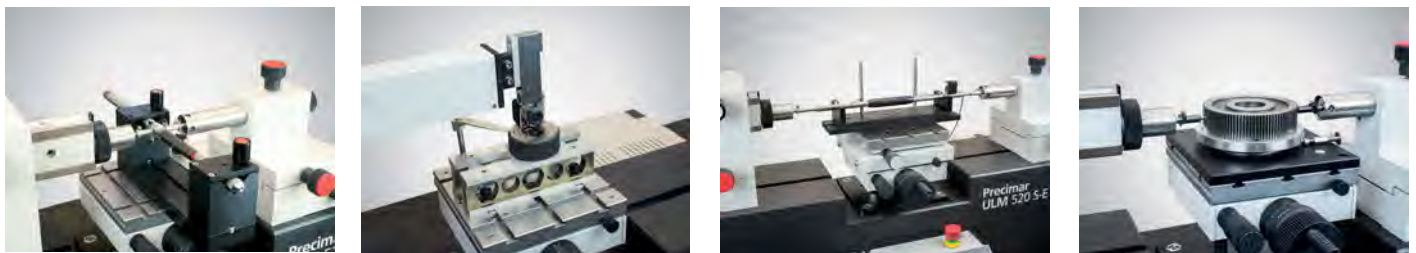
ACCESSORIES

Order no.	Type	Description
5358711	SM-Mr	Pair of measuring jaws, inside flat, outside radius 20 mm
5358712	SM-Mk	Pair of measuring jaws with balls, ø 20 mm
5358701	SM-Pa	Prism support external
5358702	SM-Pi	Prism support inside
5358703	SM-Bk	Centering bridge for self-centering internal measuring instruments, measuring range 18–35 mm
5358704	SM-Bm	Centering bridge for self-centering internal measuring instruments measuring range 35–90 mm
5358705	SM-Bg	Centering bridge for self-centering internal measuring instruments measuring range 90–300 mm
5358706	SM-Ha	Height support for universal measuring instruments
4503511	844 Sph	Riser blocks 30 mm for extended measuring depths
5358707	SM-Hv	SM-Hv holding device for larger measuring instruments
3028620	Handset scanner cable	USB 2D scanner Honeywell Xenon 1900
5358720	DYMO LW 550	Label printer



Length measuring devices for calibration metrology

The well-established ULM-E universal length measuring instruments are standard instruments for quality assurance in industrial manufacturing and benchmark devices for gage calibration. They are used for high-precision length measurements on precision parts such as gears, measuring pins, inner races, ball cages, ball bearing rings, tapers, gear shafts, etc., and for gage and measuring equipment inspections. These instruments are available in various measuring ranges (300 mm to 1500 mm) and with various measuring system configurations (in a measuring element, in a machine base, as a laser). These options allow you to choose the most appropriate measuring instrument for a given application. An extensive range of accessory kits and components is available on a modular basis, so the measuring instrument functions can be expanded over time.



Precimar

ULM-E series of length measuring devices

Powerful Windows software

Maximum ease of use; inner thread measurement supported by automatic Z positioning

Wide range of accessories

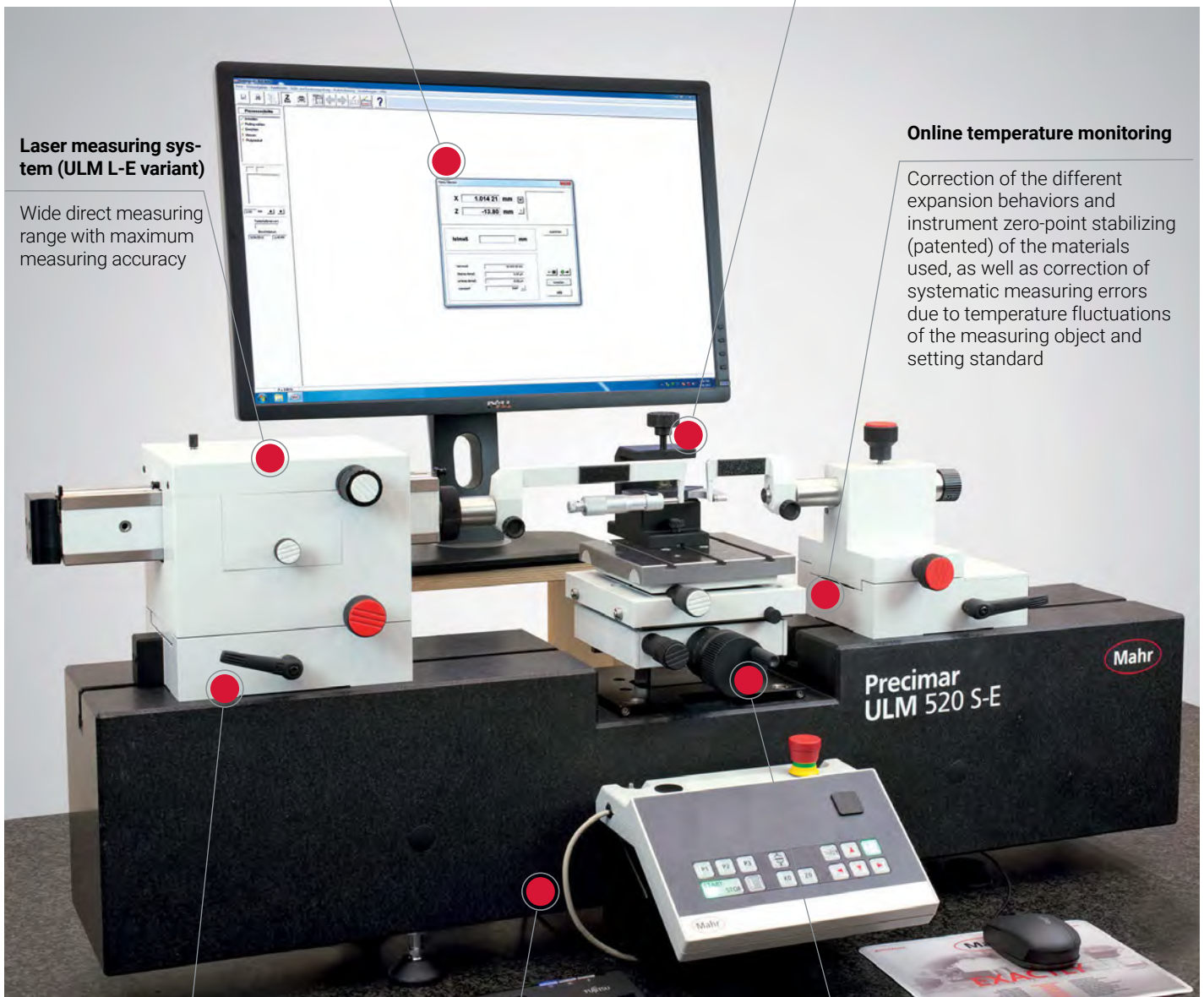
Compatible with measuring tasks thanks to specifically configured accessory sets and individual components

Laser measuring system (ULM L-E variant)

Wide direct measuring range with maximum measuring accuracy

Online temperature monitoring

Correction of the different expansion behaviors and instrument zero-point stabilizing (patented) of the materials used, as well as correction of systematic measuring errors due to temperature fluctuations of the measuring object and setting standard



Air bearing

Productivity gain thanks to quick movement of ABBE measuring element and counter bearing

Granite

Highly homogenous and rigid

Z measuring system

Productivity gain and enabling of 2D measuring task by incorporating Z position values and travel paths

Precimar ULM 300-E / ULM 600-E / ULM 1000-E / ULM 1500-E

Calibration measuring instruments

FEATURES

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
- Energy supply: 230 V/115 V; 50/60 Hz
- Package contains: Standard software 828 WIN "Free measuring", PC evaluation unit (without monitor), Magnetic holder for temperature probe, Pair of measuring brackets, immersion depth 14 mm, 2 parallel gage blocks 60/20, 2 quick clamps, 2 measuring heads with spherical zone, Setting gage 2, USB stick, Weights 0.25/0.5/1.0/2.0N, Hexagonal wrench, Screwdriver, Accessories package



TECHNICAL DATA

Order no.		5350258	5350260	5350262	5350266
Type		ULM 300-E	ULM 600-E	ULM 1000-E	ULM 1500-E
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
Direct measuring range	mm	100			
Measuring uncertainty MPE_{E1} (L in mm)	μm	$\leq (0.09+L/2000)$			
Measuring forces		0.2 ; 1.0 to 4.5 ; 11			

Order no.	Width	Height	Length
	mm	mm	mm
5350258	280	480	685
5350260	380	480	1080
5350262	380	480	1500
5350266	380	480	2000

Application:

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

Precimar ULM 520 S-E / ULM 1000 S-E

Calibration measuring instruments

FEATURES

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 left
- 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
- Energy supply: 230 V/115 V; 50/60 Hz
- Package contains: Standard software 828 WIN "Free measuring", PC evaluation unit (without monitor), Magnetic holder for temperature probe, Pair of measuring brackets, immersion depth

14 mm, 2 parallel gage blocks 60/20, 2 quick clamps, 2 measuring heads with spherical zone, Setting gage 2, USB stick, Weights 0.25/0.5/1.0/2.0N, Hexagonal wrench, Screwdriver, Accessories package



TECHNICAL DATA

Order no.		5350267	5350268
Type		ULM 520 S-E	ULM 1000 S-E
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
Direct measuring range [mm]	mm	Outer measurement: 0 to 520 Inner measurement: 0.5 to 365	Outer measurement: 0 to 1025 Inner measurement: 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: $MPE_{E1} ? (0.6+L/1000)$	
Measuring forces		0.2 ; 1.0 to 4.5 ; 11	

Order no.	Width	Height	Length
	mm	mm	mm
5350267	380	480	1080
5350268	380	480	1500

Application:

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

Precimar ULM 800 L-E / ULM 1500 L-E

Calibration measuring instruments

FEATURES

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
- Energy supply: 230 V/115 V; 50/60 Hz
- Package contains: Standard software 828 WIN "Free measuring", PC evaluation unit (without monitor), Magnetic holder for temperature probe, Pair of measuring brackets, immersion depth



TECHNICAL DATA

Order no.		5350263	5350264
Type		ULM 800 L-E	ULM 1500 L-E
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
Direct measuring range	mm	0 to 525	0 to 1115
Measuring uncertainty MPE_{E1} (L in mm)	μm	$\leq (0,1+L/2000)$	
Measuring forces		0.2 ; 1.0 to 4.5 ; 11	

Order no.	Width	Height	Length
	mm	mm	mm
5350263	380	480	1500
5350264	380	480	2300

Application:

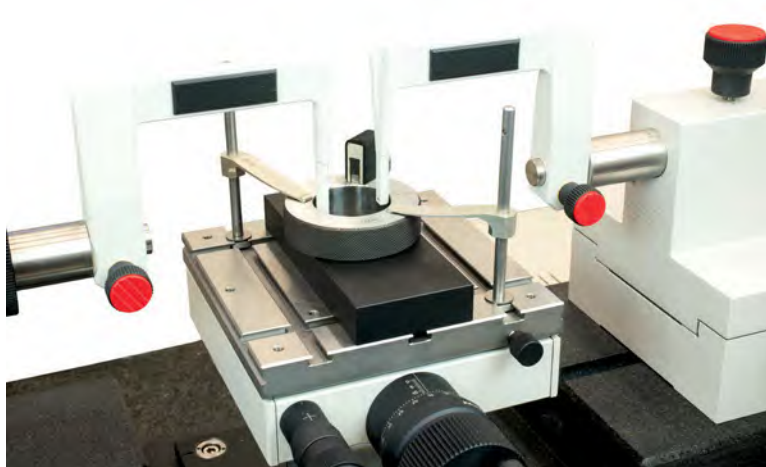
Calibration of:

- 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

14 mm, 2 parallel gage blocks
60/20, 2 quick clamps, 2 measuring heads with spherical zone,
Setting gage 2, USB stick, Weights
0.25/0.5/1.0/2.0N, Hexagonal
wrench, Screwdriver, Accessories
package

FEATURES

- Useful accessory packages for the most important calibration tasks
- Software modules optimally matched to the measurement tasks



TECHNICAL DATA

Order no.	Description	Required Number of pieces	Application	Accessories package no.			
5350161	Software module 828 WIN "Plain gages" / "Snap gages"	1	Plain plug and ring gages ≥ 1 mm	1	2	3	4
5355413	2 pcs. measuring attachments with knife edge 8 mm	2					
5355107	Universal V-clamping device	1					
5355776	Screw clamp for universal V-clamping device	1					
5355127	Measuring arms 28/4, depth 60 mm	2					
5355681	Tilt table	1					
5350163	Software module 828 WIN "Thread gages"	1	Cylindrical thread plug gages (pitch diameter)				
4820000	Set A - set of thread pin gages 426 MS	1					
5355416	2 pcs. measuring attachments flat surface 7,5 mm	2					
5355101	Single-axis floating table	1					
5355102	Floating table mount	1					
5355779	Set G ULM Tesa probe	1	Cylindrical thread ring gages $\geq$ M3 (pitch diameter)				
4631147	T-probe 828 gke, $\varnothing$ 0.29 mm	1					
5355724	Single ball stylus $\varnothing$ 0.62 mm	1					
7039407	Adapter for single ball probes	1					
5355114	2 pcs parallel bars H=40 mm/W=20 mm	2					
5350166	Software module 828 WIN "indicators/comparators/test indicators"	1	Indicators Comparators Test indicators				
5355140	Set E1 - Holder for indicator 8 mm	1					
7039499	U-piece for test indicators	1					
5355414	Measuring attachment flat 8 mm	1					

Universal length measuring machines for high-end calibration

Mahr's universal length measuring machines are ideal for the absolute and relative measurement of precision products and gages. Typical areas of application include products and gages for the aerospace and automotive industries, precision engineering and the production testing of gages in calibration laboratories. The PLM and CiM series are high-end length measuring machines, which ensure minimal length measuring uncertainties and offer partially automated measuring sequences. In other words: Metrology with maximum precision combined with extremely efficient measuring processes, both in measuring rooms and calibration laboratories. An extensive range of accessory kits and components offers solutions to the most diverse measuring and calibration tasks.



Precimar

PLM-E and CIM CNC series

Intelligent electronics

Automatic detection of outer and inner measurement and counter bearing

Powerful Windows software

Maximum ease of use thanks to simple software and clear user guide

Automatic drive

Measuring slide with progressive deflection characteristic, automatic contact detection, automatic detection of outer and inner measurements and computer-supported search of reversing points

Generation of measuring force

Electronic and thus frictionless generation of measuring force and automatic contacting

Object table

5-axis object table with CNC control in Z and Y

Granite

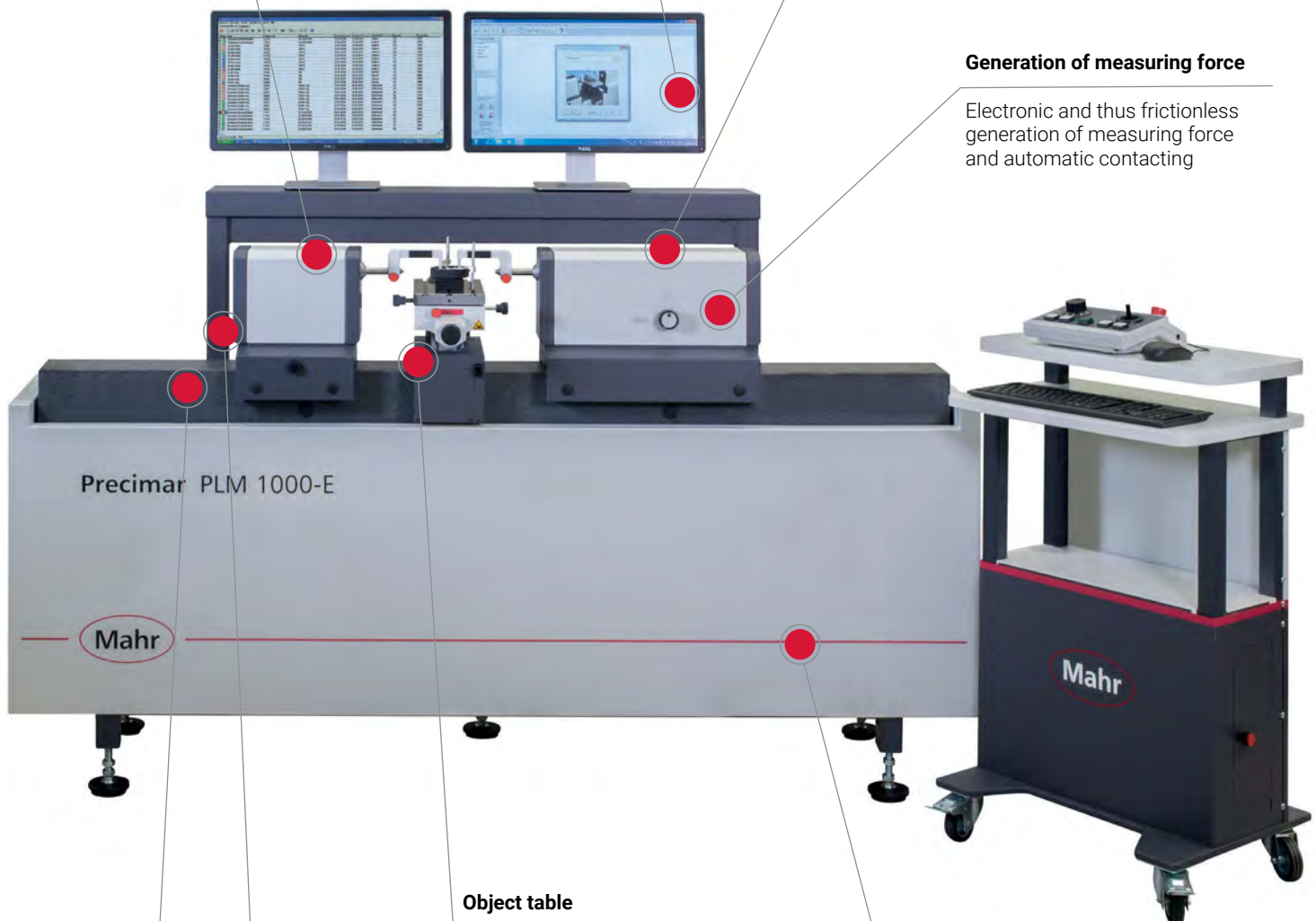
Highly homogenous and rigid

Air bearing technology

Low measurement uncertainty thanks to aerostatic guides for measuring slides and counter bearings

Online temperature monitoring

Software compensation of thermal dimensional deviations



Precimar PLM 600-E / PLM 1000-E

Precision length measuring machine

FEATURES

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
- Energy supply: 230 V/115 V; 50/60 Hz



TECHNICAL DATA

Order no.		5350700	5350800
Type		PLM 600-E	PLM 1000-E
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
Direct measuring range	mm	200	
Measuring uncertainty MPE_{E1} (L in mm)	μm	$\leq (0,085 + L/1500)$	
Position deviation / error limit (L in mm)	μm	$\leq (0,07 + L/2000)$	
Measuring forces		0 to 13,9	0 to 13,9

Order no.	Width	Height	Length
	mm	mm	mm
5350700	790	1300	1660
5350800	790	1300	2110

- Package contains: Standard software 828 WIN "Free measuring", PC evaluation unit (without monitor), 2 parallel gage blocks 60/20, 2 plug-in heads $\varnothing 5$ mm, 2 quick clamps, Pair of measuring brackets 90/60 Ci/a, USB stick, Accessories package

Application:

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

Precimar CIM 1000 CNC

Precision length measuring machine

FEATURES

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 of calculating measuring result down to measuring force 0 N (dynamic measuring)
- Energy supply: 230 V/115 V; 50/60 Hz
- Package contains: Standard software 828 WIN "Free measuring", PC evaluation unit (without monitor), 2 parallel gage blocks 60/20, 2 plug-in heads Ø 5 mm, 2 quick clamps, Pair of measuring brackets 90/60 Ci/a, USB stick, Accessories package



TECHNICAL DATA

Order no.		5350701
Type		CIM 1000 CNC
Measuring range for outer measurement	mm	0 to 1000
Measuring range for inner measurement	mm	0.5 to 845
Direct measuring range	mm	300
Measuring uncertainty MPE_{E1} (L in mm)	μm	$\leq (0.055 + L/1500)$
Position deviation / error limit (L in mm)	μm	$\leq (0.04 + L/2000)$
Measuring forces		0 to 13.9

Order no.	Width	Height	Length
	mm	mm	mm
5350701	700	1700	2500

Application:

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

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. But we can also meet the latest demands for non-contact measuring with a range of optical sensors. Mahr's MarSurf surface metrology offers a combination of top quality, maximum competence and perfect expertise.



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MarSurf M 410 / M 410 PC / MD 26 PC	530
Mobile roughness measuring instrument	
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Roughness measuring station	
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Roughness and contour measuring station	
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Combined contour and surface measuring station	

Optical or tactile?

Selecting the right measuring equipment

When should you rely on tactile metrology and when does it make more sense to measure using established optical devices? As both methods are equally precise, delivering results with 99 % accuracy, it always comes down to the surface structures you want to measure and which parameters are relevant for your production. Mahr offers you versatile solutions for both types of systems. The following criteria will help you make your selection:

1

Process values in accordance with ISO 4287, ISO 13565, ISO 25178 und ISO 21920

Tactile and optical devices identify the roughness and sometimes the waviness of surfaces – all the while in compliance with the standards DIN EN ISO 4287 and DIN EN ISO 13565. Optical devices also comply with the standard DIN EN ISO 25178 and in future with the standard DIN EN ISO 21920, which allow for an extensive description of a surface without contact.

Tactile	Optical
●	●
●	●
●	●
○	●

2

Get established process values in the blink of an eye

Roughness, waviness and primary profiles describe the surface and its properties. The parameters derived from that provide information about the quality of the surface. This guarantees reliability in the production process and makes it possible to carry out incoming goods checks quickly.

Tactile	Optical
●	●
●	●
●	●
●	●

3

Statistical testing

When it comes to machined surfaces, structures are often no longer arranged in a certain direction but are distributed at random. A 2D section does not sufficiently describe them or, if it does, it is extremely time consuming. However, the extensive optical sampling of the surface provides more information and fast measuring results.

Tactile	Optical
●	●
○	●
○	●



4

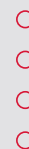
Measurement at the touch of a button

Simply place the probe arm on the surface, press the button and begin measurement – no need for complicated peripherals. Read the results directly on the display and print them out with the associated printer as desired. Enjoy all of this at an unbeatable price-performance ratio.

Tactile



Optical



5

Topological testing

When surfaces are extremely sensitive, soft, sticky or even discontinuous, non-contact and thus optical measurement is the method of choice. This applies equally to coated, inhomogeneous and complex surfaces as well as to surfaces without processing structures: It is best to scan and evaluate them optically.

Tactile



Optical



6

Easy accessibility

Both optical and tactile mobile devices enable reliable surface testing directly on the workpiece in the production area. To examine surfaces, small depressions or drill holes that are difficult to access, the removable drive units in tactile tools also present a particular advantage.

Tactile



Optical



MarSurf Pocket Surf IV / PS 10 / M 310 / M 410 / M 510

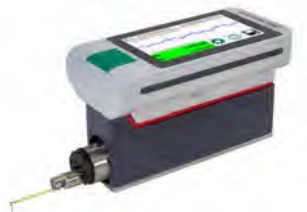
Device comparison



	PocketSurf IV	PS 10
Probe system type		Skidded probe system
Measuring direction		axial, radial
Traversing length		up to 15 mm
Tip radius	5,10 µm	2,5 µm
Measuring range	Ra - 6,35 µm, Ry, Rmax, Rz - 25,3 µm	350 µm
Measuring speed	1 mm/s	0,5 - 1 mm/s
Measuring force	15 mN	
Cutoff Lc as per ISO/JIS	0,8 mm	0.25 mm, 0.8 mm, 2.5 mm, automatic filter detection, variable
Parameters	4 surface parameters Ra, Ry, Rmax, Rz	over 30 surface parameters for R-profile as per current standards ISO/JIS/ASME/Motif
Filters/standards	ASME 2 RC filter	
Additional software		MarCom
Wireless data transfer		No
Data interface	MarConnect	
Scanner port		No
Printer port		No

MarSurf Pocket Surf IV / PS 10 / M 310 / M 410 / M 510

Device comparison



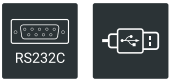
M 310	M 410	M 510
	Skidless probe system	
	axial	
	up to 26 mm	up to 75 mm
	2 µm	2 µm
	up to 1500 µm	1000 µm
	0,1 - 1 mm/s	0,1 - 2 mm/s
0,75 nm		
	0.08 mm, 0.25 mm, 0.8 mm, 2.5 mm, automatic filter detection, variable	0,08 mm, 0,25 mm, 0,8 mm, 2,5 mm, 8,0 mm, variable
	Over 55 surface parameters for R-, P- and W-profiles as per current ISO/JIS/ASME/Motif standards	Over 75 surface parameters for R-, P- and W-profiles according to current ISO/JIS/MOTIF standards
Gaussian filter according to ISO 16610- 21 (previously ISO 11562), special filter as per DIN EN ISO 13565- 1, Ls filter as per DIN EN ISO 3274 (can be switched off), DIN EN ISO 4287, 4288, 21920		DIN EN ISO 16610- 21 (Gaussian filter), DIN EN ISO 13565 Part 1 (specific filters), DIN EN ISO 16610- 31 (sturdy Gaussian filter), DIN EN ISO 4287, 4288, 21920, Daimler MBN 31007, SEP 1941
MarCom, MarWin Roughness Viewer, MarWin EasyRoughness mobile	MarWin Roughness Viewer, MarWin EasyRoughness mobile	BMT roughness software
Yes		No
USB A, USB, duplex, microSD slot for SD/SDHC cards up to 32 GB		USB A
	Yes	
	Yes	



For more information, please visit our website: www.mahr.com

MarSurf Pocket Surf IV

Mobile roughness measuring instrument



FEATURES

- Sturdy housing made of cast aluminum guarantees accurate and reliable measurement operation over many years
- Measurement of four selectable parameters: Ra, Rmax/Ry, Rz
- Reading of all the parameters after the measurement is completed
- Measuring length adjustable based on 1x, 3x or 5x the cutoff wavelength 0.8 mm/0.030"
- Can be implemented in any position – horizontal, vertical and upside down
- Four locking probe positions – axial or at 90°, 180°, or 270° angle
- Even difficult to reach surfaces on the inner and outer diameters are accessible
- MarConnect data output for simple data transmission, compatible with standard data recording systems
- Easy to read LCD displays the measured roughness parameters in µm or pinch immediately after scanning the surface
- Messages indicating when ranges exceed or fall below a limit and a battery warning symbol are also displayed
- Simplified calibration process
- Improved battery life with easy to replace 9V battery



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

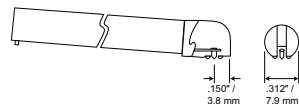
Order no.	2191800	2191802
Type		Pocket Surf IV
Measuring principle		tactile stylus method, tactile skidded probe
Measuring force	N	15 mN
Number n of sampling length according to ISO/JIS		Selected: 1 – 5
Data interface		RS- 232C, USB
Probe		Piezoelectric skid probe
H x W x D	mm	140 x 76 x 6.35 mm

MarSurf Pocket Surf IV

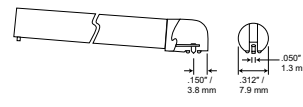
Mobile roughness measuring instrument

ACCESSORIES

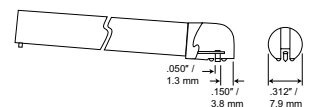
Order no.	Type	Description
2008010	EGH- 1019	General purpose probe, 10µm/90°
2008012	EGH- 1020-W1	Transverse chisel probe 10 µm
2008013	EGH- 1020-W2	Parallel chisel probe
2008014	EGH- 1021	Small bore probe, 10µm/90°
2008011	EGH- 1026	General purpose probe, 5µm/90°
2008015	EGH- 1027	Small bore probe, 5µm/90°
2008016	EGH- 1028	Groove bottom probe, 5µm/90°
2008024	EAS- 2496	Compact height stand
2008025	EAS- 2426	Universal stand
2008026	EAS- 2567	Column clamp for EAS- 2426
2008027	EPL- 1681	Adapter plate
2008023	EAS- 2421	Portable V-fixtured
2008022	EAS- 2584	Bottom plate
2008021	EAS- 2839	Bore adapter kit
2008020	EAS- 2739	V-adapter kit
2008030	PMD- 90101	Certified specimen, incl. test certificate
2008031	EMD- 90010	Precision reference specimen, without certificate
4346020	2000 r	Data connection cable RS232C (2 m)
4346023	2000 USB	Data connection cable USB (2 m)



EGH- 1019;EGH- 1026



EGH- 1020-W1



EGH- 1020-W2



EAS- 2421



EAS- 2584



EAS- 2839



EAS- 2739

PS 10 – Mobile measuring made easy

The MarSurf PS 10 is the ideal entry level instrument for surface metrology: Its extraordinarily simple and intuitive operation, along with numerous safety functions including the automatic cutoff, make the device as easy to control as a cellphone. Due to its minimal size, it is also perfect for location-independent measurements – vertical, horizontal and even overhead if necessary. And thanks to the removable drive unit, the MarSurf PS 10 can be used flexibly in production.

The measuring instrument boasts three order options for increased flexibility: with stylus tip 2 µm, 5 µm and also a variant with a transverse drive unit (MarSurf PS 10 C2).

- Intuitive operation: As easy as using a smartphone with a rotatable display
- Creates complete PDF measuring records right in the measuring instrument and data backup as TXT, X3P, CSV and PDF files
- Customized comments for the PDF measuring record entered directly into the MarSurf PS 10
- Error-free operation thanks to an integrated, removable roughness standard
- Automatic cutoff selection, ensuring that even non-specialists get the correct measuring results

9

other optional
probes

Always at hand

The calibration standard stays in the instrument and can be checked at any time.

500 g
lightweight



MarSurf PS 10

Surface measuring instruments

Extremely easy to operate with detailed profile display

The large 4.3" high-resolution and backlit TFT touch display allows intuitive operation and precise representation of the measuring profile.

Perfect evaluation and documentation

Measuring records are automatically created in the instrument without the need for additional software.

ISO 21920 ready

Now with new roughness standard
DIN EN ISO 21920!

Flexible use

The removable drive unit, in conjunction with the optional handheld support, lends this instrument added versatility where space is limited, e.g. in holes or when measuring small parts.

up to

500,000

measurements

can be stored in the instrument

31

parameters

same range of functions as a
laboratory instrument

4.3"

TFT touch display

similar to a smartphone

at least

1,200

measurements

without power supply

MarSurf PS 10 / PS 10 C2

Mobile roughness measuring instrument



FEATURES

"MarSurf" - 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
- Additional version with transverse drive unit available as MarSurf PS 10 C2 (item number 6910235)
- Software: MarCom Professional free download: www.mahr.com/marcom (only for Mahr data cables and wireless systems with USB and RS-232 interface)
- Package contains: Roughness standard, integrated in housing (removable), Stylus protection / Prism holder, power source, instruction manual, Carrying case with shoulder strap, USB cable, Extension cable to drive unit (length 1.2 m)
- Scope of delivery (output) Roughness standard, integrated in housing (removable), Stylus protection / Prism holder, power source, instruction manual, Carrying case with shoulder strap, USB cable, Extension cable to drive unit (length 1.2 m)



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

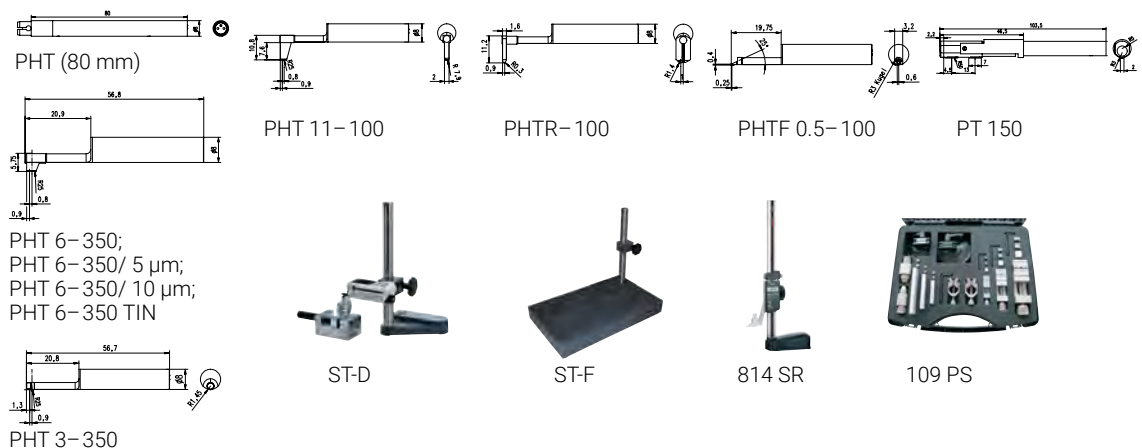
Order no.	6910230	6910232	6910235
Type		PS 10	PS 10 C2
Traversing length (Lt)		till 15 mm	till 5.6 mm
Measuring principle		tactile stylus method, tactile skidded probe	
Measuring force	N	0.00075 N	0.00075
Filter according to ISO/JIS		Gaussian filter as per ISO 16610-21 (formerly ISO 11562), special filter 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	
Short stroke under ISO/JIS		Selectable	Selectable
Number n of sampling length according to ISO/JIS		Selectable: 1 to 16	Selectable: 1 to 16
Surface parameters		Over 30 characteristic values for R-profile in accordance with current ISO/JIS/ASME/Motif standardization	
Battery type		Lithium-ion accu 3.7 V	
Data interface		USB, Duplex, Micro SD slot for SD / SDHC cards up to 32 GB	
Languages		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish, Romanian	
Storage capacity		Min. 3900 profiles, min. 500,000 results, min. 1500 PDF records, expandable to 32 GB with Micro SD card	
Probe		Inductive skidded probe	Inductive skidded probe
Calibration function		Dynamic; Ra, Rz, Rsm	Dynamic; Ra, Rz, Rsm
IP protection category		IP 40	
Operating temperature	°C	10 °C to 45 °C	
Lagertemperatur	°C	- 10 °C to 60 °C	
H x W x D	mm	160 mm x 77 mm x 50 mm	
Other functions		Lock/password protected, date/time	

MarSurf PS 10 / PS 10 C2

Mobile roughness measuring instrument

ACCESSORIES

Order no.	Type	Description
6850540	PHT (80 mm)	PHT pick-up extension 80 mm
6111520	PHT 6–350	Standard probe 2 µm
6111526	PHT 6–350/ 5µm	Standard probe 5 µm
6111527	PHT 6–350/ 10µm	Standard probe 10 µm
6111521	PHT 3–350	Probe for bores with a dia. larger than 3 mm
6111524	PHT 11–100	Probe for grooves
6111525	PHTR–100	Probe for concave and convex surfaces
6111522	PHTF 0.5–100	Probe for gear tooth flanks
6111523	PT 150	Probe for metal sheets
6850715	PHT-ts4	Pick-up protection with header V-block, steel
7028530	PHT-ts3	Pick-up protection header V-block, plastic
6910209	ST-a3	Mount PS 10/M310 on measuring stand ST
6910435	ST-a2	RD 18 C / PS 10 upright holder for cylindrical drive unit, Ø 8 mm
6710803	ST-D	Measuring stand 300 mm with cast iron base
6710806	ST-F	Measuring stand 300 mm with granite plate
6710807	ST-G	Measuring stand 300 mm with granite plate and T-slot
2247086	814 Sh	Adjustable mounting bracket to connect to 814 SR
4426100	814 SR	Digital height gage, 0 – 350 mm mm
4426101	814 SR	Digital height gage, 0 – 600 mm mm
4102357	16 EXu	Data connection cable USB (2 m)
4102603	DK-U1	Data cable USB bidirectional (2 m)
6710401	PP	V-block
6710604	PPS	Parallel vice
6710529	CT 120	XY table
4246819	109 PS	Set of miniature precision vises Set contents: Mini-vises, jaw widths 15 / 25 / 35 mm, with tripod and V-blocks and miniature dividing attachments
6820420	PRN 10	Roughness standard with Mahr calibration certificate, profile depth 10 µm
4413000	815 GN	Measuring tripod with triangular pedestal 300 mm
4413001	815 GN	Measuring tripod with triangular pedestal 500 mm
4413005	815 GN	Measuring tripod with triangular pedestal 750 mm
4416000	815 MA	Measuring tripod with magnetic base
6299054	SW XR 20	Software
6910240	SF LCD	Protective films for LCD, real glass (3 pieces)
6800000DKS	MGS 1	Geometric standard, sinusoidal profile
6800000KAL	MGS 1	Geometric standard, sinusoidal profile
6800001DKS	MGS 3	Geometric standard, sinusoidal profile
6800001KAL	MGS 3	Geometric standard, sinusoidal profile
6800002DKS	MGS 10	Geometric standard, sinusoidal profile
6800002KAL	MGS 10	Geometric standard, sinusoidal profile
6850738	RD 18 C2	Collet chucks for RD 18 C2 / PFM–2 for Ø 5 – 80 mm
9055446		Probe extension for PHT 82x70



M 310 – Adds value to **mobile roughness measurement**

Are you used to using your smartphone to access your data anytime, wherever you are? That is exactly what Mahr's new MarSurf M 310 provides: A flexible all-rounder for the mobile recording and evaluation of measuring data. Simple operation and a robust design

ensure the MarSurf M 310 is perfectly suited for use in production, where dirt and dust can clog the instrument and it is often users with little prior knowledge performing the quality control.

For all those who need more

The **MarSurf M 310** has the same functions as the PS 10 but has even more significant added benefits for you:

1

Print directly, document easily

Measuring results on paper? Sometimes still the fastest way. The mobile printer allows you to save data on thermal paper, which can then be added directly to the workpiece.

2

Preprogrammed measuring functions for immediate measuring success

A variety of measuring parameters can be defined, saved and then called up on the workpiece in the device settings. It even works using a barcode scanner, which simply connects to the MarSurf M 310. This allows even workers without expert knowledge or training to determine reliable roughness parameters.

3

Robot ready: Integrate instrument directly in the production line

The MarSurf M 310 and its interfaces can be directly integrated into your production lines, such as for measuring tasks on the robot arm. They control the measuring instrument remotely – conveniently from your computer, for example.

Status at a glance

Instrument status at a glance thanks to two easily visible status LEDs. Depending on the signal color, a measurement is underway, data are being transferred or an error has been detected. Standby mode shows the charging status.

Robust in every respect

Equipped for virtually any environment: The robust skidded probe system means that the measuring instrument is less sensitive to vibrations. The PHT probe is easy to clean thanks to its open skid.



MarSurf M 310

Surface measuring instruments

Modern optics, perfect display

A high resolution, backlit 4.3" TFT display ensures precise display of your measuring results. It is operated directly via the touchscreen – just as you are used to with your smartphone.

IATF compliant

The tried and true MarConnect duplex interface enables the transmission of a measuring equipment ID with each measurement. This makes measuring results traceable at any time.



ISO 21920 ready

Now with new roughness standard
DIN EN ISO 21920!

Software with a success guarantee

With this measuring instrument, you can reliably determine roughness parameters even without expert knowledge or training – thanks to intuitive software, clear menu structures and preprogrammed measuring functions.



