CATALOG
DIMENSIONAL METROLOGY

That you receive 360° support so that
you can rely 100% on accuracy.

This is what EXACTLY means to us.

- 0 +

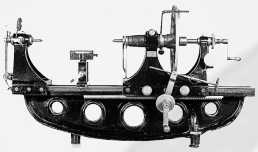
Mahr

EXACTLY

1870

Vernier Calipers from Carl Mahr - Made of steel and brass, produced in 1868

1900



Length Measuring Machine - Built in 1908. Reading on the vernier: 1/10,000 mm

1930

Millimess Dial Comparator - Built in 1937. The first indicating unit for reliably recording dimensional differences down to 1/1000 mm

1960

Millitron - Built in 1964. It is a compact length measuring instrument that was given the nickname "The Miner's Lamp"

1980

MMQ 2 - Compact desktop form tester for evaluating roundness

ABOUT MAHR: HOW IT ALL STARTED

The measure of all things since 1861. The industrialization of the 19th century saw not only a rapid growth in productivity but also a need for precision in the manufacture of products and components. Carl Mahr recognized the demand this would create for precision length measuring instruments over 150 years ago. Founded in Esslingen on the River Neckar, the family business grew slowly but surely into a global enterprise with over 1,900 employees. We have grown up in the world of metrology and have amassed a wealth of expertise along the way. We draw on this knowledge to give you the best possible support

1985

M4P - The first microprocessor-controlled roughness measuring instrument, with integrated printer for parameters and profiles

2010

MarSurf M400 - The best of the „portables". Easy. Fast. Innovative. With Bluetooth technology, skidless tracing and automatic zero setting.

2012

MarSurf One - Roughness measurement with a smart phone. Mobile. Connected. Location-independent. Inexpensive.

2014

MarCal 16 EWRi, the world's first digital calipers with intergrated Wireless data transmission system

2015

MarShaft SCOPE 250 plus, flexible shaft measuring machine for measuring small, rotationally symmetrical workpieces such as turned parts

in implementing your measurement solutions. Mahr products have long been at home in many sectors of industry. Our expertise creates customer benefits in the automotive industry, mechanical and electrical engineering, as well as in medical technology, optics and aerospace. Mahr products play their part in the most diverse measuring tasks, such as in fuel injection systems for engines, machine bearings, aspheres in optics, and in alternative energy sources such as wind power. Our solutions speak the language in many industries, the language of quality, safety and sustainability. Ever since 1861!

More information to more than 150 years Mahr you can find on our website under www.mahr.com/history

Mahr

GOETTINGEN

Germany
Headquarters of the Mahr Group
and the Measuring Systems Division
Production, Development and
Sales Metrology Systems

Mahr GmbH
Carl-Mahr-Str. 1
D–37073 Göttingen

ESSLINGEN

Germany
Precision Gages Division
Sales and Development

Mahr GmbH
Esslingen site
Reutlinger Straße 48
D–73728 Esslingen

JENA

Germany
Development and Sales

Mahr GmbH
Jena site
Carl-Zeiss-Promenade 10
D–07745 Jena

PROBOSTOV

Czech Republic
Production and Sales
Precision Gages and Measuring Systems

Mahr spol s.r.o.
Kpt. Jaroše 552
CZ–41712 Proboštov

A GLOBAL LEADER

Right where you need us. With the rise in globalization, our customers expect Mahr to have an international presence too. To ensure that we meet those expectations, we have established a worldwide network of production sites, sales and service offices around the world. Our goal is to deliver quality and

MAHR IS REPRESENTED IN

Argentina	Denmark	Iran	Pakistan	South Africa
Australia	Egypt	Ireland	Peru	Spain
Austria	Finland	Israel	Philippines	Sweden
Belgium	France	Italy	Poland	Switzerland
Brazil	Germany	Japan	Portugal	Taiwan
Bulgaria	Great Britain	Korea	Romania	Thailand
Chile	Greece	Malaysia	Russia	Tunisia
China	Hong Kong	Mexico	Serbia	Turkey
Colombia	Hungary	Netherlands	Singapore	UAE
Croatia	India	Northern Ireland	Slovakia	USA
Czech Republic	Indonesia	Norway	Slovenia	Vietnam

PROVIDENCE

USA
NAFTA Headquarters
Production and Sales
Precision Gages and Measuring Systems

Mahr Federal Inc.
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Providence, RI 02905

SUZHOU

China
Production and Sales
Precision Gages

Mahr Precision Metrology
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Suzhou Industrial Park
Suzhou 215122, P.R.

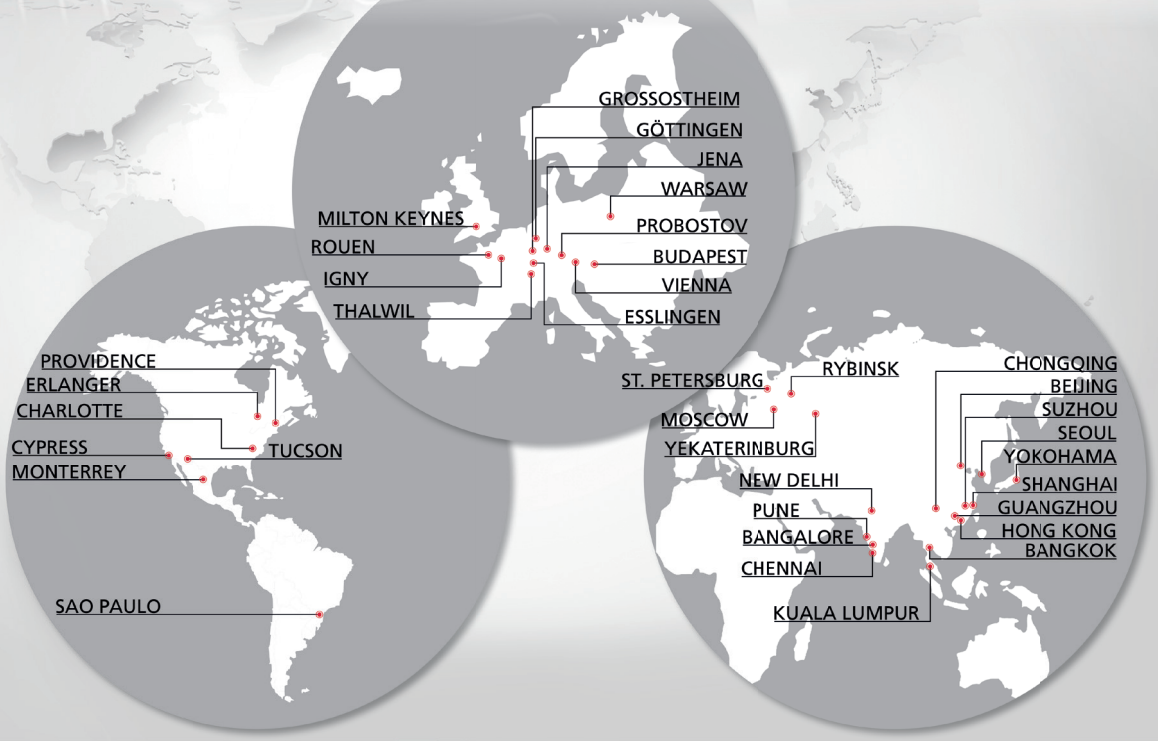
GROSSOSTHEIM

Germany
Production und Sales
Measuring Systems

MWF Roland Friedrich GmbH
Melberstraße 9
D–63762 Großostheim

service at an optimum level, all over the world. You will find Mahr metrology contacts throughout Europe, North and Latin America, and in Asia. Wherever and whenever you need us: You can measure us by our commitment!

For more information visit www.mahr.com/contact



EXPERIENCE

Mahr has been producing measuring instruments for over 150 years

PROFESSIONALISM

The right solution for every application

PRECISION

Superb quality with absolute precision

SAFETY

Results you can rely on

THE MAHR BRAND

Our precision speaks for itself! The brand is your guarantee of safety. Quality assurance is playing an increasingly critical role in the world of production. The more important repeatable precision becomes, the greater the contribution of metrology to the final result. We make it our job to ensure that the results are accurate. As one of the world's largest manufacturers of dimensional metrology equipment, our leadership in the field of innovation is unmatched. Mahr would like to talk to you: We will get to know your processes, understand them, and identify the most cost-effective metrology solution. From

See our image video on Mahr website under www.mahr.com/imagevideo

ACCURACY

Going its own way to setting new standards

INNOVATION

Innovation leader in industrial metrology

SIZE

Continuous growth to become a global leader

VISION

Always finding the EXACT measurement

hand-held measuring instruments and standardized standalone devices through to customized units directly linked to your manufacturing processes, Mahr can provide everything you need. Supplemented by the appropriate software, training, service and calibration. We deliver seamless processes and quality assurance and also help you cut costs, by working directly with your experts from planning, production, research and development, we will bring you metrology concepts that are full proof. As a process-oriented application expert, we work with you to develop solutions designed specifically for your needs. Mahr offers more than just a product, we offer a partnership.

AUTOMOTIVE

AEROSPACE

MEDICINE

ABOUT MAHR: EXPERTISE

Production metrology with experience, innovation and dedication. We are increasingly committed to developing solutions that provide our customers with a process-oriented spectrum of benefits for their own specific applications. Our solutions are used from initial research to final inspection. Many of them have been derived from direct dialog with our customers across a whole range of industries. Mahr offers

ELECTRICAL ENGINEERING

MACHINES & TOOLS

OPTICS

you a broad choice for precision gages, surface metrology and form metrology, as well as for measuring shafts, gears and tools. A comprehensive global service network delivers everything from procurement of spare parts to gage management and calibrations, in accordance with DIN EN ISO 17025.

DYNAMIC PRECISION

WITH METROLOGY FROM MAHR

MEASURING SOLUTIONS FOR THE AUTOMOTIVE INDUSTRY

THE AUTOMOTIVE APPLICATION EXPERT

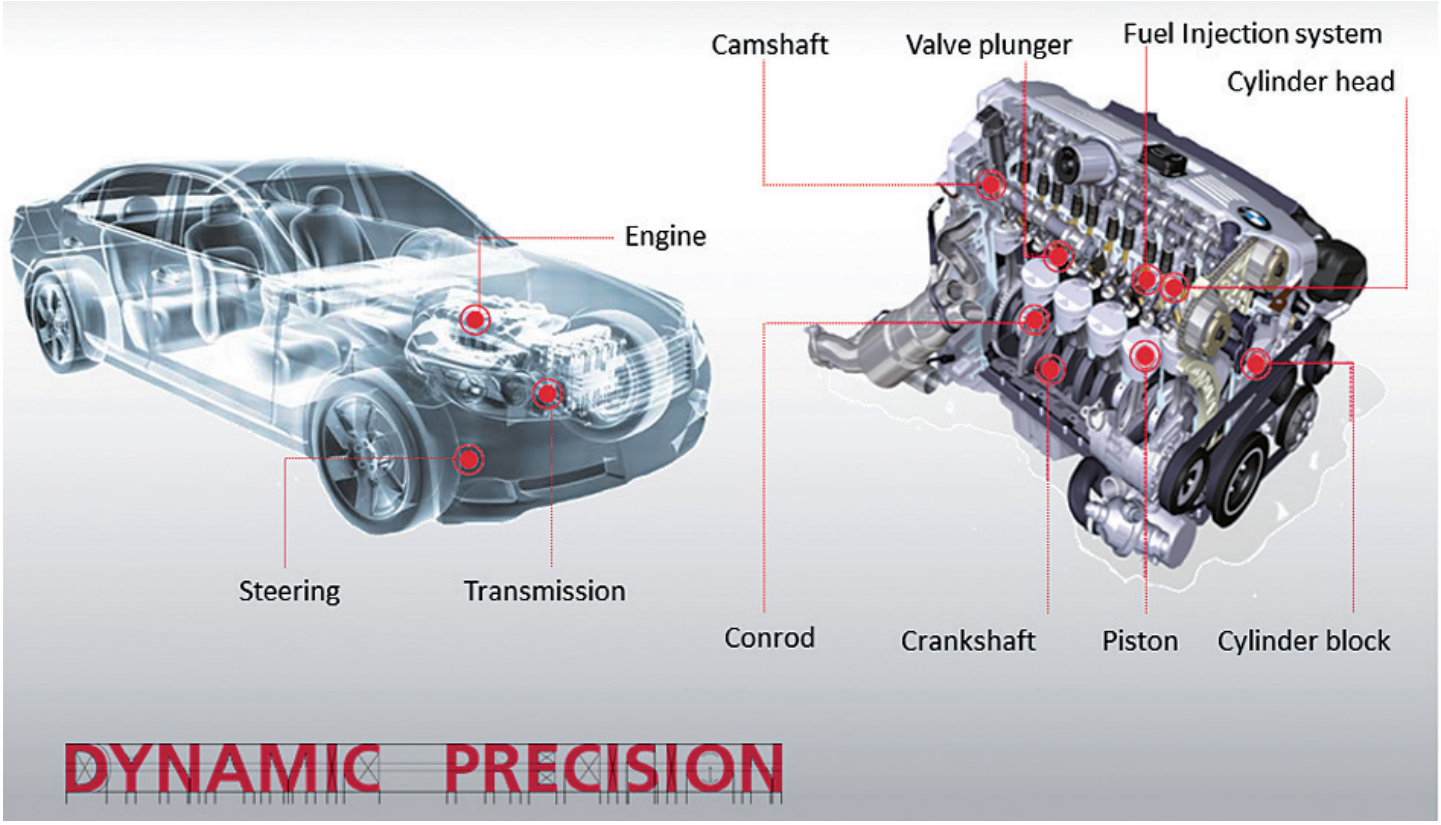
Precision and driving dynamics go hand in hand in automobiles. Drivability is dependent on precision-engineered and precision-measured components. In order to keep it this way, Mahr offers field-proven measurement technology that keeps pace with the major trends in the automotive industry.

For the foreseeable future, the internal combustion engine will remain the dominant drive system. For that reason, efforts are being made to significantly reduce the engine's fuel consumption and to meet stringent CO2 emissions targets.

An important element in the reduction of fuel consumption is downsizing. For example, the number of cylinders can be reduced from 4 to 3 or from 6 to 4. With turbocharging, a much higher performance per cylinder is possible nowadays. There are various options available here, including the conventional turbocharger, the twin-turbocharger or the sequential bi-turbocharger.

Another element in gasoline engines is direct fuel injection and active cylinder management. This refers to the activation or deactivation of cylinders. The camshaft is used to control these processes.

In addition to the design of new engine concepts, the focus is largely on the reduction of friction. Friction reduction affects the entire power train, from the engine and the transmission through to the tires. The aim is to make transmissions smaller, to increase the power transfer and to reduce noise. In addition, there are especially high demands on cylinder liners, bearings and gears, for example.

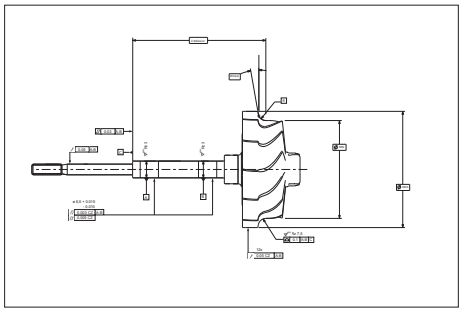


Alternative drives such as hybrid vehicles or electric vehicles with batteries or fuel cells are pushing forward the electronic power train. Currently, the automotive industry is taking on the challenge of manufacturing components such as batteries, fuel cells and electric motors to high quality standards and at a reasonable cost, in medium to high volumes.

Mahr offers metrology solutions for automotive parts. Whether it be axles, starters, brakes, seals, electric motors, gear parts, steering components, pulleys, wipers, seats, turbochargers or engines, Mahr has the solution to your metrology challenges. Mahr has a wide variety of solutions for engine parts such as injectors, engine blocks, camshafts, pistons, crankshafts, connecting rods, valves and cylinder heads.

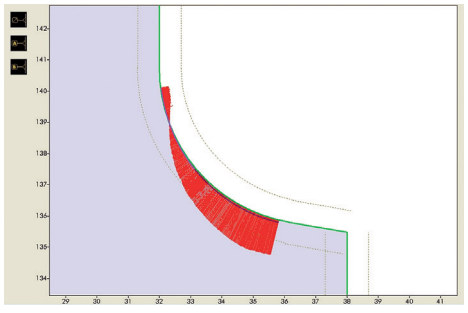
Mahr metrology solutions range from standard measuring instruments for the inspection room through to fully automatic measurements on the production line. In addition, Mahr covers the full range of parameters, including length, form, contour, gear tooth geometry and roughness.

Measuring Task



Measuring Solution

Documented Quality



Find more automotive industriy applications know-how on the Mahr website under www.mahr.com/automotve industry

THE APPLICATION EXPERT FOR MECHANICAL ENGINEERING

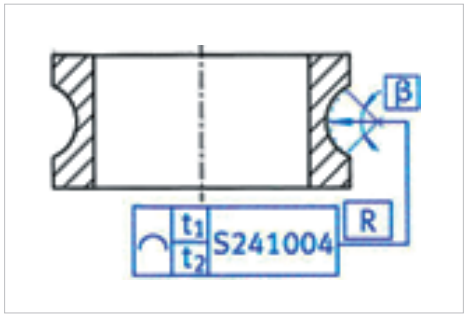
Precision and productivity go hand in hand in mechanical engineering. Proven Mahr metrology helps you to optimize production processes for precision parts in both low and high volumes. Mahr can provide the mechanical engineering industry with measurement solutions that are universal, convenient and cost-effective.

With innovative new techniques emerging in manufacturing processes such as turning, grinding, milling, drilling, honing, laser cutting and electrical discharge machining, the demands placed on dimensional metrology are growing all the time. Precision metrology from Mahr supports these developments with customized and application-specific solutions. From automated measuring systems with 100% inspection through to random individual testing, Mahr has the right solution for your production needs. These solutions offer budget-oriented quality assurance which delivers valuable competitive advantages, since quality is continuously improved as a result and production costs reduced.

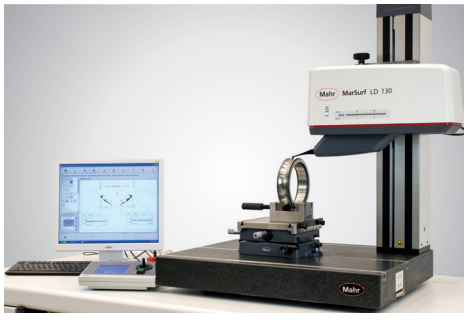
Individual customer solutions from Mahr include important factors such as life cycle cost (LCC), return on investment (ROI) and longer service intervals.

Mahr, the Application Expert, offers metrology solutions for parts used in mechanical engineering. Representative of this wide range of parts are bolts, seals, cans, transmissions, hydraulic components, bearings, pumps, compressors, pipes, shaving cutters, worm gears, cutters, hobs, shafts, gearing and gear wheels.

Measuring Task



Measuring Solution



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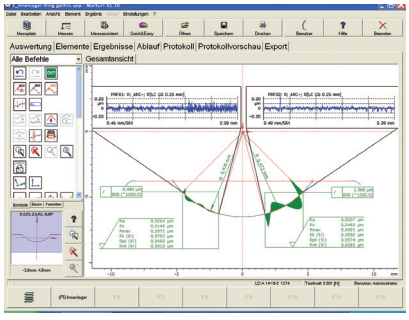


Find more mechanical engineering applications know-how on the Mahr website under www.mahr.com/mechanical-engineering

PRECISION HEALING

WITH METROLOGY FROM MAHR

MEASURING SOLUTIONS FOR MEDICAL TECHNOLOGY

THE APPLICATION EXPERT FOR THE MEDICAL INDUSTRY

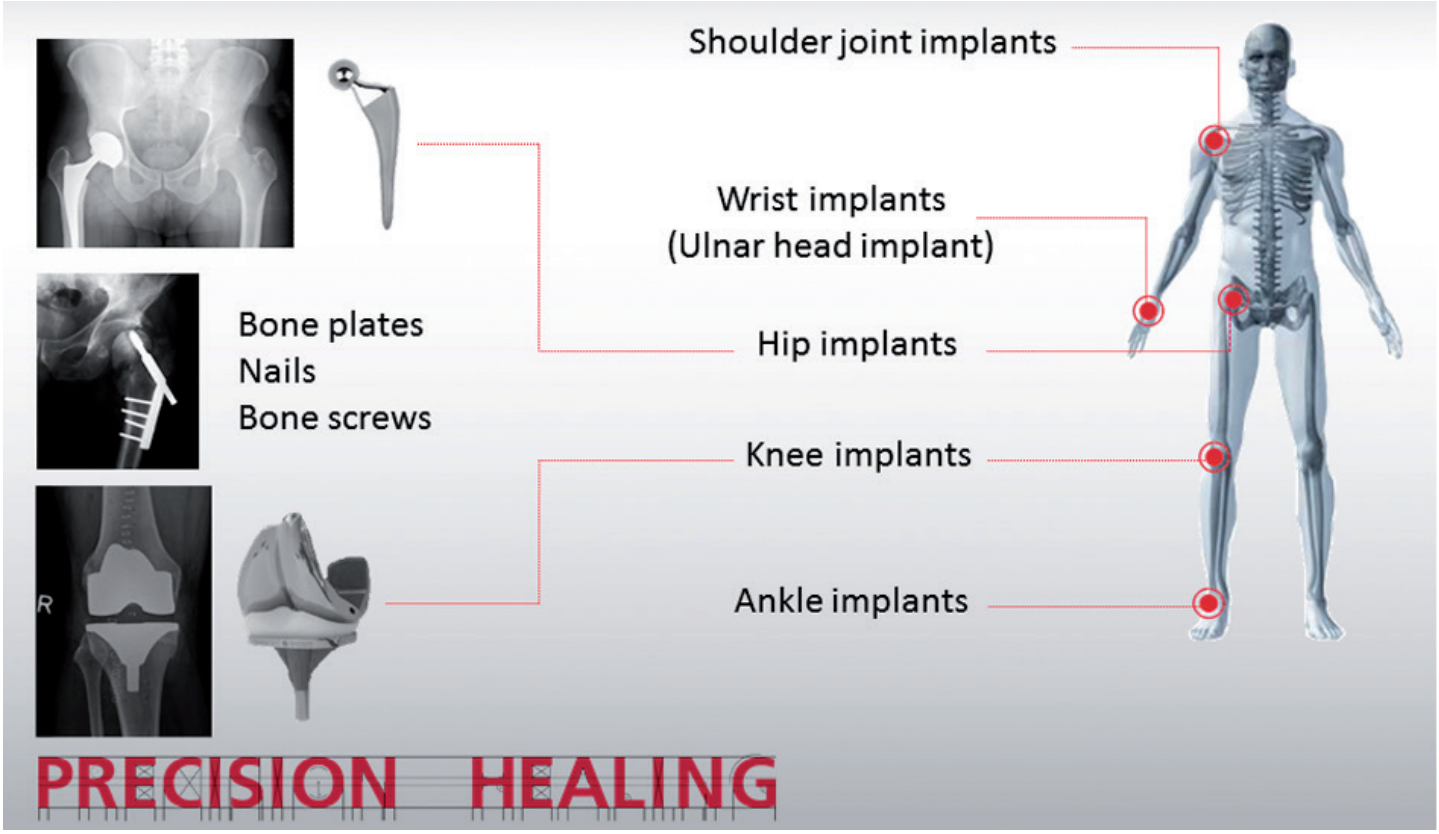
Precision promotes health. Precision-manufactured implants are easier to fit, cause fewer painful side-effects such as metal abrasion in day-to-day use, and have a longer service life. Mahr offers proven metrology to extend the quality assurance of medical parts.

Medical technology and metrology are two terms that are continually gaining in prominence, making an important contribution to improving healing outcomes and the recovery process. The use of alloplastic implants in surgical disciplines is on the rise. The essential objective is to give the patient freedom from pain and the most natural function possible. Directly associated with this is the need for biocompatibility and long-term functionality (high breaking resistance, low abrasion). New materials and material combinations help to improve these implant qualities, allowing optimized design and increased production efficiency.

For the patient, this continual improvement in quality means that further interventions, known as revision surgery, are only needed after many years and the implant can be retained for longer

To safeguard the characteristics that affect the quality of a product, the use of modern, innovative but also proven metrology is absolutely essential.

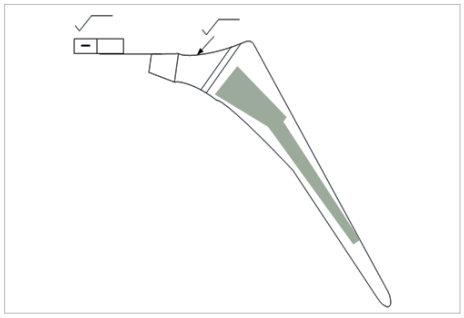
European standard EN ISO 21534 describes among other things the design review (part 7) and design features (part 5).



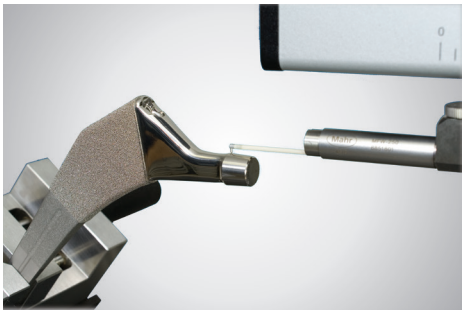
Follow the lead of many other implant manufacturers and use high-precision metrology from Mahr in your R&D department as well as in production monitoring to ensure the quality of your implants. Mahr metrology gives you detailed information for product optimization and allows you to document your quality control procedures, to 100% inspection.

You can also avoid expensive and unnecessary claims, right from the start. Mahr, the Application Expert, offers metrology solutions for parts used in medical technology, including medical screws, individual components of hip and knee joint implants, dental implants, pumps for precision metering, and thin cannulas.

Measuring Task



Measuring Solution



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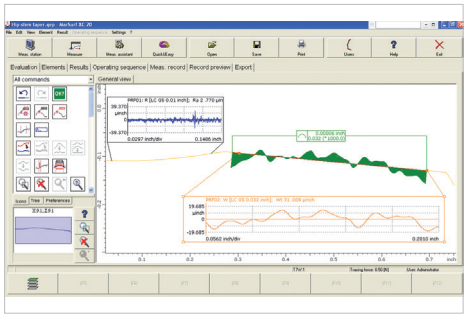


Find more medical techonology applications know-how on the Mahr website under www.mahr.com/medical-technology

PRECISION VISION

WITH METROLOGY FROM MAHR

MEASURING SOLUTIONS FOR THE OPTICS INDUSTRY

THE APPLICATION EXPERT FOR OPTICS

Precision for the correct beam path through lenses and lens systems is essential in order to focus the light and to achieve the desired luminous intensity.

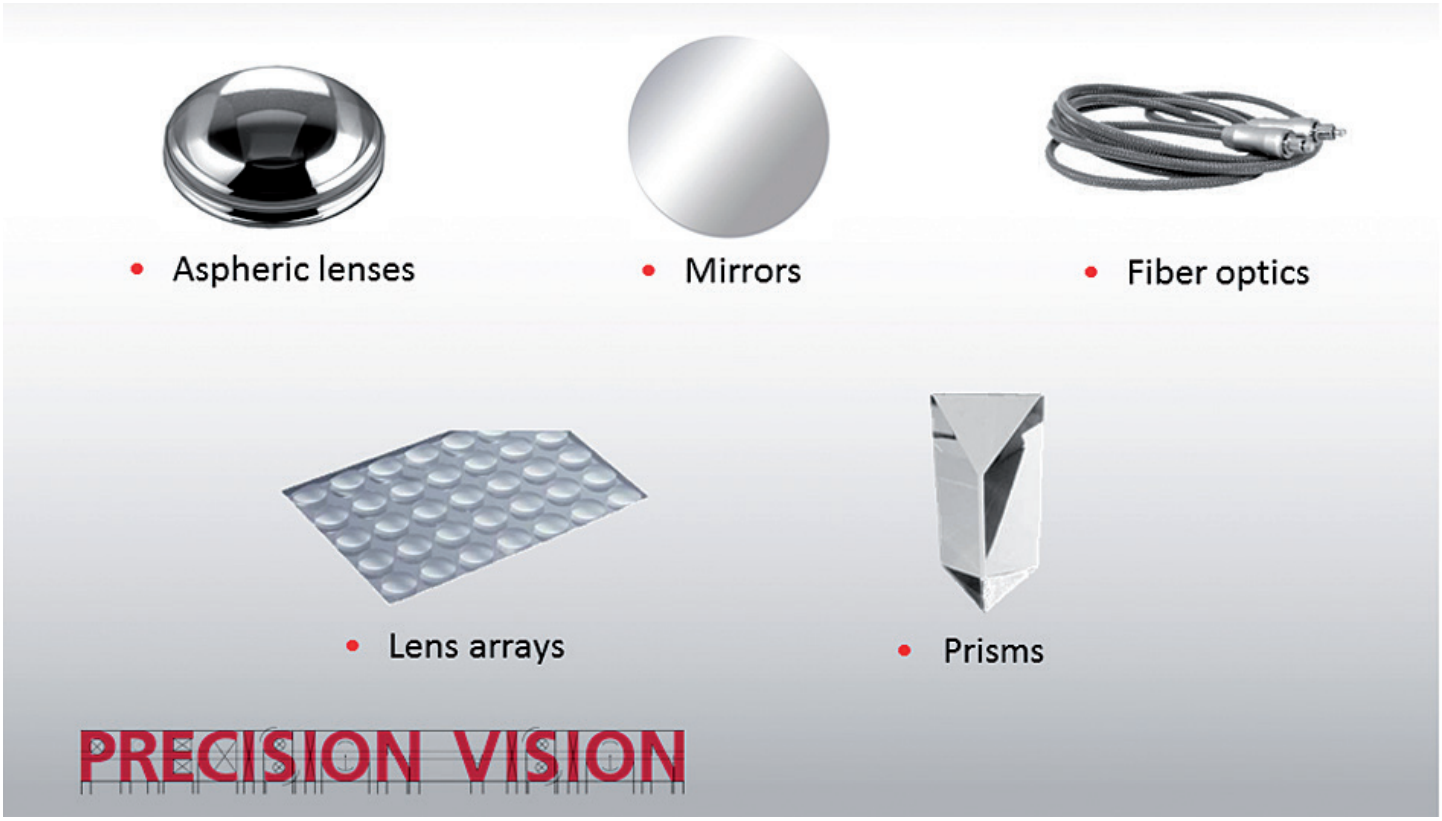
The constant development of optical components in conjunction with modern light sources such as lasers and LEDs, high-performance image processing software and the huge increase in computer storage capacity have opened the way for cost-effective technical solutions that just a few years ago would have been unthinkable.

Accompanying this development is the growing demand on metrology. Often the first quality testing of optical components such as lenses, diaphragms, prisms, mirrors, optical fibers or light sources occurs at an early stage of production.

Mahr has been working on the measurement of optical components for many years now. Lens measurement is a particular area of interest. Mahr, as a complete supplier of dimensional metrology, provides both the manufacturers of machining tools for lenses and the lens manufacturers themselves with customized solutions, from hand measuring tools for use directly on the machine to the inline measuring system MarSurf LD 130 Aspheric.

With optical systems such as zoom lenses, DVD drive lenses and mobile phone camera lenses, the aim is to design ever more compact systems that cost less to produce. So in addition to manufacturing conventional spherical lenses, the optical industry is increasingly moving towards aspherical lens shapes. The latest production techniques allow for all sorts of design possibilities as well as supporting the trend towards free-form surfaces and diffractive elements in optical components.

High-precision lenses are made by glass abrasion processes such as grinding, polishing or finishing. The optimiza-

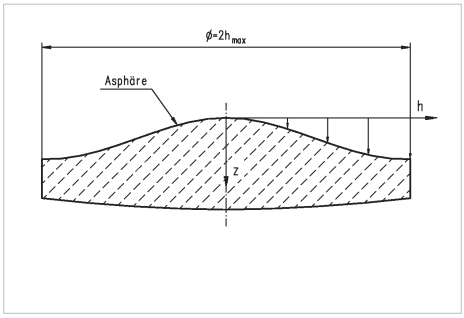


tion of this manufacturing process, with inline measurements, is an important starting point for reducing costs. Processes such as precision molding for producing high quality at relatively low cost or injection molding for manufacturing low-cost plastic lenses are used in the mass production of lenses. The quality of the tools used to make the lenses is the foundation for the quality of the products themselves. New geometries and increasing demands on the product quality also require new measurement techniques and measurement strategies.

Non-contact surface measuring systems that can detect any shape with a high degree of accuracy and evaluate it by metrological means provide the answer to the quality assurance problems of tomorrow.
Intensive research and decades of experience in industrial metrology combined with close collaboration with partners from science and industry provide the necessary foundation to support you with innovative products in the manufacture of optical components. Mahr metrology is ready for the challenges of the future.

Mahr, the Application Expert, offers metrology solutions for optical components such as spheres, aspheres, freeforms, mirrors, cylinder lenses, lens arrays and fiber optics.

Measuring Task



Measuring Solution

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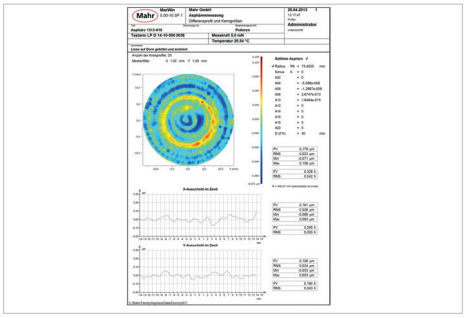


Find more optics industry applications know-how on the Mahr website under www.mahr.com/optics as well as a product video on www.mahr.com/mfu–200-aspheric–3d

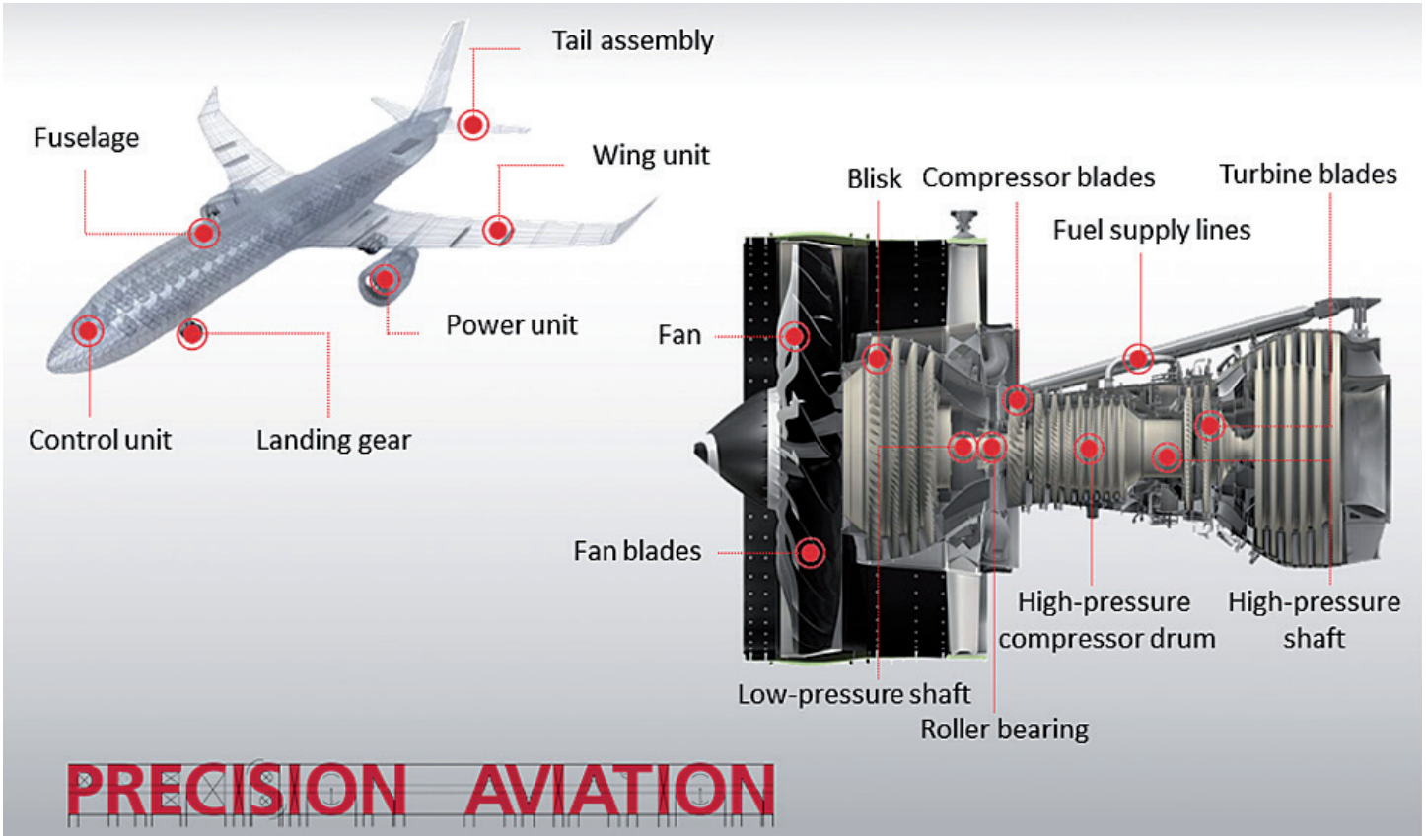
THE APPLICATION EXPERT FOR THE AEROSPACE INDUSTRY

Precision makes flying safe. Engines, wings, rudders, flaps, control systems, chassis, etc., must be in perfect working order during the fllight so as to guarantee the safe transport of passengers. Only precision-crafted components function reliably for hours and in the most diverse environmental conditions.

Global air traffiic is rapidly increasing. This means that the requirements for lower exhaust emissions and hence lower fuel consumption are rising all the time. In addition, people in built-up areas are becoming increasingly vocal in their demand for lower aircraft noise, and this in turn is having an impact on the noise emission of engines. In addition, suppliers are increasingly feeling the pressure of costs from major aircraft manufacturers.

In this trade-off between innovation and cost pressure, and given the high demands for reliability, metrology from Mahr provides solutions for R&D, measuring rooms and 100% inspection in manufacturing. During development, new lighter materials are increasingly being tested and implemented. Surface structures are carefully examined in order to minimize frictional resistance.

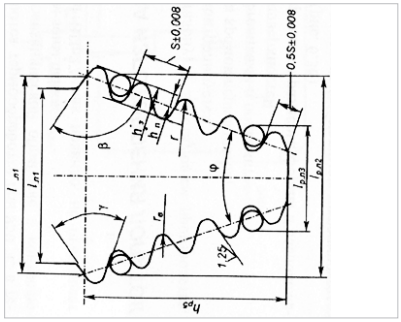
In manufacturing, the challenge is to deliver the high-quality components error-free to the subsequent processing or assembly step and to avoid costly rework. In addition to checking dimensional parameters, inspection for cracks and breakages is also vital. Optical measuring techniques and inspection methods can speed up quality assurance and make it independent of subjective assessments.



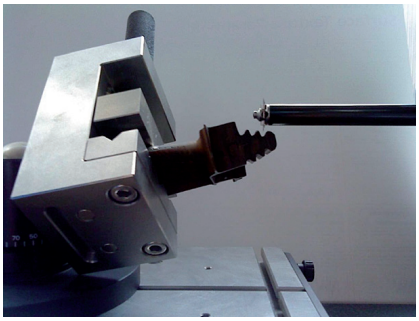
When the aircraft components are in use, the question of timely and reliable service quickly arises. Once again, Mahr offers appropriate measurement solutions to check parts for wear or damage and to establish whether they can remain in use.

Mahr, the Application Expert, offers metrology solutions for airplane components, including blisks, seals, disks, transmissions, hydraulic components, bearings, turbine blades, shafts and gear wheels.

Measuring Task



Measuring Solution



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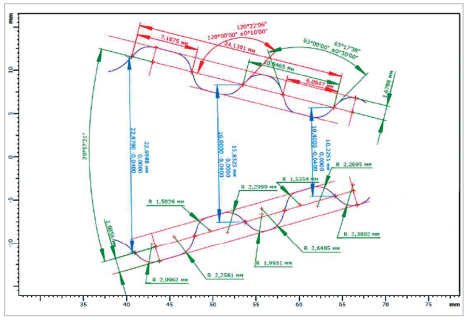


Find more aerospace industry applicationss know-how on the Mahr website under www.mahr.com/aerospace

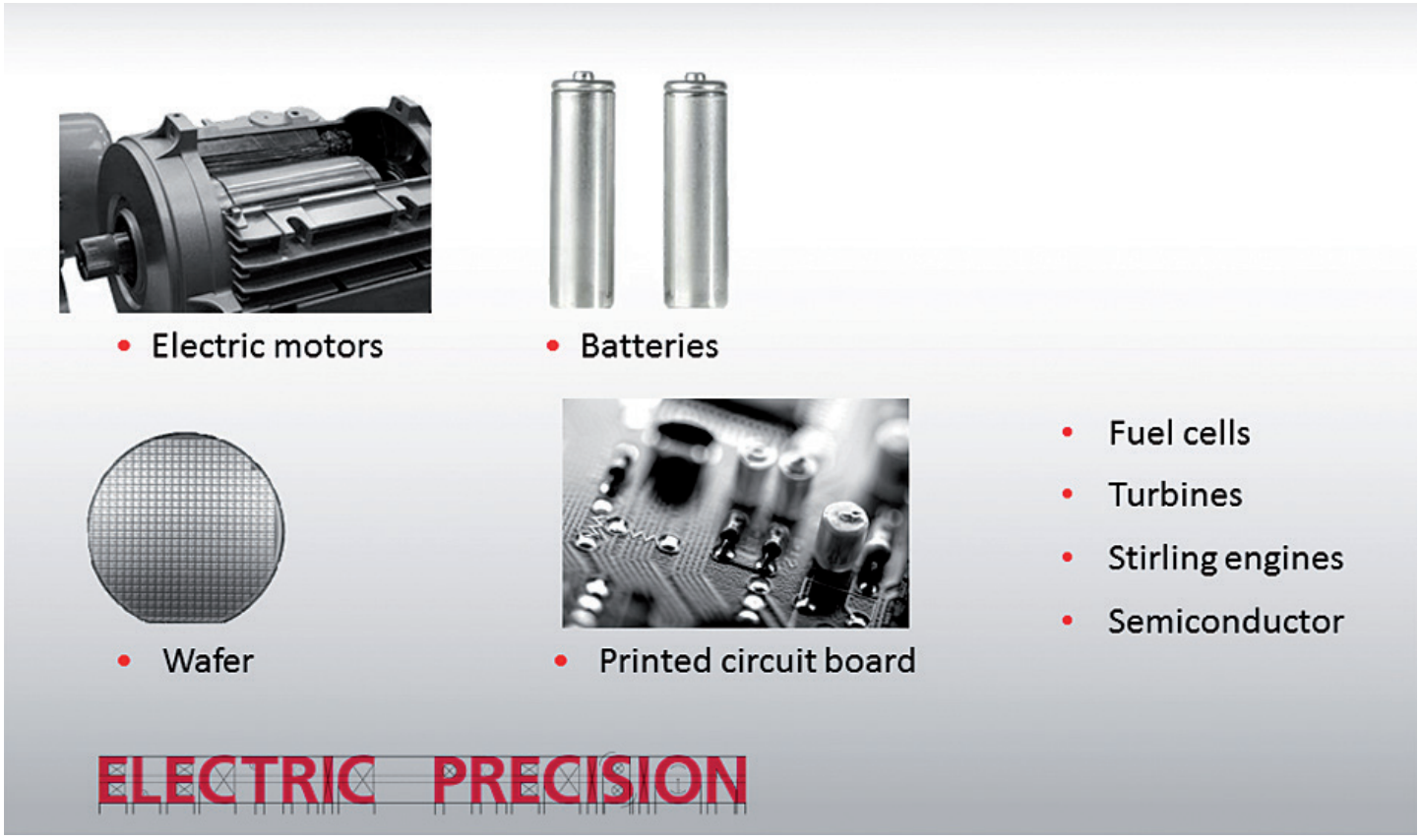
THE APPLICATION EXPERT FOR ELECTRICAL ENGINEERING

Precision ensures that electricity can flow and power devices. Precision in the nanometer range, as in semiconductors, and in the micrometer range, as in printed circuit boards, ensures the integrity of their electrical wiring and the implementation of their electrical function.

The electrical engineering industry is heavily influenced by the demand for energy efficiency. Reducing energy consumption is a major concern in all types of appliances and devices, including washing machines, dryers, refrigerators, dishwashers, consumer electronics and mobile phones. To reduce energy consumption, new materials are used, friction in mechanical components is reduced and controls are optimized. The optimization of energy efficiency, low noise and service life is the aim in electric motors. In addition to electronic commutation, this leads to the reduction of imbalance in electric motor parts.

Another trend is the miniaturization of devices and components. Examples are thinner laptops or mobile phones. This, in turn, requires smaller dimensions for electronic components and thinner multi-layered printed circuit boards. Specifically, the reduction of conductor widths and thicknesses as well as reliable production are becoming ever more challenging. In the field of electronic components, Moore's law has already resulted in 16 nm manufacturing processes, with 10 nm processes coming soon. These very small structural sizes present a challenge not only in terms of technical processes but also for metrology. Even the counter-movement "More with Moore" with process modules such as MEMS, high voltage, image sensors and integrated memory has already arrived at structural sizes of up to 55 nm.

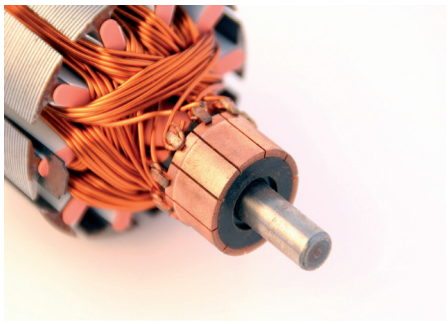
Novel energy storage systems such as fuel cells or lithium-ion batteries also place new demands on dimensional metrology.



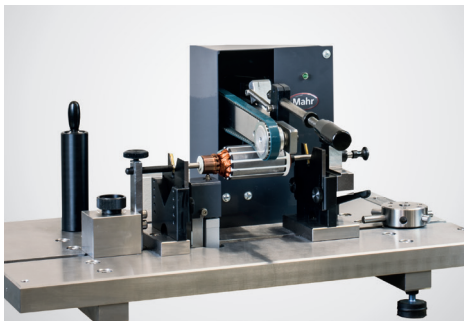
The manufacturing processes in electrical engineering are often high-volume processes. For quality assurance in manufacturing, 100% measurements or inspections are performed in many process steps. Process development and the development of components also require the use of dimensional metrology. Mahr offers proven measurement solutions for these requirements.

Mahr, the Application Expert, offers metrology techniques for the electrical engineering industry. Proven measurement solutions are available for the measurement and inspection of semiconductor structures on wafers and of printed circuit boards, electric motors, connectors, contacts, batteries and fuel cells.

Measuring Task



Measuring Solution



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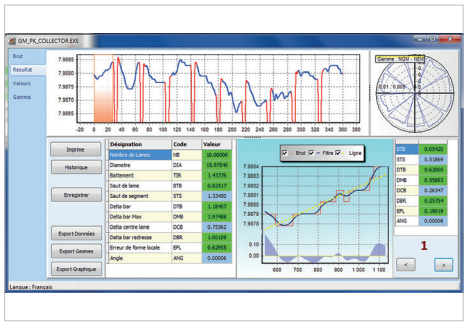


Find more electrical engineering industry applications know-how on the Mahr website under www.mahr.com/electrical-engineering

DIMENSIONAL METROLOGY

MarCal 24
Calipers

Digimar 74
Height Measuring Instruments

Micromar 92
Micrometers

MarTest 148
Test Indicators / 3D Touch Probes

MarCator 174
Digital / Dial Indicators

Millimess 240
Digital / Dial Comparators

Millimar 266
Electrical Length Measuring Instruments / Air Gaging

MarStand 344
Indicator Stands / Comparator Stands

MaraMeter 370
Indicating Measuring Instruments

Multimar 472
Universal Measuring Instruments

MarConnect 506
Interfaces / Data Processing

Mahr
MARFORM
MMQ 400
Mahr

DIMENSIONAL METROLOGY

MarTool 520
Measuring and Inspection Equipment

MarGage 530
Standards, Gages and Gage Blocks

Precimar 578
Precision Length Metrology

MarSurf 592
Surface Metrology

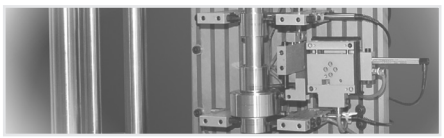
MarForm 620
Form Metrology

MarGear 634
Gear Metrology

MarOpto 646
Measuring Instruments for the Optical Industry

MarVision 654
Optical Metrology

MarShaft 672
Shaft Metrology



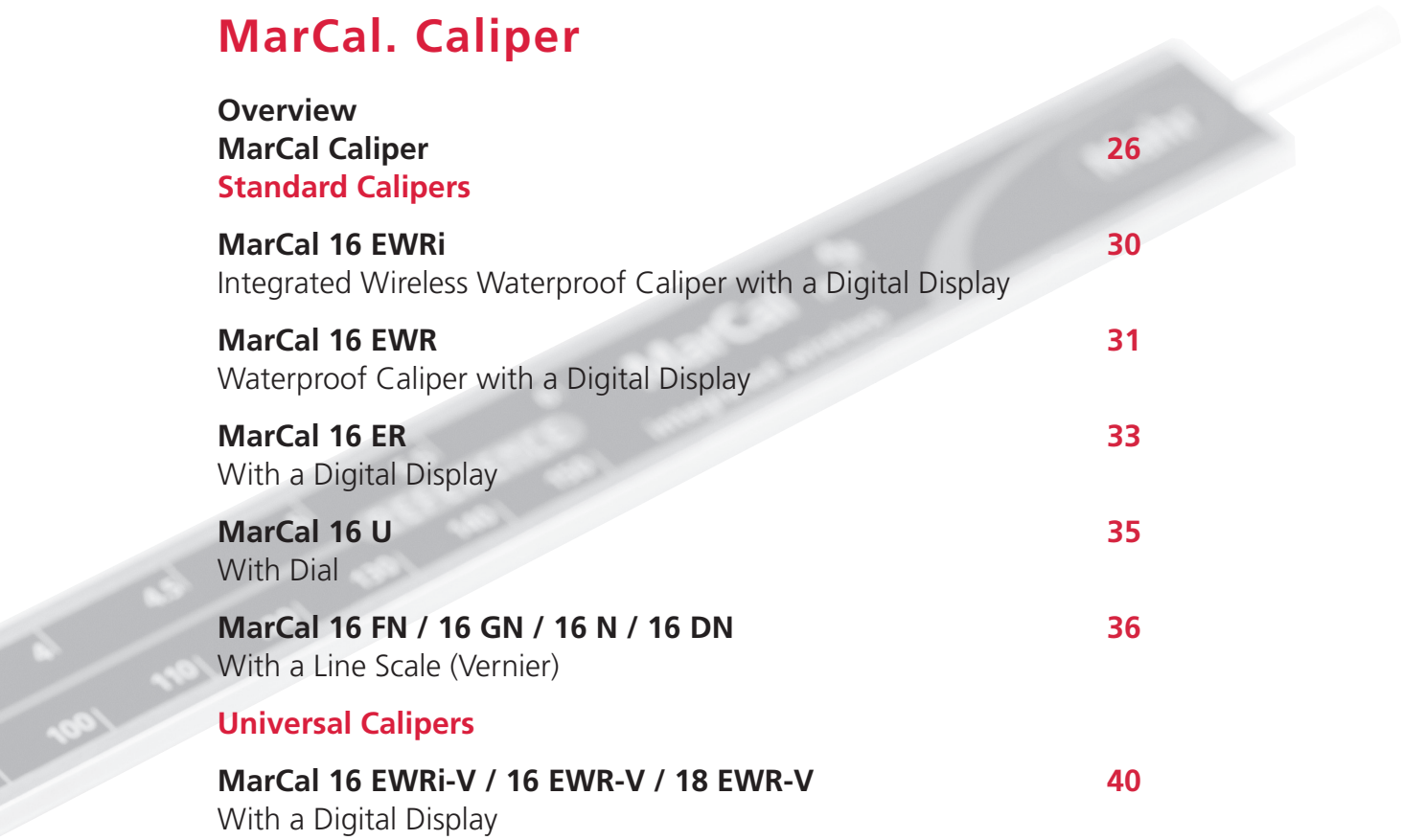
MarSolution 682
Customer Specifical Metrology

Service 690

FOR SIMPLE MEASUREMENT THE RULE OF THUMB IS SUFFICIENT.
FOR THE REST THERE IS MARCAL.

High-quality calipers are some of the most important measuring instruments in dimensional metrology because they are both versatile and easy to use. The MarCal series from Mahr is no exception. Simple to operate, with a large, high-contrast display and fast and uncomplicated data transmission, the ER digital caliper series meets all the requirements of modern metrology. The latest generation of waterproof digital calipers is the MarCal 16 EWRi, which can be used in even the most difficult workshop conditions. Integrated Wireless, the built-in, energy-efficient wireless system, is the ideal solution for transmitting measured values. In addition, all Mahr calipers have a high-precision slide movement and both slide and rail are made of hardened stainless steel.