MarSurf M 310 / M 310 C2 for transverse measurement / 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 Wireless adapter or the USB/wireless printer
- Wireless transmission of measurement results via wireless stick to the free MarCom software
- Remote start of measurement via cable or wireless
- Connection of a scanner for automatic start of the measuring programs or reading of protocol texts via barcode or QR code
- Specification of the intersection line C in μm or in % of R_z for the parameters R_{mr} and t_p
- Data backup as TXT, X3P, CSV or PDF file
- Transfer of measuring records and data optionally via cable or wireless
- 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

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	6910264	6910265	6910267	6910268
Type		M 310	M 310 C2 for transverse measurement	M 310	M 310 with printer	
Traversing length (Lt)		till 15 mm	till 5.6 mm	till 15 mm		
Measuring principle		tactile stylus method, tactile skidded probe				
Measuring force	N	.00075				
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), DIN EN ISO 4287, 4288, 21920				
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm, automatic filter detection, variable				
Short stroke under ISO/JIS		Selectable				
Number n of sampling length according to ISO/JIS		Selectable: 1 to 16				
Surface parameters		Over 30 characteristic values for R-profile in accordance with current ISO/JIS/ASME/Motif standardization				
Battery type		Lithium-ion accu 3.7 V				
Data interface		USB A, USB, Duplex, Micro SD slot for SD / SDHC cards up to 32 GB				
Languages		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish, Romanian				
Storage capacity		Min. 3900 profiles, min. 500,000 results, min. 1500 PDF measuring records, expandable to 32 GB with microSD card (320x memory capacity)				
Probe		Inductive skidded probe				
Calibration function		Dynamic; Ra, Rz, Rsm				
IP protection category		IP 40				
Operating temperature	°C	10 °C to 45 °C				
Lagertemperatur	°C	– 10 °C to 60 °C				
H x W x D	mm	160 mm x 77 mm x 50 mm				
Other functions		Lock/password protected, date/time				

M 310 C2 or MarSurf M 310 set without probe

- Free software "MarWin Easy Roughness Viewer" for further documentation (statistics, multiple profiles and results on one page etc.) available for download on the Mahr website.
- Package contains: Roughness standard, integrated in housing (removable), Stylus protection / Prism holder, power source, instruction

manual, Carrying case with shoulder strap, USB cable, Extension cable to drive unit (length 1.2 m)

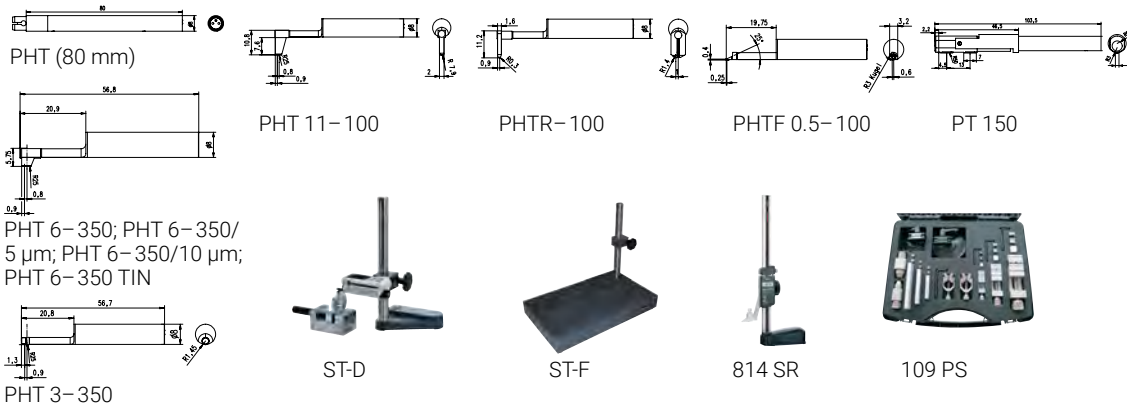
- Scope of delivery (output) Roughness standard, integrated in housing (removable), Stylus protection / Prism holder, power source, instruction manual, Carrying case with shoulder strap, USB cable, Extension cable to drive unit (length 1.2 m)

MarSurf M 310 / M 310 C2 for transverse measurement / M 310 with printer

Mobile roughness measuring instrument

ACCESSORIES

Order no.	Type	Description
6910271	DP-B1	Set consisting of Star Micronics SM-L200 Bluetooth® printer and USB wireless adapter
4102603	DK-U1	Data cable USB bidirectional (2 m)
3028620	Handset scanner cable	USB 2D scanner Honeywell Xenon 1900
3003856	USB BT	USB Wireless adapter
3028820	Handheld scanner	Zebra Techn. Corp. DS2278 Bluetooth® Barcode Scanner
6850540	PHT (80 mm)	PHT pick-up extension 80 mm
6111520	PHT 6–350	Standard probe 2 µm
6111526	PHT 6–350/ 5µm	Standard probe 5 µm
6111527	PHT 6–350/ 10µm	Standard probe 10 µm
6111521	PHT 3–350	Probe for bores with a dia. larger than 3 mm
6111524	PHT 11–100	Probe for grooves
6111525	PHTR–100	Probe for concave and convex surfaces
6111522	PHTF 0.5–100	Probe for gear tooth flanks
6111523	PT 150	Probe for metal sheets
6850715	PHT-ts4	Pick-up protection with header V-block, steel
7028530	PHT-ts3	Pick-up protection header V-block, plastic
6910209	ST-a3	Mount PS 10/M310 on measuring stand ST
6910435	ST-a2	RD 18 C / PS 10 upright holder for cylindrical drive unit, Ø 8 mm
6710803	ST-D	Measuring stand 300 mm with cast iron base
6710806	ST-F	Measuring stand 300 mm with granite plate
6710807	ST-G	Measuring stand 300 mm with granite plate and T-slot
2247086	814 Sh	Adjustable mounting bracket to connect to 814 SR
4426100	814 SR	Digital height gage, 0 – 350 mm mm
4426101	814 SR	Digital height gage, 0 – 600 mm mm
6710401	PP	V-block
6710604	PPS	Parallel vice
6710529	CT 120	XY table
4246819	109 PS	Set of miniature precision vises, Set contents: Mini-vises, jaw widths 15 / 25 / 35 mm, with tripod and V-blocks and miniature dividing attachments
6820420	PRN 10	Roughness standard with Mahr calibration certificate, profile depth 10 µm
4413000	815 GN	Measuring tripod with triangular pedestal 300 mm
4413001	815 GN	Measuring tripod with triangular pedestal 500 mm
4413005	815 GN	Measuring tripod with triangular pedestal 750 mm
4416000	815 MA	Measuring tripod with magnetic base
6910240	SF LCD	Protective films for LCD, real glass (3 pieces)
6850500	MH	Magnetic fixture PS 10 / M 310
6820521	PS 10 KN Mahr	PS 10 Gage / Geometric Standard incl. Mahr Calibration Certificate
6299436	M 310 PC	Software MarWin Easy Roughness mobile
6299443	Offline SW	MarWin
6800000DKS	MGS 1	Geometric standard, sinusoidal profile
6800000KAL	MGS 1	Geometric standard, sinusoidal profile
6800001DKS	MGS 3	Geometric standard, sinusoidal profile
6800001KAL	MGS 3	Geometric standard, sinusoidal profile
6800002DKS	MGS 10	Geometric standard, sinusoidal profile
6800002KAL	MGS 10	Geometric standard, sinusoidal profile



MarSurf M 310 PC

Mobile roughness measuring instrument

FEATURES

MarSurf M 310 PC

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 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.

- 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



TECHNICAL DATA

Order no.		6910295
Type		M 310 PC
Traversing length (Lt)		till 15 mm
Measuring principle		tactile stylus method, tactile skidded probe
Measuring force	N	0.00075 N
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
Short stroke under ISO/JIS		selectable
Number n of sampling length according to ISO/JIS		selectable: 1 to 16
Surface parameters		Over 80 parameters for R-, P- and W-profiles according to current ISO/JIS/ASME/Motif standards
Battery type		Lithium-ion accu 3.7 V
Data interface		USB A, 4x USB 3.1 Gen. 2, Display port, HDMI, wireless
Probe		Inductive skidded probe
Other functions		Lock/code word protection, date/time

Application:

Mechanical engineering

Bearings, shafts, racks, valves, various components from the engineering and precision engineering industry

Automotive

Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Medicine

Surface roughness measurement for hip and knee endoprotheses

Aerospace

Turbine components

Optics

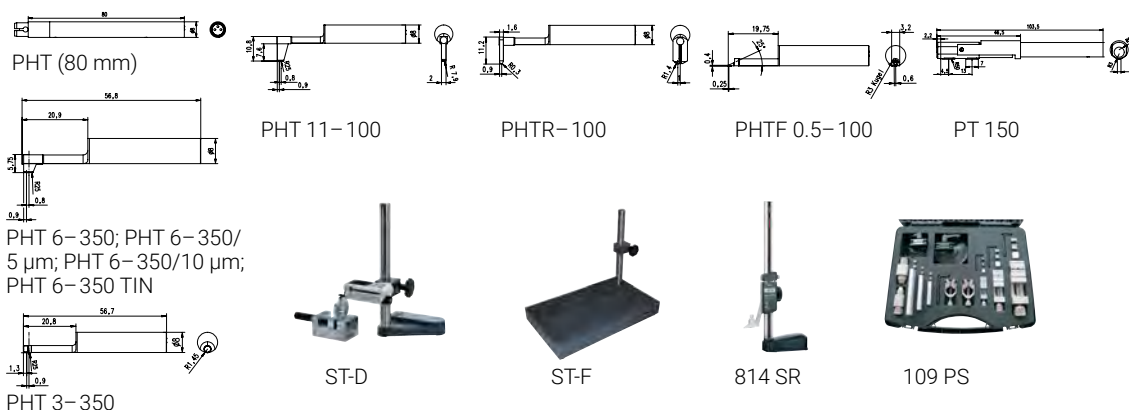
Various optical components

MarSurf M 310 PC

Mobile roughness measuring instrument

ACCESSORIES

Order no.	Type	Description
3028620	Handset scanner cable	USB 2D scanner Honeywell Xenon 1900
3028820	Handheld scanner	Zebra Techn. Corp. DS2278 Bluetooth® Barcode Scanner
3003856	USB BT	USB Wireless adapter
6910271	DP-B1	Set consisting of Star Micronics SM-L200 Bluetooth® printer and USB wireless adapter
4102603	DK-U1	Data cable USB bidirectional (2 m)
6850540	PHT (80 mm)	PHT pick-up extension 80 mm
6111520	PHT 6–350	Standard probe 2 µm
6111526	PHT 6–350/ 5µm	Standard probe 5 µm
6111527	PHT 6–350/ 10µm	Standard probe 10 µm
6111521	PHT 3–350	Probe for bores with a dia. larger than 3 mm
6111524	PHT 11– 100	Probe for grooves
6111525	PHTR– 100	Probe for concave and convex surfaces
6111522	PHTF 0.5– 100	Probe for gear tooth flanks
6111523	PT 150	Probe for metal sheets
6850715	PHT-ts4	Pick-up protection with header V-block, steel
7028530	PHT-ts3	Pick-up protection header V-block, plastic
6910209	ST-a3	Mount PS 10/M310 on measuring stand ST
6910435	ST-a2	RD 18 C / PS 10 upright holder for cylindrical drive unit, Ø 8 mm
6710803	ST-D	Measuring stand 300 mm with cast iron base
6710806	ST-F	Measuring stand 300 mm with granite plate
6710807	ST-G	Measuring stand 300 mm with granite plate and T-slot
2247086	814 Sh	Adjustable mounting bracket to connect to 814 SR
4426100	814 SR	Digital height gage, 0 – 350 mm mm
4426101	814 SR	Digital height gage, 0 – 600 mm mm
6710401	PP	V-block
6710604	PPS	Parallel vice
6710529	CT 120	XY table
4246819	109 PS	Set of miniature precision vises, Set contents: Mini-vises, jaw widths 15 / 25 / 35 mm, with tripod and V-blocks and miniature dividing attachments
6820420	PRN 10	Roughness standard with Mahr calibration certificate, profile depth 10 µm
4413000	815 GN	Measuring tripod with triangular pedestal 300 mm
4413001	815 GN	Measuring tripod with triangular pedestal 500 mm
4413005	815 GN	Measuring tripod with triangular pedestal 750 mm
4416000	815 MA	Measuring tripod with magnetic base
6299443	Offline SW	MarWin
6910240	SF LCD	Protective films for LCD, real glass (3 pieces)
6850500	MH	Magnetic fixture PS 10 / M 310
6820521	PS 10 KN Mahr	PS 10 Gage / Geometric Standard incl. Mahr Calibration Certificate
6800000DKS	MGS 1	Geometric standard, sinusoidal profile
6800000KAL	MGS 1	Geometric standard, sinusoidal profile
6800001DKS	MGS 3	Geometric standard, sinusoidal profile
6800001KAL	MGS 3	Geometric standard, sinusoidal profile
6800002DKS	MGS 10	Geometric standard, sinusoidal profile
6800002KAL	MGS 10	Geometric standard, sinusoidal profile



MarSurf M 410

Simple, innovative, flexible – modern handheld surface metrology

Mobile recording and evaluation of measuring data has never been this easy. The MarSurf M 410 is convenient and flexible to use – just like a modern smartphone. It has a practical touch display, an integrated PDF memory, innovative accessories, and can transfer data wirelessly – all of which effectively simplify your workload.

Benefit from functions that only Mahr can offer you. In addition to the practical and efficient design and the flexibility this offers, the MarSurf M 410 also has an automatic filter setting by detecting the surface structure. This automatic contacting also guarantees the unmatched reliability of your measurements. The magnetic 3-point holder for the probe arm and the freely combinable accessories offer additional process reliability.



Advantages

- Increased efficiency thanks to large integrated memory: More than 500,000 measuring programs and 1500 PDF reports, can be expanded by 32 GB (microSD)
- Skidless probes ensure that the roughness and waviness can be measured without an additional measuring station being required – determination of R-, W-, and P-parameters
- Safe measuring results thanks to automated cutoff option
- Automatic zeroing ensures process and material safety
- IATF ready – simply activate/deactivate in the menu by automatically transferring the item and serial number of the measuring instrument
- Free MarCom software to transfer data

Display and probe system can be separated

Optionally, you can use the measuring instrument as a mini mobile measuring station, for example by simply attaching the display to the wall using the supplied swivel docking station.



Magnetic probe holder

Probe arms can be changed quickly without tools and with additional protection: The magnetic 3-point holder ensures that the probe will not be broken in the event of a collision; it will simply be released by the magnetic holder.

MarSurf M 410

Surface measuring instruments

Simple alignment of the probe system

The inclination is easy to correct via the menu-driven, graphic instructions.

Intuitive operation via touch display

Easy to operate just like a smartphone so that no training or introduction to the operating functions is required – you can just get started.

Creation of PDFs directly on the device

Practical: The device creates a complete PDF file without the need for additional software or transfer to a computer. Information can be added to the PDF files directly on the device.

Wireless data transmission

Connect your measuring instrument wirelessly e.g. to a PC and transfer your data to Microsoft Excel or another evaluation software.

ISO 21920 ready

Now with new roughness standard DIN EN ISO 21920!

Importing information using a scanner

Simply start your measuring program by scanning a QR or barcode. You do not need to enter any profile information as your saved measuring programs are linked with a corresponding code.



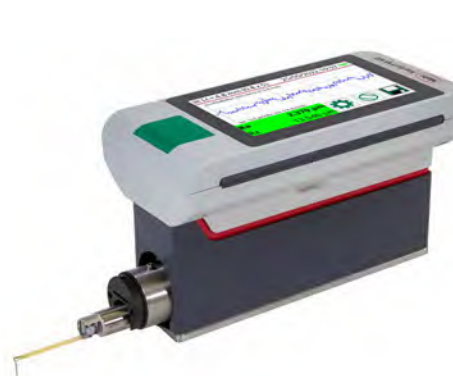
MarSurf M 410

Mobile surface measuring instrument

FEATURES

Simple, innovative, flexible – modern surface metrology for handheld use

- Handy roughness tester for mobile use
- Simple and intuitive operation: As easy as operating a smartphone
- Large, backlit 4.3" TFT touch display
- Rotatable display
- Magnetic probe holder: Fast probe arm change without tools
- Thanks to skidless probe: measurements of roughness as well as waviness – no extra measuring station required, determination of R, W and P parameters
- Simple alignment of the probe system: The inclination can be easily corrected using the menu-guided graphic instructions./li>
- Process and material safety thanks to automatic zeroing
- Micro USB interface for remote control via ASCII commands, e.g. via software for statistical process control
- USB-A interface for connecting e.g. a USB wireless adapter or the USB wireless printer
- Wireless transmission of measurement results via wireless stick to the free MarCom software
- Remote start of measurement via cable or wireless
- Connection of a scanner for automatic start of the measuring programs or reading of protocol texts via barcode or QR code
- Specification of the profile section level C in μm or in % of Rz for the characteristic values Rmr and tp/li>
- Data backup as TXT, X3P, CSV and PDF file
- Transmission of measurement protocols and data optionally via cable or wireless
- IATF 16949 compliant - secure traceability with MarConnect.
- Print directly to the mobile printer (as an option or directly in the set with printer)
- Creation of finished PDF protocols directly in the measuring device
- Customer-specific comments for the PDF log are entered directly on the MarSurf M 410
- MRK and ADK curve display and printing
- Measuring programs are saved (Quick & Easy)
- Mains-independent operation: over 1200 measurements without having to recharge the device
- Everything in the palm of your hand. Small size and low weight (approx. 500 g)
- Flexible device: Removable drive unit
- More than 50 parameters: Offer a performance range like a laboratory instrument.



Application:

Mechanical engineering

Bearings, shafts, racks, valves, various components from the engineering and precision mechanics industries

Automotive

Steering, brake systems, transmissions, crankshafts, camshafts, cylinder heads, cylinder blocks, turbochargers

Medical

Roughness measurement on hip and knee endoprostheses

Aerospace

Turbine components

Optics

Diverse optical components

TECHNICAL DATA

Order no.	6910290	6910291
Type		M 410
Traversing length (Lt)		till 26 mm
Measuring principle		tactile stylus method, tactile skidless probe
Measuring force	N	0.00075
Filter according to ISO/JIS		Gaussian filter according to DIN EN ISO 16610–21, robust Gaussian filter according to DIN EN ISO 16610–31, special filter according to DIN EN ISO 13565–1, ls filter according to DIN EN ISO 3274 (can be switched off)
Cutoff lc according to ISO/JIS		0,08 mm, 0,25 mm, 0,8 mm, 2,5 mm, automatic filter detection, variable
Short stroke under ISO/JIS		selectable
Number n of sampling length according to ISO/JIS		selectable: 1 to 16
Surface parameters		Over 55 characteristic values for R-, P-, W-profile in accordance with current ISO/JIS/ASME/Motif standardization
Battery type		Lithium-ion accu 3.7 V
Data interface		USB A, MarConnect (RS–232), Micro SD slot for SD / SDHC cards up to 32 GB
Languages		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish, Romanian
Storage capacity		min. 3900 profiles, min. 500,000 results, min. 1500 PDF logs, expandable with microSD card up to 32 GB (increases storage capacity by a factor of 320)
Probe		inductive skidless probe system
IP protection category		IP 40
Operating temperature	°C	10 °C to 45 °C
Relative humidity		30 % to 85 %, non-condensing!
Lagertemperatur	°C	– 10 °C to 60 °C
Weight measuring instrument		300 g
Weight drive unit		1120 g
H x W x D	mm	198 mm x 77 mm x 97 mm
(L x W x H) for measuring instrument		162 mm x 77 mm x 35 mm
(L x W x H) for drive unit		194 mm x 38 mm x 72 mm
Other functions		Lock/code word protection, date/time

- Quick access to your desired functions through favorites storage in the display
- Automatic cutoff selection: ensures correct measurement results even for the non-measuring technician

- Free software "MarWin Easy Roughness Viewer" for further documentation (statistics, multiple profiles and results on one page etc.) available for download on the Mahr website.

ACCESSORIES

Order no.	Type	Description
6910271	DP-B1	Set consisting of Star Micronics SM-L200 Bluetooth® printer and USB wireless adapter
4102603	DK-U1	Data cable USB bidirectional (2 m)
3028620	Handset scanner cable	USB 2D scanner Honeywell Xenon 1900
3003856	USB BT	USB Wireless adapter
3028820	Handheld scanner	Zebra Techn. Corp. DS2278 Bluetooth® Barcode Scanner
6852403	BFW	Probe arm
6910294		Measuring stand holder MD 26
6710803	ST-D	Measuring stand 300 mm with cast iron base
6710806	ST-F	Measuring stand 300 mm with granite plate
6710807	ST-G	Measuring stand 300 mm with granite plate and T-slot
6710401	PP	V-block
6710604	PPS	Parallel vice
6710529	CT 120	XY table
4246819	109 PS	Set of miniature precision vises Set contents: Mini-vises, jaw widths 15 / 25 / 35 mm, with tripod and V-blocks and miniature dividing attachments
6820420	PRN 10	Roughness standard with Mahr calibration certificate, profile depth 10 µm
6299436	M 310 PC	Software MarWin Easy Roughness mobile
6299443	Offline SW	MarWin
6910240	SF LCD	Protective films for LCD, real glass (3 pieces)
6800000DKS	MGS 1	Geometric standard, sinusoidal profile
6800000KAL	MGS 1	Geometric standard, sinusoidal profile
6800001DKS	MGS 3	Geometric standard, sinusoidal profile
6800001KAL	MGS 3	Geometric standard, sinusoidal profile
6800002DKS	MGS 10	Geometric standard, sinusoidal profile
6800002KAL	MGS 10	Geometric standard, sinusoidal profile
6820901DKS	MRS 1,5	Roughness standard
6820901KAL	MRS 1,5	Roughness standard
6820903DKS	MRS 3	Roughness standard
6820903KAL	MRS 3	Roughness standard



ST-D



ST-F



ST-G



109 PS

MarSurf M 410 PC / MD 26 PC

Mobile surface measuring instrument

FEATURES

- Handy roughness tester for mobile use
- Magnetic probe holder: Fast probe arm change without tools
- Thanks to skidless probe: measurements of roughness as well as waviness – no extra measuring station required, determination of R, W and P parameters
- Connection of a scanner for automatic start of the measuring programs or reading of protocol texts via barcode or QR code
- More than 80 parameters for R, P, W profiles according to current standard ISO/JIS or MOTIF (ISO 12085)
- Bandpass filter Ls according to current standard, Ls can also be switched off or freely varied
- Extensive logging
- Quick & Easy measuring programs can be created quickly in the learning procedure
- Automatic function for standard-compliant selection of cutoff and scanning distance
- Support of different calibration methods (static and dynamic) with presetting of the parameter Ra or Rz
- Adjustable maintenance and calibration intervals
- Many measuring station configurations are possible for individual applications
- Flexibility of the system through various options
- Different user levels protect against incorrect operation of the device and ensure that no unauthorized users can use the device



TECHNICAL DATA

Order no.	6910296	6910297
Type	M 410 PC	MD 26 PC
Traversing length (Lt)	till 26 mm	
Measuring principle	tactile stylus method, tactile skidless probe	
Measuring force	N	0.00075 N
Filter according to ISO/JIS	Gaussian filter according to DIN EN ISO 16610–21, robust Gaussian filter according to DIN EN ISO 16610–31, special filter according to DIN EN ISO 13565–1, Ls filter according to DIN EN ISO 3274 (can be switched off)	
Cutoff lc according to ISO/JIS	0,08 mm, 0,25 mm, 0,8 mm, 2,5 mm, automatic filter detection, variable	
Short stroke under ISO/JIS	selectable	
Number n of sampling length according to ISO/JIS	selectable: 1 to 16	
Surface parameters	Over 80 parameters for R, P, W profiles according to current standardization ISO/JIS or Motif (ISO 12085)	
Battery type	Lithium-ion accu 3.7 V	
Data interface	USB A, 4x USB 3.1 Gen. 2, Display port, HDMI, wireless	
Probe	inductive skidless probe system	
Weight drive unit	1120 g	
(L x W x H) for drive unit	194 mm x 38 mm x 72 mm	
Other functions	Lock/code word protection, date/time	

Application:

Mechanical engineering

Bearings, shafts, racks, valves, various components from the engineering and precision mechanics industries

Automotive

Steering, brake systems, transmissions, crankshafts, camshafts, cylinder heads, cylinder blocks, turbochargers

Medical

Roughness measurement on hip and knee endoprotheses

Aerospace

Turbine components

Optics

Diverse optical components

MarSurf M 410 PC / MD 26 PC

Mobile surface measuring instrument

ACCESSORIES

Order no.	Type	Description
6910271	DP-B1	Set consisting of Star Micronics SM-L200 Bluetooth® printer and USB wireless adapter
4102603	DK-U1	Data cable USB bidirectional (2 m)
3028620	Handset scanner cable	USB 2D scanner Honeywell Xenon 1900
3003856	USB BT	USB Wireless adapter
3028820	Handheld scanner	Zebra Techn. Corp. DS2278 Bluetooth® Barcode Scanner
6852403	BFW	Probe arm
6910294		Measuring stand holder MD 26
6710803	ST-D	Measuring stand 300 mm with cast iron base
6710806	ST-F	Measuring stand 300 mm with granite plate
6710807	ST-G	Measuring stand 300 mm with granite plate and T-slot
6710401	PP	V-block
6710604	PPS	Parallel vice
6710529	CT 120	XY table
4246819	109 PS	Set of miniature precision vises Set contents: Mini-vises, jaw widths 15 / 25 / 35 mm, with tripod and V-blocks and miniature dividing attachments
6820420	PRN 10	Roughness standard with Mahr calibration certificate, profile depth 10 µm
4413000	815 GN	Measuring tripod with triangular pedestal 300 mm
4413001	815 GN	Measuring tripod with triangular pedestal 500 mm
4413005	815 GN	Measuring tripod with triangular pedestal 750 mm
4416000	815 MA	Measuring tripod with magnetic base
6299443	Offline SW	MarWin
6910240	SF LCD	Protective films for LCD, real glass (3 pieces)
6850500	MH	Magnetic fixture PS 10 / M 310
6800000DKS	MGS 1	Geometric standard, sinusoidal profile
6800000KAL	MGS 1	Geometric standard, sinusoidal profile
6800001DKS	MGS 3	Geometric standard, sinusoidal profile
6800001KAL	MGS 3	Geometric standard, sinusoidal profile
6800002DKS	MGS 10	Geometric standard, sinusoidal profile
6800002KAL	MGS 10	Geometric standard, sinusoidal profile
6820901DKS	MRS 1,5	Roughness standard
6820901KAL	MRS 1,5	Roughness standard
6820903DKS	MRS 3	Roughness standard
6820903KAL	MRS 3	Roughness standard



ST-D



ST-F



ST-G



814 Sh



814 SR



109 PS

MarSurf M 510

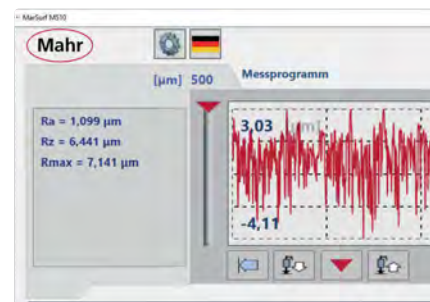
Mobile surface measuring instrument

Small measuring instrument for a **wide range of applications**

With the MarSurf M 510, Mahr presents a new mobile surface measuring instrument that impresses with its lightness and maneuverability. The compact all-rounder, which features a tactile skidless probe system, is available in three measuring lengths. This means you can be sure that you will always find the right measuring instrument for your individual applications.

The MarSurf M 510 offers a measuring range of 1 mm with three variants in measuring lengths of 15 mm, 50 mm and 75 mm. It reliably and precisely determines the roughness and waviness of technical surfaces of all types of workpieces, such as shafts, camshafts, vent sealing lips, cylinder bores and metal sheets. Easily install and set up the device yourself, as Mahr delivers it fully configured.

Other features ensure that the MarSurf M 510 can be used for a wide range of applications. Thanks to its vibration resistance, you can use the device in production environments or in machining centers without any problems. The motorized lifting and lowering of the stylus tip makes it a reliable and flexible companion for measuring surfaces. Another particularly practical feature is that it affixes to ferro-metallic surfaces thanks to the optional magnetic fixture, allowing you to position and fix it as you wish.



The user interface of the software ensures that the measured values can be read quickly.

Measuring in accordance with standards

The MarSurf M 510 is used to determine roughness parameters and apply filters in accordance with standards.



Advantages

- Smallest skidless probe system on the market
- Standard-compliant measurement of waviness and large roughness values over a measuring length of up to 75 mm
- Mobile and convenient testing of P, R and W parameters with just one instrument
- Highly versatile thanks to more than 1,000 measuring programs
- Software can be flexibly controlled with a PC, as it is Windows-compatible
- Extensive range of accessories for even more versatility

MarSurf M 510

Mobile surface measuring instrument

Low-maintenance stylus tip

The stylus tip is raised and lowered by motor control.



Powerful skidless probe system

This allows you to easily reach any measuring point on your workpiece.



Compact design

Due to its small size and weight, the MarSurf M 510 is handy and convenient to use.

Flexible USB port

You can connect either a PC or laptop via cable, depending on your requirements and existing equipment.

Version	Order no.	Measuring length	Dimensions L × W × H	Weight
MarSurf M 510-15	6910 310	15 mm	52 × 28 × 40 mm	150 g
MarSurf M 510-50	6910311	50 mm	158 × 40 × 46 mm	200 g
MarSurf M 510-75	6910312	75 mm	158 × 40 × 46 mm	200 g

MarSurf M 510 MiniProfiler

Mobile surface measuring instrument

FEATURES

Small measuring device for a large range of applications

- Smallest skidless probe system on the market
- Available in tracing length 15 mm, 50 mm und 75 mm
- Vibration resistant -> can be used in the production environment and machining centers
- Compact design
- Mobile and convenient testing of P, R and W parameters with just one device
- Motorized lift-off stylus tip
- Intuitive control of the free tracing system via PC software
- Connection via USB interface -> plug in MiniProfiler, start software, and go!
- Software operable with Windows 10 and 11
- Save measurement programs
- Only supplier on the market for Wsa standards with factory or NPL certificate
- Optional magnetic adhesion to the surface
- Additional holder for mounting on the measuring stand
- Currently the only measuring system on the market for the parameter Wsa



TECHNICAL DATA

Order no.		6910310	6910311	6910312
Type		M 510 MiniProfiler		
Traversing length (Lt)		till 15 mm	till 50 mm	till 75 mm
Measuring principle		tactile stylus method, tactile skidless probe		
Measuring force	N	0.00075 N		
Filter according to ISO/JIS		DIN EN ISO 16610–21 (Gaussian filter), DIN EN ISO 13565 Part 1 (specific filters), DIN EN ISO 16610–31 (robust Gaussian filter)		
Cutoff lc according to ISO/JIS		0,08 mm, 0,25 mm, 0,8 mm, 2,5 mm, 8,0 mm, variable		
Number n of sampling length according to ISO/JIS		5		
Surface parameters		Over 75 characteristic values for R-, P-, W-profile in accordance with current ISO/JIS/MOTIF standardization		
Data interface		USB A, 4x USB 3.1 Gen. 2, Display port, HDMI, wireless		
Probe		inductive skidless probe system		
Operating temperature	°C	5 °C to 35 °C		
Weight drive unit		150 g	200 g	
(L x W x H) for drive unit		52 x 28 x 40	158 x 40x 46	158 x 40 x 46
Other functions		other standards: Daimler MBN 31007, SEP 1941		

Application:

Mechanical engineering

Bearings, shafts, racks, valves, various components from the engineering and precision mechanics industries

Automotive

Steering, brake systems, transmissions, crankshafts, camshafts, cylinder heads, cylinder blocks, turbochargers

Medical

Roughness measurement on hip and knee endoprostheses

Aerospace

Turbine components

Optics

Diverse optical components

MarSurf M 510 MiniProfiler

Mobile surface measuring instrument

ACCESSORIES

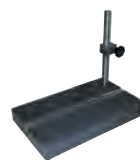
Order no.	Type	Description
4416000	815 MA	Measuring tripod with magnetic base
6710803	ST-D	Measuring stand 300 mm with cast iron base
6710806	ST-F	Measuring stand 300 mm with granite plate
6710807	ST-G	Measuring stand 300 mm with granite plate and T-slot
6710401	PP	V-block
6710529	CT 120	XY table
6710604	PPS	Parallel vice
9064901	XE3/i5 SFF	Computer - MarSurf WIN 10, Dell
9058327	Lenovo	Computer WIN 11 All-In-One/Touch
3027221	1080p	24" monitor
6268220	DE	Keyboard with USB cable DE
6268221	INT	Keyboard with USB cable INT
6268222	HU	Keyboard with USB cable HU
6268223	FR	Keyboard with USB cable FR
6268225	ES	Keyboard with USB cable ES
6268226	PT	Keyboard with USB cable PT
6268227	CZ	Keyboard with USB cable CZ
6268228	PL	Keyboard with USB cable PL
6268229	SV/FI	Keyboard with USB cable SV/FI



ST-D



ST-F



ST-G

Measure roughness in the machine tool

Mahr now offers an innovative automated solution for measuring surface roughness on workpieces directly in the CNC manufacturing machine. For this purpose, the MarSurf MC 510 measuring instrument is completely integrated into the tool holder, where it measures using a vibration-resistant, tactile skidless probe system – in accordance with standards and with high precision down to Rz 1 µm. This makes Mahr the world's only provider to offer roughness measurement as per the standard directly in the machine tool!

The MarSurf MC 510 is quickly and conveniently available in the machine tool: If a roughness measurement is to be carried out, the machine tool automatically inserts the measuring instrument from the tool magazine into the spindle like a regular machine tool. Various tool holders are available as interfaces, including types SK 40 and HSK-A 63. As soon as the measuring instrument is ready, the user can easily align it using the software-controlled, flexible swivel joint. The measuring movement is carried out by the integrated feed drive, with the CNC machine positioning the instrument at the measuring point.

The MarSurf MC 510 is powered independently of the machine tool as it has a powerful rechargeable battery. The measuring instrument can be used continuously in shift operation thanks to the replaceable battery. This makes the device ideal for automated production processes – regardless of the machine or control system. All in all, the MarSurf MC 510 offers reproducible measuring conditions that are reliable, flexible and efficient without operator influence.



Advantages

- Automated process for fast measurement of surface parameters
- Precisely reproducible measurements without operator influence
- Indication of tool wear and thus reduction of tool costs
- Protected against dirt thanks to robust design
- Flexible production processes thanks to direct control and measuring data output in NC code
- Increased process reliability as manual and downstream testing is no longer required
- OPC UA interface and closed-loop-ready
- Fully automatic and reliable documentation of surface parameters without expert knowledge

Integrated replaceable battery

The powerful replaceable battery for independent power supply can be conveniently recharged outside the machine tool.

Swivel joint

Use the swivel joint to align the MarSurf MC 510 for fine positioning, contacting, checking or parking.





Quick installation

Thanks to the holder for the tool spindle and tool changer, you can integrate the measuring instrument quickly and easily into your machine tool.

Integrated roughness standard

This allows you to automatically test whether the measuring instrument and probe arm are still working properly.

Tactile measuring unit

The MarSurf MC 510 measures surface roughness in accordance with standards and with high precision using a skidless probe system down to $R_z = 1 \mu\text{m}$.

MarSurf MC 510

Measuring principle	Tactile skidless probe system
Traversing length	$\leq 15 \text{ mm}$
Stylus tip radius	$2 \mu\text{m}$
Measuring range	$500 \mu\text{m}$; $1,000 \mu\text{m}$
Tilting axis (°)	max. 330
Interfaces	OPC UA, TCP/IP
Compatible CNC control unit	Siemens, Fanuc, Heidenhain

MarSurf MC 510 / MC 510 E

Mobile surface measuring instrument

FEATURES

Measuring roughness in the machine tool

- Mahr now offers an innovative automated solution for measuring surface roughness on workpieces directly in the CNC production machine. The MarSurf MC 510 measuring device is fully integrated into the tool holder, where it uses a vibration-resistant, tactile free probe system to measure – in compliance with standards and with high precision down to Rz 1 µm.
- The MarSurf MC 510 is quickly and conveniently available in the machine tool: If a roughness measurement is required, the machine tool automatically inserts the measuring device from the tool magazine into the spindle like a regular processing tool.
- Various tool holders are available as interfaces, including types SK 40 and HSK-A 63. As soon as the measuring device is ready, the operator can easily position it using the software-controlled, flexible swivel joint.
- The measuring movement is carried out by the integrated feed drive, with the CNC machine positioning the device at the measuring point.
- The MarSurf MC 510 is powered independently of the processing machine as it has a powerful rechargeable battery: Up to 200 measurements are possible per battery charge.
- This makes the device ideal for automated production processes – regardless of the machine and control system.
- All in all, the MarSurf MC 510 offers reproducible measuring conditions without operator influence - reliable, flexible and efficient.



TECHNICAL DATA

Order no.		6910514	6910530
Type		MC 510	MC 510 E
Versions		Built-in battery Rated capacity: 3400 mAh	Replaceable battery Rated capacity: 1500 mAh
Traversing length (Lt)		till 15 mm	
Measuring principle		tactile stylus method, tactile skidless probe	
Measuring force	N	0.00075	
Filter according to ISO/JIS		EN DIN ISO 4287, EN DIN ISO 13565, Part 1 and 2, DIN EN ISO 21920-2: 2021, EN DIN ISO 16610-21 (Gaussian filter), EN DIN ISO 13565 Part 1 (specific filters), EN DIN ISO 16610-31 (robust Gaussian filter)	
Cutoff lc according to ISO/JIS		0,08 mm, 0,25 mm, 0,8 mm, 2,5 mm	
Surface parameters		Rt, Ra, Rq, Rz, Rp, Rv, Rsk, Rku, Rsm, Rc, Rpc, Rdq, Rmax, Rlq, Rda, Rla, Pt, Rk, Mr1, Mr2, Rpk, Rvk, Rpkx, Rvkx, a1, a2, Wt, Wa, Wca, Wq, Wz, Wp, Wv, Wsk, Wku, Wdq, Wmax, Wlq, Wda, Wla, Rmr30, Rmr60, Rmr90, sSt(g), sSt(f), Wsa(1-5), Wa0.8_05, Wa0.8_06, Wa0.8_07, Wa0.8_08, Wa0.8_09, Rpq, Rmq, Rvq, Pmr60	
Battery type		Lithium-ion accu 3.7 V	
Data interface		wireless	
Storage capacity		Number of measuring programs > 1000	
Probe		2 µm / 90°	
Weight drive unit		1700 g incl. tool holder	
H x W x D	mm	214 x 80 x 80	
Other functions		Range of movement: 1-axis manipulator arm: tilting axis, tilting axis 330°, angle resolution 0.01°, smallest adjustable angle change 0.01°, time for 180° swivel ≤ 7 s, control and evaluation system (standard): IPC, Interfaces: OPCUA, TCP/IP	

Application:

Aerospace, Medical technology

Consistent and legally compliant documentation. Automated documentation of measurement results facilitates compliance with industry standards and quality requirements, especially in highly regulated industries.

Large and very expensive workpieces

Must remain in the clamping device or cannot be re-clamped in the event of reworking (alignment, concentricity, etc.)! With the MarSurf MC 510 / E, measurement and reworking can be carried out directly in the machining center.

High quantities (depending on cycle time)

Automated roughness measurement without manual intervention reduces machine downtime and measurement times.

Customers with a high degree of automation

AI, networking, closed loop, robot use, production lines, low staffing levels

Customers with the goal of process and cost optimization

Service life, data acquisition, key figures, tool monitoring, etc.

MarSurf MC 510 / MC 510 E

Mobile surface measuring instrument

ACCESSORIES

Order no.	Type	Description
6910520	HSK-A63	tool holder HSK-A63
6910521	SK 40	tool holder SK40
6910522	BT 40	tool holder BT40
6910523	Capto6	tool holder Capto6
6910524	HSK-A100	tool holder HSK-A100
6910525	SK 30	tool holder SK 30
6910526	SK 50	tool holder SK 50
6910527	BT 30	tool holder BT 30
6910528	BT 50	tool holder BT 50

MarSurf CD 140 / SD 140 / CD / GD / VD / LD / SD

Contour measuring stations



	CD 140 AG 11	CD 140 AF	SD 140 AG 11	CD
Level of automation	semi-automated			
Probe system type	Contour		Contour & roughness combined	Contour
Traversing length	up to 140 mm			
Z-axis travel path	350 mm	-	350 mm	
Measuring range	70 mm		up to 25 mm	up to 100 mm
Inclination adjustment	no			optional: $\pm 45^\circ$
Table axis TY	60 mm	25 mm	60 mm	
Measuring force	4...30 mN		0.7...30 mN	4...30 mN
X-axis resolution				
Probe system resolution	20 nm		0.8 nm	6 nm
Measuring speed				
Positioning speed X				
Z-axis positioning speed				
Max. workpiece weight	35 kg	1.5 kg	35 kg	
Probe arm length	350 mm		100...250 mm	210...490 mm

MarSurf CD 140 / SD 140 / CD / GD / VD / LD / SD

Contour measuring stations



GD		VD		LD	SD
fully automated					
	Roughness	Contour & roughness		Contour & roughness combined	
up to 140 or 280 mm					up to 140 mm
350 mm or 600 mm					350 mm
	up to 1.5 µm	Roughness: up to 1.5 µm Contour: up to 100 mm		up to 37.5 mm	up to 25 mm
	± 45°				
60 mm, optional automation					
	0.75 mN	Roughness: 0.75 mN Contour: 4...30 mN		0.7...30 mN	
10 nm					
	0.2 nm	Roughness: 0.2 nm Contour: 6 nm		0.8 nm	
0.02...10 mm/s					
0.02...200 mm/s					
0.02...50 mm/s					
90 kg					
	45...135 mm	Roughness: 45...135 mm Contour: 210...490 mm		100...250 mm	



For more information, please visit our website: www.mahr.com

Your solution for measuring the contours of **individual workpieces**

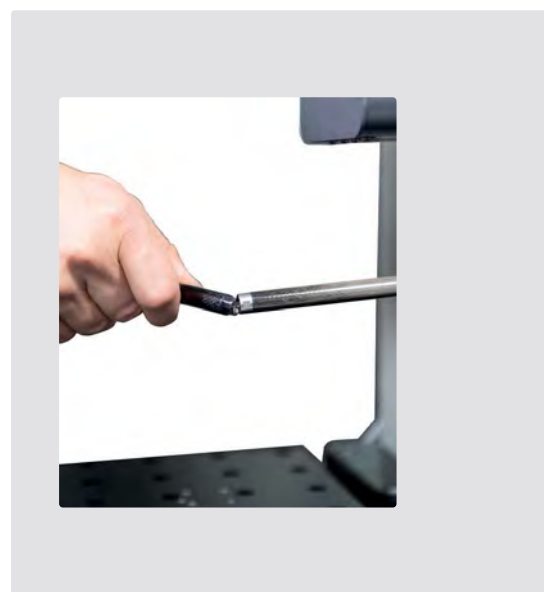
With its flexible clamp stand, the new MarSurf CD 140 AF contour measuring machine can measure both standardized and individual workpieces. This ensures you can achieve simple and reliable quality assurance with easy handling.

The new MarSurf CD 140 AF contour measuring machine delivers fast and precise measurements. It boasts a flexible workpiece holder, which makes it particularly easy to handle. The intelligent probe system and magnetic stylus tip holder ensure the process to replace stylus tips without any tools is the most straightforward process to date. Thanks to the flexible clamp stand, both standardized and individual testpieces can be measured with ease.



Advantages

- Comprehensive contour measurement functions – fast and simple
- Replacement of the stylus tip without any tools
- Travel speed in the X-axis of up to 200 mm/s
- Simple program creation or individual measurement using MarWin
- Automatic evaluation, best adjustment of contours, CAD contour comparison, and a lot more
- Flexible support plate with 25 mm bore grid for KMG workpiece holders, etc.
- Height-adjustable clamp stand for flexible use of workpiece holders and easy arrangement of workpieces in the correct measuring position
- Optionally expandable with the option of roughness measurements ($R_z > 2 \mu\text{m}$)
- Measurement with double stylus

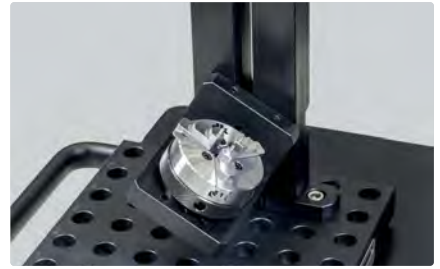
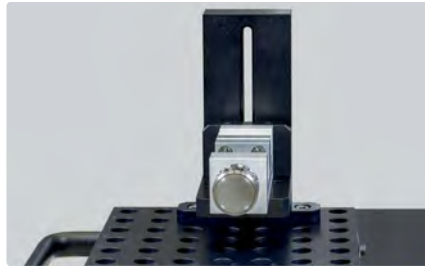
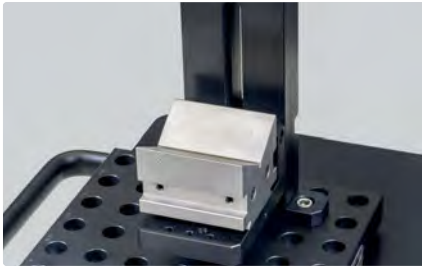


Height-adjustable clamp stand

The flexibly adjustable clamp stand enables the use of standardized clamps and individual workpiece holders.

MarSurf CD 140 AF

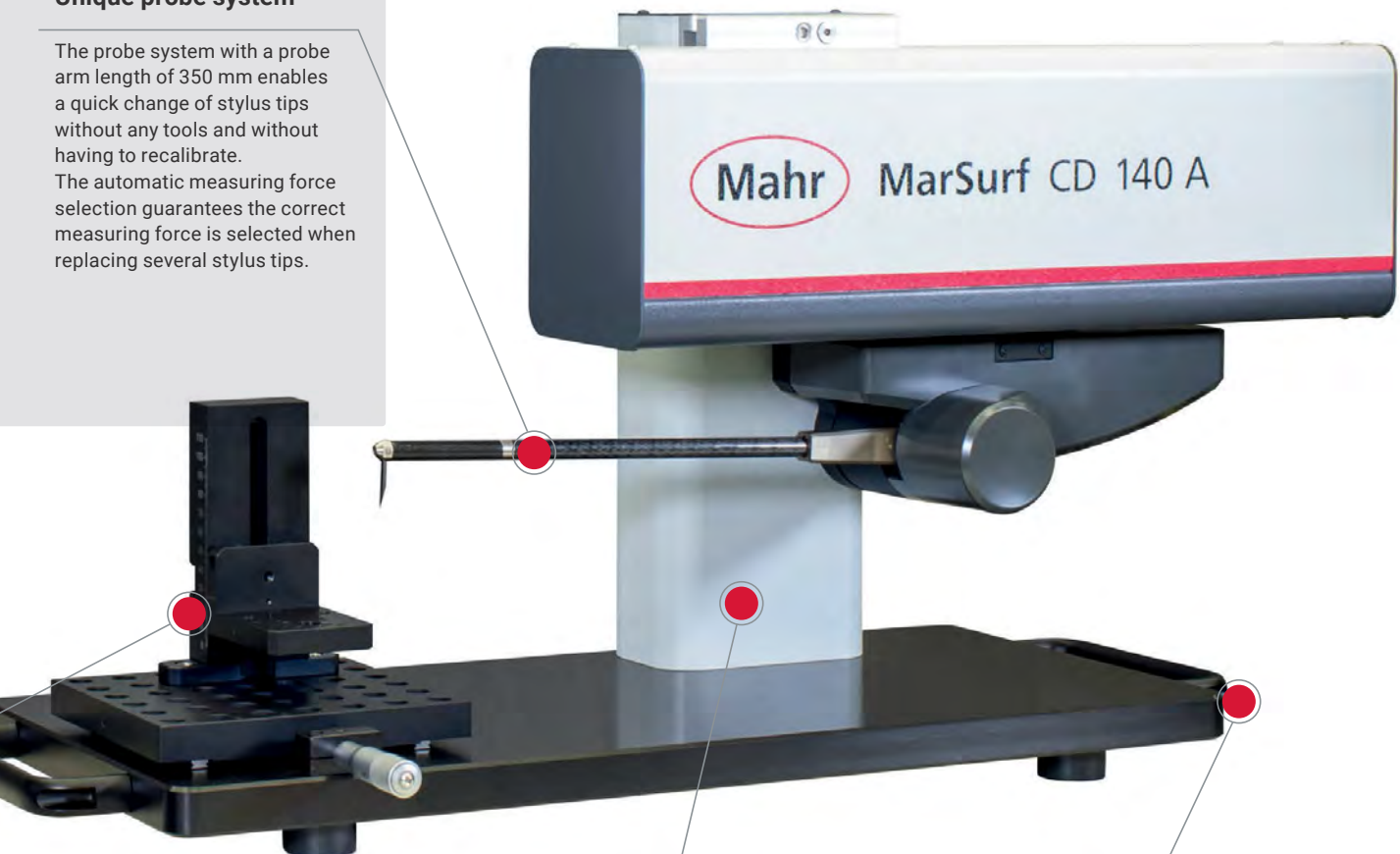
Contour measuring station



In combination with standardized clamping devices, the clamp stand enables flexible positioning of your testpiece.

Unique probe system

The probe system with a probe arm length of 350 mm enables a quick change of stylus tips without any tools and without having to recalibrate. The automatic measuring force selection guarantees the correct measuring force is selected when replacing several stylus tips.



X-axis with maximum measuring range

The high-speed X-axis is designed for a large measuring range of 140 mm.

Ergonomic carrying handles

The handles on the side make it easy to transport the device.

MarSurf CD 140 AG 11

Contour measuring instruments

MarSurf CD 140 AG 11: All-rounder with intelligent probe system

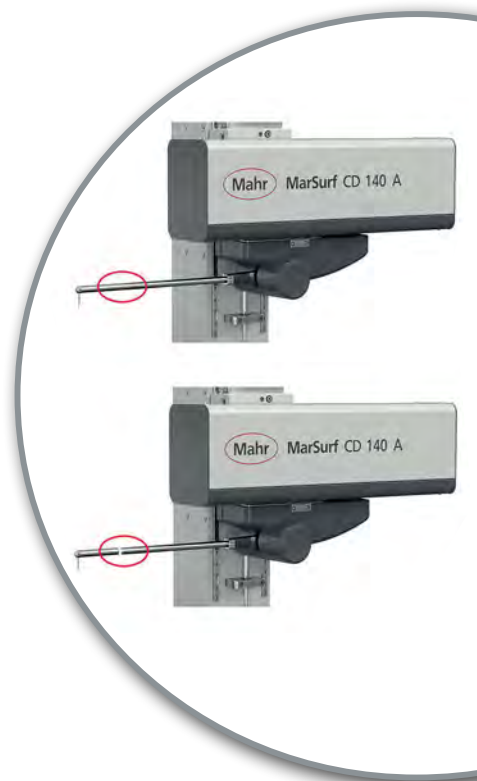
Mahr has launched a new contour measuring machine on the market – the MarSurf CD 140 AG 11. Its probe system has a measuring range of up to 70 mm and the stylus tips can be replaced quickly and without any tools – without having to recalibrate the system.

The new contour measuring machine MarSurf CD 140 AG 11 enables the user to complete fast and precise measurements. Its flexible workpiece holder makes it particularly easy to handle, while users are also convinced by its extreme versatility – it can also be used to measure roughness. The intelligent probe system and magnetic stylus tip holder ensure the process to replace stylus tips without any tools is the most straightforward process to date. Operators can also choose from a comprehensive range of clamps and workpiece holders. The new MarSurf CD 140 AG 11 can be used in a static position or directly at the location of the workpiece.



Advantages

- Comprehensive contour measurement functions – fast and simple
- Quick adjustment of the Z-axis with handles that are simple to operate
- Replacement of the stylus tip without any tools
- Travel speed in the X-axis of up to 200 mm/s
- Simple program creation or single measurement using MarWin
- Automatic evaluation, best adjustment of contours, CAD contour comparison, and much more.
- Flexible support plate with 50 mm bore grid, e.g. for CMM workpiece holders
- Optionally expandable with option of roughness measurements ($R_z > 2 \mu\text{m}$)
- Measurement with double stylus



Plug-in guide stops and a wide range of standardized clamping devices as well as workpiece holders enable flexible positioning of your testpiece.

MarSurf CD 140 AG 11

Contour measuring instruments

Manual quick adjustment

The fine adjustment is located in the Z-axis and moves the X-axis up and down.

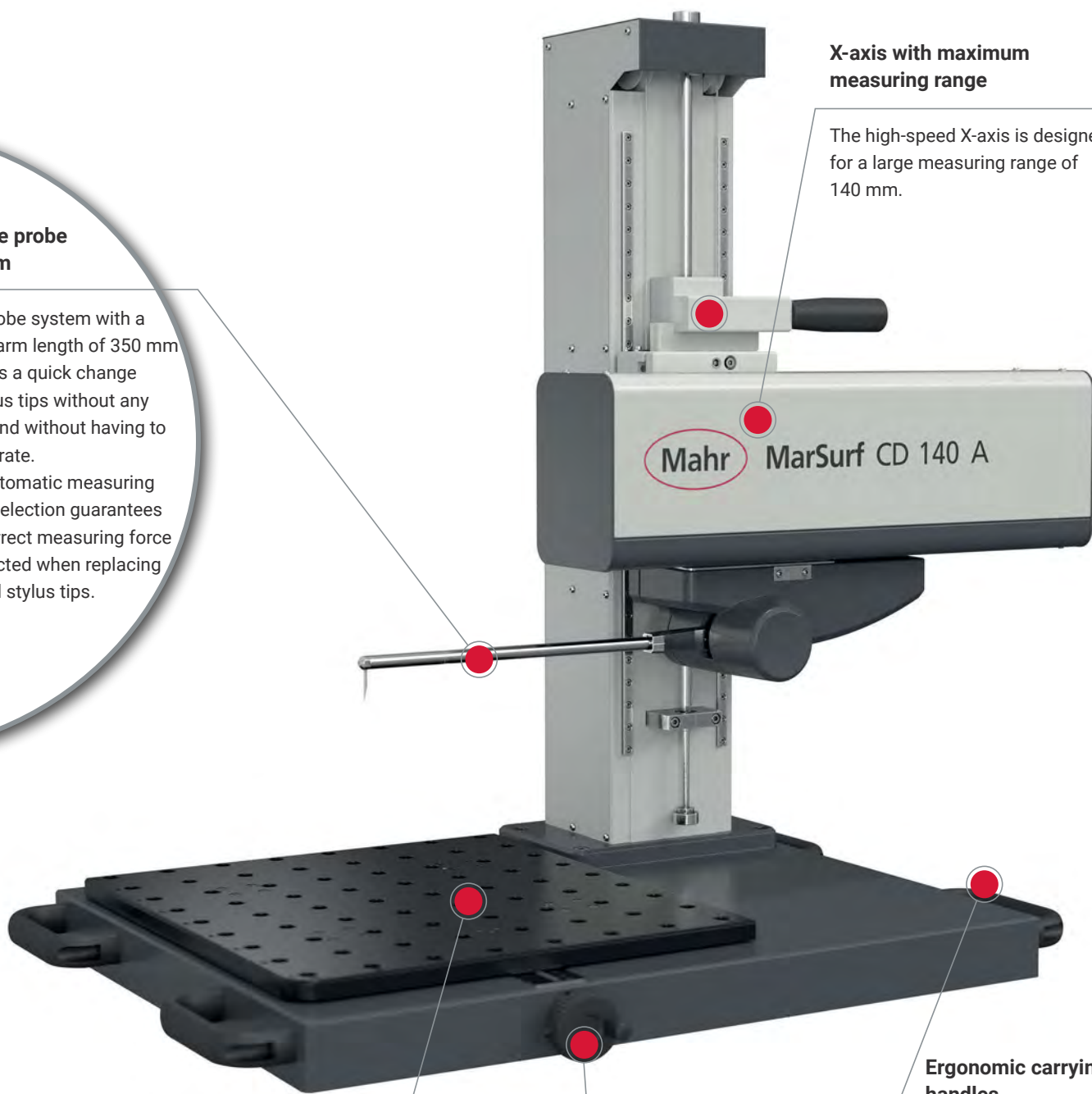
Unique probe system

The probe system with a probe arm length of 350 mm enables a quick change of stylus tips without any tools and without having to recalibrate.

The automatic measuring force selection guarantees the correct measuring force is selected when replacing several stylus tips.

X-axis with maximum measuring range

The high-speed X-axis is designed for a large measuring range of 140 mm.



Support plate also for large components

The 390 mm x 450 mm large plate with 50 mm bore grid is also suitable for large-volume workpieces. This provides a variety of flexible clamping options.

Generous traverse path

The Y-axis can be adjusted manually with a traverse path of 60 mm.

Ergonomic carrying handles

The handles on the side make it easy to transport the device.

MarSurf CD 140 AF

Contour measuring station

FEATURES

MarSurf CD 140 AF - Space-optimized measuring station for production

With the new MarSurf CD 140 AF, Mahr has launched a new contour measuring device onto the market. Its probe system has a measuring range of up to 70 mm, with which the probe tips can be changed quickly and without tools – and all without recalibration.

MarSurf CD 140 AF makes fast and precise measurements possible. Thanks to its flexible workpiece holder, it is particularly easy to handle and impresses with its great versatility.

Innovative technologies:

Fast axes

- High-speed measuring X-axis with 140 mm measuring range
- Positioning speeds up to 200 mm/s
- Reliable measurements thanks to once adjusted measuring setup
- Integrated, manual 25 mm TY axis

Unique probing system

- Tool-free, quick change of probe tips saves time when changing to another measurement task --> no recalibration required
- Magnetic probe tip holder
- Measuring range up to 70 mm as standard
- Automatic probe force selection guarantees the correct sensing force when switching between several probes
- Very low measuring force from 4 mN enables the use of particularly "filigree" probes, e.g. for small bores.
- Optional: Extension for roughness value determination

Innovative workpiece clamping system

- Flexible mounting plate with 25 mm bore grid
- The combination of mounting plate and integrated 25 mm TY adjustment eliminates the need for an additional XY table
- Low workpiece design supports an advantageous short measuring loop, which has a positive effect on the measurement results
- The clamping device stand enables the flexible use of workpiece holders and easy positioning of workpieces in the correct measuring position.



TECHNICAL DATA

Order no.		6269051	6269052	6269053	6269054
Type		CD 140 AF			
Versions		without PC	with PC	without PC, with roughness option	with PC and roughness option
Table axis travel (TY)	mm	25			
Straightness deviation		0.8 µm / 60 mm, 1.00 µm / 130 mm			
Measuring force	N	4 mN to 30 mN, software adjustable			
Probe		Contour tracing system			
Other functions		machine weight: 35 kg			

ACCESSORIES

Order no.	Type	Description
6820023	50 mm	Precision three-jaw chuck
6820024	35 mm	Precision vise
6820020	DK	Case of DK fixtures
6820021	Alufix 25–50	Quick release bracket with adapter plate
6820022	+90°/–55°	Quick release bracket swivel unit
6820026	4–50 mm	Spring compressor with attachment for Vee block
6820027	45°	Quick release bracket angle element
6710631	32 mm	Parallel vice
6710401	PP	V-block
6850011	C 3–350–25	Stylus element PG
6850012	A 36–350–25	Stylus element PG
6850013	A 62–350–25	Stylus element PG
6850014	A 36–350–500	Stylus element PG
9001738	C 6–350–25/19°	Stylus element PG
9001740	C 9–350–25/12°	Stylus element PG
9044205	A 24–350–25/12°	Stylus element PG
9044269	C 11–350–25/12°	Stylus element PG
6850015	T 36–350–25/19°	Stylus element PG
9001761	T 6–350–25/12°	Stylus element PG
9037189	T 22–350–25/19°	Stylus element PG
9044248	T 3–350–25/24°	Stylus element PG
9044258	T 18–350–25/19°	Stylus element PG
9044268	T 30–350–25/24°	Stylus element PG
6850016	A 20–350–5/90°	Stylus element PG
9044267	C 6–350–5/60°	Stylus element PG

MarSurf CD 140 AG

Contour measuring station

FEATURES

MarSurf CD 140 AG 11 - all-rounder with intelligent touch probe system

Mahr has launched a new contour measuring machine on the market – the MarSurf CD 140 AG 11. Its probe system has a measuring range of up to 70 mm and the stylus tips can be replaced quickly and without any tools – without having to recalibrate the system.

The MarSurf CD 140 AG 11 enables the user to complete fast and precise measurements. Its flexible workpiece holder makes it particularly easy to handle, while users are also convinced by its extreme versatility.

Innovative technologies:

Quick axes

- Positioning speeds up to 200 mm/s in the X direction
- Quick adjustment of the Z-axis with easy-to-use handle
- Unique adjustment lock secures the adjusted measuring setup
- Fine adjustment for optimal alignment
- High speed measuring X-axis with 140 mm measuring range
- Integrated, manual 60 mm TY axis

Unique probe system

- Tool-free quick change of probe tips saves time when changing over to another measuring task --> no recalibration required
- Magnetic probe holder
- Standard measuring range up to 70 mm
- Automatic measuring force selection guarantees the correct probe force when used in multiple stylus tip changes
- The low measuring force, starting at 4 mN, means that particularly "delicate" probe arms can be used, for example for small holes.
- Optional: Upgrade for roughness value determination

Innovative workpiece clamping system

- Flexible support plate with 50 mm bore grid
- Integrated 60 mm TY adjustment
- The combination of support plate and integrated TY adjustment omits the need for an additional XY table
- A low workpiece setup supports an advantageous short measuring circuit, which has a positive effect on the measuring results
- A large support plate allows the workpiece to be positioned as required. This makes it easier to pick up larger parts.

Application:

Mechanical engineering

Bearings, threads, threaded rods, ball screws, shafts, racks

Measurement close to production

Contour measurement in a semi-automatic process

Automotive industry

Steering, brake system, transmission, crankshaft, camshaft, cylinder head

Medicine

Contour measurement for hip and knee endoprostheses, contour measurement for medical screws, contour measurement for dental implants



TECHNICAL DATA

Order no.		6269200	6269201	6269202	6269203
Type		CD 140 AG			
Versions		without PC	with PC	without PC, with Roughness option	with PC and Roughness option
Z axis travel	mm	350			
Table axis travel (TY)	mm	60			
Straightness deviation		0.8 µm / 60 mm, 1.00 µm / 130 mm			
Measuring force	N	4 mN to 30 mN, adjustable using software			
Probe		Contour probe system			
H x W x D	mm	572 x 905 x 822 mm			
Other functions		Machine weight: 100 kg			

ACCESSORIES

Order no.	Type	Description
6820001	AF 25	V-pieces set
6820002	AF 25	Delta block set
6820003	AF 25	Hold down set
6820004	Alufix	Screw-jack set
6820005	Alufix	Three-jaw chuck set
6820020	DK	Case of DK fixtures
6820021	Alufix 25–50	Quick release bracket with adapter plate
6820022	+90°/–55°	Quick release bracket swivel unit
6820023	50 mm	Precision three-jaw chuck
6820024	35 mm	Precision vise
6820026	4 – 50 mm	Spring compressor with attachment for Vee block
6820027	45°	Quick release bracket angle element
6820028	V-block	Vee block 120°, 60 mm Vee block length
6820010	CD/GD/VD	MarSurf standard holder
6830144		Instrument desk 1710 mm x 870 mm x 750 mm
6710604	PPS	Parallel vice
6710401	PP	V-block
3028620	Handset scanner cable	USB 2D scanner Honeywell Xenon 1900
3028820	Handheld scanner	Zebra Techn. Corp. DS2278 Bluetooth® Barcode Scanner

Compact all-rounder for surface metrology

We have added the new MarSurf SD 140 AG 11 to our portfolio of manual surface measuring instruments: it can check both roughness and contour features – in just one measuring phase. This measuring station offers easy handling and reliable quality assurance thanks to its high functionality. It is therefore also a suitable entry-level model for stationary surface metrology.

The heart of the MarSurf SD 140 AG 11 is the new tactile probe system. This can record the measurements for roughness and contour at the same time, which the software then evaluates separately. The probe arm measuring range spans 10 mm (100 mm probe arm) and 25 mm (250 mm probe arm), and the positioning speed can be set from 0.1 mm/s to 200 mm/s via software.

The probe system's tool-free probe arm quick-change function also saves time, allowing you to quickly switch to another measuring task without having to recalibrate the new probe arm. The electronic probe arm detection and automatic measuring force selection provide even more reliability. These ensure that the correct contact/measuring force is always guaranteed when switching between several stylus tips.

Support plate with hole grid

Thanks to the special support plate, you can use a wide variety of workpiece holders and clamps flexibly and quickly.

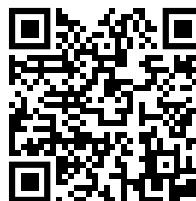
Y-axis manually adjustable

The operator can manually adjust the Y-axis using the integrated 60 mm adjustment.



Advantages

- Measure roughness and contour in one go
- Tool-free probe arm quick-change function
- Electronic probe arm detection
- Automatic measuring force selection
- Defined start position with aligned axis
- Flexible clamping system: Support plate (390 mm x 450 mm) with 50 mm hole grid

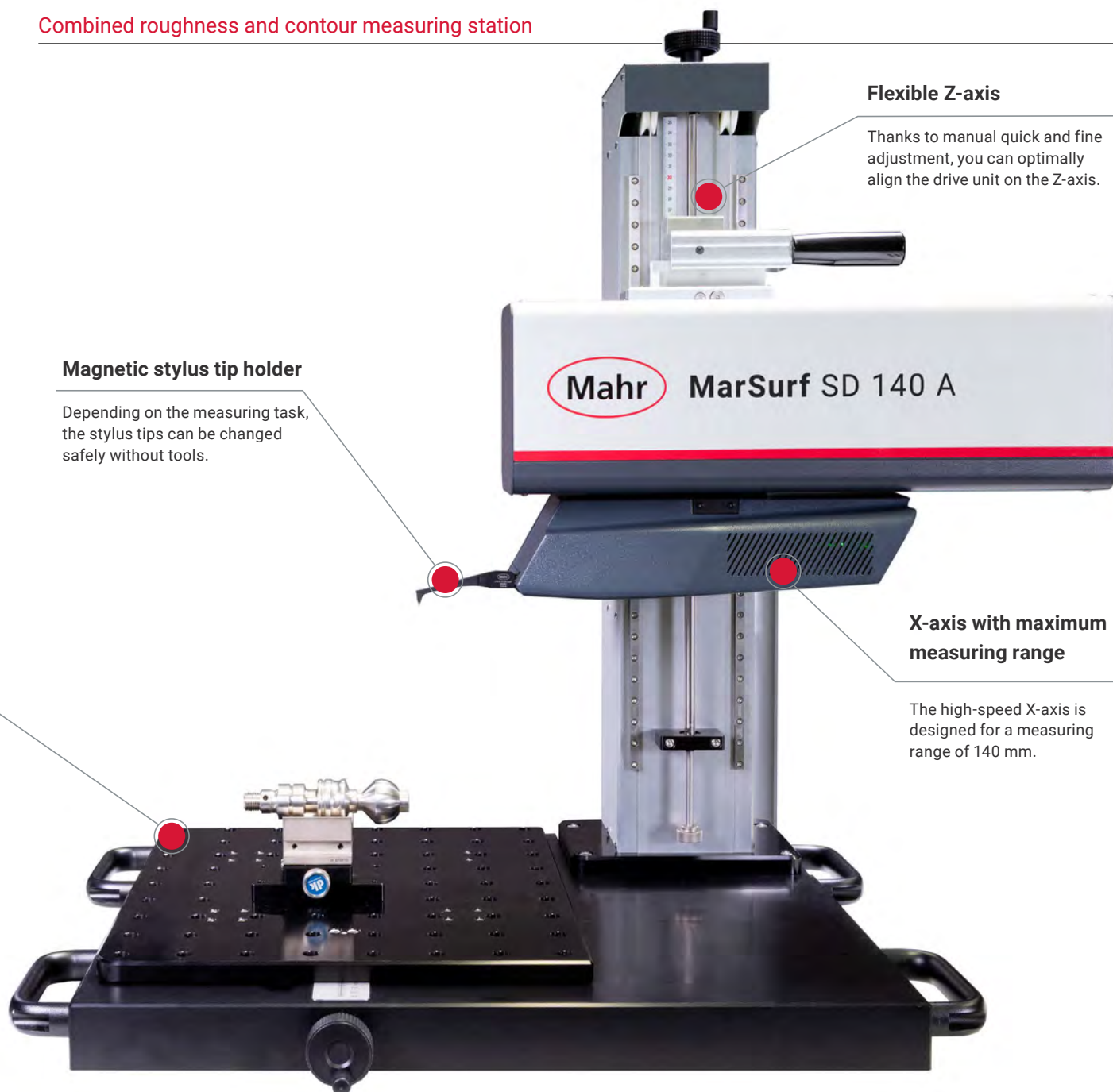


More details can be found on our website:

[metrology.mahr.com/
marsurf-tactile-measuring-instruments](https://metrology.mahr.com/marsurf-tactile-measuring-instruments)

MarSurf SD 140 AG 11

Combined roughness and contour measuring station



Flexible Z-axis

Thanks to manual quick and fine adjustment, you can optimally align the drive unit on the Z-axis.

Magnetic stylus tip holder

Depending on the measuring task, the stylus tips can be changed safely without tools.

X-axis with maximum measuring range

The high-speed X-axis is designed for a measuring range of 140 mm.

	MarSurf CD 140 AF	MarSurf CD 140 AG 11	MarSurf SD 140 AG 11
Contour	x	x	x
Roughness	–	–	x
Contour arm with roughness sensing tip	x	x	–
Roughness and contour scanning system	–	–	x
X-axis length	140 mm		
Z-axis length	–	350 mm	

MarSurf SD 140 AG 11

Combined roughness and contour measuring station

FEATURES

MarSurf SD 140 AG 11 - Compact all-rounder forentry into surface metrology

We are now expanding our portfolio of manual surface measuring devices with the new MarSurf SD 140 AG 11, which can check both roughness and contour features in just one measuring run. The heart of the MarSurf SD 140 AG 11 is the newly developed tactile probe system. This can record the measured values for roughness and contour at the same time, which the software then evaluates separately. The probe arm measuring range covers 10 mm (100 mm probe arm) and 25 mm (200 mm probe arm), the measuring force from 0.75 mN to 30 mN can be set via software. You also save time with the tool-free probe arm quick-change function, which allows you to quickly change over to another measuring task without recalibrating the probe arm. The electronic probe arm recognition and automatic probe force selection offer you even more safety.

The basis for a flexible and fast measuring process and for a wide range of applications for the MarSurf SD 140 AG 11 is its innovative clamping system. Thanks to the mounting plate with 50 mm hole pattern, you can use a wide variety of workpiece holders, including those of coordinate measuring machines, for example. An extensive selection of other clamping devices and tool holders is also available

Innovative technologies:

Fast axes

- Positioning speeds of up to 200 mm/s in X
- Quick adjustment of the Z-axis with easy-to-use handle
- Unique adjustment lock secures measuring setup once adjusted
- Fine adjustment for optimum alignment
- High-speed measuring X-axis with 140 mm measuring range
- Integrated, manual 60 mm TY axis

Unique probe system

- Measure roughness and contour in one go
- Easy probe arm change via magnetic interface with chip recognition and automatic probe force selection.
- Automated calibration routine for probe arms
- Large measuring range of 10 mm (100 mm probe arm) and 25 mm

Application:

Mechanical engineering

Bearings, threads, threaded rods, ball screws, shafts, gear racks

Production-related measurement

Contour measurement in a semi-automatic process

Automotive Industry

Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medical

Contour of hip and knee endoprostheses, contour of medical screws, contour of dental implants



TECHNICAL DATA

Order no.		6269300
Type		SD 140 AG 11
Z axis travel	mm	350
Table axis travel (TY)	mm	60
Straightness deviation		a) 0.5 µm / 60 mmb) 0.7 µm / 130 mm
Measuring force	N	4 mN to 30 mN, software adjustable
Probe		Roughness and contour probe system
H x W x D	mm	572 x 905 x 822 mm
Other functions		Machine weight: 100 kg

(200 mm probe arm) for versatile applications

- Automatic probe force selection guarantees the correct probe force when changing between several probe tips
- Very low measuring force from 4 mN enables the use of particularly „delicate“ probe arms, e.g. for small bores. Innovative workpiece clamping system
- Flexible mounting plate with 50 mm bore grid

- Integrated 60 mm TY adjustment
- The combination of mounting plate and integrated TY adjustment makes an additional XY table superfluous
- Low workpiece structure supports an advantageous short measuring circle, which has a positive effect on the measuring accuracy.
- Large support plate allows free positioning of the workpieces. This makes it easier to support larger parts.

ACCESSORIES

Order no.	Type	Description
6820001	AF 25	V-pieces set
6820002	AF 25	Delta block set
6820003	AF 25	Hold down set
6820004	Alufix	Screw-jack set
6820020	DK	Case of DK fixtures
6820021	Alufix 25–50	Quick release bracket with adapter plate
6820022	+90°/–55°	Quick release bracket swivel unit
6820023	50 mm	Precision three-jaw chuck
6820024	35 mm	Precision vise
6820026	4 – 50 mm	Spring compressor with attachment for Vee block
6820027	45°	Quick release bracket angle element
6820028	V-block	Vee block 120°, 60 mm Vee block length
6710401	PP	V-block
6710604	PPS	Parallel vice
6710610	PKS	Ball joint vice
6710631	32 mm	Parallel vice
6710632	PSS	Parallel vice with ball joint 32 mm
6710633	PSSW	Parallel vice with angle bracket swivable $\pm 45^\circ$
9059081	UZS15	Center clamp UZS 15 Maprox

Best performance and precise results every time

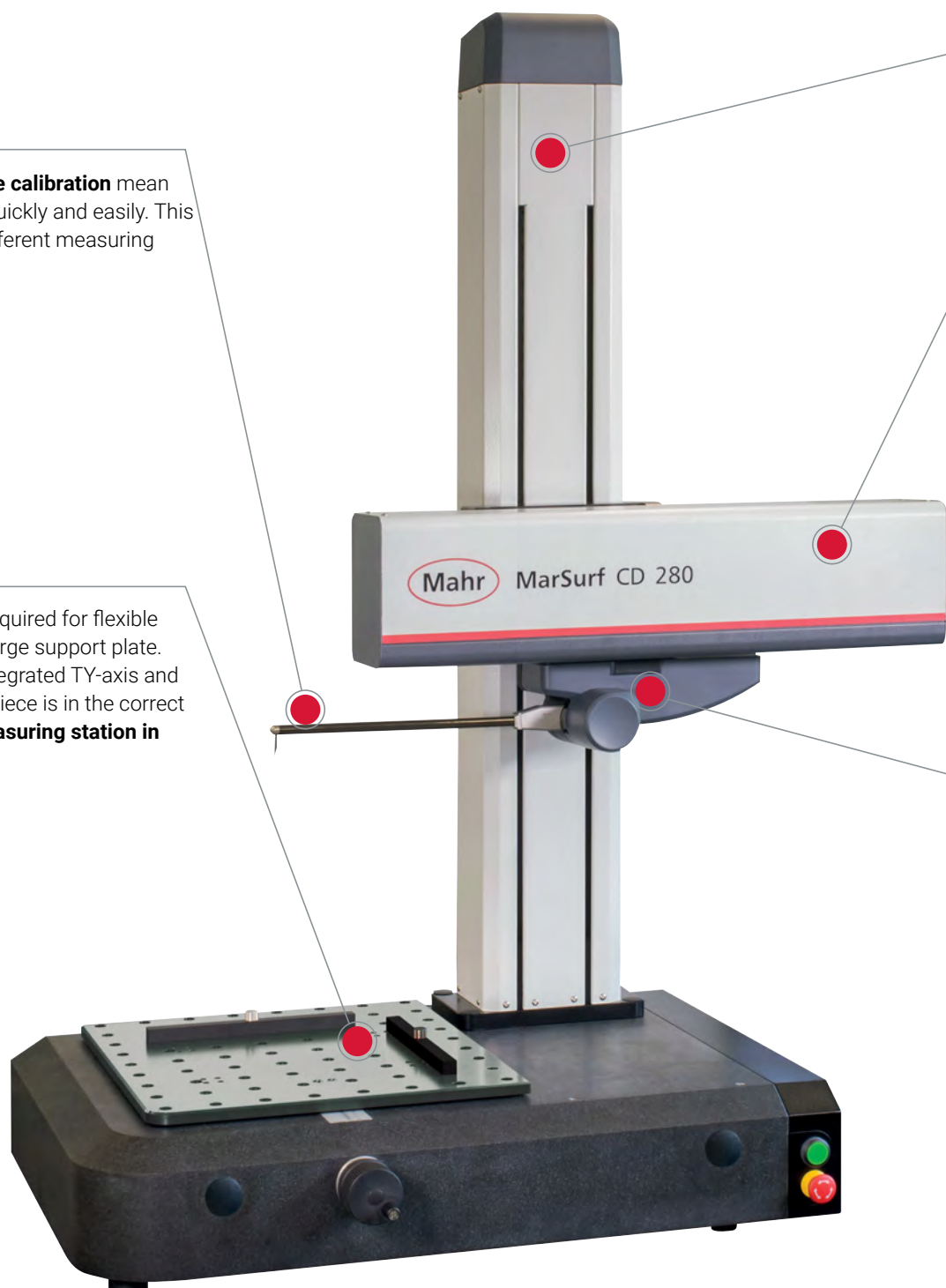
With their extremely fast CNC axes and a highly dynamic probe system, machines from the MarSurf CD, MarSurf GD and MarSurf VD series break all speed records. Even when it comes to handling, the instruments are optimized to save your valuable time.

Easy changeover

The **magnetic mount** and **one-time calibration** mean that probe arms can be changed quickly and easily. This saves time when switching to a different measuring task.

Time-saving positioning

Just a few hand movements are required for flexible positioning of workpieces on the large support plate. Thanks to the 50 mm bore grid, integrated TY-axis and the plug-in guide stops, your workpiece is in the correct position in a flash. **Set up your measuring station in half the time!**



Quick axes

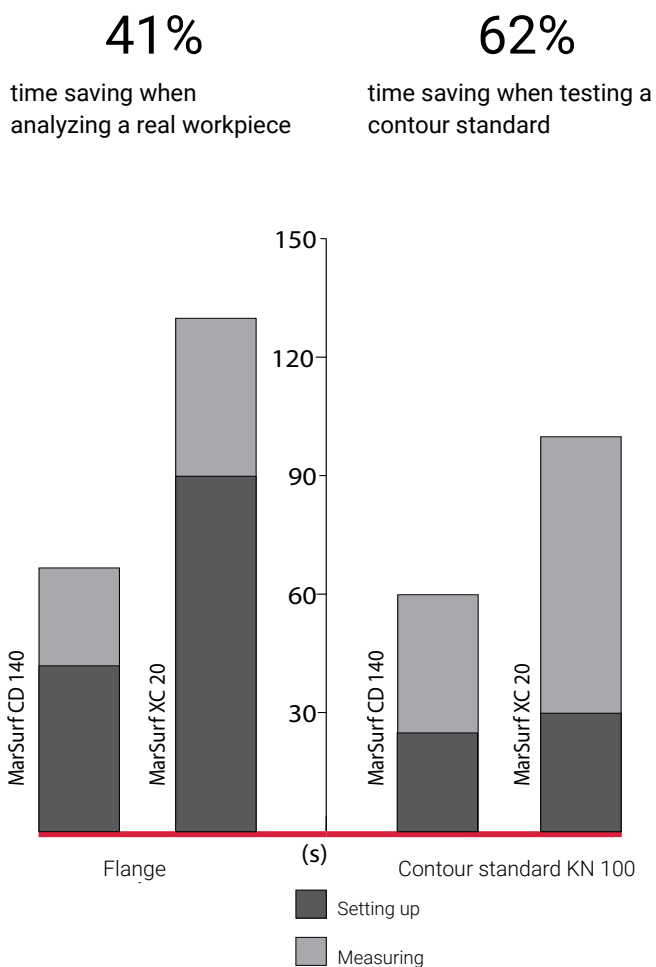
Z-axes with full CNC-capability and high-speed X-axes enable **positioning speeds of up to 50 mm/s in Z-direction and up to 200 mm/s in X-direction**. This means that the MarSurf instruments are particularly fast at getting to the start point of any measurement.

Short measuring times

The highly-dynamic probe system finds the perfect balance between rigidity and dynamics. **Which means you benefit from maximum accuracy at high measuring speeds of up to 10 mm/s.**

PERSONAL BEST!

Contour and surface measurement has never been as speedy as now. Our MarSurf CD 140 leads the way:



Floor-to-floor time of the new MarSurf CD 140 compared to the previous MarSurf XC 20 model with PCV 200 drive unit.



FEATURES

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

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



Application:

Mechanical engineering

Bearings, threads, threaded rods, ball spindles, shafts, racks

Measurements close to production

Semi-automatic contour measurement

Automotive 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

TECHNICAL DATA

Order no.		6269000	6269001	6269002	6269003	6269004	6269005	6269006	6269007
Type		CD 140					CD 280		
Traversing length (Lt)		0.1 – 140 mm					0.1 – 280 mm		
Z axis travel	mm	350		600		350		600	
Tilt adjustment		No	Yes	No	Yes	No	Yes	No	Yes
Table axis travel (TY)	mm	60							
Resolution in X	µm	10,0							
Resolution in Z	µm	0,154							
Guide deviation		0,35 µm / 60 mm 0,40 µm / 140 mm				0,35 µm / 60 mm 0,40 µm / 140 mm 0,75 µm / 280 mm			
Uncertainty of displayed X-axis		±(0,5 µm + l/500); l in mm							
Uncertainty of displayed Z-axis		±(0,0125 mm + l in mm); l/20000							
Measuring force	N	4 mN to 30 mN, adjustable via software							
Probe		Contour probe system							
Operating temperature	°C	15 °C to 40 °C							
Other functions		manual TY							

Order no.		6269100	6269101	6269102	6269103	6269104	6269105	6269106	6269107
Type		CD 140					CD 280		
Traversing length (Lt)		0.1 – 140 mm					0.1 – 280 mm		
Z axis travel	mm	350		600		350		600	
Tilt adjustment		No	Yes	No	Yes	No	Yes	No	Yes
Table axis travel (TY)	mm	60							
Resolution in X	µm	10,0							
Resolution in Z	µm	0,154							
Guide deviation		0,35 µm / 60 mm 0,40 µm / 140 mm				0,35 µm / 60 mm 0,40 µm / 140 mm 0,75 µm / 280 mm			
Uncertainty of displayed X-axis		±(0,5 µm + l/500); l in mm							
Uncertainty of displayed Z-axis		±(0,0125 mm + l in mm); l/20000							
Measuring force	N	4 mN to 30 mN, adjustable via software							
Probe		Contour probe system							
Operating temperature	°C	15 °C to 40 °C							
Other functions		motorized TY							

MarSurf CD 140 / CD 280

Contour measuring station

ACCESSORIES

Order no.	Type	Description
6821000		Manual control panel
6710700		Option motorized TY axes for basement
6820000	Contour B	Calibration standard with 2 balls
7003717		Shock and vibration absorbing system for basement
6851345		Control unit for standard shock and vibration absorbing system
6830144	Table	Instrument desk 1710 mm x 870 mm x 750 mm
7003789		Table for absorbing system for basement
5356103		Control panel with monitor
9026049		Table top 740 x 430 set
6820020	DK	Case of DK fixtures
6820001	AF 25	V-pieces set
6820002	AF 25	Delta block set
6820003	AF 25	Hold down set
6820004	Alufix	Screw-jack set
6820005	Alufix	Three-jaw chuck set
6820010	CD/GD/VD	MarSurf standard holder
6820125KAL	KN 100	Contour standard
6820125DKS	KN 100	Contour standard
6800001KAL	MGS 3	Geometric standard, sinusoidal profile
6800001DKS	MGS 3	Geometric standard, sinusoidal profile
6800002KAL	MGS 10	Geometric standard, sinusoidal profile
6800002DKS	MGS 10	Geometric standard, sinusoidal profile
6820903KAL	MRS 3	Roughness standard
6820903DKS	MRS 3	Roughness standard

MarSurf GD 140 / GD 280

Roughness measuring station



FEATURES

MarSurf GD: The new reference measuring station for roughness and waviness measurements

The new Mahr measuring stations from the MarSurf GD series are setting new standards. In addition to surface roughness evaluations, profile, and waviness evaluations can also be performed. The new MarSurf GD series is enabling production companies to achieve a new dimension to reliably ensure and improve the production quality of workpieces in the measuring room or close to the production area.