MarCal. Caliper



Overview

MarCal Caliper 26

Standard Calipers

MarCal 16 EWRi 30
Integrated Wireless Waterproof Caliper with a Digital Display

MarCal 16 EWR 31
Waterproof Caliper with a Digital Display

MarCal 16 ER 33
With a Digital Display

MarCal 16 U 35
With Dial

MarCal 16 FN / 16 GN / 16 N / 16 DN 36
With a Line Scale (Vernier)

Universal Calipers

MarCal 16 EWRi-V / 16 EWR-V / 18 EWR-V 40
With a Digital Display

Special Calipers 43
Waterproof Caliper in special design

Workshop Calipers

MarCal 18 EWR / 18 ESA 57
With a Digital Display

MarCal 18 NA / 18 N / 18 DN 60
With a Line Scale (Vernier)

Digital Deph Gage

MarCal 30 EWRi 65
Waterproof Caliper with a Digital Display

MarCal 30 EWR / 30 EWN / 30 EWRi-D / 30 EWR-D / 30 EWRi-N / 30 EWR-N 66
With a Digital Display

MarCal 30 N / 30 NH / 30 ND 70
With a Line Scale (Vernier)

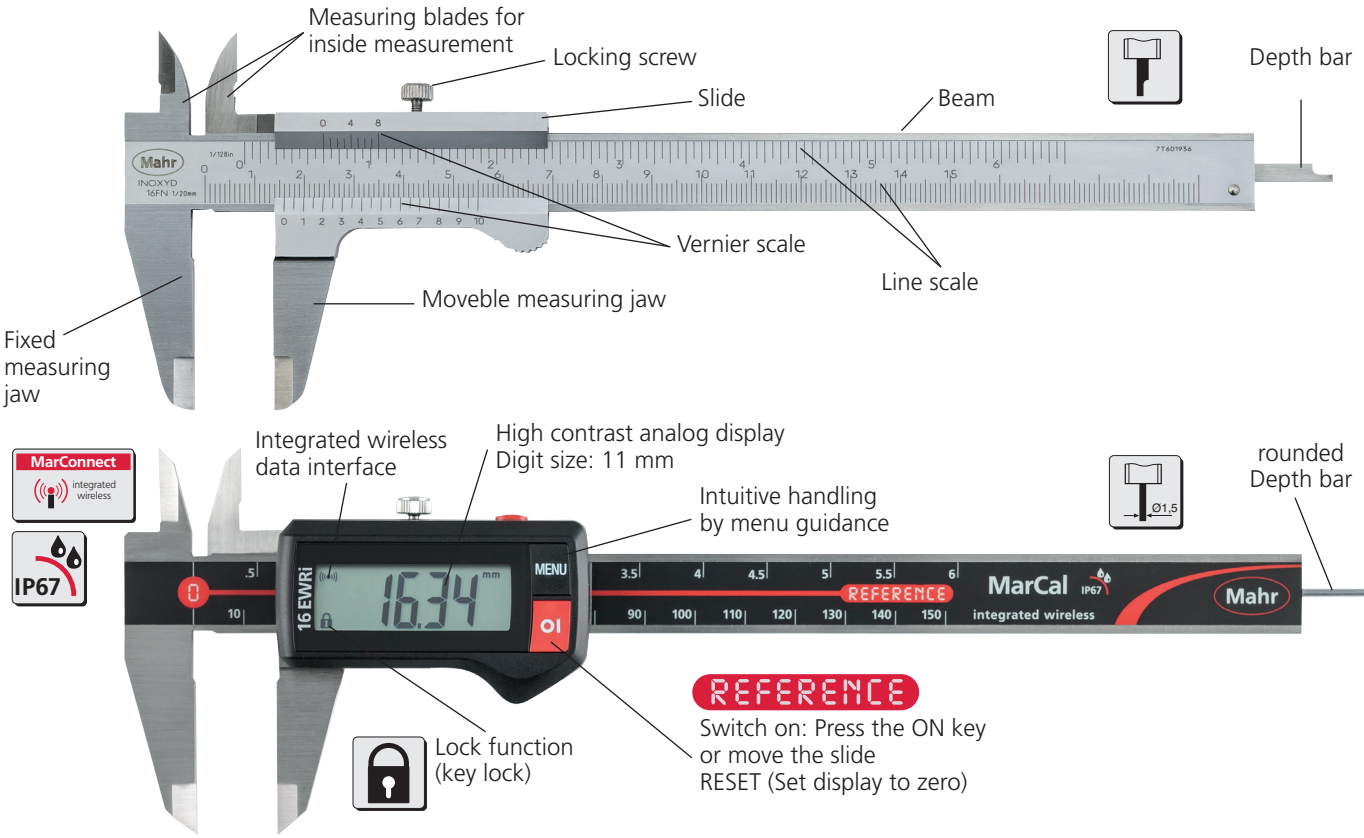
Linear Machine Scales

MarCal 31 EW 73
With a Digital Display

MarCal. Calipers

OVERVIEW

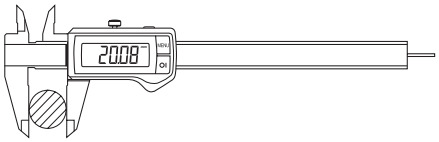
MarCal - Design Features



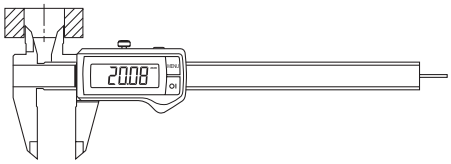
MarCal - Types on measurement

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

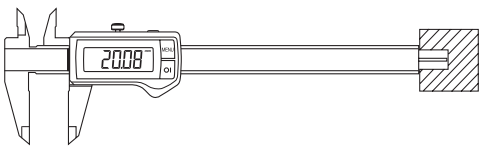
a) Outside measurement



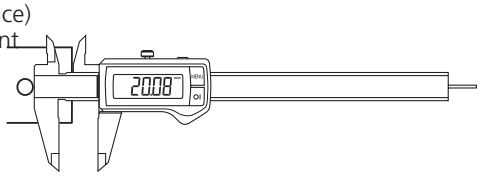
b) Inside measurement



c) Depth measurement



d) Step (Distance) measurement



Error limits G according to DIN 862

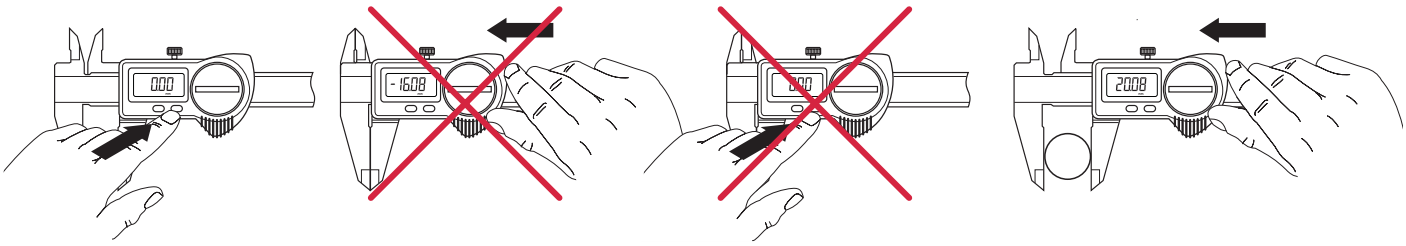
Measuring length	Error limits *G* in µm		
	Scale interval and/or vernier interval		Resolution
mm	0,1 and 0,05	0,02	0,01
50	50	20	20
100			
200		30	30
300			
400	60		
500	70		
600	80		
700	90	40	40
800	100		
900	110		
1000	120		
1200	140	50	—
1400	160	60	
1600	180		
1800	200		
2000	220		

MarCal - The innovative Reference-System

Just set once to zero
All Mahr digital calipers with this REFERENCE logo are equipped with the innovative Reference System. The zero position just 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



REFERENCE - System

① Switch ON ② Results of measurement

Press the ON key or move the slide

IP-Protection classes

First digit is the degree of protection according to IEC 60529

Protection 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)

Protection against wet conditions (fluids)

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

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

MarCal. The new Generation

WATERPROOF DIGITAL CALIPERS WITH THE REFERENCE SYSTEM AND INTEGRATED WIRELESS

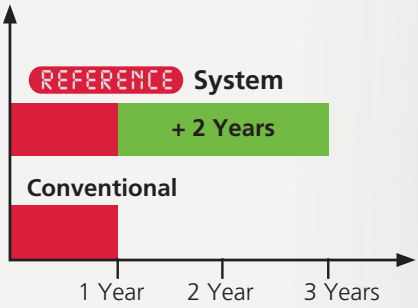
Security due to the Reference-Lock function

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

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

Battery service life is 3 years

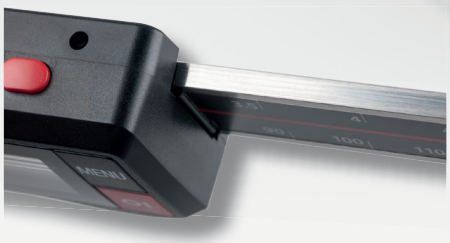
The new Reference System is extremely energy efficient because of its standby mode feature; almost no power is required, thus **extending the life of the battery up to 3 years*.**



** When Integrated Wireless is deactivated*

Superior quality of the guideways

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



Surface of the guideway

Mahr
Lapped guideway

Competitor A
Ground guideway

Competitor B
Ground guideway

MarConnect Integrated Wireless

Wireless data transmission for the price of a data cable. 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 in the digital indicator's display The message will show whether the sent data has been transferred correctly, and/or whether you are in the reception range of the i-Stick.

Ergonomic Design

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

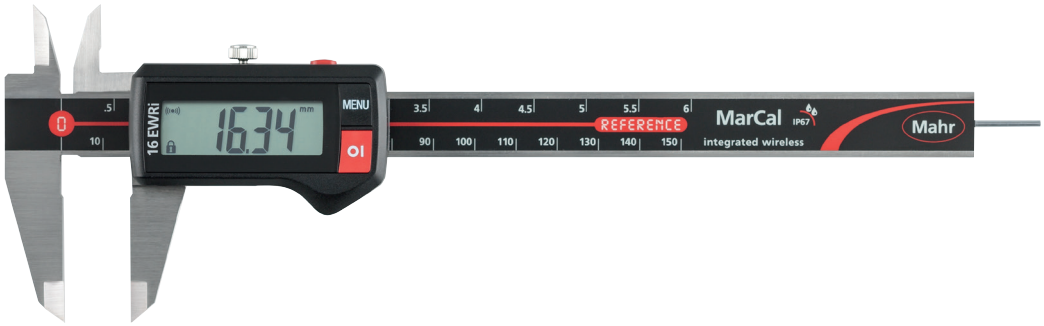
The high-contrast display with 11 mm sized digits enables accurate, fatigue-free reading of the measurement results.

Excellent resistance against dust, coolant and lubricants

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

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

Digital Caliper MarCal 16 EWRi



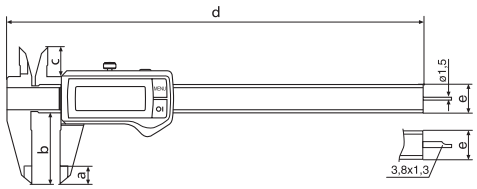
Functions:
- ON/OFF
- AUTO-ON / OFF
- HOLD (storage of measured values)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- Reversal of counting direction
- mm/inch
- LOCK function (key lock)
- DATA (data transmission)

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0,5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

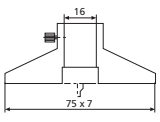
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103400	16 EWRi	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round	
4103401	16 EWRi	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round	•
4103402	16 EWRi	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	
4103403	16 EWRi	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•
4103404	16 EWRi	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	
4103405	16 EWRi	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•
4103406	16 EWRi	0 –300	0 –12"	0,01 /0005"	0,04	.0015"	Factory standard		
4103407	16 EWRi	0 –300	0 –12"	0,01 / .0005"	0,04	.0015"	Factory standard		•

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



Accessories

Order no.	Product description	Product type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102220	Receiver	i-Stick
4102520	Battery 3 V, CR 2032	



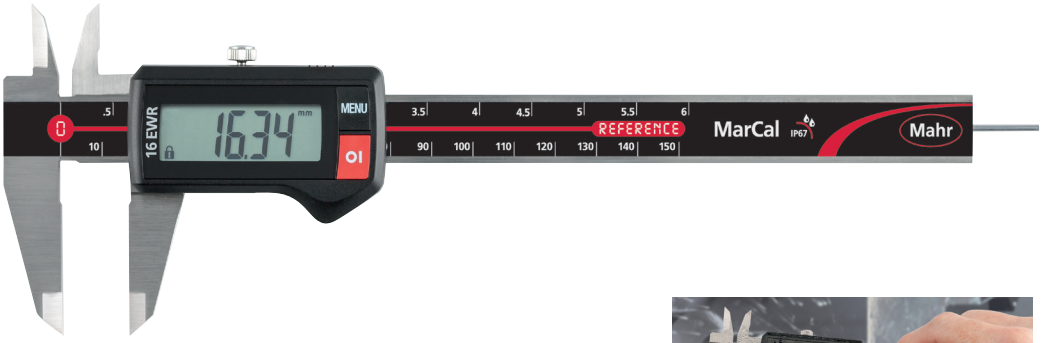
16 Em

i-Stick

Digital Caliper MarCal 16 EWR

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)

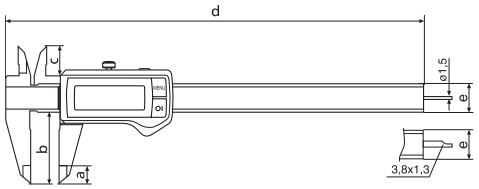
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Digit height:** 11 mm
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case



Technical Data

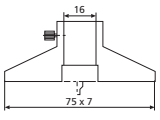
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103300	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	DIN 862	round	
4103301	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	DIN 862	round	•
4103302	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	
4103303	16 EWR	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•

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



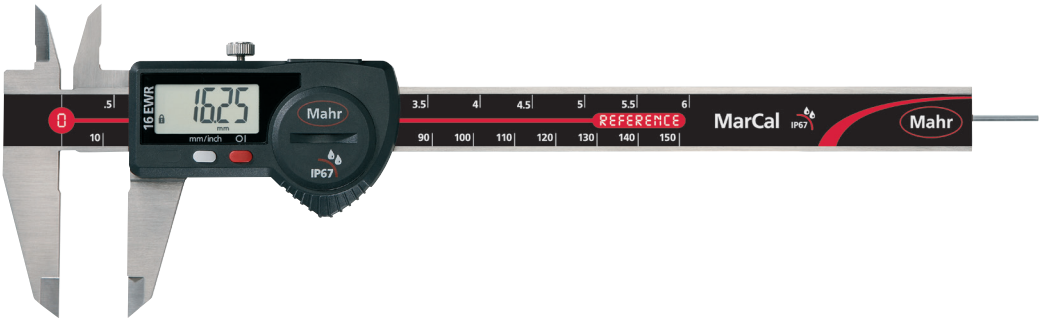
Accessories

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



16 Em

Digital Caliper MarCal 16 EWR



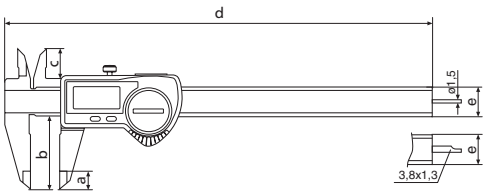
Functions:
- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)
- DATA (Data transmission via connection cable)

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

Technical Data

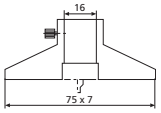
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103064	16 EWR	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round	
4103065	16 EWR	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round	•
4103066	16 EWR	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	
4103067	16 EWR	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•
4103068	16 EWR	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	
4103069	16 EWR	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•
4103070	16 EWR	0 –300	0 –12"	0,01 / .0005"	0,04	.0015"	Factory standard		
4103071	16 EWR	0 –300	0 –12"	0,01 / .0005"	0,04	.0015"	Factory standard		•

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



Accessories

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

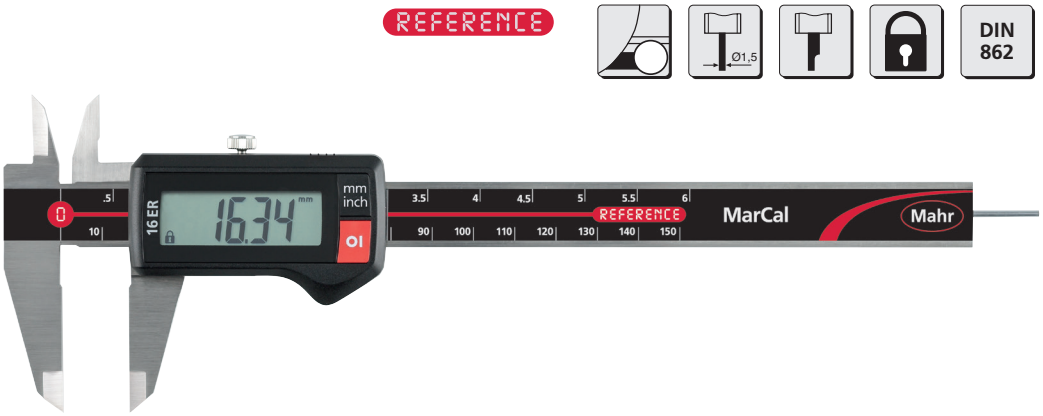


16 Em

Digital Caliper MarCal 16 ER

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

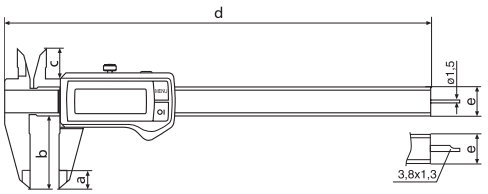
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Dirt wipers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



Technical Data

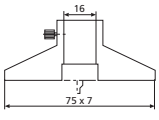
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103010	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	DIN 862	round	
4103011	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	DIN 862	round	•
4103012	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	
4103013	16 ER	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•

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



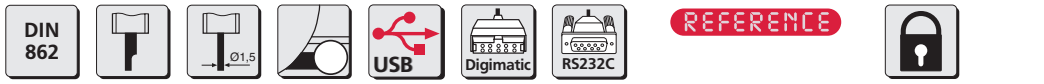
Accessories

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



16 Em

Digital Caliper MarCal 16 ER



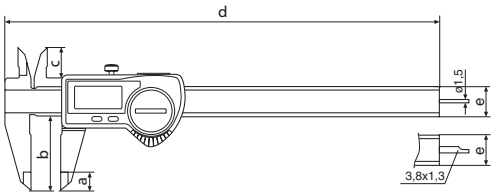
Functions:
- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)
- DATA (Data transmission via connection cable)

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** none
- **Scope of delivery:** Instruction manual, Battery, Case

Technical Data

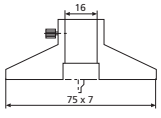
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod	Friction wheel
		mm	inch	mm/inch	mm	inch			
4103014	16 ER	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round	
4103015	16 ER	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round	•
4103016	16 ER	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	
4103017	16 ER	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•
4103018	16 ER	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	
4103019	16 ER	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•
4103020	16 ER	0 –300	0 –12"	0,01 / .0005"	0,04	.0015"	Factory standard		
4103021	16 ER	0 –300	0 –12"	0,01 / .0005"	0,04	.0015"	Factory standard		•

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



Accessories

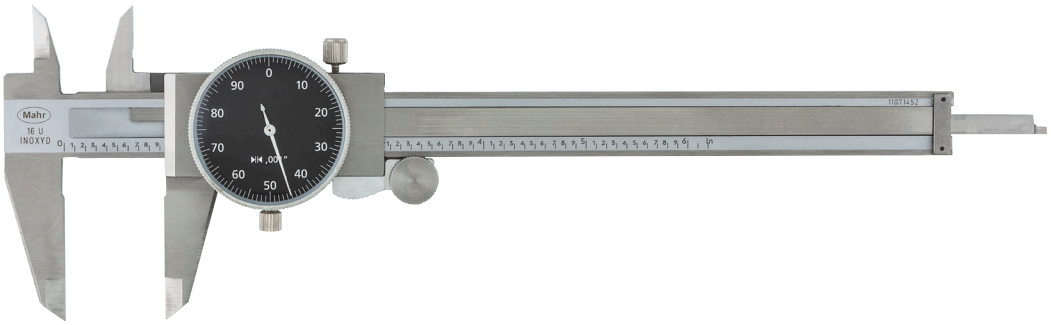
Order no.	Product description	Product type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd



16 Em

Dial Caliper MarCal 16 U

- Large, high contrast dial face
- 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
- **Scope of delivery:** Case



Technical Data

Order-no.		4107005	4107107	4107900
Product type			16 U	
Measuring range	mm		0 – 150	
Measuring range	inch			0 – 6"
Graduation value	mm	0,01	0,02	
Graduation value	inch			.0001"
Range per rev.	inch			.100"
Range per rev.	mm	1	2	
Error limit	mm		0,03	
Error limit	inch			.0012"
Standard			DIN 862	Factory standard
Dial color			white	black
Depth Rod			rectangular	
Friction wheel			•	

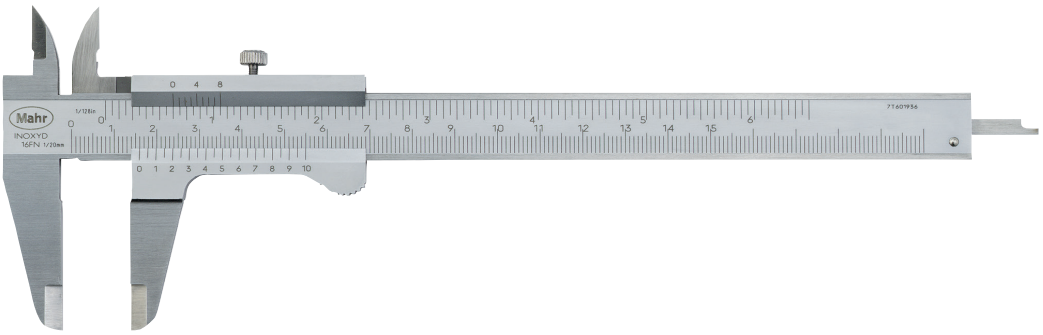
Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4107005	10	40	16,5	234	16
4107900	10	40	16,5	234	16
4107107	10	40	16,5	234	16

Accessories

Order no.	Product description	Product type
4100302	Case for measuring range 150 mm	
4102020	Depth bridge (75 x 7 mm)	16 Em

Caliper with analog display MarCal 16 FN

DIN 862

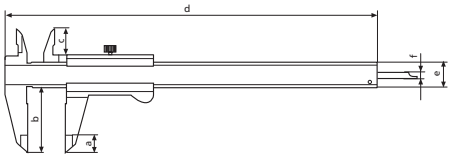


- Vernier and main scale have a satin chrome finish for glare free reading
- Locking screw above
- Measuring surfaces made of steel
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Raised guideways for the protection of the scale
- **Scope of delivery:** Thread table, Case

Technical Data

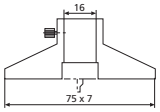
Order no.	Product type	Measuring range	Measuring range	Readings	Vernier value	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm	inch	mm	inch		
4100400	16 FN	0 –150	0 –6"	0,05	1/128"	0,05	.002"	DIN 862	rectangular
4100401	16 FN	0 –200	0 –8"	0,05	1/128"	0,05	.002"	DIN 862	rectangular
4100402	16 FN	0 –300	0 –12"	0,05	1/128"	0,05	.002"	DIN 862	rectangular
4100420	16 FN	0 –150		0,05		0,05		DIN 862	rectangular
4100421	16 FN	0 –200		0,05		0,05		DIN 862	rectangular
4100422	16 FN	0 –300		0,05		0,05		DIN 862	rectangular

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



Accessories

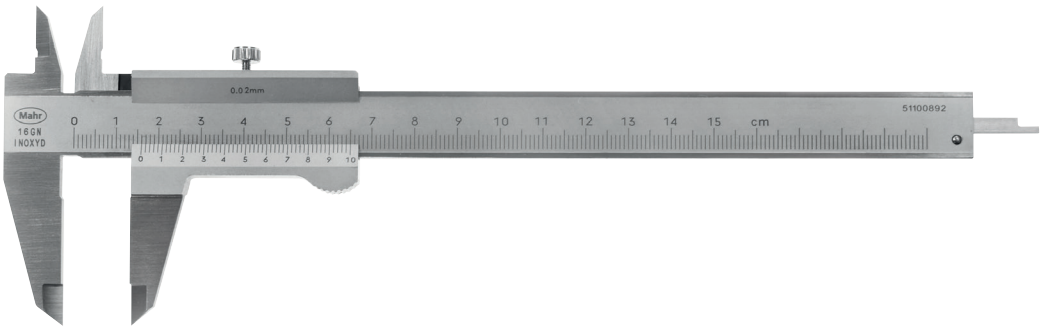
Order no.	Product description	Product type
4100302	Case for measuring range 150 mm	
4102020	Depth bridge (75 x 7 mm)	16 Em



16 Em

Caliper with analog display MarCal 16 GN

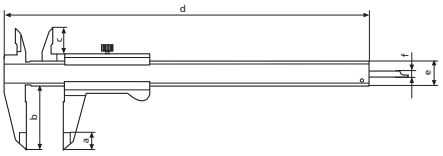
- Vernier and main scale have a satin chrome finish for glare free reading
- Locking screw above
- Measuring surfaces made of steel
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Raised guideways for the protection of the scale
- **Scope of delivery:** Thread table, Case



Technical Data

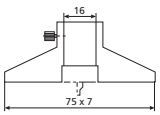
Order no.	Product type	Measuring range	Measuring range	Readings	Vernier value	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm	inch	mm	inch		
4100650	16 GN	0 – 150		0,02		0,05		Factory standard	rectangular
4100651	16 GN	0 – 200		0,02		0,05		Factory standard	rectangular
4100652	16 GN	0 – 300		0,02		0,05		Factory standard	rectangular
4100671	16 GN	0 – 200	0 – 8″	0,02	.001″	0,05	.002″	Factory standard	rectangular
4100672	16 GN	0 – 300	0 – 12″	0,02	.001″	0,05	.002″	Factory standard	rectangular

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4100650	10	40	16	228	16	3,8
4100651	14	50	19	290	17	3,8
4100652	16	64	23	404	20	4,8
4100671	14	50	19	290	17	3,8
4100672	16	64	23	404	20	4,8



Accessories

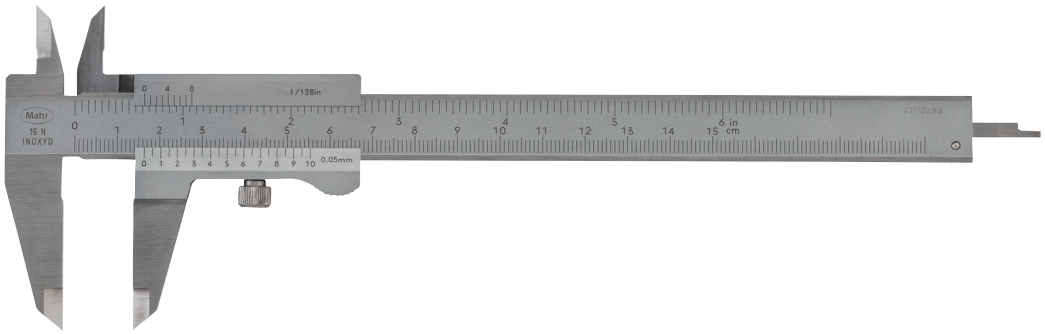
Order no.	Product description	Product type
4100302	Case for measuring range 150 mm	
4102020	Depth bridge (75 x 7 mm)	16 Em



16 Em

Caliper with analog display MarCal 16 N

DIN 862

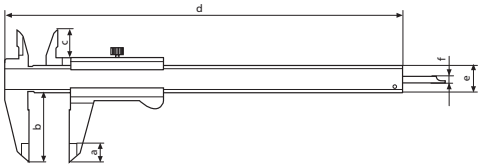


- Vernier and main scale have a satin chrome finish for glare free reading
- Locking screw below
- Measuring surfaces made of steel
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- **Scope of delivery:** Thread table, Case

Technical Data

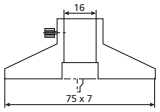
Order no.	Product type	Measuring range	Measuring range	Readings	Vernier value	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm	inch	mm	inch		
4100500	16 N	0 –150	0 –6"	0,05	1/128"	0,05	.002"	DIN 862	rectangular

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4100500	10	40	16	228	16	3,8



Accessories

Order no.	Product description	Product type
4100302	Case for measuring range 150 mm	
4102020	Depth bridge (75 x 7 mm)	16 Em

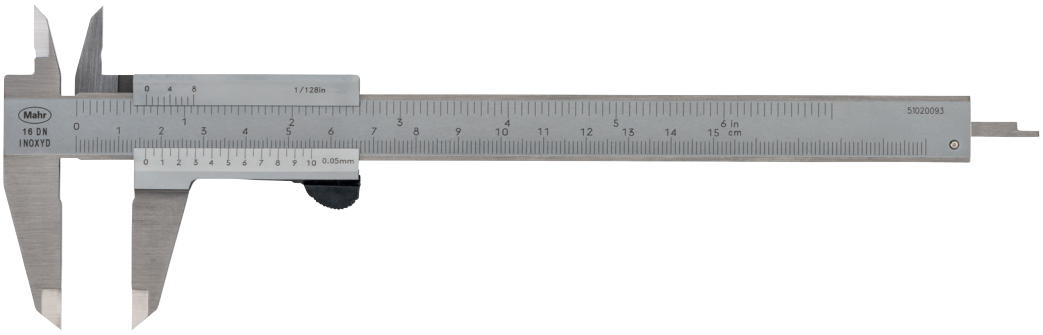


16 Em

Caliper with analog display MarCal 16 DN

DIN 862

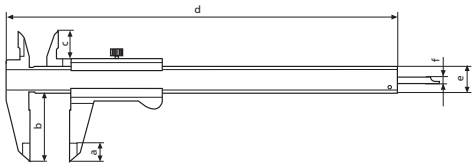
- Vernier and main scale have a satin chrome finish for glare free reading
- Thumb clamp
- Measuring surfaces made of steel
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Raised guideways for the protection of the scale
- **Scope of delivery:** Thread table, Case



Technical Data

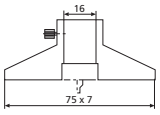
Order no.	Product type	Measuring range	Measuring range	Readings	Vernier value	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm	inch	mm	inch		
4100600	16 DN	0 –150	0 –6“	0,05	1/128“	0,05	.002“	DIN 862	rectangular

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4100600	10	40	16	228	16	3,8



Accessories

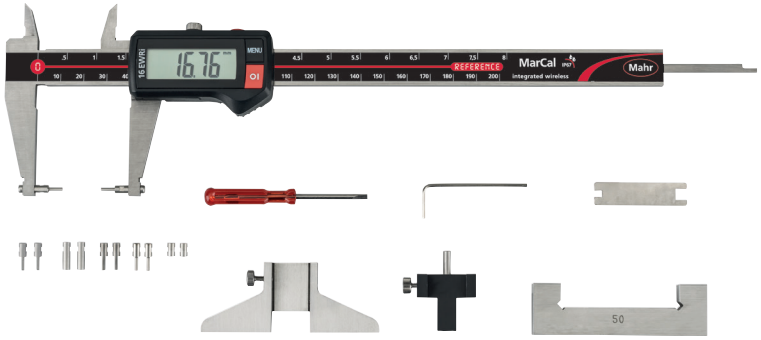
Order no.	Product description	Product type
4100302	Case for measuring range 150 mm	
4102020	Depth bridge (75 x 7 mm)	16 Em



16 Em

Digital universal caliper MarCal 16 EWRi-V

IP67 | DIN 862 | REFERENCE | MarConnect integrated wireless



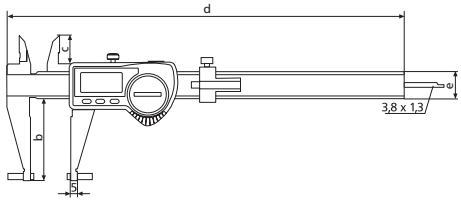
Application:

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

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod	Incl. accessories
		mm	inch	mm/inch	mm	inch			
4118907	16 EWRi-V	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•

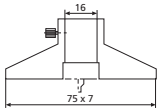
Order no.	b	c	d	e
	mm	mm	mm	mm
4118907	48	16,5	285	16



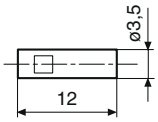
Accessories

Order no.	Product description	Product type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102220	Receiver	i-Stick
4102520	Battery 3 V, CR 2032	
4118810	Anvil for outside measurement (3,5 x 12 mm)	16 Eea 1
4118811	Anvil for outside measurement (1,5 x 6 mm)	16 Eea 2
4118812	Anvil for outside measurement (3,5 x 6 mm)	16 Eea 3
4118813	Anvil for inside measurement (3,5 x 6 mm)	16 Eei 1
4118814	Anvil for inside measurement (1,5 x 6 mm)	16 Eei 2
4118815	Anvil for inside measurement (3,5 x 6 mm)	16 Eei 3
4118816	Anvil for inside measurement (4 x 2,5 mm)	16 Eei 4
4118817	Setting Gage for inside measurement (50 mm)	16 Eel
4118818	Measuring Force Device	16 Ec
4118819	Mounting Attachment for thread anvils 844 TG/844Tr and ball anvils 844 Tk	16 Eab
4879602	Screws M2x8	

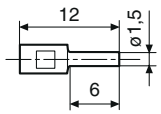
i-Stick



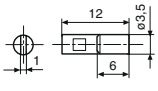
16 Em



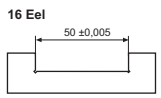
16 Eea 1



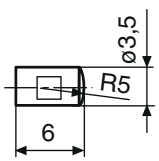
16 Eea 2



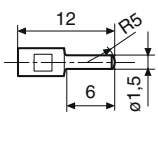
16 Eea 3



16 Eel



16 Eei 1



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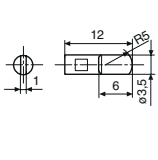
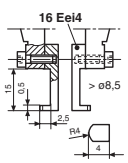
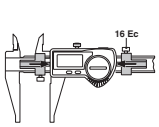


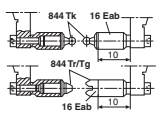
16 Eei 3



16 Eei 4



16 Ec



16 Eab

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

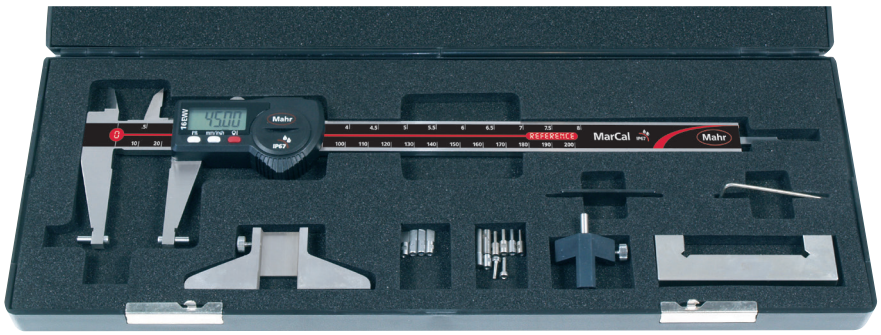
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0,5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case, Setting gage for inside measurement 16 Eel, Measuring force device 16 Ec, Depth Measuring Bridge 16 Em, Anvils for outside measurement 16 Eea 1–3, Anvils for inside measurement 16Eei 1–3

Digital universal caliper MarCal 16 EWR-V

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)

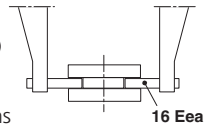
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Step measuring function
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent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

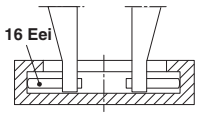
REFERENCE | DIN 862 | IP67 | USB | RS232C | Digimatic



Application:

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

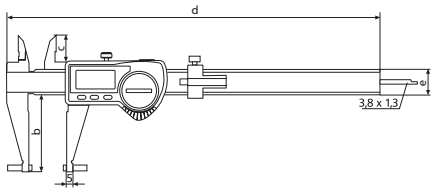




Technical Data

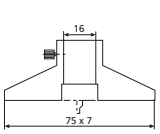
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod	Incl. accessories
		mm	inch	mm/inch	mm	inch			
4118807	16 EWR-V	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	•
4118808	16 EWR-V	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	DIN 862	rectangular	

Order no.	b	c	d	e
	mm	mm	mm	mm
4118807	48	16,5	285	16
4118808	48	16,5	285	16

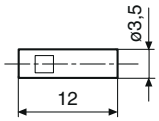


Accessories

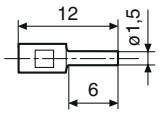
Order no.	Product name	Product type
4102020	Depth bridge (75 x 7 mm)	16 Em
4102357	16 EXu Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4118810	Anvil for outside measurement (3.5 x 12 mm)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



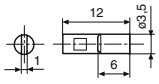
16 Em



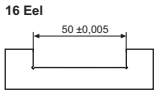
16 Eea 1



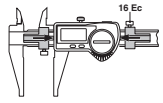
16 Eea 2



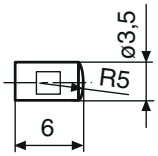
16 Eea 3



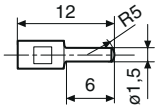
16 Eel



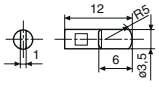
16 Ec



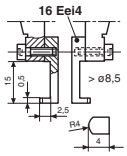
16 Eei 1



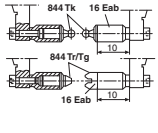
16 Eei 2



16 Eei 3

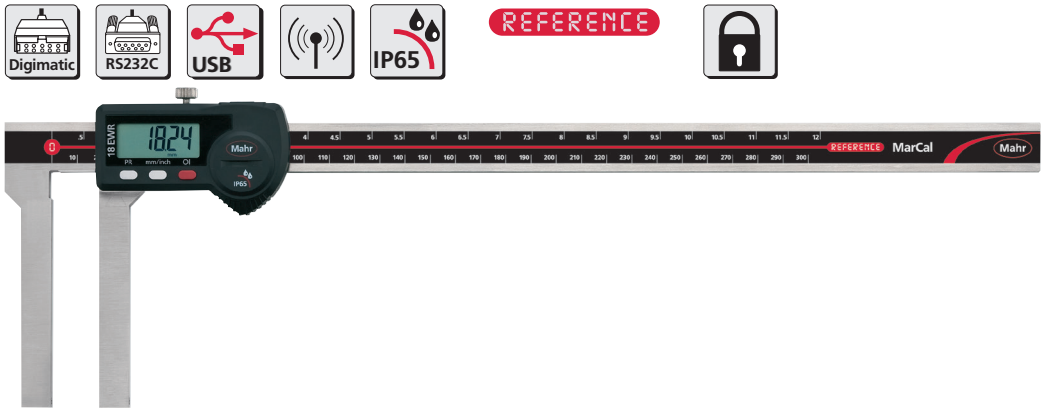


16 Eei 4



16 Eab

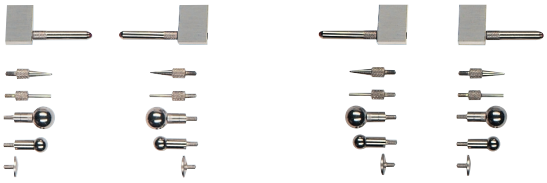
Digital universal caliper MarCal 18 EWR-V



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)

Application:

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

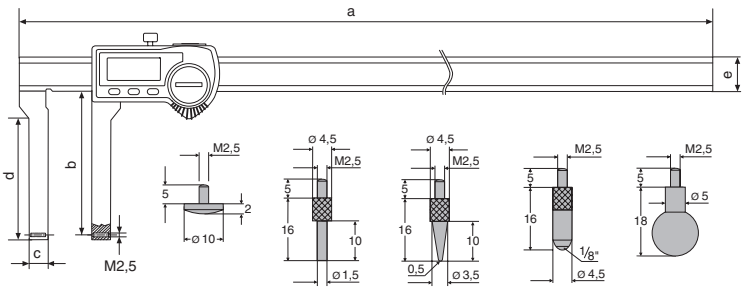


- High contrast analog display
- Locking screw above
- Immediate measurements due to the Reference System
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- Slide and beam made of hardened stainless steel
- Measuring faces for outside measurement
- Thread M2.5 measuring jaws to accommodate measuring anvils for internal and external measurements
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm (300 mm), 12,5 mm (500mm)
- **Data interface:** USB, Opto RS232C, Digimatic, Wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 65
- **Scope of delivery:** Battery, Case, Instruction manual, Avils

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard
		mm	inch	mm/inch	mm	inch	
4112722	18 EWR-V	0 –300	0 –12"	0,01 / .0005"	0,06	.0025"	Factory standard
4112723	18 EWR-V	0 –500	0 –20"	0,01 / .0005"	0,08	.003"	Factory standard

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4112722	410	90	12	75,5	20
4112723	680	100	16	81	25



Accessories

Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd

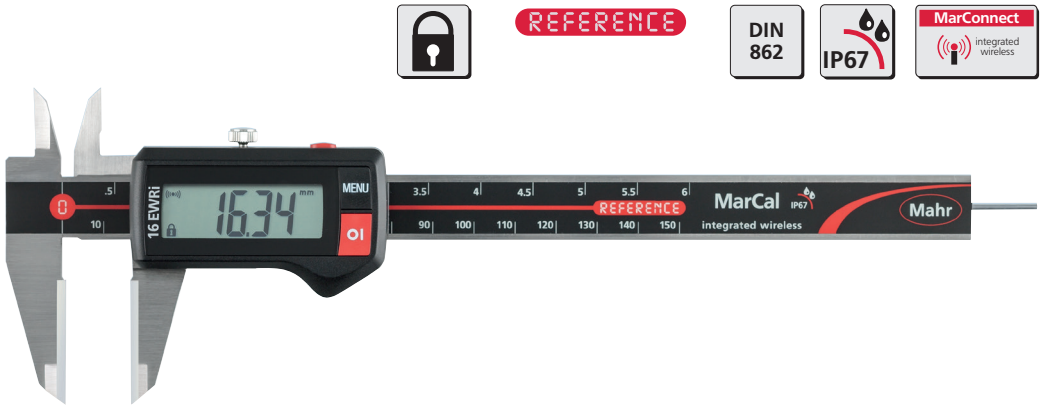
16 EWe

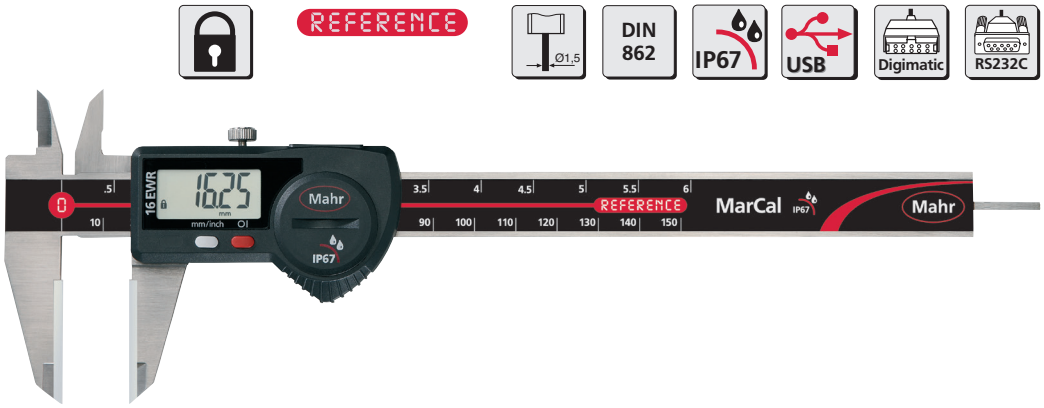
e-Stick

Digital Caliper for special applications MarCal 16 EWRi-C / 16 EWR-C

Functions 16 EWRi-C:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-C:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)





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

Features 16 EWRi-C:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-C:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

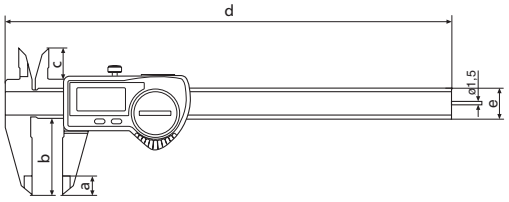
Application:

Outer measuring surfaces made of ceramic, for measuring hard materials

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103372	16 EWRi-C	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round
4103072	16 EWR-C	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round

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

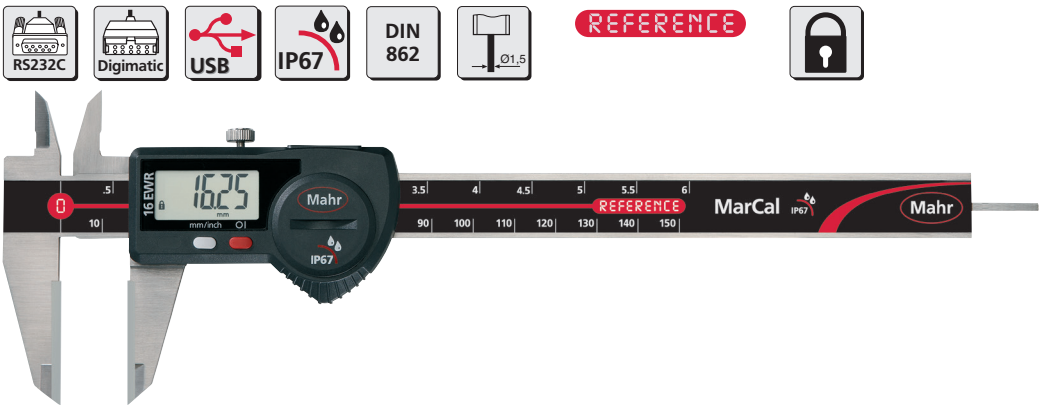


Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-C	Receiver	i-Stick
4102357	16 EWR-C	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-C	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-C, 16 EWRi-C	Battery 3 V, CR 2032	
4102915	16 EWR-C	Digimatic data cable (2 m)	16 EWd

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-H / 16 EWR-H



Application:

Outer measuring surfaces made of carbide, for measuring hard materials

Functions 16 EWRi-H:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-H:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)

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

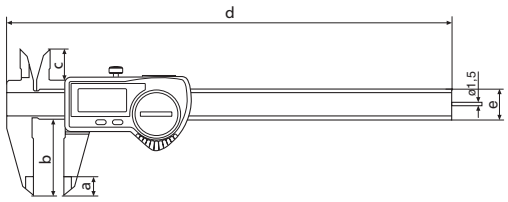
Features 16 EWRi-H:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-H:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103373	16 EWRi-H	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round
4103073	16 EWR-H	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	DIN 862	round

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



Accessories

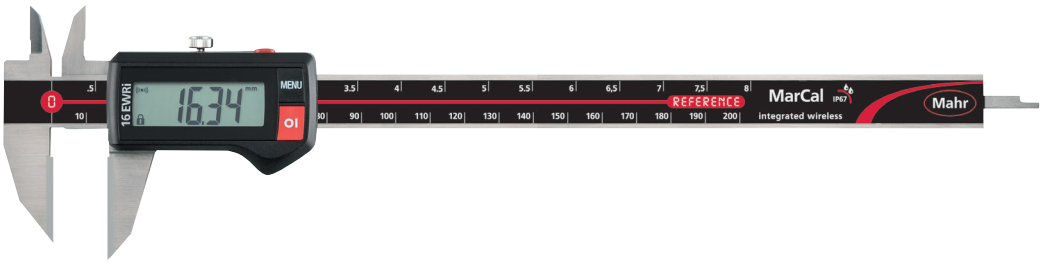
Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-H	Receiver	i-Stick
4102357	16 EWR-H	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-H	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-H, 16 EWRi-H	Battery 3 V, CR 2032	
4102915	16 EWR-H	Digimatic data cable (2 m)	16 EWd

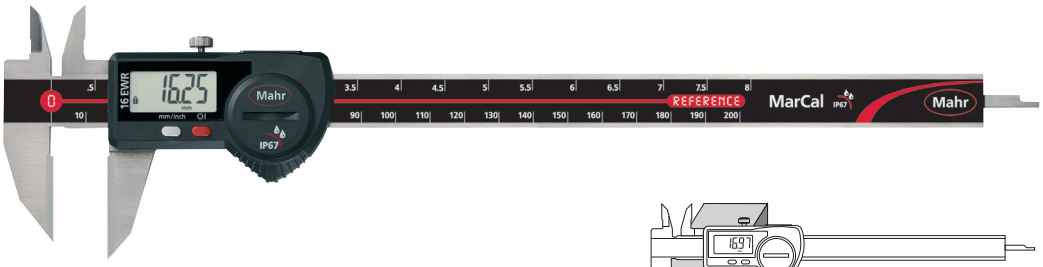
i-Stick

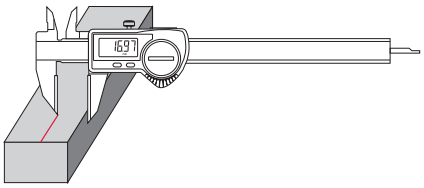
Digital Caliper for special applications MarCal 16 EWRi-AR / 16 EWR-AR

Functions 16 EWRi-AR:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-AR:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)







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

Features 16 EWRi-AR:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-AR:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

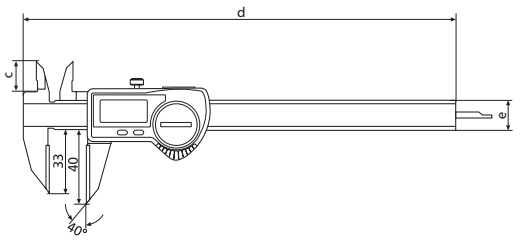
Application:

For marking out workpieces

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103382	16 EWRi-AR	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	Factory standard	rectangular
4103082	16 EWR-AR	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	Factory standard	rectangular

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

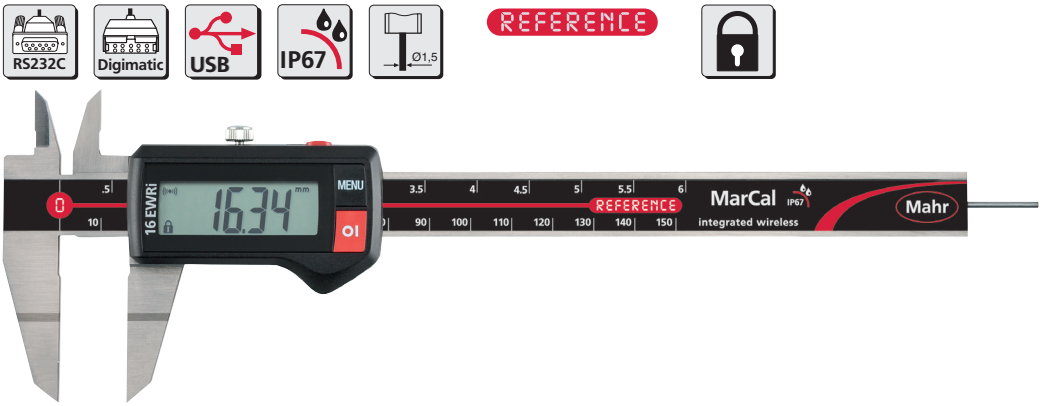


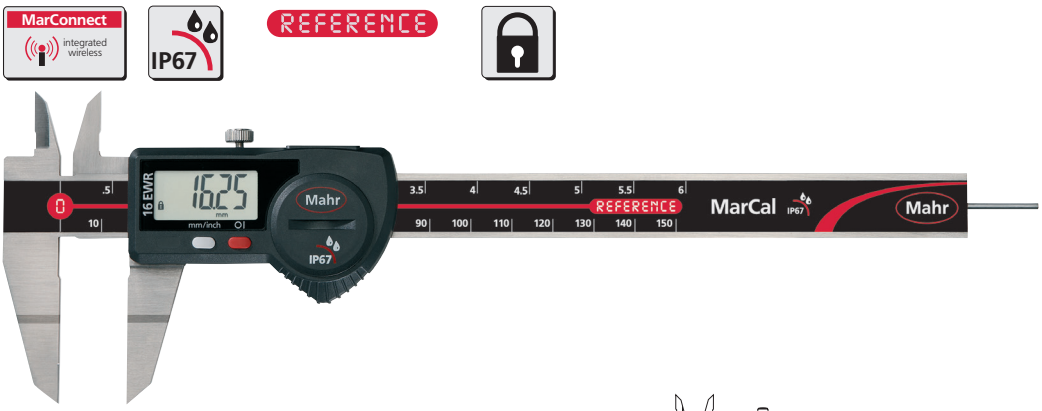
Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-AR	Receiver	i-Stick
4102357	16 EWR-AR	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-AR	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-AR, 16 EWRi-AR	Battery 3 V, CR 2032	
4102915	16 EWR-AR	Digimatic data cable (2 m)	16 EWd

i-Stick

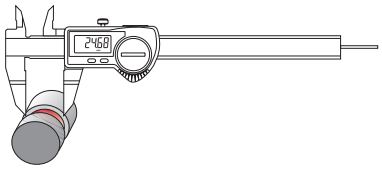
Digital Caliper for special applications MarCal 16 EWRi-NA / 16 EWR-NA





Application:

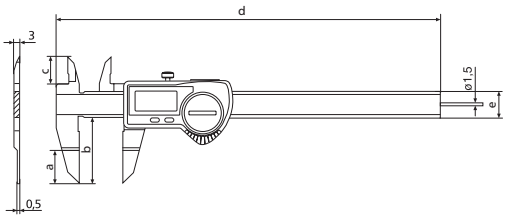
For measuring keyseats



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103374	16 EWRi-NA	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	round
4103074	16 EWR-NA	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	round

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



Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-NA	Receiver	i-Stick
4102357	16 EWR-NA	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-NA	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-NA, 16 EWRi-NA	Battery 3 V, CR 2032	
4102915	16 EWR-NA	Digimatic data cable (2 m)	16 EWd

i-Stick

Functions 16 EWRi-NA:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

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

Features 16 EWRi-NA:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-NA:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Digital Caliper for special applications MarCal 16 EWRi-S / 16 EWR-S

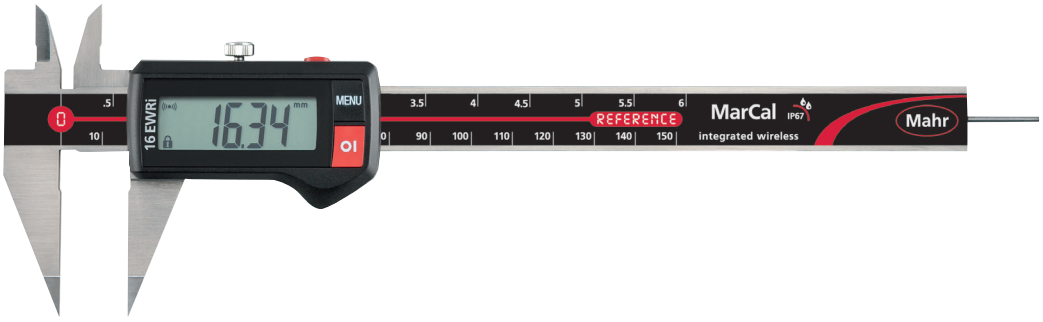
Functions 16 EWRi-S:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

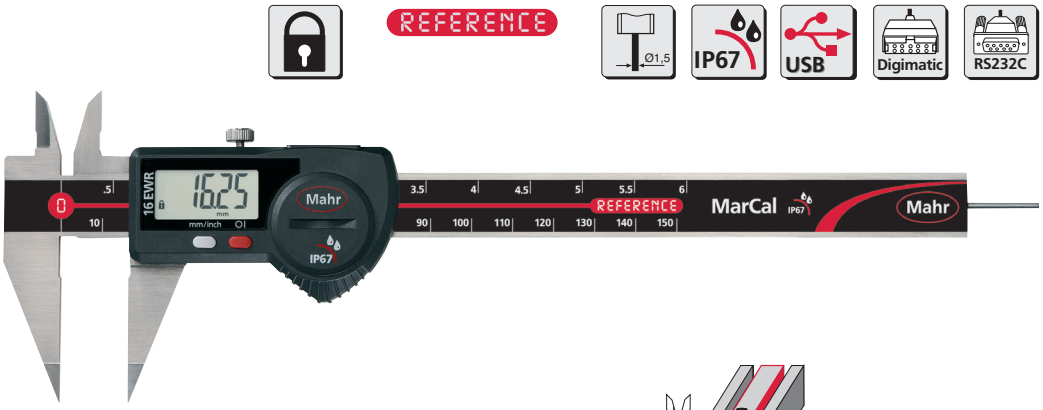
Functions 16 EWR-S:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)

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

Features 16 EWRi-S:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

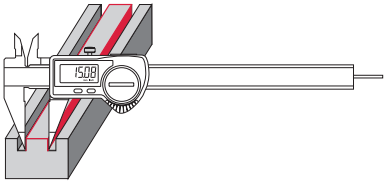
Features 16 EWR-S:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case





Application:

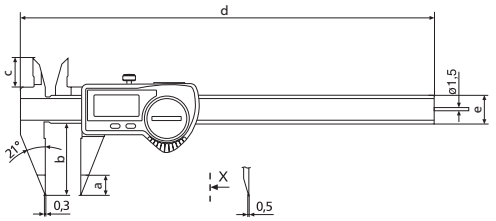
With pointed jaws e.g. for measuring distances between grooves



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103375	16 EWRi-S	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	round
4103075	16 EWR-S	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	round

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103375	10	40	16,5	235	16
4103075	10	40	16,5	235	16

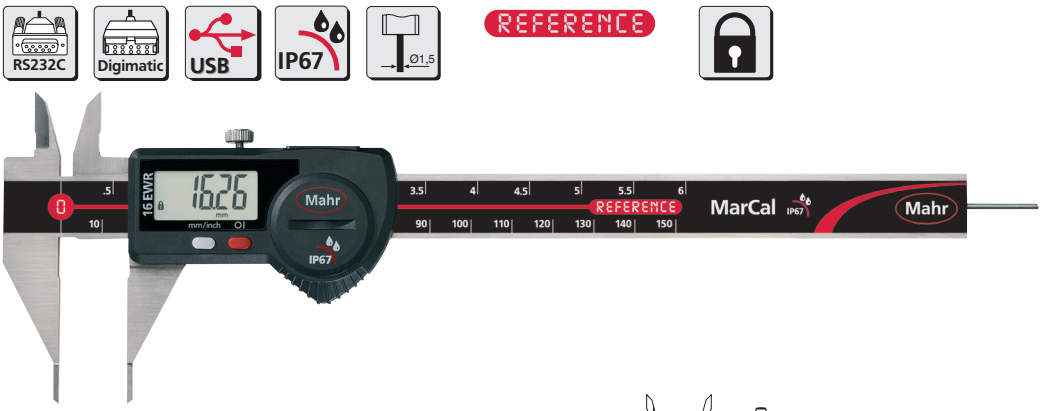


Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-S	Receiver	i-Stick
4102357	16 EWR-S	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-S	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-S, 16 EWRi-S	Battery 3 V, CR 2032	
4102915	16 EWR-S	Digimatic data cable (2 m)	16 EWd