The new measuring station concept combines speed, security, and flexibility. The aim is to increase the cost-effectiveness 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

Order no.		6269010	6269011	6269012	6269013	6269110	6269111	6269112	6269113
Type		GD 140		GD 280		GD 140		GD 280	
Traversing length (Lt)		0.1 – 140 mm		0.1 – 280 mm		0.1 – 140 mm		0.1 – 280 mm	
Z axis travel	mm	350	600	350	600	350	600	350	600
Tilt adjustment		Yes							
Table axis travel (TY)	mm	60							
Guide deviation		0,20 µm / 60 mm 0,40 µm / 140 mm		0,20 µm / 60 mm 0,40 µm / 140 mm 0,75 µm / 280 mm		0,20 µm / 60 mm 0,40 µm / 140 mm		0,20 µm / 60 mm 0,40 µm / 140 mm 0,75 µm / 280 mm	
Measuring force	N	0,75 mN							
Probe		Roughness probe system (skidless)							
Other functions		manual TY				motorized TY			

Application:

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

MarSurf GD 140 / GD 280

Roughness measuring station

ACCESSORIES

Order no.	Type	Description
6821000		Manual control panel
6710700		Option motorized TY axes for basement
6820000	Contour B	Calibration standard with 2 balls
7003717		Shock and vibration absorbing system for basement
6851345		Control unit for standard shock and vibration absorbing system
6830144	Table	Instrument desk 1710 mm x 870 mm x 750 mm
7003789		Table for absorbing system for basement
5356103		Control panel with monitor
9026049		Table top 740 x 430 set
6852551		Probe system extension for BFW probe system length 150 mm
6852552		Probe system extension for BFW probe system length 300 mm
6852553		Probe system extension for BFW probe system length 500 mm
9000682		Depth extension MarSurf GD/VD 140/280
6820020	DK	Case of DK fixtures
6820001	AF 25	V-pieces set
6820002	AF 25	Delta block set
6820003	AF 25	Hold down set
6820004	Alufix	Screw-jack set
6820005	Alufix	Three-jaw chuck set
6800000KAL	MGS 1	Geometric standard, sinusoidal profile
6800000DKS	MGS 1	Geometric standard, sinusoidal profile
6800001KAL	MGS 3	Geometric standard, sinusoidal profile
6800001DKS	MGS 3	Geometric standard, sinusoidal profile
6800002KAL	MGS 10	Geometric standard, sinusoidal profile
6800002DKS	MGS 10	Geometric standard, sinusoidal profile
6820901KAL	MRS 1,5	Roughness standard
6820901DKS	MRS 1,5	Roughness standard
6820903KAL	MRS 3	Roughness standard
6820903DKS	MRS 3	Roughness standard

MarSurf VD 140 / VD 280

Roughness and contour measuring station



FEATURES

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

Roughness probe system BFW

- Easy probe arm change and probe arm protection by means of magnetic probe arm holder

TECHNICAL DATA

Order no.		6269020	6269021	6269022	6269023	6269120	6269121	6269122	6269123
Type		VD 140		VD 280		VD 140		VD 280	
Traversing length (Lt)		0.1 – 140 mm		0.1 – 280 mm		0.1 – 140 mm		0.1 – 280 mm	
Z axis travel	mm	350	600	350	600	350	600	350	600
Tilt adjustment		Yes							
Table axis travel (TY)	mm	60							
Guide deviation		with roughness probe system 0,20 µm / 60 mm 0,40 µm / 140 mm 0,75 µm / 280 mm							
Measuring force	N	with roughness probe system 0,75 mN with contour probe system: 4 mN to 30 mN, adjustable via software							
Probe		Roughness probe system (skidless) Contour probe system							
Other functions		manual TY				motorized TY			



Application:

Mechanical engineering

Bearings, threads, threaded rods, ball screws, shafts, racks

Metrology close to production

Contour measurement in a semi-automatic process

Automotive

Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine

Contour measurement for hip and knee endoprostheses, medical screws, dental implants

- 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 the measurement results

MarSurf VD 140 / VD 280

Roughness and contour measuring station

ACCESSORIES

Order no.	Type	Description
6821000		Manual control panel
6710700		Option motorized TY axes for basement
6820000	Contour B	Calibration standard with 2 balls
7003717		Shock and vibration absorbing system for basement
6851345		Control unit for standard shock and vibration absorbing system
6830144	Table	Instrument desk 1710 mm x 870 mm x 750 mm
7003789		Table for absorbing system for basement
5356103		Control panel with monitor
9026049		Table top 740 x 430 set
6852551		Probe system extension for BFW probe system length 150 mm
6852552		Probe system extension for BFW probe system length 300 mm
6852553		Probe system extension for BFW probe system length 500 mm
9000682		Depth extension MarSurf GD/VD 140/280
6820020	DK	Case of DK fixtures
6820001	AF 25	V-pieces set
6820002	AF 25	Delta block set
6820003	AF 25	Hold down set
6820004	Alufix	Screw-jack set
6820005	Alufix	Three-jaw chuck set
6820125KAL	KN 100	Contour standard
6820125DKS	KN 100	Contour standard
6800000KAL	MGS 1	Geometric standard, sinusoidal profile
6800000DKS	MGS 1	Geometric standard, sinusoidal profile
6800001KAL	MGS 3	Geometric standard, sinusoidal profile
6800001DKS	MGS 3	Geometric standard, sinusoidal profile
6800002KAL	MGS 10	Geometric standard, sinusoidal profile
6800002DKS	MGS 10	Geometric standard, sinusoidal profile
6820901KAL	MRS 1,5	Roughness standard
6820901DKS	MRS 1,5	Roughness standard
6820903KAL	MRS 3	Roughness standard
6820903DKS	MRS 3	Roughness standard

MarSurf SD 140 BG / LD 140 / 280

Combined roughness and contour measuring station

Two high-performance devices for optimal surface measurement

In high-end surface metrology, you can now choose between two new motorized devices: the MarSurf LD 140/280 and the MarSurf SD 140 BG. Both are based on the same platform and allow measurement of roughness and contour at the same time with the highest accuracy.

While the MarSurf LD 140/280 is currently Mahr's most powerful surface measurement system, the MarSurf SD 140 BG represents the more economical solution of the two. For both devices, Mahr has developed a new probing system. The probe units of the two new systems capture the measurement data only once, which the software can then analyze twice for both roughness and contour features if desired. This allows customers to save twice: firstly, time, as they receive two measurement results with just one measurement run; and secondly, money, as they only need to invest in one measurement system.

Both devices measure workpiece contours, straightness, and surface deviations using the touch probe method. The comprehensive range of probe arms of different sizes and designs also makes them suitable for a variety of measurement tasks at different measurement points. In geometric measurements, the probe arms ensure the highest safety and precision due to their high rigidity.

Tool-free magnetic stylus holder

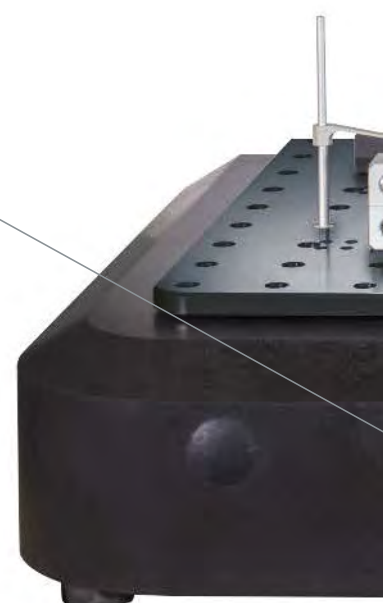
Depending on the measuring task, the probe arms can be changed safely and without tools – the probe always fits perfectly.

New tactile touch systems

The two new tactile systems capture the values for roughness and contour in just one measurement pass.

Integrated 60 mm TY adjustment

The 60 mm TY axle is optionally equipped with a manual or motorized adjustment.

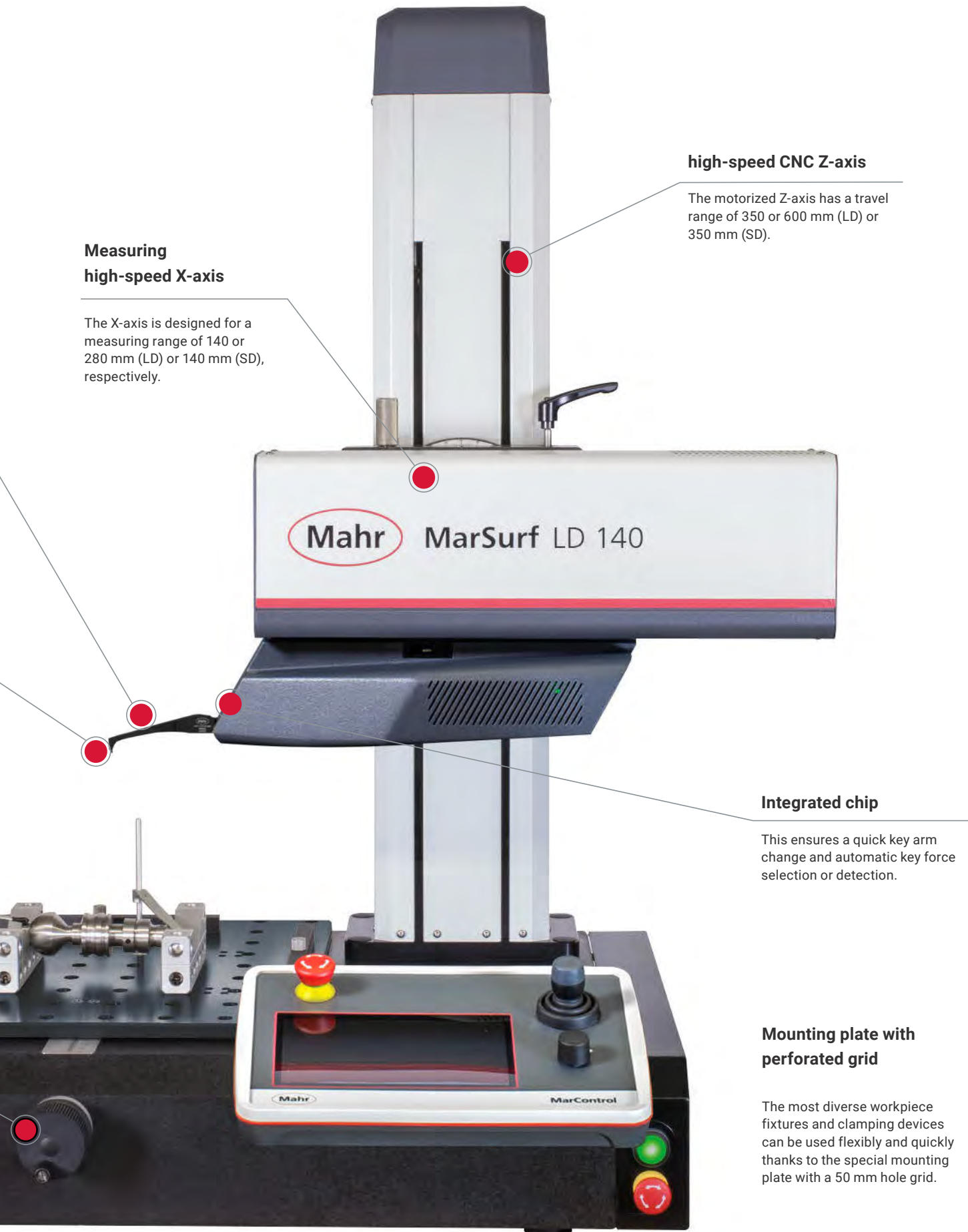


Detailed information about our surface measuring instruments can be found on our website:

metrology.mahr.com/marsurf-taktile-messgeraete

MarSurf SD 140 BG / LD 140 / 280

Combined roughness and contour measuring station



Measuring high-speed X-axis

The X-axis is designed for a measuring range of 140 or 280 mm (LD) or 140 mm (SD), respectively.

high-speed CNC Z-axis

The motorized Z-axis has a travel range of 350 or 600 mm (LD) or 350 mm (SD).

Integrated chip

This ensures a quick key arm change and automatic key force selection or detection.

Mounting plate with perforated grid

The most diverse workpiece fixtures and clamping devices can be used flexibly and quickly thanks to the special mounting plate with a 50 mm hole grid.

MarSurf SD 140

Combined roughness and contour measuring station

FEATURES

2 in1: Automatic and simultaneous measurement of roughness and contour

With the new MarSurf SD 140 measuring station, Mahr offers an automated solution for measuring roughness and contour at the same time and with the highest accuracy. For this purpose, the device is equipped with a new tactile probe system. Its probe arm unit records the measurement data only once, which the software can then evaluate twice for both contour and roughness characteristics if desired. Customers save twice: time, as they receive two measurement results with just one measurement run; and money, as they only have to invest in one measuring station.

Innovative technologies:

Fast axes:

- X-axis positioning speed of up to 200 mm/s.
- Standard CNC-compatible Z-axis with a 350 mm height.
- The Z-axis is about twice as fast as previous Mahr Z-axes and up to 5 times faster than the Z-axes commonly used on the market.

Combined roughness and contour scanning system S7:

- Measure and evaluate roughness and contour in one go.
- Magnetic probe arm pick-up and recognition via chip.
- Large probe arm measuring range of 10 mm (100 mm probe arm) or 25 mm (200 mm probe arm).
- Probe arms for various applications with lengths of up to 200 mm.

Innovative workpiece clamping system:

- Innovative mounting plate 390 x 430 mm with bore dimension 50 mm.
- Integrated 60 mm TY adjustment (optionally motorized).
- The combination of mounting plate and integrated TY adjustment makes an additional XY table superfluous.

Application:

Mechanical engineering

Bearings, threads, threaded rods, ball screws, shafts, racks

Metrology close to production

Contour measurement in a semi-automatic process

Automotive

Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine

Contour measurement for hip and knee endoprostheses, medical screws, dental implants



TECHNICAL DATA

Order no.	6269350	6269351
Type	SD 140	
Traversing length (Lt)	0.1 – 140 mm	
Z axis travel	mm	350
Tilt adjustment	yes	
Table axis travel (TY)	mm	60
Resolution in X	µm	0,0
Resolution in Z	µm	0,154
Measuring force	N	0.7 mN to 30 mN, adjustable via software
Probe	Combined roughness and contour probe system	
Other functions	manual TY	motorized TY

ACCESSORIES

Order no.	Type	Description
6820001	AF 25	V-pieces set
6820002	AF 25	Delta block set
6820003	AF 25	Hold down set
6820004	Alufix	Screw-jack set
6820020	DK	Case of DK fixtures
6820021	Alufix 25– 50	Quick release bracket with adapter plate
6820022	+90°/– 55°	Quick release bracket swivel unit
6820023	50 mm	Precision three-jaw chuck
6820024	35 mm	Precision vise
6820026	4 – 50 mm	Spring compressor with attachment for Vee block
6820027	45°	Quick release bracket angle element
6820028	Prisma	Vee block 120°, 60 mm Vee block length
6821000	MCP	Manual control panel
6820010	CD/GD/VD	MarSurf standard holder
7003717	FAEBI	Shock and vibration absorbing system for basement
7003789	BF 1000	Table for absorbing system for basement
9000682	DE 200	Depth extension MarSurf GD/VD 140/280
9026049	740 x 430	Table top 740 x 430 set
6710401	PP	V-block
6710604	PPS	Parallel vice
6710610	PKS	Ball joint vice
6710631	32 mm	Parallel vice
6710632	PSS	Parallel vice with ball joint 32 mm
6710633	PSSW	Parallel vice with angle bracket swivable ±45°
9059081	UZS15	Center clamp UZS 15 Maprox

MarSurf LD 140 / LD 280

Combined roughness and contour measuring station

FEATURES

2 in1: Automatic and simultaneous measurement of roughness and contour

With the new MarSurf LD 140/280 measuring station, Mahr offers an automated solution for measuring roughness and contour at the same time and with the highest accuracy. For this purpose, the device is equipped with a newly developed tactile probe system. Its probe arm unit records the measurement data only once, which the software can then evaluate twice for both contour and roughness characteristics if desired. Customers save twice: time, as they receive two measurement results with just one measurement run; and money, as they only have to invest in one measuring station.

Innovative technologies:

Fast axes:

- X-axis positioning speed of up to 200 mm/s.
- Standard CNC-compatible Z-axis with a choice of 350 or 600 mm height.
- The Z-axis is about twice as fast as previous Mahr Z-axes and up to 5 times faster than the Z-axes commonly used on the market.

Combined roughness and contour scanning system:

- Measure and evaluate roughness and contour in one go.
- Magnetic probe arm pick-up and recognition via chip.
- Large probe arm measuring range of 15 mm (100 mm probe arm) or 37.5 mm (250 mm probe arm).
- Probe arms for various applications with lengths of up to 250 mm.

Innovative workpiece clamping system:

- Innovative mounting plate 390 x 430 mm with bore dimension 50 mm.
- Integrated 60 mm TY adjustment (optionally motorized).
- The combination of mounting plate and integrated TY adjustment makes an additional XY table superfluous.

Application:

Mechanical engineering

Bearings, threads, threaded rods, ball screws, shafts, racks

Metrology close to production

Contour measurement in a semi-automatic process

Automotive

Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine

Contour measurement for hip and knee endoprostheses, medical screws, dental implants



TECHNICAL DATA

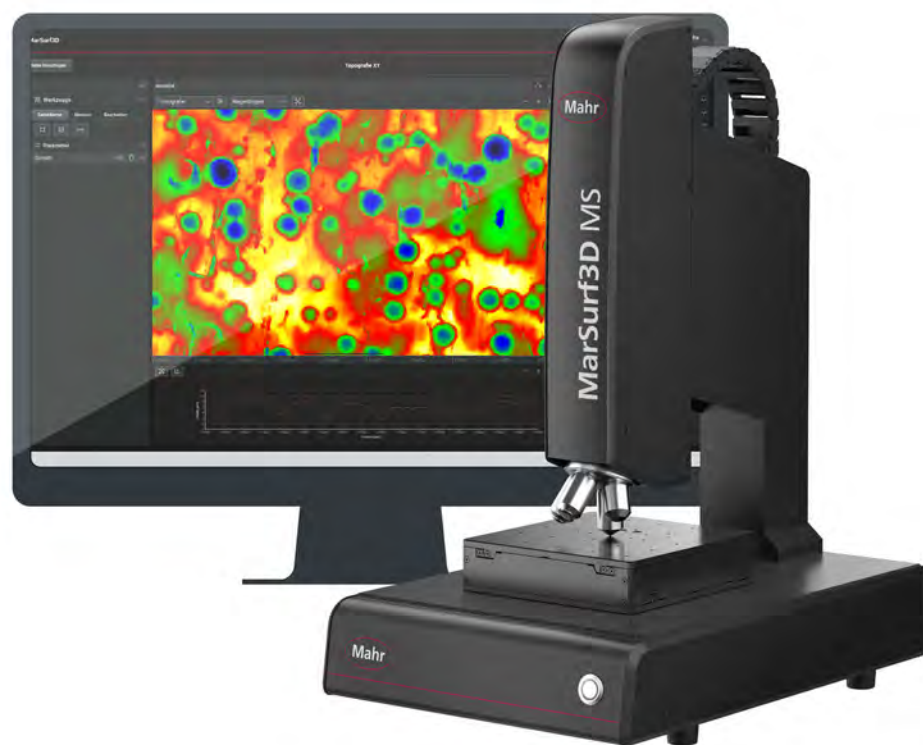
Order no.		6269040	6269041	6269042	6269043	6269140	6269141	6269142	6269143
Type		LD 140		LD 280		LD 140		LD 280	
Traversing length (Lt)		0.01 – 140 mm		0.01 – 280 mm		0.01 – 140 mm		0.01 – 280 mm	
Z axis travel	mm	350	600	350	600	350	600	350	600
Tilt adjustment		Yes							
Table axis travel (TY)	mm	60							
Resolution in X	µm	0,0							
Resolution in Z	µm	0,154							
Measuring force	N	7 mN to 30 mN, adjustable via soft							
Probe		Combined roughness and contour probe system							
Operating temperature	°C	15 °C to 45 °C							
Lagertemperatur	°C	– 15 °C to 50 °C							
Other functions		manual TY				motorized TY			

ACCESSORIES

Order no.	Type	Description
6821000	MCP	Manual control panel
7003717	FAEBI	Shock and vibration absorbing system for basement
6851345	4 FAEBI	Control unit for standard shock and vibration absorbing system
7003789	BF 1000	Table for absorbing system for basement
9026049	740 x 430	Table top 740 x 430 set
6820020	DK	Case of DK fixtures
6820001	AF 25	V-pieces set
6820002	AF 25	Delta block set
6820003	AF 25	Hold down set
6820004	Alufix	Screw-jack set
6820005	Alufix	Three-jaw chuck set
6820010	CD/GD/VD	MarSurf standard holder
6820125KAL	KN 100	Contour standard
6820125DKS	KN 100	Contour standard
6800001KAL	MGs 3	Geometric standard, sinusoidal profile
6800001DKS	MGs 3	Geometric standard, sinusoidal profile
6800002KAL	MGs 10	Geometric standard, sinusoidal profile
6800002DKS	MGs 10	Geometric standard, sinusoidal profile
6820903KAL	MRS 3	Roughness standard
6820903DKS	MRS 3	Roughness standard

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. But we can also meet the latest demands for non-contact measuring with a range of optical sensors. Mahr's MarSurf surface metrology offers a combination of top quality, maximum competence and perfect expertise.



MarSurf	570
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Sensor OS 500	
MarSurf3D	591
OptoRack	
MarSurf3D	592
OptoShaft	
MarSurf3D	593
OptoWorm	

Optical or tactile?

Selecting the right measuring equipment

When should you rely on tactile metrology and when does it make more sense to measure using established optical devices? As both methods are equally precise, delivering results with 99 % accuracy, it always comes down to the surface structures you want to measure and which parameters are relevant for your production. Mahr offers you versatile solutions for both types of systems. The following criteria will help you make your selection:

1	Process values in accordance with ISO 4287, ISO 13565, ISO 25178 und ISO 21920 Tactile and optical devices identify the roughness and sometimes the waviness of surfaces – all the while in compliance with the standards DIN EN ISO 4287 and DIN EN ISO 13565. Optical devices also comply with the standard DIN EN ISO 25178 and in future with the standard DIN EN ISO 21920, which allow for an extensive description of a surface without contact.	Tactile Optical
2	Get established process values in the blink of an eye Roughness, waviness and primary profiles describe the surface and its properties. The parameters derived from that provide information about the quality of the surface. This guarantees reliability in the production process and makes it possible to carry out incoming goods checks quickly.	Tactile Optical
3	Statistical testing When it comes to machined surfaces, structures are often no longer arranged in a certain direction but are distributed at random. A 2D section does not sufficiently describe them or, if it does, it is extremely time consuming. However, the extensive optical sampling of the surface provides more information and fast measuring results.	Tactile Optical



4

Measurement at the touch of a button

Simply place the probe arm on the surface, press the button and begin measurement – no need for complicated peripherals. Read the results directly on the display and print them out with the associated printer as desired. Enjoy all of this at an unbeatable price-performance ratio.

Tactile



Optical



5

Topological testing

When surfaces are extremely sensitive, soft, sticky or even discontinuous, non-contact and thus optical measurement is the method of choice. This applies equally to coated, inhomogeneous and complex surfaces as well as to surfaces without processing structures: It is best to scan and evaluate them optically.

Tactile



Optical



6

Easy accessibility

Both optical and tactile mobile devices enable reliable surface testing directly on the workpiece in the production area. To examine surfaces, small depressions or drill holes that are difficult to access, the removable drive units in tactile tools also present a particular advantage.

Tactile



Optical



To ensure each component exhibits the maximum performance, the surfaces must often have special characteristics. That applies to form deviations and roughness as well as waviness or geometric features.

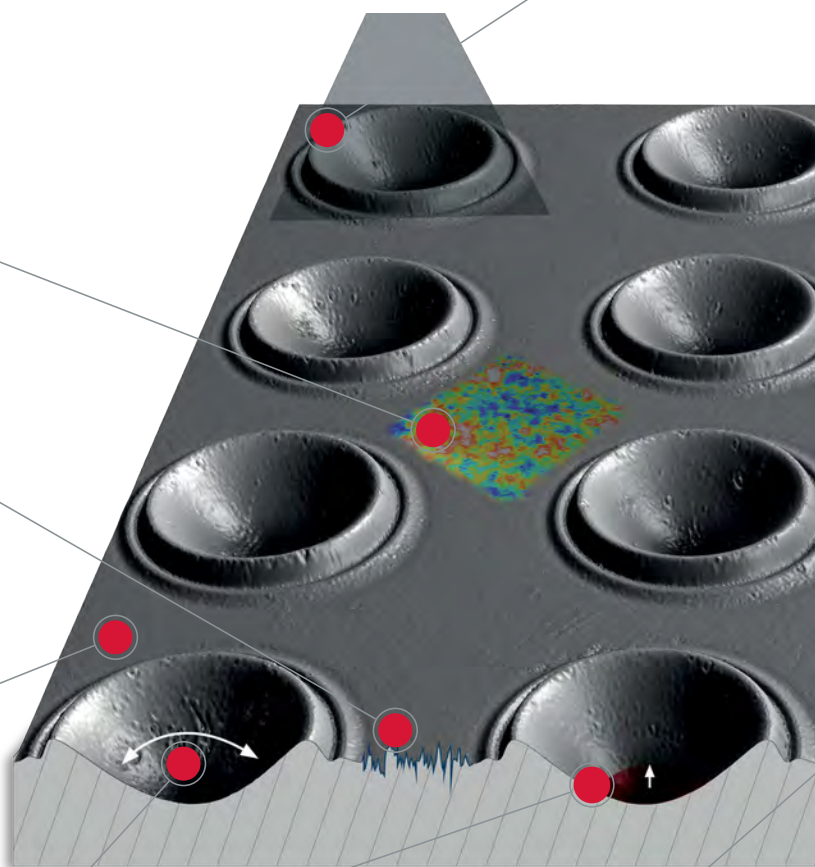
Extensive roughness evaluations as per ISO 25178

Profile roughness in accordance with ISO 4287, ISO 13565, ISO 21920, ASME B46.1, ISO 12085, SEP, VDA guidelines, and other standards

Linear errors compared to a target contour as well as straightness parameters as per ISO 12780

Determining radii, circles, segments of a circle and angle determination including evaluation of half or full angles

Determining the flatness of a full or partial surface, e.g. in accordance with ISO 12781



MarSurf Optical 3D metrology

Measuring tasks at a glance



Automotive



Aviation



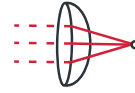
Electronics



Machines &
Tools



Medical



Optics



New Energies

Visual inspection

Microscope image or photo-simulated image in the evaluations as well as 3D depictions

Particle analysis

Detection and classification of particles, grains, furrows, textures, hills and valleys

Distance measurements

Comprehensive horizontal distance measurements (x;y), angle positions and inclinations

Form

Form deviation from planar contours, target/actual comparison with CAD data, roundness evaluation in accordance with ISO 12181

Error

Detection and analysis of defects, surface imperfections and damage

Layer thickness

Direct determination of the thickness of transparent layers, step height analysis of opaque surfaces

Height

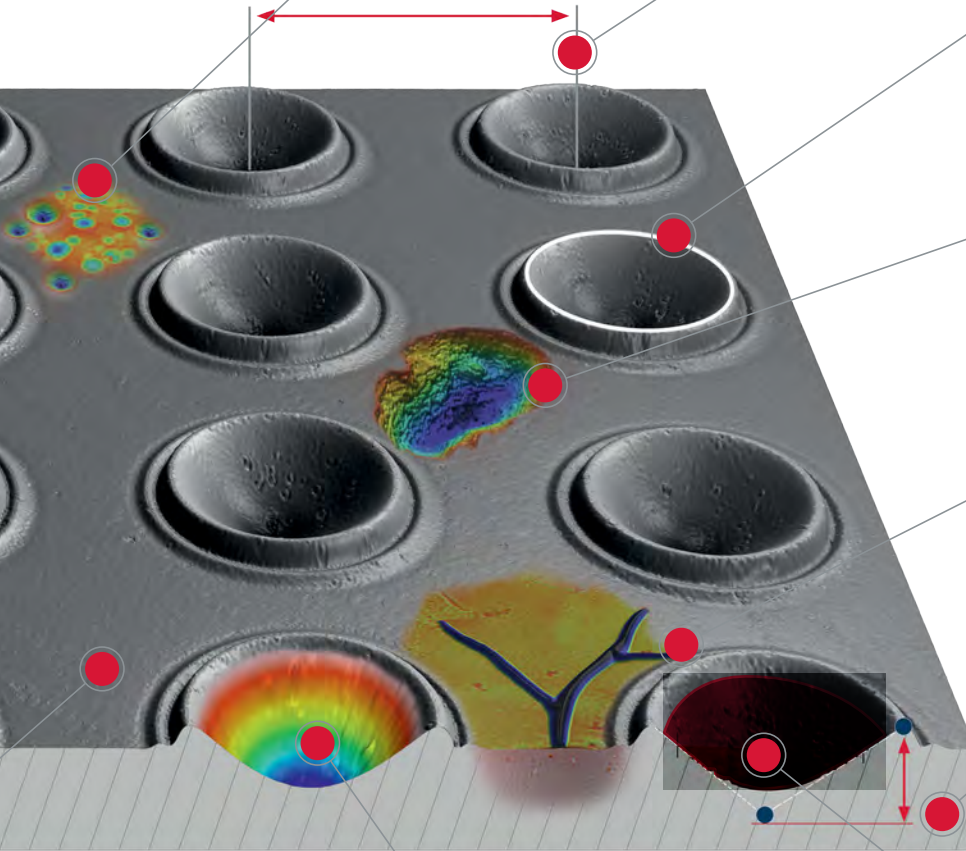
Distance measurements (z), determination of maximum and average heights as well as differences in position

Volume

Volume calculations of hollows, hills, valleys, peaks, and particles

Area

Calculation of surface area in peaks and hollows as well as determination of maximum elevations/depressions



Two platforms for multiple measurement options

Mahr has restructured its optical 3D metrology and offers you a wide range of combination options from which you can easily put together the right system.

Do you want only the best from the world of 3D measurement for testing your workpieces? No worries! Simply combine the desired measuring platform - MarSurf3D GS for large workpieces from 200 mm or MarSurf3D SX for workpieces up to 200 mm - with a powerful measuring head of your choice. The areal measuring head technologies range from focus variation and white light interferometry to confocal measurements. Confocal profilometry and line sensors are also available. Or why not opt for the new multisensor measuring head, which combines the areal measuring technologies. For you this means: All surface measurements down to the lower nanometer range can be carried out with a single instrument, and of course in real time. There is no need to change the measuring instrument, as this powerful multifunctional tool combines three powerful technologies in one. Either for the laboratory, quality assurance or directly on the production machine, and therefore exactly where you manufacture your workpieces.

0.13 μm

Maximum
sampling rate

4 sec.

Typical measuring time
for 3D roughness
measurements

0.1 – 100 %

Reflectivity of all the sample
surfaces

50,000 MTBF

LED light source

126,000,000

Measuring points/
second



MarSurf3D

Platforms

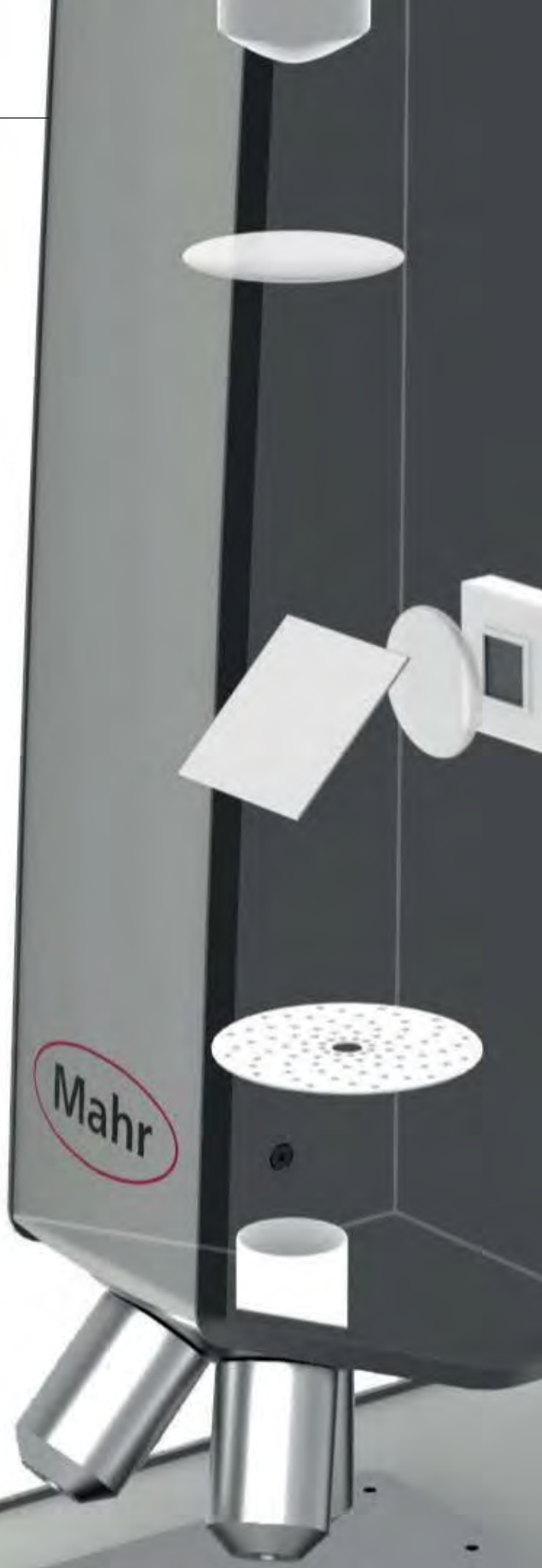


Image: SX platform

Measuring head technologies: The choice is yours!

Measure whatever way you like: The new MarSurf 3D platforms **MarSurf3D GS** and **MarSurf3D SX** can be combined with the measuring technology of your choice. These include Mahr-patented confocal technology, high-precision white light interferometry, focus variation and confocal point sensors or line sensors.

Do you have a wide variety of workpieces and very different measuring tasks? Do you switch between instruments and technologies? This is now a thing of the past with the modular MarSurf3D series. Mahr offers one instrument for all with its new multi-sensor measuring head – whether you measure confocally, by focus variation or down to the lower nanometer range with white light interferometry.





Technologies

Confocal

The specially developed and patented multi-pinhole technology ensures ultra-fast image capture with the highest signal quality, resulting in maximum repeatability down to the sub-nanometer range. This technology is suitable for a wide range of applications in the field of surface metrology, from smooth to very rough surfaces.

Interferometry

Interferometry offers a vertical resolution in the sub-nanometer range, regardless of the magnification. This allows surface heights in the NM range to be recorded on large measuring fields. Interferometry comes into its own on very smooth and continuous surfaces and is also suitable for the ultra-precise determination of step heights.

Focus variation

Focus variation with active lighting is a technology developed for measuring the geometry of large rough surfaces. Steeply inclined surfaces (up to 86°) in particular and a large vertical measuring range can be recorded in one measurement.

Multisensor

Maximum flexibility is achieved by combining the individual technologies: Confocal, white light interferometry and focus variation.

The different strengths of the technologies can be utilized in one measuring system.

Clever combination:
How it works...

GS and SX platforms

from 100 x 100 mm
up to 500 x 400 mm

Five measuring heads to choose from:



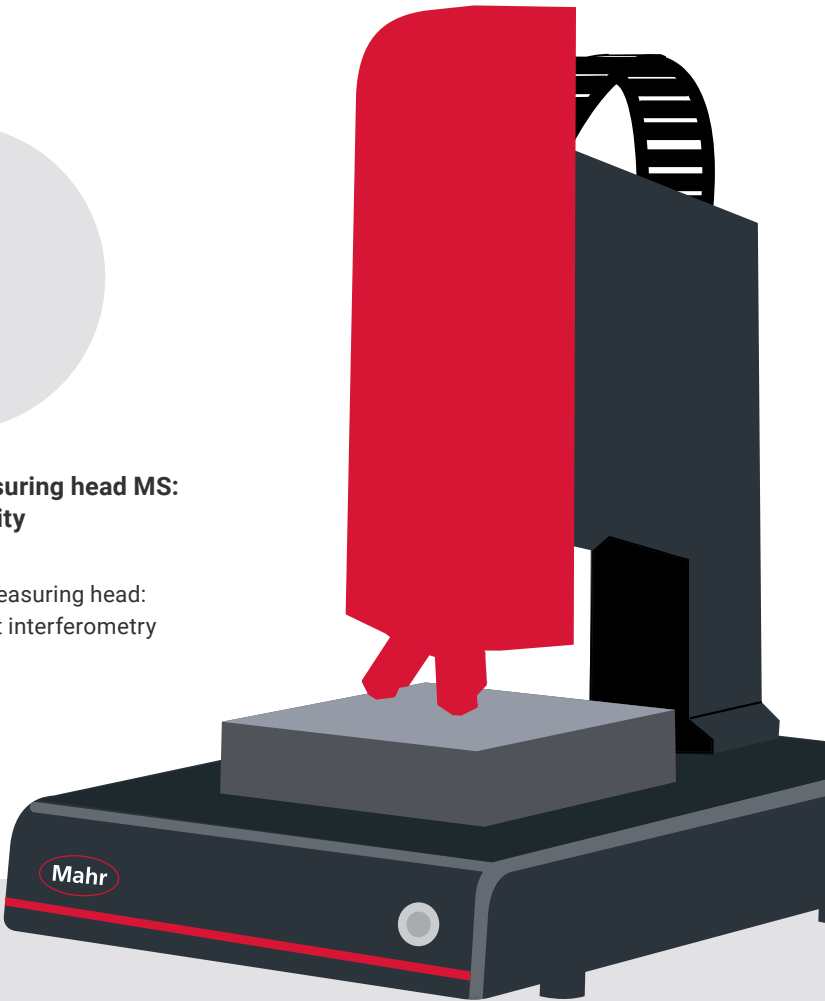
White light interferometer WI:
Highest vertical resolution

Record topographies in the
sub-nanometer range



Multisensor measuring head MS:
Maximum flexibility

Combined in one measuring head:
confocal, white light interferometry
and focus variation



Application	Confocal	Interferometry	Focus variation
Structured surfaces	++	+	+
Rough surfaces	++	o	+
Smooth surfaces	+	++	–
Steep flanks	+	o	++
Height measuring range	+	+	++
Layer thickness	+	+	–



Confocal measuring head CM: The all-rounder

Robust surface metrology
for everyday use



3D profilometer CP: Flexibility for quality control

Maximum flexibility even
for large components



3D profilometer CL: Ultra-fast large-area measurement

High measuring point density
with high measuring speed

Image: SX platform

Platform		Measuring heads						
		CM	CM <i>plus</i>	WI <i>plus</i>	MS	MS <i>plus</i>	CP	CL
MarSurf3D SX	3050	x	x	x	–	–	–	–
	3100	x	x	x	x	x	–	–
	3200	x	x	x	x	x	–	–
	3201	x	x	x	x	x	–	–
MarSurf3D GS	3201	x	x	x	x	x	x	x
	3302	x	x	x	x	x	x	x
	3301	x	x	x	x	x	x	x
	3501	x	x	x	x	x	x	x

plus: with piezo drive

Two pillars with a **variety of measuring heads**

Combine the appropriate measuring head with one of the new MarSurf3D GS or MarSurf3D SX platforms. The sample size and degree of automation determine the direction.

HD stitching

High resolution even with large measuring surfaces

Compact and robust

Controller integrated in the system

Sample table

Travel path 100 x 100 mm or 200 x 200 mm



MarSurf3D SX

The MarSurf3D SX comes into its own for smaller workpieces with axis sizes up to a maximum of 200 mm. It has a compact design and integrated attenuation. Its shape is reminiscent of the tried-and-tested confocal series and it offers impressive value for money.



Advantages

- For laboratory and QA
- Flexible all-rounder
- Measurements can be automated

MarSurf3D

Platforms

Offset camera

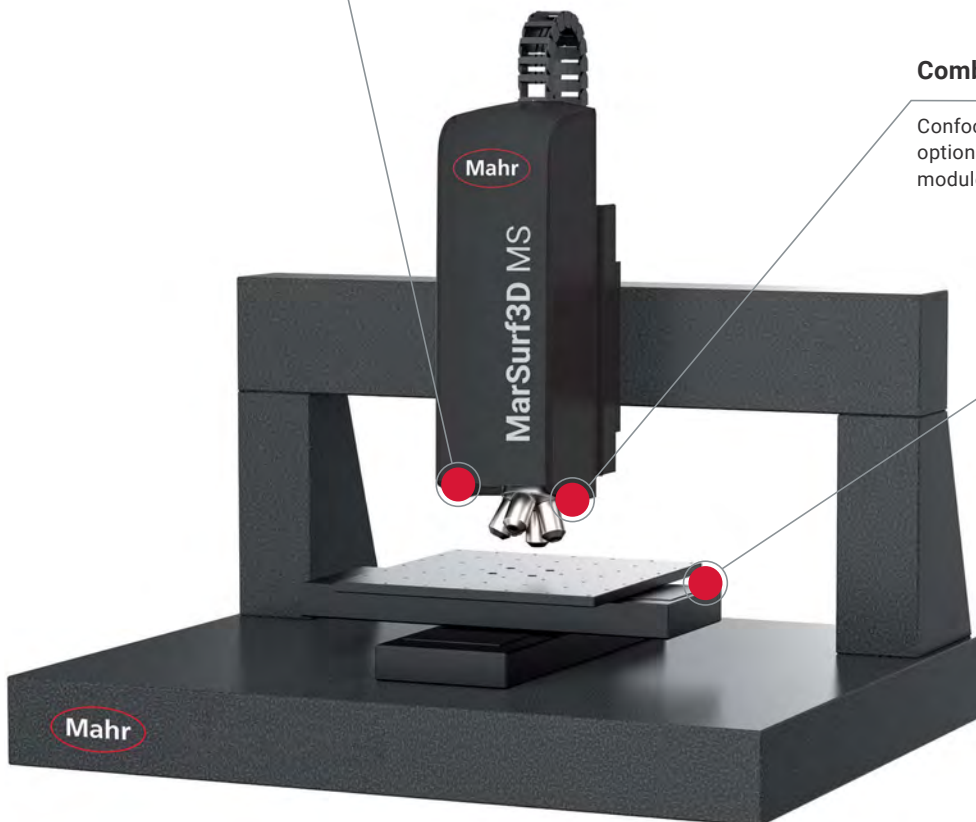
Optional for easy creation of measurements and registration mark detection

Combination options

Confocal area sensor, optional profilometer module

Sample table

Travel path 200 x 200 mm to 500 x 400 mm



MarSurf3D GS

With its portal design, the MarSurf3D GS is suitable for large workpieces from 200 mm. Here you have a choice of different axes, which you can select depending on the dimensions of your workpieces. An integrated overview camera, a point sensor and an enclosure are available on request. And the best bit: The MarSurf3D GS offers 24/7 performance. It allows you to check the quality of your workpieces around the clock.