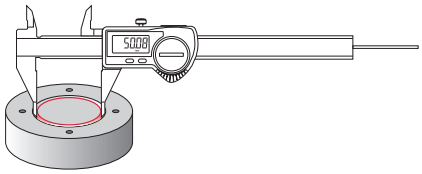
i-Stick

Digital Caliper for special applications MarCal 16 EWRi-SM / 16 EWR-SM



Application:

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



Functions 16 EWRi-SM:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-SM:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)

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

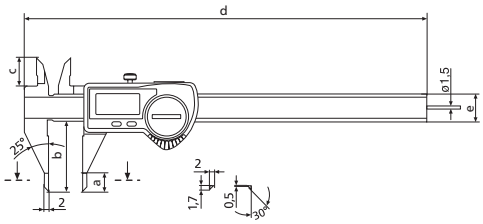
Features 16 EWRi-SM:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-SM:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103376	16 EWRi-SM	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	round
4103076	16 EWR-SM	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	round

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4103376	10	40	16,5	235	16
4103076	10	40	16,5	235	16



Accessories

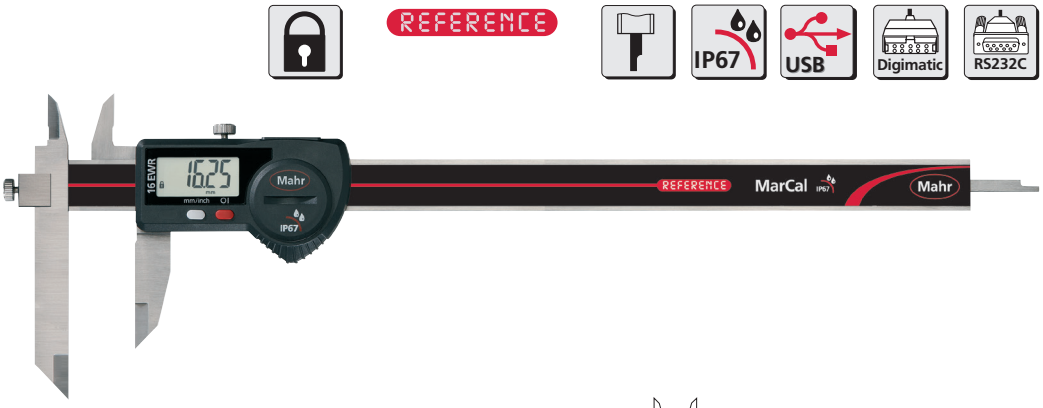
Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-SM	Receiver	i-Stick
4102357	16 EWR-SM	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-SM	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-SM, 16 EWRi-SM	Battery 3 V, CR 2032	
4102915	16 EWR-SM	Digimatic data cable (2 m)	16 EWd

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-VS / 16 EWR-VS

Functions 16 EWRi-VS:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-VS:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)



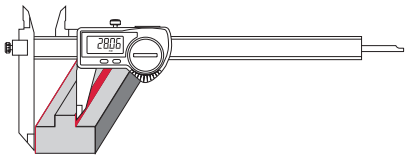
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust,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

Features 16 EWRi-VS:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-VS:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Application:

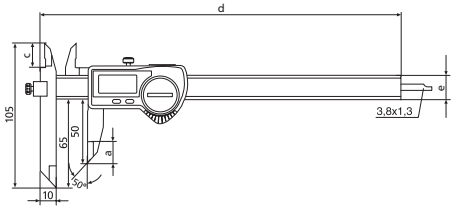
With moving jaws for measuring stepped workpieces



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103383	16 EWRi-VS	0 –200	0 –8"	0,01 / .0005"	0,04	.0015"	Factory standard	rectangular
4103083	16 EWR-VS	0 –200	0 –8"	0,01 / .0005"	0,04	.0015"	Factory standard	rectangular

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



Accessories

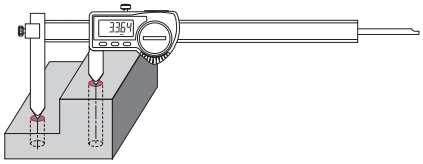
Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-VS	Receiver	i-Stick
4102357	16 EWR-VS	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-VS	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-VS, 16 EWRi-VS	Battery 3 V, CR 2032	
4102915	16 EWR-VS	Digimatic data cable (2 m)	16 EWd

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-BA / 16 EWR-BA

Application:

For measuring the distance between bores



Functions 16 EWRi-BA:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-BA:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)

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

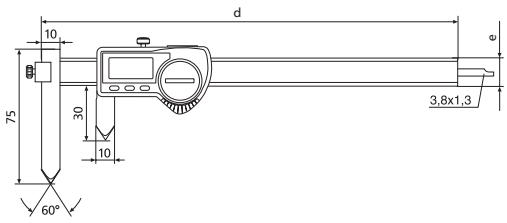
Features 16 EWRi-BA:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-BA:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103384	16 EWRi-BA	10 –210	0,4 –8,3"	0,01 / .0005"	0,04	.0015"	Factory standard	rectangular
4103084	16 EWR-BA	10 –210	0,4 –8,3"	0,01 / .0005"	0,04	.0015"	Factory standard	rectangular

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



Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-BA	Receiver	i-Stick
4102357	16 EWR-BA	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-BA	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-BA, 16 EWRi-BA	Battery 3 V, CR 2032	
4102915	16 EWR-BA	Digimatic data cable (2 m)	16 EWd

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-SA / 16 EWR-SA

Functions 16 EWRi-SA:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-SA:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)

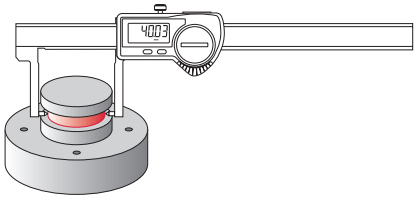
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are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

Features 16 EWRi-SA:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-SA:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Application:

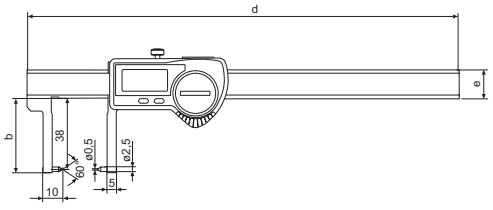
Inward-angled measuring tips for measuring wall thicknesses and recesses on shafts



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103377	16 EWRi-SA	0 –140	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	none
4103077	16 EWR-SA	0 –140	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	none

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



Accessories

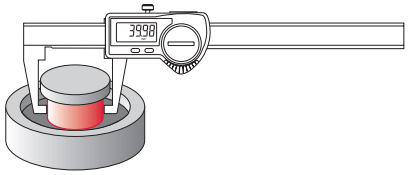
Order no.	For measuring instrument	Product name	Product type
4102220	16 EWRi-SA	Receiver	i-Stick
4102357	16 EWR-SA	16 EXu Data connection cable USB (2 m)	16 EXu
4102410	16 EWR-SA	Data connection cable RS232C (2 m)	16 EXr
4102520	16 EWRi-SA, 16 EWR-SA	Battery 3 V, CR 2032	
4102915	16 EWR-SA	Digimatic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

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-AA / 16 EWR-AA

Application:

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



Functions 16 EWRi-AA:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-AA:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)

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

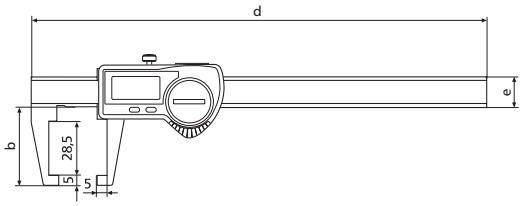
Features 16 EWRi-AA:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-AA:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103379	16 EWRi-AA	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	none
4103079	16 EWR-AA	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard	none

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



Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-AA	Receiver	i-Stick
4102357	16 EWR-AA	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-AA	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-AA, 16 EWRi-AA	Battery 3 V, CR 2032	
4102915	16 EWR-AA	Digimatic data cable (2 m)	16 EWd

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-SI / 16 EWR-SI

Functions 16 EWRi-SI:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-SI:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)

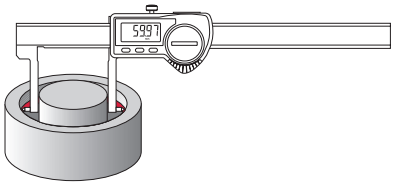
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are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

Features 16 EWRi-SI:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-SI:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Application:

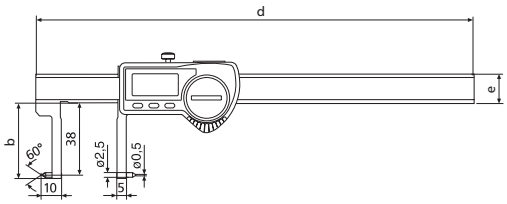
Outward-angled measuring tips for measuring recesses in bores



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103378	16 EWRi-SI	20 –170	0,8 –6,7"	0,01 / .0005"	0,03	.001"	Factory standard	none
4103078	16 EWR-SI	20 –170	0,8 –6,7"	0,01 / .0005"	0,03	.001"	Factory standard	none

Order no.	b	d	e
	mm	mm	mm
4103378	38	235	16
4103078	38	235	16



Accessories

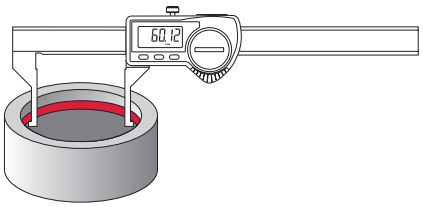
Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-SI	Receiver	i-Stick
4102357	16 EWR-SI	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-SI	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-SI, 16 EWRi-SI	Battery 3 V, CR 2032	
4102915	16 EWR-SI	Digimatic data cable (2 m)	16 EWd

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-AI / 16 EWR-AI

Application:

Outward-angled measuring surfaces for measuring recesses in bores



Functions 16 EWRi-AI:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-AI:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)

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

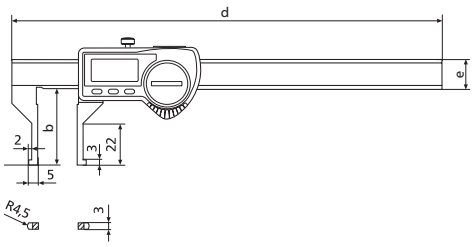
Features 16 EWRi-AI:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-AI:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103380	16 EWRi-AI	10 –160	0,4 –6,3"	0,01 / .0005"	0,03	.001"	Factory standard	none
4103080	16 EWR-AI	10 –160	0,4 –6,3"	0,01 / .0005"	0,03	.001"	Factory standard	none

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



Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-AI	Receiver	i-Stick
4102357	16 EWR-AI	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-AI	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-AI, 16 EWRi-AI	Battery 3 V, CR 2032	
4102915	16 EWR-AI	Digimatic data cable (2 m)	16 EWd

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-RW / 16 EWR-RW

Functions 16 EWRi-RW:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-RW:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- DATA (Data transmission via connection cable)

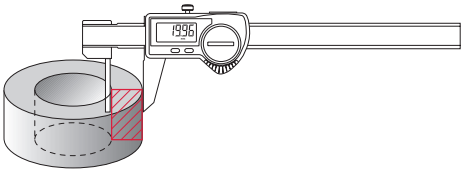
- High contrast analog display
- Locking screw above
- Lapped guideway
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are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

Features 16 EWRi-RW:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-RW:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Application:

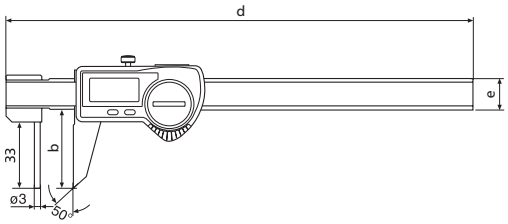
Measurement of wall thicknesses



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103381	16 EWRi-RW	0 – 150	0 – 6"	0,01 / .0005"	0,05	.002"	Factory standard	none
4103081	16 EWR-RW	0 – 150	0 – 6"	0,01 / .0005"	0,05	.002"	Factory standard	none

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



Accessories

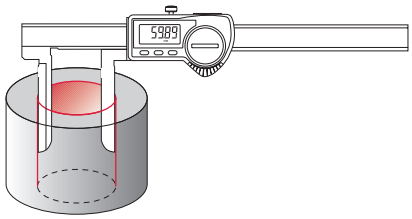
Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-RW	Receiver	i-Stick
4102357	16 EWR-RW	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-RW	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-RW, 16 EWRi-RW	Battery 3 V, CR 2032	
4102915	16 EWR-RW	Digimatic data cable (2 m)	16 EWd

i-Stick

Digital Caliper for special applications MarCal 16 EWRi-LI / 16 EWR-LI

Application:

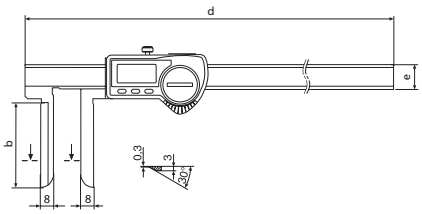
With long inner blades



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Depth Rod
		mm	inch	mm/inch	mm	inch		
4103385	16 EWRi-LI	10 –200	0,4 –8"	0,01 / .0005"	0,05	.002"	Factory standard	none
4103085	16 EWR-LI	10 –200	0,4 –8"	0,01 / .0005"	0,05	.002"	Factory standard	none

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



Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	16 EWRi-LI	Receiver	i-Stick
4102357	16 EWR-LI	Data Connection Cable USB (2 m)	16 EXu
4102410	16 EWR-LI	Data Connection Cable RS232C (2 m)	16 EXr
4102520	16 EWR-LI, 16 EWRi-LI	Battery 3 V, CR 2032	
4102915	16 EWR-LI	Digimatic data cable (2 m)	16 EWd

i-Stick

Functions 16 EWRi-LI:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 16 EWR-LI:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring blade for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)

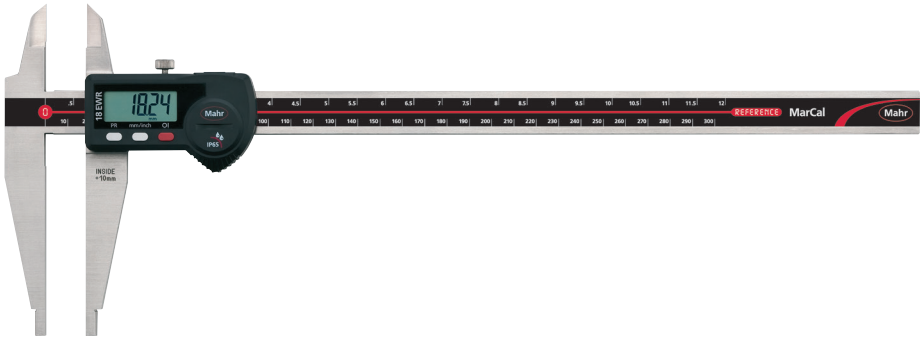
Features 16 EWRi-LI:
- **Height of digits:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Features 16 EWR-LI:
- **Height of digits:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Digital workshop caliper MarCal 18 EWR

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)

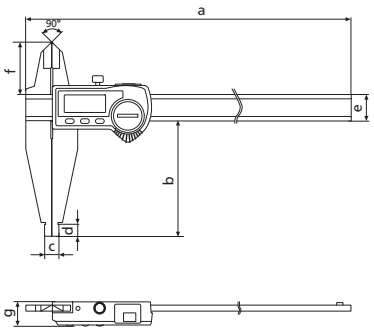
- Measuring blades for outside measurements
- High contrast analog display
- Locking screw above
- Rounded measuring blades for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm (300mm), 12,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic, Wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 65
- **Scope of delivery:** Battery, Instruction manual, Case



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Weight
		mm	inch	mm/inch	mm	inch		kg
4112704	18 EWR	0 –300	0 –12"	0,01 / .0005"	0,03	.001"	Factory standard	0,45
4112712	18 EWR	0 –500	0 –20"	0,01 / .0005"	0,04	.0015"	Factory standard	1,10
4112714	18 EWR	0 –750	0 –30"	0,01 / .0005"	0,05	.002"	Factory standard	1,35
4112716	18 EWR	0 –1000	0 –40"	0,01 / .0005"	0,06	.0025"	Factory standard	2,20

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



Accessories

Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd

16 EWe

e-Stick

Digital workshop caliper MarCal 18 EWR

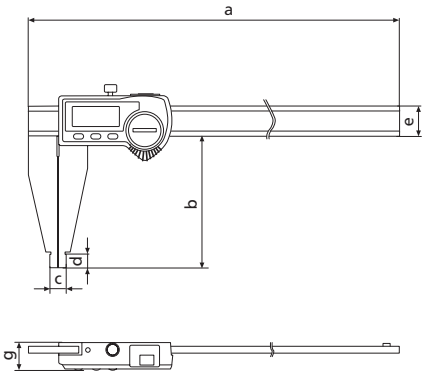
Functions:
- AUTO-ON / OFF
- DATA (Data transmission via connection cable)
- ON/OFF
- PRESET (for entering a numerical value)
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)

- High contrast analog display
- Locking screw above
- Rounded measuring blades for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm (300mm), 12,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic, Wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 65
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Weight
		mm	inch	mm/inch	mm	inch		kg
4112705	18 EWR	0 –300	0 –12"	0,01 / .0005"	0,03	.001"	Factory standard	0,44
4112713	18 EWR	0 –500	0 –20"	0,01 / .0005"	0,04	.0015"	Factory standard	1,00
4112715	18 EWR	0 –750	0 –30"	0,01 / .0005"	0,05	.002"	Factory standard	1,28
4112717	18 EWR	0 –1000	0 –40"	0,01 / .0005"	0,06	.0025"	Factory standard	2,10

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4112705	410	90	10	10	20
4112713	650	150	20	20	25
4112715	905	150	20	20	25
4112717	1165	150	20	20	30



Accessories

Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd

16 EWe

e-Stick

Digital workshop caliper MarCal 18 ESA

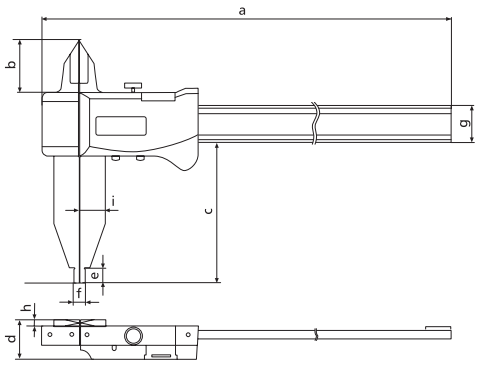
Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- HOLD (storage of measured values)
- PRESET (enter anumerical value) from range 500 mm

- High contrast analog display
- Locking screw above
- Rounded measuring blades for inside measurements
- Prisma guide ways for a more smooth and even movement
- Measuring surfaces made of steel
- Measuring blades for outside measurements
- To reduce the overall weight the slide and beam are made from aluminum and are coated with a hard anodized surface coating (1100 HV)
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 6 mm (300mm), 10,5 mm
- **Data interface:** Opto RS232C (only 300 mm version)
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** none
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard	Weight
		mm	inch	mm/inch	mm	inch		kg
4112620	18 ESA	0 –300	0 –12"	0.01 / .0005"	0.04	.0015"	Factory standard	0.50
4112621	18 ESA	0 –500	0 –20"	0.01 / .0005"	0.05	.002"	Factory standard	1.40
4112622	18 ESA	0 –800	0 –32"	0.01 / .0005"	0.07	.0025"	Factory standard	1.60
4112623	18 ESA	0 –1000	0 –40"	0.01 / .0005"	0.08	.003"	Factory standard	1.80

Order no.	a	b	c	d	e	f	g	h	i
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4112620	450	33	90	17,5	10	10	25	4,5	17
4112621	726	42	150	20,7	15	20	31,9	6	29
4112622	1026	42	150	20,7	15	20	31,9	6	29
4112623	1760	42	150	20,7	15	20	31,9	6	29



Accessories

Order no.	Product description	Product type
4102510	Data Connection Cable RS232C (2 m)	16 ESv
4102520	Battery 3 V, CR 2032	

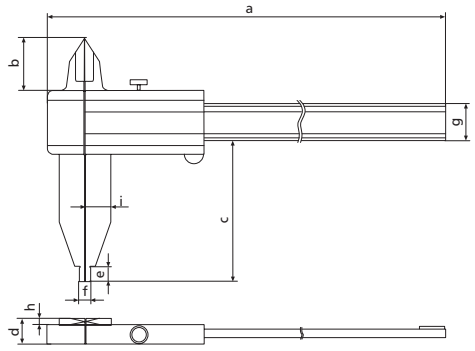
Workshop Calipers MarCal 18 NA

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

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Standard	Weight
		mm	mm	mm		kg
4112300	18 NA	0 –300	0,02	0,04	Factory standard	0,50
4112301	18 NA	0 –500	0,02	0,05	Factory standard	1,40
4112302	18 NA	0 –800	0,02	0,07	Factory standard	1,60
4112303	18 NA	0 –1000	0,02	0,08	Factory standard	1,75
4112304	18 NA	0 –1500	0,02	0,16	Factory standard	2,10
4112305	18 NA	0 –2000	0,02	0,16	Factory standard	2,50

Order no.	a	b	c	d	e	f	g	h	i
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4112300	450	33	90	17,5	10	10	25	4,5	17
4112301	726	42	150	20,7	15	20	31,9	6	29
4112302	1026	42	150	20,7	15	20	31,9	6	29
4112303	1226	42	150	20,7	15	20	31,9	6	29
4112304	1760	85	200	25	15	30	48,1	6	40
4112305	2260	85	200	25	15	30	48,1	6	40



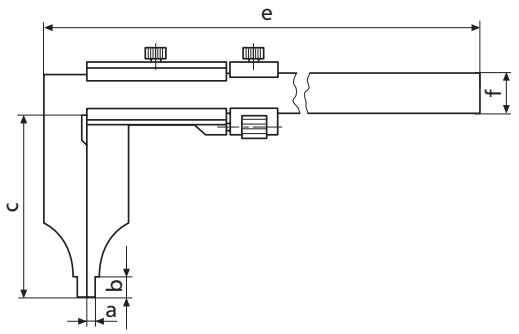
Workshop Calipers MarCal 18 N

- Measuring blades for outside measurements
- High contrast analog display
- Locking screw above
- Rounded measuring blades for inside measurements
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Scope of delivery:** up to 1000 mm delivered with a case, over 1000 mm individually packed

Technical Data

Order no.	Product type	Measuring range	Measuring range	Vernier value	Vernier value	Error limit	Error limit	Standard
		mm	inch	mm	inch	mm	inch	
4112220	18 N	0 –300		0.02		0.05		Factory standard
4112221	18 N	0 –500		0.02		0.06		Factory standard
4112222	18 N	0 –800		0.02		0.08		Factory standard
4112223	18 N	0 –1000		0.02		0.08		Factory standard
4112224	18 N	0 –1500		0.02		0.1		Factory standard
4112225	18 N	0 –2000		0.02		0.12		Factory standard
4112230	18 N	0 –300	0 –12″	0.02	.001″	0.05	.002″	Factory standard
4112231	18 N	0 –500	0 –20″	0.02	.001″	0.06	.0025″	Factory standard
4112232	18 N	0 –800	0 –32″	0.02	.001″	0.08	.003″	Factory standard
4112233	18 N	0 –1000	0 –40″	0.02	.001″	0.08	.003″	Factory standard
4112234	18 N	0 –1500	0 –60″	0.02	.001″	0.1	.004″	Factory standard
4112235	18 N	0 –2000	0 –80″	0.02	.001″	0.12	.005″	Factory standard

Order no.	a	b	c	e	f
	mm	mm	mm	mm	mm
4112220	5	10	90	410	20
4112221	10	19	150	675	25
4112222	10	19	150	985	30
4112223	10	19	150	1185	30
4112224	15	19	200	1760	40
4112225	15	19	200	2270	45
4112230	5	10	90	410	20
4112231	10	19	150	675	25
4112232	10	19	150	985	30
4112233	10	19	150	1185	30
4112234	15	19	200	1760	40
4112235	15	19	200	2270	45



Workshop Calipers MarCal 18 N

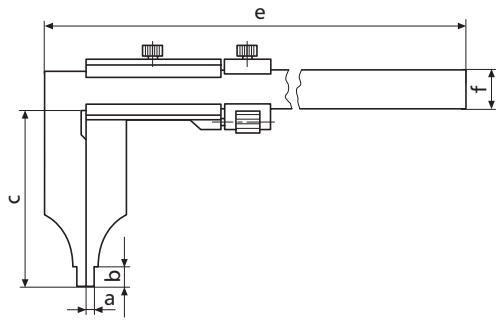
DIN 862

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

Technical Data

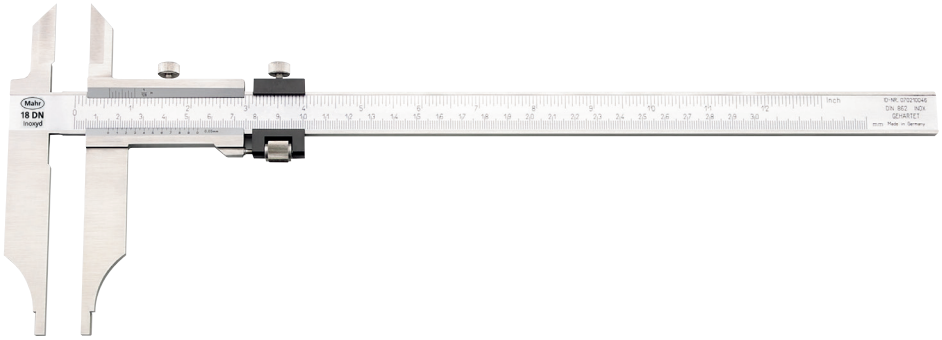
Order no.	Product type	Measuring range	Readings	Error limit	Standard
		mm	mm	mm	
4112200	18 N	0 –200	0,02	0,05	Factory standard
4112201	18 N	0 –300	0,02	0,05	Factory standard
4112210	18 N	0 –500	0,05	0,07	DIN 862
4112211	18 N	0 –800	0,05	0,1	DIN 862
4112212	18 N	0 –1000	0,05	0,12	DIN 862
4112213	18 N	0 –1500	0,05	0,18	DIN 862
4112214	18 N	0 –2000	0,05	0,22	DIN 862

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



Workshop Calipers MarCal 18 DN

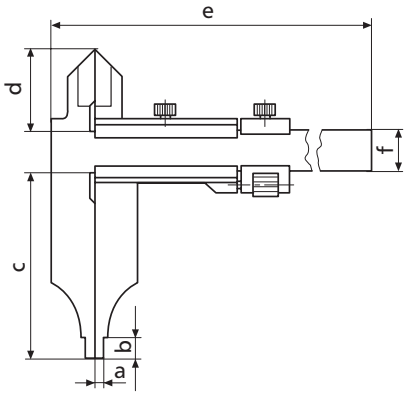
- With fine adjustment
- Measuring blades for outside measurements
- Vernier and main scale have a satin chrome finish for glare free reading
- Locking screw above
- Rounded measuring blades for inside measurements
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Raised guideways for the protection of the scale
- **Scope of delivery:** Case



Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Standard
		mm	mm	mm	
4113300	18 DN	0 –200	0,02	0,05	Factory standard
4113301	18 DN	0 –300	0,02	0,05	Factory standard
4113302	18 DN	0 –500	0,02	0,06	Factory standard
4113303	18 DN	0 –800	0,02	0,08	Factory standard
4113304	18 DN	0 –1000	0,02	0,08	Factory standard

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4113300	5	10	80	40	310	20
4113301	5	10	90	40	410	20
4113302	10	19	150	60	675	25
4113303	10	19	150	65	985	30
4113304	10	19	150	67	1185	30



Workshop Calipers MarCal 18 DN

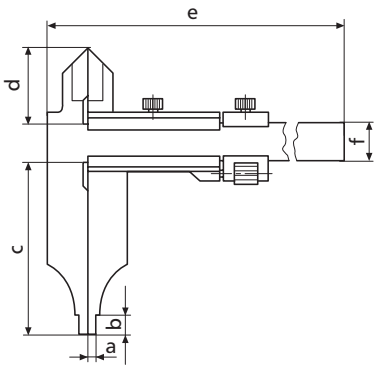
DIN 862

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

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Standard
		mm	mm	mm	
4113200	18 DN	0 –200	0,05	0,05	DIN 862
4113201	18 DN	0 –300	0,05	0,05	DIN 862
4113202	18 DN	0 –500	0,05	0,07	DIN 862
4113203	18 DN	0 –800	0,05	0,1	DIN 862
4113204	18 DN	0 –1000	0,05	0,12	DIN 862
4113205	18 DN	0 –1500	0,05	0,18	DIN 862
4113206	18 DN	0 –2000	0,05	0,22	DIN 862

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



Digital Depth Gage MarCal 30 EWRi

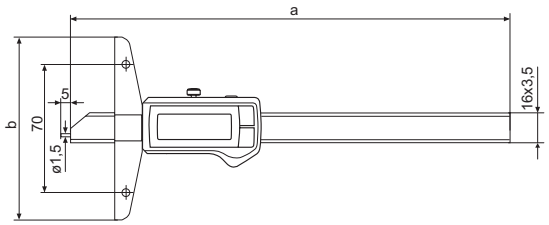
Functions:
- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- LOCK function (key lock)
- HOLD (storage of measured values)
- Reversal of counting direction
- DATA (data transmission)

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Digit height:** 11 mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0,5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard
		mm	inch	mm/inch	mm	inch	
4126755	30 EWRi	0 – 150	0 – 6"	0,01 / .0005"	0,03	.001"	Factory standard
4126756	30 EWRi	0 – 300	0 – 12"	0,01 / .0005"	0,04	.0015"	Factory standard
4126757	30 EWRi	0 – 500	0 – 20"	0,01 / .0005"	0,05	.002"	Factory standard

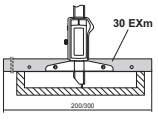
Order no.	a	b
	mm	mm
4126755	234	100
4126756	384	150
4126757	584	150



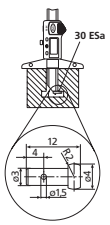
Accessories

Order no.	Product description	Product type
4102220	Receiver	i-Stick
4102520	Battery 3 V, CR 2032	
4125611	Anvil (4 mm)	30 ESa
4126510	Cross Beam Extension (300 mm)	30 EXm
4126511	Cross Beam Extension (200 mm)	30 EXm

i-Stick



30 EXm



30 ESa

Digital Depth Gage MarCal 30 EWR

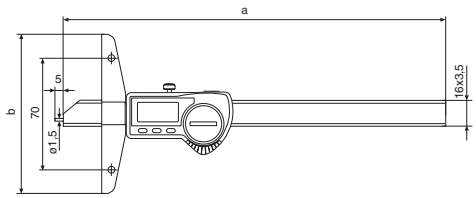
Functions:
- AUTO-ON / OFF
- DATA (Data transmission via connection cable)
- ON/OFF
- PRESET (for entering a numerical value)
- RESET (set display to zero)
- mm/inch
- LOCK function (key lock)

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Digit height:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

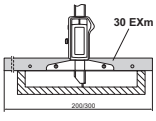
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard
		mm	inch	mm/inch	mm	inch	
4126700	30 EWR	0 –150	0 –6"	0,01 / .0005"	0,03	.001"	Factory standard
4126701	30 EWR	0 –300	0 –12"	0,01 / .0005"	0,04	.0015"	Factory standard
4126702	30 EWR	0 –500	0 –20"	0,01 / .0005"	0,05	.002"	Factory standard

Order no.	a	b
	mm	mm
4126700	234	100
4126701	384	150
4126702	584	150

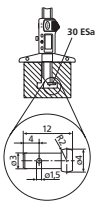


Accessories

Order no.	Product description	Product type
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4125611	Anvil (4 mm)	30 ESa
4126510	Cross Beam Extension (300 mm)	30 EXm
4126511	Cross Beam Extension (200 mm)	30 EXm



30 EXm



30 ESa

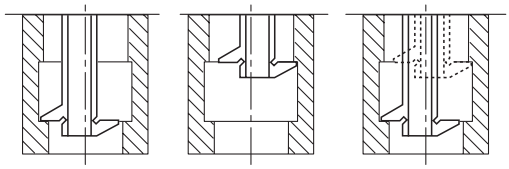
Digital Depth Gage MarCal 30 EWRi-D

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

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Digit height:** 11mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery life approx. 3 years (approx. 0,5 in wireless mode)
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Application:

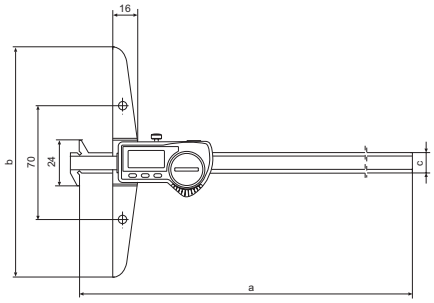
Measuring groove widths and distances between grooves



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard
		mm	inch	mm/inch	mm	inch	
4126533	30 EWRi-D	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	Factory standard
4126534	30 EWRi-D	0 –300	0 –12"	0,01 / .0005"	0,04	.001"	Factory standard

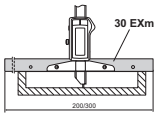
Order no.	a	b	c
	mm	mm	mm
4126533	281	100	12
4126534	381	150	12



Accessories

Order no.	Product description	Product type
4102220	Receiver	i-Stick
4102520	Battery 3 V, CR 2032	
4126510	Cross Beam Extension (300 mm)	30 EXm
4126511	Cross Beam Extension (200 mm)	30 EXm

i-Stick

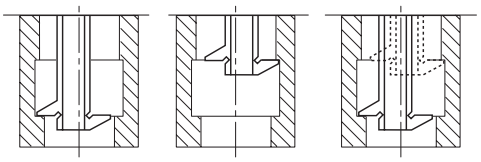


30 EXm

Digital Depth Gage MarCal 30 EWR-D

Application:

Measuring groove widths and distances between grooves



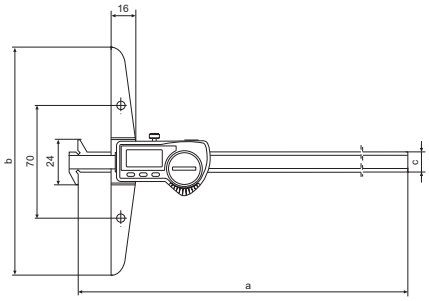
Functions:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)

- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants and lubricants
- Dirt wipers are integrated in the slide
- **Digit height:** 8,5 mm
- **Data interface:** USB, Opto RS232C, Digimatic
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

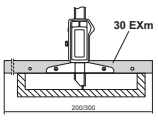
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard
		mm	inch	mm/inch	mm	inch	
4126523	30 EWR-D	0 –200	0 –8"	0,01 / .0005"	0,03	.001"	Factory standard
4126524	30 EWR-D	0 –300	0 –12"	0,01 / .0005"	0,04	.001"	Factory standard

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



Accessories

Order no.	Product description	Product type
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4126510	Cross Beam Extension (300 mm)	30 EXm
4126511	Cross Beam Extension (200 mm)	30 EXm



30 EXm

Digital Depth Gage MarCal 30 EWRi-N / 30 EWR-N

Functions 30 EWRi-N:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission)
- HOLD (storage of measured values)

Functions 30 EWR-N:
- ON/OFF
- AUTO-ON / OFF
- mm/inch
- LOCK function (key lock)
- RESET (set display to zero)
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)

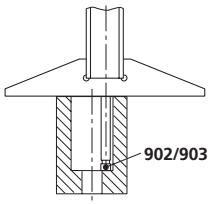
- High contrast analog display
- Locking screw above
- Lapped guideway
- Measuring surfaces made of steel
- Slide and beam made of hardened stainless steel
- Immediate measurements due to the Reference System
- Raised guideways for the protection of the scale
- Excellent resistance against dust, coolants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

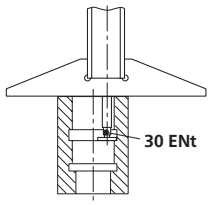
Features 30 EWRi-N:
- **Height of digits:** 11mm
- **Data interface:** Integrated wireless
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Anvils 30 Ent (1mm), 902 (4mm) and 903 (4mm), Case

Features 30 EWR-N:
- **Height of digits:** 8,5mm
- **Data interface:** USB, RS232C, Digimatic
- **Energy supply:** Battery, life span ca. 3 years
- **IP protection category:** IP 67
- **Scope of delivery:** Battery, Instruction manual, Anvils 30 Ent (1mm), 902 (4mm) and 903 (4mm), Case

Application:

Measuring groove widths and distances between grooves

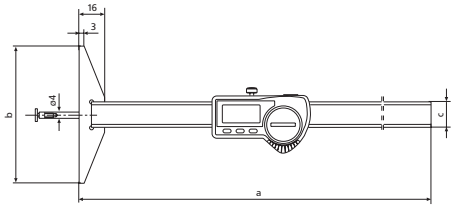




Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Error limit	Standard
		mm	inch	mm/inch	mm	inch	
4126532	30 EWRi-N	0 – 100	0 – 4"	0,01 / .0005"	0,03	.001"	Factory standard
4126513	30 EWR-N	0 – 100	0 – 4"	0,01 / .0005"	0,03	.001"	Factory standard

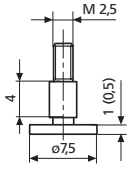
Order no.	a	b	c
	mm	mm	mm
4126532	268	85	16
4126513	268	85	16



Accessories

Order no.	For measuring instrument	Product description	Product type
4102220	30 EWRi-N	Receiver	i-Stick
4102357	30 EWR-N	Data Connection Cable USB (2 m)	16 EXu
4102410	30 EWR-N	Data Connection Cable RS232C (2 m)	16 EXr
4102520	30 EWRi-N, 30 EWR-N	Battery 3 V, CR 2032	
4102915	30 EWR-N	Digimatic data cable (2 m)	16 EWd
4126310	30 EWRi-N	Disc Type Anvil (7,5 x 0,5 mm)	30 ENt
4882022	30 EWRi-N	Disc Type Anvil (7,5 x 1 mm)	30 ENt

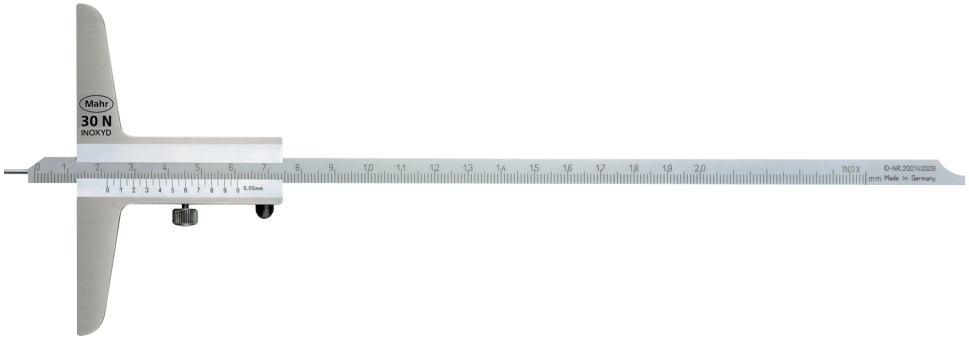
i-Stick



30 ENt

Depth Gage MarCal 30 N

DIN 862

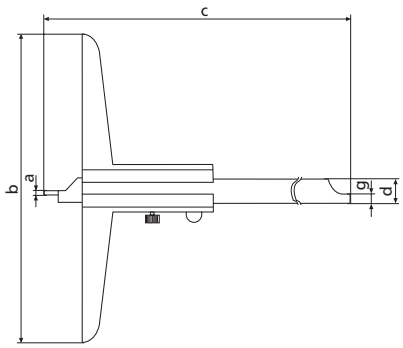


- Vernier and main scale have a satin chrome finish for glare free reading
- Locking screw below
- Hardened measuring pin
- Measuring surfaces made of steel
- Interchangeable beams
- **Scope of delivery:** Case

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Standard
		mm	mm	mm	
4127200	30 N	0 –80	0,05	0,05	DIN 862
4127300	30 N	0 –150	0,05	0,05	DIN 862
4127301	30 N	0 –200	0,05	0,05	DIN 862
4127201	30 N	0 –300	0,05	0,05	DIN 862
4127202	30 N	0 –500	0,05	0,07	DIN 862

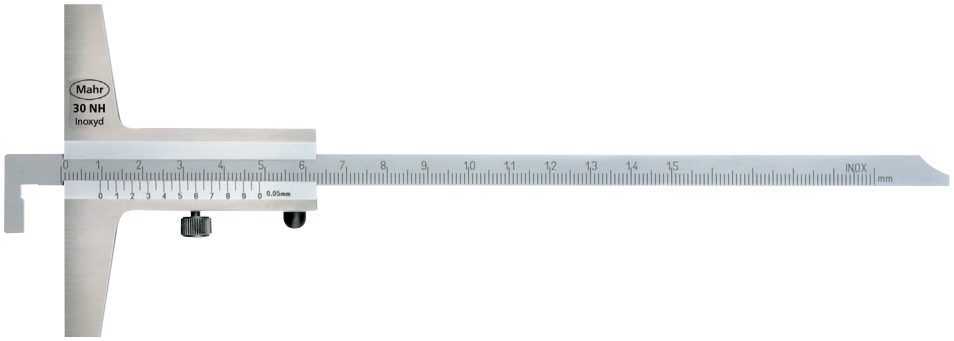
Order no.	a	b	c	d	g
	mm	mm	mm	mm	mm
4127200	1	50	140	8	
4127300	1,5	100	235	8	3,5
4127301	1,5	100	285	8	3,5
4127201	2	150	390	12	4
4127202	2	150	590	12	4



Depth Gage with hook MarCal 30 NH

DIN 862

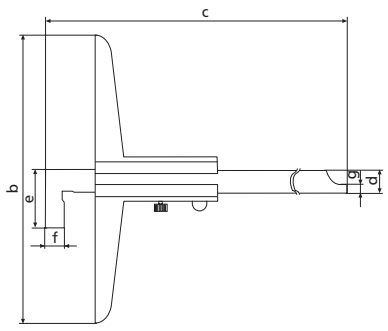
- Vernier and main scale have a satin chrome finish for glare free reading
- Locking screw below
- Measuring surfaces made of steel
- Interchangeable beams
- **Scope of delivery:** Case



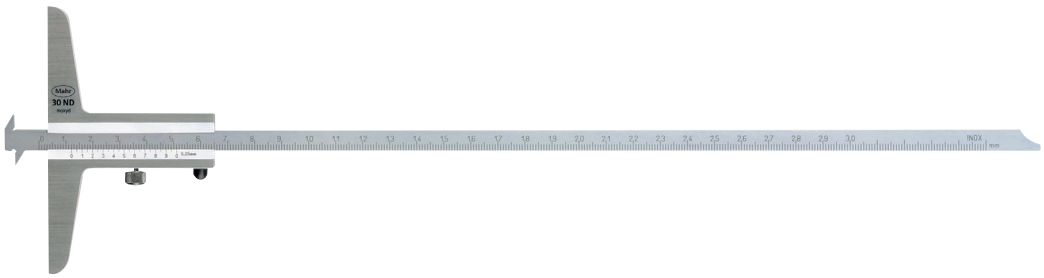
Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Standard
		mm	mm	mm	
4127350	30 NH	0 –150	0,05	0,05	DIN 862
4127351	30 NH	0 –200	0,05	0,05	DIN 862
4127352	30 NH	0 –300	0,05	0,05	DIN 862
4127353	30 NH	0 –500	0,05	0,07	DIN 862

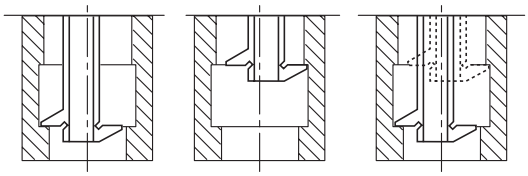
Order no.	b	c	d	e	f	g
	mm	mm	mm	mm	mm	mm
4127350	100	235	8	20	5	3,5
4127351	100	285	8	20	5	3,5
4127352	150	390	12	28	10	4
4127353	150	590	12	28	10	4



Depth Gage with twin hook MarCal 30 ND



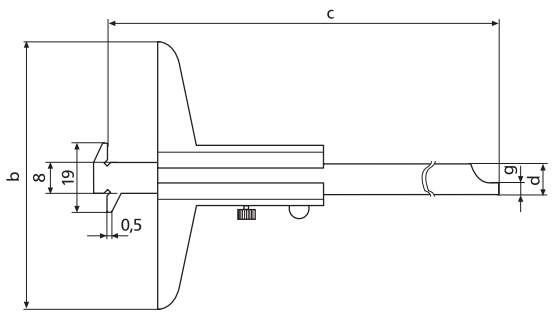
- Vernier and main scale have a satin chrome finish for glare free reading
- Locking screw below
- Measuring surfaces made of steel
- Interchangeable beams
- **Scope of delivery:** Case



Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Standard
		mm	mm	mm	
4127400	30 ND	0 –200	0,02	0,05	Factory standard
4127401	30 ND	0 –300	0,02	0,05	Factory standard
4127410	30 ND	0 –200	0,05	0,05	Factory standard
4127411	30 ND	0 –300	0,05	0,05	Factory standard

Order no.	b	c	d	g
	mm	mm	mm	mm
4127400	100	285	8	3,5
4127401	100	390	12	4
4127410	100	285	8	3,5
4127411	100	390	12	4



Digital linear machine scale MarCal 31 EW

REFERENCE

IP54 USB RS232C

Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)
- AUTO-ON / OFF

- Control panel and display unit can be rotated for horizontal or vertical installation
- High contrast analog display
- Slide and beam made of hardened stainless steel
- Raised guideways for the protection of the scale
- Dirt wipers are integrated in the slide
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 6 mm
- **Data interface:** USB, Opto RS232C
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 54
- **Scope of delivery:** Drive-type device, Instruction manual, Battery

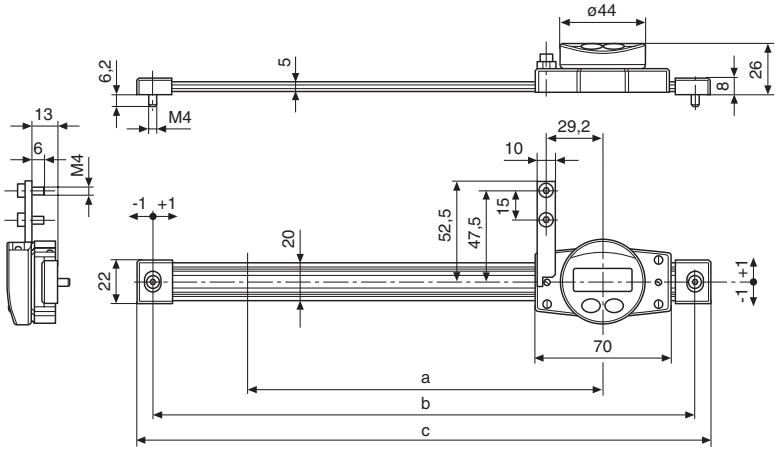
Application:

For measuring travel on a machine
(e.g. on an upright drilling machine, milling machine)

Technical Data

Order no.	Measuring range	Measuring range	Product type	Resolution	Error limit	Error limit	Standard
	mm	inch		mm/inch	mm	inch	
4104100	150	6	31 EW	0,01 / .0005"	0,03	.001"	Factory standard
4104101	200	8	31 EW	0,01 / .0005"	0,03	.001"	Factory standard
4104102	300	12	31 EW	0,01 / .0005"	0,04	.0015"	Factory standard
4104103	600	24	31 EW	0,01 / .0005"	0,05	.002"	Factory standard

Order no.	a	b	c
	mm	mm	mm
4104100	185	282	298
4104101	235	332	348
4104102	335	432	448
4104103	665	762	778



Accessories

Order no.	Product name	Product type
4102520	Battery 3 V, CR 2032	
4305121	800 EWu Data Connection Cable USB (2 m)	800 EWu
4305122	Data Connection Cable RS232C (2 m)	800 EWr

DO YOU WANT TO AIM EVEN HIGHER?
FOR THIS, THERE IS DIGIMAR.

Mahr offers you a complete range of products in order for you to obtain the most reliable solution for all your measuring tasks.Whether it's simply scribing a work piece or completing complex measurements in two dimensions – Digimar Height Measuring Instrumentsguarantee a maximum of both flexibility and quality. Our motorized Height Measuring Instruments Digimar 817 CLM and 816 CLexceed all customer requirements: they are simple to operate, all the basic functions can be executed with a single key and they offer maximum ease and accuracy.

Digimar. Height Measuring Instruments

Overview
Digimar Height Measuring Instruments 76

Motorized Height Measuring Instruments

Digimar 817 CLM 78
Height Measuring Instrument

Digimar 816 CL 79
Height Measuring Instrument

Accessories for 817 CLM and 816 CL 80

Manual Height Measuring Instruments

Digimar 814 N 87
Height Measuring and Scribing Instrument

Digimar 814 G 89

Height Measuring and Scribing Instrument

Digimar 814 SR 91
Height Measuring and Scribing Instrument

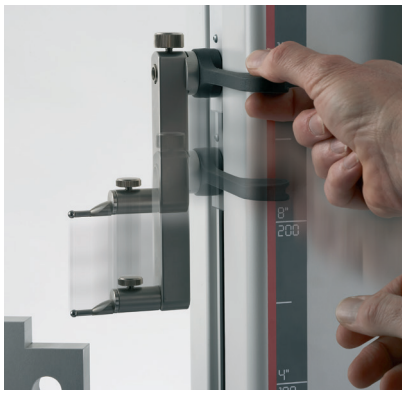
Digimar 817 CLM Quick Height

The new Height Measuring Instrument **Digimar** 817 CLM with the innovative Quick Mode. Highly accurate rapid measurements, a wide range of measuring and evaluation options and excellent operator comfort.

The best solution for all measuring tasks

QUICK MODE

Fast measurement per hand
Easy to operate due to the "Quick Mode"; an innovative solution from Mahr (patented).



Ill. 1. Move the measuring carriage by hand in the direction of the object to be measured.

Ill. 2. The motor starts, the measurement procedure will automatically be performed.

Measurement using the keypad (speed keys) on the base

Ideal in conjunction with the air bearings for large work pieces.

By using the keys that are integrated into the base, the operator can comfortably move the measuring carriage into the desired position and start a measurement. This eases measurement, particularly when measuring large workpieces as these do not have to be moved into position. The operator can keep both hands on the measuring instrument (one hand on the key for the air bearing and other on the high-speed keys) and measure the workpiece in one run.

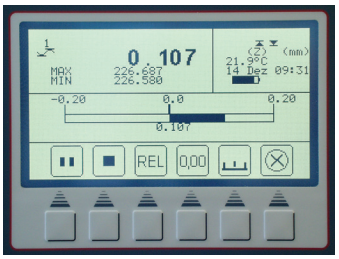
Highest accuracy and reliability

- Extremely accurate incremental measuring system with double reader head system, insensitive to the contamination of dirt
- Robust guide column, made from stainless steel
- Measuring head in precision ball bearings guide
- Temperature compensation with an integrated temperature sensor

20°C

Ergonomic operating and display unit

- The display unit can be positioned freely with the swivel arm



- Large, back-lit display
- Self-explanatory guided operation with icons

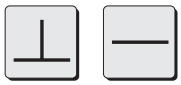
Easy to operate all measurement functions with the function keys due to the clearly defined symbols.