Advantages

- Suitable for large workpieces
- Designed for continuous operation
- Freely selectable degree of automation

Mobile 3D surface measurement for use anywhere

Regardless of whether the surface is sensitive, very large or even shiny: The MarSurf CM mobile combines the unique properties of a portable and robust measuring system for production with the established functionality of a stationary system. The MarSurf CM mobile provides reliable and accurate measurements. Thanks to confocal 3D metrology, your measurements are quick, non-contact and material-independent.

In particular for measurements on large objects and specimens that are difficult to move, such as rollers and car bodies, the MarSurf CM mobile will impress you with its compact size, giving you the option to stitch larger measuring fields at a consistently high resolution thanks to the motorized axes. Featuring a lens revolver, the option of a color camera and application-specific software solutions, the measuring system fulfills the requirements of a wide range of measuring tasks and can be used wherever your work requires it.

Mobile und contactless

Regardless of workpiece dimensions and surface properties

HD stitching

High resolution, even with large measuring surfaces, due to motorized axes

Versatile

Roughness and microgeometrical measurements in one system



Get to know the entire MarSurf CM portfolio.

Do you require a stationary measuring station or want an automated solution? Visit our website!

MarSurf

Confocal technology

Portable

Compact system for quick use

Robust

Reliable results, even in the production environment

5 million
measuring points per individual measurement

0.13 μm
minimum sampling rate

100 fps
even at maximum resolution

16 bit
high dynamic range camera

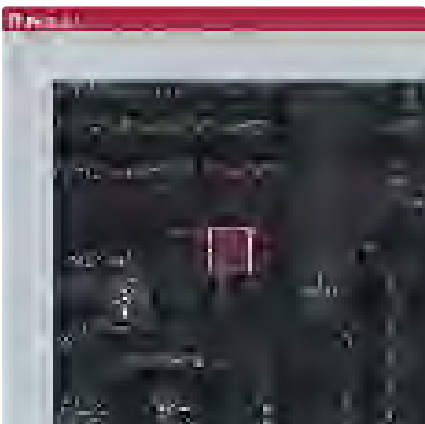


Unique specifications

Roughness measurements as per ISO 4287, ISO 21920, and ISO 25178

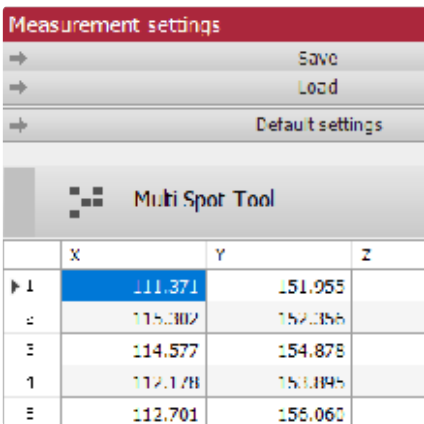
One user interface, many functions

With the user-friendly measurement and control software – MarSurf Metrology (MSW) – all of the sensors and overview camera can easily be controlled from one user interface. When switching between measuring heads, the selected measuring head automatically moves to the defined measuring position. Meaningful 3D overviews of the measuring results, including intensity overlay, are already available after just a few seconds.



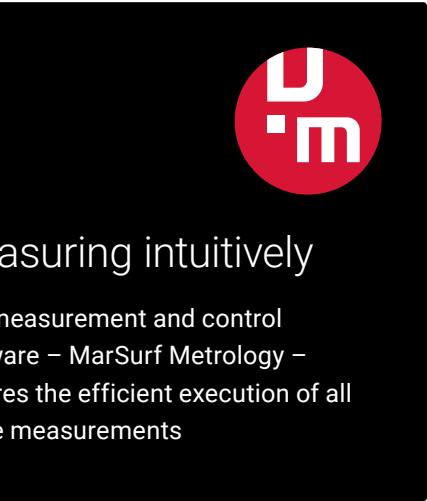
Navigator function

The navigator function generates a fast overview image, in which the required measuring range can easily be selected using the mouse.



Template function

The template function can be used to save measuring parameters as a template. Recurring measuring tasks can thus be implemented easily.



Snapshot technology

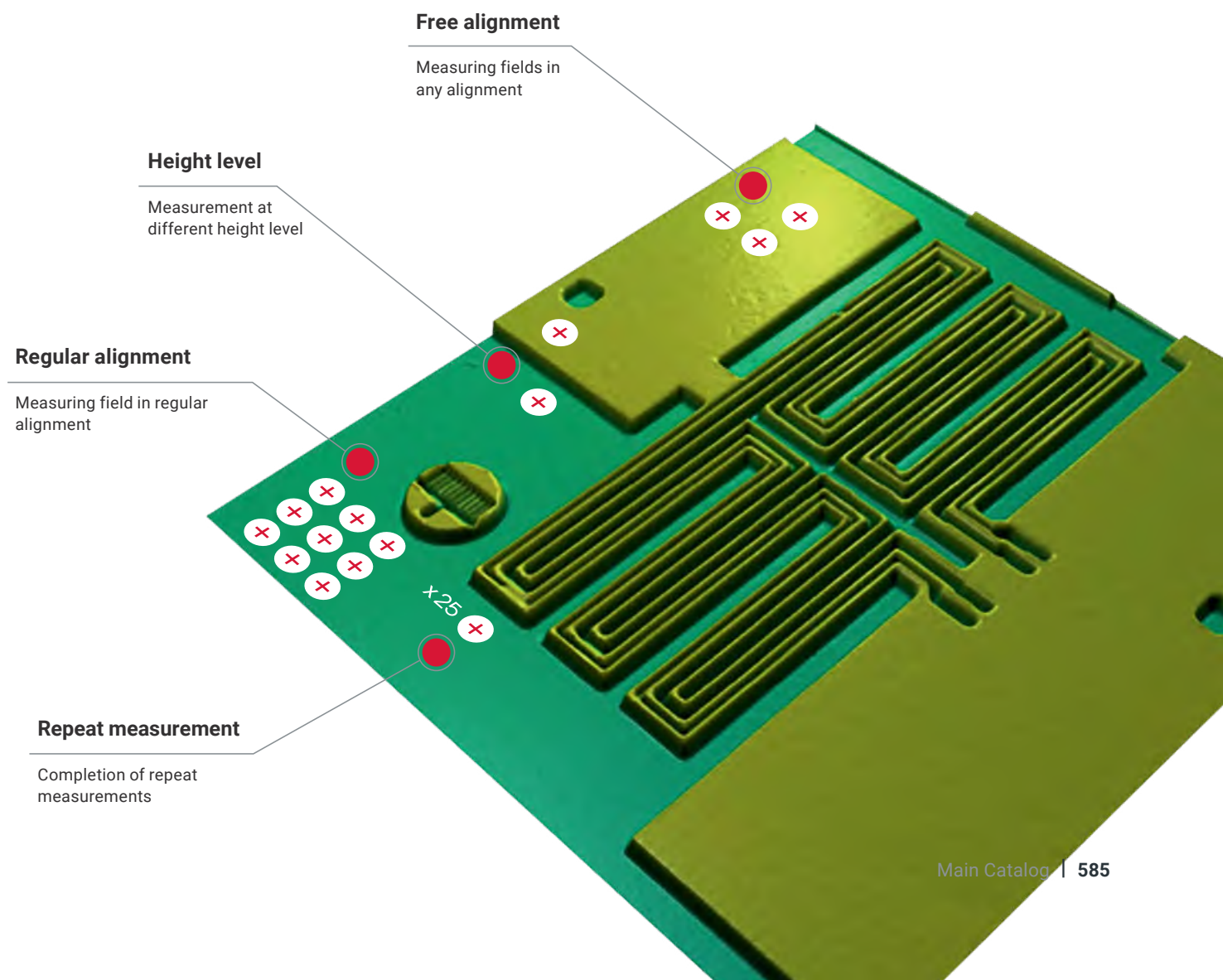
After you have arrived at the desired sample position, simply click for optimum measuring results. The MarSurf MSW automatically regulates all of the settings, including the focus range and brightness. At the same time there is enough room for individual settings.

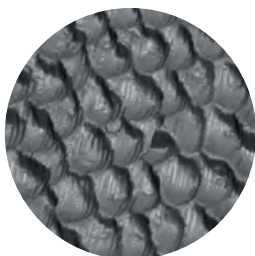
Multi Spot Tool

With the MarSurf Metrology software, you can approach several measuring positions individually, save them, or define them directly in the navigator overview. Alternatively, a fixed grid can be copied to the points, or a temporal instead of a local offset can be used at that point for the repeat measurement to monitor any changes. All points are recorded and saved in one measuring process.

Measuring processes using the Multi Spot Tool can be saved as a template for subsequent measurements. The tool includes all the known, easy-to-use functions of the MarSurf MSW, including the Auto-Range and Stitching functions. Semi-automated processes can also be designed.

Measurement settings				
Save				
Load				
Default settings				
Multi Spot Tool				
	X	Y	Z	Repeat
1	110.316	149.249	1.7459	1
2	115.319	151.273	1.7459	1
-	114.403	149.203	1.7459	1
4	120.811	153.117	1.7459	1
-	119.103	151.525	1.7459	1





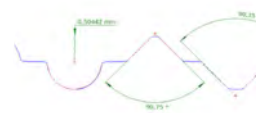
Roughness as per
ISO 25178, ISO 13565,
ISO 4287, ISO 21920



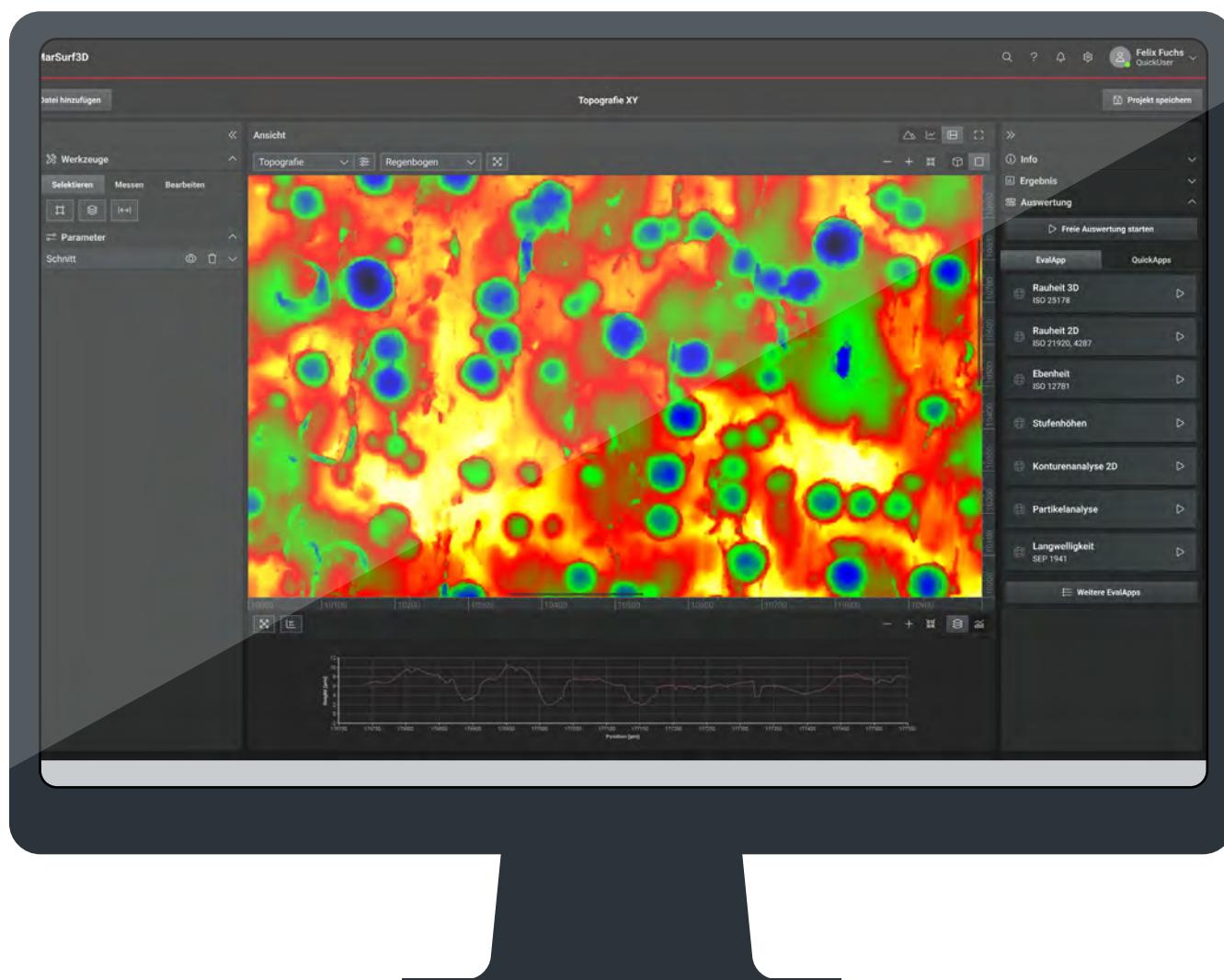
Particle/pore analysis
including classification
Height/depth, area,
volume, diameter



Flatness according to
ISO 12781



Geometry and contour
evaluation in 2D

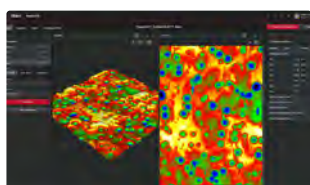


Surface characteristics at the press of a button

The surface analysis software MarSurf3D offers a comprehensive function package for displaying and evaluating the structure, roughness, waviness, step height, contours, and other surface characteristics. The clearly structured user interface makes it possible to create simple analytical reports at the touch of a button. A variety of display options, such as profile view, 3D reconstruction, or a reflectance image provide informative measuring records. It is easy for users to create individual evaluation templates.

Effective display and evaluation

Display and document structures, roughness, waviness and more with the MarSurf3D software



Edit

Wide selection of tools to:

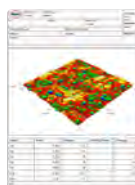
- remove formatting
- select
- filter



Evaluate

Interactive analysis for:

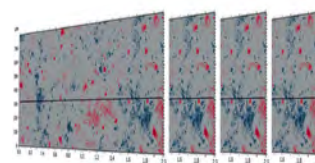
- roughness
- geometry
- tribology



Document

Creation of standardized reports:

- 2D and 3D images
- profiles
- tables



Automate

Use of the created evaluations for recurring measuring tasks:

- QuickApps
- batch processing



Making functions **visible** through scattered light

Functional properties such as friction, sheen, adhesive strength and seal play an important role in the manufacture of finished surfaces. Scattered light metrology quickly and reliably records these properties. Your benefit: The surface parameters are not obtained from individual height values, but from the reflected distribution of the microprofile angle within the illuminated measuring surface. The parameters are calculated directly from this. The rougher the surface, the greater the angular distribution, the variance of which is described as an Aq value according to VDA 2009 and is directly proportional to the hybrid parameter Rdq of ISO 21920. According to the same principle, it is also possible to measure the shape and waviness using the macro angle. Up to 8,000 roughness measurements per second can be carried out using this method, which makes the technology ideal for use in the manufacturing environment.



Advantages

- High measuring speed (up to 8 kHz)
- Vibration-insensitive
- Very high measuring accuracy (up to 0.001 μm)
- Traceable to ISO 17025

Practical examples



Transmission shaft bearings

Waviness measurement



Roller bearing inner and outer rings

Waviness and roundness measurement



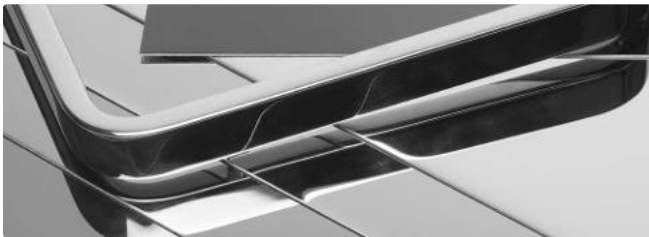
Rollers / films

Inline roughness measurement



Hip joint balls

Shape and roughness measurement with defect detection



Galvanized surfaces

Gloss measurement



Silicon wafers

Full surface roughness measurement

... as well as

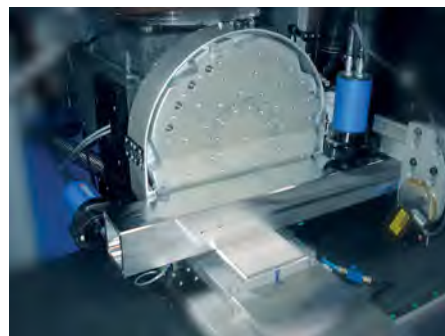
racks, gear shafts, hydraulic shafts and rotor shafts, gear worms, ball studs, linear guides and much more.

MarSurf3D OS 500

Sensor OS 500

DESCRIPTION

- One sensor for a wide range of measurement applications
- The scattered light sensors can be selected depending on the application.
- In daily operation, scattered light sensors are extremely fast, low-maintenance, robust and precise.
- The OS 800 can be integrated directly into machine control systems. With the option of 8 kHz, it is designed for large surface measurements, such as rollers.
- The OS 500 is controlled via a PC and can perform roughness and waviness evaluations using the sensor software provided.



TECHNICAL DATA

6356000 - Sensor OS- 500		
IP protection category		IP 65
Surface parameters		Roughness Aq, waviness
Measuring range		32° (+/- 16°)
Measuring spot diameter	µm	900
Measuring frequency	kHz	2
Type		OS 500
Measuring principle		Scattered light method according to VDA 2009
Light source		LED 670 nm
System controller		external

APPLICATIONS

- Grinding and finishing machines
- Rolls (calender rolls, steel sheets, foils...)
- Rolling bearings (large bearings...)



For more information, please visit our website: www.mahr.com

MarSurf3D OptoRack

OptoRack

DESCRIPTION

Process monitoring for the highest demands

- The OptoRack measuring machine was specifically developed for process monitoring during the grinding and finishing of rack gears and ball screws.
- Through a swiveling axis, the sensor can measure roughness and waviness separately on tracks to the right and left of the contact point of the raceways. The measurement process is carried out automatically after the spindle is inserted. The roughness profile and the waviness at any point on the spindle are evaluated.
- Ball screw drives are used to convert a rotary motion into a linear motion. Applications can be found in machine tools and steering systems. Especially in steering systems, the functional behavior such as efficiency, wear, and potential noise development strongly depends on the surface condition of the ball raceways.
- With Optosurf technology, surface characteristics can be measured in a rough manufacturing environment, thus making a sustainable contribution to the improvement of products.
- Measurement objects: Rack and pinion with ball screw



TECHNICAL DATA

6356002 - OptoRack

Surface parameters		Roundness LSC: > 0.2µm, Waviness: 0.02 µm, Roughness: Aq > 1.6 (Ra > 0.001µm)
Measuring range		32° (+/- 16°)
Measuring spot diameter	µm	900
Measuring frequency	kHz	2
Workpiece length max.	mm	800
Type		OptoRack
Measuring time		per cycle 2s
Energy supply:		230 V / 50 Hz
Measuring principle		Scattered light method according to VDA 2009
Light source		LED 670 nm with 0.9 mm measuring spot, switchable second measuring spot with 0.03 mm laser c1)

APPLICATIONS

- Roughness
- Waviness (chatter marks)
- Roundness
- Defects
- Tool wear



For more information, please visit our website: www.mahr.com

MarSurf3D OptoShaft

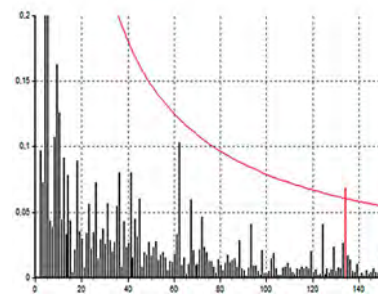
OptoShaft

DESCRIPTION

Process monitoring for the highest demands

- The OptoShaft measuring machine was specifically developed for process monitoring during the grinding and finishing of bearing seats of gearbox and rotor shafts. Due to its extremely robust and simultaneously precise scattered light sensor, the measuring device can be used directly next to the manufacturing machine.
- Especially finely finished bearing seats that rotate as needle bearings in the gearbox or motor have high requirements for surface quality. Even the smallest waviness with amplitudes $< 0.05 \mu\text{m}$ leads to unacceptable noise. The cause of the waviness is chatter marks on the bearing seat, which sporadically occur during the grinding process and were not completely eliminated after finishing.

Measuring Objects: Gearbox and rotor shafts



TECHNICAL DATA

6356003 - OptoShaft		
Surface parameters		Roundness LSC: $> 0.2 \mu\text{m}$, Waviness: $0.02 \mu\text{m}$, Roughness: $Aq > 1.6$ ($Ra > 0.001 \mu\text{m}$)
Measuring range		$32^\circ (+/- 16^\circ)$
Measuring spot diameter	μm	900
Measuring frequency	kHz	2
Workpiece length max.	mm	440
Type		OptoShaft
Measuring time		per cycle 1 s
Energy supply		230 V / 50 Hz
Measuring principle		Scattered light method according to VDA 2009
Light source		LED 670 nm with 0.9 mm measuring spot, switchable second measuring spot with 0.03 mm laser c1)

APPLICATIONS

- Roughness
- Waviness (chatter marks)
- Roundness
- Defects
- Tool wear



For more information, please visit our website: www.mahr.com

MarSurf3D OptoWorm

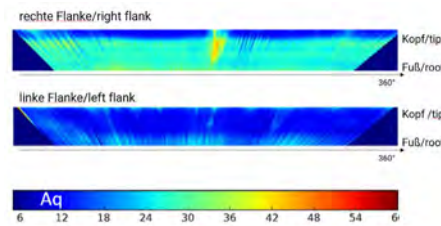
OptoWorm

DESCRIPTION

Process monitoring for the highest demands

- The OptoWorm measuring machine was specially developed for process monitoring in the fine machining of worm gears. The machine makes it possible to measure the entire functional surface of the left and right flank. Due to the extremely robust and at the same time precise stray light sensor, the measuring machine can be used directly next to the production machine.
- The worm is an important element in electric power steering, for example. The demands on the surface of the worm flanks are extremely high due to the force that is transmitted to the worm wheel.

Measuring objects: Gear worms



TECHNICAL DATA

6356004 - OptoWorm		
Surface parameters		Roughness: $Aq > 1.6$ ($Ra > 0.001\mu m$), waviness: $0.02\mu m$, $32^\circ (+/- 16^\circ)$
Measuring range		
Measuring spot diameter	μm	900
Measuring frequency	kHz	2
Type		OptoWorm
Measuring time		per cycle 2s
Energy supply		230 V / 50 Hz
Measuring principle		Scattered light method according to VDA 2009
Light source		LED 670 nm with 0.9 mm measuring spot, switchable second measuring spot with 0.03 mm laser c1)

APPLICATIONS

- Roughness
- Waviness (chatter marks)
- Roundness
- Defects
- Tool wear



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, non-contact 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 precise measuring results at an unbeatable price-performance ratio.



MarVision MM 500 / MM 500 CNC	596
Overview	
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Workshop measuring microscope with M3-software	
MarVision MM 500 CNC	600
CNC Workshop measuring microscope	
Accessories for measuring microscopes	602

Workshop measuring microscope for geometric elements

Mahr offers the new MarVision MM 500 measuring microscope for the workshop and laboratory in two versions, each with three measuring ranges: with manual axes or with CNC axis control. This gives you a total of six models from which you can choose the perfect solution for your requirements.

The MarVision MM 500 inspects turned, milled, punched and bent parts, plastic parts and electronic circuit boards, for example. The measuring microscope uses automatic edge detection to determine geometric elements such as points, straight lines, circles, distances, angles and intersection points on these workpieces without contact. Thanks to the optical incremental measuring system, it offers outstanding accuracy and reliability. In addition, its color camera captures particularly high-contrast images.

The manual MM 500 models are designed to test components quickly and easily. In contrast, the CNC versions with stitching are designed for a higher throughput, e.g. recurring measuring tasks on a sample. You can achieve your measuring results quickly and easily without complex pre-settings: Control is via the intuitive M3 software, either by touchscreen PC or keyboard and mouse.



Advantages

- Available for three measuring ranges: 200 x 100 mm / 300 x 200 mm / 400 x 250 mm
- Robust mechanics
- Simple commissioning thanks to the one-box design of the electronics
- Proven M3 software with touch PC

Quadrant LED ring light

This optional coaxial incident light provides you with optimum illumination of monochrome surfaces.

LED transmitted light

This telecentric transmitted light ensures a sharp image of rotationally symmetrical workpieces.

Solid granite base

The sturdy design provides lasting protection against vibrations and thus contributes to the reliability of the measuring results.



M3 software

1 Observe

2 Measure

3 Specify

MarVision MM 500 / MM 500 CNC

Workshop measuring microscope

Motorized Navitar zoom lens

Even the smallest components can be measured extremely accurately in six zoom levels.

Height adjustment as required

Depending on the model, you can align the lenses to your workpieces either manually or by motor.

Sturdy steel XY table

This provides the ideal support, even for delicate workpieces, and enables perfect working with incident and transmitted light.

4 Calculate

5 Evaluate

6 Document

MarVision MM 500

Workshop measuring microscope with M3-software

FEATURES

Measuring microscope

- Integrated color camera
- Zoom lens (0.7x – 4.5x)
- LED ring light: 1 ring and 4 segments, individually switchable and dimmable
- LED transmitted light: dimmable
- Laser pointer for position finding
- Telecentric transmitted light
- Solid granite base
- Sturdy steel XY table, precision-mounted
- Optical incremental measuring system for outstanding accuracy and reliability

Operating and display unit M3-software with touchscreen PC

- 23" touchscreen with keyboard and mouse
- Operating system Windows, further software can be installed
- Operation via Multi-Touch screen or with mouse / keyboard
- M3-Software
- Large video image
- 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

Optional hardware components

- Use of ancillary lenses 0.5x / 2x (additional magnification levels)

Software options

- Importing DXF data
- DXF and profiling package
- Module - Thread measurement
- Module - Cable insulation
- Module - QDAS

Package contains: M3 software with touchscreen PC, instruction manual, Mahr calibration certificate



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.		4248401	4248402	4248403	4248441	4248442	4248443
Type		MM 500					
Measuring range X / Y	mm	200/100	300/200	400/250	200/100	300/200	400/250
Magnification		35–225x			35 – 225x		
Measuring system - resolution	mm	0,001					
Measuring system - E1 X/Y	µm	1,9 + (L/100)		3,9 + (L/100)	1,9 + (L/100)		3,9 + (L/100)
Measuring system - E2 XY	µm	2,9 + (L/100)		4,9 + (L/100)	2,9 + (L/100)		4,9 + (L/100)
Max. height of test piece	mm	200					
Size of table L x B	mm	370 x 210	480 x 380	600 x 430	370 x 210	480 x 380	600 x 430
Max. height of test piece	kg	20					
Energy supply		230 V/115 V; 50/60 Hz					
Lens		Manual zoom			Motorized zoom		
Illumination		LED back and front illumination, adjustable					
Measuring system execution		Built-in incremental scale					
Design		manual axis					

MarVision MM 500

Workshop measuring microscope with M3-software

ACCESSORIES

Order no.	Type	Description
4248817	320 v0,5	Ancillary lens 0.5x (for Navitar objective lens only)
4248818	320 v0,75	Ancillary lens 0.75x (for Navitar objective lens only)
4248819	320 v1,5	Ancillary lens 1.5x (for Navitar objective lens only)
4248820	320 v2	Ancillary lens 2.0x (for Navitar objective lens only)
4248800		Pair of prism 200x100 mm 5– 55 mm Diameter
4248801		Center support 200x100 mm, H=40 mm
4248802		Center support rotational 200X100 mm, H=50 mm, 130 mm
4248805		Stop bar 120mm
4248806		Stop bar 90° for MM500 200x100
4248811		Rotary glass plate D=100 mm for system 200x100 mm
4248822		Option Integration DXF-File for MM 500 M3-Software
4248823		Option Integration DXF-File & Profiling Paket M3-Softwar
4248824		Option Thread-Inspection for MM 500 M3-Software
4248825		Option Wire-Insulation for MM 500 M3-Software
4885854		Option QDAS-converter for MM 500 M3-Software
4885855		Option Barcode-Scanner module for MM500 M3-Software
4248807		Prism pair 300x200 mm 5– 55 mm diameter
4248809		Center support 300x200 mm, H=40 mm
4248803		Center support rotational 300x200 mm, H=50 mm, 130 mm
4248814		Stop bar 90° MM500 400x250/300x200
4248812		Rotary glass plate D=100 mm for system 300x200 mm
4248808		Prism pair 400x250 mm 5– 55mm Diameter
4248810		Center support 400x250 mm, H=40 mm
4248804		Center support rotational 400x250 mm, H=50 mm, 130 mm
4248813		Rotary glass plate D=100 mm for system 400x250 mm



220 p



220 sp



220 as90; 220 as90-1



MarVision MM 500 CNC

CNC Workshop measuring microscope

FEATURES

Measuring microscope

- 3-axes CNC control
- Axis movement and speed regulation controlled via joystick
- Integrated color camera
- Motorized zoom lens (0.7x – 4.5x) with autofocus
- LED ring light: 1 ring and 4 segments, individually switchable and dimmable
- LED transmitted light: dimmable
- Telecentric transmitted light
- Coaxial incident light
- Laser pointer for position finding
- Solid granite base
- Sturdy steel XY table, precision-mounted
- Optical incremental measuring system for outstanding accuracy and reliability

Operating and display unit M3-software with touchscreen PC

- 23" touchscreen with keyboard and mouse
- Operating system Windows, further software can be installed
- Operation via Multi-Touch screen or with mouse / keyboard
- M3-Software
- Large video image
- 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

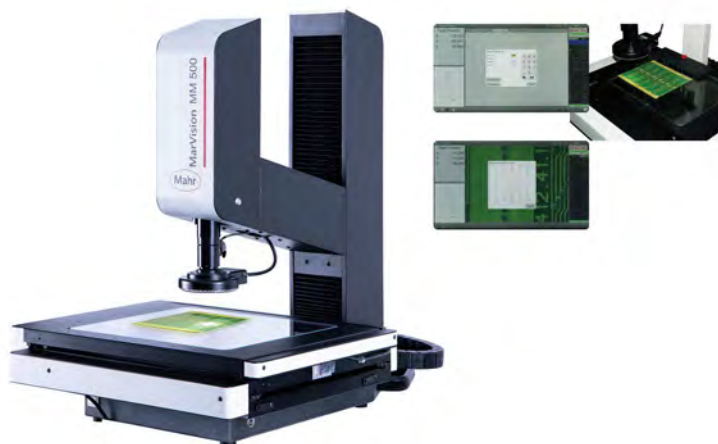
Optional hardware components

- Use of ancillary lenses 0.5x / 2x (additional magnification levels)

Software options

- Importing DXF data
- DXF and profiling package
- Module - Thread measurement
- Module - Cable insulation
- Module - QDAS

Package contains: M3 software with touchscreen PC, instruction manual, Mahr calibration certificate



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.		4248421	4248422	4248423
Type		MM 500 CNC		
Measuring range X / Y	mm	200/100	300/200	400/250
Magnification		35 – 225 x		
Measuring system - resolution	mm	0,001		
Measuring system - E1 X/Y	µm	1,9 + (L/100)		3,9 + (L/100)
Measuring system - E2 XY	µm	2,9 + (L/100)		4,9 + (L/100)
Max. height of test piece	mm	200		
Max. height of test piece with coax.	mm	200		200
Size of table L x B	mm	370 x 210	480 x 380	600 x 430
Max. height of test piece	kg	20		
Energy supply		230 V/115 V; 50/60 Hz		
Illumination		LED back and front illumination, adjustable		
Measuring system execution		Built-in incremental scale		
Design		CNC-Achsen		

MarVision MM 500 CNC

CNC Workshop measuring microscope

ACCESSORIES

Order no.	Type	Description
4248817	320 v0,5	Ancillary lens 0.5x (for Navitar objective lens only)
4248818	320 v0,75	Ancillary lens 0.75x (for Navitar objective lens only)
4248819	320 v1,5	Ancillary lens 1.5x (for Navitar objective lens only)
4248820	320 v2	Ancillary lens 2.0x (for Navitar objective lens only)
4248800		Pair of prism 200x100 mm 5– 55 mm Diameter
4248801		Center support 200x100 mm, H=40 mm
4248802		Center support rotational 200x100 mm, H=50 mm, 130 mm
4248805		Stop bar 120mm
4248806		Stop bar 90° for MM500 200x100
4248811		Rotary glass plate D=100 mm for system 200x100 mm
4248822		Option Integration DXF-File for MM 500 M3-Software
4248823		Option Integration DXF-File & Profiling Paket M3-Software
4248824		Option Thread-Inspection for MM 500 M3-Software
4248825		Option Wire-Insulation for MM 500 M3-Software
4885854		Option QDAS-converter for MM 500 M3-Software
4885855		Option Barcode-Scanner module for MM500 M3-Software
4248807		Prism pair 300x200 mm 5– 55 mm diameter
4248809		Center support 300x200 mm, H=40 mm
4248803		Center support rotational 300x200 mm, H=50 mm, 130 mm
4248814		Stop bar 90° MM500 400x250/300x200
4248812		Rotary glass plate D=100 mm for system 300x200 mm
4248808		Prism pair 400x250 mm 5– 55mm Diameter
4248810		Center support 400x250 mm, H=40 mm
4248804		Center support rotational 400x250 mm, H=50 mm, 130 mm
4248813		Rotary glass plate D=100 mm for system 400x250 mm



220 p



220 sp



220 as90; 220 as90– 1

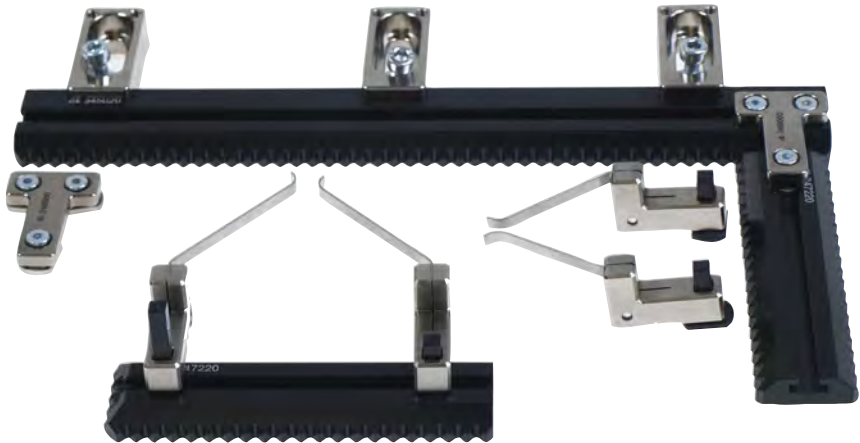


MarVision 220 Set 2/1 / 220 Set 2/2 / 220 Set 2/3

Set of rack rails for measuring range 200 x 100 mm

FEATURES

- Clamping set for optical measurement tasks
- For the construction of a simple support frame that can be attached with clamping jaws to the threaded bores of the measurement table
- Includes 4 spring clamps to quickly and easily secure test parts



Application:

- For clamping workpieces on measuring microscopes

TECHNICAL DATA

Order no.	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

ACCESSORIES

Order no.	Type	Description
4246850	220 Set 1	Set of clamping elements in wooden case
4246854	220 Set 3	V-supports, jaw chuck and tailstock
4246855	220 ds	Rotating swivel holder without jaw chuck rack rails
4246856	220 pb03	Precision jaw chuck for 0–3 mm for rotating swivel holder 220 ds
4246857	220 pb065	Precision jaw chuck for Ø 0–6.5 mm for rotating swivel holder 220 ds



220 Set 1



220 Set 3



220 pb065; 220 pb03; 220 ds

MarVision 109 P / 109 Pst / 109 PS

Vise with 15 mm jaw width

FEATURES

- Hard chrome plated or anodized construction (jaw width 15 mm)
- Exchangeable clamping jaws in hardened stainless steel and plastic



Application:

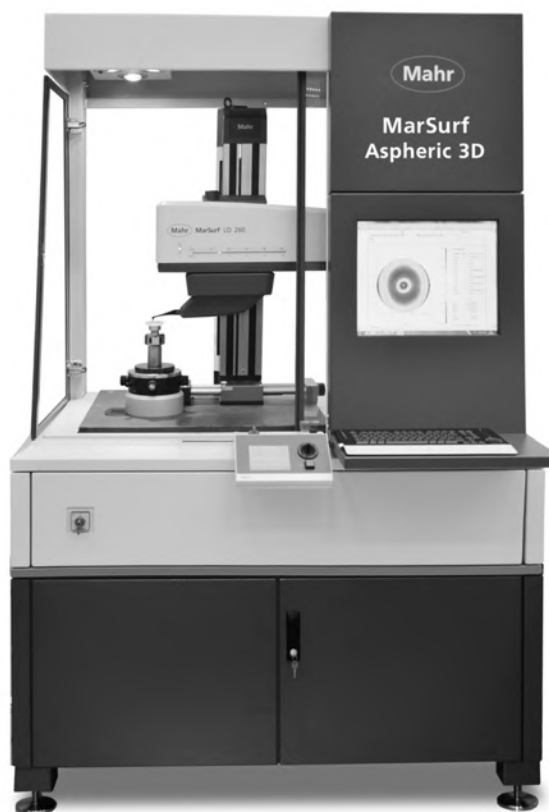
- For clamping small workpieces on measuring microscopes

TECHNICAL DATA

Order no.	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
4246822	109 PS	Mini-vises, jaw widths 15 / 25 / 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 and V-blocks and miniature dividing attachments

MarOpto | Measuring instruments for the optical industry

The tasks of metrology are changing with innovations in manufacturing processes. Above all, fast measurement directly on the production machine is now inevitable due to ever-increasing accuracy requirements and decreasing cycle times. With MarOpto, you can measure lenses, aspheres, and freeforms where your product is manufactured – including fast feedback to the manufacturing process to avoid rejects.



MarOpto LD 280 Aspheric Aspheric measuring station	606
MarOpto LD 260 Aspheric 3D Aspheric measuring station	608
MarOpto LD Aspheric products Software	610
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Contour and surface measuring station for production

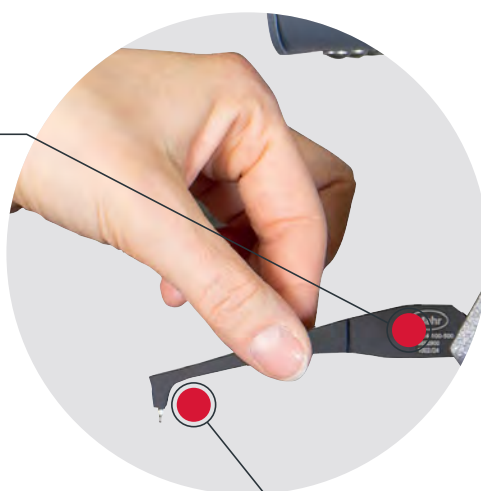
MarOpto LD 280 Aspheric

The MarOptoLD 280 Aspheric measuring station is a highly precise 2D surface measuring station for measuring contours on spheres, aspheres and optical components. Check and correct your individual production steps in closed loop operation.

Mahr's tried and tested software platform MarWin provides the basis for flexible evaluation using Aspheric.Lib.