Universal measurement possibilities

- Wide range of measurement functions in 1D or 2D

- Dynamic measurement functions with the analog display

- Automatic perpendicularity and straightness measurements (in conjunction with accessories)

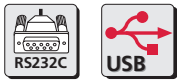


- Automated measuring procedures (measurement programs)

- Auto function for chain measurements and distance measurements

Extensive evaluation possibilities

- Transmit data to a PC via RS232 or USB (with an adapter) for example, into MS Excel via the MarCom Software



- Print measured values, statistics, etc. via a USB printer

- Save measued values in the integrated USB memory (will be recognized by a PC as an interchangeable disc drive) or on a USB dongle

- Broad range of statistical evaluations are available

Height Measuring Instrument Digimar 817 CLM

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

Technical Data

Order no.		4429010	4429011	4429012
Product type			817 CLM	
Measuring range	mm	0 – 350	0 – 600	0 – 1000
Measuring range	inch	0 – 14"	0 – 24"	0 – 40"
Application range from	mm		170	
Application range to	mm	520	770	1170
Resolution	mm		0,01, 0,005, 0,001, 0,0005, 0,0001	
Resolution	inch		.001", .0005", .0001", .00005", .00001"	
Error limit	µm		(1.8+L/600) L in mm	
Repeatability bores	µm		1	
Repeatability plane	µm		0,5	
Perpendicularity error	µm	5	6	10
Operation time max.	h		10	
Measuring force	N		1.0 +/–0.2 N	
Relative humidity non-condensing	%		65	
Working temperature	°C / °F		20 / 68	
Operating temperature	°C / °F		10 –40 / 50–104	
Product weight	kg / lbs	25,00 / 55.15	30,00 / 66.14	35,00 / 77.16
Data interface			USB, RS232C, Wireless	
Standard			Factory standard	

Accessories

Order no.	Product description	Product type
7024634	Data Connection Cable RS232C (3 m)	
4102333	Adapter Cable RS232-USB (1 m)	817 usb
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick
4221525	Surface Plate made from granite, 1000 x 630 mm	107 G
4221573	Stand, 1000 x 630 mm	107 Ug
4221526	Surface Plate made from granite, 1200 x 800 mm	107 G
4221574	Stand, 1200 x 800 mm	107 Ug

e-Stick

107 Ug

Height Measuring Instrument Digimar 816 CL

Basic measuring functions

- Top or bottom contacting
- Web width or distances between grooves, including center of web or groove
- Bore or shaft diameter, including center of bore or shaft
- Bore reversing point (up or down)
- Shaft reversing point (up or down)
- Calculating distances or symmetry
- Dynamic measuring functions
- Measuring program
- Measuring data processing
- Easy to read background lit graphic LCD-Display
- Large and clearly defined function keys
- Operator guidance with self-explanatory icons / pictograms
- Possible to set additional zero points on a work piece
- Memory can store up to 99 measured values
- MarConnect Data output, select either:
  - USB
  - OPTO RS232C
- Excellent accuracy and reliabilty due to the optical incremental measurement system with the double reader head
- Dynamic probing system enabling high repeatability
- Air bearings system for light and smooth movement
- Precise measuring head on stainless steel guideways
- Motorised measuring carriage simplifies measurement runs
- Temperature compensation with an integrated temperature sensor
- Probe constant remains after the instrument is switched off
- Integrated rechargeable battery with a long operating time span for mains independent measurement
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Height Measuring Instrument incl. Operating and display unit, Carrier 817h1, Probe K6/51, Setting block 817 eb, Instruction manual, Power source, Protection cover, Calibration certificate

Technical Data

Order no.		4429030	4429031
Product type		816 CL	
Measuring range	mm	0 –350	0 –600
Measuring range	inch	0 –14"	0 –24"
Application range from	mm	170	
Application range to	mm	520	770
Resolution	mm	0,01, 0,001	
Resolution	inch	.00005", .0001"	
Error limit	µm	(2.8+L/300) L in mm	
Repeatability bores	µm	3	
Repeatability plane	µm	2	
Perpendicularity error	µm	15	20
Operation time max.	h	10	
Measuring force	N	1.0 +/–0.2 N	
Relative humidity non-condensing	%	65	
Working temperature	°C / °F	20 / 68	
Operating temperature	°C / °F	10 –40 / 50–104	
Product weight	kg / lbs	25.00 / 55.15	30.00 / 66.14
Data interface		Opto RS232C, USB, Wireless	
Standard		Factory standard	

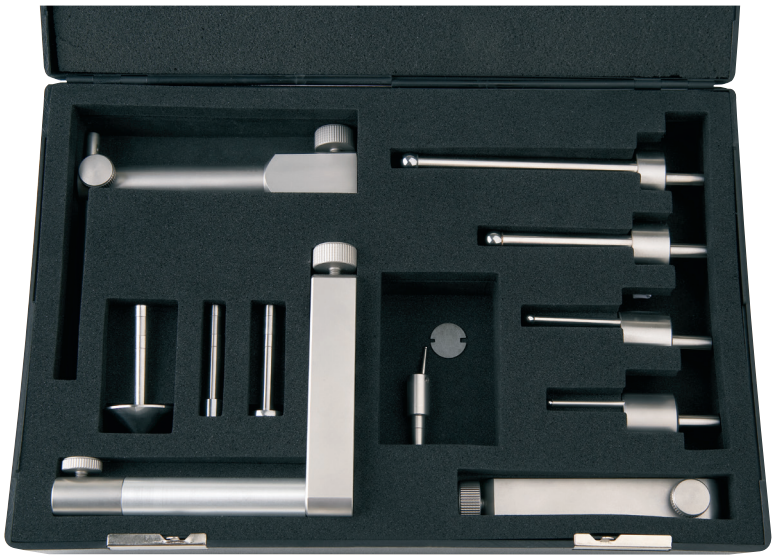
Accessories

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

e-Stick

107 Ug

Probe set Digimar 817 ts 1



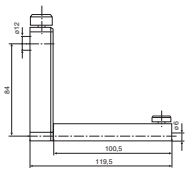
- Large accessory kit
- Packaged in a practical plastic case
- Consisting of:
- Depth probe
- Carrier with extended holder
- Disc measuring probe for grooves, etc.
- Conical measuring probe
- Cylindrical measuring probe
- Holder for test indicator styli with M2 thread
- Carrier including 4 spherical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

Technical Data

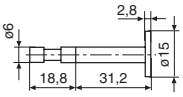
Order no.	Product type
4429019	817 ts 1

Components included in set

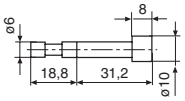
Order no.	Product description	Product type
4429219	Carrier for a probe, Mounting hole 6 mm, a = 100,5 mm, b = 119,5 mm, c = 84 mm	817 h2
4429226	Disc probe ø 15 mm	S15/31,2
4429227	Cylindrical probe ø 10 mm	Z10/31,2
4429228	Taper probe	MKe 30
4429221	Depth probe incl. carrier	TMT 120
4429256	Probe M2 incl. styli 800 ts ø 2,0 mm	KM 2
4429220	Carrier for probes 817 CLM, Mounting hole 8 mm	817 h4
7023813	Probe with mount, ø 4,0 mm	K 4/30
7023816	Probes with mount, ø 6 mm	K 6/40
7023810	Probes with mount, ø 10,0 mm	K 10/60
7023615	Probes with mount, ø 10,0 mm	K 10/100



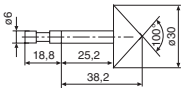
817 h2



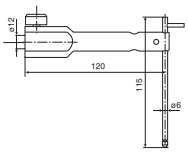
S15/31,2



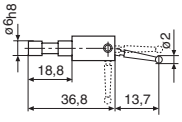
Z10/31,2



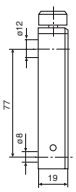
MKe 30



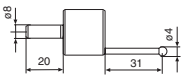
TMT 120



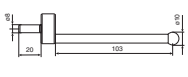
KM 2



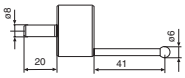
817 h4



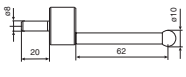
K 4/30



K 10/100



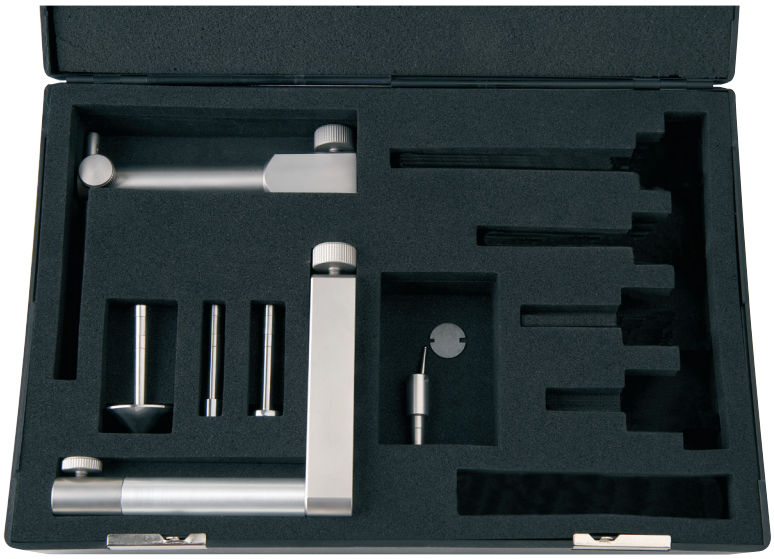
K 6/40



K 10/60

Probe set Digimar 817 ts2

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

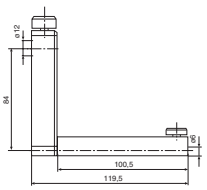


Technical Data

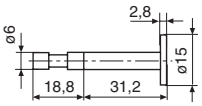
Order no.	Product type
4429018	817 ts2

Components included in set

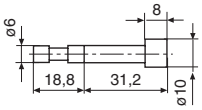
Order no.	Product description	Product type
4429219	Carrier for a probe, Mounting hole 6 mm, a = 100,5 mm, b = 119,5 mm, c = 84 mm	817 h2
4429226	Disc probe ø 15 mm	S15/31,2
4429227	Cylindrical probe ø 10 mm	Z10/31,2
4429228	Taper probe	MKe 30
4429221	Depth probe incl. carrier	TMT 120
4429256	Probe M2 incl. styli 800 ts ø 2,0 mm	KM 2



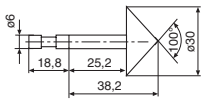
817 h2



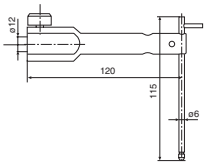
S15/31,2



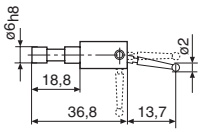
Z10/31,2



MKe 30

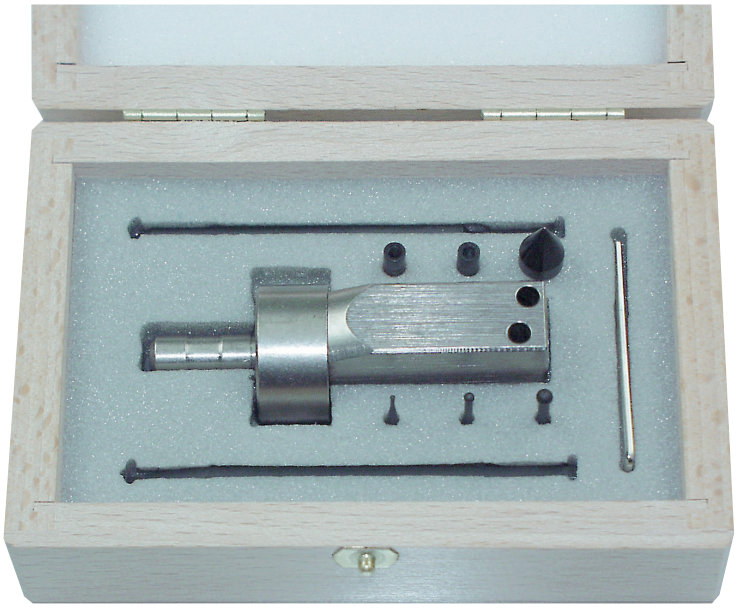


TMT 120



KM 2

Universal probe set Digimar 817 ts3



Accessory kit for small parts and delicate grooves, recesses and bores

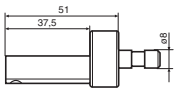
- Packaged in a practical wooden case
- Suitable for 817 h4 carriers with 8 mm mounting bore (4429220)
- Consisting of:
  - Base with 8 mm holding shaft
  - Depth probe
  - Probe shoe for grooves and recesses
  - Spherical measuring probe
  - Conical measuring probe
  - Extension
  - Adapter for M2.5 measuring anvils
- **Scope of delivery:** Case

Technical Data

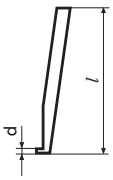
Order no.	Product type
7034000	817 ts3

Components included in set

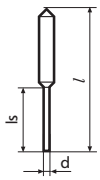
Order no.	Product name	Product type
3015917	Probe carrier	Gk/8
3015918	Measuring crook, d = 0,5 mm, l = 78 mm	TS 0,5/78
3015919	Probe pin/tip, d = 1,2 mm, l = 75 mm, ls = 15,5 mm	T 1,2/75
3015920	Taper probe	MKe 8
3022000	Spherical probe, d_k = 3,0 mm, l = 24 mm	K3/24
3022001	Spherical probe, d_k = 2,0 mm, l = 24 mm	K2/24
3022002	Spherical probe, d_k = 1,0 mm, l = 24 mm	K1/24
3015888	Extension M3 - M2,5, d = 4 mm, l = 20 mm	V/M2,5
3015921	Extension M3 - M3, d = 4 mm, l = 20 mm	V/M3



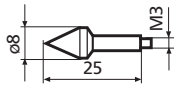
Gk/8



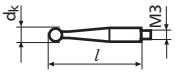
TS 0,5/78



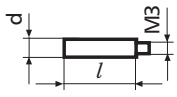
T 1,2/75



MKe 8



K3/24



V/M2,5;V/M3

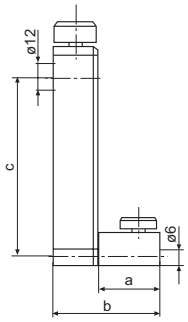
Carrier for a probe Digimar 817 h1 / 817 h2 / 817 h5

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

Technical Data

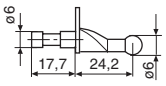
Order no.	Product type
4429154	817 h1
4429219	817 h2
4429454	817 h5

Order no.	a	b	c	Mounting hole
	mm	mm	mm	
4429154	27,5	46,5	84	6 mm
4429219	100,5	119,5	84	6 mm
4429454	35	54	86	6 mm

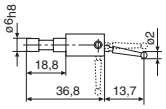


Accessories

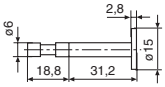
Order no.	Product description	Product type
4301865	Mounting shaft ø 6 mm	800 a6
4429158	Spherical probe, ø 5,0 mm	K5/51
4429226	Disc probe ø 15 mm	S15/31,2
4429227	Cylindrical probe ø 10 mm	Z10/31,2
4429228	Taper probe	MKe 30
4429254	Spherical probe for 817 CLM, ø 6 mm	K6/51
4429256	Probe M2 incl. styli 800 ts ø 2,0 mm	KM 2



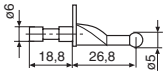
K6/51



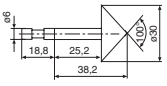
KM 2



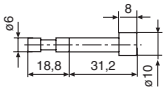
S15/31,2



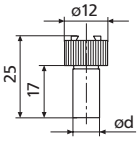
K5/51



MKe 30



Z10/31,2



800 a

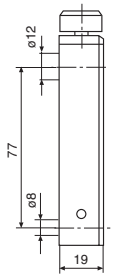
Carrier for probes 817 CLM Digimar 817 h4

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

Technical Data

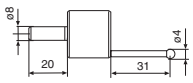
Order no.	Product type
4429220	817 h4

Order no.	Mounting hole
4429220	8 mm

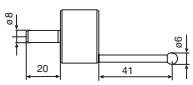


Accessories

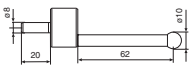
Order no.	Product description	Product type
3015888	Extension M3 - M2,5, d = 4 mm, l = 20 mm	V/M2,5
3015917	Probe carrier	CXt2
3015918	Measuring crook, d = 0,5 mm, l = 78 mm	CXt2
3015919	Probe pin/tip, d = 1,2 mm, l = 75 mm, ls = 15,5 mm	CXt2
3015920	Taper probe	CXt2
3015921	Extension M3 - M3, d = 4 mm, l = 20 mm	CXt2
3022000	Spherical probe, d_k = 3,0 mm, l = 24 mm	CXt2
3022001	Spherical probe, d_k = 2,0 mm, l = 24 mm	CXt2
3022002	Spherical probe, d_k = 1,0 mm, l = 24 mm	CXt2
7023615	Probes with mount, ø 10,0 mm	K 10/100
7023810	Probes with mount, ø 10,0 mm	K 10/60
7023813	Probe with mount, ø 4,0 mm	K 4/30
7023816	Probes with mount, ø 6 mm	K 6/40



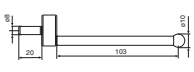
K 4/30



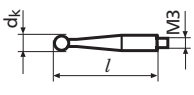
K 6/40



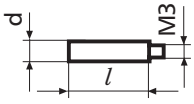
K 10/60



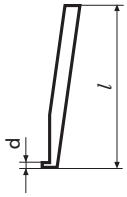
K 10/100



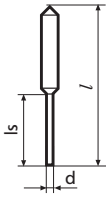
K1-3/24



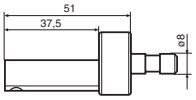
V/M2,5;V/M3



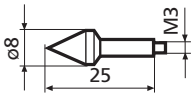
TS 0,5/78



T 1,2/75



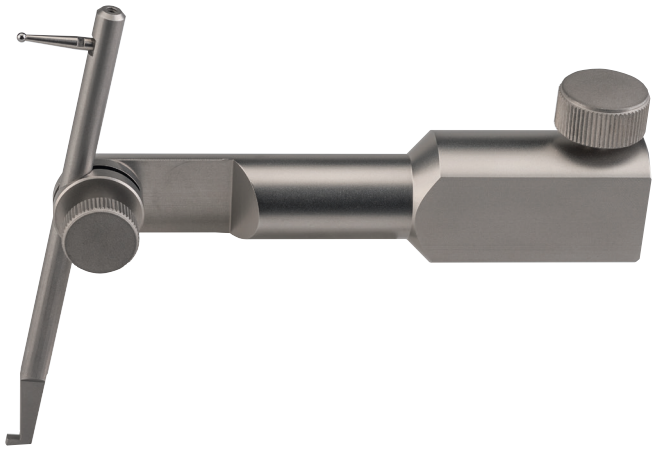
Gk/8



MKe 8

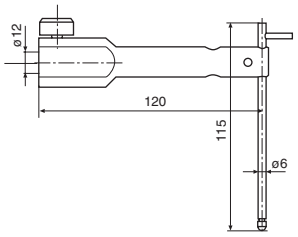
Depth probe incl. carrier Digimar TMT 120 / TMT 120 S

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

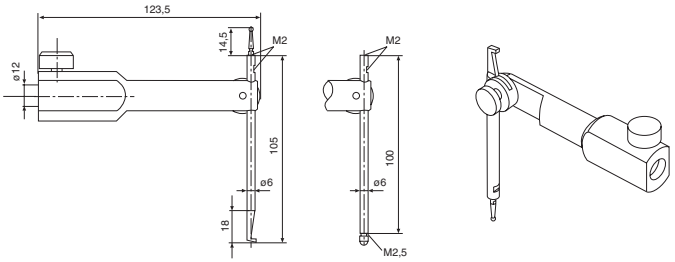


Technical Data

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



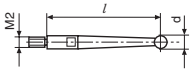
TMT 120



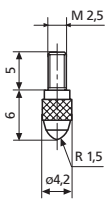
TMT 120 S

Accessories

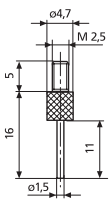
Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4360001	Standard contact point, Steel, r = 1,5 mm	901
4360002	Standard contact point, Carbide, r = 1,5 mm	901 H
4360003	Standard contact point, Ruby, r = 1,5 mm	901 R
4360241	Pin contact point, Carbide, l = 11 mm, Measuring surface ø 1,5 mm	911 H2



800 t

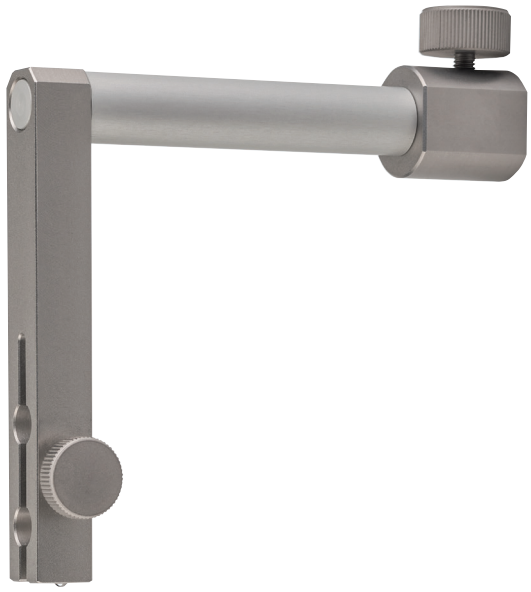


901



911 H2

Carrier for checking perpendicularity Digimar 817 h3

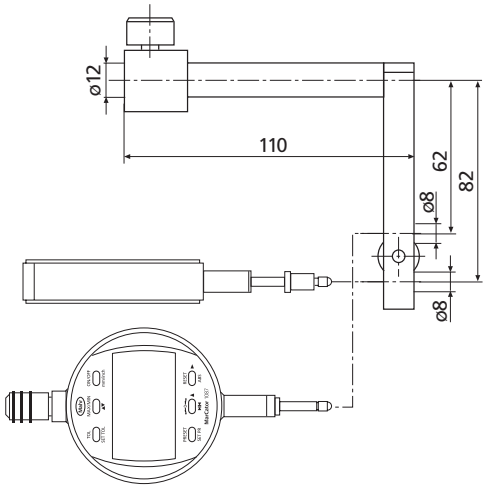


- Carrier for perpendicularity measurement
- Suitable for analog and digital dial indicators
- Ideal with P1514H measuring probe (817 CLM only)

Technical Data

Order no.	Product type
4429206	817 h3

Order no.	Mounting hole
4429206	8 mm



Accessories

Order no.	Product description	Product type
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4337620	Digital Indicator, 0,0005 mm, 12,5 mm	1086 R
4426810	Incremental probe	P1514 H

1086 R

Height Measuring and Scribing Instrument Digimar 814 N

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

Application:
- For measuring heights and center distances between bores and surfaces, widths of ledges
- For marking and scribing of workpieces

- Large, easy to read digital display
- Measuring and display unit are incorporated in the measuring head
- Data transmission via Opto RS232 C interface
- Digital Preset
- Zero setting in any position
- MAX, MIN and MAX-MIN functions
- Enter tolerance limit for 1 characteristic
- Switch between mm/inch
- High accuracy
- Incremental inductive measuring system
- Measuring head with an ball bush guide
- Resistance free measuring system
- Easy to operate due to the hand crank on the side of the measuring head
- Constant measuring force; acting upwards or downwards as required
- Measuring head can be locked in position, ideal for scribing tasks
- With fine adjustment
- Mains independent due to being battery operated
- Universal application due to broad range of accessories
- **Scope of delivery:** Height Measuring Instrument incl. Operating and display unit, Caliper arm 814t, Spherical probe 814 m, 8 mm, Battery, Instruction manual, Protection cover, Calibration certificate

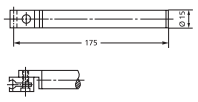
Technical Data

Order no.		4426540	4426542
Product type		814 N	
Measuring range	mm	0 –320	0 –620
Measuring range	inch	0 –12.6"	0 –24.4"
Resolution	mm	0.001, 0.01	
Resolution	inch	.00005", .0005"	
Error limit	µm	20	30
Perpendicularity error in µm	µm	20	30
Operating time max.	h	2000	
Measuring force	N	3	
Working temperature	°C / °F	20 / 68	
Operating temperature	°C / °F	5 –40 / 41–104	
Product weight	kg / lbs	6.20 / 13.22	10.50 / 23.15
Data interface		Opto RS232C, Wireless	
Standard		Factory standard	

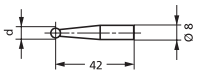
Height Measuring and Scribing Instrument Digimar 814 N

Accessories

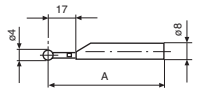
Order no.	Product description	Product type
4426510	Probe arm 150 mm, Mounting hole 8 mm	814 t
4426525	Spherical probe, Ball diameter 2,0 mm	814 m
4426526	Spherical probe, Ball diameter 3,0 mm	814 m
4426512	Spherical probe, Ball diameter 4,0 mm	814 m
4426527	Spherical probe, Ball diameter 5,0 mm	814 m
4426511	Spherical probe, Ball diameter 6 mm	814 m
4426528	Spherical probe, Ball diameter 7 mm	814 m
4426509	Spherical probe, Ball diameter 8,0 mm	814 m
4426498	Spherical probe ruby ball, ø = 4,0 mm	817 Cl-r
4426513	Disc probe	814 s
4426514	Probe holder	814 h
4426515	Scriber	814 a
4426516	Holder	814 kh
4426071	Measuring taper 0–15 mm	817 ks1
4426072	Measuring taper 14–20 mm	817 ks2
4426073	Measuring taper 18–24 mm	817 ks3
4426074	Measuring taper 23–30 mm	817 ks4
4426517	Two direction probe, ø = 4,0 mm	814 u
4426518	Interchangeable probe arm, ø = 2,0 mm	814 ua
4426434	Holder with connection thread M2,5 / M1,6 / M1,4	817 Cl-am
4426433	Stylus with exchangeable measuring pin	817 Cl-sa
4426435	Stylus with parallel measuring faces	817 Cl-p
4426616	Dust Cover for 0–320 mm	
4426619	Dust cover for 0–620 mm	
4102510	Data Connection Cable RS232C (2 m)	16 ESv
4102235	Transmitter for e-Stick	1082 e
4102230	Receiver	e-Stick
4102330	Adapter Cable RS232-USB (1 m)	Opto usb
4102520	Battery 3 V, CR 2032	



814 t



814 m



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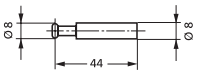

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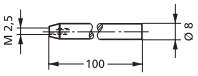

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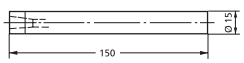

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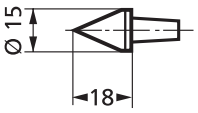
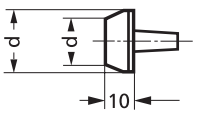


817 ks1



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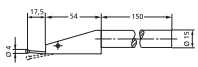

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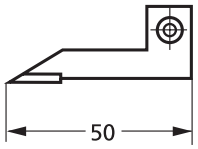

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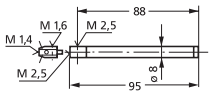

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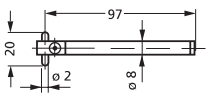

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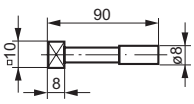


817 Cl-p

e-Stick

Height Measuring and Scribing Instrument Digimar 814 G

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

Application:
- For measuring heights and center distances between bores and surfaces, widths of ledges
- For marking and scribing of workpieces

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

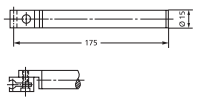
Technical Data

Order no.		4426541	4426543
Product type		814 G	
Measuring range	mm	0 –320	0 –620
Measuring range	inch	0 –12.6"	0 –24.4"
Resolution	mm	0.001, 0.01	
Resolution	inch	.00005", .0005"	
Error limit	µm	20	30
Perpendicularity error in µm	µm	20	30
Operating time max.	h	2000	
Measuring force	N	3	
Working temperature	°C / °F	20 / 68	
Operating temperature	°C / °F	5 –40 / 41–104	
Product weight	kg / lbs	14.00 /30.86	18.30 / 35.27
Plate size	mm	200 x 300	
Data interface:		Opto RS232C, Wireless	
Standard		Factory standard	

Height Measuring and Scribing Instrument Digimar 814 G

Accessories

Order no.	Product description	Product type
4426510	Probe arm 150 mm, Mounting hole 8 mm	814 t
4426525	Spherical probe, Ball diameter 2,0 mm	814 m
4426526	Spherical probe, Ball diameter 3,0 mm	814 m
4426512	Spherical probe, Ball diameter 4,0 mm	814 m
4426527	Spherical probe, Ball diameter 5,0 mm	814 m
4426511	Spherical probe, Ball diameter 6 mm	814 m
4426528	Spherical probe, Ball diameter 7 mm	814 m
4426509	Spherical probe, Ball diameter 8,0 mm	814 m
4426498	Spherical probe ruby ball, ø = 4,0 mm	817 Cl-r
4426513	Disc probe	814 s
4426514	Probe holder	814 h
4426515	Scriber	814 a
4426516	Holder	814 kh
4426071	Measuring taper 0–15 mm	817 ks1
4426072	Measuring taper 14–20 mm	817 ks2
4426073	Measuring taper 18–24 mm	817 ks3
4426074	Measuring taper 23–30 mm	817 ks4
4426517	Two direction probe, ø = 4,0 mm	814 u
4426518	Interchangeable probe arm, ø = 2,0 mm	814 ua
4426434	Holder with connection thread M2,5 / M1,6 / M1,4	817 Cl-am
4426433	Stylus with exchangeable measuring pin	817 Cl-sa
4426435	Stylus with parallel measuring faces	817 Cl-p
4426616	Dust Cover for 0–320 mm	
4426619	Dust cover for 0–620 mm	
4102510	Data Connection Cable RS232C (2 m)	16 ESv
4102235	Transmitter for e-Stick	1082 e
4102230	Receiver	e-Stick
4102330	Adapter Cable RS232-USB (1 m)	Opto usb
4102520	Battery 3 V, CR 2032	



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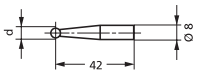

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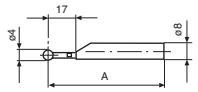

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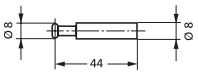

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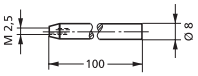

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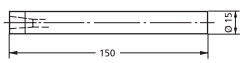

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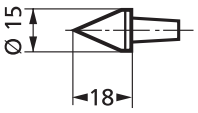

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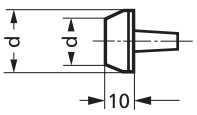

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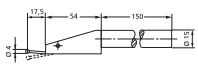

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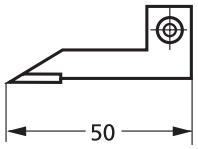

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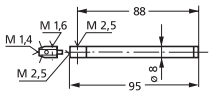

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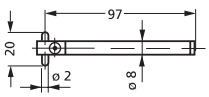

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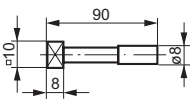


817 Cl-p

e-Stick

Height Measuring and Scribing Instrument Digimar 814 SR

REFERENCE

ABS System | USB | Digimatic | RS232C

Functions:
- RESET (set display to zero)
- mm/inch
- ABS (Switch between Relative and Absolute measurement)
- Lock/Unlock
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)
- AUTO-ON / OFF

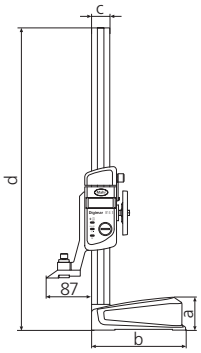
- Battery life up to 3 years
- Max. measuring speed 1,5 m/s (60"/s)
- MarConnect Data output: choose either
  - USB
  - OPTO RS232C
  - Digimatic
- High contrast Liquid Crystal Display with 12 mm sized digits
- Sturdy heavy-duty base, easy to handle
- Hardened and lapped contact surface which produce both a smooth and even movement
- Slide and beam made of hardened stainless steel
- Hand crank for positioning and measuring
- Fine adjustment
- Locking screw
- Interchangeable scriber point, carbide tipped
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Scriber, Battery, Carton, Instruction manual

Application:
- Scribing and marking of work pieces
- Measuring Heights and distances

Technical Data

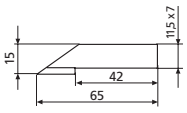
Order no.		4426100	4426101
Product type		814 SR	
Measuring range	mm	0 –350	0 –600
Measuring range	inch	0 –14"	0 –24"
Resolution	mm	0,01	
Resolution	inch	.0005"	
Error limit	µm	40	50
Operation time max.	h	4000	
Operating temperature	°C / °F	10 –40 / 50–104	
Product weight	kg / lbs	7.00 / 15.43	8.00 / 17.64
Data interface:		Opto RS232C, Digimatic, USB, Wireless	
Standard		Factory standard	

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

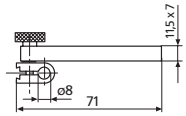


Accessories

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



814 SRs;



27 Sp

e-Stick

16 EWe

DOES EVERYTHING ROTATE AROUND PRECISION?
NO PROBLEM WITH MICROMAR.

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

Micromar. Micrometers

Overview Micromar Micrometers 94

Micromar 40 EWRi 96
Digital Micrometer

Micromar 40 EWR / 40 ER / 40 EWS / 40 EWV 98
With a digital Display

Micromar 40 A / 40 SA / 40 AS / 40 W 104
With Scales

Micromar 40 F / 40 FC / 40 T / 40 TS 109
With a Dial Comparator

Micromar 40 EWR-B / 40 AB 114
With reduced measuring faces Ø 3 mm

Micromar 40 EWR-S 116
For measuring recesses, grooves

Micromar 40 EWR-R / 40 AR 119
With croweded anvil

Micromar 40 SM 122
With Disc-Type anvils

Micromar 40 Z 123
For Gear and Theread Measurment

Micromar 40 EWR-K 125
For measuring crimp heights

Micromar 40 AW 126
With Disc-Type anvils

Inside Micrometers

Micromar 44 F / 44 Cm / 44 CB / 44 CZ 127
Inside Micrometers with 2-Point Contact

Micromar 44 A / 44 EWR / 844 A 132
Self-Centering Inside Micrometer / Measuring Pistols

Depth Micrometers

Micromar 45 T 144
With a Line Scale (Vernier)

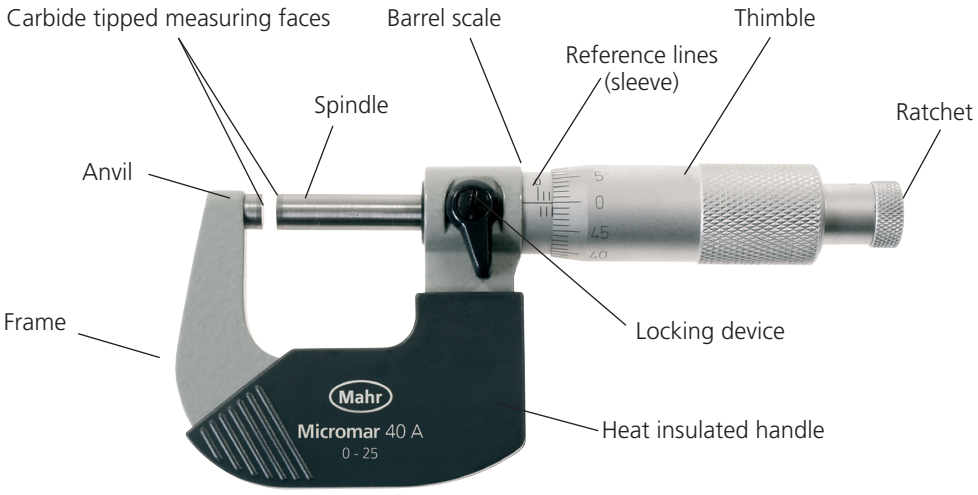
Micrometer Heads

Micromar 46 EWR / 46 / 46 H 145
Digital Micrometer Head

Micromar. Micrometer

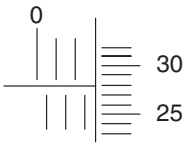
OVERVIEW

Micromar - Design Features



Reading example:

Micrometer with 0,01 mm-divisions



Sleeve	2,5
Thimble	0,28
Measuring result	2,78 mm

Micromar - Types of Micrometers

Mahr - Micrometers are available with the following means of indication:

a) Digital Micrometer with digital display

b) Mechanical Micrometer with scale and dial

c) Mechanical Micrometer with scale

Error limits *G* according to DIN 863-1

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

Micromar. Digital Micrometer Micromar 40 EWRi

Micrometers with Integrated Wireless

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

MarConnect integrated wireless

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

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

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

Stainless steel, hardened spindle

Sturdy hard lacquered steel frame

Tolerance function with warning limits:

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

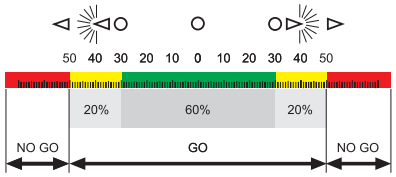
Hold:
Frezees the measured value after the measurement. Practical function for measuring tasks, where the display is not visible, i.e. measurements in the machine.

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

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

Micromar 40 EWRi. Digital Micrometer

MarConnect integrated wireless · IP65 · ABS · TOL · REFERENCE



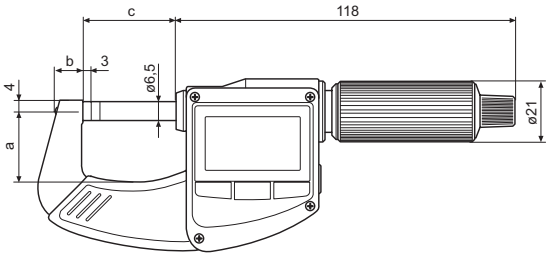
Functions:
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (Tolerance and warning limits)
- DATA (Data transmission)
- HOLD (storage of measured values)

- High contrast analog display
- Spindle is hardened throughout and ground, stainless
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **IP protection category:** IP 65
- **Scope of delivery:** Instruction manual, Battery, Setting standard (from measuring range 25–50 mm), Case

Technical Data

Order no.	Product type	Measuring range	Resolution	Error limit	Spindle thread pitch	Measuring force
		mm	mm/inch	µm	mm	N
4157100	40 EWRi	0 –25	0,001 / .00005"	2	0,5	5 –10
4157101	40 EWRi	25 –50	0,001 / .00005"	2	0,5	5 –10
4157102	40 EWRi	50 –75	0,001 / .00005"	3	0,5	5 –10
4157103	40 EWRi	75 –100	0,001 / .00005"	3	0,5	5 –10

Order no.	a	b	c
	mm	mm	mm
4157100	24	9,5	32
4157101	36	11	57
4157102	45	13	82
4157103	57	13	107



Accessories

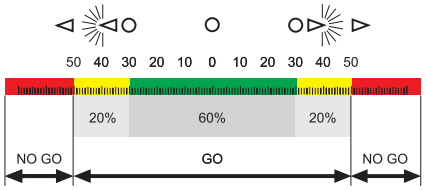
Order no.	Product name	Product type
4102220	Receiver	i-Stick
4102520	Battery 3 V, CR 2032	
4158000	Stand, for holding outside micrometers	41 H

i-Stick

41 H

Micromar 40 EWRi. Digital micrometer set

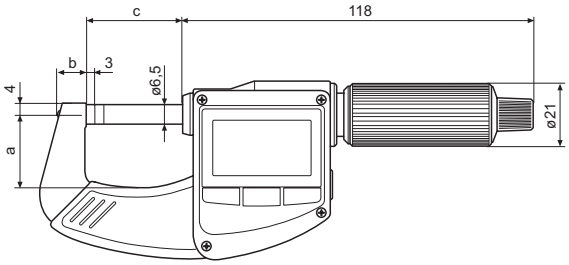
Functions:
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (Tolerance and warning limits)
- DATA (Data transmission)
- HOLD (storage of measured values)



- High contrast analog display
- Spindle is hardened throughout and ground, stainless
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 10 mm
- **Data interface:** Integrated wireless
- **IP protection category:** IP 65
- **Scope of delivery:** Instruction manual, Battery, Setting values, Case

Technical Data

Order no.	Product type	Measuring range	Resolution	Spindle thread pitch	Measuring force	Number of Micrometers
		mm	mm/inch	mm	N	
4157115	40 EWRi	0 –100	0,001 / .00005"	0,5	5 –10	4



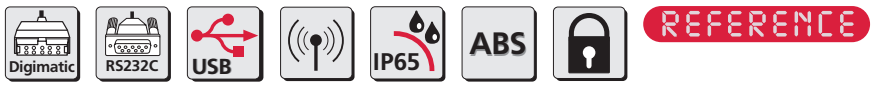
Accessories

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

i-Stick

41 H

Digital Micrometer Micromar 40 EWR



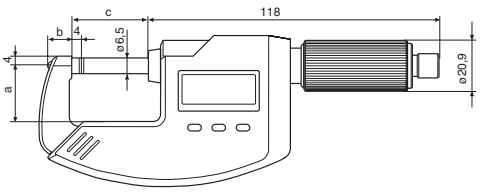
Functions:
- Functions:
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (for entering a numerical value)
- LOCK function (key lock)
- DATA (Data transmission via connection cable)

- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Scope of delivery:** Instruction manual, Battery, Setting standard (from measuring range 25–50 mm), Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	µm	mm	N	
4151705	40 EWR	0 –25	0 –1"	0.001 / .00005"	2	0.635	5 –10	Factory standard
4151706	40 EWR	25 –50	1 –2"	0.001 / .00005"	2	0.635	5 –10	Factory standard
4151707	40 EWR	50 –75	2 –3"	0.001 / .00005"	3	0.635	5 –10	Factory standard
4151708	40 EWR	75 –100	3 –4"	0.001 / .00005"	3	0.635	5 –10	Factory standard
4151740	40 EWR	100 –125	4 –5"	0.001 / .00005"	6	0.635	5 –10	DIN 863–1
4151741	40 EWR	125 –150	5 –6"	0.001 / .00005"	6	0.635	5 –10	DIN 863–1
4151742	40 EWR	150 –175	6 –7"	0.001 / .00005"	7	0.635	5 –10	DIN 863–1
4151743	40 EWR	175 –200	7 –8"	0.001 / .00005"	7	0.635	5 –10	DIN 863–1

Order no.	a	b	c
	mm	mm	mm
4151705	23	9.5	31.5
4151706	32	11.5	57
4151707	44	13.5	82
4151708	57	15.5	107
4151740	73	17	132.5
4151741	85	17	157.5
4151742	97	17	182.5
4151743	110	17	207.5



Accessories

Order no.	Product name	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	16 EXu Data connection cable USB (2 m)	16 EXu
4102410	Data connection cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4158000	Stand, for holding outside micrometers	41 H

16 EWe

e-Stick

41 H

Micromar 40 EWR. Digital Micrometer

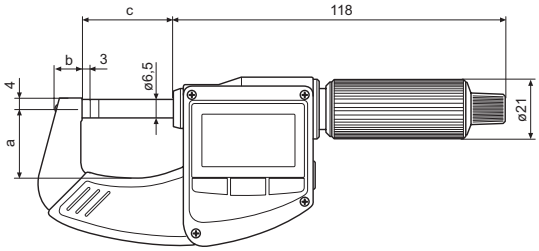
Functions:
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (for entering a numerical value)
- LOCK function (key lock)
- HOLD (storage of measured values)

- High contrast analog display
- Spindle is hardened throughout and ground, stainless
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Digit height:** 10 mm
- **IP protection category:** IP 65
- **Scope of delivery:** Instruction manual, Battery, Setting standard (from measuring range 25–50 mm), Case

Technical Data

Order no.	Product type	Measuring range	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	mm/inch	µm	mm	N	
4157011	40 EWR	0 –25	0,001 / .00005"	2	0,5	5 –10	Factory standard
4157012	40 EWR	25 –50	0,001 / .00005"	2	0,5	5 –10	Factory standard
4157013	40 EWR	50 –75	0,001 / .00005"	3	0,5	5 –10	Factory standard
4157014	40 EWR	75 –100	0,001 / .00005"	3	0,5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4157011	24	9,5	32
4157012	36	11	57
4157013	45	13	82
4157014	57	13	107



Digital Micrometer Set Micromar 40 EWR

Functions:
- AUTO-ON / OFF
- RESET (set display to zero)
- ABS (display can be set to zero
- without losing the reference to the Preset value)
- mm/inch
- Lock/Unlock
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)

- High contrast analog display
- Spindle is hardened throughout and ground, stainless
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Height of digits:** 8,5 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery, life span ca. 2 years
- **IP protection category:** IP 65
- **Scope of delivery:** Instruction manual, Battery, Setting values, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Spindle thread pitch	Measuring force	Standard	Number of Micrometers
		mm	inch	mm/inch	mm	N		
4151709	40 EWR	0 –100	0 –4“	0,001 / .00005“	0,635	5 –10	Factory standard	4

Accessories

Order no.	Product description	Product type
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102357	Data Connection Cable USB (2 m)	16 EXu
4102231	Transmitter for e-Stick	16 EWe
4102230	Receiver	e-Stick
4158000	Stand, for holding outside micrometers	41 H

16 EWe

e-Stick

41 H

Digital Micrometer Micromar 40 ER

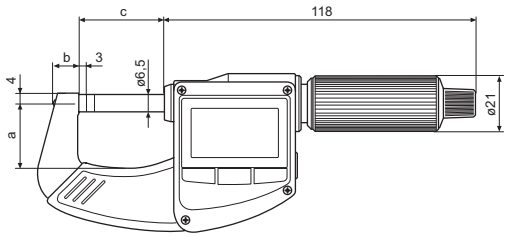
Functions:
- RESET (set display to zero)
- mm/inch
- HOLD (storage of measured values)
- LOCK function (key lock)

- High contrast analog display
- Spindle is hardened throughout and ground, stainless
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Digit height:** 10 mm
- **IP protection category:** IP 40
- **Scope of delivery:** Instruction manual, Battery, Case

Technical Data

Order no.	Product type	Measuring range	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	mm/inch	µm	mm	N	
4157010	40 ER	0 –25	0,001 / .00005"	2	0,5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4157010	24	9,5	32



Accessories

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

41 H

Digital Micrometer Micromar 40 EWS

Digimatic RS232C USB IP52 ABS REFERENCE

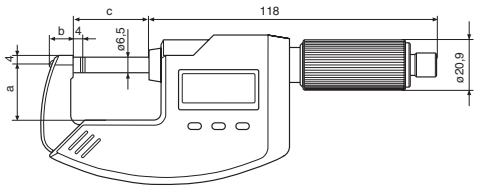
Functions:
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- mm/inch
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)
- LOCK function (key lock)

- Sliding spindle
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **IP protection category:** IP 52
- **Scope of delivery:** Battery, Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	µm	mm	N	
4151724	40 EWS	0 –25	0 –1"	0,001 / .00005"	4	0,635	5 –10	DIN 863–1

Order no.	a	b	c
	mm	mm	mm
4151724	23	9,5	31,5



Accessories

Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4158000	Stand, for holding outside micrometers	41 H

16 EWe

e-Stick

41 H

Digital Micrometer Micromar 40 EWV

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

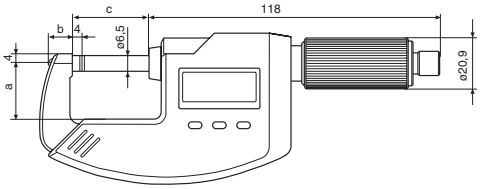
- High contrast analog display
- Sliding spindle
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Chrome plated steel frame, heat insulated
- With mounting shank for anvils dia. = 3,5mm
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 52
- **Scope of delivery:** Instruction manual, Battery, Case, Anvils 40 Efk, 40 Efl, Anvils 40 Eak, 40 Eal, Anvils 40 Erk, Anvils 40 Epk, Anvils 40 Esk, Anvils 40 Etk, 40 Etl, 4151722 without measuring anvils

ABS | DIN 863-3 | IP52 | USB | RS232C | Digimatic

Technical Data

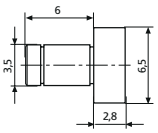
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Spindle thread pitch	Measuring force	Standard	Incl. accessories
		mm	inch	mm/inch	µm	mm	N		
4151723	40 EWV	0 –25	0 –1"	0,001 / .00005"	4	0,635	5 –10	DIN 863–3	•
4151722	40 EWV	0 –25	0 –1"	0,001 / .00005"	4	0,635	5 –10	DIN 863–3	

Order no.	a	b	c
	mm	mm	mm
4151723	23	9,5	31,5
4151722	23	9,5	31,5

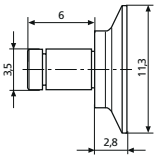


Accessories

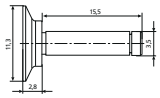
Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4151761	Anvil (6,5 mm)	40 Efl
4151762	Anvil (11,3 mm)	40 Etl
4151767	Anvil (2,3 x 2 mm)	40 Eal
4151771	Anvil (6,5 mm)	40 Efk
4151772	Anvil (11,3 mm)	40 Etk
4151773	Anvil (60°)	40 Epk
4151774	Anvil (6,5 mm)	40 Erk
4151775	Anvil (7 x 0,75 mm)	40 Esk
4151777	Anvil (2,3 x 2 mm)	40 Eak
4158000	Stand, for holding outside micrometers	41 H



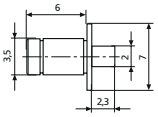
40 Efk



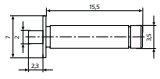
40 Etk



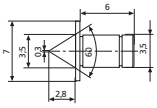
40 Etl



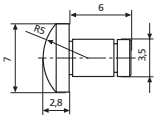
40 Eak



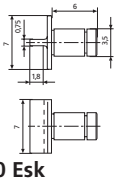
40 Eal



40 Epk



40 Erk



40 Esk

16 EWe

e-Stick

41 H

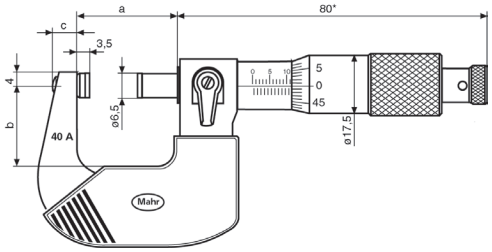
Micrometer Micromar 40 A

- Operating and display units antiglare 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
- **Scope of delivery:** Setting standard (from measuring range 25–50 mm), Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Standard
		mm	mm	µm	mm	
4134000	40 A	0 –25	0,01	4	0,5	DIN 863–1
4134001	40 A	25 –50	0,01	4	0,5	DIN 863–1
4134002	40 A	50 –75	0,01	5	0,5	DIN 863–1
4134003	40 A	75 –100	0,01	5	0,5	DIN 863–1
4134004	40 A	100 –125	0,01	6	0,5	DIN 863–1
4134005	40 A	125 –150	0,01	6	0,5	DIN 863–1
4134006	40 A	150 –175	0,01	7	0,5	DIN 863–1
4134007	40 A	175 –200	0,01	7	0,5	DIN 863–1

Order no.	a	b	c
	mm	mm	mm
4134000	31	25,5	7
4134001	56	34,5	12
4134002	81	47,5	12
4134003	106	58,5	13
4134004	131	71,5	13
4134005	156	83,5	13
4134006	182	95,5	13
4134007	207	108,5	13



Accessories

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

41 H

Micrometer Micromar 40 SA

- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Setting values 25 mm / 75 mm, Case

Technical Data

Order no.	Product type	Measuring range	Readings	Spindle thread pitch	Standard	Number of Micrometers
		mm	mm	mm		
4134050	40 SA	0 –100	0,01	0,5	DIN 863–1	4
4134051	40 SA	100 –200	0,01	0,5	DIN 863–1	4

Accessories

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

41 H

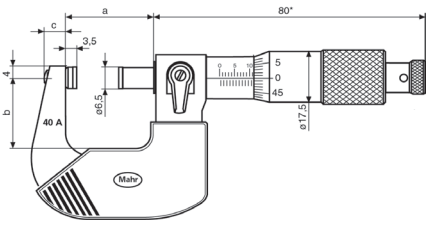
Micrometer Micromar 40 A

- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Setting standard (from measuring range 1–2"), Case

Technical Data

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

Order no.	a	b	c
	mm	mm	mm
4134900	31	25,5	7
4134901	56	34,5	12
4134902	81	47,5	12
4134903	106	58,5	13
4134904	131	71,5	13
4134905	156	83,5	13
4134906	182	95,5	13
4134907	207	108,5	13



Accessories

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

41 H

Micrometer Micromar 40 AS

- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Setting values 1" / 3", Case

Technical Data

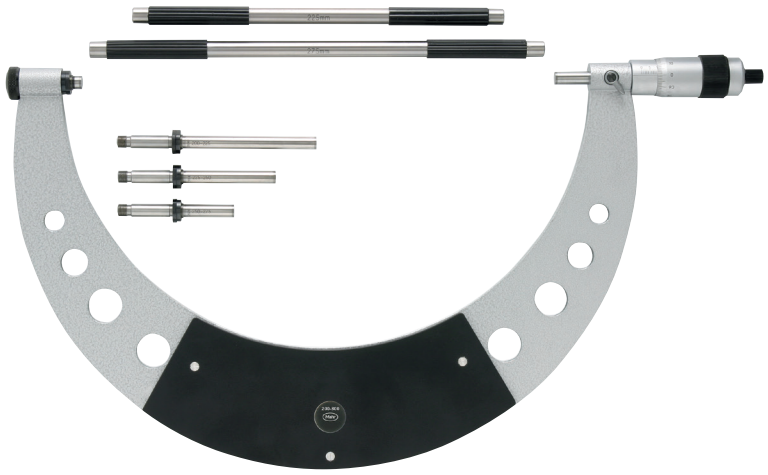
Order no.	Product type	Measuring range	Readings	Micrometer pitch (imperial)	Standard
		inch	inch	inch	
4134960	40 AS	0 –4"	.0001"	.025"	Factory standard
4134961	40 AS	4 –8"	.0001"	.025"	Factory standard

Accessories

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

41 H

Micrometer Micromar 40 W

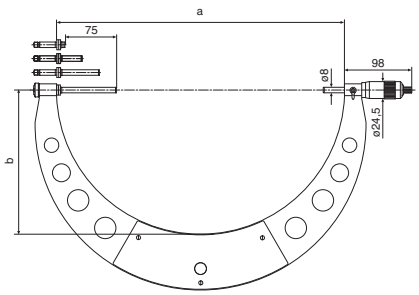


- Operating and display units antiglare with satin chrome finish
- Spindle and anvil made of hardened steel, carbide tipped
- Hard lacquered steel frame, from 400 mm the frame is made from a steel tube to reduce weight
- Heat insulators
- Ratchet is integrated in the thimble
- Locking device
- 4 interchangeable anvils, adjustable
- **Scope of delivery:** Instruction manual, Setting values, Case

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Parallelism	Flatness	Spindle thread pitch	Standard
		mm	mm	µm	µm	µm	mm	
4137500	40 W	0 –100	0,01	5	3	0,6	1	Factory standard
4137501	40 W	100 –200	0,01	7	4	0,6	1	Factory standard
4137502	40 W	200 –300	0,01	9	5	0,6	1	Factory standard
4137503	40 W	300 –400	0,01	11	6	0,6	1	Factory standard
4137504	40 W	400 –500	0,01	13	7	0,6	1	Factory standard
4137505	40 W	500 –600	0,01	21	8	0,6	1	Factory standard
4137506	40 W	600 –700	0,01	23	8	0,6	1	Factory standard
4137507	40 W	700 –800	0,01	26	9	0,6	1	Factory standard
4137508	40 W	800 –900	0,01	28	11	0,6	1	Factory standard
4137509	40 W	900 –1000	0,01	30	11	0,6	1	Factory standard

Order no.	a	b
	mm	mm
4137500	117,5	59
4137501	217,5	109
4137502	317,5	159
4137503	417,5	209
4137504	517,5	259
4137505	617,5	309
4137506	717,5	360
4137507	817,5	410
4137508	917,5	460
4137509	1017,5	510



Micrometer with integrated Dial Comparator Micromar 40 F / 40 FC

- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Case

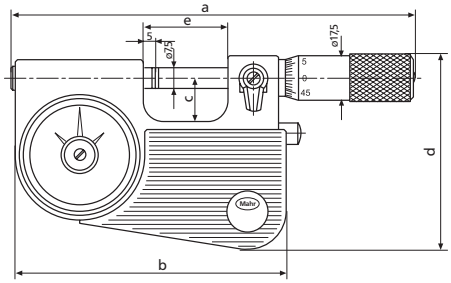
Application:

- For rapid measurements of diameters of cylindrical parts (shafts, bolts and shanks)
- Measurement of thickness and length
- Recommended for standard precision parts

Technical Data

Order no.		4150000	4150001	4150200	4150201
Product type		40 F		40 FC	
Measuring range	mm	0 –25	25 –50	0 –25	25 –50
Measuring surface		Carbide		Ceramic	
Readings	mm	0,01			
Error limit	µm	2			
Parallelism	µm	1			
Flatness	µm	0,2			
Spindle thread pitch	mm	0,5			
Measuring force	N	9			
Standard		Factory standard			
Measuring range, dial comparator (measuring screw)	µm	± 65			
Readings	µm	1			
Error limit G_e	µm	1			

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



Accessories

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

41 H

43 A

Micrometer with integrated Dial Comparator Micromar

Application:

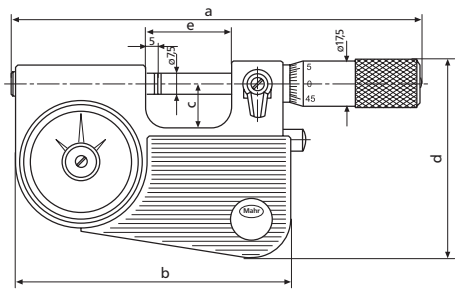
- For rapid measurements of diameters of cylindrical parts (shafts, bolts and shanks)
- Measurement of thickness and length
- Recommended for standard precision parts

- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Case

Technical Data

Order no.		4150900	4150901
Measuring range	inch	0 –1"	1 –2"
Readings	inch	.0001"	
Error limit	inch	.00008"	
Parallelism deviation	inch	.00008"	
Flatness deviation	inch	.00001"	
Micrometer pitch (imperial)	inch	.025"	
Measuring force	N	9	
Standard		Factory standard	
Dial comparator measuring range (measuring screw)	inch	± .0025"	
Dial comparator scale graduation value	inch	.00005"	
Dial comparator error limit Ge	inch	.00005"	

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



Accessories

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

41 H

Micrometer with integrated Dial Comparator Micromar 40 T

DIN 863-3

- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Case

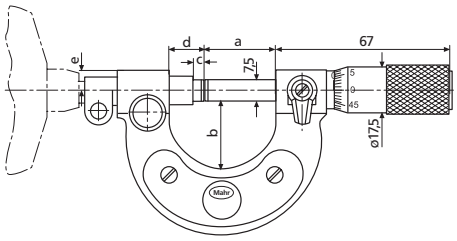
Application:

- For rapid measurements of diameters of cylindrical parts (shafts, bolts and shanks)
- Measurement of thickness and length
- Recommended for standard precision parts

Technical Data

Order no.		4154000	4154001	4154002	4154003	4154004
Product type				40 T		
Measuring range	mm	0 –25	25 –50	50 –100	100 –150	150 –200
Readings	mm			0,01		
Error limit	µm			2		
Parallelism	µm			2		
Flatness	µm			0,2		
Spindle thread pitch	mm			0,5		
Measuring force	N		6,5		7,5	
Standard				DIN 863–3		
Indicating instrument (scope of delivery)				Millimess 1003		
Measuring range, dial comparator (measuring screw)	µm			± 50		
Readings	µm			1		
Error limit G_e	µm			1		

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4154000	27	28	4	11	8
4154001	52	40	4	11	8
4154002	76	65	5,5	30	8
4154003	127	87	5,5	30	8
4154004	177	112	5,5	30	8



Accessories

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

41 H

43 A

Precision Bench Micrometer Micromar 40 TS

DIN 863-3

Application:

- For rapid measurements of diameters of cylindrical parts (shafts, bolts and shanks)
- Measurement of thickness and length
- Recommended for standard precision parts

- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual

Technical Data

Order no.		4154030	4154031
Product type		40 TS	
Measuring range	**mm**	0 –50	
Error limit	**µm**	2	
Parallelism	**µm**	2	
Flatness	**µm**	0,2	
Spindle thread pitch	**mm**	0,5	
Measuring force	**N**	6,5	
Standard		DIN 863–3	
Indicating instrument (scope of delivery)		Millimess 1003	without
Measuring range, dial comparator (measuring screw)	**µm**	± 50	±
Readings	**µm**	1	
Error limit G_e	**µm**	1	

Accessories

Order no.	Product description	Product type
4154035	Wooden case	
4159400	Setting gage (25 mm)	43 A
4335000	Millimess 0,5 µm, ± 25 µm	1002
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4346000	Inductive dial comparator, ± 0,9 µm	2000
4346100	Inductive dial comparator, ± 0,9 µm	2001

43 A

1002

1003

2000

2001

Precision Bench Micrometer Micromar 40 TS

- Operating and display units antiglare 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
- **Scope of delivery:** Dial comparator 1003 Z, Instruction manual

Application:

- For rapid measurements of diameters of cylindrical parts (shafts, bolts and shanks)
- Measurement of thickness and length
- Recommended for standard precision parts

Technical Data

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

Accessories

Order no.	Product description	Product type
4154035	Wooden case	
4159940	Setting gage (1 inch)	43 A
4335900	Millimess .00002″, ± .0010″	1002 Z
4334900	Millimess .00005″, ± .0020″	1003 Z
4333900	Millimess .0001″, ± .0050″	1004 Z
4346000	Inductive dial comparator, ± 0,9 µm	2000
4346900	Inductive dial comparator, ± 0,9 µm	2000
4346901	Inductive dial comparator, ± 0,9 µm	2000
4346100	Inductive dial comparator, ± 0,9 µm	2001
4346910	Inductive dial comparator, ± 0,9 µm	2001
4346911	Inductive dial comparator, ± 0,9 µm	2001

1003 Z

1004 Z

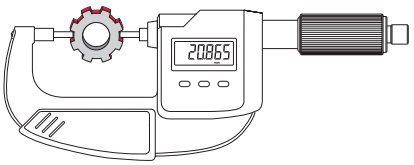
2000

2001

Digital Micrometer Micromar 40 EWR-B

Application:

For measuring recesses and grooves



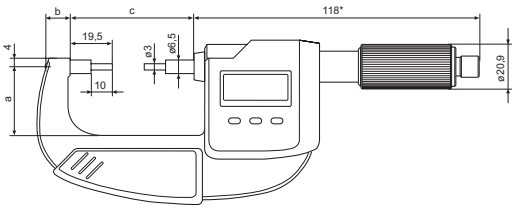
Functions:
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (Tolerance and warning limits)
- DATA (data transmission)
- HOLD (storage of measured values)

- Reduced measuring surfaces Ø 3 mm
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Spindle and anvil are carbide tipped
- Rapid drive
- Ratchet is integrated in the thimble
- Lacquered steel frame, heat insulated
- **Digit height:** 8.5 mm
- **Data interface:** USB, Digimatic, Opto RS232C
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Scope of delivery:** Instruction manual, Battery, Setting standard (from measuring range 25–50 mm), Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	mm	N	
4151750	40 EWR-B	0 –25	0 –1"	0,001 / .00005"	0,635	5 –10	DIN 863–3
4151751	40 EWR-B	25 –50	1 –2"	0,001 / .00005"	0,635	5 –10	DIN 863–3
4151752	40 EWR-B	50 –75	2 –3"	0,001 / .00005"	0,635	5 –10	DIN 863–3
4151753	40 EWR-B	75 –100	3 –4"	0,001 / .00005"	0,635	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4151750	32	11,5	57
4151751	44	13,5	82
4151752	57	15,5	107
4151753	73	13	132,5



Accessories

Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4158000	Stand, for holding outside micrometers	41 H

16 EWe

e-Stick

41 H

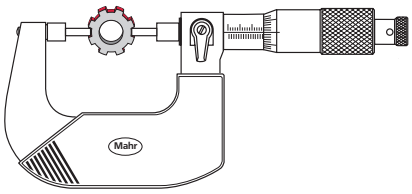
Micrometer Micromar 40 AB

- Reduced measuring surfaces Ø 3 mm
- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Setting standard (from measuring range 25–50 mm), Case

DIN 863-3

Application:

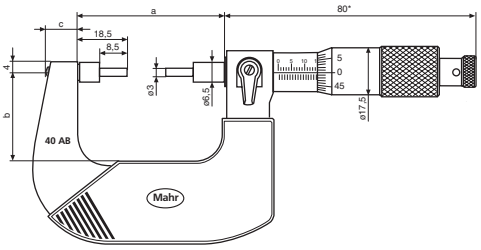
For measuring recesses and grooves



Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	mm	µm	mm	N	
4134100	40 AB	0 –25	0,01	4	0,5	5 –10	DIN 863–3
4134101	40 AB	25 –50	0,01	4	0,5	5 –10	DIN 863–3
4134102	40 AB	50 –75	0,01	5	0,5	5 –10	DIN 863–3
4134103	40 AB	75 –100	0,01	5	0,5	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4134100	56	34,5	12
4134101	81	47,5	12
4134102	106	58,5	13
4134103	131	71,5	13



Accessories

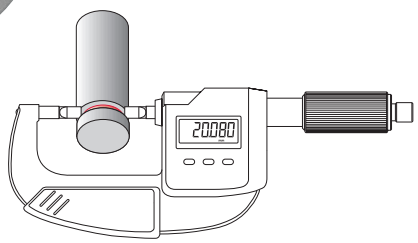
Order no.	Product description	Product type
4158000	Stand, for holding outside micrometers	41 H

41 H

Digital Micrometer Micromar 40 EWR-S

Application:

For measuring recesses, grooves, etc.