Toolless magnetic probe arm holder

Perfect fit, quick replacement and automatic detection/measuring force selection of probe arms



Users benefit from the following advantages:

- Closed loop – output of the differential profile to correct the machine tool
- Check the surface in the first machining operations
- Operating concept for production control
- Electronic control of contacting force for different applications
- Compact design – small footprint

Large measuring range

Probe arm stroke of 15 mm
(100 mm probe arm)
Probe arm stroke of 37.5 mm
(250 mm probe arm)

Support plate with 50 mm hole grid

for a flexible workpiece holder

Options:

- Manual TC axis
- Housing
- Probe arms
- Double-sided measurement of optical elements

Integrated 60 mm TY-adjustment

Choose between manual or motorized



Max. measuring range
280 mm
X-axis

Vertical resolution
0.8 nm

Max. measuring speed
10 mm/s

Form deviation 2D
≤100 nm

Mahr MarOpto LD 280 Aspheric

High-speed measuring X-axis

280 mm
0.02 - 10 mm/s measuring speed

New S9 probe system

for precise recording of measurement
data, <100 nm form deviation

New manual control panel

Full functionality and user-friendly

Mahr

MarControl

Contour and surface measuring station for production

MarOpto LD 260 Aspheric 3D

The MarOpto LD 260 Aspheric 3D measuring station is a high-precision 3D surface measuring station for contour measurement on spheres, aspheres and optical components. Check and correct your individual production steps in closed loop operation.

Mahr's tried and tested software platform MarWin provides the basis for flexible evaluation using Aspheric.Lib.

Users benefit from the following advantages:

- Closed loop – Output the differential profile to correct the machine tool
- Check the surface in the first machining operations
- Operating concept for production control
- Electronic control of contacting force for different applications

Options:

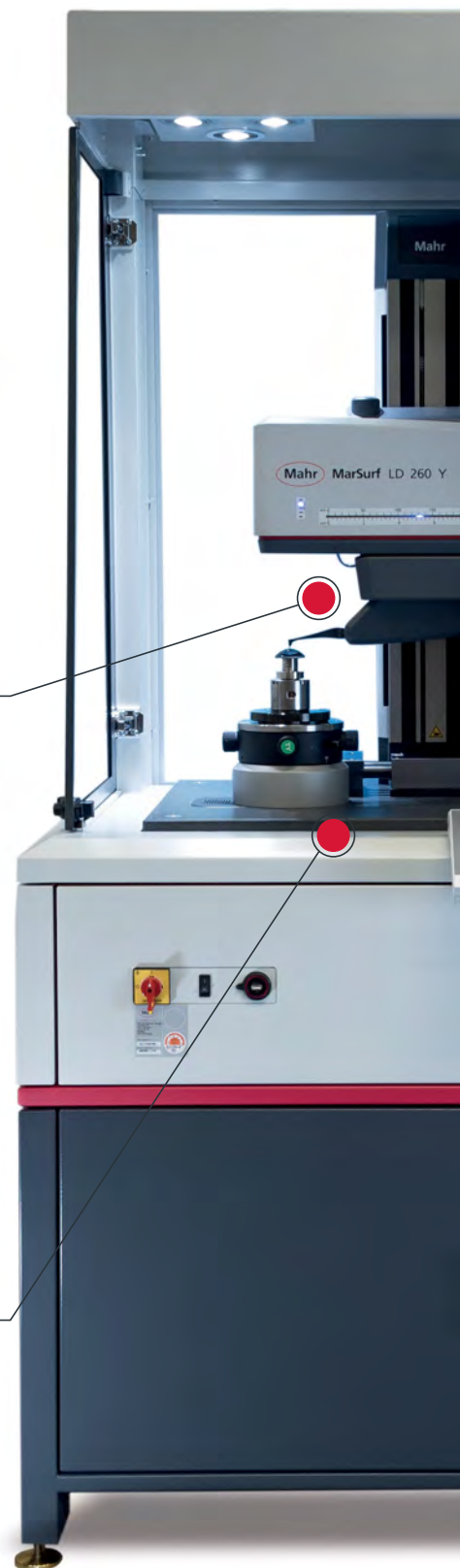
- Probe arms
- Double-sided measurement of optical elements

Bionic-style LP D probe arm

Improved dynamics and optimized design, change probe arm without calibration

Measurement of diffractive structures

Determines the form deviation, zone height, zone distances and much more



Max. measuring range

260 mm

X-axis

Vertical resolution

0.8 nm

Max. measuring speed

10 mm/s

Form deviation 2D

≤ 100 nm

Form deviation 3D

≤ 200 nm



ISO 10110

Evaluation according to DIN ISO 10110-5

Increased flexibility

Different types of aspheres can be measured with one measuring system.

Measurement of bi-aspheres

Optical lenses can be measured on both sides in absolute reference to one another.

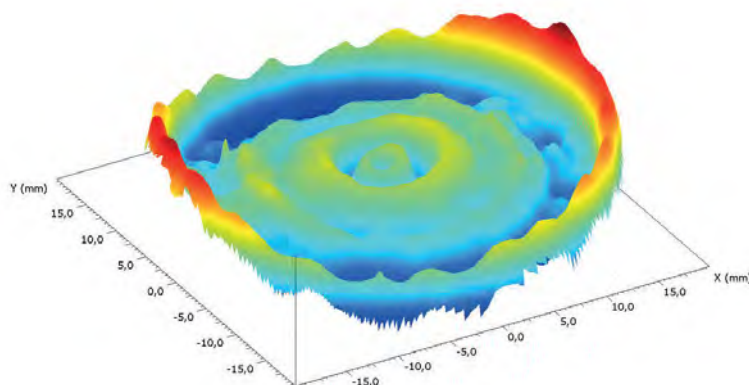
Powerful software for measuring tasks in lens production

Mahr not only offers universal hardware, but also the perfectly compatible measuring and evaluation software based on the MarWin platform for the special applications of the optical industry. The user interface of the software is clearly laid out and easy to navigate.

Aspheric.Lib

The AsphericLib software package measures spheres, aspheres and mounting surfaces and evaluates the results. Users benefit from the following options:

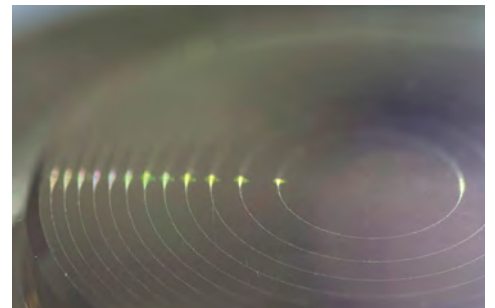
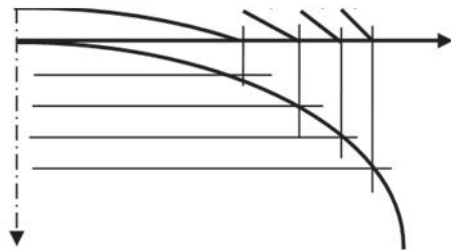
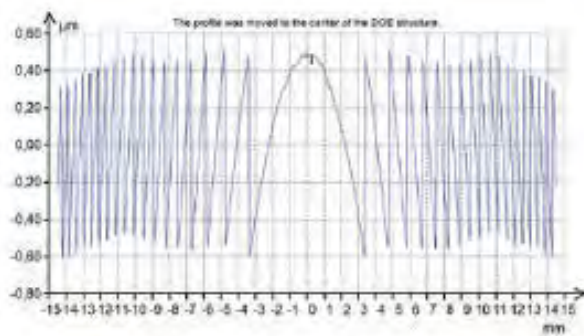
- Evaluate and log according to ISO 10110-5 incl. surface form deviation, gradient error, astigmatism and other Zernicke polynomials
- Automated 2D measurement of one or more linear sections, as well as complete 3D measurement
- Define nominal geometries using a clear software interface
- Reverse engineering and simulation: Determine the asphere coefficients of unknown geometries
- Export profiles for 2D or 3D correction of the machine tools in 2D or file formats: *.mod, *.txt, *.ascii, *.dat, *.xyz, *.zygo.dat, *.x3p
- Import geometry data from the machine tool



Measurement of diffractive lenses

Description:

Analysis with constant zone width or constant zone height
Analysis after removing the basic shape (aspherical, spherical or flat)
Evaluation of the tolerable parameters for the individual zones and levels: Angle, zone height, shape deviation, level width, level radius, zone width, zone position
Profile export for machine correction
Diffractive structure with basic shape removed



EasyContour for contour and roughness measurement

The EasyContour software package offers a solution for simple and intuitive contour measurement and evaluation.

Lots of preprogrammed measuring tasks – for example for calculating radii, arc lengths, distances, angles etc.

Measurement of double-sided optical elements. Enables the evaluation of the inner centering (ISO 10110-6) of bi-aspheres up to lens arrays.

Automatic record export.

Optional connection to qs-stat.

The close-to-production 3D measuring station – ultraprecise and universal MarOpto MFU 200-3D

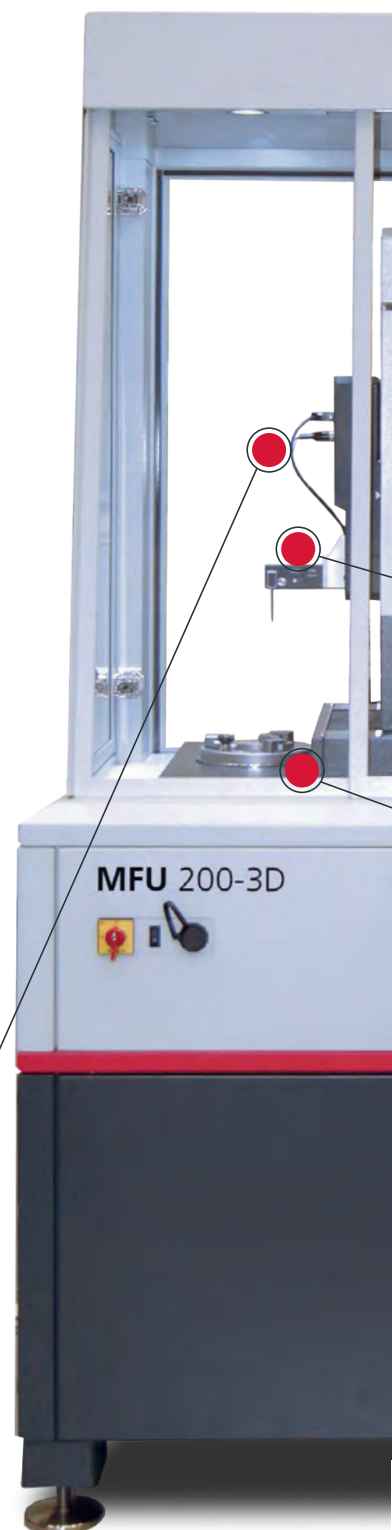
The MarOpto MFU 200-3D is a universal machine for measuring contour, roughness, axis offset, radial run-out and tilt errors in lenses in one setup. It is thus ideal for spheres, aspheres, cylinder lenses and freeforms. Measurements are taken automatically, quickly and close to production in 2D and 3D. Thanks to the unique combination of optical and tactile probe arms, a reference surface of the component can be used to determine the form and position of the other surfaces. Mahr's tried and tested software platform MarWin provides the basis for various, modular evaluation options of the lenses. The AnyShape software package is now available for this purpose.

Users benefit from the following advantages:

- Close-to-production option available thanks to measuring cabinet with attenuation
- Accuracy due to dynamic realtime compensation (measurement uncertainty < 100 nm [PV])
- Reference system on the component itself thanks to combination of optical and tactile sensors
- Flexibility thanks to measurable gradient angle of up to 45°
- Standard evaluation as per ISO 10110-5
- Universal due to automation of different measuring tasks on one machine
- Increased productivity thanks to minimal calibration due to greater temperature stability

Shorter measuring times

The new quick-clamping device allows individual adjustment to the measuring object.



Maximum diameter

180 mm

X-axis

Noise figure

< 5 nm

Roundness deviation

< 20 nm

Measurement uncertainty

< 100 nm PV

Measurable gradient up to

45°

on rotationally symmetrical parts



Most reliable repeatability

Even better drives guarantee maximum reproducibility in the positioning range.

Flexible multi-sensor system

The flexible motorized probe measures alternately with the tactile probe arm or the optical sensor.

Automated measuring procedure

The automatic alignment of the measurement objects eliminates the need for user intervention, ensuring process stability.

Unique precision

The MarOpto MFU 200-3D is one of the most accurate polar coordinate measuring machines in the nm range for lens components.

MarOpto MFU 200-3D

High-precision 3D measuring station for spheres, aspheres and freeforms

DESCRIPTION

The **MarOpto MFU 200-3D** is a universal, highly accurate measuring machine for the automatic measurement of spheres, aspheres, freeforms and special lenses and was developed by Mahr to enable optical components to be tested quickly in 2D and 3D close to the production area.

Accuracy

- With a measurement uncertainty of less than 100 nm PV, the measuring instrument is perfectly designed to meet your process optimization requirements.

Flexibility

- The **MarOpto MFU 200-3D** can perform optical and tactile measurements of surfaces. An interferometric point sensor is used for the optical measurement. There is a wide range of probe arms for tactile measurements. Rotationally symmetrical objects with a slope of up to 45°, off-axis and freeforms up to 28° can be measured.



TECHNICAL DATA

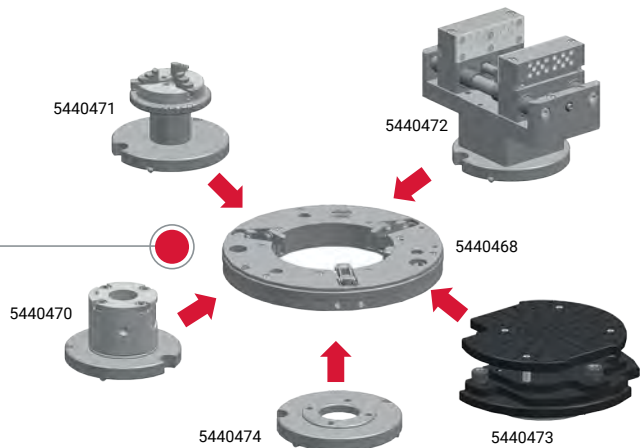
MarOpto MFU 200-3D	
Type	MarOpto MFU 200-3D
Operation	Control panel and 19" TFT monitor (touch screen)
Control panel	MCP 12
Motorized measuring probe	T7W
Optical measuring probe	IPS
Probe arm	90° angled, ruby ball ø 3 mm, incl. connection for optical sensor
Pitch error	Pitch error of the C-/Z-/X-axis is calibrated
Calibration set and Basic clamp set	included
MarOpto software package MFU 200-3D Aspheric	included
MarOpto software option MFU 200-3D Anyshape	option

ACCESSORIES

Order no.	Description
5440468	Hydraulic expansion chuck ø 25 mm for quick clamp system
5440471	Three-jaw chuck for quick clamp system
5440472	Vise for quick clamp system
5440473	Index plate for quick clamp system
5440474	Mounting plate
3028108	Adapter for hydraulic expansion chuck 25 mm – 12 mm
9058047	Clamps for 200 mm lenses

Clamp set

Universal design for every purpose – the design ensures you are well equipped even if you have a broad range of components.



MarOpto MFU 200-3D

High-precision 3D measuring station for spheres, aspheres and freeforms

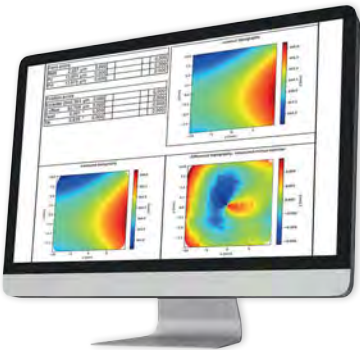
Advantages:

- Closed loop integration in the production process (grinding/polishing)
- Probe combination – combination of optical sensors and tactile probes can be combined in one probe system; can be moved in space (360°)
- Active tracking – automatic measurement of unknown geometries; the sensor (optical and tactile) automatically follows the surface via the machine controller
- Automatic tilting and centering – user-independent positioning, centering, and alignment of measuring objects



Measuring tasks Flexible measuring tasks in one machine

- Form
- Contour
- Roughness
- Axis offset of lenses
- Radial runout error
- Tilt and centering error of the optics



Mahr not only offers universal hardware, but also the perfectly compatible measuring and evaluation software for special applications of the optical industry. The user interface of the software is clearly laid out and easy to navigate.

AnyShape AsphericLib		Geometry of lens surface	
		rotationally symmetrical	non-rotationally symmetrical
Outer aperture of the lens (reference measurement)	circular	asphere, sphere, optical flat...	cylinder lens, toroid, off axis...
	non-circular	asphere, sphere, optical flat...	cylinder lens, toroid, off axis...

Mar4D | Dimensional metrology

Solving different measuring tasks as quickly as possible, close to production and reproducibly in one system — that is what Mar4D does. The combination of optical and tactile shaft measuring and classic form tester technology is unique worldwide. Experience outstanding equipment features combined with extreme flexibility in workpiece size and increase your productivity in the production environment.



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Fast and precise measurement during production

The cylinder coordinate measuring machines from the Mar4D PLQ product range measure complex rotationally symmetrical workpieces with more flexibility and more conveniently than ever before. They also operate at the highest speed and level of precision providing fast and reliable measuring results. As a new optional feature, we now offer a sensor for automated workpiece temperature compensation.

Thanks to their multisensor technology, the various Mar4D PLQ models cover a particularly broad range of dimensional measuring tasks. The devices also have an extremely robust design and are therefore suitable for measurements directly in production. This means shorter throughput times for you, which considerably increases your throughput and productivity. The instruments are also equipped with a motorized tailstock, which means they can even adjust workpieces between the centering tips. Standard equipment also includes a high-precision form tester C-axis. We offer various versions of the Mar4D PLQ, such as the purely optical model or without a tailstock. This allows you to select the exact version that best solves your measuring tasks.

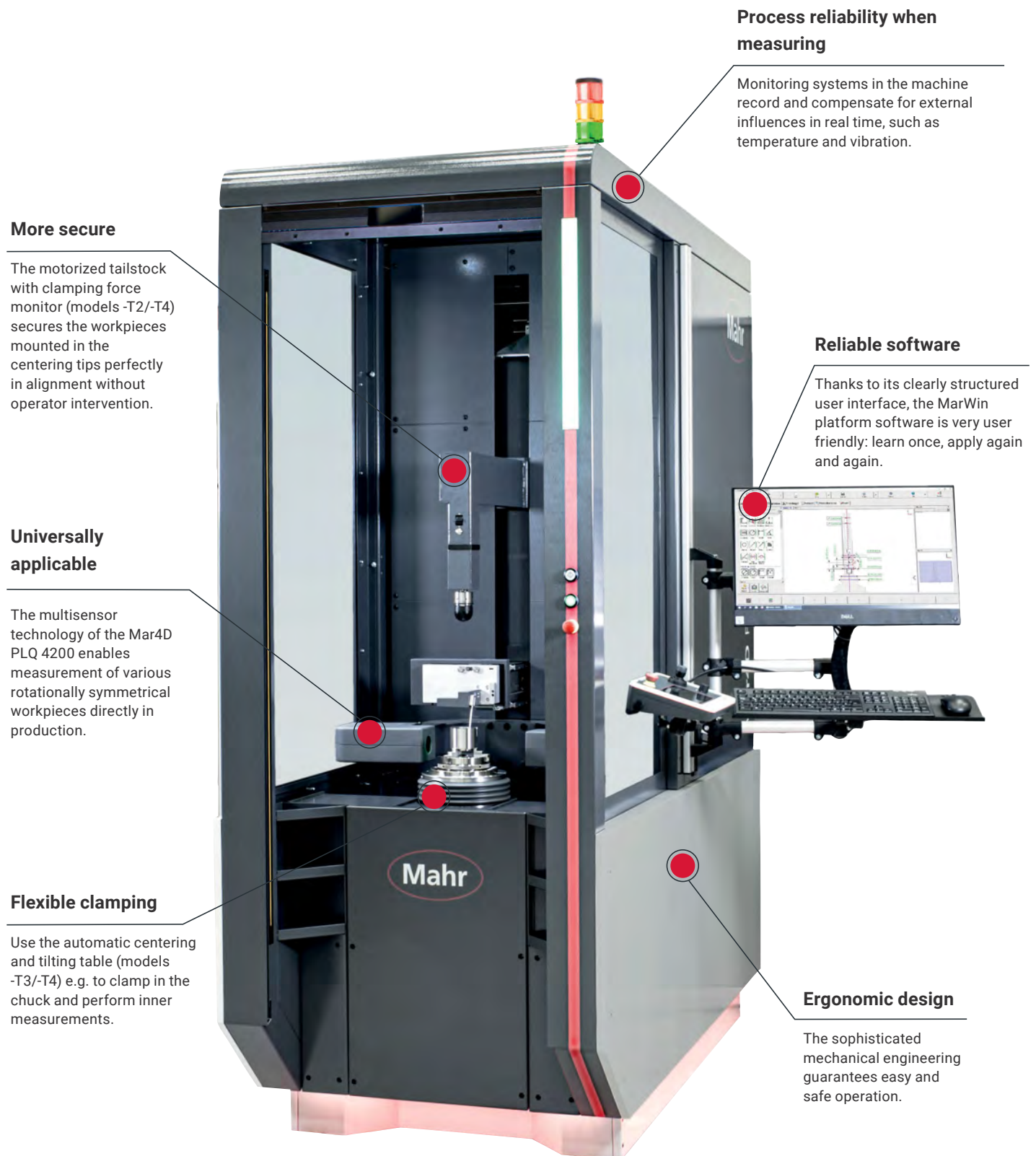


Advantages

- Future-proof: Optical and tactile metrology that can be combined as required
- Versatile: Quick-change Mahr T7W probe systems with motorized rotational axis or 3D scanning probe SP25M from Renishaw
- Flexible: Additional Y-axis on tactile unit, e.g. for zenith search or for scanning entire bore geometries
- Universal: Inspection of multiple features in a single measuring run, e.g. length, diameter, form, position, contour, roundness, roughness, or 3D geometries and symmetry.
- Fast and precise: Unique speed and optimum axis accuracy even as the tolerances become smaller achieved due to specially developed control architecture
- Convenient and safe: Ergonomic operation and reliable safety concept

Mar4D

Overview cylinder coordinate measuring machines



<https://metrology.mahr.com/en-int/mar4d-plq>

Mar4D PLQ 3200-T2 / PLQ 4200-T2

Device comparison



Order no.	5553200	5553201	5553202	5553250	5553251	5553252	5554200	5554201	5554202	5554250	5554251	5554252
Type	PLQ 3200-T2						PLQ 4200-T2					
Travel/measuring path X1 axis	200											
Travel/measuring path X2 axis	-	-	-	-	-	-	200					
Travel/measuring path Y-axis	-	-	-	-	-	-	40					
Pos.-/Meas. path Z-axis	450	730	1000	450	730	1000	450	730	1000	450	730	1000
Positioning speed C-axis	0.2 – 120 1/min			0.2 – 15 1/min			0.2 – 120 1/min			0.2 – 15 1/min		
Positioning speed X1 axis	0.5 – 200 mm/s											
Positioning speed X2 axis	-	-	-	-	-	-	0.5 – 200 mm/s					
Positioning speed Y-axis	-	-	-	-	-	-	0.5 – 50 mm/s					
Positioning speed Z-axis	0.5 – 200 mm/s											
Table load max.	20			50			20			50		
Error limit Length	MPE ≤ (2,4 + l/200) µm; „l“ in mm											
Error limit diameter	MPE ≤ (1,3 + d/150) µm; „d“ in mm											
Workpiece length max.	450	730	1000	450	730	1000	450	730	1000	450	730	1000
Workpiece diameter max.	210											
Sensors	optical						optical tactile					
Camera system	CMOS matrix camera											
Probe system	-	-	-	-	-	-	Mahr T7W and/or RENISHAW SP25M					
Special equipment	motorized tailstock											



For more information, please visit our website: www.mahr.com

Mar4D PLQ 3200-T3 / PLQ 4200-T3 / PLQ 3200-T4 / PLQ 4200-T4

Device comparison



Order no.	5553203	5553253	5554203	5554253	5553204	5553254	5554204	5554254
Type	PLQ 3200-T3		PLQ 4200-T3		PLQ 3200-T4		PLQ 4200-T4	
Travel/measuring path X1 axis	200							
Travel/measuring path X2 axis	-	-	200		-	-	200	
Travel/measuring path Y-axis	-	-	40		-	-	40	
Pos./Meas. path Z-axis	730				450			
Positioning speed C-axis	0.2 – 60 1/min	0.2 – 15 1/min	0.2 – 60 1/min	0.2 – 15 1/min	0.2 – 60 1/min	0.2 – 15 1/min	0.2 – 60 1/min	0.2 – 15 1/min
Positioning speed X1 axis	0.5 – 200 mm/s							
Positioning speed X2 axis	-	-	0.5 – 200 mm/s		-	-	0.5 – 200 mm/s	
Positioning speed Y-axis	-	-	0.5 – 50 mm/s		-	-	0.5 – 50 mm/s	
Positioning speed Z-axis	0.5 – 200 mm/s							
Table load max.	20	50	20	50	20	50	20	50
Error limit Length	MPE ≤ (2,4 + l/200) µm; „l“ in mm							
Error limit diameter	MPE ≤ (1,3 + d/150) µm; „d“ in mm							
Workpiece length max.	730				450			
Workpiece diameter max.	210							
Sensors	optical		optical tactile		optical		optical tactile	
Camera system	CMOS matrix camera							
Probe system	-	-	Mahr T7W and/or RENISHAW SP25M		-	-	Mahr T7W and/or RENISHAW SP25M	
Special equipment	CNC table				CNC table and motorized tailstock			



For more information, please visit our website: www.mahr.com

Mar4D PLQ 3200-T2

Optical devices with tailstock

Features:

- **Speed:**
 - Axis movements with a unique speed of up to 200 mm/s
 - Very fast and high-resolution matrix camera with a large field of view of 15x10 mm (WxH)
 - Joint evaluation of all collected measurement data via MarWin
- **Productivity:**
 - Many different measuring functions combined in one device
 - Flexible measurement of workpieces with up to D=210 mm, L=1000 mm and 50 kg directly in production next to the production machines
 - Increase in measuring capacities and reduced waiting times
- **Precision:**
 - Integrated environmental controls, such as active temperature compensation of the device, ensure consistent measurement quality and significantly reduce waste.
 - The motorized tailstock with clamping force monitoring prevents operator influences and increases the reproducibility of the measurement results
- **User-friendliness:**
 - The ergonomic housing and interior design enables convenient and gentle operation for many hours
 - Light curtains and interior monitoring protect people and measuring devices
 - All devices are "robot-ready" and automation solutions, such as robot loading, can be implemented quickly and directly through our specialized MES department

Applications:

- Automotive industry
- E-mobility
- Renewable energies
- Aerospace technology
- Steel industry
- Mechanical engineering
- Tool technology
- Electrical engineering
- Medical technology

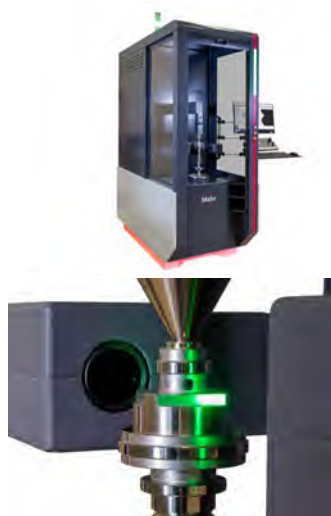
Options:

- MarControl manual control panel for manual axis control
- Various centering and hollow tips
- Various jaw chucks and clamping solutions by means of a quick-change system
- Various calibration shafts
- Automation solutions through our specialized MES department
- Various software extensions such as Q-DAS qs-STAT Plus Export

Supplied with:

- PC holder and 2 pcs 60° centering tips (ø 2–40 mm)

TECHNICAL DATA



Order no.	5553200	5553201	5553202	5553250	5553251	5553252
Type	PLQ 3200-T2					
Travel/measuring path X1 axis	200 mm					
Pos.-/Meas. path Z-axis	450 mm	730 mm	1000 mm	450 mm	730 mm	1000 mm
Positioning speed C-axis	0.2 – 120 l/min			0.2 – 15 l/min		
Positioning speed X1 axis	0.5 – 200 mm/s					
Positioning speed Z-axis	0.5 – 200 mm/s					
Table load max.	20 kg			50 kg		
Error limit Length	MPE ≤ (2.4 + l/200) µm; 'l' in mm					
Error limit diameter	MPE ≤ (1.3 + d/150) µm; 'd' in mm					
Reference temperature	20 °C					
Workpiece length max.	450 mm	730 mm	1000 mm	450 mm	730 mm	1000 mm
Workpiece diameter max.	210 mm					
Sensors	optical					
Optical system	telecentric precision optics, image field approx. 15 x 10 mm (W x H)					
Camera system	CMOS matrix camera					
Measuring computer	All-in-one PC (incl. Microsoft Windows 11 IoT LTSC)					
Special equipment	motorized tailstock					

Mar4D PLQ 3200-T3

Optical devices with CNC table

Features:

- **Speed:**
 - Extremely fast, mechanical-optical workpiece alignment by means of a fully automatic centering and tilting table in combination with the matrix camera
 - Axis movements with a unique speed of up to 200 mm/s
 - Very fast and high-resolution matrix camera with a large field of view of 15x10 mm (WxH)
 - Joint evaluation of all collected measurement data via MarWin
- **Productivity:**
 - Workpieces that have not been manufactured between tips are simply clamped in the chuck
 - Many different measuring functions combined in one device
 - Flexible measurement of workpieces with up to D=210 mm, L=730 mm and 50 kg directly in production next to the production machines
 - Increase in measuring capacities and reduced waiting times
- **Precision:**
 - Compensation of eccentrics of several millimeters to 1 µm in less than 30 seconds
 - Integrated environmental controls, such as active temperature compensation of the device, ensure consistent measurement quality and significantly reduce waste.
- **User-friendliness:**
 - The ergonomic housing and interior design enables convenient and gentle operation for many hours
 - All devices are "robot-ready" and automation solutions, such as robot loading, can be implemented quickly and directly through our specialized MES department

Applications:

- Automotive industry
- E-mobility
- Renewable energies
- Aerospace technology
- Steel industry
- Mechanical engineering
- Tool technology
- Electrical engineering
- Medical technology

Options:

- MarControl manual control panel for manual axis control
- Various jaw chucks and clamping solutions using a quick-change system
- Various calibration shafts
- Automation solutions via our specialized MES department

Supplied with:

- PC holder

TECHNICAL DATA



Order no.	5553203	5553253
Type	PLQ 3200-T3	
Travel/measuring path X1 axis	200 mm	
Pos./Meas. path Z-axis	730 mm	
Positioning speed C-axis	0.2 – 60 l/min	0.2 – 15 l/min
Positioning speed X1 axis	0.5 – 200 mm/s	
Positioning speed Z-axis	0.5 – 200 mm/s	
Table load max.	20 kg	50 kg
Error limit Length	$MPE \leq (2.4 + l/200) \mu\text{m}; 'l' \text{ in mm}$	
Error limit diameter	$MPE \leq (1.3 + d/150) \mu\text{m}; 'd' \text{ in mm}$	
Reference temperature	20 °C	
Workpiece length max.	730 mm	
Workpiece diameter max.	210 mm	
Sensors	optical	
Optical system	telecentric precision optics, image field approx. 15 x 10 mm (W x H)	
Camera system	CMOS matrix camera	
Measuring computer	All-in-one PC (incl. Microsoft Windows 11 IoT LTSC)	
Special equipment	CNC table	

Mar4D PLQ 3200-T4

Optical devices with CNC table and tailstock

Features:

- **Speed:**
 - Extremely fast, mechanical-optical workpiece alignment by means of a fully automatic centering and tilting table in combination with the matrix camera
 - Axis movements with a unique speed of up to 200 mm/s
 - Very fast and high-resolution matrix camera with a large field of view of 15x10 mm (WxH)
 - Joint evaluation of all collected measurement data via MarWin
- **Productivity:**
 - Workpieces that have not been manufactured between tips are simply clamped in the chuck
 - Many different measuring functions combined in one device
 - Flexible measurement of workpieces with up to D=210 mm, L=450 mm and 50 kg directly in production next to the production machines
 - Increase in measuring capacities and reduced waiting times
- **Precision:**
 - Compensation of eccentrics of several millimeters to 1 µm in less than 30 seconds
 - Integrated environmental controls, such as active temperature compensation of the device, ensure consistent measurement quality and significantly reduce waste.
 - The motorized tailstock with clamping force monitoring prevents operator influences and increases the reproducibility of the measurement results
- **User-friendliness:**
 - The ergonomic housing and interior design enables convenient and gentle operation for many hours
 - Light curtains and interior monitoring protect people and measuring devices
 - All devices are "robot-ready" and automation solutions, such as robot loading, can be implemented quickly and directly through our specialized MES department

Applications:

- Automotive industry
- E-mobility
- Renewable energies
- Aerospace technology
- Steel industry
- Mechanical engineering
- Tool technology
- Electrical engineering
- Medical technology

Options:

- MarControl manual control panel for manual axis control
- Various centering and hollow tips
- Various jaw chucks and clamping solutions by means of a quick-change system
- Various calibration shafts
- Automation solutions through our specialized MES department
- Various software extensions such as Q-DAS qs-STAT Plus Export

Supplied with:

- PC holder and 2 pcs 60° centering tips (ø 2–40 mm)



TECHNICAL DATA

Order no.	5553204	5553254
Type	PLQ 3200-T4	
Travel/measuring path X1 axis	200 mm	
Pos.-/Meas. path Z-axis	450 mm	
Positioning speed C-axis	0.2 – 60 1/min	0.2 – 15 1/min
Positioning speed X1 axis	0.5 – 200 mm/s	
Positioning speed Z-axis	0.5 – 200 mm/s	
Table load max.	20 kg	50 kg
Error limit Length	$MPE \leq (2.4 + l/200) \mu\text{m}; 'l' \text{ in mm}$	
Error limit diameter	$MPE \leq (1.3 + d/150) \mu\text{m}; 'd' \text{ in mm}$	
Reference temperature	20 °C	
Workpiece length max.	450 mm	
Workpiece diameter max.	210 mm	
Sensors	optical	
Optical system	telecentric precision optics, image field approx. 15 x 10 mm (W x H)	
Camera system	CMOS matrix camera	
Measuring computer	All-in-one PC (incl. Microsoft Windows 11 IoT LTSC)	
Special equipment	CNC table and motorized tailstock	

Mar4D PLQ 4200-T2

Optical-tactile devices with tailstock

Features:

- **Speed:**
 - Axis movements with a unique speed of up to 200 mm/s
 - Very fast and high-resolution matrix camera with a large field of view of 15x10 mm (WxH) in effective combination with innovative probe systems
 - Mahr T7W with motorized rotation axis and thus fastest stylus change on the market or RENISHAW SP25M 3D scanning probe system
 - Joint evaluation of all collected measurement data via MarWin
- **Productivity:**
 - Many different measuring functions combined in one device
 - Flexible measurement of workpieces with up to D=210 mm, L=1000 mm and 50 kg directly in production next to the production machines
 - Increase in measuring capacities and reduced waiting times
- **Precision:**
 - Compensation of eccentricities of several millimeters to 1 µm in less than 30 seconds
 - Integrated environmental controls, such as active temperature compensation of the device, ensure consistent measurement quality and significantly reduce waste.
 - The motorized tailstock with clamping force monitoring prevents operator influences and increases the reproducibility of the measurement results
- **User-friendliness:**
 - The ergonomic housing and interior design enables convenient and gentle operation for many hours
 - All devices are "robot-ready" and automation solutions, such as robot loading, can be implemented quickly and directly through our specialized MES department

Applications:

- Automotive industry
- E-mobility
- Renewable energies
- Aerospace technology
- Steel industry
- Mechanical engineering
- Tool technology
- Electrical engineering
- Medical technology

Options:

- MarControl manual control panel for manual axis control
- Various probe arm units for Mahr T7W or SP25M of the company RENISHAW
- Various centering and hollow tips
- Various calibration shafts
- automatic sensor for workpiece temperature compensation (the PLQ itself is always actively compensated)
- Automation solutions through our specialized MES department
- Various software extensions such as Q-DAS qs-STAT Plus Export

Supplied with:

- PC holder and 2 pcs 60° centering tips (ø 2–40 mm)

TECHNICAL DATA



Order no.	5554200	5554201	5554202	5554250	5554251	5554252
Type	PLQ 4200-T2					
Travel/measuring path X1 axis	200 mm					
Travel/measuring path X2 axis	200 mm					
Travel/measuring path Y-axis	40 mm					
Pos.-/Meas. path Z-axis	450 mm	730 mm	1000 mm	450 mm	730 mm	1000 mm
Positioning speed C-axis	0.2 – 120 1/min			0.2 – 15 1/min		
Positioning speed X1 axis	0.5 – 200 mm/s					
Positioning speed X2 axis	0.5 – 200 mm/s					
Positioning speed Y-axis	0.5 – 50 mm/s					
Positioning speed Z-axis	0.5 – 200 mm/s					
Table load max.	20 kg			50 kg		
Error limit Length	MPE ≤ (2.4 + l/200) µm; 'l' in mm					
Error limit diameter	MPE ≤ (1.3 + d/150) µm; 'd' in mm					
Reference temperature	20 °C					
Workpiece length max.	450 mm	730 mm	1000 mm	450 mm	730 mm	1000 mm
Workpiece diameter max.	210 mm					
Sensors	optical tactile					
Optical system	telecentric precision optics, image field approx. 15 x 10 mm (W x H)					
Camera system	CMOS matrix camera					
Probe system	Mahr T7W and/or RENISHAW SP25M					
Measuring computer	All-in-one PC (incl. Microsoft Windows 11 IoT LTSC)					
Special equipment	motorized tailstock					

Mar4D PLQ 4200-T3

Optical-tactile devices with CNC table

Features:

- **Speed:**
 - Extremely fast, mechanical-optical workpiece alignment by means of a fully automatic centering and tilting table in combination with the matrix camera
 - Axis movements with a unique speed of up to 200 mm/s
 - Very fast and high-resolution matrix camera with a large field of view of 15x10 mm (WxH) in effective combination with innovative probe systems
 - Mahr T7W with motorized axis of rotation and thus fastest stylus change on the market or RENISHAW SP25M 3D scanning probe system
 - Joint evaluation of all collected measurement data via MarWin
- **Productivity:**
 - Workpieces that were not manufactured between tips are simply clamped in the chuck
 - Many different measuring functions combined in one device
 - Flexible workpieces with up to D=210 mm, L=730 mm and 50 kg measured directly in production next to the production machines
 - Increased measuring capacities and reduced waiting time
- **Precision:**
 - Compensation of eccentrics of several millimeters to 1 µm in less than 30 seconds
 - Integrated environmental controls, such as active temperature compensation of the device, ensure consistent measurement quality and significantly reduce waste
- **User-friendliness:**
 - The ergonomic housing and interior design enables convenient and gentle operation for many hours
 - Light curtains and interior monitoring protect people and measuring devices
 - All devices are "robot-ready" and automation solutions, such as robot loading, can be implemented quickly and directly via our specialized MES department

Applications:

- Automotive industry
- E-mobility
- Renewable energies
- Aerospace technology
- Steel industry
- Mechanical engineering
- Tool technology
- Electrical engineering
- Medical technology

Options:

- MarControl manual control panel for manual axis control
- Various probe arm units for Mahr T7W or SP25M of the company RENISHAW
- Various centering and hollow tips
- Various jaw chucks and clamping solutions by means of a quick-change system
- Various calibration shafts
- automatic sensor for workpiece temperature compensation (the PLQ itself is always actively compensated)
- Automation solutions through our specialized MES department
- Various software extensions such as Q-DAS qs-STAT Plus Export

Supplied with:

- PC holder



TECHNICAL DATA

Order no.	5554203	5554253
Type	PLQ 4200-T3	
Travel/measuring path X1 axis	200 mm	
Travel/measuring path X2 axis	200 mm	
Travel/measuring path Y-axis	40 mm	
Pos./Meas. path Z-axis	730 mm	
Positioning speed C-axis	0.2 – 60 1/min	0.2 – 15 1/min
Positioning speed X1 axis	0.5 – 200 mm/s	
Positioning speed X2 axis	0.5 – 200 mm/s	
Positioning speed Y-axis	0.5 – 50 mm/s	
Positioning speed Z-axis	0.5 – 200 mm/s	
Table load max.	20 kg	50 kg
Error limit Length	$MPE \leq (2.4 + l/200) \mu\text{m}; 'l' \text{ in mm}$	
Error limit diameter	$MPE \leq (1.3 + d/150) \mu\text{m}; 'd' \text{ in mm}$	
Reference temperature	20 °C	
Workpiece length max.	730 mm	
Workpiece diameter max.	210 mm	
Sensors	optical tactile	
Optical system	telecentric precision optics, image field approx. 15 x 10 mm (W x H)	
Camera system	CMOS matrix camera	
Probe system	Mahr T7W and/or RENISHAW SP25M	
Measuring computer	All-in-one PC (incl. Microsoft Windows 11 IoT LTSC)	
Special equipment	CNC table	

Mar4D PLQ 4200-T4

Optical-tactile devices with CNC table and tailstock

Features:

- **Speed:**
 - Extremely fast, mechanical-optical workpiece alignment by means of a fully automatic centering and tilting table in combination with the matrix camera
 - Axis movements with a unique speed of up to 200 mm/s
 - Very fast and high-resolution matrix camera with a large field of view of 15x10 mm (WxH) in effective combination with innovative probe systems
 - Mahr T7W with motorized axis of rotation and thus fastest stylus change on the market or RENISHAW SP25M 3D scanning probe system
 - Joint evaluation of all collected measurement data via MarWin
- **Productivity:**
 - Workpieces that were not manufactured between tips are simply clamped in the chuck
 - Many different measuring functions combined in one device
 - Flexible workpieces with up to D=210 mm, L=450 mm and 50 kg measured directly in production next to the production machines
 - Increased measuring capacities and reduced waiting time
- **Precision:**
 - Compensation of eccentrics of several millimeters to 1 µm in less than 30 seconds
 - Integrated environmental controls, such as active temperature compensation of the device, ensure consistent measurement quality and significantly reduce waste
 - The motorized tailstock with clamping force monitoring prevents operator influences and increases the reproducibility of the measurement results
- **User-friendliness:**
 - The ergonomic housing and interior design enables convenient and gentle operation for many hours
 - Light curtains and interior monitoring protect people and measuring devices
 - All devices are "robot-ready" and automation solutions, such as robot loading, can be implemented quickly and directly via our specialized MES department

Applications:

- Automotive industry
- E-mobility
- Renewable energies
- Aerospace technology
- Steel industry
- Mechanical engineering
- Tool technology
- Electrical engineering
- Medical technology

Options:

- MarControl manual control panel for manual axis control
- Various probe arm units for Mahr T7W or SP25M of the company RENISHAW
- Various centering and hollow tips
- Various jaw chucks and clamping solutions by means of a quick-change system
- Various calibration shafts
- automatic sensor for workpiece temperature compensation (the PLQ itself is always actively compensated)
- Automation solutions through our specialized MES department
- Various software extensions such as Q-DAS qs-STAT Plus Export

Supplied with:

- PC holder and 2 pcs 60° centering tips (ø 2–40 mm)



TECHNICAL DATA

Order no.	5554204	5554254
Type	PLQ 4200-T4	
Travel/measuring path X1 axis	200 mm	
Travel/measuring path X2 axis	200 mm	
Travel/measuring path Y-axis	40 mm	
Pos./Meas. path Z-axis	450 mm	
Positioning speed C-axis	0.2 – 60 1/min	0.2 – 15 1/min
Positioning speed X1 axis	0.5 – 200 mm/s	
Positioning speed X2 axis	0.5 – 200 mm/s	
Positioning speed Y-axis	0.5 – 50 mm/s	
Positioning speed Z-axis	0.5 – 200 mm/s	
Table load max.	20 kg	50 kg
Error limit Length	$MPE \leq (2.4 + l/200) \mu\text{m}; 'l' \text{ in mm}$	
Error limit diameter	$MPE \leq (1.3 + d/150) \mu\text{m}; 'd' \text{ in mm}$	
Reference temperature	20 °C	
Workpiece length max.	450 mm	
Workpiece diameter max.	210 mm	
Sensors	optical tactile	
Optical system	telecentric precision optics, image field approx. 15 x 10 mm (W x H)	
Camera system	CMOS matrix camera	
Probe system	Mahr T7W and/or RENISHAW SP25M	
Measuring computer	All-in-one PC (incl. Microsoft Windows 11 IoT LTSC)	
Special equipment	CNC table and motorized tailstock	

Probe systems

Depending on the measuring task and workpiece, you have the flexibility to choose between various probe arms and probe arm sets to achieve the optimal measuring result.