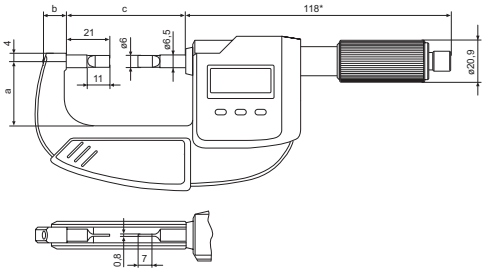
Functions:
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to ORIGIN)
- mm/inch
- ORIGIN (for entering a numerical value)
- LOCK function (key lock)
- TOL (Tolerance and warning limits)
- DATA (data transmission)
- HOLD (storage of measured values)

- With blade-type measuring surfaces
- Sliding spindle
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Rapid drive
- Lacquered steel frame, heat insulated
- **Digit height:** 8.5 mm
- **Data interface:** USB, Digimatic, Opto RS232C
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 54
- **Scope of delivery:** Instruction manual, Battery, Setting standard (from measuring range 25–50 mm), Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	mm	N	
4151810	40 EWR-S	0 –25	0 –1"	0,001 / .00005"	0,635	5 –10	DIN 863–3
4151811	40 EWR-S	25 –50	1 –2"	0,001 / .00005"	0,635	5 –10	DIN 863–3
4151812	40 EWR-S	50 –75	2 –3"	0,001 / .00005"	0,635	5 –10	DIN 863–3
4151813	40 EWR-S	75 –100	3 –4"	0,001 / .00005"	0,635	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4151810	32	11,5	57
4151811	44	13,5	82
4151812	57	15,5	107
4151813	73	13	132,5



Accessories

Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4158000	Stand, for holding outside micrometers	41 H

16 EWe

e-Stick

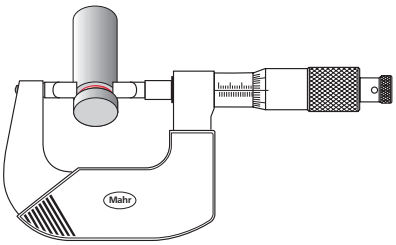
41 H

Micrometer Micromar 40 AS

- With blade-type measuring surfaces
- Operating and display units antiglare 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
- Sliding spindle
- **Scope of delivery:** Instruction manual, Setting standard (from measuring range 25–50 mm), Case

Application:

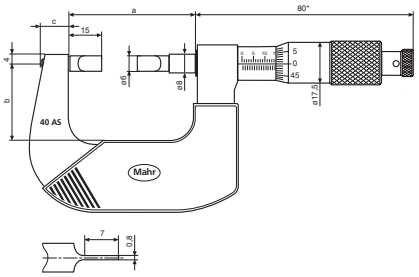
For measuring recesses, grooves, etc.



Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	mm	µm	mm	N	
4134200	40 AS	0 –25	0,01	4	0,5	5 –10	Factory standard
4134201	40 AS	25 –50	0,01	4	0,5	5 –10	Factory standard
4134202	40 AS	50 –75	0,01	5	0,5	5 –10	Factory standard
4134203	40 AS	75 –100	0,01	5	0,5	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4134200	56	34,5	12
4134201	81	47,5	12
4134202	106	58,5	13
4134203	131	71,5	13

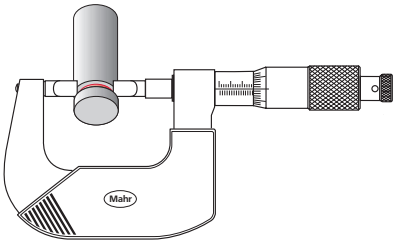


Accessories

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

41 H

Micrometer Micromar 40 AS



- With blade-type measuring surfaces
- Operating and display units antiglare 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
- Sliding spindle
- **Scope of delivery:** Instruction manual, Setting standard (from measuring range 1–2"), Case

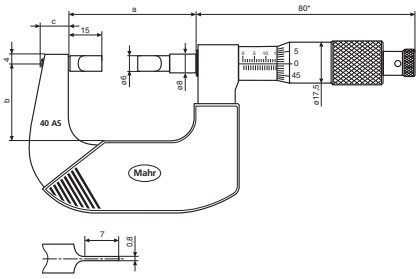
Application:

For measuring recesses, grooves, etc.

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Micrometer pitch (imperial)	Measuring force	Standard
		inch	inch	inch	inch	N	
4134930	40 AS	0 –1"	.0001"	.00016"	.025"	5 –10	Factory standard
4134931	40 AS	1 –2"	.0001"	.00016"	.025"	5 –10	Factory standard
4134932	40 AS	2 –3"	.0001"	.0002"	.025"	5 –10	Factory standard
4134933	40 AS	3 –4"	.0001"	.0002"	.025"	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4134930	56	34,5	12
4134931	81	47,5	12
4134932	106	58,5	13
4134933	131	71,5	13



Accessories

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

41 H

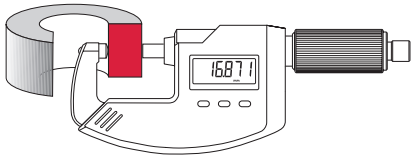
Digital Micrometer Micromar 40 EWR-R

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)
- DATA (data transmission)
- HOLD (storage of measured values)

- Measuring surfaces: spherical anvil, planar spindle
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Rapid drive
- Lacquered steel frame, heat insulated
- **Digit height:** 8.5 mm
- **Data interface:** USB, Digimatic, Opto RS232C
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Scope of delivery:** Instruction manual, Battery, Setting standard (from measuring range 25–50 mm), Case

Application:

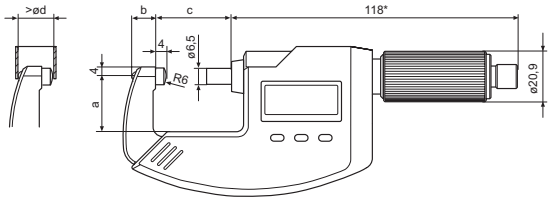
For measuring the thickness of pipe walls



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	mm	N	
4151820	40 EWR-R	0 –25	0 –1"	0,001 / .00005"	0,635	5 –10	DIN 863–3
4151821	40 EWR-R	25 –50	1 –2"	0,001 / .00005"	0,635	5 –10	DIN 863–3

Order no.	a	b	c	d
	mm	mm	mm	mm
4151820	23	9,5	31,5	14
4151821	32	11,5	57	16



Accessories

Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4158000	Stand, for holding outside micrometers	41 H

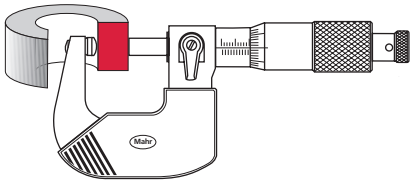
16 EWe

e-Stick

41 H

Micrometer Micromar 40 AR

DIN 863-3



- Measuring surfaces: spherical anvil, planar spindle
- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Setting standard (from measuring range 25–50 mm), Case

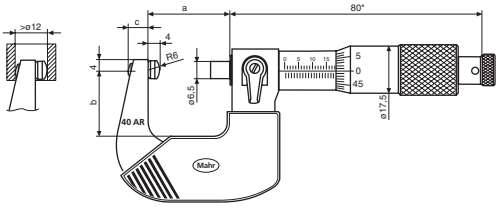
Application:

For measuring the thickness of pipe walls

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	mm	µm	mm	N	
4134250	40 AR	0 –25	0,01	4	0,5	5 –10	DIN 863–3
4134251	40 AR	25 –50	0,01	4	0,5	5 –10	DIN 863–3

Order no.	a	b	c
	mm	mm	mm
4134250	31	25,5	7
4134251	56	34,5	12



Accessories

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

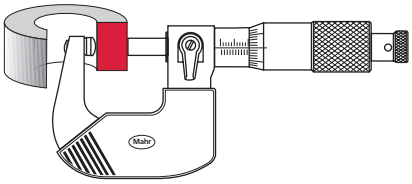
41 H

Micrometer Micromar 40 AR

- Measuring surfaces: spherical anvil, planar spindle
- Operating and display units antiglare 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
- **Scope of delivery:** Instruction manual, Setting standard (from measuring range 1–2"), Case

Application:

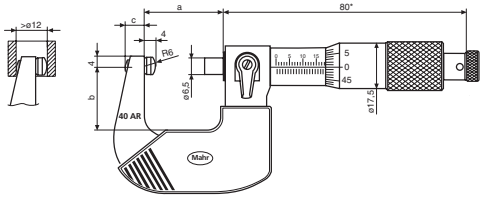
For measuring the thickness of pipe walls



Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Micrometer pitch (imperial)	Measuring force	Standard
		inch	inch	inch	inch	N	
4134940	40 AR	0 –1"	.0001"	.00016"	.025"	5 –10	Factory standard
4134941	40 AR	1 –2"	.0001"	.00016"	.025"	5 –10	Factory standard

Order no.	a	b	c
	mm	mm	mm
4134940	31	25,5	7
4134941	56	34,5	12



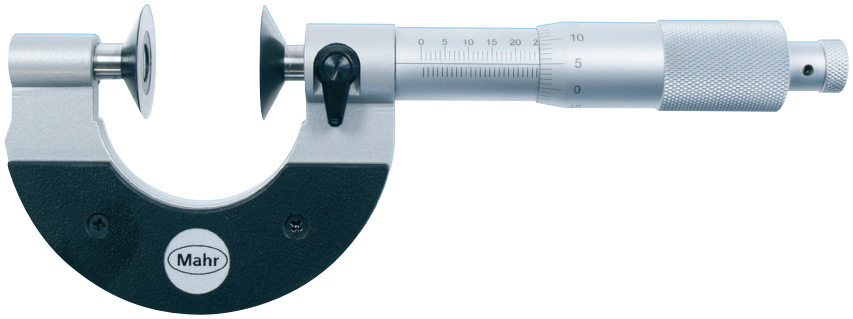
Accessories

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

41 H

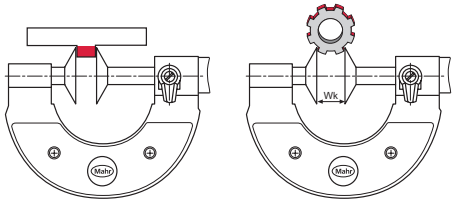
Micrometer Micromar 40 SM

DIN 863-3



Application:

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

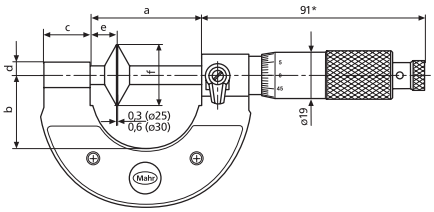


- Operating and display units antiglare with satin chrome finish
- Maximum stability
- Stainless spindle is hardened throughout and ground
- Disc-type anvils are hardened and lapped
- Chrome plated steel frame, heat insulated
- Rapid drive with integrated ratchet
- Locking device
- **Scope of delivery:** Instruction manual, Case

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Parallelism	Flatness	Spindle thread pitch	Measuring force	Standard
		mm	mm	µm	µm	µm	mm	N	
4134600	40 SM	0 –25	0,01	4	4	0,6	0,5	5 –10	DIN 863–3
4134601	40 SM	25 –50	0,01	4	4	0,6	0,5	5 –10	DIN 863–3
4134602	40 SM	50 –75	0,01	5	4	0,6	0,5	5 –10	DIN 863–3
4134603	40 SM	75 –100	0,01	5	4	0,6	0,5	5 –10	DIN 863–3
4134604	40 SM	100 –125	0,01	6	5	0,6	0,5	5 –10	DIN 863–3
4134605	40 SM	125 –150	0,01	6	5	0,6	0,5	5 –10	DIN 863–3
4134606	40 SM	150 –175	0,01	7	5	0,6	0,5	5 –10	DIN 863–3
4134607	40 SM	175 –200	0,01	7	5	0,6	0,5	5 –10	DIN 863–3

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4134600	45	30,5	18,1	6	11	25
4134601	70	35	18,1	6	11	25
4134602	95	48	18,1	6	11	25
4134603	120	59,5	18,1	6	11	25
4134604	145	71	18,1	6	11	30
4134605	170	83	18,1	6	11	30
4134606	195	96	18,1	6	11	30
4134607	220	108	18,1	6	11	30



Accessories

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

41 H

Thread Micrometer Micromar 40 Z

DIN 863-3

- Scales have a satin-chrome finish
- Rugged steel frame, heat insulated
- Spindle is hardened throughout, ground and is also provided with a locking device
- Adjustable anvil
- Spindle and anvil both have a mounting bore to accommodate interchangeable anvils
- Flat end surface of the anvil shank rests on a hardened steel ball which is at the bottom of the mounting bore
- **Scope of delivery:** Case

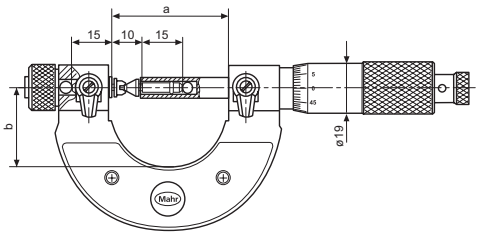
Application:

For measuring pitch and outside diameters of external threads

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Measuring force	Standard
		mm	mm	µm	mm	N	
4170030	40 Z	0 –25	0,01	4	0,5	5 –10	DIN 863–3
4170031	40 Z	25 –50	0,01	4	0,5	5 –10	DIN 863–3
4170032	40 Z	50 –75	0,01	5	0,5	5 –10	DIN 863–3
4170033	40 Z	75 –100	0,01	5	0,5	5 –10	DIN 863–3
4170034	40 Z	100 –125	0,01	6	0,5	5 –10	DIN 863–3
4170035	40 Z	125 –150	0,01	6	0,5	5 –10	DIN 863–3
4170036	40 Z	150 –175	0,01	7	0,5	5 –10	DIN 863–3
4170037	40 Z	175 –200	0,01	7	0,5	5 –10	DIN 863–3

Order no.	a	b
	mm	mm
4170030	45	30,5
4170031	70	35
4170032	95	48
4170033	120	59,5
4170034	145	71
4170035	170	83
4170036	195	96
4170037	220	108



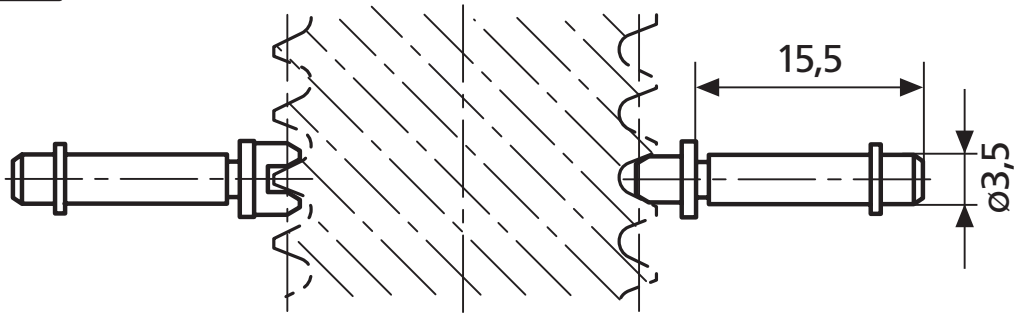
Accessories

Order no.	Product description	Product type
4158000	Stand, for holding outside micrometers	41 H
4173210	Anvil flat, hardened steel	40 Za
4175000	Setting gage (25 mm) metric / UST 60°	43 Z
4175001	Setting gage (50 mm) metric / UST 60°	43 Z
4175002	Setting gage (75 mm) metric / UST 60°	43 Z
4175003	Setting gage (100 mm) metric / UST 60°	43 Z
4175004	Setting gage (125 mm) metric / UST 60°	43 Z
4175005	Setting gage (150 mm) metric / UST 60°	43 Z
4175006	Setting gage (175 mm) metric / UST 60°	43 Z
4175100	Setting gage (25 mm) Whitworth 55°	43 Z
4175101	Setting gage (50 mm) Whitworth 55°	43 Z
4175102	Setting gage (75 mm) Whitworth 55°	43 Z
4175103	Setting gage (100 mm) Whitworth 55°	43 Z
4175104	Setting gage (125 mm) Whitworth 55°	43 Z
4175105	Setting gage (150 mm) Whitworth 55°	43 Z
4175106	Setting gage (175 mm) Whitworth 55°	43 Z
4511190	Anvil flat, carbide tipped	40 Za

41 H

Micromar Thread anvils

DIN 863-3



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

Accessories

Thread pitch in mm	Taper Order no.	V-anvil Order no.
Pitch diameter, external thread		
Metric 60°		
0,2	**4173407**	**4173007**
0,25	**4173408**	**4173008**
0,3	**4173409**	**4173009**
0,35	**4173410**	**4173010**
0,4	**4173411**	**4173011**
0,45	**4173412**	**4173012**
0,5 –0,7	**4173400**	**4173000**
0,7 –1	**4173401**	**4173001**
1,25 –2	**4173402**	**4173002**
2 –3,5	**4173403**	**4173003**
3,5 –5	**4173404**	**4173004**
5 –7	**4173405**	**4173005**
7 –9	**4173406**	**4173006**
Trapezoid 30°		
1	**4173650**	**4173250**
1,5	**4173651**	**4173251**
2	**4173652**	**4173252**
3	**4173653**	**4173253**
4	**4173654**	**4173254**
5	**4173655**	**4173255**
6	**4173656**	**4173256**
7	**4173657**	**4173257**
8	**4173658**	**4173258**
9	**4173659**	**4173259**
10	**4173660**	**4173260**
12	**4173661**	**4173261**
14	**4173662**	**4173262**
16	**4173663**	**4173263**
18	**4173664**	**4173264**
20	**4173665**	**4173265**

Thread pitch in TPI	Taper Order no.	V-anvil Order no.
Pitch diameter, external thread		
UST 60°		
60 –48	**4173513**	**4173113**
48 –40	**4173514**	**4173114**
40 –32	**4173515**	**4173115**
32 –24	**4173516**	**4173116**
24 –18	**4173517**	**4173117**
18 –14	**4173518**	**4173118**
14 –10	**4173519**	**4173119**
10 –7	**4173520**	**4173120**
7 –4,5	**4173521**	**4173121**
4,5 –3	**4173522**	**4173122**
Whitworth 55 °		
40 –32	**4173443**	**4173043**
32 –24	**4173444**	**4173044**
24 –18	**4173445**	**4173045**
18 –14	**4173446**	**4173046**
14 –10	**4173447**	**4173047**
10 –7	**4173448**	**4173048**
7 –4,5	**4173449**	**4173049**
4,5 –3	**4173450**	**4173050**
3 –2,5	**4179409**	**4179408**

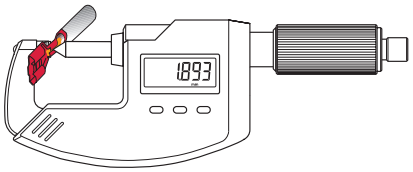
Digital Micrometer Micromar 40 EWR-K

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)
- DATA (data transmission)
- HOLD (storage of measured values)

- Measuring surfaces: Anvil with narrow web, pointed spindle
- High contrast analog display
- Stainless spindle is hardened throughout and ground
- Rapid drive
- Lacquered steel frame, heat insulated
- **Digit height:** 8.5 mm
- **Data interface:** USB, Digimatic, Opto RS232C
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 65
- **Scope of delivery:** Battery, Instruction manual, Case

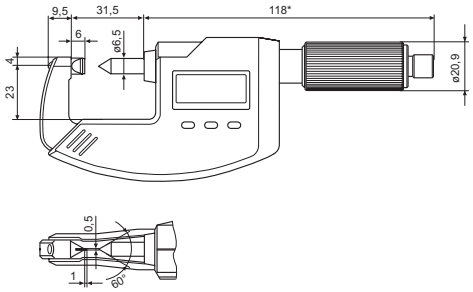
Application:

For measuring crimp heights



Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Spindle thread pitch	Measuring force	Standard
		mm	inch	mm/inch	mm	N	
4151830	40 EWR-K	0 –25	0 –1"	0,001 / .00005"	0,635	5 –10	Factory standard



Accessories

Order no.	Product description	Product type
4102230	Receiver	e-Stick
4102231	Transmitter for e-Stick	16 EWe
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd
4158000	Stand, for holding outside micrometers	41 H

16 EWe

e-Stick

41 H

Micrometer Micromar 40 AW

- Operating and display units antiglare 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
- Sliding spindle

Features 40 AW:

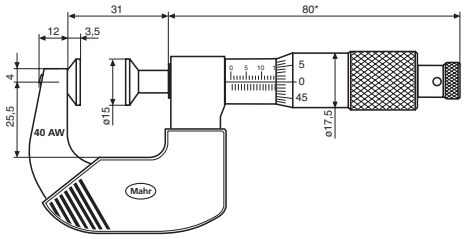
- **Scope of delivery:** Instruction manual, Setting standard, Case

Application:

For measuring soft materials such as felt, rubber, cardboard, etc.

Technical Data

Order no.		4134300	4134950
Product type		40 AW	
Measuring range	mm	0 –25	
Measuring range	inch		0 –1"
Readings	mm	0,01	
Readings	inch		.0001"
Error limit	µm	8	
Error limit inches	inch		.0003"
Parallelism	µm	5	
Flatness	µm	2	
Micrometer pitch (imperial)	inch		.025"
Spindle thread pitch	mm	0,5	
Measuring force	N	5 –10	
Standard		Factory Standard	



Accessories

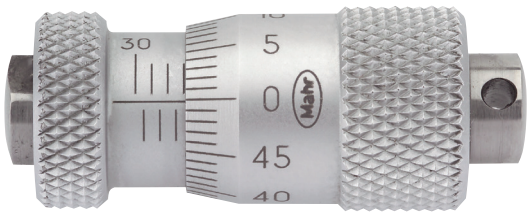
Order no.	For measuring instrument	Product description	Product type
4158000	40 AW, 40 AW	Stand, for holding outside micrometers	41 H

41 H

Inside Micrometer Micromar 44 F

DIN 863-4

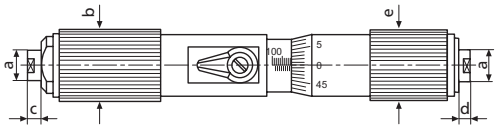
- Operating and display units antiglare with satin chrome finish
- Rigid, lightweight tubular construction
- Stainless spindle is hardened throughout and ground
- Measuring faces spherically lapped, one measuring face adjustable
- From measuring range 100–125 mm with heat insulators and a locking device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



Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Standard
		mm	mm	µm	mm	
4163000	44 F	30 –40	0,01	4	0,5	DIN 863–4
4163001	44 F	40 –50	0,01	4	0,5	DIN 863–4
4163002	44 F	50 –70	0,01	5	0,5	DIN 863–4
4163003	44 F	70 –100	0,01	5	0,5	DIN 863–4
4163004	44 F	100 –125	0,01	6	0,5	DIN 863–4
4163005	44 F	125 –150	0,01	6	0,5	DIN 863–4
4163006	44 F	150 –175	0,01	7	0,5	DIN 863–4
4163007	44 F	175 –200	0,01	7	0,5	DIN 863–4

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4163000	7	12,5	2	4	12,6
4163001	7	12,5	2,5	4,5	12,6
4163002	7	13,5	2,5	4,5	13,6
4163003	7	13,5	4,5	4,5	14
4163004	8	20	4,5	4,5	20
4163005	8	20	8	8	20
4163006	8	20	8	8	20
4163007	8	20	8	8	20

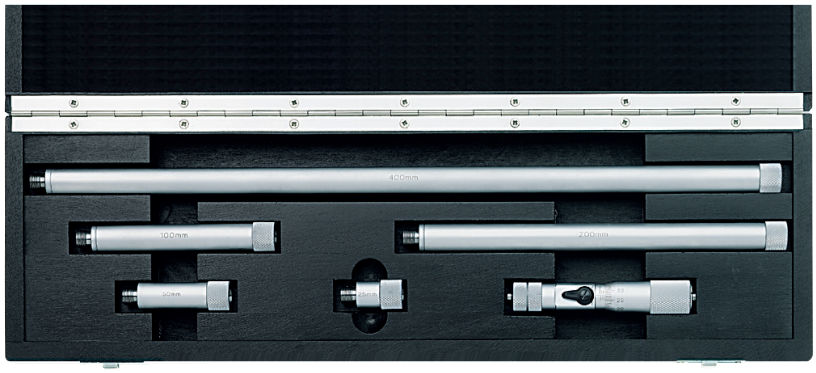


Accessories

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

355 E

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



- Operating and display units antiglare with satin chrome finish
- Rigid, lightweight tubular construction
- Stainless spindle is hardened throughout and ground
- Locking device
- Carbide tipped spherical measuring faces
- Interchangeable extensions 44 Cv with cylindrical gage rods that are spring-mounted in protective sleeves; for the extension of the measuring range
- Protection sleeves have a satin chrome finish
- **Scope of delivery:** Measuring Head 44 Cm, from measuring range 100–150 mm with extensions 44 Cv, Case

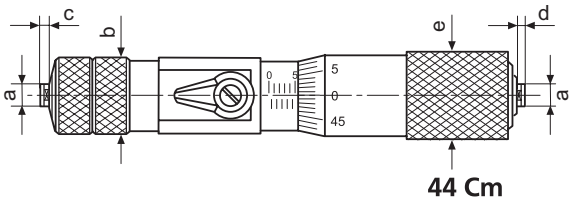
Application:

For measuring large inside diameters

Technical Data

Order no.	Product type	Measuring range	Readings	Extensions 44 Cv	Error limit	Spindle thread pitch	Standard
		mm	mm		µm	mm	
4168001	44 Cm	100 –125	0,01		4+(l/100)µm l= length of the combination in mm	0,5	Factory standard
4168020	44 Cms 1	100 –150	0,01	25 mm	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard
4168021	44 Cms 2	100 –300	0,01	25 mm 50 / 100 mm	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard
4168022	44 Cms 3	100 –500	0,01	25 / 50 mm 100 / 200 mm	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard
4168023	44 Cms 4	100 –900	0,01	25 / 50 mm 100 / 200 mm 400 mm	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4168001	5	16	2	2	18



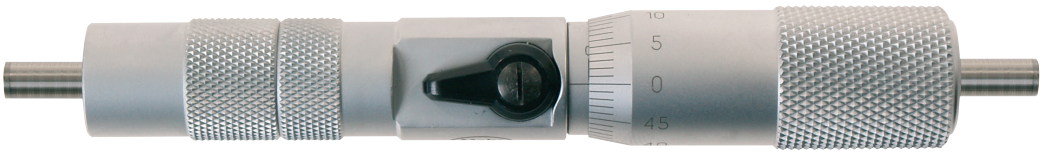
44 Cm

Accessories

Order no.	Product description	Product type
4167030	Individual Extension (25 mm)	44 Cv
4167031	Individual Extension (50 mm)	44 Cv
4167032	Individual Extension (100 mm)	44 Cv
4167033	Individual Extension (200 mm)	44 Cv
4167034	Individual Extension (400 mm)	44 Cv
4167035	Individual Extension (800 mm)	44 Cv

Inside Micrometer with reduced measuring faces Micromar 44 CB

- Operating and display units antiglare with satin chrome finish
- Rigid, lightweight tubular construction
- Stainless spindle is hardened throughout and ground
- Locking device
- Carbide tipped spherical measuring faces
- Interchangeable extensions 44 Cv with cylindrical gage rods that are spring-mounted in protective sleeves; for the extension of the measuring range
- Protection sleeves have a satin chrome finish
- **Scope of delivery:** Measuring head 44 CBm, End piece 44 CBv, Case



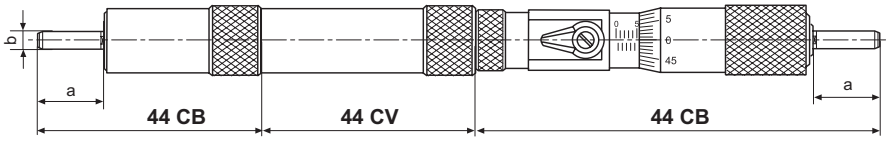
Application:

For measuring grooves on large diameters

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Standard
		mm	mm	µm	mm	
4167922	44 CB	150 –175	0,01	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard
4167906	44 CB	175 –200	0,01	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard
4167912	44 CB	250 –275	0,01	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard
4167921	44 CB	275 –300	0,01	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard

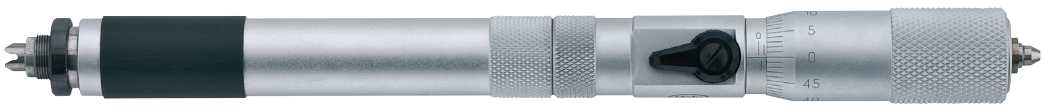
Order no.	a	b
	mm	mm
4167922	10	5
4167906	20	5
4167912	40	5
4167921	50	5



Accessories

Order no.	Product description	Product type
4167030	Individual Extension (25 mm)	44 Cv
4167031	Individual Extension (50 mm)	44 Cv
4167032	Individual Extension (100 mm)	44 Cv
4167033	Individual Extension (200 mm)	44 Cv
4167034	Individual Extension (400 mm)	44 Cv
4167035	Individual Extension (800 mm)	44 Cv
4168160	Case for 44 Cms	

Inside Micrometer Micromar 44 CZ



- Operating and display units antiglare with satin chrome finish
- Measuring head and End piece with mounting bore for interch-angeable anvils
- Rigid, lightweight tubular const-ruction
- Stainless spindle is hardened throughout and ground
- Locking device
- Interchangeable extensions 44 Cv with cylindrical gage rods that are spring-mounted in protective sleeves; for the extension of the measuring range
- Protection sleeves have a satin chrome finish
- **Scope of delivery:** Measuring head 44 CZm, End Piece 44 CZe, Case

Application:

Ideal for measuring internal threads with large diameters

Technical Data

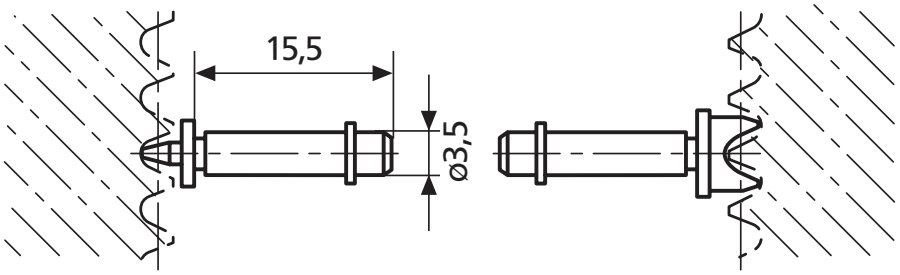
Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Standard
		mm	mm	µm	mm	
4168030	44 CZ	200 –225	0,01	4+(l/100)µm l= length of the combination in mm	0,5	Factory standard

Accessories

Order no.	Product description	Product type
4167030	Individual Extension (25 mm)	44 Cv
4167031	Individual Extension (50 mm)	44 Cv
4167032	Individual Extension (100 mm)	44 Cv
4167033	Individual Extension (200 mm)	44 Cv
4167034	Individual Extension (400 mm)	44 Cv
4167035	Individual Extension (800 mm)	44 Cv
4168160	Case for 44 Cms	

Micromar Thread anvils

- Special wear-resistant hardened steel
- Cylindrical holding shaft and circlip for rotatable mounting in the bore of the measuring spindle



Accessories

Thread pitch in mm	Taper Order no.	V-Anvil Order no.
Pitch diameter, internal thread		
Metric 60°		
0,5 –0,7	**4173400**	**4179400**
0,7 –1	**4173401**	**4179401**
1,25 –2	**4173402**	**4179402**
2 –3,5	**4173403**	**4179403**
3,5 –5	**4173404**	**4179404**
5 –7	**4173405**	**4179405**
7 –9	**4173406**	**4179406**
Trapezoid 30°		
1	**4173650**	**4179950**
1,5	**4173651**	**4179951**
2	**4173652**	**4179952**
3	**4173653**	**4179953**
4	**4173654**	**4179954**
5	**4173655**	**4179955**
6	**4173656**	**4179956**
7	**4173657**	**4179957**
8	**4173658**	**4179958**
9	**4173659**	**4179959**
10	**4173660**	**4179960**
12	**4173661**	**4179961**
14	**4173662**	**4179962**
16	**4173663**	**4179963**
18	**4173664**	**4179964**
20	**4173665**	**4179965**

Thread pitch in TPI	Taper Order no.	V-anvil Order no.
Pitch diameter, internal thread		
UST 60°		
40 –32	**4173515**	**4179115**
32 –24	**4173516**	**4179116**
24 –18	**4173517**	**4179117**
18 –14	**4173518**	**4179118**
14 –10	**4173519**	**4179119**
10 –7	**4173520**	**4179120**
7 –4,5	**4173521**	**4179121**
4,5 –3	**4173522**	**4179122**
Whitworth 55 °		
40 –32	**4173443**	**4179043**
32 –24	**4173444**	**4179044**
24 –18	**4173445**	**4179045**
18 –14	**4173446**	**4179046**
14 –10	**4173447**	**4179047**
10 –7	**4173448**	**4179048**
7 –4,5	**4173449**	**4179049**
4,5 –3	**4173450**	**4179050**
3 –2,5	**4179409**	**4179407**

Self-Centering Inside Micrometer Micromar 44 A

DIN 863-4

Application:

For measuring:
- through holes
- blind holes
- centering shoulders

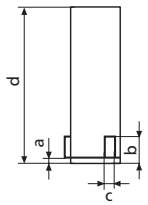
- Operating and display units antiglare with satin chrome finish
- Stainless spindle is hardened throughout and ground
- Rapid drive with integrated ratchet
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide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

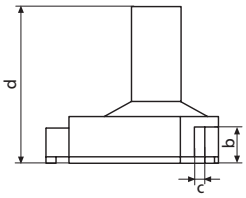
Technical Data

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

Self-Centering Inside Micrometer Micromar 44 A

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

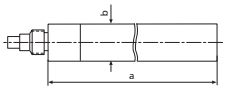




Accessories

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

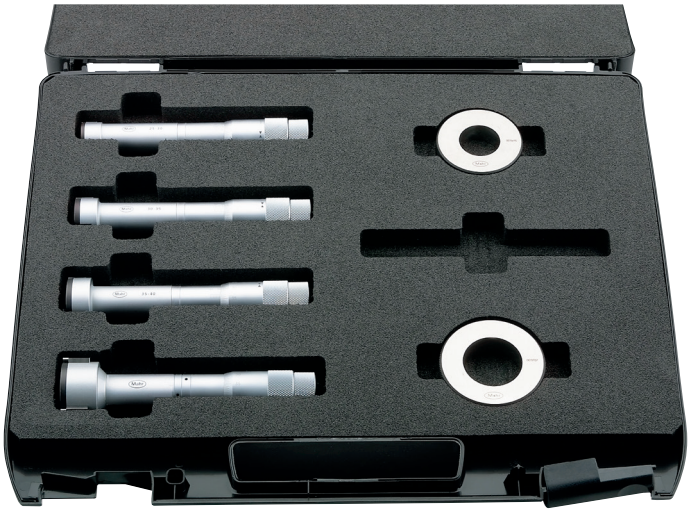
355 E



44 Av

Self-Centering Inside Micrometer Set Micromar 44 AS

DIN 863-4



Application:

For measuring:
- through holes
- blind holes
- centering shoulders

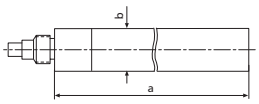
- Operating and display units antiglare with satin chrome finish
- Stainless spindle is hardened throughout and ground
- Rapid drive with integrated ratchet
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide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

Technical Data

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



44 Av

Digital Self-Centering Inside Micrometer Micromar 44 EWR

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

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

Application:

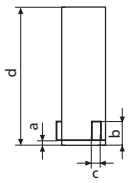
For measuring:
- through holes
- blind holes
- centering shoulders

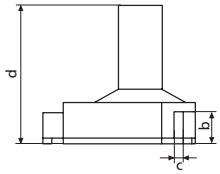
Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Standard	Measuring depth	Measuring depth with extension
		mm	inch	mm/inch	µm		mm	mm
4191120	44 EWR	6 –8	.25 –.3125"	0,001 / .00005"	4	DIN 863–4	58	133
4191121	44 EWR	8 –10	.3125 –.4"	0,001 / .00005"	4	DIN 863–4	58	133
4191122	44 EWR	10 –12	.4 –.4725"	0,001 / .00005"	4	DIN 863–4	58	133
4191123	44 EWR	12 –16	.4725 –.625"	0,001 / .00005"	4	DIN 863–4	64	139
4191124	44 EWR	16 –20	.625 –.775"	0,001 / .00005"	4	DIN 863–4	64	139
4191125	44 EWR	20 –25	.775 –1"	0,001 / .00005"	4	DIN 863–4	68	218
4191126	44 EWR	25 –30	1 –1.2"	0,001 / .00005"	4	DIN 863–4	68	218
4191127	44 EWR	30 –40	1.2 –1.6"	0,001 / .00005"	4	DIN 863–4	76	226
4191129	44 EWR	40 –50	1.6 –2"	0,001 / .00005"	4	DIN 863–4	76	226
4191130	44 EWR	50 –60	2 –2.35"	0,001 / .00005"	5	DIN 863–4	79	229
4191131	44 EWR	60 –70	2.35 –2.75"	0,001 / .00005"	5	DIN 863–4	79	229
4191032	44 EWR	70 –85	2.75 –3.35"	0,001 / .00005"	5	DIN 863–4	97	247
4191033	44 EWR	85 –100	3.35 –4"	0,001 / .00005"	5	DIN 863–4	97	247
4191034	44 EWR	100 –125	4 –4.9"	0,001 / .00005"	6	DIN 863–4	132	282
4191035	44 EWR	125 –150	4.9 –5.9"	0,001 / .00005"	6	DIN 863–4	132	282
4191036	44 EWR	150 –175	5.9 –6.9"	0,001 / .00005"	7	DIN 863–4	132	282
4191037	44 EWR	175 –200	6.9 –7.9"	0,001 / .00005"	7	DIN 863–4	132	282

Digital Self-Centering Inside Micrometer Micromar 44 EWR

Order no.	a	b	c	d
	mm	mm	mm	mm
4191120	1,5	4	1,5	58
4191121	1,8	4,3	1,5	58
4191122	1,8	4,3	1,5	58
4191123		6,5	4	64
4191124		6,5	4	64
4191125		9	4	68
4191126		9	4	68
4191127		15	5	76
4191129		15	5	76
4191130		18	5	79
4191131		18	5	79
4191032		23	7	97
4191033		23	7	97
4191034		27	7	132
4191035		27	7	132
4191036		27	7	132
4191037		27	7	132



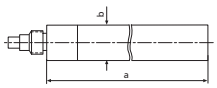


Accessories

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

16 EWe

e-Stick



44 Av

355 E

Digital Self-Centering Inside Micrometer Sets Micromar 44 EWR

REFERENCE | ABS | DIN 863-4 | IP52 | USB | RS232C | Digimatic

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

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

Application:
- Through holes
- Blind holes
- Centering shoulders

Technical Data

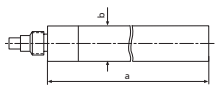
Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Standard	Number of measuring heads 44 Ak	Setting rings
		mm	inch	mm/inch	µm			
4191160	44 EWR	6 –12	.25 –.4725"	0,001 / .00005"	4	DIN 863–4	3	8 mm, 10 mm
4191161	44 EWR	12 –20	.4725 –.775"	0,001 / .00005"	4	DIN 863–4	2	16 mm
4191162	44 EWR	20 –50	.775 –2"	0,001 / .00005"	4	DIN 863–4	4	25 mm, 40 mm
4191163	44 EWR	50 –100	2 –4"	0,001 / .00005"	5	DIN 863–4	4	60 mm, 85 mm

Accessories

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

16 EWe

e-Stick



44 Av

Self-Centering Inside Measuring Pistol Micromar 844 A

Application:

For measuring:
- through holes
- blind holes
- centering shoulders

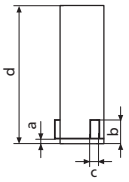
- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight
- **Scope of delivery:** excludes indicator, Basic Units 844 Ag, Measuring head 44 Ak, Instruction manual, Case

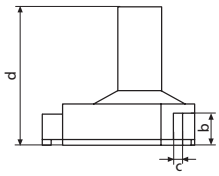
Technical Data

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

Self-Centering Inside Measuring Pistol Micromar 844 A

Order no.	a	b	c	d
	mm	mm	mm	mm
4487700	1,5	4	1,5	58
4487701	1,8	4,3	1,5	58
4487702	1,8	4,3	1,5	58
4487703		6,5	4	64
4487704		6,5	4	64
4487705		9	4	68
4487706		9	4	68
4487707		15	5	76
4487709		15	5	76
4487710		18	5	79
4487711		18	5	79
4487612		23	7	97
4487613		23	7	97
4487614		27	7	132
4487615		27	7	132
4487616		27	7	132
4487617		27	7	132



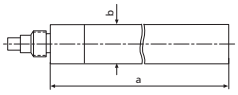


Accessories

Order no.	Product description	Product type
4337621	Digital Indicator, 0,0005 mm, 25 mm	1086 R
4337625	Digital Indicator, 0,0005 mm, 25 mm	1086 Ri
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102357	Data Connection Cable USB (2 m)	16 EXu
4710026	Adjustment ring DIN 2250 C (8 mm)	355 E
4710030	Adjustment ring DIN 2250 C (10 mm)	355 E
4710036	Adjustment ring DIN 2250 C (16 mm)	355 E
4710040	Adjustment ring DIN 2250 C (20 mm)	355 E
4710050	Adjustment ring DIN 2250 C (30 mm)	355 E
4710060	Adjustment ring DIN 2250 C (40 mm)	355 E
4710080	Adjustment ring DIN 2250 C (60 mm)	355 E
4710105	Adjustment ring DIN 2250 C (85 mm)	355 E
4710121	Adjustment ring DIN 2250 C (125 mm)	355 E
4710122	Adjustment ring DIN 2250 C (175 mm)	355 E
4190090	Extensions 75 mm, (6 –12 mm)	44 Av
4190091	Extensions 75 mm, (12 –20 mm)	44 Av
4190092	Extensions 150 mm, (20 –30 mm)	44 Av
4190093	Extensions 150 mm, (30 –200 mm)	44 Av
4102220	Receiver	i-Stick

1086 R

1086 Ri



44 Av

355 E

i-Stick

Self-Centering Measuring Pistol Micromar 844 AS

Application:

For measuring:
- through holes
- blind holes
- centering shoulders

- Threaded connection for changing the measuring head
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide tipped
- From 12 mm the anvils can be used to measure the bottom of a bore
- From 40 mm all measuring heads are made from aluminium to reduce weight
- **Scope of delivery:** Instruction manual, Setting rings, Key for replacing measuring heads (from 30 mm), Case

Technical Data

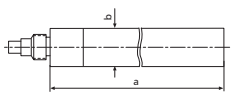
Order no.	Product type	Measuring range	Measuring range	Resolution	Standard	Number of measuring heads 44 Ak	Indicating instrument (scope of delivery)	Setting rings
		mm	inch	mm/inch				
4487750	844 AS	6 –12	.25 –.4725"		Factory standard	3	without	8 mm, 10 mm
4487751	844 AS	12 –20	.4725 –.775"		Factory standard	2	without	16 mm
4487752	844 AS	20 –50	.775 –2"		Factory standard	4	without	25 mm, 40 mm
4487753	844 AS	50 –100	2 –4"		Factory standard	4	without	60 mm, 85 mm
4487760	844 AS	6 –12	.25 –.4725"	0,0005 / .00002"	Factory standard	3	MarCator 1086 R	8 mm, 10 mm
4487761	844 AS	12 –20	.4725 –.775"	0,0005 / .00002"	Factory standard	2	MarCator 1086 R	16 mm
4487762	844 AS	20 –50	.775 –2"	0,0005 / .00002"	Factory standard	4	MarCator 1086 R	25 mm, 40 mm
4487763	844 AS	50 –100	2 –4"	0,0005 / .00002"	Factory standard	4	MarCator 1086 R	60 mm, 85 mm

Accessories

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

16 EWe

e-Stick



44 Av

Basic Unit Micromar 44 EWg

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

Threaded connection for changing the measuring head

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

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution
		mm	inch	mm/inch
4190106	44 EWg	6 –20	.25 –.775"	0,001 / .00005"
4190107	44 EWg	20 –100	.775 –4.0"	0,001 / .00005"
4190108	44 EWg	100 –200	4.0 –7.9"	0,001 / .00005"

Accessories

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

Basic Instrument Measuring Pistol Micromar 844 Ag

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

Technical Data

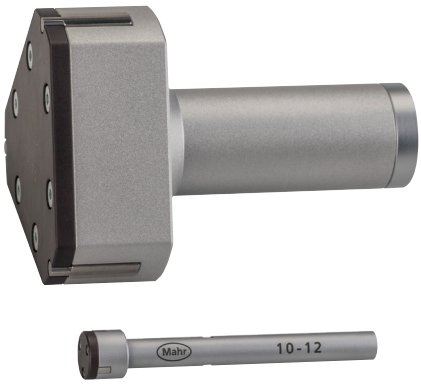
Order no.	Product type	Measuring range	Measuring range
		mm	inch
4487635	844 Ag	6 –100	.25 –4.0"
4487633	844 Ag	20 –100	.775 –4.0"
4487634	844 Ag	100 –200	4.0 –7.9"

Accessories

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

Measuring head Micromar 44 Ak

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

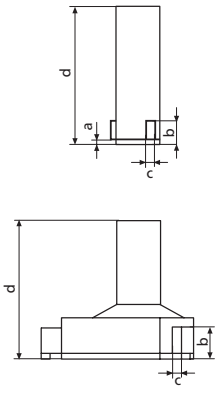


Technical Data

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

Accessories

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

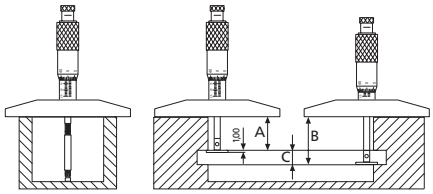


Depth Micrometer Micromar 45 T

- Operating and display units antiglare with satin chrome finish
- Stainless spindle is hardened throughout and ground
- Rapid drive with integrated ratchet
- **Scope of delivery:** Extensions 25 mm and 50 mm, Case

Application:

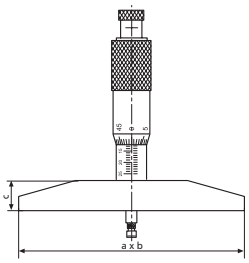
- Depth measurement
- Measuring the space between grooves and groove widths (in conjunction with a disc anvil 45 Tm)



Technical Data

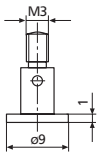
Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Standard
		mm	mm	µm	mm	
4180000	45 T	0 –100	0,01	5	0,5	Factory standard

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



Accessories

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



45 Tm

Digital Micrometer Head Micromar 46 EWR

REFERENCE

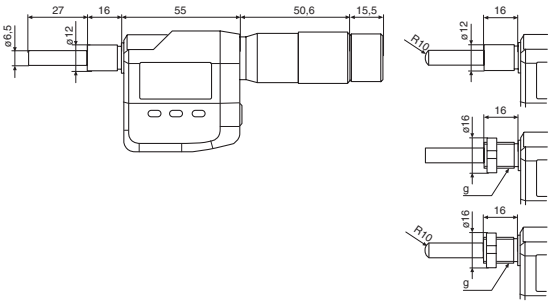
Functions:
- RESET (set display to zero)
- ABS (display can be set to zero without losing reference to preset)
- PRESET (for entering a numerical value)
- LOCK function (key lock)
- mm/inch
- Reversal of counting direction
- DATA (Data transmission via connection cable)

- High contrast analog display
- Rapid drive with integrated ratchet
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 2 years
- **IP protection category:** IP 52
- **Scope of delivery:** End cap (in case the rapid drive is not required), Instruction manual, Battery, Case

Technical Data

Order no.	Product type	Measuring range	Measuring range	Resolution	Error limit	Spindle thread pitch	Standard	Model Contact surface	Locking nut
		mm	inch	mm/inch	µm	mm			
4184305	46 EWR	0 –25	0 –1"	0,001 / .00005"	4	0,635	Factory standard	flat	
4184306	46 EWR	0 –25	0 –1"	0,001 / .00005"	4	0,635	Factory standard	spherical	
4184307	46 EWR	0 –25	0 –1"	0,001 / .00005"	4	0,635	Factory standard	flat	•
4184308	46 EWR	0 –25	0 –1"	0,001 / .00005"	4	0,635	Factory standard	spherical	•

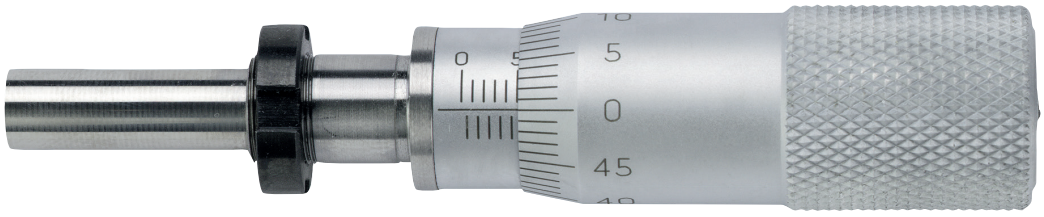
Order no.	g	Measurement surface radius	Mounting shaft
		mm	mm
4184305			12
4184306		10	12
4184307	M12x1		
4184308	M12x1	10	



Accessories

Order no.	Product description	Product type
4102357	Data Connection Cable USB (2 m)	16 EXu
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102520	Battery 3 V, CR 2032	
4102915	Digimatic data cable (2 m)	16 EWd

Micrometer Head Micromar 46

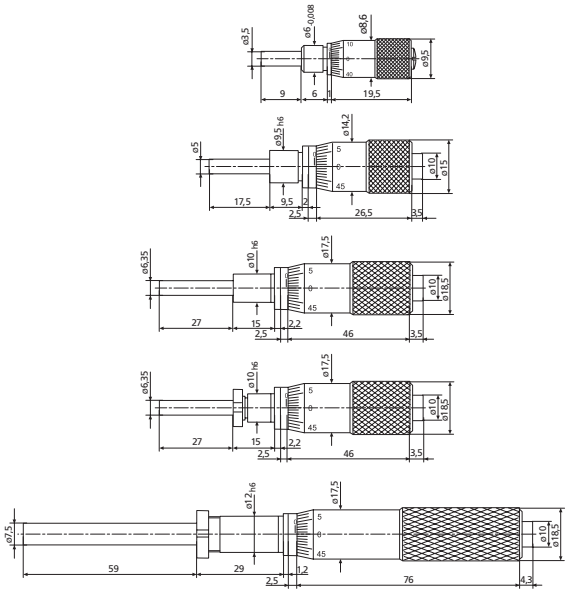


- Operating and display units antiglare with satin chrome finish
- Stainless spindle is hardened throughout and ground

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Standard	Model Contact surface	Locking nut
		mm	mm	µm	mm			
4183021	46	0 –6,5	0,01	3	0,5	DIN 863–2	flat	
4183025	46	0 –13	0,01	3	0,5	DIN 863–2	flat	
4183030	46	0 –25	0,01	3	0,5	DIN 863–2	flat	
4183024	46	0 –25	0,01	3	0,5	DIN 863–2	flat	•
4183023	46	0 –50	0,01	5	0,5	Factory standard	flat	•

Order no.	Mounting shaft
	mm
4183021	6
4183025	9,5
4183030	10
4183024	10
4183023	12



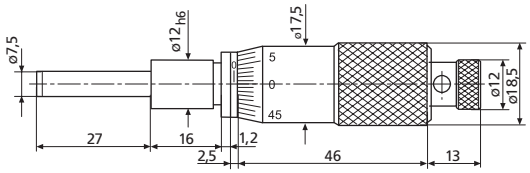
Micrometer Head Micromar 46 H

- Operating and display units antiglare with satin chrome finish
- Stainless spindle is hardened throughout and ground
- Rapid drive with integrated ratchet
- Carbide tipped measuring faces

Technical Data

Order no.	Product type	Measuring range	Readings	Error limit	Spindle thread pitch	Standard	Model Contact surface
		mm	mm	µm	mm		
4184000	46 H	0 –25	0,01	3	0,5	DIN 863–2	flat

Order no.	Mounting shaft
	mm
4184000	12



YOUR MEASURING TASKS ARE SENSITIVE.
MARTEST IS HIGHLY SENSITIVE.

Since 1936, Mahr has been one of the world's leading suppliers of dial test indicator measuring devices. Our company's success has been built on the continuous advancement of our products. Because of our unrelenting commitment to innovation, we can meet and exceed market expectations. Our core philosophy is to offer our customers a highly accurate and simple solution for wide variety of measuring tasks. Our extensive product range and a wide variety of accessories are at your disposal. The sensitive computer-optimized mechanism ensures maximum security and precision. A hardened mineral glass panel effectively protects the dial against scratching and cracks when used in harsh workshop conditions, and a seal prevents liquids from penetrating.

MarTest. Test Indicators and Touch Probes

Mechanical Dial Test Indicators Overview 150

MarTest 800 SA / 800 SGA / 800 S / 800 SG / 800 SR 152
Metric, Standard version

MarTest 800 SL / 800 SGL / 800 SGB 153
Metric, with a long styli

MarTest 800 SGM / 800 SM / 800 SRM / 800 SGE 154
Metric, with a higher resolution

MarTest 801 SM / 801 SGM / 801 SRM / 801 SGE 156
Inch, with a higher resolution

MarTest 801 SGI / 801 S / 801 S1 / 801 SG 157
Inch, Standard version

MarTest 801 SR 157
With a larger measuring range

MarTest 801 SL / 801 SGL 158
Inch, with a longer styli

MarTest 800 V / 800 VGM / 801 V / 801 VGM 159
Vertical version

MarTest 800 H / 801 H 163
Horizontal version

Digital Test Indicators

MarTest 800 EW 165
Standard version

MarTest 800 EWL 165
With a longer styli

3D-Touch Probes

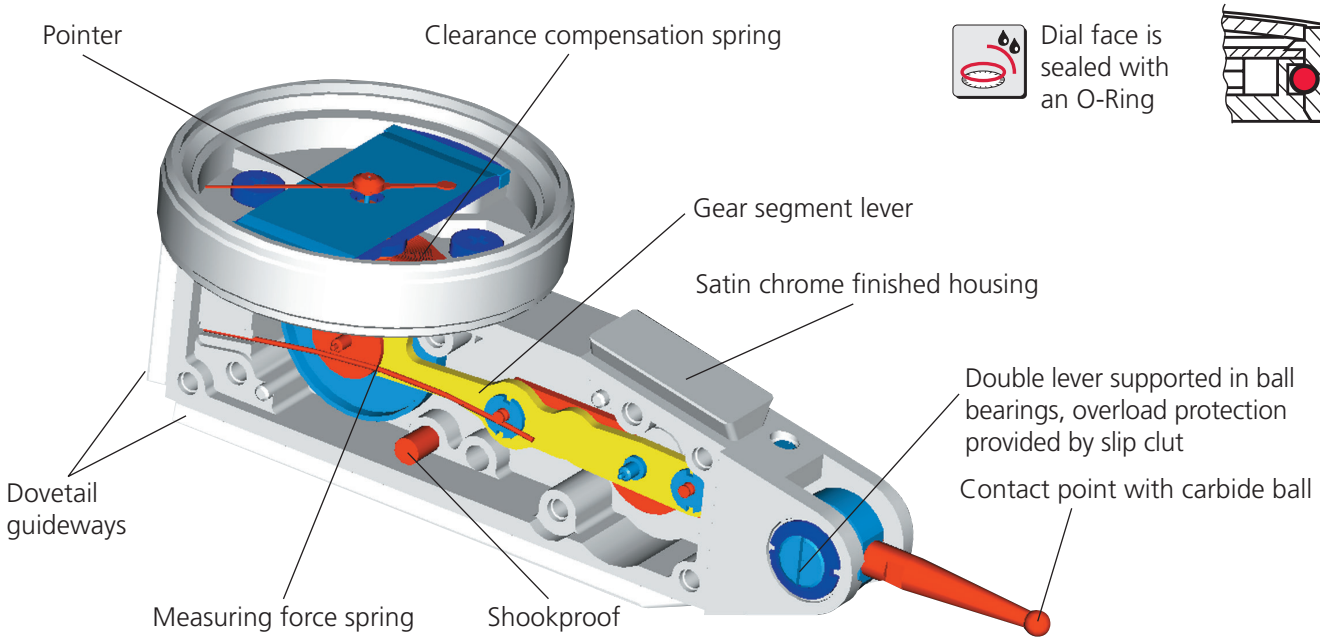
MarTest 802 EW 172
Water proof, with a Digital display

MarTest 802 NW 173
Water proof, with a Analog display

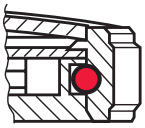
MarTest. Test Indicators and Touch Probes

OVERVIEW

MarTest – Design



Dial face is sealed with an O-Ring



SHOCK PROOF

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

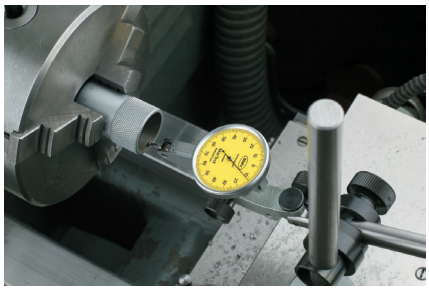
Styli with carbide contact points

Styli with ruby contact points

MarTest – Applications

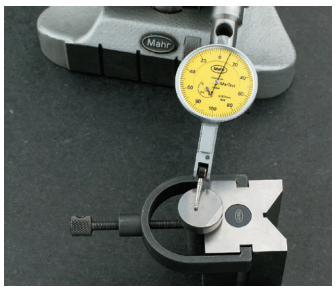
Concentricity of a shaft

Concentricity of a sleeve

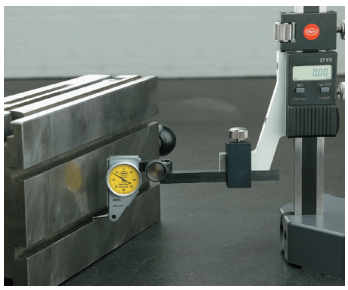


Centering of a bore

Aligning a surface

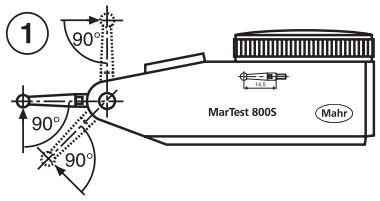


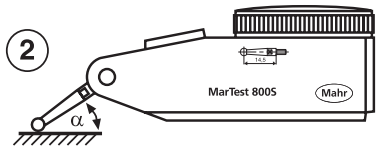
Testing parallelism



MarTest – Angle of stylus

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





Angle α	15°	30°	45°	60°
Corr. factor	0,96	0,87	0,70	0,50

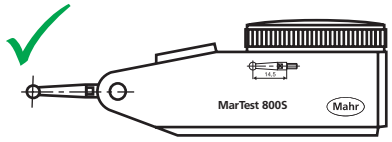
Example:

Angle α: 30° (estimated)

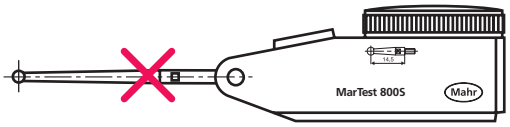
Reading on dial: 0,38 mm

Meas. values: 0,38 x 0,87 = 0,33 mm

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



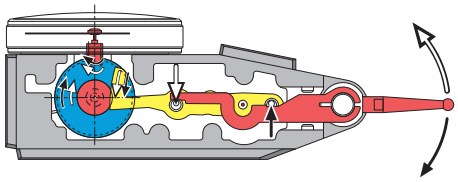
l = 14,5



l = 41,2

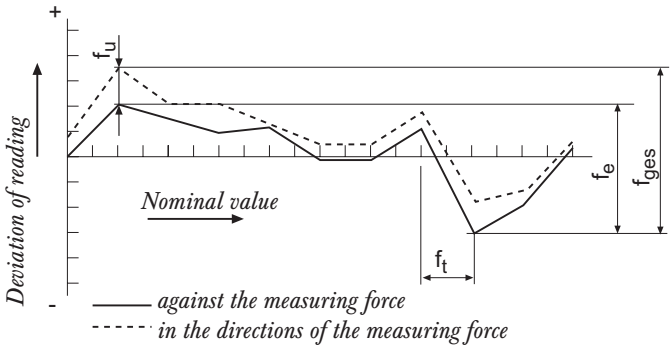
MarTest – Automatic switch of measuring direction

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



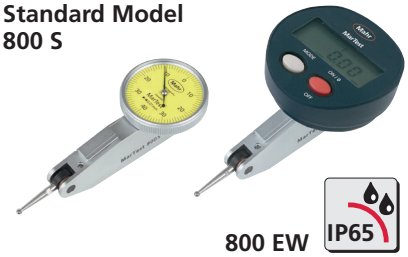
functional description

MarTest – Metrological characteristics



MarTest – Versions

Standard Model
800 S



800 EW

Extra Long Styli
800 SL

800 EWL

Higher Resolution
800 SM

Larger Measuring Range
800 SR

Horizontal Model
800 H

Vertical Model
800 V

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

DIN 2270 | SHOCK PROOF

Application:

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

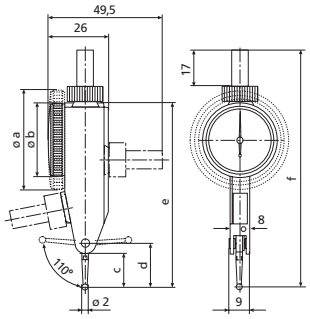
Standard model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a8

Technical Data

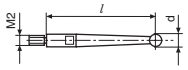
Product type			800 S	800 SG	800 SR	800 SA	800 SGA
Order no.	Order no.		4305200	4307200	4307250	4301200	4301250
	Order no. set		2015309	2015310	2015348	2015343	2015344
Measuring range		mm	± 0.4		± 0.8	± 0.25	
Graduation value		mm	0.01				
Scale diameter		mm	28	38		28	38
Type of dial face			40–0–40			25–0–25	
Dial color			yellow				
Measuring force		N	0.15			0.1	
Range per rev.		mm	0.8			0.5	
Deviation range f_e		µm	10			5	
Total deviation range f_{ges}		µm	13		14	8	
Hysteresis f_u		µm	3		4	3	
Partial measuring span f_t		µm	5				
Repeatability f_w		µm	3				
Standard			DIN 2270		Factory standard		

Order no.	a	b	c	d	e	f	Stylus length
	mm	mm	mm	mm	mm	mm	mm
4305200		30	13,6	17,8	75	99	14,5
4307200	40,5		13,6	17,8	75	99	14,5
4307250	40,5		13,6	17,8	75	99	14,5
4301200		30	13,6	17,8	75	99	14,5
4301250	40,5		13,6	17,8	75	99	14,5
2015309		30	13,6	17,8	75	99	14,5
2015310	40,5		13,6	17,8	75	99	14,5
2015343		30	13,6	17,8	75	99	14,5
2015344	40,5		13,6	17,8	75	99	14,5
2015348	40,5		13,6	17,8	75	99	14,5



Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

Test Indicator MarTest 800 SL / 800 SGL / 800 SGB

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, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a8, Holding bar HB–2157, Clamp CP–2199

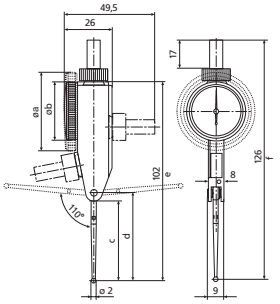
Application:

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

Technical Data

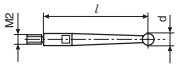
Product type			800 SL	800 SGL	800 SGB
Order no.	Order no.		4306200	4306250	4301300
	Order no. set		2015312	2015313	2015346
Measuring range		mm	± 0.25		± 0.5
Graduation value		mm	0.01		
Scale diameter		mm	28	38	
Type of dial face			25–0–25		50–0–50
Dial color			yellow		
Measuring force		N	0.07		
Range per rev.		mm	0.5		1
Deviation range f_e		µm	10		
Total deviation range f_{ges}		µm	13		
Hysteresis f_u		µm	5		4
Partial measuring span f_t		µm	5		
Repeatability f_w		µm	3		
Standard			Factory standard		
Set included			Holding bar HB–2157, Clamp CP–2199		

Order no.	a	b	c	d	e	f	Stylus length
	mm	mm	mm	mm	mm	mm	mm
2015312		30	40,3	44,6	102	126	41,24
2015313	40,5		40,3	44,6	102	126	41,24
2015346	40,5		31,4	35,7	93	117	32,3
4301300	40,5		31,4	35,7	93	117	32,3
4306200		30	40,3	44,6	102	126	41,24
4306250	40,5		40,3	44,6	102	126	41,24



Accessories

Order no.	Product description	Product type
4301851	Stylus ø 1,0 mm, Carbide, l = 32,3 mm	800 tb
4301850	Stylus ø 2,0 mm, Carbide, l = 32,3 mm	800 tb
4301852	Stylus ø 3,0 mm, Carbide, l = 32,3 mm	800 tb
4309052	Stylus ø 2,0 mm, Ruby, l = 32,3 mm	800 tbr
4305868	Spanner	
4306851	Stylus ø 1,0 mm, Carbide, l = 41,24 mm	800 tl
4306850	Stylus ø 2,0 mm, Carbide, l = 41,24 mm	800 tl
4306853	Stylus ø 3,0 mm, Carbide, l = 41,24 mm	800 tl
4309053	Stylus ø 2,0 mm, Ruby, l = 41,24 mm	800 tlr



800 tb

Test Indicator MarTest 800 SGM / 800 SM / 800 SRM

DIN 2270 | SHOCK PROOF

Application:

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

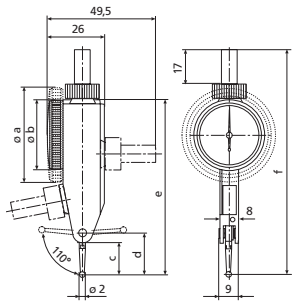
For high-precision measurements

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a8, Holding bar HB–2157, Clamp CP–2199

Technical Data

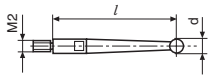
Product type			800 SGM	800 SM	800 SRM
Order no.	Order no.		4308200	4308150	4308250
	Order no. set		2015314	2015315	2015349
Measuring range		mm	± 0.1		± 0.2
Graduation value		mm	0.002		
Scale diameter		mm	38	28	38
Type of dial face			100–0–100		
Dial color			yellow		
Measuring force		N	0.15		
Range per rev.		mm	0.2		
Deviation range f_e		µm	3		
Total deviation range f_{ges}		µm	4		5
Hysteresis f_u		µm	2		3
Partial measuring span f_t		µm	2		
Repeatability f_w		µm	1.5		
Standard			DIN 2270		Factory standard
Set included			Holding bar HB–2157, Clamp CP–2199		

Order no.	a	b	c	d	e	f	Stylus length
	mm	mm	mm	mm	mm	mm	mm
2015314	40,5		13,6	17,8	75	99	14,5
2015315		30	13,6	17,8	75	99	14,5
2015349	40,5		13,6	17,8	75	99	14,5
4308150		30	13,6	17,8	75	99	14,5
4308200	40,5		13,6	17,8	75	99	14,5
4308250	40,5		13,6	17,8	75	99	14,5



Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

Test Indicator MarTest 800 SGE

For high-precision measurements

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a8, Holding bar HB–2157, Clamp CP–2199

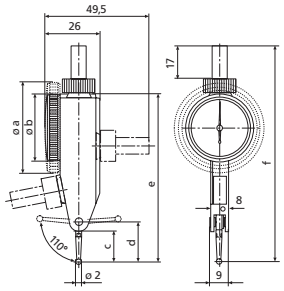
Application:

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

Technical Data

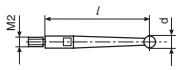
Product type			800 SGE
Order no.	Order no.		4308220
	Order no. set		2015345
Measuring range		mm	± 0.07
Graduation value		mm	0.001
Scale diameter		mm	38
Type of dial face			70–0–70
Dial color			yellow
Measuring force		N	0.2
Range per rev.		mm	0.14
Deviation range f_e		µm	3
Total deviation range f_{ges}		µm	4
Hysteresis f_u		µm	2
Partial measuring span f_t		µm	2
Repeatability f_w		µm	1.5
Standard			Factory standard
Set included			Holding bar HB–2157, Clamp CP–2199

Order no.	a	c	d	e	f	Stylus length
	mm	mm	mm	mm	mm	mm
2015345	40,5	8,3	12,5	70	94	9,15
4308220	40,5	8,3	12,5	70	94	9,15



Accessories

Order no.	Product description	Product type
4308851	Stylus ø 1,0 mm, Carbide, l = 9,1 mm	800 te
4308850	Stylus ø 2,0 mm, Carbide, l = 9,1 mm	800 te
4308852	Stylus ø 3,0 mm, Carbide, l = 9,1 mm	800 te
4309050	Stylus ø 2,0 mm, Ruby, l = 9,1 mm	800 ter
4305868	Spanner	



800 t

Test Indicator MarTest 801 SM / 801 SGM / 801 SRM / 801 SGE

Application:

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

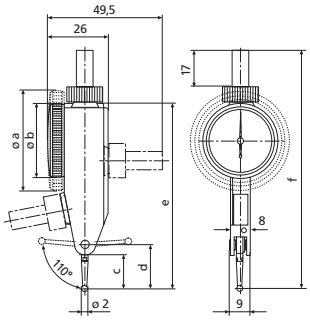
For high-precision measurements

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a3/8, Holding bar HB–2157, Clamp CP–2199

Technical Data

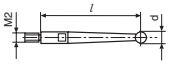
Product type			801 SM	801 SGM	801 SRM	801 SGE
Order no.	Order no.		4308960	4308970	4308980	4308985
	Order no. Set		2015321	2015322	2015351	2015323
Measuring range		inch	± .004"		± .008"	± .004"
Graduation value		inch	.0001"			.00005"
Scale diameter		inch	1.1"	1.5"		
Type of dial face			4–0–4			
Dial color			green			
Measuring force		N	0.15			
Range per rev.		inch	.008"			
Deviation range f_e		inch	.00012"			.0004"
Total deviation range f_{ges}		inch	.00016"		.0002"	.0005"
Measuring value hysteresis f_u		inch	.00008"		.00012"	
Partial measuring span f_t		inch	.00008"			.0002"
Repeatability f_w		inch	.0001"			
Standard			Factory standard			
Set included			Holding bar HB–2157, Clamp CP–2199			

Order no.	a	b	c	d	e	f	Stylus length
	mm	mm	mm	mm	mm	mm	mm
2015321		30	13,6	17,8	75	99	14,5
2015322	40,5		13,6	17,8	75	99	14,5
2015351	40,5		13,6	17,8	75	99	14,5
2015323	40,5		13,6	17,8	75	99	14,5
4308960		30	13,6	17,8	75	99	14,5
4308970	40,5		13,6	17,8	75	99	14,5
4308980	40,5		13,6	17,8	75	99	14,5
4308985	40,5		13,6	17,8	75	99	14,5



Accessories

Order no.	Product description	Product type
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

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

Standard model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a3/8, Holding bar HB–2157, Clamp CP–2199

Application:

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

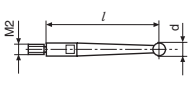
Technical Data

Product type			801 SGI	801 S	801 S1	801 SG	801 SR
Order no.	Order no.		4307970	4305950	4305960	4307950	4307960
	Order no. Set		2015311	2015316	2015317	2015318	2015350
Measuring range		mm	± 0.3				
Measuring range		inch	± .015"				± .030"
Graduation value		mm	0.01				
Graduation value		inch	.0005"		.001"	.0005"	
Scale diameter		inch	1.5"	1.1"	1.5"		
Type of dial face			15–0–15				
Dial color			green				
Measuring force		N	0.15				
Range per rev.		mm	0.6				
Range per rev.		inch	.03"				
Deviation range f_e		inch	.0004"				
Total deviation range f_{ges}		inch	.0005"				
Measuring value hysteresis f_u		inch	.00012"				.00016"
Partial measuring span f_t		inch	.0002"				
Repeatability f_w		inch	.0001"				
Standard			Factory standard				
Set included			Holding bar HB–2157, Clamp CP–2199				

Order no.	a	b	c	d	e	f	Stylus length
	mm	mm	mm	mm	mm	mm	mm
2015311	40,5		13,6	17,8	75	99	14,5
2015316		30	13,6	17,8	75	99	14,5
2015317		30	13,6	17,8	75	99	14,5
2015318	40,5		13,6	17,8	75	99	14,5
2015350	40,5		13,6	17,8	75	99	14,5
4305950		30	13,6	17,8	75	99	14,5
4305960		30	13,6	17,8	75	99	14,5
4307950	40,5		13,6	17,8	75	99	14,5
4307960	40,5		13,6	17,8	75	99	14,5
4307970	40,5		13,6	17,8	75	99	14,5

Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

Test Indicator MarTest 801 SL / 801 SGL

Application:

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

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, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a3/8, Holding bar HB–2157, Clamp CP–2199

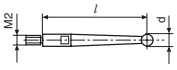
Technical Data

Product type			801 SL	801 SGL
Order no.	Order no.		4306950	4306960
	Order no. Set		2015319	2015320
Measuring range		inch	± .010"	
Graduation value		inch	.0005"	
Scale diameter		inch	1.1"	1.5"
Type of dial face			10–0–10	
Dial color			green	
Measuring force		N	0.07	
Range per rev.		inch	.02"	
Deviation range f_e		inch	.0004"	
Total deviation range f_{ges}		inch	.0005"	
Measuring value hysteresis f_u		inch	.0002"	
Partial measuring span f_t		inch	.0002"	
Repeatability f_w		inch	.0001"	
Standard			Factory standard	
Set included			Holding bar HB–2157, Clamp CP–2199	

Order no.	a	b	c	d	e	f	Stylus length
	mm	mm	mm	mm	mm	mm	mm
2015319		30	40,3	44,6	102	126	41,24
2015320	40,5		40,3	44,6	102	126	41,24
4306950		30	40,3	44,6	102	126	41,24
4306960	40,5		40,3	44,6	102	126	41,24

Accessories

Order no.	Product description	Product type
4306851	Stylus ø 1,0 mm, Carbide, l = 41,24 mm	800 tl
4306850	Stylus ø 2,0 mm, Carbide, l = 41,24 mm	800 tl
4306853	Stylus ø 3,0 mm, Carbide, l = 41,24 mm	800 tl
4309053	Stylus ø 2,0 mm, Ruby, l = 41,24 mm	800 tlr
4305868	Spanner	



800 t

Test Indicator MarTest 800 V

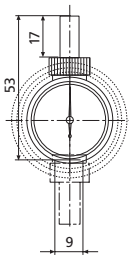
Vertical model
- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal resistance to solvents
- Matt chrome plated protective casing with three integrated dovetail guide rails
- Shockproof measuring mechanism
- Anti-magnetic model
- Automatic adjustment to the contacting direction ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a8, Holding bar HB–2157, Clamp CP–2199

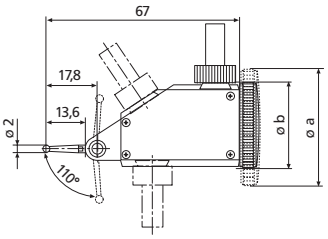
Application:
- Measurement of concentricity, alignment, parallelism and flatness
- Centering of bores and shafts
- Parallel or perpendicular alignment of work pieces

Technical Data

Order no.		2015327	4302200
Product type		800 V	
Measuring range	mm	± 0,4	
Readings	mm	0,01	
Scale diameter	mm	28	
Type of dial face		40–0–40	
Dial color		yellow	
Measuring force	N	0,2	
Range per rev.	mm	0,8	
Span of error f_e	µm	10	
Total span of error f_{ges}	µm	13	
Hysteresis f_u	µm	3	
Local span f_t	µm	5	
Repeatability f_w	µm	3	
Standard			DIN 2270
Set included		Holding bar HB–2157, Clamp CP–2199	

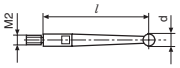
Order no.	b	Stylus length
	mm	mm
2015327		14,5
4302200	30	14,5





Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

Test Indicator MarTest 800 VGM

DIN 2270 | SHOCK PROOF

Application:

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

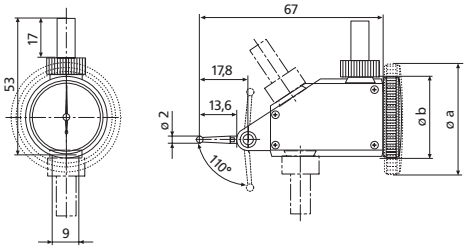
Vertical model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a8, Holding bar HB–2157, Clamp CP–2199

Technical Data

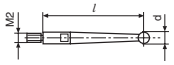
Order no.		2015347	4302250
Product type		800 VGM	
Measuring range	mm	± 0,1	
Readings	mm	0,002	
Scale diameter	mm	38	
Type of dial face		100–0–100	
Dial color		yellow	
Measuring force	N	0,25	
Range per rev.	mm	0,2	
Span of error f_e	µm	3	
Total span of error f_{ges}	µm	4	
Hysteresis f_u	µm	2	
Local span f_t	µm	2	
Repeatability f_w	µm	1,5	
Standard			DIN 2270
Set included		Holding bar HB–2157, Clamp CP–2199	

Order no.	a	Stylus length
	mm	mm
2015347		14,5
4302250	40,5	14,5



Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

Test Indicator MarTest 801 VGM

Vertical model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a3/8, Holding bar HB–2157, Clamp CP–2199

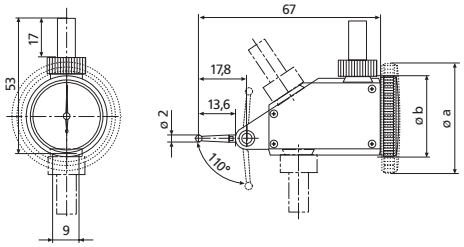
Application:

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

Technical Data

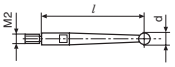
Order no.		2015326	4302960
Product type		801 VGM	
Measuring range	**inch**	± .004"	
Graduation value	**inch**	.0001"	
Scale diameter	**inch**	1.5"	
Type of dial face		4–0–4	
Dial color		green	
Measuring force	**N**	0.25	
Range per rev.	**inch**	.008"	
Deviation range f_e	**inch**	.00012"	
Total deviation range f_{ges}	**inch**	.00016"	
Measuring value hysteresis f_u	**inch**	.00008"	
Partial measuring span f_t	**inch**	.00008"	
Repeatability f_w	**inch**	.0001"	
Standard			Factory standard
Set included		Holding bar HB–2157, Clamp CP–2199	

Order no.	a	Stylus length
	mm	mm
2015326		14,5
4302960	40,5	14,5



Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

Test Indicator MarTest 801 V

Application:

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

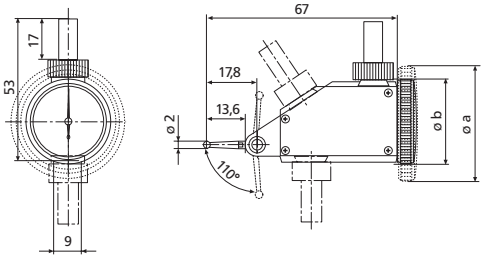
Vertical model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a3/8, Holding bar HB–2157, Clamp CP–2199

Technical Data

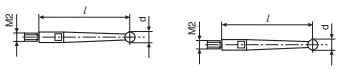
Order no.		2015325	4302950
Product type		801 V	
Measuring range	**inch**	± .015"	
Graduation value	**inch**	.0005"	
Scale diameter	**inch**	1.1"	
Type of dial face		15–0–15	
Dial color		green	
Measuring force	**N**	0.2	
Range per rev.	**inch**	.03"	
Deviation range f_e	**inch**	.0004"	
Total deviation range f_{ges}	**inch**	.0005"	
Measuring value hysteresis f_u	**inch**	.00012"	
Partial measuring span f_t	**inch**	.0002"	
Repeatability f_w	**inch**	.0001"	
Standard			Factory standard
Set included		Holding bar HB–2157, Clamp CP–2199	

Order no.	b	Stylus length
	mm	mm
2015325		14,5
4302950	30	14,5



Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t **800 tb**

Test Indicator MarTest 800 H

Horizontal model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a8, Holding bar HB–2157, Clamp CP–2199

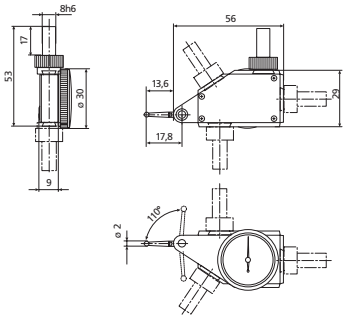
Application:

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

Technical Data

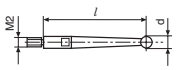
Order no.		2015328	4303200
Product type		800 H	
Measuring range	mm	± 0,4	
Readings	mm	0,01	
Scale diameter	mm	28	
Type of dial face		40–0–40	
Dial color		yellow	
Measuring force	N	0,25	
Range per rev.	mm	0,8	
Span of error f_e	µm	10	
Total span of error f_{ges}	µm	13	
Hysteresis f_u	µm	3	
Local span f_t	µm	5	
Repeatability f_w	µm	3	
Standard		DIN 2270	
Set included		Holding bar HB–2157, Clamp CP–2199	

Order no.	Stylus length
	mm
2015328	14,5
4303200	14,5



Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

Test Indicator MarTest 801 H

Application:

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

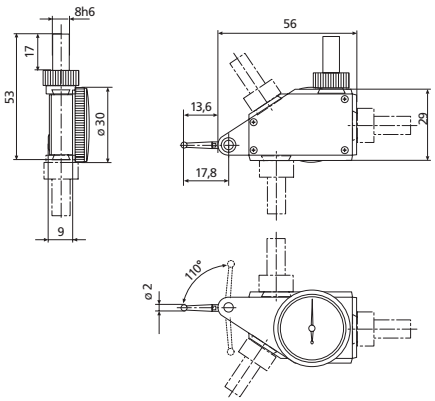
Horizontal model

- High-contrast dial face, **sealed with O-ring**
- **Mineral glass viewing panel** for best protection against cracking, scratching, hot shavings and optimal 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 ensures infallible readings
- Ball bearing mounted double lever
- Friction clutch overload protection
- Stylus with carbide ball
- **Scope of delivery:** Case, Instruction manual, Spanner for changing the styli, Stylus dia. ø 2 mm, Mounting shaft 800a3/8, Holding bar HB–2157, Clamp CP–2199

Technical Data

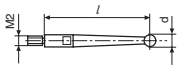
Order no.		2015324	4303950
Product type		801 H	
Measuring range	**inch**	± .015"	
Graduation value	**inch**	.0005"	
Scale diameter	**inch**	1.1"	
Type of dial face		15–0–15	
Dial color		green	
Measuring force	**N**	0.25	
Range per rev.	**inch**	.03"	
Deviation range f_e	**inch**	.0004"	
Total deviation range f_{ges}	**inch**	.0005"	
Measuring value hysteresis f_u	**inch**	.00012"	
Partial measuring span f_t	**inch**	.0002"	
Repeatability f_w	**inch**	.0001"	
Standard		Factory standard	
Set included		Holding bar HB–2157, Clamp CP–2199	

Order no.	Stylus length
	mm
2015324	14,5
4303950	14,5



Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4305868	Spanner	



800 t

Digital Test Indicator MarTest 800 EW / 800 EWL

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

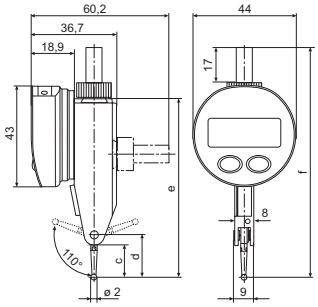
- Inductive measuring system
- Battery life approx. 2 years
- Operating unit is protected against coolants and lubricants, protection class IP65
- Combined analog and digital display
- Operating and display unit (bezel) can be rotated through 360°
- Satin chrome finished housing with 3 dovetail guideways
- Shockproof
- Movement bearings are jeweled
- Automatic matching to sensing direction
- Anti-magnetic
- Double lever supported in ball bearings
- Overload protection provided by slip clutch
- **Data interface:** Opto RS232C, USB
- **IP protection category:** IP 65
- **Scope of delivery:** Mounting shaft 800a8, Spanner for changing the styli, Stylus dia. ø 2 mm, Case

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

Technical Data

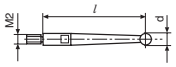
Order no.		4305120	4306120
Product type		800 EW	800 EWL
Measuring range	mm	± 0,4	± 0,25
Measuring range, test indicator, comparator, probe	inch	± .015"	± .010"
Resolution	mm	0,001	
Resolution	inch	.00005"	
Measuring force	N	0,13	0,07
Span of error f_e	µm	10	
Total span of error f_{ges}	µm	13	
Hysteresis f_u	µm	3	5
Local span f_t	µm	5	
Repeatability f_w	µm	3	
Standard		Factory standard	

Order no.	c	d	e	f	Mounting shaft	Stylus length
	mm	mm	mm	mm	mm	mm
4305120	13,6	17,8	75	99	8	14,5
4306120	40,3	44,6	102	126	8	41,24



Accessories

Order no.	Product description	Product type
4305870	Stylus ø 1,0 mm, Carbide, l = 14,5 mm	800 ts
4305850	Stylus ø 2,0 mm, Carbide, l = 14,5 mm	800 ts
4305871	Stylus ø 3,0 mm, Carbide, l = 14,5 mm	800 ts
4102520	Battery 3 V, CR 2032	
4305122	Data Connection Cable RS232C (2 m)	800 EWr
4305121	Data Connection Cable USB (2 m)	800 EWu
4309051	Stylus ø 2,0 mm, Ruby, l = 14,5 mm	800 tsr
4306850	Stylus ø 2,0 mm, Carbide, l = 41,24 mm	800 tl
4306851	Stylus ø 1,0 mm, Carbide, l = 41,24 mm	800 tl
4306853	Stylus ø 3,0 mm, Carbide, l = 41,24 mm	800 tl
4309053	Stylus ø 2,0 mm, Ruby, l = 41,24 mm	800 tlr



800 t

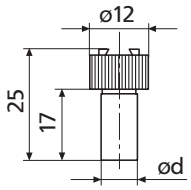
Mounting shaft MarTest 800 a4 / 800 a6 / 800 a8 / 800 a3/8 / 800 a1/4“

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

Technical Data

Order no.	Product type
4305885	800 a4
4301865	800 a6
4305865	800 a8
4305875	800 a3/8
4305895	800 a1/4“

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



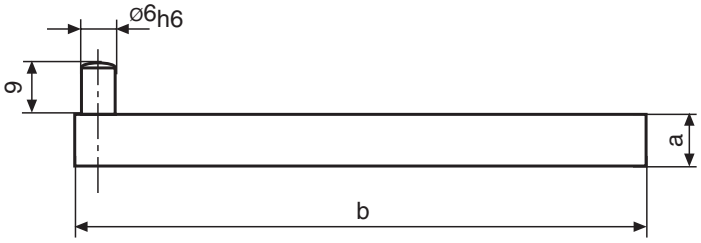
Holder MarTest 800 h1

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

Technical Data

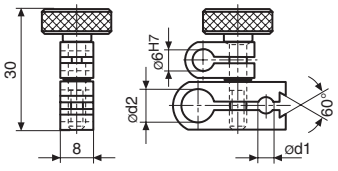
Order no.	Product type
4305888	800 h1

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

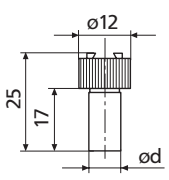


Accessories

Order no.	Product description	Product type
4305865	Mounting shaft ø 8 mm	800 a8
4305875	Mounting shaft ø 0,375 inch	800 a3/8
4305885	Mounting shaft ø 4 mm	800 a4
4305891	Universal clamp, ø d1 = 4 mm, ø d2 = 8 mm, dovetail clamp	800 k8
4305892	Universal clamp, ø d1 = 5/32", ø d2 = 3/8", dovetail clamp	800 k3/8"



800 k



800 a

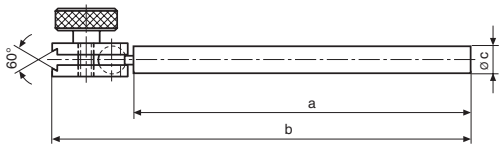
Universal holder with dovetail clamp MarTest 800 hs8

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

Technical Data

Order no.	Product type
4305886	800 hs8

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



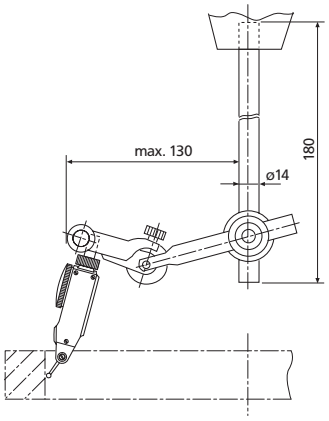
Measuring and centering arm MarTest 801 v

For aligning and centering work pieces on machine tools
- Swivel mounting clamp and fine adjustment
- Stainless steel rods

Technical Data

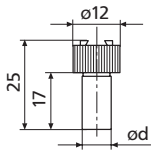
Order no.	Product type
4309070	801 v

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



Accessories

Order no.	Product description	Product type
4305865	Mounting shaft ø 8 mm	800 a8



800 a

Measuring stand MarTest 801 p

- With swivel holder
- Base with V-groove

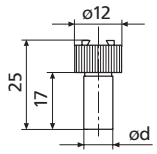
Technical Data

Order no.	Product type
4309090	801 p

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

Accessories

Order no.	Product description	Product type
4305865	Mounting shaft ø 8 mm	800 a8
4305885	Mounting shaft ø 4 mm	800 a4



800 a

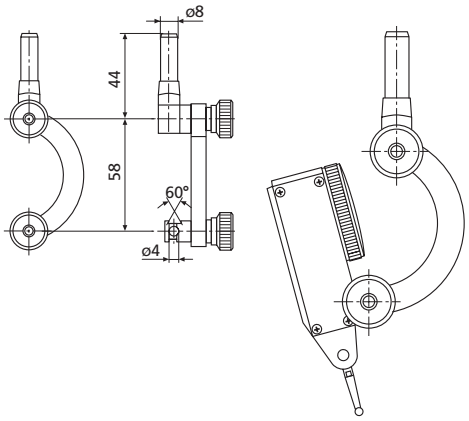
Universal centering support frame MarTest 800 b

- For aligning and centering workpieces on machine tools
- Pivoting holding clamp

Technical Data

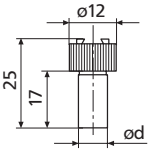
Order no.	Product type
4305893	800 b

Order no.	Mounting hole
4305893	4 mm



Accessories

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



800 a

Digital 3D-Touch Probe MarTest 802 EW

IP65

Application:

Can be used on milling and CNC machines to
- determine the zero position on a work piece
- determine the center of a bore
- determine and correct the position of a work piece
- and for measurement of
- lengths
- depths

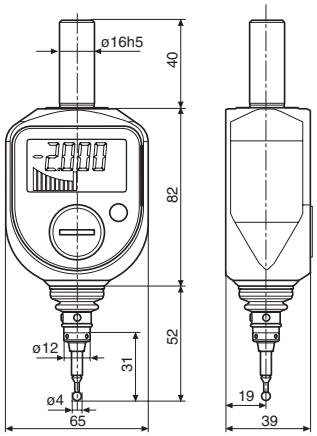
Functions:
- ON/OFF
- Auto OFF after 2 h

Excellent readability thanks to combined display:
- bar graph for dynamic path information
- digital display for exact readings
- Can be controlled independently of a machine tool
- Large working range in all axes (X, Y, Z) prevents damage to the stylus by contacting errors
- Compact metal housing and long probe arm
- Shockproof movement
- **IP protection category:** IP 65
- **Scope of delivery:** Battery, Instruction manual, Stylus 802 EWt

Technical Data

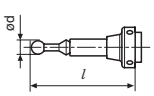
Order no.		4304300	4304305
Product type		802 EW	
Resolution	**mm**	0,005	
Resolution	**inch**		.0001"
Working range X, Y,Z -Axis		–2 to 4 mm	–.0787" to .157"
Repeatability at zero, unidirectional		± 0,005 mm	± .0001"
Standard		Factory standard	

Order no.	Mounting shaft	Mounting shaft
	mm	inch
4304300	16	
4304305		.75"



Accessories

Order no.	Product description	Product type
4304320	Styluses ø 4,0 mm, l = 31 mm	802 EWt
4102520	Battery 3 V, CR 2032	



802 EWt

Mechanical 3D-Touch Probe MarTest 802 NW

- 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
- **Scope of delivery:** Battery, Instruction manual, Stylus 802 EWt

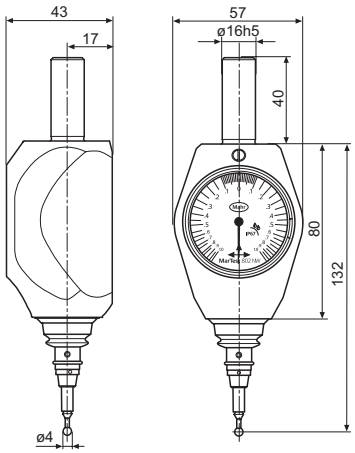
Application:

Can be used on milling and CNC machines to
- determine the zero position on a work piece
- determine the center of a bore
- determine and correct the position of a work piece
- and for measurement of
- lengths
- depths

Technical Data

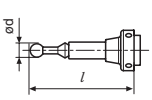
Order no.		4304311	4304312
Product type		802 NW	
Readings	**mm**	0,01	
Readings	**inch**		.0004"
Working range X, Y,Z -Axis		6,6 mm	.26"
Repeatability at zero, unidirectional		± 0,01mm	± .0004"
Standard		Factory standard	

Order no.	Mounting shaft	Mounting shaft
	mm	inch
4304311	16	
4304312		.75"



Accessories

Order no.	Product description	Product type
4304320	Styluses ø 4,0 mm, l = 31 mm	802 EWt
4304321	Styluses ø 6 mm, l = 56,6 mm	802 NWt



802 EWt / NWt

THEY POINT YOU IN THE RIGHT DIRECTION.
MARCATOR DIAL INDICATORS.

Due to their versatility, dial indicators rank as some of the most commonly used transducers. That is certainly the case with our MarCator series. Our mechanical dial indicators have precision gears and pinions for maximum accuracy. They are also available in shockproof and waterproof versions. Our MarCator digital indicator range contains high-precision electronic measuring systems, which allow for additional measuring functions without sacrificing the proven benefits of an analog display. With the simple operating system, the large, easy-to-read display and the option of fast and easy transmission of all your measuring results, they satisfy all the requirements of a modern measuring instrument.

MarCator. Dial and Digital Indicators

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Digital Indicator

MarCator 1086 WR / 1086 Ri / 1086 WRi / 1087 R 181
Digital Indicator

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Digital Indicator

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Small Precision Dial Indicators

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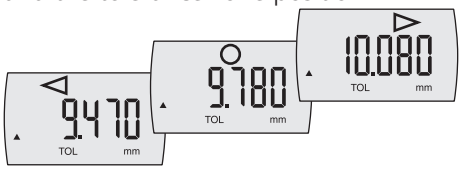
MarCator. Dial and Digital Indicators

DIGITAL INDICATORS WITH REFERENCE SYSTEM

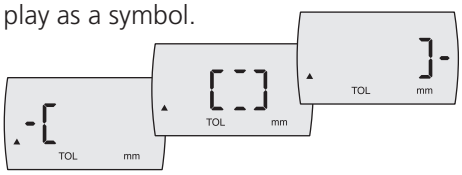
Mahr sets a very high standard in the Digital Indicator product segment with Digital Indicators MarCator 1086 Ri / 1087 Ri. With the Reference System the MarCator Digital Indicators can be applied immediately; the zero-position only has to be set once for all further measurements. Also, if you need to document your data, we have integrated wireless indicators; that offer consumers an energy efficient wireless data transmission system. This is an optimal solution for transmitting your measured values to a PC.

Clear Display

Tolerance indication with the diplayed value
Displayed is the actual measured value and the tolerance zone position



Tolerance indication without the value in the display. In and out of tolerance will be indicated in the display as a symbol.



Universal Data-Interface

- **Integrated Wireless** The wireless interface for the price of a cable
- **USB** No interface box is required! Simple and inexpensive way to set up a multiple measuring instruments via a USB hub
- **Digimatic** To connect a Digimatic compatible evaluation instrument
- **Mahr Opto RS232C** For direct connection to a COM port on a PC

Error free operation

Lock function:
This prevents unintentional activation of an operating button. Either all the operating buttons or certain individual buttons can be locked. If a locked operating button is pressed, the "LOC" symbol will appear in the display.

Absolute-Function:

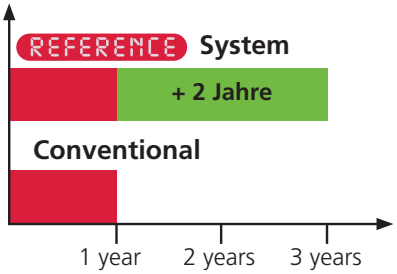
Micrometer can be set in any position to 0,000 mm / .0000" without losing reference to the preset value.

Protection class IP54 (optional)
- Protection cap is sealed
- Rubber bellows for the measuring spindle
- Sealed battery compartment

Code Initials	IP	International Protection
First digit	5	Dust protected
Second digit	4	Protection against splash water in all directions

Battery service life is 3 years

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



** When Integrated Wireless is deactivated*

Just set once to zero

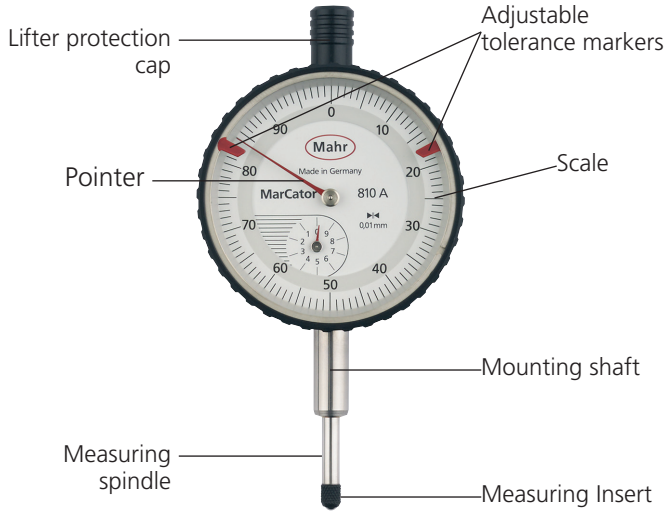
REFERENCE All Mahr digital indicators with this logo are equipped with the innovative Reference System. The zero position just has to be set once: after setting the zero position, the zero remains stored for all further measurements. Therefore, once the indicator is switched ON or the contact point is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

MarConnect Integrated Wireless – For the price of a data cable

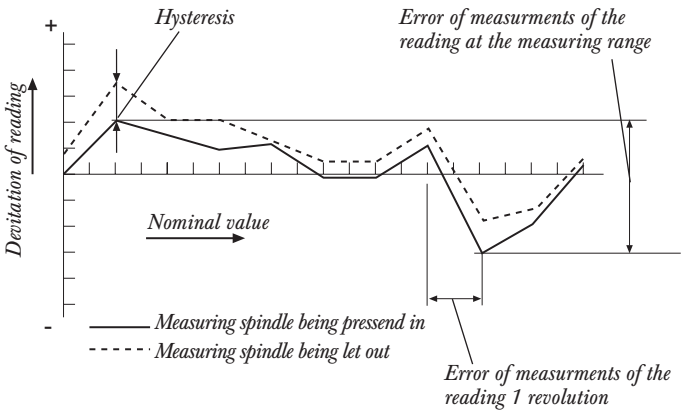
MarConnect integrated wireless

Wireless data transmission for the price of a data cable. With Integrated Wireless, you have a new Integrated Wireless data transmission system from Mahr **for the price of a data cable.** Data acquisition with digital Indicators is now even simpler: Simply transmit your measured data without being caught up between cables directly into Microsoft Office Excel® or via a keyboard code into any Windows program.