Order no.	Description	Type
5550400	Probe system T7W, ready for connection, incl. probe arm Ø 3 x 60 mm (carbide)	T7W
5400211	Probe arm set 1, incl. four probe arms (Fig. 1)	T7W
5400220	Probe arm set 2, incl. one probe arm and three interchangeable inserts (Fig. 2)	T7W
5550460	Double probe arm unit for roughness measurement, PHT 6-350 + probe arm Ø 3 x 38.8 mm (ruby)	T7W
5550250	Probe system SP25M by Renishaw, ready for connection, incl. probe insert Ø 3 x 50 mm (ruby)	SP25M
5550263	Probe insert Ø 1 x 80 mm (ruby)	SP25M
5550264	Probe insert Ø 2 x 80 mm (ruby)	SP25M
5550265	Probe insert Ø 3 x 80 mm (ruby)	SP25M
5550266	Probe insert Ø 5 x 80 mm (ruby)	SP25M
5550267	Probe insert Ø 2 x 80 mm + Ø 2 x 55/-ZL 27 mm (ruby [Fig. 3])	SP25M

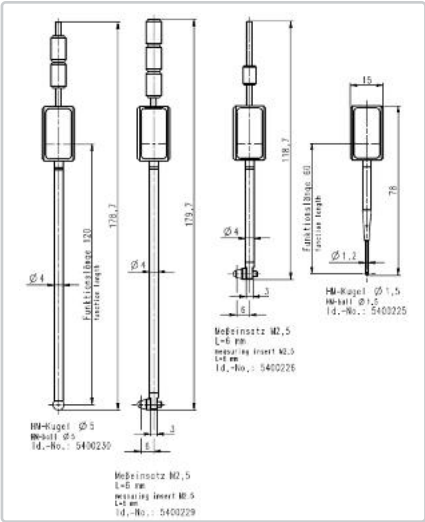


Figure 1

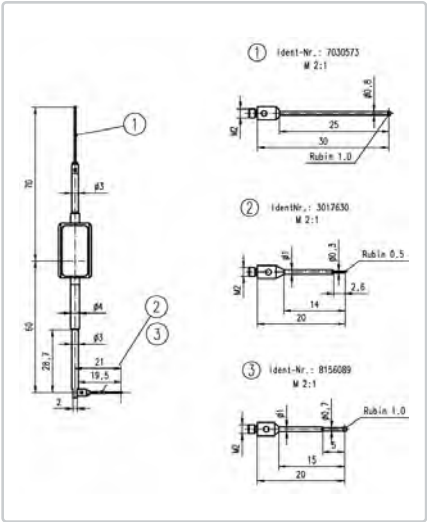


Figure 2

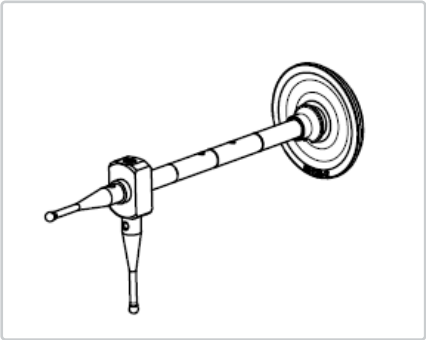


Figure 3

Mar4D PLQ accessories

Hardware and software

General hardware

Mahr also offers the relevant hardware for individually upgrading or converting the Mar4D PLQ 3200/4200.

Order no.	Description
9058327	All-in-one PC incl. Windows 11 IoT LTSC
5550085	Second monitor
5550083	Manual control panel
5550095	Barcode scanner



Software

Thanks to the MarWin software platform, the Mar4D PLQ 3200/4200 offers user-friendly operation, and measurements can be programmed individually. The following package/options are available:

Order no.	Description
5550100	MarWin Professional4D for PLQ: Complete software package for measuring, controlling, evaluating and logging
6299367	Roughness measurement with T7W
6292271	Q-DAS qs-STAT Plus export

Clamps

There are plenty of clamps available for the Mar4D PLQ to hold your workpieces tightly and securely in place during the measuring process. The items listed below are only a selection.

For all models

Order no.	Description	Clamping diameter	Height
5700007	Centering tip 60° (calibration optional [Fig. 4])	Ø 2 – 16 mm	70 mm
5700003	Centering tip 60° (calibration optional [package includes -T2/-T4])	Ø 2 – 40 mm	46 mm
5700011	Hollow tip 90° (calibration optional)	Ø 6 – 20 mm	30 mm
5700010	Hollow tip 120° (calibration optional [Fig. 5])	Ø 6 – 35 mm	30 mm
5700020	Quick-release clamping adapter for tips	–	–

Only for -T3/-T4 models

Order no.	Description	Clamping diameter
5700030	Three-jaw rim chuck	Ø 0.5 – 63 mm
5700031	Three-jaw rim chuck (Fig. 6)	Ø 3 – 120 mm
5700032	Three-jaw rim chuck	Ø 3 – 152 mm
5700033	Three-jaw lathe chuck	Ø 3 – 90 mm
5700050	Quick-change system for clamps (Fig. 7)	–
9004831	Three-jaw chuck (compatible with 5700050)	Ø 50 mm
9054537	Three-jaw chuck (compatible with 5700050)	Ø 80 mm
9058476	Six-jaw chuck (compatible with 5700050)	Ø 80 mm

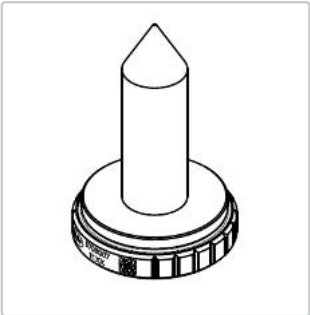


Figure 4

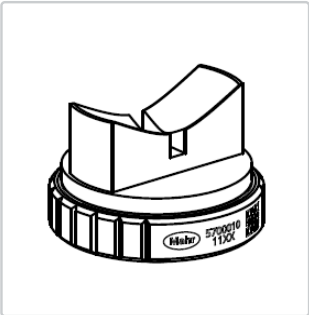


Figure 5

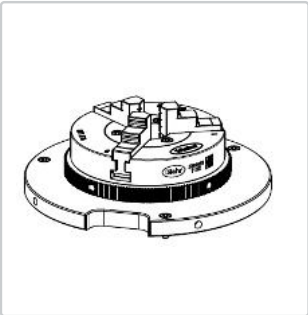


Figure 6

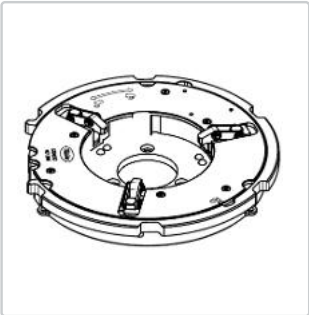


Figure 7

Calibration standard

The quality of the finished workpieces ultimately depends on their dimensional accuracy. Calibration is therefore recommended, i.e. intensive testing together with traceability to (inter-)nationally recognized standards. Mahr offers the following accessories in this respect:

Order no.	Description	Diameter	Length
5550050	Calibration unit with ceramic sphere for calibrating the instrument coordinate system (Fig. 8)	–	–
5360011	Calibrating shaft for lengths and diameters (Fig. 9)	Ø 25 – 170 mm	439 mm
5360010	Calibrating shaft for lengths and diameters	Ø 25 – 170 mm	713 mm
5360581	Universal contour measuring standard KN 100 S (Fig. 10)	–	–
6820901	Roughness standard MRS 1.5	–	–
6820903	Roughness standard MRS 3	–	–
9001525	Holder for roughness standards, mounted on equipment table	–	–
5700052	Holder for roughness standards, held in quick-change system (compatible with 5700050)	–	–

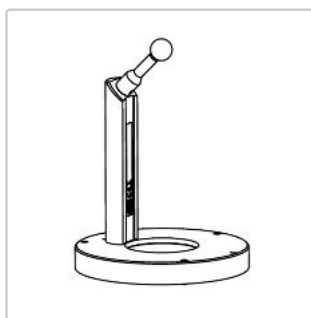


Figure 8



Figure 9

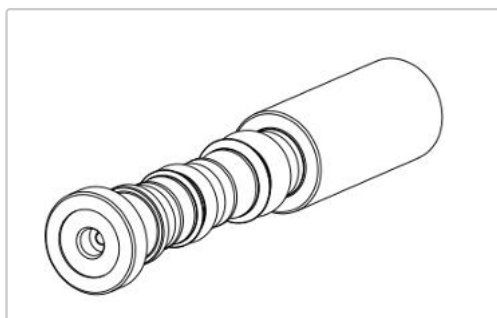


Figure 10

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.



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The latest information about MarShaft products is available on our website:
www.mahr.com, web code 11935

MarShaft SCOPE 250 *plus*

Device comparison



Order no.	5361802	5361803
Type	SCOPE 250 <i>plus</i>	
Positioning speed C-axis	0.2 – 60 1/min	
Positioning speed X-axis	-	-
Positioning speed Z-axis	0.5 – 200 mm/s	
Table load max.	5	
Measured value resolution length	0.01 – 0.0001 mm	
Measured value resolution diameter	0.01 – 0.0001 mm	
Angular resolution	0.01 – 0.0001 °	
Error limit Length	MPE ≤ (3,0 + l/125) µm; „l“ in mm	
Error limit diameter	MPE ≤ (1,5 + d/40) µm; „d“ in mm	
Roundness deviation C-axis	< 1 µm (Filter 50)	< 0,1 µm (Filter 50)
Reference temperature	20	
Workpiece length max.	250	
Workpiece diameter max.	40	
Sensors	optical	
Camera system	CMOS matrix camera	
Probe system	-	-
Special equipment	Tailstock	Tailstock and high-precision C-axis



For more information, please visit our website: www.mahr.com

MarShaft SCOPE 350 *plus* / SCOPE 750 *plus* / SCOPE 600 *plus* 3D

Device comparison



Order no.	5361507	5361508	5361522
Type	SCOPE 350 <i>plus</i>	SCOPE 750 <i>plus</i>	SCOPE 600 <i>plus</i> 3D
Positioning speed C-axis			
Positioning speed X-axis	0.5 – 100 mm/s		
Positioning speed Z-axis			
Table load max.	15		
Measured value resolution length			
Measured value resolution diameter			
Angular resolution			
Error limit Length	$MPE \leq (2,0 + l/125) \mu m; „l“ \text{ in mm}$		$MPE \leq (3,0 + l/125) \mu m; „l“ \text{ in mm}$
Error limit diameter	$MPE \leq (1,0 + d/125) \mu m; „d“ \text{ in mm}$		$MPE \leq (1,5 + d/125) \mu m; „d“ \text{ in mm}$
Roundness deviation C-axis	< 1 μm (Filter 50)		
Reference temperature			
Workpiece length max.	350	750	600
Workpiece diameter max.	120		
Sensors	optical (-tactile)		optical-tactile
Camera system			
Probe system	Mahr 1320– 2 (optional)		Mahr 1320– 2
Special equipment	Tailstock		Motorized tailstock and specially alkalized linear axes



For more information, please visit our website: www.mahr.com

MarShaft SCOPE 600 *plus* 3D

Versatile and maximum precision

Best performance

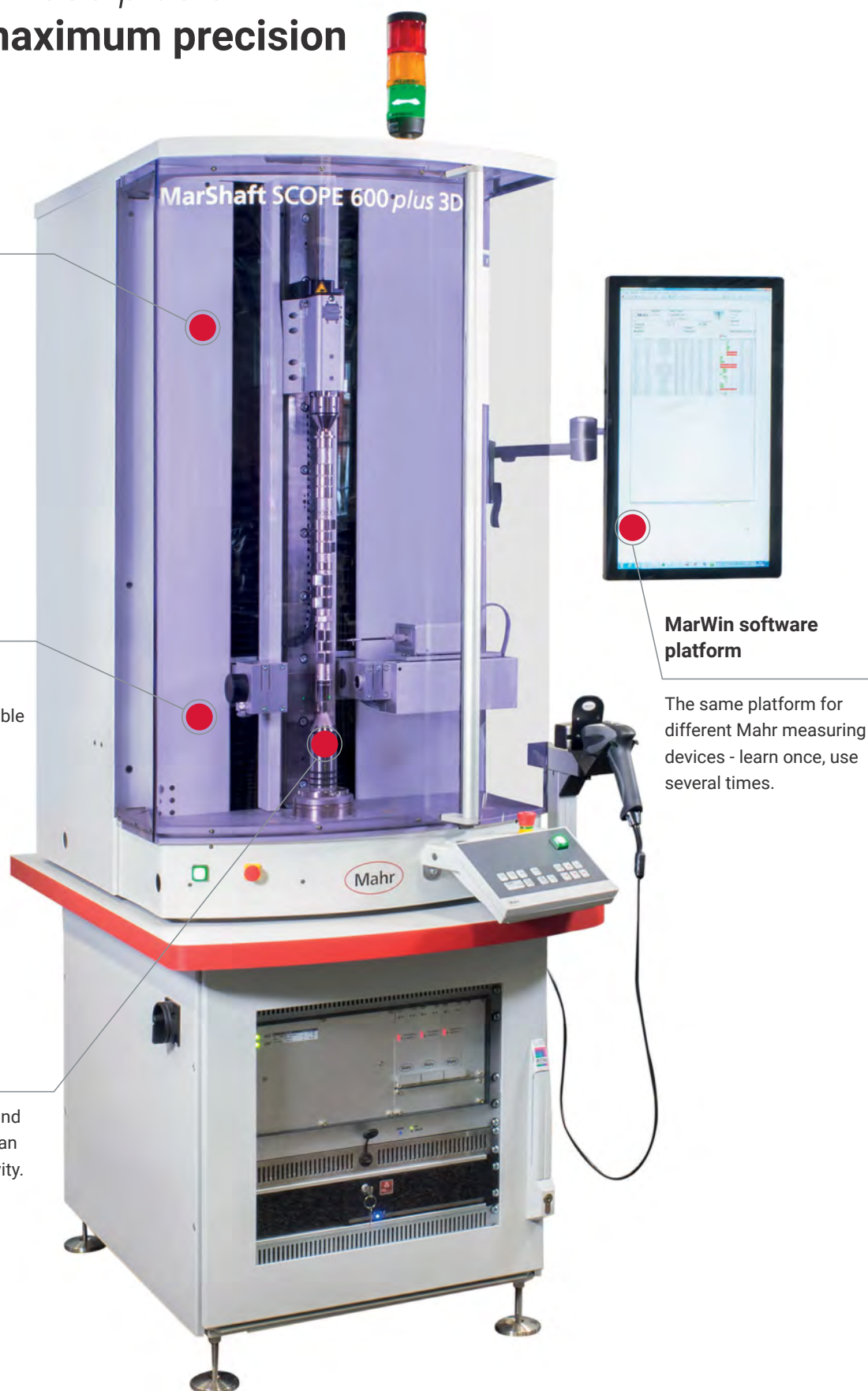
Suitable for measuring rooms and production environments, resulting in short distances and increased measuring capacity.

Measurements without user intervention

The measuring sequences are fully automated and completely free of user influences, thus providing reliable measuring results and avoiding measurement errors.

Fast results

The fast workpiece measurement and quality statement avoids rejects at an early stage and increases productivity.



MarWin software platform

The same platform for different Mahr measuring devices - learn once, use several times.

MarShaft SCOPE 250 *plus*

Optical shaft measuring devices

Features:

- 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
- Speeds of up to 200 mm/s result in extremely fast cycle 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 segment of small optical shaft measuring machines.

Applications:

- Length
- Diameter
- Form and position tolerances
- Offsets
- Recess width
- Bevel width
- Intersection points

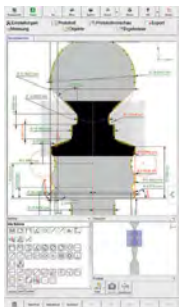
- Position of intersection points
- Angles of rotation
- Position of radii
- Taper lengths
- Angles
- Pitches
- Widths across flats
- Outer threads

Options:

- Thread measurement
- Various centering and tips and hollow tips
- qs-STAT (Plus) Export

Supplied with:

- 2 pieces 60° centering tips (Ø 2–15 mm)



TECHNICAL DATA

Order no.	5361802	5361803
Type	SCOPE 250 <i>plus</i>	
Positioning speed C-axis	0.2 – 60 1/min	
Positioning speed Z-axis	0.5 – 200 mm/s	
Table load max.	5 kg	
Measured value resolution Length	0.01 – 0.0001 mm	
Measured value resolution diameter	0.01 – 0.0001 mm	
Angular resolution	0.01 – 0.0001 °	
Error limit Length	MPE ≤ (3,0 + l/125) µm; "l" in mm	
Error limit diameter	MPE ≤ (1,5 + d/40) µm; "d" in mm	
Roundness deviation C-axis	< 1 µm (Filter 50)	< 0,1 µm (Filter 50)
Reference temperature	20 °C	
Workpiece length max.	250 mm	
Workpiece diameter max.	40 mm	
Sensors	optical	
Camera system	CMOS matrix camera	
Special equipment	Tailstock	Tailstock and high-precision C-axis

MarShaft SCOPE 350 *plus* / SCOPE 750 *plus*

Optical-tactile shaft measuring devices

Features:

- Fully automatic measuring procedure and easy operation using touchscreen
- CMOS matrix camera with large image field of 1280 x 1024 pixels
- One measuring instrument for multiple measuring tasks in combination with production compatibility
- The MarWin measurement and evaluation software has been tried and tested over many years and is constantly updated, offering maximum flexibility, a quick training phase and simple operation.

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

Options:

- Tactile measuring unit for measuring e.g. concentricity and axial running
- Thread measurement
- Turbocharger shaft measurement
- Temperature compensation of the workpiece Various centering tips and hollow tips
- Handheld control panel
- Barcode scanner
- Interior monitoring
- Signal light
- MarWin Professional Shaft
- qs-STAT (Plus) Export

Supplied with:

- 2 pieces 60° centering tips (Ø 2–40 mm)



TECHNICAL DATA

Order no.	5361507	5361508
Type	SCOPE 350 <i>plus</i>	SCOPE 750 <i>plus</i>
Positioning speed C-axis	0.2 – 60 1/min	
Positioning speed X-axis	0.5 – 100 mm/s	
Positioning speed Z-axis	0.5 – 200 mm/s	
Table load max.	15 kg	
Measured value resolution Length	0.01 – 0.0001 mm	
Measured value resolution diameter	0.01 – 0.0001 mm	
Angular resolution	0.01 – 0.0001 °	
Error limit Length	MPE ≤ (2,0 + l/125) µm; "l" in mm	
Error limit diameter	MPE ≤ (1,0 + d/125) µm; "d" in mm	
Roundness deviation C-axis	< 1 µm (Filter 50)	
Reference temperature	20 °C	
Workpiece length max.	350 mm	750 mm
Workpiece diameter max.	120 mm	
Sensors	optical (-tactile)	
Camera system	CMOS matrix camera	
Probe system	Mahr 1320–2 (optional)	
Special equipment	Tailstock	

MarShaft SCOPE 600 *plus* 3D

High precision shaft measuring device

Features:

- Fully automatic measurement sequence and simple operation via touch-screen.
- CMOS matrix camera with a large field of view of 1280 x 1024 pixels.
- Tactile measuring unit with Y-axis is included.
- Always with special calibration of the linear axes X, Z and Y.
- A measuring device for many measuring tasks in combination with production compatibility.
- MarWin's measurement and evaluation software, which has proven itself over many years and is constantly updated, enables maximum flexibility as well as a fast training phase and simple operation.

Applications:

- Complete measurement of camshafts
- Shafts with keyways and/or bores
- Transmission shafts
- Eccentric shafts
- Turned parts
- Tripods
- Racks
- Axle pins
- Hollow shafts
- Drive shafts

- Turbocharger shafts
- Bone screws
- Worms
- Balancer shafts
- Hydraulic parts
- Valves (gasoline engine)
- Many more

Options:

- Thread measurement
- Turbocharger shaft measurement
- Workpiece temperature compensation
- Various centering and hollow tips
- Handheld control
- Barcode scanner
- Interior monitoring
- Signal lamp
- QS-STAT (Plus) Export

Supplied with:

- Probe system 1320 (incl. probe arm Ø 2 x 72 mm) and two 60° centering tips (Ø 2–40 mm)



TECHNICAL DATA

Order no.	5361522
Type	SCOPE 600 <i>plus</i> 3D
Positioning speed C-axis	0.2 – 60 1/min
Positioning speed X-axis	0.5 – 100 mm/s
Positioning speed Z-axis	0.5 – 200 mm/s
Table load max.	15 kg
Measured value resolution Length	0.01 – 0.0001 mm
Measured value resolution diameter	0.01 – 0.0001 mm
Angular resolution	0.01 – 0.0001 °
Error limit Length	MPE ≤ (3,0 + l/125) µm; "l" in mm
Error limit diameter	MPE ≤ (1,5 + d/125) µm; "d" in mm
Roundness deviation C-axis	< 1 µm (Filter 50)
Reference temperature	20 °C
Workpiece length max.	600 mm
Workpiece diameter max.	120 mm
Sensors	optical-tactile
Camera system	CMOS matrix camera
Probe system	Mahr 1320–2
Special equipment	Motorized tailstock and specially alkalized linear axes

MarForm | Form metrology

Error-free functioning and durability of a workpiece is determined not only by its dimensions but above all by its form. Requirements are rising all the time, whether in terms of roundness, flatness, straightness, coaxiality or runout -- especially in the case of rotationally symmetrical workpieces. MarForm helps you to cut process costs without driving up testing costs – by means of stable, innovative instruments offering a high degree of automation, flexibility and accuracy.



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MarForm MMQ 500

Precise and flexible measurement of form and position

Based on the variety of precise measurement options, the MarForm range is the best when it comes to form measuring equipment. The optimized design of the machine ensures that the latest version, the **MarForm MMQ 500** can be implemented universally guaranteeing maximum utilization. The innovative design of the device makes it extremely easy and safe to operate. You can position all of the components perfectly for your measurement using just one hand. The measuring process itself boasts impressively high speeds. This is because the Z-axis allows movements of up to 100 millimeters/second, making it more than three times faster than conventional form measuring instruments. The high-performance MarWin measurement and evaluation software with its clearly structured user interface provides a user-friendly and secure working environment.

Universally applicable: from small workpieces that are a few millimeters in size to heavy components with a weight of up to 80 kg

Recording of form, position, roughness, contour, and lead in one measuring sequence

Accurate alignment of workpieces by the automatic centering and tilting table

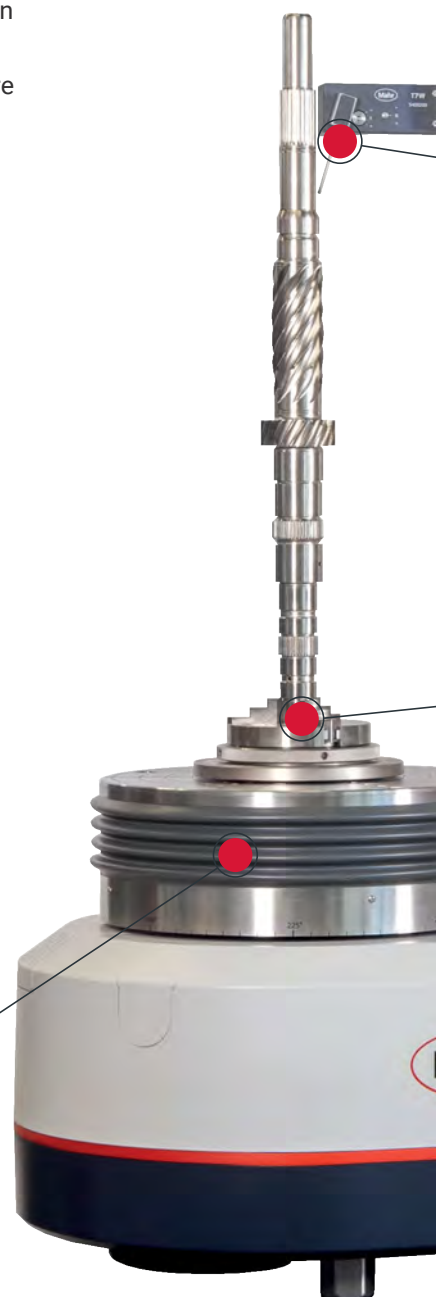
Highest axis accuracy even as the tolerances become smaller

Reliable repeatability even for difficult measuring tasks

Intuitive software

High load capacity

Even heavy workpieces with a weight of up to 80 kg can be measured safely using the particularly high-performance centering and tilting table.



MarForm

Overview form measuring equipment

up to
100 mm/s
positioning speed

up to
80 kg
table load

0.01 μm
maximum accuracy of the
measuring axes

0.5 μm
centering accuracy of the
centering and tilting table



Optimized base-to-base time

The Z-axis allows movements of up to 100 mm/s, making it more than three times faster than conventional form measuring instruments.

Fully automated probe arm replacement

The probe arm unit of the MarForm MMQ 500 holds up to four probe arms at once thus enabling the probe arm to be replaced quickly without any operator intervention.

More effective alignment

The newly developed centering and tilting table also enables complex workpieces to be aligned easily and quickly.

High measuring certainty

The mechanical bearing is up to 70 times stiffer than on comparable models making it insensitive to external influences.

MarForm MMQ 100 *plus* / MMQ 150 / MMQ 200 / MMQ 400–2

Device comparison



Order no.	5440691	5440752	5440750	5440751	5440770	5440771
Type	MMQ 100 <i>plus</i>	MMQ 150	MMQ 200		MMQ 400–2	
Pos.-/Meas. path X-axis	180		150		180	280
Pos.-/Meas. path Z-axis	300		250		350	500
Positioning speed X axis	0.5 – 30 mm/s					
Positioning speed Z-axis	0.5 – 100 mm/s					
Table load max.	20				60	
Straightness deviation X-axis	-	-	-	-	0,5 µm/100 mm	
Straightness deviation Z-axis	-	0,4 µm/100 mm	0,15 µm/100 mm			
Workpiece diameter max.	210				270	530
Centering and tilting table	manual					
Table diameter	160				285	



For more information, please visit our website: www.mahr.com

MarForm MMQ 400– 2 / MMQ 500 / MarForm MFU 200

Device comparison



Order no.	5440780	5440781	5440901	5440580	5440782	5440787
Type	MMQ 400–2		MMQ 500	MarForm MFU 200	MMQ 400–2	
Pos.-/Meas. path X-axis	180	280		200	280	
Pos.-/Meas. path Z-axis	350	500	470	320	900	
Positioning speed X axis	0.5 – 30 mm/s			0.1 – 100 mm/s	0.5 – 30 mm/s	
Positioning speed Z-axis	0.5 – 100 mm/s			0.1 – 100 mm/s	0.5 – 100 mm/s	
Table load max.	60		80	20	40	
Straightness deviation X-axis	0,5 µm/100 mm		0,3 µm/100 mm	0.075 µm/measuring path (according to DIN EN ISO 1101)	0,5 µm/100 mm	
Straightness deviation Z-axis	0,15 µm/100 mm			0.075 µm/measuring path (according to DIN EN ISO 1101)	0,15 µm/100 mm	
Workpiece diameter max.	270	530		280	530	270
Centering and tilting table	motorized					
Table diameter	285		300	180	285	
Special equipment	CNC table			CNC table and motorized tailstock	CNC table	CNC table and dynamic real-time compensation



For more information, please visit our website: www.mahr.com

MarForm MMQ 100 *plus*

Entry-level form measuring device

Features:

- Precise and fast measurement results
- Digital encoders in X and Z for position transfer to the constantly updated and proven MarWin software
- Large measuring volume
- Reliable due to mechanical bearings
- Mobile due to low weight and handy dimensions
- Fast workpiece alignment through computer support
- Centering and tilting screws for rough and fine adjustment
- Suitable for the workshop, as there is no compressed air connection required

Applications:

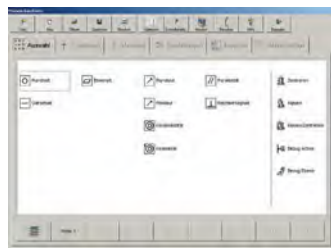
- **Mechanical engineering:**
Bearings, ball screws, shafts, sockets, rotational bushings
- **Measurement close to production:**
PLC and end-of-line testing
- **Automotive:**
Steering, brake system, gearbox, motor
- **Medicine:**
Hip and knee endoprostheses, medical screws, teeth implants

Options:

- Rim chuck Ø 100 mm
- Various other clamping devices
- Upgrade to MarWin AdvancedForm
- Data export Q-DAS qs-STAT
- Various arms with different lengths and stylus ball geometries
- Various double probe arms
- Various calibration standards

Supplied with:

- Probe system T20W (incl. probe arm Ø 3 x 60 mm)



TECHNICAL DATA

Order no.	5440691
Type	MMQ 100 <i>plus</i>
Pos.-/Meas. path X-axis	180 mm
Pos.-/Meas. path Z-axis	300 mm
Positioning speed X axis	0.5 – 30 mm/s
Positioning speed Z-axis	0.5 – 100 mm/s
Table load max.	20 kg
Reference temperature	20 °C
Workpiece diameter max.	210 mm
Probe system	tactile 1D
Centering and tilting table	manual
Table diameter	160 mm

MarForm MMQ 150

Form measuring device with extended possibilities

Features:

- 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
- Ergonomic control panel, can also be used to start selected measuring programs (P1, P2, P3)
- Compact, space saving design
- MarWin PC
- 24" monitor
- Intuitive and easy-to-use EasyForm software

Applications:

- **Mechanical engineering:**
Bearings, ball screws, shafts, sockets, rotational bushings
- **Measurement close to production:**
PLC and end-of-line testing
- **Automotive:**
Steering, brake system, gearbox, motor
- **Medicine:**
Hip and knee endoprostheses, medical screws, teeth implants

Options:

- Rim chuck Ø 100 mm
- Various additional clamps
- Commutator analysis
- Vibration velocity analysis
- Upgrade to MarWin AdvancedForm
- Data export Q-DAS qs-STAT
- Probe arms of various lengths and stylus ball geometries
- Various double probe arms
- Various calibration standards
- Various instrument tables, also with vibration compensation

Supplied with:

- Probe system T20W (incl. probe arm Ø 3 x 60 mm)

TECHNICAL DATA



Order no.	5440752
Type	MMQ 150
Pos.-/Meas. path X-axis	150 mm
Pos.-/Meas. path Z-axis	250 mm
Positioning speed X axis	0.5 – 30 mm/s
Positioning speed Z-axis	0.5 – 100 mm/s
Table load max.	20 kg
Linear resolution X-axis (interpolated)	10 nm
Linear resolution Z-axis (interpolated)	~0,0625 µm
Straightness deviation Z-axis	0,4 µm/100 mm
Reference temperature	20 °C
Workpiece diameter max.	210 mm
Probe system	Tactile 1D
Centering and tilting table	manual
Table diameter	160 mm

MarForm MMQ 200

Universal, high-precision form measuring device

Features:

- Precise detection of form and position deviations
- Fully automatic measuring sequences
- High-precision C-roundness measuring axis
- Motorized, vertical Z-measuring axis
- Motorized, horizontal X-positioning axis
- Manual centering and tilting table
- Ergonomic control panel, e.g. for starting selected measuring programs
- Intuitive and proven measuring and evaluation software MarWin

Applications:

- **Mechanical engineering:**
Bearings, ball screws, shafts, sockets, rotational bushings
- **Measurement close to production:**
PLC and end-of-line testing
- **Automotive:**
Steering, brake system, gearbox, motor
- **Medicine:**
Hip and knee endoprostheses, medical screws, teeth implants

Options:

- Various clamping devices
- Roughness evaluation with T7W
- Bar-to-bar analysis on commutator
- Vibration velocity analysis
- Upgrade to MarWin AdvancedForm
- Probe arms with various lengths and stylus ball geometries
- Various double probe arms
- Various calibration standards
- Various instrument tables, also with vibration compensation

Scope of delivery:

- T20W probe system for order number 5440750
- T7W probe system for order number 5440751



TECHNICAL DATA

Order no.	5440750	5440751
Type		MMQ 200
Pos.-/Meas. path X-axis		150 mm
Pos.-/Meas. path Z-axis		250 mm
Positioning speed X axis		0.5 – 30 mm/s
Positioning speed Z-axis		0.5 – 100 mm/s
Table load max.		20 kg
Linear resolution X-axis (interpolated)		10 nm
Linear resolution Z-axis (interpolated)		~0,0625 µm
Straightness deviation Z-axis		0,15 µm/100 mm
Reference temperature		20 °C
Workpiece diameter max.		210 mm
Probe system		Tactile 1D
Centering and tilting table		manual
Table diameter		160 mm

MarForm MMQ 400–2

High-precision, fully automatic reference form measuring device

Features:

The high-precision MarForm MMQ 400–2 series is the ideal solution for the following applications:

- Measurement of high-precision workpieces
- Measurement of extra-long workpieces
- Measurement of large and/or heavy workpieces
- Use in production or in the precision measuring room

To meet your requirements exactly, there are **different device variants** to choose from:

- Fully or semi-automatic centering and tilting table
- vertical Z-measuring axis with a length of 350, 500 or 900 mm
- horizontal X-measuring axis with a measuring length of 180 or 280 mm fully
- automatic probe system T7W with swivelling probe arm or manual probe system T20W
- 900 mm variant optionally with motorized tailstock for workpieces from 200 mm in length

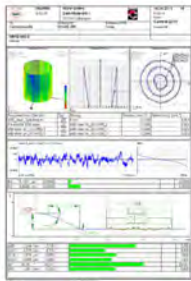
Applications:

- **Mechanical engineering:**
Bearings, ball screws, shafts, sockets, rotational bushings
- **Measurement close to production:**
PLC and end-of-line testing
- **Automotive:**
Steering, brake system, gearbox, motor
- **Medicine:**
Hip and knee endoprostheses, medical screws, teeth implants

Options:

- Roughness measurement
- Switch between form probe with ruby ball and roughness probe PHT 6–350
- Piston testing
- Lead testing and analysis
- Cam shape
- Bar-to-bar analysis on commutator
- Contour measurement and evaluation
- Path control (MCPC)
- Freeform evaluation
- Vibration velocity analysis
- Dominant roundness waviness (MBN 10455)

TECHNICAL DATA



Order no.	5440770	5440771	5440780	5440781	5440782	5440787
Type	MMQ 400–2					
Pos.-/Meas. path X-axis	180 mm	280 mm	180 mm	280 mm		
Pos.-/Meas. path Z-axis	350 mm	500 mm	350 mm	500 mm	900 mm	
Positioning speed X axis	0.5 – 30 mm/s					
Positioning speed Z-axis	0.5 – 100 mm/s					
Table load max.	60 kg				40 kg	
Linear resolution X-axis (interpolated)	5 nm					
Linear resolution Z-axis (interpolated)	5 nm					
Straightness deviation X-axis	0,5 µm/100 mm					
Straightness deviation Z-axis	0,15 µm/100 mm					
Reference temperature	20 °C					
Workpiece diameter max.	270 mm	530 mm	270 mm	530 mm	270 mm	
Probe system	Tactile 1D					
Centering and tilting table	manual			motorized		
Table diameter	285 mm					
Special equipment			CNC-Tisch			CNC table and dynamic real-time compensation

MarForm MMQ 500

Universal, high-precision form measuring device

Features:

- Suitable for small workpieces from a few millimeters in size to large and/or heavy workpieces weighing up to 80 kg.
- Highest axis accuracy, even with smaller tolerances.
- Best repeatability, even for difficult measurement tasks.
- Measurement of form, position, roughness, contour and twist in one measurement sequence.
- Intuitive to use and proven measurement and evaluation software MarWin.

Applications:

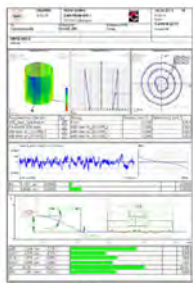
- **Mechanical engineering:**
Bearings, ball screws, shafts, sockets, rotational bushings
- **Measurement close to production:**
PLC and end-of-line testing
- **Automotive:**
Steering, brake system, gearbox, motor
- **Medicine:**
Hip and knee endoprostheses, medical screws, teeth implants

Options:

- Roughness measurement
- Switching between form probe with ruby ball and roughness probe PHT 6–350
- Piston testing
- Twist testing and analysis
- Cam shape
- Bar-to-bar variation analysis on the commutator
- Contour measurement and evaluation
- Path control (MCPC)
- Freeform evaluation
- Vibration velocity analysis
- Dominant roundness waviness (MBN 10455)

Supplied with:

- T7W probe system (incl. probe arm Ø 3 x 60 mm)



TECHNICAL DATA

Order no.	5440901
Type	MMQ 500
Pos.-/Meas. path X-axis	280 mm
Pos.-/Meas. path Z-axis	470 mm
Positioning speed X axis	0.5 – 30 mm/s
Positioning speed Z-axis	0.5 – 100 mm/s
Table load max.	80 kg
Linear resolution X-axis (interpolated)	5 nm
Linear resolution Z-axis (interpolated)	5 nm
Straightness deviation X-axis	0,3 µm/100 mm
Straightness deviation Z-axis	0,15 µm/100 mm
Reference temperature	20 °C
Workpiece diameter max.	530 mm
Probe system	Tactile 1D
Centering and tilting table	motorized
Table diameter	300 mm
Special equipment	CNC-Tisch

MarForm MarForm MFU 200

High-precision, fully automatic reference form measuring device

Features:

- Optimized for use in the measuring room and the achievement of reference quality
- High reproducibility of the measurement results through dynamic real-time compensation, which detects and corrects even the smallest deviations in the measurement sequence
- Productivity thanks to high temperature stability over a long period of time – no daily calibration necessary
- Extreme precision due to high-precision rotary axis with Mahr precision guides: roundness deviation of < 20 nm
- Intuitive to use and proven MarWin measurement and evaluation software

Applications:

- **Mechanical engineering:**
bearings, ball screws, shafts, bushings, rotary unions
- **Automotive industry:**
steering, brake system, transmission, engine
- **Medical:**
hip and knee endoprostheses, medical screws, dental implants
- **Production-related measurement:**
SPC and end-of-line testing

Options:

- Expandable with optical point sensor IPS for combined use as an optical and tactile measuring measuring center
- Advanced or ProfessionalForm
- Diameter measurement incl. calibration set and certificate
- Various probe arm units and clamping devices

Supplied with:

- T7W probe system (incl. probe arm Ø 3 x 60 mm)

TECHNICAL DATA



Order no.	5440580
Type	MarForm MFU 200
Pos.-/Meas. path X-axis	200 mm
Pos.-/Meas. path Z-axis	320 mm
Positioning speed X axis	0.1 – 100 mm/s
Positioning speed Z-axis	0.1 – 100 mm/s
Table load max.	20 kg
X-axis resolution (interpolated)	0,001 µm
Z-axis resolution (interpolated)	0,001 µm
Roundness deviation C-axis	0,01 + 0,0002 µm/mm*measuring range (according to DIN EN ISO 1101)
Straightness deviation X-axis	0.075 µm/measuring path (according to DIN EN ISO 1101)
Straightness deviation Z-axis	0.1 µm/measuring path (according to DIN EN ISO 1101)
Parallelism deviation	0.5 µm (Z/C axis over 1 m in the tracing direction)
Perpendicularity	0.3 µm (X/C axis over 120 mm)
Positioning uncertainty X-axis	2 µm (according to VDI/DGQ 3441) / 0.5 µm (with probe backlash)
Positioning uncertainty Z-axis	2 µm (according to VDI/DGQ 3441) / 1 µm (with probe backlash)
Diameter uncertainty X-axis	0,2 µm
Reference temperature	20 °C
Workpiece diameter max.	280 mm
Probe system	Tactile 1D
Centering and tilting table	motorized
Table diameter	180 mm
Special equipment	CNC table and dynamic real-time compensation

MarForm MMQ accessories

Mahr T7W probe system

Accessories for the optimum solution



Device to balance probe arms



T7W motorized probe

The T7W measuring probe is fitted with a motorized rotational axis. This allows you to move the probe arm gradually into any desired contacting position. It can be used for measurements on both cylindrical surfaces and end faces. As a zero position probe, the T7W can also switch between inner and outer measurements or between top and bottom end face measurements automatically, without operator intervention. Fully automatic measuring sequences on complex workpieces can be performed without operator intervention. The T7W probe arms are interchangeable. With its motorized rotational axis you can also create multi-point probe arms – i.e. probe arms with multiple contact elements – allowing you to switch between different stylus ball geometries within a measuring run.