MarCator - Features

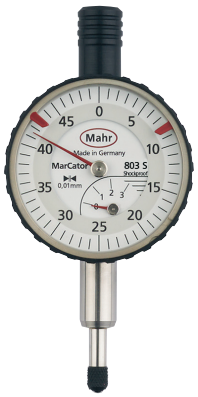


Metrological characteristics

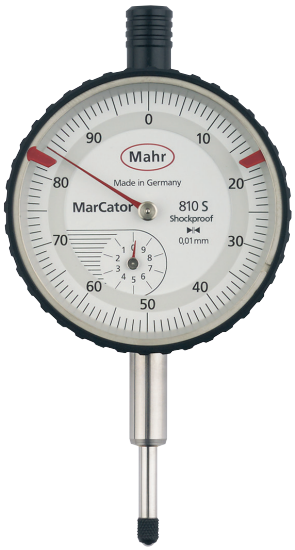


MarCator - Versions

Precision small Dial Indicator 803 S



Precision Dial Indicator 810 S



Digital Indicator 1075 R

Digital Indicator 1087 Ri

Digital Indicator MarCator 1075 R

Digimatic RS232C USB IP52

REFERENCE

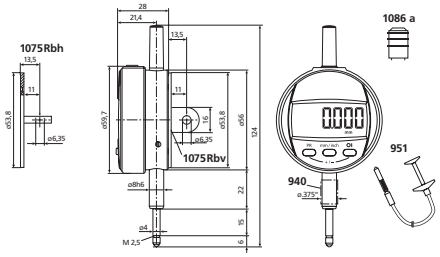
Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- DATA (Data transmission via connection cable)
- LOCK function (key lock)
- AUTO-ON / OFF

- High contrast LCD
- Hermetically sealed protective measuring spindle cap
- Mounting shank and measuring spindle are both made of hardened stainless steel
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 12 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 52
- **Scope of delivery:** Battery, Instruction manual

Technical Data

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

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



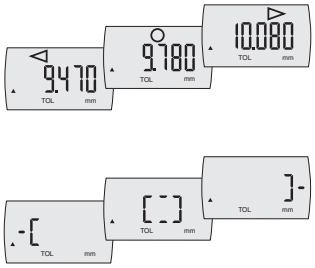
Accessories

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

Digital Indicator MarCator 1086 R

REFERENCE ABS TOL IP42 USB RS232C Digimatic

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

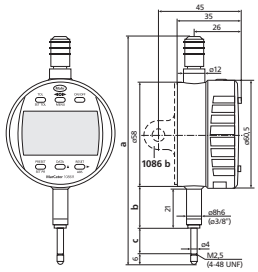


- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery

Technical Data

Order no.		4337620	4337621	4337622	4337623	4337650	4337651
Product type		1086 R				1086 ZR	
Measuring span	mm	12.5	25	50	100	12.5	25
Measuring span	inch	.5"	1"	2"	4"	.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		0.007	0.008	0.004	
Error limit over 50 graduations	mm	0.002					
Repeatability	mm	0.001					
Measuring force	N	0.65 –0.9	0.65 –1.15	1.25 –2.7	1.8 –3.5	0.65 –0.65	0.9 –1.15
Standard		Factory standard					

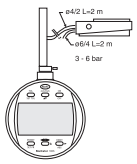
Order no.	a	b	c	Mounting shaft	Mounting shaft
	mm	mm	mm	mm	inch
4337620	126.3	23	13.5	8	
4337621	153.4	26.8	26.5	8	
4337622	267.3	40	52	8	
4337623	420.3	91	103	8	
4337650	126.3	23	13.5		.375"
4337651	153.4	26.8	26.5		.375"



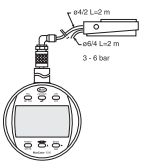
Accessories

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

1085 a



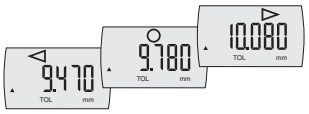
1082 p

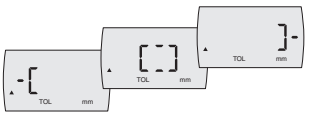


1082 p

Digital Indicator MarCator 1086 R

Digimatic RS232C USB IP42 TOL ABS REFERENCE





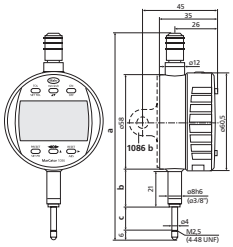
Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (Data transmission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

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery

Technical Data

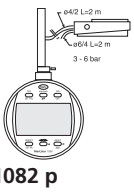
Order no.		4337130	4337131	4337132	4337133
Product type		1086 R			
Measuring span	mm	12.5	25	50	100
Measuring span	inch	.5″	1″	2″	4″
Resolution	mm	0.01			
Resolution	inch	.0005″			
Error limit	mm	0.02			
Error limit over 50 graduations	mm	0.02			
Repeatability	mm	0.01			
Measuring force	N	0.65 –0.9	0.65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

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

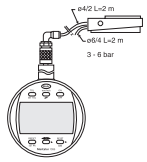


Accessories

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



1082 p



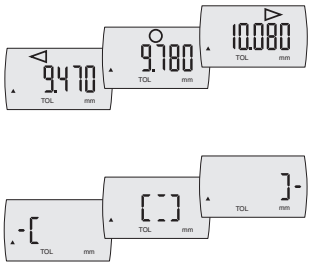
1082 p

1085 a

Digital Indicator MarCator 1086 WR

REFERENCE ABS TOL IP54 USB RS232C Digimatic

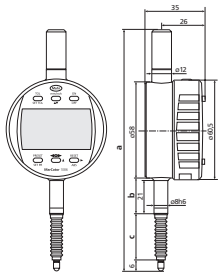
Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (Data transmission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



- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Hermetically sealed protective measuring cap
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 54
- **Scope of delivery:** Instruction manual, Battery

Technical Data

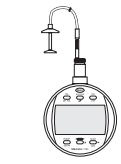
Order no.		4337640	4337641
Product type		1086 WR	
Measuring span	mm	12.5	25
Measuring span	inch	.5"	1"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01	
Resolution	inch	.00002", .00005", .0001", .0002", .0005"	
Error limit	mm	0.004	
Error limit over 50 graduations	mm	0.002	
Repeatability	mm	0.001	
Measuring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



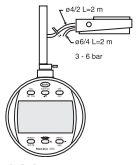
Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337640	144.3	21	28.5	8
4337641	193.2	24.8	50	8

Accessories

Order no.	Product name	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4336311	Cable Release (12,5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12,5 + 25 mm)	1082 p
4337472-E	Rubber bellows (12,5 mm)	
4310103	Adapter bush (.375" / 8 mm)	940
4337474-E	Rubber bellows (25 mm)	



1085 a

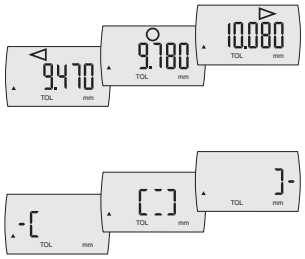


1082 p

Digital Indicator MarCator 1086 Ri

Digimatic | RS232C | USB | IP42 | TOL | ABS | MarConnect integrated wireless

REFERENCE



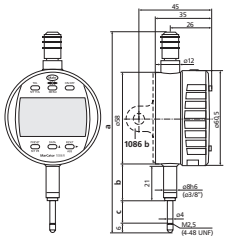
Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- <0> (tolerance GO / NO GO display mode)
- ABS (display can be set to zero without losing reference to preset)
- DATA (Data transmission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

- Integrated wireless transmitter
- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery

Technical Data

Order no.		4337624	4337625	4337626	4337627	4337628
Product type		1086 Ri				
Measuring span	**mm**	12.5	25	50	100	25
Measuring span	**inch**	.5"	1"	2"	4"	1"
Resolution	**mm**	0.0005, 0.001, 0.002, 0.005, 0.01				
Resolution	**inch**	.00002", .00005", .0001", .0002", .0005"				
Error limit	**mm**	0.004		0.008	0.009	0.004
Error limit over 50 graduations	**mm**	0.002				
Repeatability	**mm**	0.001				
Measuring force	**N**	0.65 –0.9	0.65 –1.15	1.25 –2.7	1.8 –3.5	0 –0
Standard		Factory standard				
Lifting protection cap		•				

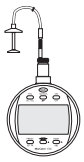
Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337624	126.3	23	13.5	8
4337625	153.4	26.8	26.5	8
4337626	267.3	40	52	8
4337627	420.3	91	103	8
4337628	153.4	26.8	26.5	8



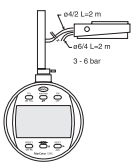
Accessories

Order no.	Product name	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102220	Receiver	i-Stick
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4336311	Cable Release (12,5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12,5 + 25 mm)	1082 p
4310103	Adapter bush (.375" / 8 mm)	940
4336230	Pneumatic lifting (50 + 100 mm)	1082 p

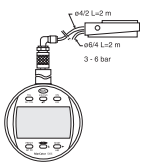
i-Stick



1085 a



1082 p

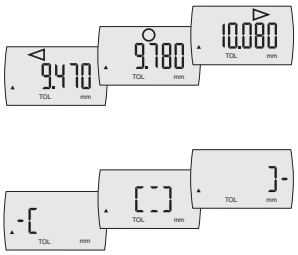


1082 p

Digital Indicator MarCator 1086 Ri

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

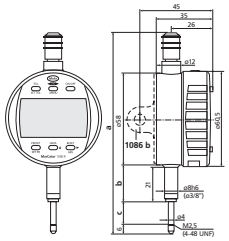
- Integrated wireless transmitter
- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery



Technical Data

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

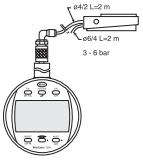
Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337134	126.3	23	13.5	8
4337135	153.4	26.8	26.5	8



Accessories

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

i-Stick

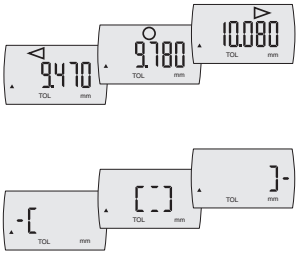


1082 p

Digital Indicator MarCator 1086 WRi

Digimatic | RS232C | USB | IP54 | TOL | ABS | MarConnect integrated wireless

REFERENCE



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

- Integrated wireless transmitter
- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 11 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **IP protection category:** IP 54
- **Scope of delivery:** Instruction manual, Battery

Technical Data

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

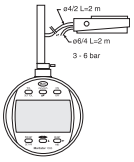
Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337142	144.3	21	28.5	8
4337143	193.2	24.8	50	8

Accessories

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

i-Stick

1085 a



1082 p

Digital Indicator MarCator 1087 R

REFERENCE

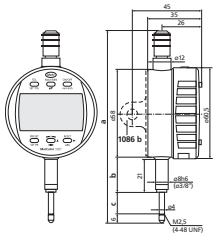
Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- ABS (display can be set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

- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Immediate measurements due to the Reference System
- Lifter protection cap on the measuring spindle
- Mounting shank and measuring spindle are both made of hardened stainless steel
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Opto RS232C, Digimatic, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery

Technical Data

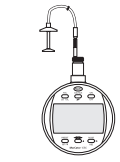
Order no.		4337660	4337661	4337670	4337671
Product type		1087 R		1087 ZR	
Measuring span	mm	12.5	25	12.5	25
Measuring span	inch	.5"	1"	.5"	1"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01			
Resolution	inch	.00002", .00005", .0001", .0002", .0005"			
Graduation values	mm	0,001, 0,002, 0,005, 0,01, 0,02, 0,05			
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2			
Error limit	mm	0.004			
Error limit over 50 graduations	mm	0.002			
Repeatability	mm	0.001			
Measuring force	N	0.65 –0.9	0.65 –1.15	0.65 –0.9	0.65 –1.15
Standard		Factory standard			
Lifting protection cap		•			

Order no.	a	b	c	Mounting shaft	Mounting shaft
	mm	mm	mm	mm	inch
4337660	126,3	23	13,5	8	
4337661	153,4	26,8	26,5	8	
4337670	126,3	23	13,5		.375"
4337671	153,4	26,8	26,5		.375"

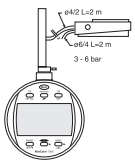


Accessories

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



1085 a



1082 p

Digital Indicator MarCator 1087 Ri

Digimatic · RS232C · USB · IP42 · ABS · MAX MIN · TOL · MarConnect integrated wireless

REFERENCE

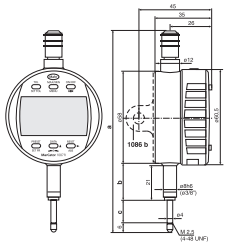
Functions:
- 0 (set the analog display to zero)
- ABS (display can be set to zero without losing reference to preset)
- AUTO-ON / OFF
- DATA (Data transmission via connection cable)
- Factor (adjustable)
- LOCK (individual button lock)
- MAX/MIN memory for searching the reversal point
- ON/OFF
- PRESET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

Technical Data

Order no.		4337663	4337665
Product type		1087 Ri	
Measuring span	mm	12.5	25
Measuring span	inch	.5"	1"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01	
Resolution	inch	.00002", .00005", .0001", .0002", .0005"	
Graduation values	mm	0,001, 0,002, 0,005, 0,01, 0,02, 0,05	
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2	
Error limit	mm	0.004	
Error limit over 50 graduations	mm	0.002	
Repeatability	mm	0.001	
Measuring force	N	0.65 –0.85	0.9 –0.65
Standard		Factory standard	
Lifting protection cap		•	

- Integrated wireless transmitter
- High-contrast LCD display
- Operating and display unit (bezel) can be rotated through 280°
- Lift-off cap on end of measuring pin
- Clamping shaft and measuring pin in hardened stainless steel
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **Energy supply:** Battery operation
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery

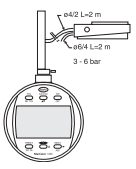
Order no.	a	b	c	Mounting shaft
	mm	mm	mm	mm
4337663	126.3	23	13.5	8
4337665	153.4	26.8	26.5	8



Accessories

Order no.	Product name	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102411	Digimatic data cable (2 m)	16 EXd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102220	Receiver	i-Stick
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4336237	Pneumatic lifting (12,5 + 25 mm)	1082 p
4336311	Cable Release (12,5 + 25 mm)	1085 a
4310103	Adapter bush (.375" / 8 mm)	940

i-Stick



1082 p

1085 a

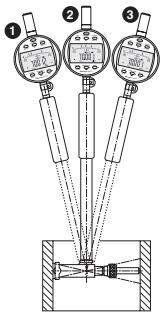
Digital Indicator MarCator 1087 BR

REFERENCE ABS MAX MIN TOL IP42 USB Digimatic RS232C

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

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.

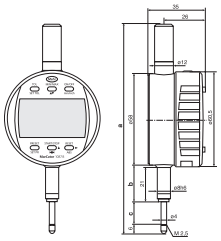


- High contrast LCD
- Operating and display unit (bezel) can be rotated through 280°
- Immediate measurements due to the Reference System
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Hermetically sealed protective measuring cap
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Opto RS232C, Digimatic, USB
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery

Technical Data

Order no.		4337662
Product type		1087 BR
Measuring span	mm	12.5
Measuring span	inch	.5"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"
Graduation values	mm	0,001, 0,002, 0,005, 0,01, 0,02, 0,05
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2
Error limit	mm	0.004
Error limit over 50 graduations	mm	0.002
Repeatability	mm	0.001
Measuring force	N	0.65 –0.9
Standard		Factory standard
Protective measuring spindle cap		•

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



Accessories

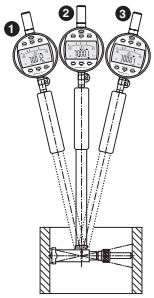
Order no.	Product name	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
2246308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

Digital Indicator MarCator 1087 BRi

RS232C | Digimatic | USB | IP42 | TOL | MAX MIN | ABS | REFERENCE | MarConnect integrated wireless

Application:

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



Functions:

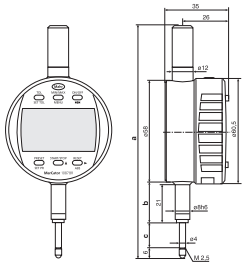
- ON/OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value) from range 500 mm
- Reversal of counting direction
- TOL (enter tolerance limit values)
- START/STOP search for reversal point
- MAX/MIN memory for searching the reversal point
- ABS (display can be set to zero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

- Integrated wireless transmitter
- High-contrast LCD display
- Operating and display unit (bezel) can be rotated through 280°
- Lift-off cap on end of measuring pin
- Clamping shaft and measuring pin in hardened stainless steel
- Immediate measurements due to the Reference System
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8.5 mm
- **Data interface:** Opto RS232C, Digimatic, USB, Integrated wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 42
- **Scope of delivery:** Instruction manual, Battery

Technical Data

Order no.		4337664
Product type		1087 BRi
Measuring span	mm	12.5
Measuring span	inch	.5"
Resolution	mm	0.0005, 0.001, 0.002, 0.005, 0.01
Resolution	inch	.00002", .00005", .0001", .0002", .0005"
Graduation values	mm	0,001, 0,002, 0,005, 0,01, 0,02, 0,05
Range of analog display	mm	± 0,01, ± 0,02, ± 0,04, ± 0,1, ± 0,2
Error limit	mm	0.004
Error limit over 50 graduations	mm	0.002
Repeatability	mm	0.001
Measuring force	N	0.65 –0.9
Standard		Factory standard
Protective measuring spindle cap		•

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

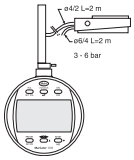


Accessories

Order no.	Product name	Product type
4884464	Battery 3 V, Type CR 2450	
4102357	16 EXu Data Connection Cable USB (2 m)	16 EXu
4102915	Digimatic data cable (2 m)	16 EWd
4102410	Data Connection Cable RS232C (2 m)	16 EXr
4102220	Receiver	i-Stick
4375004	Protective cap for 1075 R / 1086 R / 1087 R	1086 s
4337421	Lug back	1086 b
2246308	Adjustable back	
2254939	Screw back	
2255653	Rack back	
2255778	Adjustable back for 75B	
2255936	Post back	
4336311	Cable Release (12,5 + 25 mm)	1085 a
4336237	Pneumatic lifting (12,5 + 25 mm)	1082 p
4310103	Adapter bush (.375" / 8 mm)	940

i-Stick

1085 a

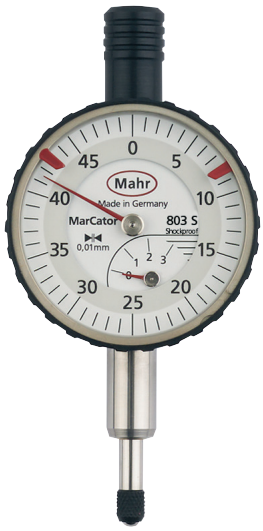


1082 p

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

DIN 878

- Shockproof movement
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- **Scope of delivery:** Case



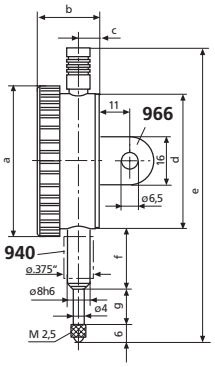
Application:

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

Technical Data

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

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

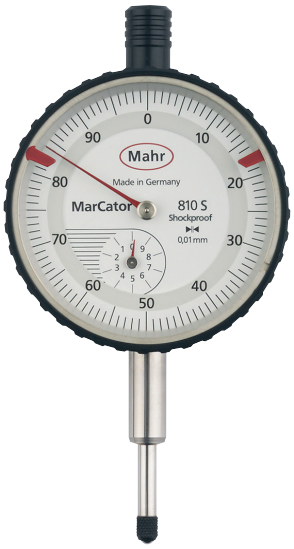


Accessories

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

Precision Dial Indicator MarCator 810 S / 810 A / 810 AT / 810 SV / 810 AU

DIN 878

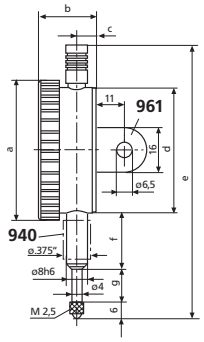


- Shockproof movement
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- **Scope of delivery:** Case

Technical Data

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

Order no.	a	b	c	d	e	f	g	Mounting shaft	Scale diameter
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4311000	58	23	7.5	52	111.5	21	16	8	50
4311050	58	23	7.5	52	112	22	15	8	50
4311060	58	23	5.5	52	112	22	15	8	50
4321000	58	24.2	8.7	52	169	22	45	8	50
4329050	58	23	7.5	52	111.5	22	4.5	8	50

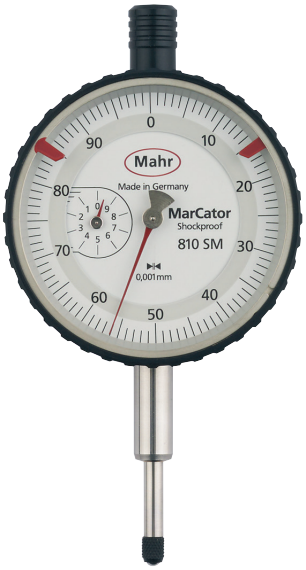


Accessories

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

Precision Dial Indicator MarCator 810 SM / 810 SRM

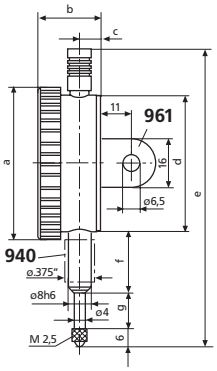
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precise mechanism with a combined gear lever transmission
- High accuracy with a minimum span of error
- **Scope of delivery:** Case



Technical Data

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

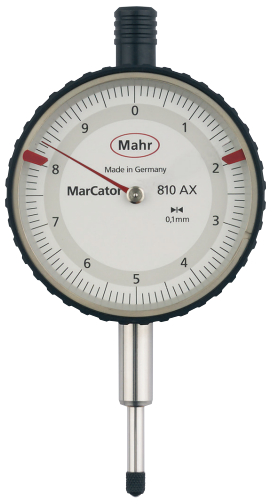
Order no.	a	b	c	d	e	f	g	Mounting shaft	Scale diameter
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4311070	58	23	8.5	52	111.5	22	15	8	50
4311080	58	23	7.5	52	111.5	22	15	8	50



Accessories

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

Precision Dial Indicator MarCator 810 AX

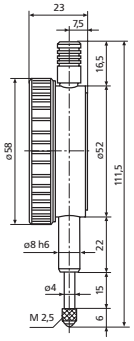


- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- **Scope of delivery:** Case

Technical Data

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

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



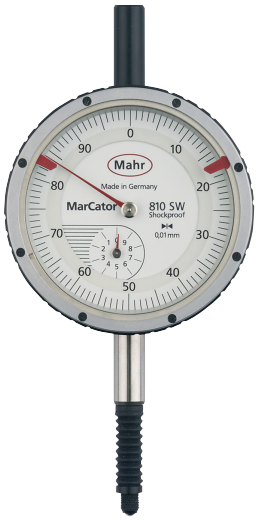
Accessories

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

Precision dial indicator MarCator 810 SW / 803 SW

DIN 878 IP54

- 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
- **Scope of delivery:** Case



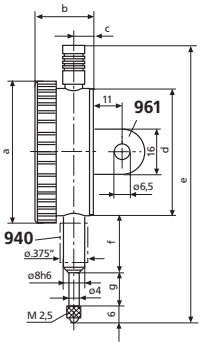
Application:

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

Technical Data

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

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

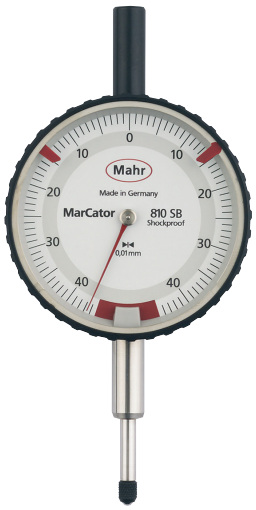


Accessories

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

Precision dial indicator MarCator 810 SB / 803 SB

DIN 878

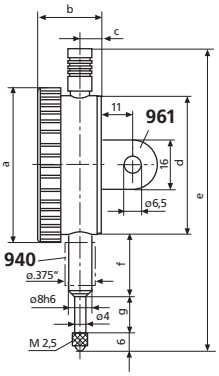


- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Hermetically sealed protective measuring spindle cap
- Limited measuring range for error free readings
- Large overtravel (ca. 9 mm) for easier insertion of test items in measuring devices
- Precision gears and pinions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

Technical Data

Order no.		4317000	4324250
Product type		810 SB	803 SB
Measuring span	mm	0.8	0.4
Graduation value	mm	0.01	
Type of dial face		40 –0 –40	20 –0–20
Range per rev.	mm	0.8	
Error limit, measuring range	µm	7	
Error limit, 1/2 revolution	µm	6	8
Error limit, 1/10 revolution	µm	5	
Repeatability f_w	µm	3	
Hysteresis f_u	µm	3	
Overtravel	mm	9	4.5
Measuring force	N	0.7 –1.1	0.9 –1.1
Standard		DIN 878	
Shockproof movement		•	
Protective measuring spindle cap		•	
Dial color		white	

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

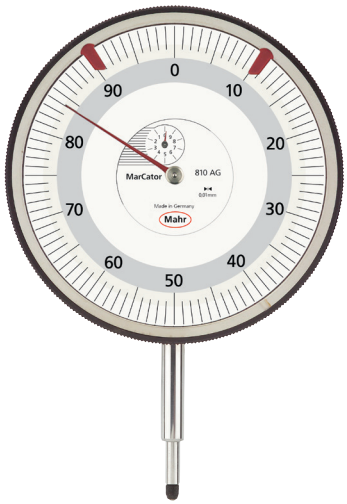


Accessories

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

Large dial indicator MarCator 810 AG

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



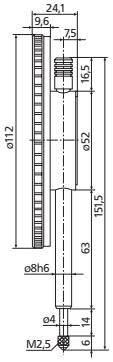
Application:

Ideal for long reading distance and in poorly lit conditions

Technical Data

Order no.		4322000
Product type		810 AG
Measuring span	mm	10
Graduation value	mm	0.01
Type of dial face		0 –100
Range per rev.	mm	1
Error limit, measuring range	µm	17
Error limit, 1 revolution	µm	15
Error limit, 1/2 revolution	µm	15
Error limit, 1/10 revolution	µm	5
Repeatability f_w	µm	3
Measuring value hysteresis f_u	µm	5
Overtravel	mm	0.1
Measuring force	N	1.3 –2.3
Standard		Factory standard
Lifting protection cap		•
Dial color		white

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



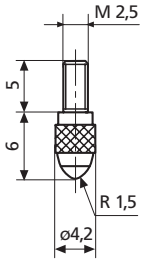
Accessories

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

Indicators MarCator

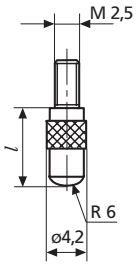
Standard contact point

Order no.	Product 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



Spherical contact point

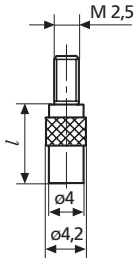
Order no.	Product type	l	Measuring surface ø	Measurement surface radius	Measuring surface
		mm	mm	mm	
4360007	902	4	4	6	Steel
4360008	902	5	4	6	Steel
4360009	902	6	4	6	Steel
4360010	902	8	4	6	Steel
4360011	902	10	4	6	Steel
4360012	902	12	4	6	Steel
4360013	902	15	4	6	Steel
4360014	902	20	4	6	Steel
4360015	902	25	4	6	Steel
4360016	902	30	4	6	Steel
4360017	902	35	4	6	Steel
4360018	902	50	4	6	Steel
4360019	902	40	4	6	Steel
4360020	902	75	4	6	Steel
4360021	902	80	4	6	Steel
4360022	902	60	4	6	Steel
4360023	902	100	4	6	Steel
4360024	902	70	4	6	Steel
4360025	902	90	4	6	Steel
4360026	902	45	4	6	Steel
4360029	902	95	4	6	Steel
4360031	902	55	4	6	Steel
4360035	902	65	4	6	Steel
4360036	902	85	4	6	Steel
4360040	902 H	8	4	6	Carbide
4360041	902 H	10	4	6	Carbide
4360042	902 H	12	4	6	Carbide
4360043	902 H	15	4	6	Carbide
4360044	902 H	20	4	6	Carbide
4360045	902 H	25	4	6	Carbide
4360046	902 H	30	4	6	Carbide
4360047	902 H	35	4	6	Carbide
4360048	902 H	50	4	6	Carbide
4360049	902 H	40	4	6	Carbide
4360050	902 H	45	4	6	Carbide



Indicators MarCator

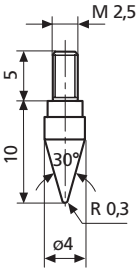
Flat contact point

Order no.	Product type	l	Measuring surface ø	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



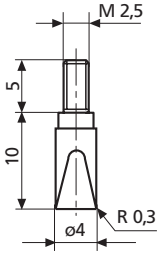
Conical contact point

Order no.	Product 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



Wedge Shaped Contact Points

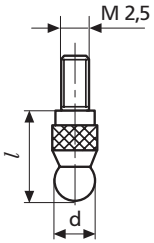
Order no.	Product type	l	Measuring surface ø	Measurement surface radius	Measuring surface
		mm	mm	mm	
4360140	905	10	4	0.3	Steel
4360141	905 H	10	4	0.3	Carbide



Indicators MarCator

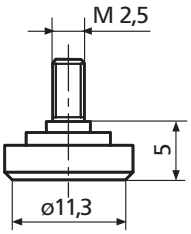
Ball Contact Points

Order no.	Product 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



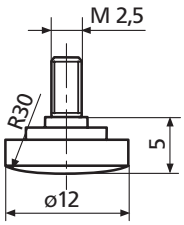
Flat contact plates

Order no.	Product 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



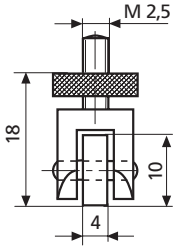
Spherical contact plates, steel

Order no.	Product 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



Measuring Rollers

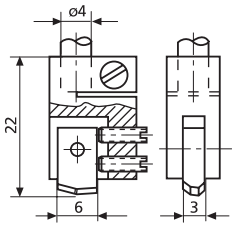
Order no.	Product type	l	Measurement surface radius	Radial run-out deviation	Measuring surface
		mm	mm	µm	
4360220	909 A	18		3	Steel
4360221	909 B	18	5	3	Steel



Indicators MarCator

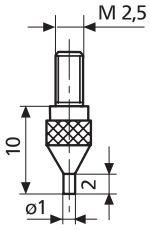
Measuring attachment

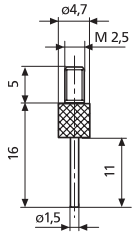
Order no.	Product type	l	Measuring surface
		mm	
4360230	910 H	22	Carbide



Pin contact point

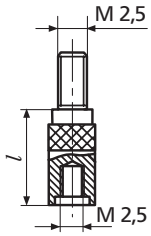
Order no.	Product type	l	Measuring surface ø	Measuring surface
		mm	mm	
4360240	911 H1	2	1	Carbide
4360241	911 H2	11	1.5	Carbide
4360280	911	15	1.5	Steel
4360281	911	20	1.5	Steel
4360282	911	25	1.5	Steel
4360283	911	30	1.5	Steel
4360284	911	35	1.5	Steel
4360285	911	40	1.5	Steel
4360286	911	50	1.5	Steel





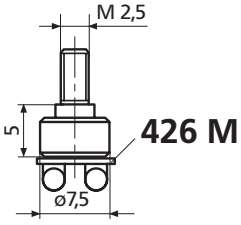
Measuring spindle extensions

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



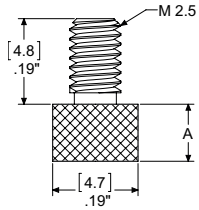
Flat contact points

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



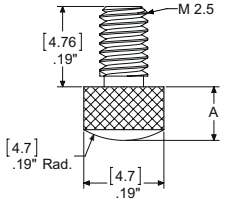
Flat contact point

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



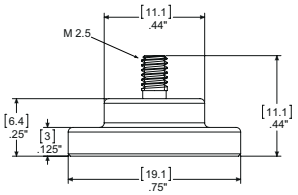
Contact point, radiused surface

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



Wide face contact point with metric 2.5

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

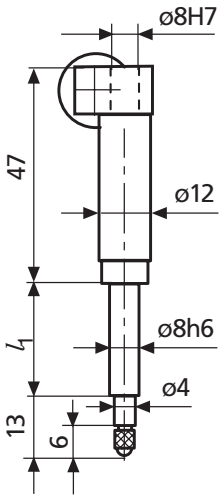


Thread adapter, M2.5 to #4–48

Order no.	Product type
2201833	AD–185

Straight holder MarCator 941 G

- **Scope of delivery:** Contact point 901



Application:

- For all types of measuring devices
- To be used in conjunction with a dial indicator or an inductive probe
- To position the measuring instrument at a certain angle

Technical Data

Order no.	Length l1	Transmission	Product type
	mm		
4365000	25	3 mm	941 G
4365001	50	3 mm	941 G
4365002	75	3 mm	941 G

Order no.	Length l1
	mm
4365000	25
4365001	50
4365002	75

Angular holder MarCator 941 W

- **Scope of delivery:** Contact point 901, Contact point 903 (l = 10 mm)

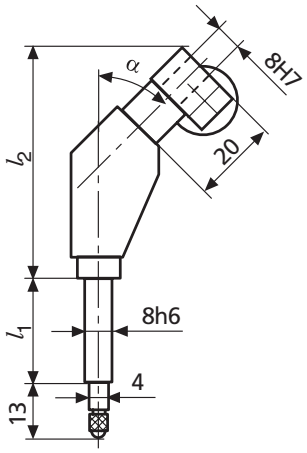
Application:

- For all types of measuring devices
- To be used in conjunction with a Dial Indicator or an Inductive Probe
- To be positioned (tilted) at the measurement direction and also at a certain distance or angle

Technical Data

Order no.	Length l1	Length l2	Transmission	Product type
	mm	mm		
4365010	25	53.7	3 mm	941 W
4365011	50	53.7	3 mm	941 W
4365020	25	49.3	3 mm	941 W
4365021	50	49.3	3 mm	941 W
4365022	75	49.3	3 mm	941 W
4365030	25	34.5	3 mm	941 W
4365031	50	34.5	3 mm	941 W
4365032	75	34.5	3 mm	941 W

Order no.	Angle α	Length l1	Length l2
	°	mm	mm
4365010	45	25	53.7
4365011	45	50	53.7
4365020	60	25	49.3
4365021	60	50	49.3
4365022	60	75	49.3
4365030	90	25	34.5
4365031	90	50	34.5
4365032	90	75	34.5



Sensor level MarCator 943

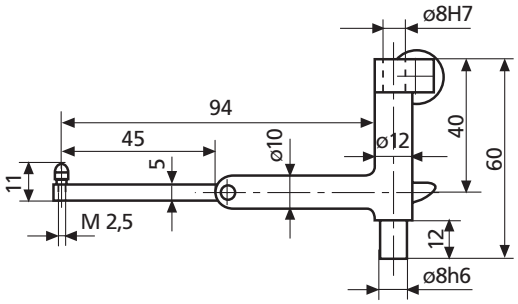
- Integrated lifting device
- Interchangeable contact point
- **Scope of delivery:** Contact point 901

Application:

- For testing concentricity in bore holes as well as difficult to reach outside diameters
- To be inserted in a measuring stand with a lifting device

Technical Data

Order no.	Transmission	Product type
4367000	+/–1mm	943



Dial Indicators per ANSI/AGD

You get more with Mahr Dial Indicators

- Proven for the most demanding applications
- Superior design and serviceability
- Unmatched customer and technical support
- Catalog and customized styles
- Full range of accessories to suit virtually every need
- Unit construction and removable movement save repair/cleaning time and maintenance costs
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminate slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pull back spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- Many models employ stainless steel stem for added durability

How to order

How to order your dial indicator and accessories

1. Select the type of Indicator you require. Check the specialized types as well as regular ANSI/AGD models.
2. Choose the model best suited to the magnification, range and viewing needs of your job.
3. Accessories are important because they greatly increase the speed, efficiency and convenience of obtaining desired results. Mahr's wide selection of dial indicator accessories are shown in this catalog.
4. Our customers have many options; they are not restricted to the normally furnished equipment mentioned above. A wide choice of optionally available points, backs or dial arrangements can be specified at little or no extra cost. We maintain the most extensive stock of indicators and gages for dimensional measurement available anywhere. Items which are in stock are normally shipped within five working days. If you need them sooner, inquire when ordering. We can often make next-day deliveries.
   Understandably, some of the items in this catalog are not always in stock or are special order items, which take a little longer to ship.

If you need help in determining what Indicators right for your application, just ask us. Contact Mahr:

1-800-333-4243

One of our experienced professionals will give you courteous, professional advice that can save you time and money.

Replacement indicators

Although Mahr dial indicators are known for their lifetime service, it is not uncommon to change an indicator back, contact point, dial or to even add an accessory to suit your latest application.

When ordering a replacement dial indicator for a specific application, always verify the configuration of the indicator.
Ordering a replacement using the standard model number shown on your indicator may not provide you with the configuration or accessories you desire.

Dial Indicators per ANSI/AGD

Selecting a Dial Indicator

Since modern manufacturing involves a wide range of tolerances. choosing a dial indicator might be difficult, especially since the number of indicators available is so vast. The following guidelines were prepared to assist you in selecting the right model for your application.

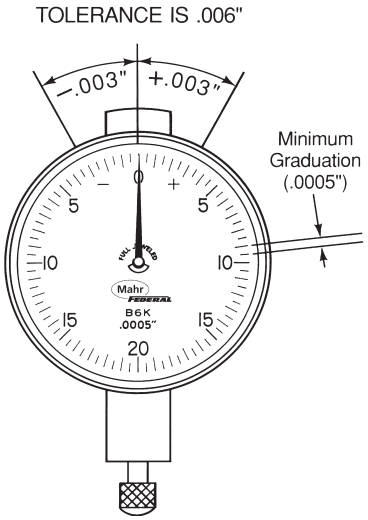
Consider four characteristics when selecting a dial indicator:

- **Minimum Graduation Value** — value of the smallest graduations marked on the dial. From several different values available from Mahr, select the one which is closest to 10% of the tolerance spread of the work you are measuring. This assures that the tolerance will span about ten divisions of the dial.
- **Size** — represents the bezel diameter. Make your selection on the basis of space available for the indicator and the distance from which it will be viewed. The Indicator photograph shown on the first page of each ANSI/AGD Group is full scale. Simply place the page which illustrates the Indicator at the expected viewing distance, and choose the size that offers you the best readability and is the proper size for your fixture. Mahr's "C" size bezels (ANSI/AGD Group 2), which have a diameter of 2-1/4", are the most popular.
- **Range per Revolution** — represents the distance the spindle travels with one complete revolution of the dial hand. From the dials available in the size and minimum graduation value you choose, select the range per revolution which allows the tolerance spread to occupy 1/10 to 1/4 of the dial.
- **Total Range** — the maximum distance over which the indicator spindle can travel. Usually, this represents 2-1/2 revolutions of the hand, which is adequate for most needs. Sometimes, however, this may not be adequate for your application and a special total range may be necessary.

Copies of the current ANSI Standard for Dial Indicators (ANSI B89.1.1 0-1987) are available from:

The American Society of Mechanical Engineers
ASME Order Desk
22 Law Drive
Fairfield, NJ 07007
(973)882-1167

If your tolerance spread is .006" (±.003"), then, the most suitable minimum graduation value is .0005".

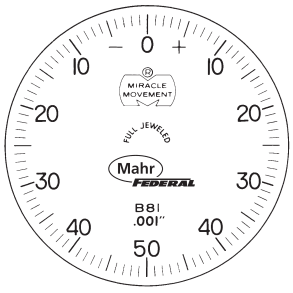


Your tolerance spread is .006". You have chosen an ANSI/AGD Group 2 (Mahr "C" Size) dial with a minimum graduation value of .0005". Mahr offers four indicator types in this size and minimum graduation value. Of these, type C5M has a range per revolution of .030" which is about midway between your tolerance extremes.

You selected a C5M indicator. Your total range, however, needs to be at least .200" so the spindle can clear the lip of your part. But, the longest range available in the C5M indicator you need is only .075".
Special ranges up to .400" are available for this indicator type. Select the closest range for your application (for Model C5M, you would select .250").

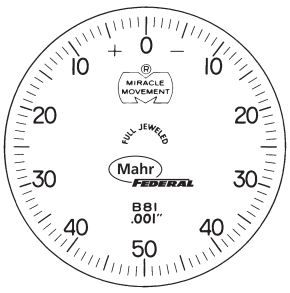
If the range you need is not listed under the "Special Ranges" category, contact Mahr . Chances are we can supply the range you need.

Dial Types



1. Balanced (+) on right.
Normally furnished on all Group 0, 1, 3 and 4 ANSI/AGD indicators only, unless otherwise specified. Indicates an increasing value when contact is depressed as in comparison type OD. snap and bench thickness gages.

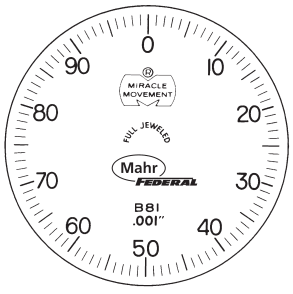
Note: If Revolution Counter models are ordered, counter dial numbered counterclockwise.



2. Balanced (+) on left.
Indicates decreasing values when contact is depressed as in comparison bore* and depth gages.

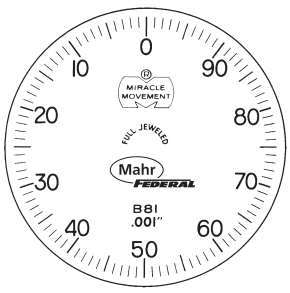
Note: With Revolution Counter models, counter dial numbered clockwise.

** Will vary as dictated by motion transfer design.*



3. Continuous clockwise.
Normally furnished on Long and Extra Long Range Indicators, unless otherwise specified. Indicates an increasing value when contact is depressed as in direct-reading thickness gages.

Note: With Revolution Counter models, counter dial numbered counterclockwise.



4. Continuous counterclockwise.
Indicates a decreasing value when contact is depressed as in direct reading slot, recess or hole depth measurements.

Note: If Revolution Counter models are ordered, counter dial numbered clockwise

Dial Indicator per ANSI/AGD Group 0 – Mahr Series A

Application:

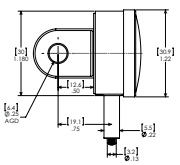
Where available space prohibits the use of longer dial indicators

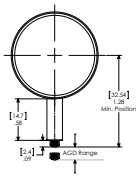
- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- Normally furnished: balanced dial with + on right; centered vertical lug back; regular contact point PT–43, .09" radiused, .093" long
- Optional dials: balanced with + on left; continuous clockwise; continuous counterclockwise
- Order by part number and specify dial style desired. For other dial styles or special requirements, call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch		inch	inch			
2011089	A1/2Q	.010"	.0001"	0–2–0	.004"	± .0001"	ANSI	0	green
2011093	A3Q	.050"	.0005"	0–10–0	.020"	± .0005"	ANSI	0	green
2011095	A6Q	.100"	.001"	0–20–0	.040"	± .001"	ANSI	0	green

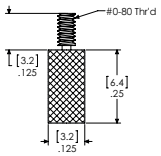
Order no.	Mounting shaft	Scale diameter
	inch	inch
2011089	.22"	1.25"
2011093	.22"	1.25"
2011095	.22"	1.25"



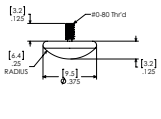


Accessories

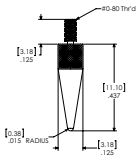
Order no.	Product name	Product type
2202329	Contact point, flat	AL–61
2204777	Flat back	BK–32
2204778	Lug back	BK–37
2204779	Post back 7/32"	BK–38
2204785	Adjustable back	BK–45
2204809	Screw type back 1/4–28	BK–88
2205082	Split bushing .218" x .374" x .5"	BU–112
2225757	Contact point, spherical	PT–118
2225758	Contact point, taper	PT–119
2225801	Contact point, spherical, A = 1/4"	PT–204
2225802	Contact point, spherical, A = 3/8"	PT–205
2225804	Contact point, spherical, A = 1/2"	PT–207
2225805	Contact point, spherical, A = 5/8"	PT–208
2225806	Contact point, spherical, A = 3/4"	PT–209
2225808	Contact point, spherical, A = 7/8"	PT–210
2225809	Contact point, spherical, A = 1"	PT–211
2225925	Contact point, spherical, A = 3/32" (normally furnished)	PT–43



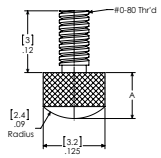
AL–61



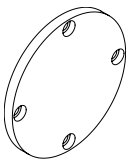
PT–118



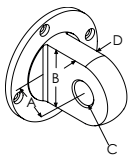
PT–119



PT–43



BK–32



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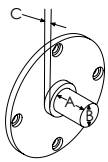
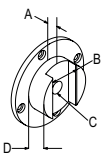
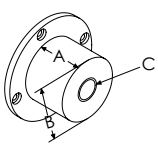


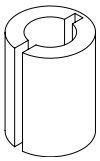
BK–38



BK–45



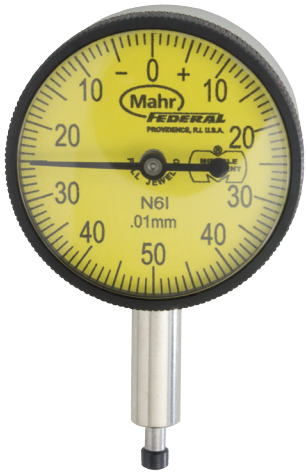
BK–88



BU–112

Dial Indicator per ANSI/AGD Group 0 – Mahr Series N

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- Normally furnished: balanced dial with + on right; centered vertical lug back; regular contact point PT–43, .09" radiused, .093" long
- Optional dials: balanced with + on left; continuous clockwise; continuous counterclockwise
- Order by part number and specify dial style desired. For other dial styles or special requirements, call Mahr



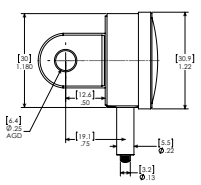
Application:

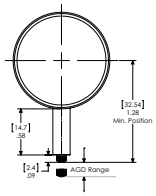
Where available space prohibits the use of longer dial indicators

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm		mm	mm			
2011743	N1/2O	0.25	0.002	0–5–0	0.1	± 0,002	ANSI	0	yellow
2011745	N3I	1.25	0.005	0–25–0	0.5	± 0,005	ANSI	0	yellow
2011759	N6I	2.5	0.01	0–50–0	1	± 0,01	ANSI	0	yellow

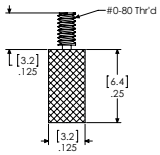
Order no.	Mounting shaft	Scale diameter
	inch	mm
2011743	.22"	32
2011745	.22"	32
2011759	.22"	32



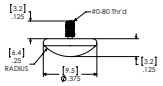


Accessories

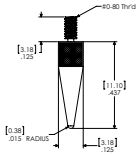
Order no.	Product name	Product type
2202329	Contact point, flat	AL–61
2204777	Flat back	BK–32
2204778	Lug back	BK–37
2204779	Post back 7/32"	BK–38
2204785	Adjustable back	BK–45
2204809	Screw type back 1/4–28	BK–88
2205082	Split bushing .218" x .374" x .5"	BU–112
2225757	Contact point, spherical	PT–118
2225758	Contact point, taper	PT–119
2225801	Contact point, spherical, A = 1/4"	PT–204
2225802	Contact point, spherical, A = 3/8"	PT–205
2225804	Contact point, spherical, A = 1/2"	PT–207
2225805	Contact point, spherical, A = 5/8"	PT–208
2225806	Contact point, spherical, A = 3/4"	PT–209
2225808	Contact point, spherical, A = 7/8"	PT–210
2225809	Contact point, spherical, A = 1"	PT–211
2225925	Contact point, spherical, A = 3/32" (normally furnished)	PT–43



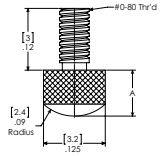
AL–61



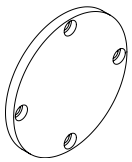
PT–118



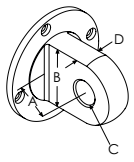
PT–119



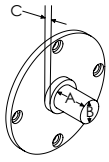
PT–43



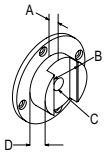
BK–32



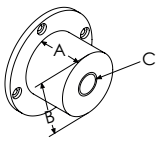
BK–37



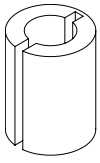
BK–38



BK–45



BK–88



BU–112

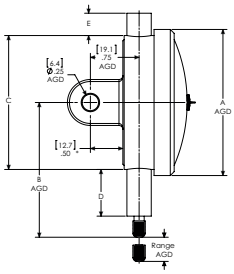
Dial Indicator per ANSI/AGD Group 1 – Mahr Series B

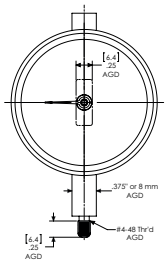
- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2011000	12I	.025"	.0001"	0–5–0		.010"	±.0001"	ANSI	1	green
2011001	12I-RC	.025"	.0001"	0–10	•	.010"	±.0001"	ANSI	1	green
2011004	12Q	.025"	.00025"	0–5–0		.010"	±.00025"	ANSI	1	green
2011005	12Q-RC	.025"	.00025"	0–10	•	.010"	±.00025"	ANSI	1	green
2011106	B3K	.050"	.00025"	0–10–0		.020"	±.00025"	ANSI	1	green
2011107	B3K-RC	.050"	.00025"	0–20	•	.020"	±.00025"	ANSI	1	green
2011110	B3Q	.050"	.0005"	0–10–0		.020"	±.0005"	ANSI	1	green
2011111	B3Q-RC	.050"	.0005"	0–20	•	.020"	±.0005"	ANSI	1	green
2011118	B5M	.075"	.0005"	0–15–0		.030"	±.0005"	ANSI	1	green
2011119	B5M-RC	.075"	.0005"	0–30	•	.030"	±.0005"	ANSI	1	green
2011123	B6K	.100"	.0005"	0–20–0		.040"	±.0005"	ANSI	1	green
2011124	B6K-RC	.100"	.0005"	0–40	•	.040"	±.0005"	ANSI	1	green
2011133	B7I	.125"	.0005"	0–25–0		.050"	±.0005"	ANSI	1	green
2011134	B7I-RC	.125"	.0005"	0–50	•	.050"	±.0005"	ANSI	1	green
2011114	B3W	.050"	.001"	0–10–0		.020"	±.001"	ANSI	1	green
2011115	B3W-RC	.050"	.001"	0–20	•	.020"	±.001"	ANSI	1	green
2011128	B6Q	.100"	.001"	0–20–0		.040"	±.001"	ANSI	1	green
2011129	B6Q-RC	.100"	.001"	0–40	•	.040"	±.001"	ANSI	1	green
2011137	B7O	.125"	.001"	0–25–0		.050"	±.001"	ANSI	1	green
2011138	B7O-RC	.125"	.001"	0–50	•	.050"	±.001"	ANSI	1	green
2011141	B8I	.250"	.001"	0–50–0		.100"	±.001"	ANSI	1	green
2011142	B8I-RC	.250"	.001"	0–100	•	.100"	±.001"	ANSI	1	green

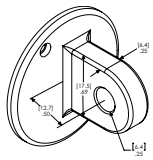
Dial Indicator per ANSI/AGD Group 1 – Mahr Series B



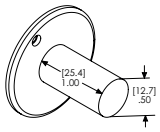


Accessories

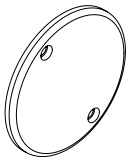
Order no.	Product name	Product type	ANSI/AGD Group
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203132	Mounting bracket with adjusting knob	AT–115	1
2203155	Mounting bracket with hex socket adjust	AT–27	1
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203183	Brake attachment (option)	AT-A–7-W1	1
2204603	Base for indicators with lug back	BA–1051	
2204756	Vertical lug back, Centered, 1/4" Hole	BK–1600	1
2204757	Vertical lug back, offset, 1/4" Hole	BK–1601	1
2204758	Adjustable back 1/4"–20 Thread	BK–1633	1
2204759	Post back 1/2"	BK–1634	1
2204760	Flat back	BK–1660	1
2204761	Screw type back 1/4–28	BK–1661	1
2204771	Horizontal lug back 1/4" Hole	BK–19	1
2204811	Rack back used on AT–27 and AT–115	BK–92	1
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111	
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2219994	Dust guard use with indicators with a .375" stem	GU–2	
2220128	Tolerance hands w/screw on bezel (option)	HD–128	1
2220156	Tolerance hands w/screw on bezel (option)	HD–59	1
2220539	OX-Bow Lifting lever	LR–40	
2220542	Liftig lever, left hand	LR–46	1
2220543	Liftig lever, right hand	LR–47	1
2235806	Tap 1/2 –32	V–892	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU-94	



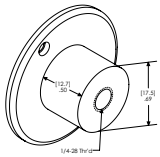
BK–1601



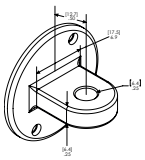
BK–1634



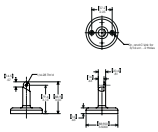
BK–1660



BK–1661



BK–19



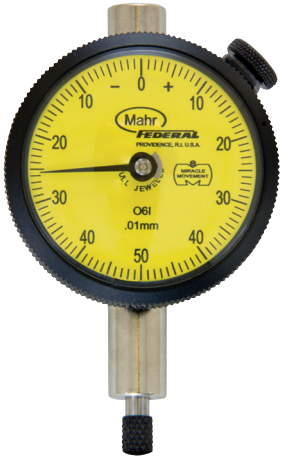
BA–1051

BU–80

AD–138

LR–46

Dial Indicator per ANSI/AGD Group 1 – Mahr Series 0

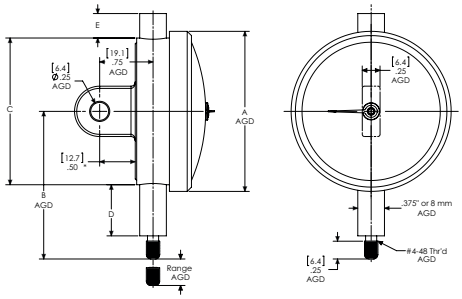


- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr

Technical Data

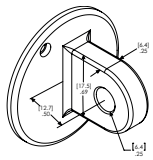
Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2011765	O1I	0.5	0.002	0–10–0		0.2	± 0,004	ANSI	1	yellow
2011767	O1I-RC	0.5	0.002	0–20	•	0.2	± 0,004	ANSI	1	yellow
2011770	O3I	1.25	0.005	0–25–0		0.5	± 0,005	ANSI	1	yellow
2011772	O3I-RC	1.25	0.005	0–50	•	0.5	± 0,005	ANSI	1	yellow
2011775	O6I	2.5	0.01	0–50–0		1	± 0,010	ANSI	1	yellow
2011776	O6I-RC	2.5	0.01	0–100	•	1	± 0,010	ANSI	1	yellow
2011779	O8I	6.25	0.025	0–125–0		2.5	± 0,025	ANSI	1	yellow
2011780	O8I-RC	6.25	0.025	0–250	•	2.5	± 0,025	ANSI	1	yellow

Dial Indicator per ANSI/AGD Group 1 – Mahr Series 0

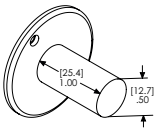


Accessories

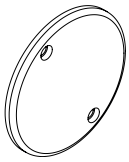
Order no.	Product name	Product type	ANSI/AGD Group
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203132	Mounting bracket with adjusting knob	AT–115	1
2203155	Mounting bracket with hex socket adjust	AT–27	1
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203183	Brake attachment (option)	AT-A–7-W1	1
2204603	Base for indicators with lug back	BA–1051	
2204756	Vertical lug back, Centered, 1/4" Hole	BK–1600	1
2204757	Vertical lug back, offset, 1/4" Hole	BK–1601	1
2204758	Adjustable back 1/4"–20 Thread	BK–1633	1
2204759	Post back 1/2"	BK–1634	1
2204760	Flat back	BK–1660	1
2204761	Screw type back 1/4–28	BK–1661	1
2204771	Horizontal lug back 1/4" Hole	BK–19	1
2204811	Rack back used on AT–27 and AT–115	BK–92	1
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111	
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2219994	Dust guard use with indicators with a .375" stem	GU–2	
2220128	Tolerance hands w/screw on bezel (option)	HD–128	1
2220156	Tolerance hands w/screw on bezel (option)	HD–59	1
2220539	OX-Bow Lifting lever	LR–40	
2220542	Liftig lever, left hand	LR–46	1
2220543	Liftig lever, right hand	LR–47	1
2235806	Tap 1/2 –32	V–892	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU-94	



BK–1601



BK–1634



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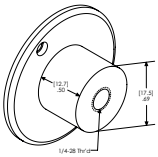
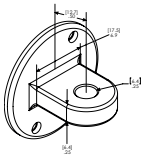
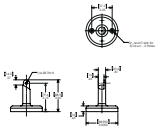


BK–1661



BK–19



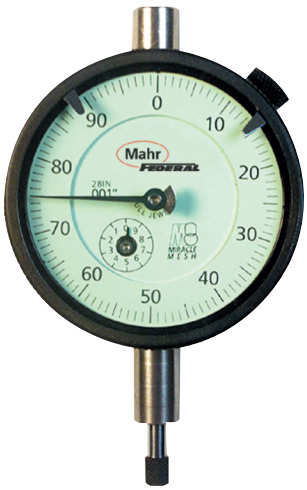
BA–1051

BU–80

AD–138

LR–46

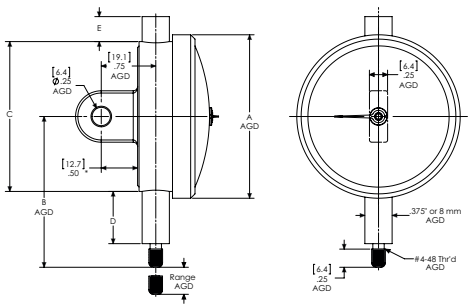
Dial Indicator per ANSI/AGD Group 2 – Mahr Series C



- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2011157	C1/2K	.010"	.00005"	0–2–0		.004"	±.0001"	ANSI	2	green
2011158	C1/2K-RC	.010"	.00005"	0–4	•	.004"	±.0001"	ANSI	2	green
2011161	C1K	.020"	.0001"	0–4–0		.008"	±.0001"	ANSI	2	green
2011162	C1K-RC	.020"	.0001"	0–8	•	.008"	±.0001"	ANSI	2	green
2015781	22I	.025"	.0001"	0–5–0		.010"	±.0001"	ANSI	2	green
2014761	22IN-RC	.025"	.0001"	0–10	•	.010"	±.0001"	ANSI	2	green
2015782	22QN	.025"	.00025"	0–5–0		.010"	±.00025"	ANSI	2	green
2014791	22QN-RC	.025"	.00025"	0–10	•	.010"	±.00025"	ANSI	2	green
2015783	23K	.050"	.00025"	0–10–0		.020"	±.00025"	ANSI	2	green
2014808	23K-RC	.050"	.00025"	0–20	•	.020"	±.00025"	ANSI	2	green
2015784	23Q	.050"	.0005"	0–10–0		.020"	±.0005"	ANSI	2	green
2014810	23Q-RC	.050"	.0005"	0–20	•	.020"	±.0005"	ANSI	2	green
2015786	25M	.075"	.0005"	0–15–0		.030"	±.0005"	ANSI	2	green
2014811	25M-RC	.075"	.0005"	0–30	•	.030"	±.0005"	ANSI	2	green
2015787	26K	.100"	.0005"	0–20–0		.040"	±.0005"	ANSI	2	green
2014812	26K-RC	.100"	.0005"	0–40	•	.040"	±.0005"	ANSI	2	green
2015790	27I	.125"	.0005"	0–25–0		.050"	±.0005"	ANSI	2	green
2014814	27I-RC	.125"	.0005"	0–50	•	.050"	±.0005"	ANSI	2	green
2015785	23W	.050"	.001"	0–10–0		.020"	±.001"	ANSI	2	green
2014809	23W-RC	.050"	.001"	0–20	•	.020"	±.001"	ANSI	2	green
2015789	26Q	.100"	.001"	0–20–0		.040"	±.001"	ANSI	2	green
2014813	26Q-RC	.100"	.001"	0–40	•	.040"	±.001"	ANSI	2	green
2015791	27O	.125"	.001"	0–25–0		.050"	±.001"	ANSI	2	green
2014815	27O-RC	.125"	.001"	0–50	•	.050"	±.001"	ANSI	2	green
2015792	28IN	.250"	.001"	0–50–0		.100"	±.001"	ANSI	2	green
2011049	28IN-RC	.250"	.001"	0–100	•	.100"	±.001"	ANSI	2	green