T7W motorized measuring probe, with probe arm with 360° angular mobility for MMQ 400 and MMQ 400 CNC

Order no. 5400200

Total area	2000 µm
Zero point probe working range	±500 µm
Measuring force	adjustable from 0.01 N to 0.2 N
Bidirectional measurement	
Contact angle	freely selectable in 1° increments
	360° motorized control
Probe arms	easy to change (magnetic fixture)
Suitable for flexible multipoint probe	
Mechanical and electrical overload protection	
Device to balance probe arms	

Accessories for T7W motorized probe

Probe arm kit for T7W Order no. 5400221

In storage case, consisting of:

Stylus arm dia. 0.5 mm, L=20 mm, M2a	Stylus arm extension 10 mm, M2
Stylus arm dia. 1.0 mm, L=20 mm, M2a	Stylus arm extension 20 mm, M2
Stylus arm dia. 1.0 mm, L=15 mm, M2a	Stylus arm extension 30 mm, M2
Stylus arm dia. 1.5 mm, L=10 mm, M2a	Stylus arm extension 40 mm, M2
Stylus arm dia. 3.0 mm, L=10 mm, M2a	Rotary swivel joint M2
Stylus arm dia. 3.0 mm, L=25 mm, M2a	Hex head screwdriver A/F 1.5
Weight 1.5 g	Hex head screwdriver A/F 0.9
Weight 1.0 g	Rotary part M2, concentric
Weight 2.0 g	Wrench 1.0
Weight 3.0 g	Stylus arm holder M2i transverse
Weight 0.5 g	Stylus arm holder M2i axial
Weight 10.0 g	Stylus M2i transverse
Weight 5.0 g	Mount 2x M2i transverse
Probe arm L=15 mm 2x M2	Guide
	Adjuster

MarForm MMQ accessories

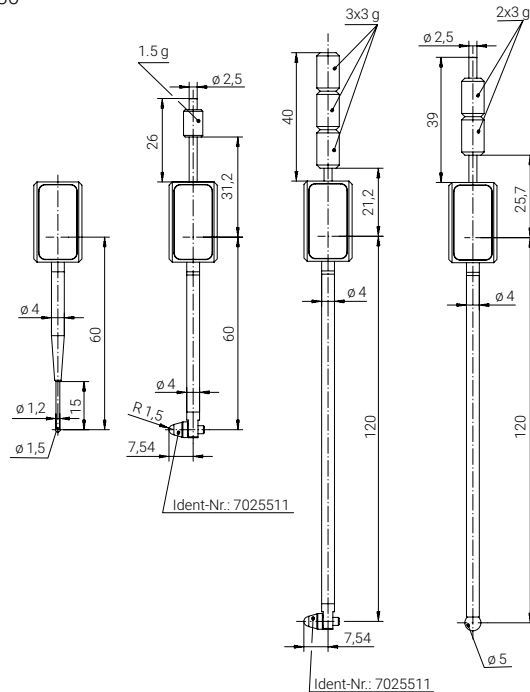
Mahr T7W probe system

Probe arm for T7W probe

Probe arm set for T7W

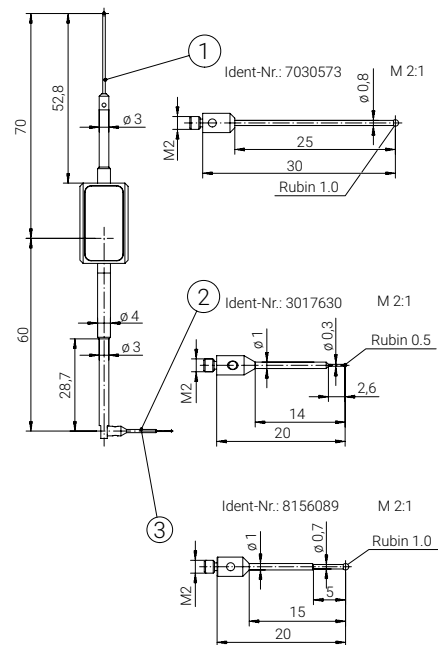
Order No. 5400211

Consisting of one each of probe arms 5400225, 5400226, 5400229 and 5400230



Probe arm set # 2 for T7W Order No. 5400220

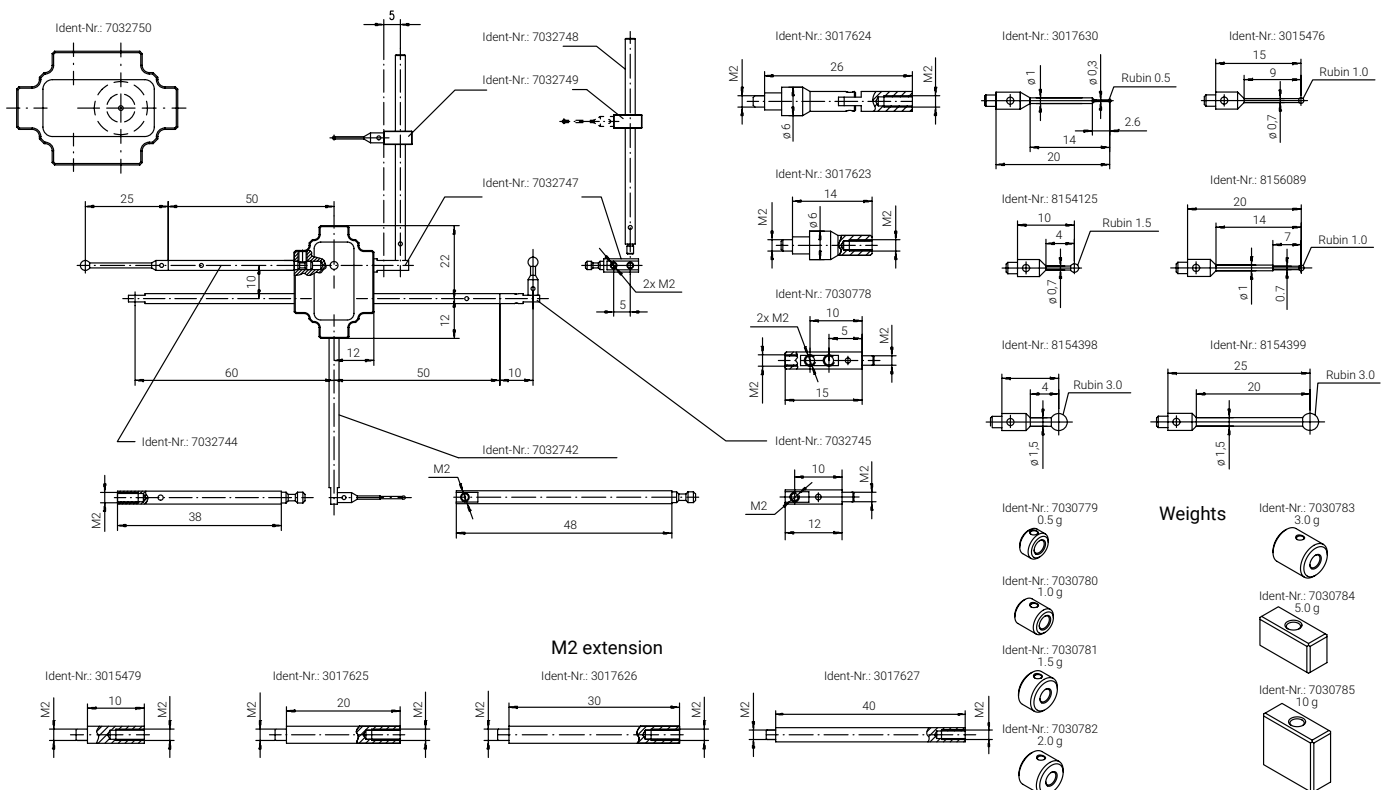
for measuring small workpieces, consisting of a probe arm holder and three exchangeable M2 styli



Probe arm module for T7W

Order No. 5400221

M2 styli



Mahr T20W probe system

A close-up photograph of a Mahr T20W 500030 probe measuring a gear. The probe is a horizontal metal arm with a circular sensor tip at the end. It is positioned against the teeth of a large, polished metal gear. The probe's body is silver-colored with black text that reads "Mahr T20W 500030". A blue adjustment screw is visible on the side of the probe. The background is a plain, light-colored surface.

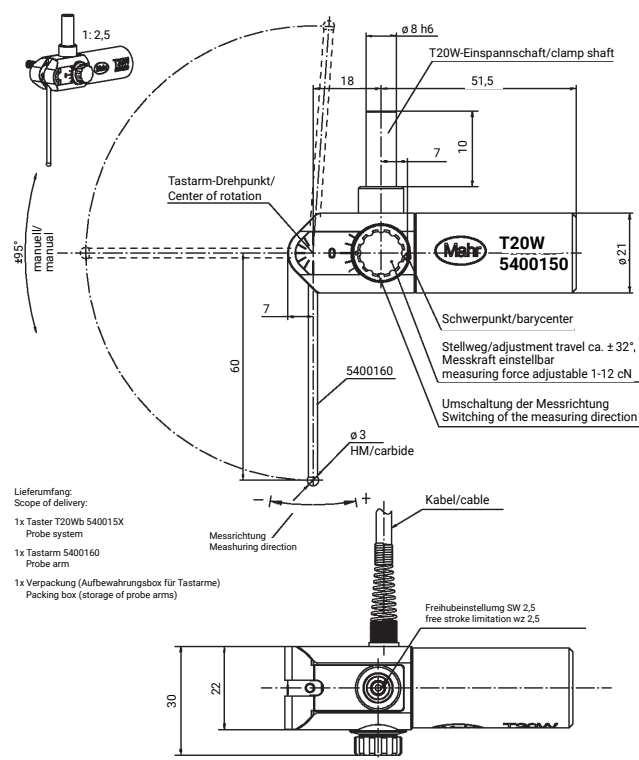
The inductive T20W measuring probe is suitable for all applications. Thanks to the probe arm, which can be moved to an angle of 190°, and the various clamping options for the probe, measurements can also be taken in places that are difficult to access. To adapt the probe to the respective measuring tasks or workpieces, you can combine easily interchangeable probe arms with different measuring inserts.

Measuring range $\pm 1000 \mu\text{m}$
Measuring force adjustable from 0.01 N to 0.12 N
Switchable measuring direction
Exchangeable probe arm
Free stroke limit adjustable in contacting direction
Clamping shaft $\varnothing 8 \text{ mm}$
Order no. 5400151 for MMQ 400

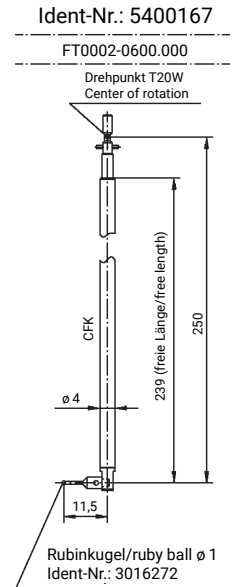
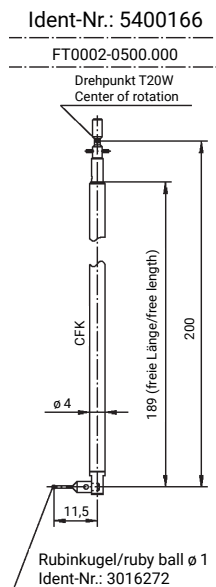
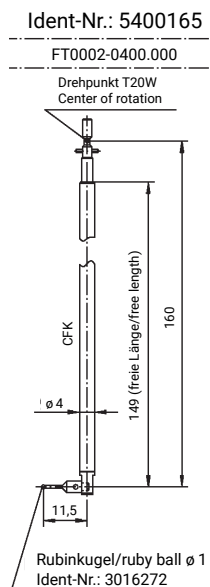
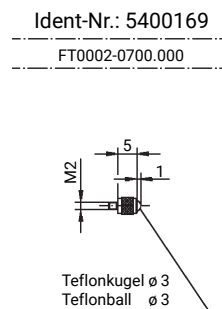
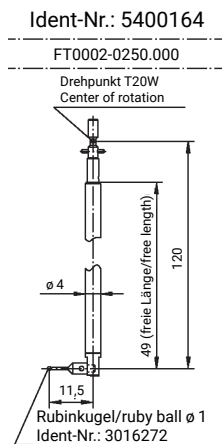
Probe arm 60 mm Ø 1.0; M2i lengthwise	5400161
Probe arm 60 mm Ø 3	5400160
Probe arm 60 mm Ø 1.0; M2i diagonal	5400163
Probe arm 60 mm Ø 1.0; M2i lengthwise; shaft Ø 0.8 L=30 mm	5400170
Probe arm 120 mm Ø 1.0; M2i lengthwise	5400162
Probe arm 120 mm Ø 1.0; M2i diagonal	5400164
Probe arm 160 mm Ø 1.0; M2i diagonal CRP	5400165
Probe arm 200 mm Ø 1.0; M2i diagonal CRP	5400166
Probe arm 250 mm Ø 1.0; M2i diagonal CRP	5400167

Base for multiple probe arms, with one probe arm support and two vertically and one horizontally deployable probe arms, with two measuring inserts:
 Ø 1 mm ruby, L=10 mm and one measuring insert Ø 1 mm ruby L=20 mm
 5400168

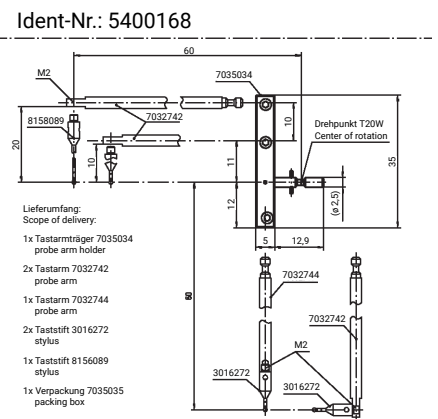
Teflon measuring anvil Ø 3 mm, M2	5400169
Measuring anvil L=10 mm, sphere Ø 0.3 mm ruby	4662093
Measuring anvil L=10 mm, sphere Ø 0.5 mm ruby	4662090
Measuring anvil L=10 mm, sphere Ø 1.0 mm ruby	3016272
Measuring anvil L=10 mm, sphere Ø 1.5 mm ruby	8154125
Measuring anvil L=10 mm, sphere Ø 3.0 mm ruby	8154398
Measuring anvil L=20 mm, sphere Ø 5.0 mm ruby	8159402
Measuring anvil L=10 mm, sphere Ø 1.0 mm carbide	8162168
Measuring anvil L=10 mm, sphere Ø 1.5 mm carbide	8049415
Measuring anvil L=10 mm, sphere Ø 2.0 mm carbide	8162164
Measuring anvil L=20 mm, sphere Ø 3.0 mm carbide	8159618
Measuring anvil L=20 mm, sphere Ø 5.0 mm carbide	8049416
Pin wrench for styli/anvils	5440192



Ident-Nr.: 5400160	Ident-Nr.: 5400161	Ident-Nr.: 5400162	Ident-Nr.: 5400170	Ident-Nr.: 5400163
FT0002-0100.000	FT0002-0300.000	F FT0002-0350.000	FT0002-0380.000	FT0002-0200.000
Drehpunkt T20W Center of rotation	Drehpunkt T20W Center of rotation	Drehpunkt T20W Center of rotation	Drehpunkt T20W Center of rotation	Drehpunkt T20W Center of rotation
HM-Kugell $\varnothing$ 3 carbide-ball $\varnothing$ 3	Rubinkugel/ruby ball $\varnothing$ 1 Ident-Nr.: 3016272	Rubinkugel/ruby ball $\varnothing$ 1 Ident-Nr.: 3016272	Rubinkugel/ruby ball $\varnothing$ 1 Ident-Nr.: 8156089	Rubinkugel/ruby ball $\varnothing$ 1 Ident-Nr.: 3016272



ID no.	Ball $\varnothing$ [mm]	Material	Operation length [mm]
4662093	0,3	Rubin/ruby	10
4662090	0,5	Rubin/ruby	10
3016272	1,0	Rubin/ruby	10
8156089	1,0	Rubin/ruby	20
8154125	1,5	Rubin/ruby	10
8154398	3,0	Rubin/ruby	10
8159402	5,0	Rubin/ruby	20
8162168	1,0	HM/carbide	10
8049415	1,5	HM/carbide	10
8162164	2,0	HM/carbide	10
8159618	3,0	HM/carbide	20
8049416	5,0	HM/carbide	20



Engineered Solutions | Customized measuring solutions

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 tailor-made solutions that take account of 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

Customized measuring stations

658

Engineered Solutions

Automated solutions

659

Engineered Solutions

Dimensional solutions

660

Engineered Solutions

Contour and surface metrology

662

Customized measuring stations

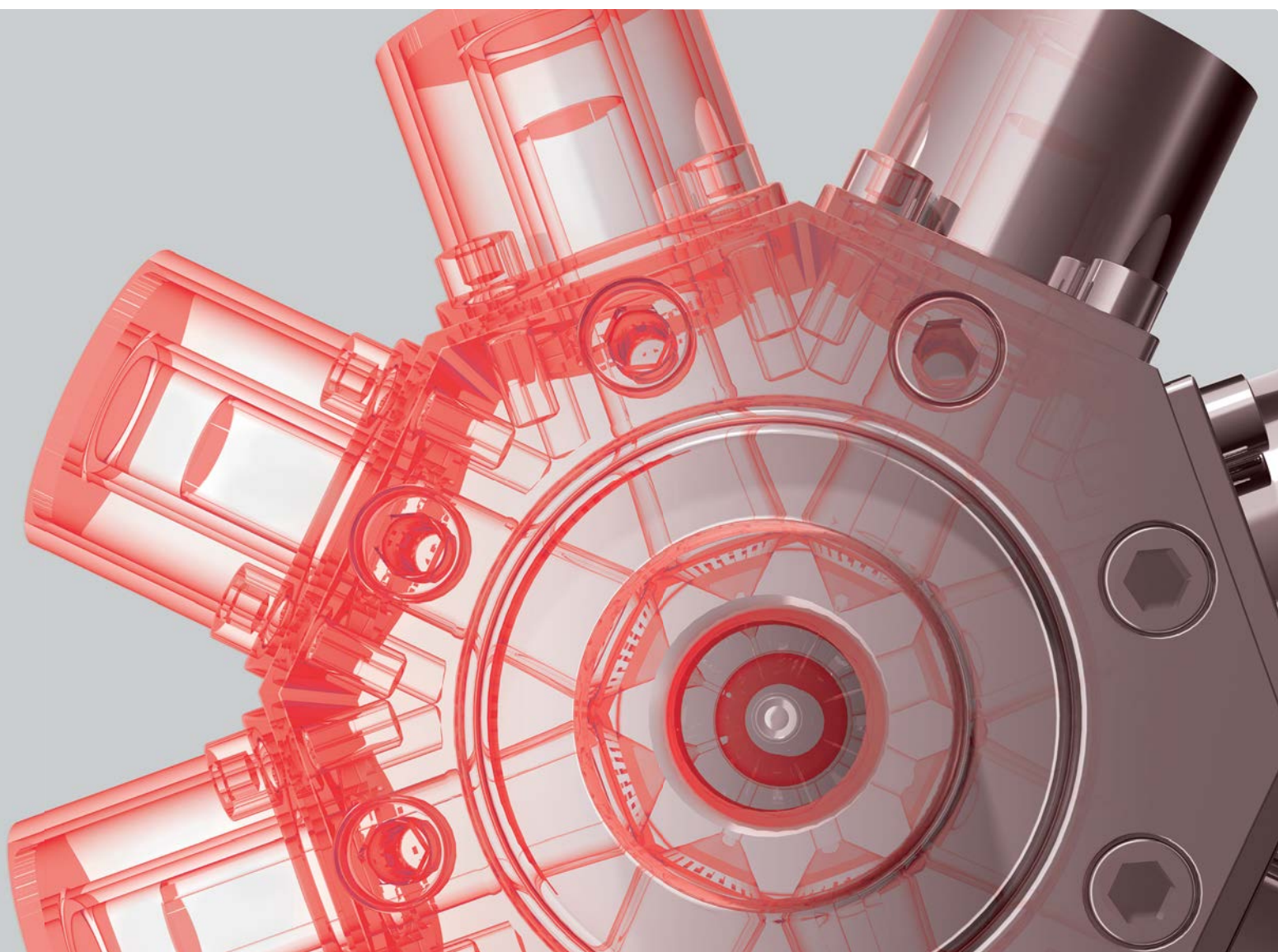
Complex measuring tasks, striving for maximum efficiency, prompt measuring results on site or the desire for maximum ease of use sometimes require solutions that have been individually designed with these requirements in mind. With Engineered Solutions, Mahr consolidates its extensive product expertise to design tailor-made measuring stations for customers around the world.

Typical demands placed on us:

- Measuring directly in production
- Measurements that are easy for on-site personnel to carry out
- Measuring results within a few seconds
- Reliable completion of complex and demanding measuring tasks
- Simplification of measuring tasks that occur on a daily basis
- 100% inline control – solutions for integration in the production line
- Have measuring results that can be documented and traced

What challenge are you facing?

There are many reasons why an individual measuring solution may be required. There is generally one problem that cannot be solved at all or is very labor-intensive to solve with the usual standard measuring machines. We solve that problem.



Stand-alone machines – automated solutions

Autonomous measuring stations

Measuring without personnel commitment

- Fully autonomous processing of multiple and complex measuring tasks
- Combination of several measuring sensors into one measuring station
- Automated measuring room
- Operation without metrology personnel



Inline solutions

Measuring stations for integration

- Complete measuring stations with workpiece feeding and output
- Automated workpiece handling in the measuring station
- Automatic workpiece recognition and measuring program selection
- Fully automatic measurement



Complete inline solutions -

measuring stations with peripherals

- Workpiece feeding and alignment
- Workpiece classification
- Laser marking of the workpiece
- Bulk material feeder
- Inspection tasks such as crack detection

For more information,
please visit our website

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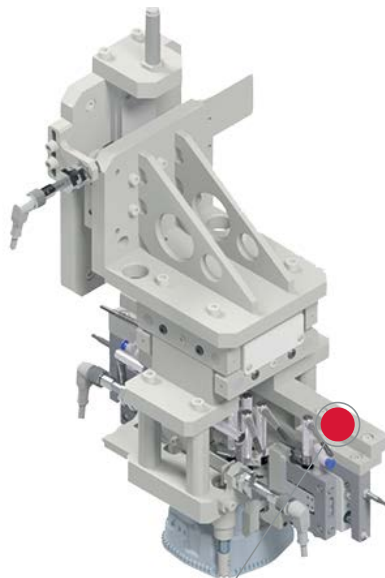
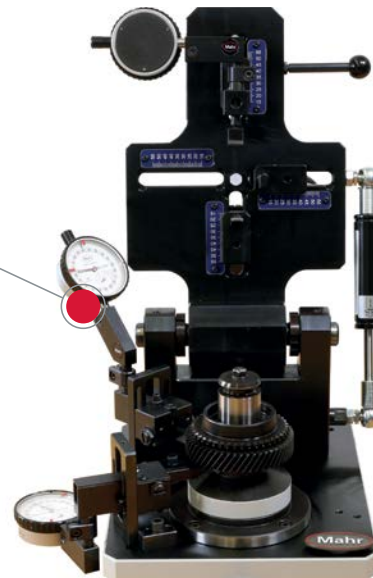
Clever measuring devices, excellent results

Dimensional solutions from Mahr Engineered Solutions:

Manual solutions

Manual loading and measurement

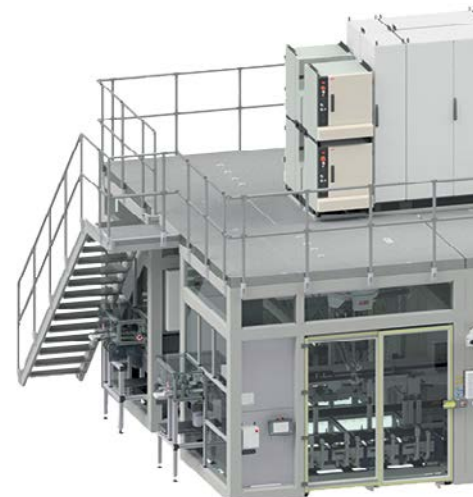
- Measuring directly in production
- Easy to handle
- Measuring result is available within a few seconds
- Reliable and safe measurements carried out by workshop personnel

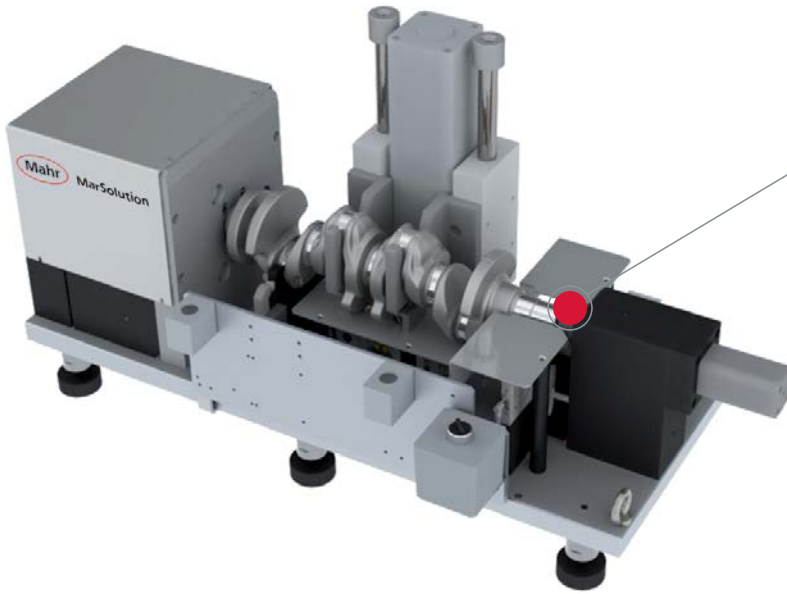


OEM solutions -

measuring modules for inline integration

- Integration of measuring heads in production and assembly lines
- Cooperation with integrators according to customer requirements
- Simple connection and integration
- High-precision metrology from the expert as part of a complete system





Semi-automated solutions

Manual loading and fully automatic measurement

- Dynamic measurements
- Complex measuring tasks
- Increased efficiency through automation of measuring sequences



SPC measuring stations

Turnkey solutions for different measuring tasks

- Complete SPC measuring stations with a wide variety of measuring equipment for handling all pending measuring tasks in a manufacturing process
- Complete metrological equipment for production lines and/or workshops



Fully automatic machines

Fully automated inline measurements

- Measuring cell for integration in the production line
- Automatic workpiece recognition and measuring program selection
- Workpiece feeding and alignment
- Workpiece classification

Radius, angle, roughness – or chamfer?

Contour and surface solutions from Mahr Engineered Solutions:

Manual auxiliary devices -

quick and easy help with your everyday work

- Elimination of time-consuming setup and alignment of workpieces
- Easy measurement of complex or difficult measuring tasks
- Error reduction through avoidance of incorrect operation



Manual measuring stations

Positioning & recurring measuring tasks made easy

- Targeted and easy processing of individual measuring tasks
- Easy handling of large and heavy workpieces
- Efficiently process recurring measuring tasks, e.g. work sequence plans



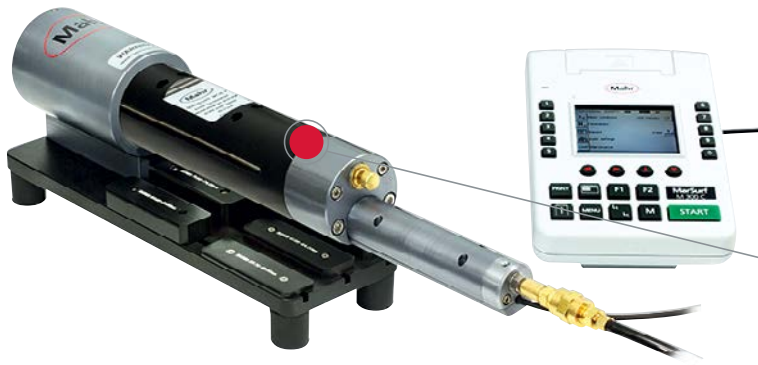
Fully autonomous measuring stations -

insert workpiece, start measurement and get result

- Fully autonomous inline processing of numerous and complex measuring tasks without staff involvement
- All-in-one measuring station: Automatic workpiece recognition and selection of measuring program, probe arm, etc.

Engineered Solutions

Contour and surface metrology



Mobile solutions

The measuring equipment comes to the workpiece

- Measurement directly at the production site
- Measurement directly in the production line, without ejection of the workpiece
- Surface measuring task as part of an SPC measuring station

Automatic measuring stations

Automated measuring sequences without tying up personnel

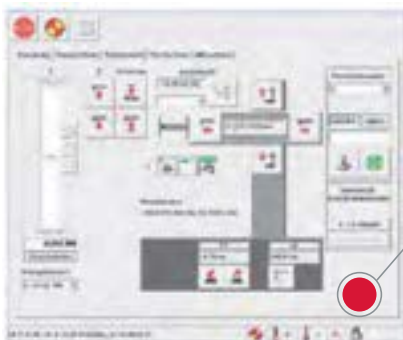
- No operator influence on measuring results
- No staff need to be involved during measurement
- Automation and high-precision metrology combined across the entire measurement circuit



The right software for the machine

MarSurf Engineered measuring stations use specially developed, intelligent software solutions

- The measuring programs are created according to the features being measured.
- No programming knowledge required
- Process-optimized measuring programs
- Simple duplication of measuring programs on structurally identical machines



Mahr | Services

Together with its subsidiaries and representatives, Mahr offers a worldwide service network. In addition to the product-related services, we offer you further services at various locations that reflect Mahr's expertise and experience. We are at your disposal to solve your specific metrological problems. Challenge us!



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Services

Mahr Academy | Application advice



In addition to product training, **Mahr Academy** also provides technical content. We not only offer training and courses in measurement technology, but also in test equipment and quality inspection. Our instructors are one hundred per cent familiar with the subject and know what it is all about from their own experience.

Our topics are:

- Quality and test equipment management
- Practical application of production metrology
- New DIN / ISO / GPS standards
- AUKOM training courses (AUKOM Level 1–3, AUKOM Measuring Technician, AUKOM Update, AUKOM Form and Position, AUKOM Surf, AUKOM Management Workshop)
- Webinars and eLearnings

Practical relevance

Experience shows: Practice demands practice! That is why practical application is at the center of every Mahr offer.

Teamwork

Learning is effective in a group. Here you can exchange ideas and benefit from the experience of other participants.

Small groups

Small groups at our seminars allow everyone to have their say and all questions are answered.

On-site & online

All seminars can be booked on-site, online or as a hybrid event — giving you complete flexibility.



Do you need support in developing solutions for metrological tasks? Do you need to create measuring programs for complex workpieces? Do your users need thorough product training?

Our application technology specialists will be happy to use their knowledge and many years of experience in production metrology to your advantage.

The application technology and technical service departments offer you:

- Sample measurements
- Commissioning
- Creation of measuring programs
- Product and user training
- Measuring equipment capability tests
- Order and contract measurements

You can find our current seminar program here:

www.metrology.mahr.com/en-int/service/mahr-service

Services

Technical service | Service agreements



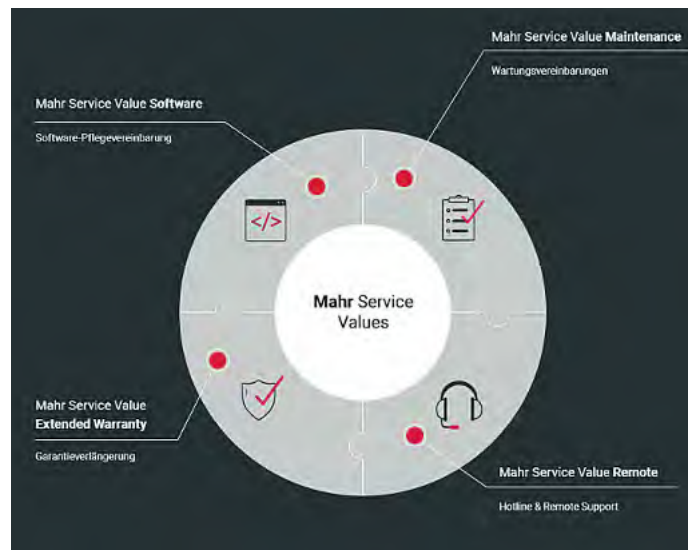
Mahr **measuring instruments** are developed and produced with great care in accordance with the **Mahr quality guidelines** using state-of-the-art technology. You receive a measuring device of the highest quality.

An efficient service organization is available worldwide to support your machine or measuring station. The **Mahr service organization** is equipped with modern, in some cases specially developed tools and devices, has well-trained specialist personnel and can draw on an extensive range of parts.

Mahr works according to advanced, factory-proven guidelines and offers a range of complementary services. In order to always achieve optimum results with your **Mahr measuring instruments**, we recommend that you only use the services of the **Mahr service organization**. This is the only way to ensure that **original Mahr spare parts** are always used and that maintenance procedures are applied that reflect the constantly evolving **Mahr standard**.

Direct contact with you is important to us. We want you to be able to contact us at any time with your personal enquiry and receive support.

You can find the right contact for your service enquiry at:
www.metrology.mahr.com/en-int/service/mahr-service



Our service agreements — packages with added value

Whether it's day-to-day business or an exceptional situation: when you use our service, you want fast, competent support — without having to worry about the costs. This is exactly what **Mahr Service Values** are for: our agreements for maintenance, software maintenance, warranty extensions and hotline and remote support.

With **Mahr Service Values**, you can conveniently secure the right service for your needs and retain full control over your budget. Depending on the package, we also guarantee you shorter response times or prioritization when allocating appointments. You can also put together your own customized service package according to the modular principle — try it out!

Services

Measuring system | Calibration services



Mahr maintains **laboratories for various devices and sizes**. In these laboratories, the dimensional connection can be ensured at a high metrological level and with very **low measurement uncertainties**. In principle, **all measuring** equipment can be calibrated. For **Precision Gages**, **Mahr** only calibrates new products and test equipment after repair (optional).

Precision Gages includes:

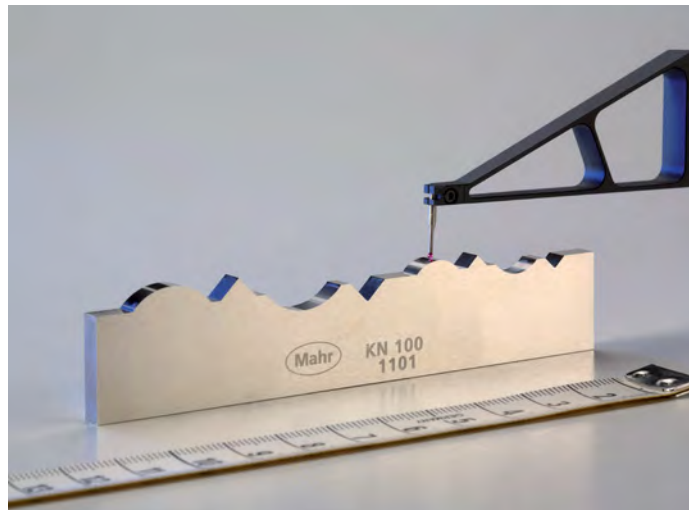
- Gage blocks *
- Setting rings / setting mandrels / setting discs / test pins *
- Inductive measuring probes with / without display unit *
- Incremental measuring probes *
- Calipers / micrometers *
- Dial gages / dial indicators / dial test indicators *
- Setting gages *

For Systems, Mahr also carries out recurring calibrations (recalibrations) in the field of system technology.

This includes:

- Geometry and roughness standards *
- Plane glasses
- Vertical length measuring devices / height measuring devices *
- Magnification standards (flick standards) *
- Contour standards *
- Stylus instruments / roughness measuring instruments *
- Test cylinders / control columns *
- Roundness standards *
- Length measuring devices *
- Multi-shaft standards *
- Dial indicator and dial gage testers *
- Superfine roundness standards *

* Calibrations with officially recognized calibration certificates in accordance with national and international standards, e.g. DAKKS/DKD (German Calibration Service).



The **DAKKS** is a signatory to the multilateral agreements of the European cooperation for Accreditation (**EA**) and the International Laboratory Accreditation Cooperation (**ILAC**) for the mutual recognition of calibration certificates.

Your **Mahr contact person** will provide you with information on national and international recognition, e.g. within the framework of multilateral agreements **www.european-accreditation.org** and **www.ilac.org**.



Services

Repair or exchange

Exchange and hire service

Replacing instead of repairing – this is easily possible with many measuring devices and small instruments. You will quickly and easily receive a refurbished device or a corresponding component as a replacement for your defective technology. This reduces downtime to a minimum and gives you a 12-month warranty on the replacement device.

Refurbished devices & components for replacement (examples):

Micrometers and digital calipers

Indicating measuring devices from the Marameter product group

Mobile roughness measuring devices, e.g. MarSurf PS 10 or MarSurf M 300

Surface drive units and probe systems

Probe arms for surface and form measurement

The choice is yours:

- **Exchange (Mahr devices)**

In return for sending in your defective device, you will receive a refurbished measuring device from our exchange pool.

On request, we will engrave your ID number back onto the device. Spare parts are already included in the exchange price.

Your advantage: You save repair time and your downtime is reduced to a minimum.

- **Repair**

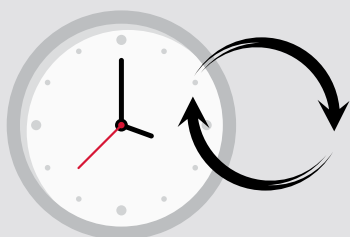
Of course, you also have the option of having your own device repaired. During the repair, we rectify functional defects and rework the measuring surfaces. Spare part prices are already included in the repair price.

Your advantage: You can be sure that the devices will meet the specifications and accuracy of a new device after repair thanks to our manufacturer expertise.

- **General overhaul (Mahr devices)**

General overhauls not only eliminate faults, but also proactively replace worn parts and eliminate visual defects. The metrological properties of the devices are restored to their original condition.

Your advantage: You will receive a device back that corresponds to its metrological characteristics.



EXCHANGE

Delivery time: approximately 3 working days



REPAIR

Delivery time: depends on instrument

Services

Subcontract measurement services from Mahr

Programming & measurement program creation

Job programming for fully automatic, complex measurement sequences or special evaluation or calculation methods – always customized and adapted to your needs.

Consultancy and concept development

The optimum test procedure for you is developed in dialogue with the customer. Test measurements and demonstrations provide the proof.

Contract measurement and capability testing

We measure what your measuring devices cannot measure.

Your advantage: You save on expensive new purchases.

We support you when your own measurement capacity is overloaded.

Your advantage: You do not need additional employees or machines.

We check the capability of your measurement systems and the suitability of your measuring equipment for your applications.

Your advantage: With tight tolerances, you can be sure you are working with the right equipment.

Mahr undertakes the following contract and contract measurements:

1. Measurement via 3D coordinate measuring machines either:
 - a) tactile or
 - b) optical (non-contact)
2. Form and position measurement
3. Roughness and surface
4. Contour measurement
5. Initial sampling in accordance with the regulations of the German Association of the Automotive Industry (VDA) and other specifications

Measurement reports

After the sampling of your workpiece, you will receive a professional measurement report from us, which you can refer to in the event of necessary inspections (e.g. if errors have occurred in production).

Do your measuring machines and measuring equipment work accurately enough to fulfill the ever-increasing requirements regarding tolerated deviation?

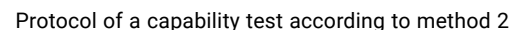
Method 1:

Here, the capabilities of the devices are generally determined. This normally takes place in our laboratory – in individual cases also in your measuring room.

Determines the influence of the operator on the measurement results. To do this, we test the devices at your premises under normal installation conditions. We also involve the employees who will later work with the devices.

Method 3:

In this case, an investigation is carried out on the automatic measuring device. The operator influence, which is to be deliberately determined in procedure 2, is to be excluded here. This method is usually carried out on 25 workpieces with two tests.



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