Dial Indicator per ANSI/AGD Group 2 – Mahr Series C

Accessories

Order no.	Product name	Product type	ANSI/AGD Group
2014804	Magnetic maximum hand w/snap on bezel (option)		2
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201843	Adaptor Bushing 0.275" ID to 0.375" OD	AD–58	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203133	Mounting bracket with adjusting knob for AGD 2	AT–116	2
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203184	Brake attachment (option)	AT-A–7-W2	2
2204603	Base for indicators with lug back	BA–1051	
2204772	Post back 1/2" Dia	BK–2093	2
2204773	Vertical Lug, Offset 1/4" Hole	BK–2168	2
2204780	Vertical lug back, Centered 1/4" Hole	BK–383	2
2204782	Horizontal lug back, Centered, 1/4" Hole	BK–400	2
2204786	Flat back for AGD 2	BK–470	2
2204790	Adjustable back 1/4–20 Thread	BK–531	2
2204802	Screw type back 1/4–28	BK–692	2
2204812	Rack back used on AT–116 and AT–28	BK–93	2
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD.	BU–94	
2205222	Tolerance hands w/screw on bezel (option)	BZ–2503	2
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2219994	Dust guard use with indicators with a .375" stem	GU–2	
2220154	Tolerance handsw/screw on bezel (option)	HD–57	2
2220177	Protective housing for AGD 2 models with rangers up to 6.35mm/ .250"	HG–100	2
2220178	Protective housing for AGD 2 models with rangers up to 25mm/ 1"	HG–101	2
2220539	OX-Bow Lifting lever	LR–40	
2220544	Liftig lever, left hand	LR–48	2
2220545	Liftig lever, right hand	LR–49	2
2235806	Tap 1/2 –32	V–892	

2014804

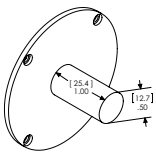
HD–57

LR–48

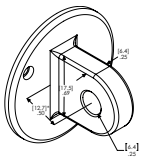
BU–80

AD–138

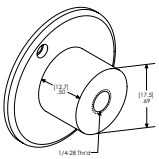
HG–100



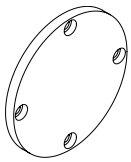
BK–2093



BK–1600



BK–1661



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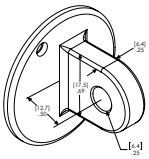

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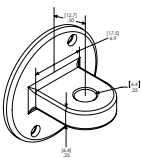

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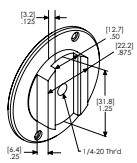

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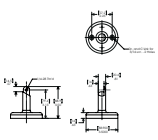


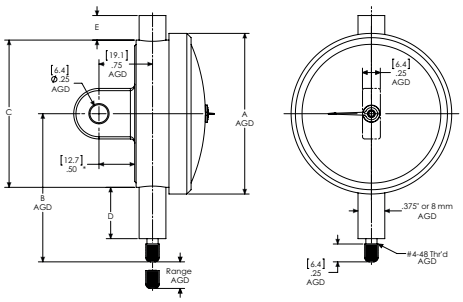
BA–1051

Dial Indicator per ANSI/AGD Group 2 – Mahr Series P

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2011810	P1/2I	0.25	0.001	0–5–0		0.1	± 0,002	ANSI	2	yellow
2011812	P1/2I-RC	0.25	0.001	0–10	•	0.1	± 0,002	ANSI	2	yellow
2011815	P1I	0.5	0.002	0–10–0		0.2	± 0,004	ANSI	2	yellow
2011817	P1I-RC	0.5	0.002	0–20	•	0.2	± 0,004	ANSI	2	yellow
2015793	23I	1.25	0.005	0–25–0		0.5	± 0,005	ANSI	2	yellow
2014817	23IM-RC	1.25	0.005	0–50	•	0.5	± 0,005	ANSI	2	yellow
2015794	26I	2.5	0.01	0–50–0		1	± 0,010	ANSI	2	yellow
2014818	26IM-RC	2.5	0.01	0–100	•	1	± 0,010	ANSI	2	yellow
2015795	28IM	5	0.02	0–100–0		2	± 0,020	ANSI	2	yellow
2014819	28IM-RC	5	0.02	0–200	•	2	± 0,020	ANSI	2	yellow



Dial Indicator per ANSI/AGD Group 2 – Mahr Series P

Accessories

Order no.	Product name	Product type	ANSI/AGD Group
2014804	Magnetic maximum hand w/snap on bezel (option)		2
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201843	Adaptor Bushing 0.275" ID to 0.375" OD	AD–58	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203133	Mounting bracket with adjusting knob for AGD 2	AT–116	2
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203184	Brake attachment (option)	AT-A–7-W2	2
2204603	Base for indicators with lug back	BA–1051	
2204772	Post back 1/2" Dia	BK–2093	2
2204773	Vertical Lug, Offset 1/4" Hole	BK–2168	2
2204780	Vertical lug back, Centered 1/4" Hole	BK–383	2
2204782	Horizontal lug back, Centered, 1/4" Hole	BK–400	2
2204786	Flat back for AGD 2	BK–470	2
2204790	Adjustable back 1/4–20 Thread	BK–531	2
2204802	Screw type back 1/4–28	BK–692	2
2204812	Rack back used on AT–116 and AT–28	BK–93	2
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD.	BU–94	
2205222	Tolerance hands w/screw on bezel (option)	BZ–2503	2
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2219994	Dust guard use with indicators with a .375" stem	GU–2	
2220154	Tolerance handsw/screw on bezel (option)	HD–57	2
2220177	Protective housing for AGD 2 models with rangers up to 6.35mm/ .250"	HG–100	2
2220178	Protective housing for AGD 2 models with rangers up to 25mm/ 1"	HG–101	2
2220539	OX-Bow Lifting lever	LR–40	
2220544	Liftig lever, left hand	LR–48	2
2220545	Liftig lever, right hand	LR–49	2
2235806	Tap 1/2 –32	V–892	

2014804

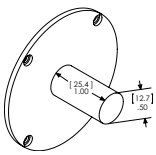
HD–57

LR–48

BU–80

AD–138

HG–100



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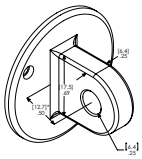

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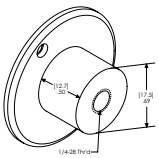

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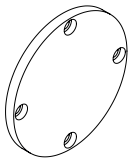

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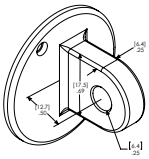

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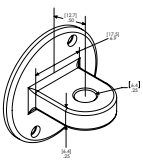

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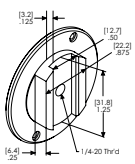

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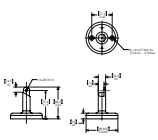


BA–1051

Dial Indicator MarCator

- Outstanding quality due to a well thought out design, use of high quality materials, and the precision engineered mechanism's guarantee
- The concentric "Speed Read" pointer (on 1.0" and .500" models) allows easy and safe reading of this Dial Indicator
- Spindle and stem are made of resistant stainless steel
- Supplied with: Lug Back and Tolerance Hands

Technical Data

Order no.	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
	inch	inch			inch	inch			
2016005	.250"	.001"	0–100	•	.100"	±.001"	ANSI	2	green
2016004	.500"	.001"	0–100	•	.100"	±.001"	ANSI	2	green
2016002	1.000"	.001"	0–100	•	.100"	±.001"	ANSI	2	green

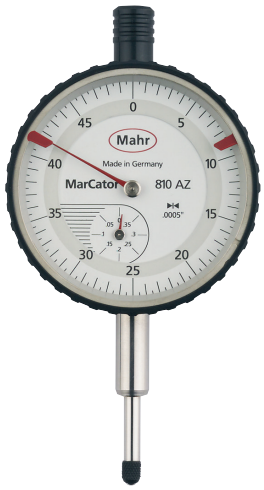
Order no.	Mounting shaft	Scale diameter
	inch	inch
2016005	.375"	2.25"
2016004	.375"	2.25"
2016002	.375"	2.25"

Accessories

Order no.	Product name
2016007	Lug back
2016008	Screw back
2016009	Post back
2016010	Adjustable back
2247145	Flat back

Dial indicator MarCator 810 AZ / 803 AZ

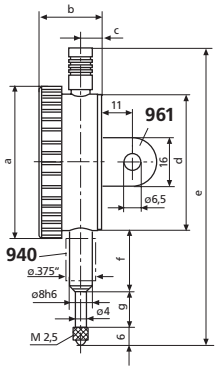
- High contrast dial face
- Adjustable tolerance markers
- Chrome plated housing
- Lifter protection cap on the measuring spindle
- Precision gears and pinions
- **Scope of delivery:** Adapter bush 940, 8mm to 3/8", Case



Technical Data

Order no.		4311900	4324900
Product type		810 AZ	803 AZ
Measuring span	inch	.400"	.120"
Graduation value	inch	.0005"	
Type of dial face		0–50	0 –20
Range per rev.	inch	.05"	.02"
Error limit	inch	.0005"	.0004"
Error limit, 1/10 revolution inches (text)	inch	.0002"	
Repeatability f_w	inch	.00012"	
Measuring value hysteresis f_u	inch	.00012"	
Free stroke inches (text)	inch	.004"	.008"
Measuring force	N	0.9 –1.5	0.7 –1.1
Standard		Factory standard	
Lifting protection cap		•	
Dial color		white	

Order no.	a	b	c	d	e	f	g	Mounting shaft	Mounting shaft	Scale diameter
	mm	mm	mm	mm	mm	mm	mm	mm	inch	inch
4311900	58	23	7.5	52	111.5	22	15	8	.375"	1.97"
4324900	40	20.6	6.8	37	83	15.5	8	8	.375"	1.4"



Accessories

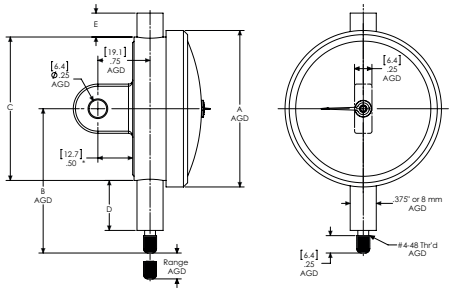
Order no.	Product name	Product type
4310103	Adapter bush (.375" / 8 mm)	940
4373020	Splash proof cap (58 mm)	955
4375010	Lug back, vertical, for 810	961
4375011	Lug back, horizontal, for 810	962
4375020	Lug back, vertical, for 803	966
4375021	Lug back, horizontal, for 803	967

Dial Indicator per ANSI/AGD Group 3 – Mahr Series D

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2011226	D1K	.020"	.0001"	0–4–0		.008"	±.0001"	ANSI	3	green
2011227	D1K-RC	.020"	.0001"	0–8	•	.008"	±.0001"	ANSI	3	green
2011050	32I	.025"	.0001"	0–5–0		.010"	±.0001"	ANSI	3	green
2011051	32I-RC	.025"	.0001"	0–10	•	.010"	±.0001"	ANSI	3	green
2011054	32Q	.025"	.00025"	0–5–0		.010"	±.00025"	ANSI	3	green
2011055	32Q-RC	.025"	.00025"	0–10	•	.010"	±.00025"	ANSI	3	green
2011230	D3K	.050"	.00025"	0–10–0		.020"	±.00025"	ANSI	3	green
2011231	D3K-RC	.050"	.00025"	0–20	•	.020"	±.00025"	ANSI	3	green
2011242	D5G	.075"	.00025"	0–15–0		.030"	±.00025"	ANSI	3	green
2011243	D5G-RC	.075"	.00025"	0–30	•	.030"	±.00025"	ANSI	3	green
2011234	D3Q	.050"	.0005"	0–10–0		.020"	±.0005"	ANSI	3	green
2011235	D3Q-RC	.050"	.0005"	0–20	•	.020"	±.0005"	ANSI	3	green
2011246	D5M	.075"	.0005"	0–15–0		.030"	±.0005"	ANSI	3	green
2011247	D5M-RC	.075"	.0005"	0–30	•	.030"	±.0005"	ANSI	3	green
2011250	D6K	.100"	.0005"	0–20–0		.040"	±.0005"	ANSI	3	green
2011251	D6K-RC	.100"	.0005"	0–40	•	.040"	±.0005"	ANSI	3	green
2011258	D7I	.125"	.0005"	0–25–0		.050"	±.0005"	ANSI	3	green
2011259	D7I-RC	.125"	.0005"	0–50	•	.050"	±.0005"	ANSI	3	green
2011238	D3W	.050"	.001"	0–10–0		.020"	±.001"	ANSI	3	green
2011239	D3W-RC	.050"	.001"	0–20	•	.020"	±.001"	ANSI	3	green
2011254	D6Q	.100"	.001"	0–20–0		.040"	±.001"	ANSI	3	green
2011255	D6Q-RC	.100"	.001"	0–40	•	.040"	±.001"	ANSI	3	green
2011262	D7O	.125"	.001"	0–25–0		.050"	±.001"	ANSI	3	green
2011263	D7O-RC	.125"	.001"	0–50	•	.050"	±.001"	ANSI	3	green
2011266	D8I	.250"	.001"	0–50–0		.100"	±.001"	ANSI	3	green
2011267	D8I-RC	.250"	.001"	0–100	•	.100"	±.001"	ANSI	3	green



Dial Indicator per ANSI/AGD Group 3 – Mahr Series D

Accessories

Order no.	Product name	Product type	ANSI/AGD Group
2011341	Magnetic maximum hand (option)		3
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203185	Brake attachment (option)	AT-A–7-W3	3
2204603	Base for indicators with lug back	BA–1051	
2204730	Adjustable back with 1/4–20 Thread	BK–10	3
2204734	Horizontal lug back, Centered	BK–109	3
2204763	Screw type back 1/4–28	BK–177	3
2204784	Vertical lug back, Centered	BK–431	3
2204787	Flat back	BK–473	3
2204791	Vertical lug back, offset	BK–545	3
2204799	Post back 1/2" Dia	BK–664	3
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111	
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2219994	Dust guard use with indicators with a .375" stem	GU–2	
2220539	OX-Bow Lifting lever	LR–40	
2220546	Liftig lever, left hand	LR–50	3
2220547	Liftig lever, right hand	LR–51	3
2235806	Tap 1/2 –32	V–892	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU-94	

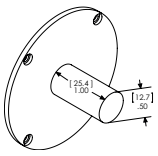
2011341

LR–50

BU–80

AD–138

HG–100



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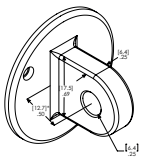

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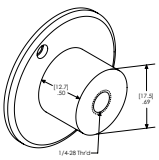

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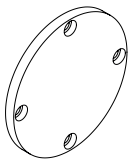

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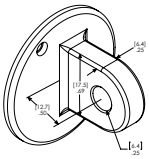

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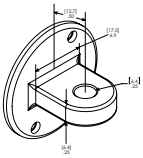

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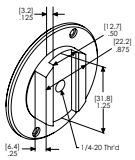
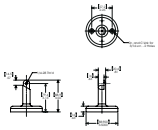
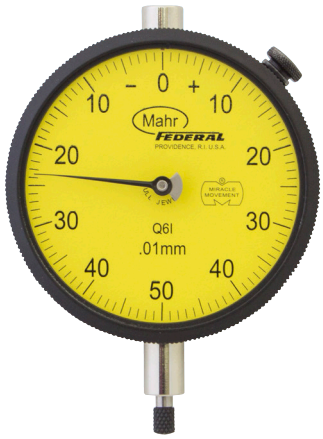


BK–531



BA–1051

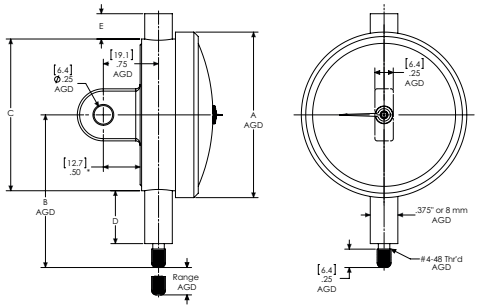
Dial Indicator per ANSI/AGD Group 3 – Mahr Series Q



- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2011867	Q1I	0.5	0.002	0–10–0		0.2	± 0,004	ANSI	3	yellow
2011868	Q1I-RC	0.5	0.002	0–20	•	0.2	± 0,004	ANSI	3	yellow
2011871	Q3I	1.25	0.005	0–25–0		0.5	± 0,005	ANSI	3	yellow
2011872	Q3I-RC	1.25	0.005	0–50	•	0.5	± 0,005	ANSI	3	yellow
2011875	Q6I	2.5	0.01	0–50–0		1	± 0,010	ANSI	3	yellow
2011876	Q6I-RC	2.5	0.01	0–100	•	1	± 0,010	ANSI	3	yellow
2011879	Q8I	5	0.02	0–100–0		2	± 0,020	ANSI	3	yellow
2011880	Q8I-RC	5	0.02	0–200	•	2	± 0,020	ANSI	3	yellow



Dial Indicator per ANSI/AGD Group 3 – Mahr Series Q

Accessories

Order no.	Product name	Product type	ANSI/AGD Group
2011341	Magnetic maximum hand (option)		3
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203185	Brake attachment (option)	AT-A–7-W3	3
2204603	Base for indicators with lug back	BA–1051	
2204730	Adjustable back with 1/4–20 Thread	BK–10	3
2204734	Horizontal lug back, Centered	BK–109	3
2204763	Screw type back 1/4–28	BK–177	3
2204784	Vertical lug back, Centered	BK–431	3
2204787	Flat back	BK–473	3
2204791	Vertical lug back, offset	BK–545	3
2204799	Post back 1/2" Dia	BK–664	3
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111	
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2219994	Dust guard use with indicators with a .375" stem	GU–2	
2220539	OX-Bow Lifting lever	LR–40	
2220546	Liftig lever, left hand	LR–50	3
2220547	Liftig lever, right hand	LR–51	3
2235806	Tap 1/2 –32	V–892	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU-94	

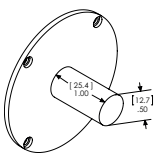
2011341

LR–50

BU–80

AD–138

HG–100



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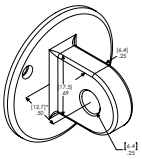

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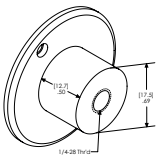

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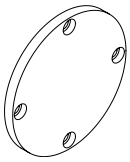

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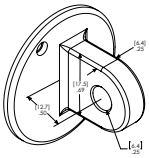

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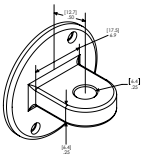

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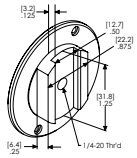

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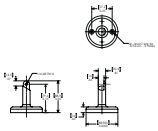


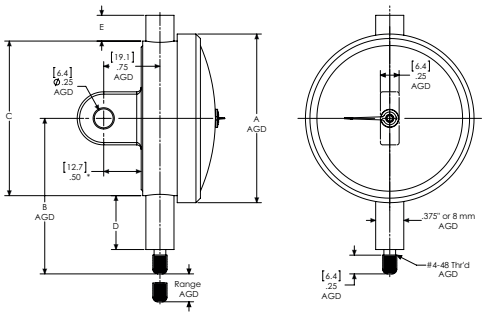
BA–1051

Dial Indicator per ANSI/AGD Group 4 – Mahr Series E

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2011280	E1K	.020"	.0001"	0–4–0		.008"	± .0001"	ANSI	4	green
2011281	E1K-RC	.020"	.0001"	0–8	•	.008"	± .0001"	ANSI	4	green
2011060	42I	.025"	.0001"	0–5–0		.010"	± .0001"	ANSI	4	green
2011061	42I-RC	.025"	.0001"	0–10	•	.010"	± .0001"	ANSI	4	green
2011286	E3K	.050"	.00025"	0–10–0		.020"	± .00025"	ANSI	4	green
2011287	E3K-RC	.050"	.00025"	0–20	•	.020"	± .00025"	ANSI	4	green
2011298	E5G	.075"	.00025"	0–15–0		.030"	± .00025"	ANSI	4	green
2011299	E5G-RC	.075"	.00025"	0–30	•	.030"	± .00025"	ANSI	4	green
2011290	E3Q	.050"	.0005"	0–10–0		.020"	± .0005"	ANSI	4	green
2011291	E3Q-RC	.050"	.0005"	0–20	•	.020"	± .0005"	ANSI	4	green
2011302	E5M	.075"	.0005"	0–15–0		.030"	± .0005"	ANSI	4	green
2011303	E5M-RC	.075"	.0005"	0–30	•	.030"	± .0005"	ANSI	4	green
2011306	E7I	.125"	.0005"	0–25–0		.050"	± .0005"	ANSI	4	green
2011307	E7I-RC	.125"	.0005"	0–50	•	.050"	± .0005"	ANSI	4	green
2011294	E3W	.050"	.001"	0–10–0		.020"	± .001"	ANSI	4	green
2011295	E3W-RC	.050"	.001"	0–20	•	.020"	± .001"	ANSI	4	green
2011310	E7O	.125"	.001"	0–25–0		.050"	± .001"	ANSI	4	green
2011311	E7O-RC	.125"	.001"	0–50	•	.050"	± .001"	ANSI	4	green
2011314	E8I	.250"	.001"	0–50–0		.100"	± .001"	ANSI	4	green
2011315	E8I-RC	.250"	.001"	0–100	•	.100"	± .001"	ANSI	4	green



Dial Indicator per ANSI/AGD Group 4 – Mahr Series E

Accessories

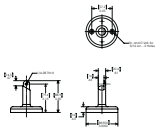
Order no.	Product name	Product type	ANSI/AGD Group
2201801	Adaptor	AD–138	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203186	Brake attachment (option)	AT-A–7-W4	4
2204603	Base for indicators with lug back	BA–1051	
2204755	Screw type back 1/4–28	BK–16	4
2204762	Post back 1/2"	BK–17	4
2204765	Adjustable back 1/4–20 Thread	BK–18	4
2204775	Vertical and Horizontal lug back, Centered	BK–3	4
2204781	Vertical lug back, Offset	BK–4	4
2204788	Flat back	BK–5	4
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2220150	Bezel with Tolerance hands (Option)	HD–53	4
2220539	OX-Bow Lifting lever	LR–40	
2220557	Liftig lever, left hand	LR–68	4
2220558	Liftig lever, right hand	LR–69	4
2235806	Tap 1/2 –32	V–892	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU-94	

BU–80

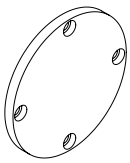
AD–138

LR–68

HD–53



BA–1051



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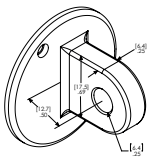

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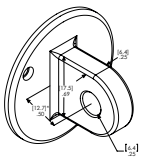

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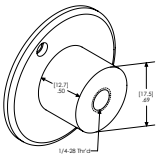

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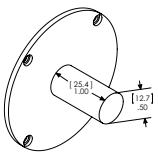

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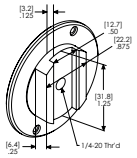


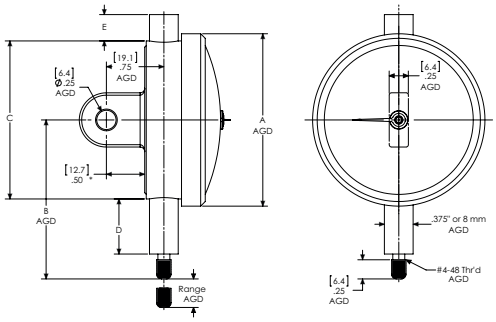
BK–531

Dial Indicator per ANSI/AGD Group 4 – Mahr Series R

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Compliance with ANSI/AGD dimensional and accuracy specifications
- These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back and .18" by .250" long contact
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counterclockwise. (Order by part number and specify dial style desired)
- For other dial styles or special requirements - call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2012347	R1I	0.5	0.002	0–10–0		0.2	± 0,004	ANSI	4	yellow
2012348	R1I-RC	0.5	0.002	0–20	•	0.2	± 0,004	ANSI	4	yellow
2012351	R3I	1.25	0.005	0–25–0		0.5	± 0,005	ANSI	4	yellow
2012352	R3I-RC	1.25	0.005	0–50	•	0.5	± 0,005	ANSI	4	yellow
2012355	R6I	2.5	0.01	0–50–0		1	± 0,010	ANSI	4	yellow
2012356	R6I-RC	2.5	0.01	0–100	•	1	± 0,010	ANSI	4	yellow
2012359	R8I	5	0.02	0–100–0		2	± 0,020	ANSI	4	yellow
2012360	R8I-RC	5	0.02	0–200	•	2	± 0,020	ANSI	4	yellow



Dial Indicator per ANSI/AGD Group 4 – Mahr Series R

Accessories

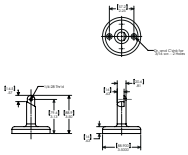
Order no.	Product name	Product type	ANSI/AGD Group
2201801	Adaptor	AD–138	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203186	Brake attachment (option)	AT-A–7-W4	4
2204603	Base for indicators with lug back	BA–1051	
2204755	Screw type back 1/4–28	BK–16	4
2204762	Post back 1/2"	BK–17	4
2204765	Adjustable back 1/4–20 Thread	BK–18	4
2204775	Vertical and Horizontal lug back, Centered	BK–3	4
2204781	Vertical lug back, Offset	BK–4	4
2204788	Flat back	BK–5	4
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2220150	Bezel with Tolerance hands (Option)	HD–53	4
2220539	OX-Bow Lifting lever	LR–40	
2220557	Liftig lever, left hand	LR–68	4
2220558	Liftig lever, right hand	LR–69	4
2235806	Tap 1/2 –32	V–892	

BU–80

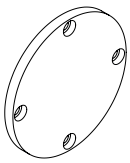
AD–138

LR–68

HD–53



BA–1051



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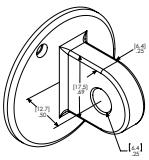

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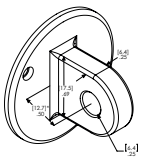

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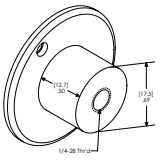

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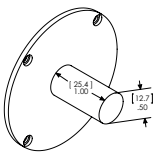
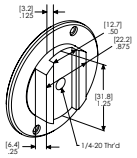


BK–2093



BK–531

Lang Range and Extra Long Range Indicators

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Normally furnished: continuous clockwise dial; centered vertical lug back; regular contact point, .18" radiused, .250" long
- Long Range Models: include (1) revolution counter (except C9I without revolution counter). Extra Long Range Models: include (2) revolution counters.
- For other dial styles or special requirements - call Mahr.

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		inch	inch			inch	inch			
2011064	42IQ	.500"	.0001"	0–10	•	.010"	± .0001" for first 2 1/2 rev. only	ANSI	4	green
2014699	28IQN	.500"	.001"	0–100	•	.100"	± .001"	ANSI	2	green
2014698	28ISN	1.000"	.001"	0–100	•	.100"	± .001"	ANSI	2	green
2011270	D8IS	1.000"	.001"	0–100	•	.100"	± .001"	ANSI	3	green
2014816	29I	1.000"	.01"	0–1000		1.000"	± .010"	ANSI	2	green
2011272	D8IT	2.000"	.001"	0–100	•	.100"	± .001" for first 1" of travel	ANSI	3	green
2011318	E8IU	3.000"	.001"	0–100	•	.100"	± .001" for first 1" of travel	ANSI	4	green

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	ANSI/AGD Group	Dial color
		mm	mm			mm	mm			
2012381	SP6IS	25	0.01	0–100	•	1	± 0.02	ANSI	2	yellow
2012384	SQ6IS	25	0.01	0–100	•	1	± 0.02	ANSI	3	yellow
2011883	Q8IT	50	0.025	0–25	•	2.5	± 0.025 for first 25 mm of travel	ANSI	3	yellow
2012363	R8IU	75	0.025	0–25	•	2.5	± 0.025 for first 25 mm of travel	ANSI	4	yellow

Order no.	Mounting shaft	Scale diameter	Scale diameter
	inch	inch	mm
2011064	.375"	3.625"	
2014699	.375"	2.25"	
2014698	.375"	2.25"	
2011270	.375"	2.75"	
2014816	.375"	2.25"	
2011272	.375"	2.75"	
2011318	.375"	3.625"	
2012381	.375"		57
2012384	.375"		70
2011883	.375"		70
2012363	.375"		92

Lang Range and Extra Long Range Indicators

Accessories

Order no.	Product name	Product type	ANSI/AGD Group
2011341	Magnetic maximum hand (option)		3
2014804	Magnetic maximum hand w/snap on bezel (option)		2
2201801	Adaptor for inductive probes for use on dial indicators (AGD)	AD–138	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203133	Mounting bracket with adjusting knob for AGD 2	AT–116	2
2203156	Mounting bracket with hex socket adjustable	AT–28	2
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203184	Brake attachment (option)	AT-A–7-W2	2
2203185	Brake attachment (option)	AT-A–7-W3	3
2204603	Base for indicators with lug back	BA–1051	
2204730	Adjustable back with 1/4–20 Thread	BK–10	3
2204734	Horizontal lug back, Centered	BK–109	3
2204763	Screw type back 1/4–28	BK–177	3
2204772	Post back 1/2" Dia	BK–2093	2
2204773	Vertical Lug, Offset 1/4" Hole	BK–2168	2
2204775	Vertical and Horizontal lug back, Centered	BK–3	4
2204780	Vertical lug back, Centered 1/4" Hole	BK–383	2
2204782	Horizontal lug back, Centered, 1/4" Hole	BK–400	2
2204784	Vertical lug back, Centered	BK–431	3
2204786	Flat back for AGD 2	BK–470	2
2204787	Flat back	BK–473	3
2204790	Adjustable back 1/4–20 Thread	BK–531	2
2204791	Vertical lug back, offset	BK–545	3
2204799	Post back 1/2" Dia	BK–664	3
2204802	Screw type back 1/4–28	BK–692	2
2204812	Rack back used on AT–116 and AT–28	BK–93	2
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111	
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2205222	Tolerance hands w/screw on bezel (option)	BZ–2503	2
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2219994	Dust guard use with indicators with a .375" stem	GU–2	
2220150	Bezel with Tolerance hands (Option)	HD–53	4
2220154	Tolerance handsw/screw on bezel (option)	HD–57	2
2220177	Protective housing for AGD 2 models with rangers up to 6.35mm/ .250"	HG–100	2
2220178	Protective housing for AGD 2 models with rangers up to 25mm/ 1"	HG–101	2
2220539	OX-Bow Lifting lever	LR–40	
2220544	Liftig lever, left hand	LR–48	2
2220545	Liftig lever, right hand	LR–49	2
2220546	Liftig lever, left hand	LR–50	3
2220547	Liftig lever, right hand	LR–51	3
2235806	Tap 1/2 –32	V–892	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU-94	

2011341

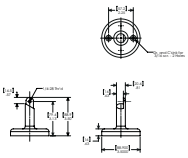
HD–57

LR–48;LR-50

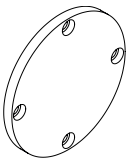
BU–80

AD–138

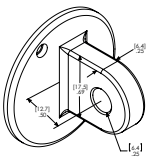
HG–100



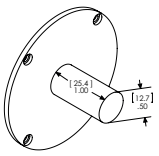
BA–1051



BK–32



BK–1601



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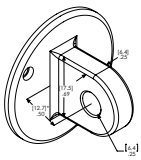
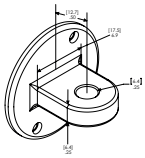
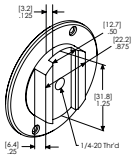


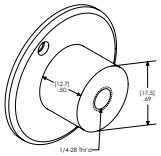
BK–1600



BK–19

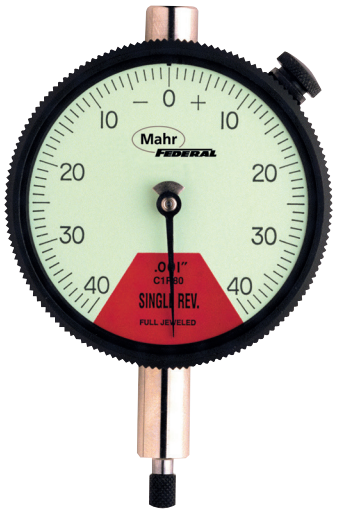


BK–531



BK–1661

Dial Indicator MarCator C1RN–80 / C1RN–40



A practical solution for inspectors and machine operators who need to eliminate the potential for indicator misreadings. No matter how far out of tolerance a part may be, the needle of a one revolution indicator will always stay in the red, non-read zone — no passing zero again — no reading errors.

- No limited contact travel
- Shockproof "Following Movement" always keeps the hand within a single revolution
- Alternate contact points, backs and other accessories are optionally available
- Metric dials are yellow
- One piece case design
- Inserted precision bearings
- Available in ANSI/AGD Group 2 size
- Flat back

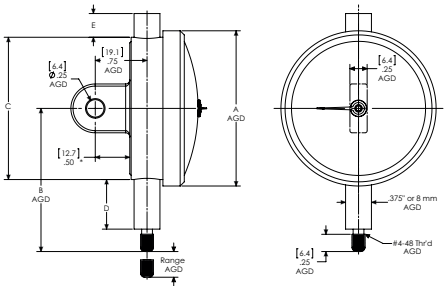
Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Standard	Dial color
		inch	inch			
2014792	C1RN–80	.080"	.001"	40–0–40	ANSI	green
2014793	C1RN–40	.040"	.0005"	20–0–20	ANSI	green

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Standard	Dial color
		mm	mm			
2014794	P1RN–200	2	0.02	100–0–100	ANSI	yellow
2014795	P1RN–100	1	0.01	50–0–50	ANSI	yellow
2014796	M1RN–200	2	0.02	100–0–100	ANSI	yellow
2014797	M1RN–100	1	0.01	50–0–50	ANSI	yellow

Order no.	Mounting shaft	Mounting shaft
	mm	inch
2014792		.375"
2014793		.375"
2014794		.375"
2014795		.375"
2014796	8	
2014797	8	



Accessories

Order no.	Product name	Product type	ANSI/AGD Group
2014804	Magnetic maximum hand (Option)		2
2201801	Adaptor	AD–138	
2201846	Threaded Bushing .625" long .500" OD with 5/16–32 internal thread	AD–62	
2201854	Split Collet OD is 17.45 mm/ .687". Requires 1/2–32 threaded hole.	AD–87	
2203133	Mounting bracket with adjusting knob for AGD 2	AT–116	2
2203156	Mounting bracket with hex socket adjustable	AT–28	2
2203163	Brake attachment, dust cap mount (option), Range limited to 6.35mm/ .250" for group 1 and to 12mm/ .500" for group 2–4 indicators	AT–81	
2203184	Brake attachment (option)	AT-A–7-W2	2
2204603	Base for indicators with lug back	BA–1051	
2204772	Post back 1/2" Dia	BK–2093	2
2204773	Vertical Lug, Offset 1/4" Hole	BK–2168	2
2204780	Vertical lug back, Centered 1/4" Hole	BK–383	2
2204782	Horizontal lug back, Centered, 1/4" Hole	BK–400	2
2204786	Flat back for AGD 2	BK–470	2
2204790	Adjustable back 1/4–20 Thread	BK–531	2
2204802	Screw type back 1/4–28	BK–692	2
2204812	Rack back used on AT–116 and AT–28	BK–93	2
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111	
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80	
2205222	Tolerance hands w/screw on bezel (option)	BZ–2503	2
2206230	Rane limiting caps, adjustable up to 9,52 mm / .375"	CS–123	
2219994	Dust guard use with indicators with a .375" stem	GU–2	
2220154	Tolerance handsw/screw on bezel (option)	HD–57	2
2220177	Protective housing for AGD 2 models with rangers up to 6.35mm/ .250"	HG–100	2
2220178	Protective housing for AGD 2 models with rangers up to 25mm/ 1"	HG–101	2
2220539	OX-Bow Lifting lever	LR–40	
2220544	Liftig lever, left hand	LR–48	2
2220545	Liftig lever, right hand	LR–49	2
2235806	Tap 1/2 –32	V–892	
2205200	Split bushing without counterbore, .375" stem hole x .50" OD	BU-94	

2014804

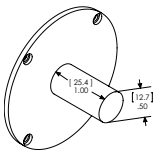
HD–57

LR–48

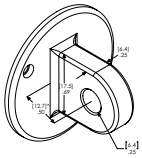
BU–80

AD–138

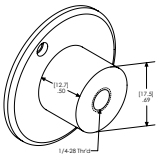
HG–100



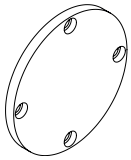
BK–2093



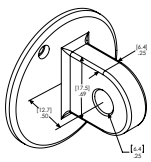
BK–1600



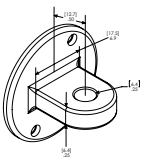
BK–1661



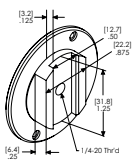
BK–32



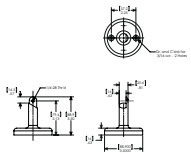
BK–1601



BK–19

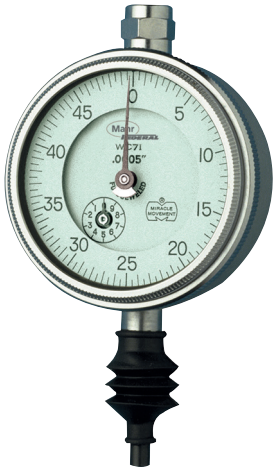


BK–531



BA–1051

Series WC Wetproof Dial Indicators



Application:

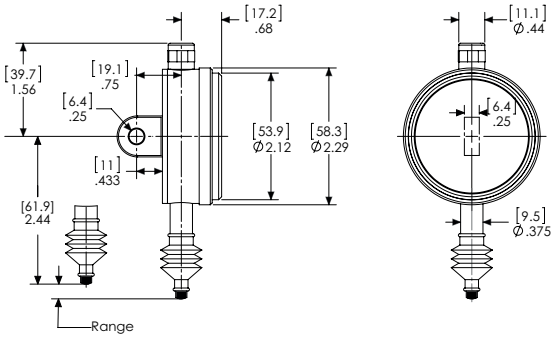
Splashproof protection from coolant, oil, or other contaminant's

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Normally furnished: continuous clockwise dial with revolution counter; BK–63 centered vertical lug back; regular contact point, .18" radiused, .625" long
- Optional Dials: continuous counterclockwise with revolution counter; balanced outer dial with + on right or left. Order by dial type and specify dial style desired
- For other dial styles or special requirements - call Mahr

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	Dial color
		inch	inch			inch	inch		
2014655	W22I	.025"	.0001"	0–10	•	.010"	± .0001"	ANSI	green
2014663	WC3K	.050"	.00025"	0–20	•	.020"	± .00025"	ANSI	green
2014665	WC3Q	.050"	.0005"	0–20	•	.020"	± .0005"	ANSI	green
2014667	WC5M	.075"	.0005"	0–30	•	.030"	± .0005"	ANSI	green
2014669	WC6K	.100"	.0005"	0–40	•	.040"	± .0005"	ANSI	green
2014671	WC7I	.125"	.0005"	0–50	•	.050"	± .0005"	ANSI	green
2014673	WC8I	.250"	.001"	0–100	•	.100"	± .001"	ANSI	green
2014675	WC8IS	1.000"	.001"	0–100	•	.100"	± .001"	ANSI	green

Order no.	Mounting shaft
	inch
2014655	.375"
2014663	.375"
2014665	.375"
2014667	.375"
2014669	.375"
2014671	.375"
2014673	.375"
2014675	.375"



Accessories

Order no.	Product name	Product type
2204797	Lug back	BK–63
2204800	Adjustable back 1/4–20 Thread	BK–68
2204810	Post back 1/2" Dia	BK–90
2204813	Flat back	BK–97

Series WP Wetproof Dial Indicators

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring . . . . less maintenance
- Normally furnished: continuous clockwise dial with revolution counter; BK–63 centered vertical lug back; regular contact point, .18" radiused, .625" long
- Optional Dials: continuous counterclockwise with revolution counter; balanced outer dial with + on right or left. Order by dial type and specify dial style desired
- For other dial styles or special requirements - call Mahr

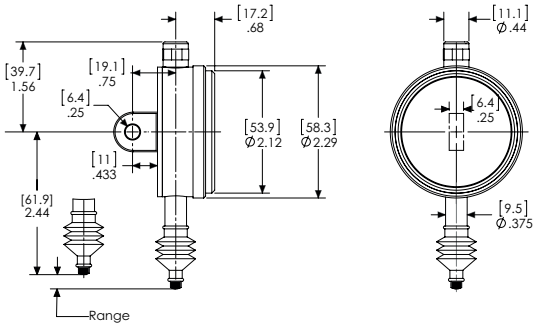
Application:

Splashproof protection from coolant, oil, or other contaminant's

Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Rev. counter	Range per rev.	Error limit	Standard	Dial color
		mm	mm			mm	mm		
2014679	WP1I	0.5	0.002	0–20	•	0.2	± 0,004	ANSI	yellow
2014681	WP3I	1.25	0.005	0–50	•	0.5	± 0,005	ANSI	yellow
2014683	WP6I	2.5	0.01	0–100	•	1	± 0,01	ANSI	yellow

Order no.	Mounting shaft
	inch
2014679	
2014681	.375"
2014683	.375"



Accessories

Order no.	Product name	Product type
2204797	Lug back	BK–63
2204800	Adjustable back 1/4–20 Thread	BK–68
2204810	Post back 1/2" Dia	BK–90
2204813	Flat back	BK–97

Perpendicular Dial Indicators

Application:

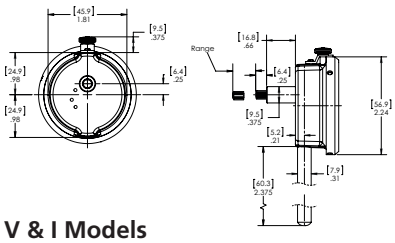
Provides improved readability where other style indicators cannot be used

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Normally furnished: balanced dial with + on right; mounting rod (see dimension drawings); regular contact point, .18" radiused, .250" long
- Threaded stem versions available as an option; AD–59 (.5622 long x .500" OD. for "J & W" styles), 3/8–32 internally threaded bushings and AD–60 (.687" long x .500" OD. for "G & F" Models) purchased separately. Bushings also available separately.
- For other dial styles or special requirements - call Mahr

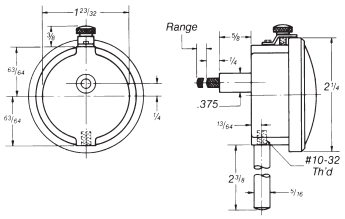
Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Range per rev.	Error limit	Gear type	Standard	Dial color
		inch	inch		inch	inch			
2011713	J1K	.008"	.0001"	0–4–0	.008"	± .0001"	crown	ANSI	green
2011715	J6K	.040"	.0005"	0–20–0	.040"	± .0005"	crown	ANSI	green
2011332	G4O	.100"	.0005"	0–12–0	.025"	± .0005"	spiral	ANSI	green
2011717	J8I	.100"	.001"	0–50–0	.100"	± .001"	crown	ANSI	green
2012411	V8I	.100"	.001"	0–50–0	.100"	± .001"	crown	ANSI	green
2011330	F8I	.200"	.001"	0–50–0	.100"	± .001"	spiral	ANSI	green
2011334	G8I	.200"	.001"	0–50–0	.100"	± .001"	spiral	ANSI	green

Order no.	Mounting shaft	Scale diameter
	inch	inch
2011713	.313"	2,25"
2011715	.313"	2,25"
2011332	.313"	2,25"
2011717	.313"	2,25"
2012411	.375"	1,69"
2011330	.375"	1,72"
2011334	.313"	2,25"



V & I Models



J & W Models

Accessories

Order no.	Product name	Product type
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80
2205200	Split bushing without counterbore, .375" stem hole „x .50" OD.	BU–94
2219994	Dust guard use with indicators with a .375" stem	GU–2

BU–80

Perpendicular Dial Indicators

- Unit construction and removable movement save repair/cleaning time and maintenance
- Hardened gears and stainless steel racks provide lasting protection against indicator failure due to shock or wear
- Jeweled bearings resist friction, add to longer indicator life
- Skeletonized, hobbed gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft tinted dials (green - inch / yellow - metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth adjusting bezels for easy setup
- Positive pressure pullback spring requires less maintenance
- Normally furnished: balanced dial with + on right; mounting rod (see dimension drawings); regular contact point, .18" radiused, .250" long
- Threaded stem versions available as an option; AD–59 (.5622 long x .500" OD. for "J & W" styles), 3/8–32 internally threaded bushings and AD–60 (.687" long x .500" OD. for "G & F" Models) purchased separately. Bushings also available separately.
- For other dial styles or special requirements - call Mahr

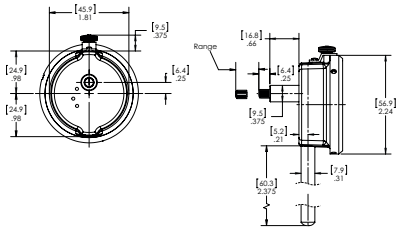
Application:

Provides improved readability where other style indicators cannot be used

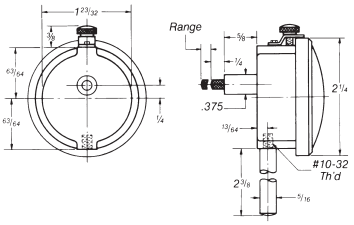
Technical Data

Order no.	Product type	Measuring span	Graduation value	Type of dial face	Range per rev.	Error limit	Gear type	Standard	Dial color
		mm	mm		mm	mm			
2014653	W1I	0.2	0.002	0–10–0	0.2	± 0.002	crown	ANSI	yellow
2014657	W6I	1	0.01	0–50–0	1	± 0.010	crown	ANSI	yellow
2014659	W8I	2.5	0.025	0–125–0	2.5	± 0.025	crown	ANSI	yellow
2011344	I8I	2.5	0.025	0–125–0	2.5	± 0.025	crown	ANSI	yellow

Order no.	Mounting shaft	Scale diameter
	inch	mm
2011344	.375"	43
2014653	.313"	57
2014657	.313"	57
2014659	.313"	57



V & I Models



J & W Models

Accessories

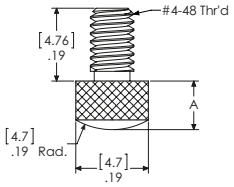
Order no.	Product name	Product type
2205081	Split bushing, for use with protective housing, .375" stem hole X .687" OD	BU–111
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197
2205195	Split bushing, with counterbore, .375" stem hole X .500" OD	BU–80
2205200	Split bushing without counterbore, .375" stem hole „x .50" OD.	BU–94
2219994	Dust guard use with indicators with a .375" stem	GU–2

BU–80

Indicators MarCator

Standard measuring anvil

Order no.	Product type	Dimension A	Measuring surface	Number	Set contents
2225870	PT–225	1/8″	hardened steel	1	
2225867	PT–223	1/4″	hardened steel	1	
2225904	PT–35	1/4″	carbide tipped	1	
2225902	PT–317	1/4″	Diamond	1	
2225973	PT–563	3/8″	hardened steel	1	
2225763	PT–14	1/2″	hardened steel	5	5 units
2225974	PT–564	5/8″	hardened steel	1	
2225901	PT–31	3/4″	hardened steel	1	
2225799	PT–201	7/8″	hardened steel	1	
2225885	PT–232	1″	hardened steel	5	5 units
2225900	PT–305	1–1/8″	hardened steel	1	
2225975	PT–565	1–1/4″	hardened steel	5	5 units
2225888	PT–239	1–3/8″	hardened steel	1	
2225933	PT–50	1–1/2″	hardened steel	5	5 units
2225887	PT–235	1–5/8″	hardened steel	1	
2225890	PT–241	1–3/4″	hardened steel	5	5 units
2225738	PT–100	1–7/8″	hardened steel	1	
2225934	PT–51	2″	hardened steel	5	5 units
2225891	PT–243	2–1/8″	hardened steel	1	
2225986	PT–696	2–1/4″	hardened steel	1	
2225739	PT–101	2–3/8″	hardened steel	1	
2225892	PT–245	2–1/2″	hardened steel	1	
2225740	PT–102	2–5/8″	hardened steel	1	
2225976	PT–566	2–3/4″	hardened steel	1	
2225893	PT–247	2–7/8″	hardened steel	1	
2225765	PT–155	3″	hardened steel	5	5 units
2225756	PT–116	1/8″ –1″	hardened steel	8	1/8 –1″ in increments of 1/8″
2225755	PT–115	1/8″ –3″	hardened steel	24	1/8 –3″ in increments of 1/8″

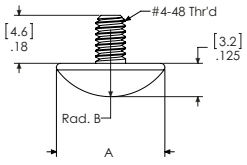


Plane measuring anvil

Order no.	Product type	Dimension A	Measuring surface	Number	Set contents
2202280	AL–19	1/8″	hardened steel	5	5 units
2202337	AL–673	1/4″	hardened steel	1	
2202322	AL–51	1/4″	carbide tipped	1	
2202281	AL–20	3/8″	hardened steel	1	
2202283	AL–21	1/2″	hardened steel	1	
2202284	AL–22	5/8″	hardened steel	1	
2202285	AL–23	3/4″	hardened steel	1	
2202286	AL–24	7/8″	hardened steel	1	
2202287	AL–25	1″	hardened steel	1	
2202327	AL–55	1/8″ –1″	hardened steel	8	1/8 –1″ in increments of 1/8″

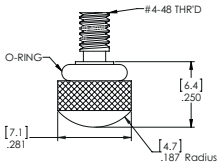
Spherical disk-type anvil

Order no.	Product type	Dimension A	Dimension B	Measuring surface	Number	Set contents
2225880	PT–227	.375″	.250″	hardened steel	5	5 units
2225760	PT–120	.375″	.250″	carbide tipped	1	
2225983	PT–619	.500″	.375″	hardened steel	1	



Measuring anvil with shock protection

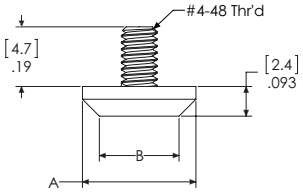
Order no.	Product type	Length	Measuring surface
2225875	PT–2263	.25″	hardened steel



Indicators MarCator

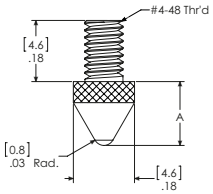
Disk-type anvil

Order no.	Product type	Dimension A	Dimension B	Measuring surface	Number
2202291	AL–291			hardened steel	1
2202321	AL–502	.356"	.250"	hardened steel	1
2202257	AL–1730	.356"	.250"	carbide tipped	1
2202256	AL–1510	.500"	.375"	hardened steel	1
2202324	AL–520	.615"	.500"	hardened steel	1
2202315	AL–44	.731"	.625"	hardened steel	1



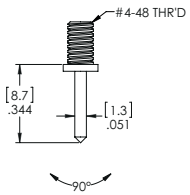
Conical measuring anvil

Order no.	Product type	Dimension A	Measuring surface	Number	Set contents
2225886	PT–233	3/16"	hardened steel	1	
2225881	PT–229	7/16"	hardened steel	1	
2225778	PT–181	7/16"	carbide tipped	1	
2225779	PT–182	3/4"	carbide tipped	1	
2225894	PT–253	1"	hardened steel	1	
2225780	PT–183	1"	carbide tipped	1	
2225883	PT–230	1–7/16"	hardened steel	5	5 units
2225884	PT–231	2"	hardened steel	5	5 units



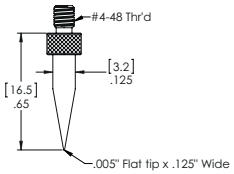
Conical measuring anvil

Order no.	Product type	Angle α	Measuring surface	Number
		°		
2225876	PT–2265	90	hardened steel	1



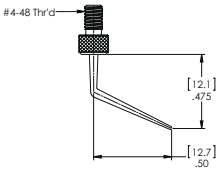
Conical measuring anvil

Order no.	Product type	Measuring surface	Number
2225877	PT–2266	hardened steel	1



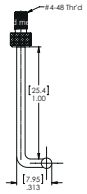
Offset measuring anvil

Order no.	Product type	Measuring surface	Number
2225878	PT–2267	hardened steel	1



Angled measuring anvil

Order no.	Product type	Measuring surface	Number
2225879	PT–2268	hardened steel	1



Adaptor #4-48 male to M2,5 female threads

Order no.	Number
2236519	1

Auxiliary Plunger 57mm/ 2.25" long MarCator AT–25 / AT–26

For extending reach of all ANSI/ AGD type and perpendicular indicators with .375" diameter stems and ranges up to 6.35 mm/ .250" range. Attaches to indicator stem by integral split collet. Body is 12 mm/ .500" OD.

Technical Data

Order no.	Mounting bore	Length	Length	Product type
	inch	mm	inch	
2203153	3/8"	57	2.25"	AT–25
2203154	3/8"	104	4"	AT–26

Accessories

Order no.	Product name	Product type
2225781	Spherical contact point, 8–32 thread, for AT–26	PT–184

Hole attachment, 47,50 mm / 1.87“ long MarCator AT–7293 / AT–7294

For ANSI/AGD type and perpendicular indicators with .375” diameter stems. For measuring internal surfaces.

Technical Data

Order no.	Mounting bore	Length	Length	Product type
	inch	mm	inch	
2203160	3/8“	47.5	1.87“	AT–7293
2203161	3/8“	25	1“	AT–7294

Angle attachment for ranges up to 3,05 mm / .120" MarCator A–9 / AT–24

For ANSI/AGD type and perpendicular indicators (.375" diameter stems). For making measurements at right angle to spindle movement.

Application:

for ranges up to 3,05 mm / .120"

A-9

AT-24

Technical Data

Order no.	Mounting bore	Product type
	inch	
2201391	3/8"	A–9
2203152	3/8"	AT–24

Accessories

Order no.	Product name	Product type
2232596	Replacement spring for right angle attachment A–9	SP–56

MarCator 400B–3 / 400B–4

- For checking and calibrating dial indicators, test indicators, digital indicators, and LVDT inductive probes
- Large micrometer style wheel has widely spaced graduations for easy setting and viewing
- Adjustable crosshair provides exact on-the-mark setting
- Anvil uses Tungsten Carbide for maximum wear resistance
- Indicator clamped in line with micrometer spindle for direct contact measurement
- **Data interface:** none
- **Scope of delivery:** Adaptor bushing AD–58, Split bushing BU–112, Split bushing BU–197

Application:

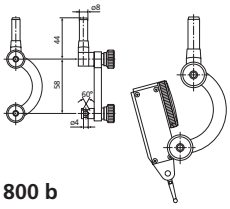
Portable Dial Calibrator

Technical Data

Order no.	Product type	Measuring span	Measuring span	Graduation value	Graduation value	Range per rev.	Range per rev.	Error limit	Error limit
		mm	inch	mm	inch	mm	inch	mm	inch
2050665	400B–3		1.000"		.0001"		.0025"		.00005"
2050666	400B–4	25		0.002		0.05		0.001	

Accessories

Order no.	Product name	Product type
4305893	Universal centering support frame	800 b
2201843	Adaptor Bushing 0.275" ID to 0.375" OD	AD–58
2205127	Split bushing with shoulder 8mm stem hole X .375" OD	BU–197
2205082	Split bushing .218" x .374" x .5"	BU–112



800 b

For the regular testing / calibration of your MarCator dial gages, please see chapter 14, Precimar, for the suitable testing device.

SIMPLE, ACCURATE AND INEXPENSIVE MEASUREMENT.
MILLIMESS DIAL COMPARATORS.

Millimess is the "classic" amongst all measuring instrument. For over 60 years, the Millimess series of dial comparators has been synonymous with both high precision and extreme robustness. Both maximum accuracy and a minimal reversal span error are obtained through the levers, gears and pinions being supported with jeweled bearings and the measuring spindle running in a ball bush guide. Millimess is therefore particularly suitable for measuring tasks where the accuracy and the reversal span of a conventional dial indicator are not sufficient. Further advantages of Millimess are the simple handling, the easy reading as well as the movement being absolute shockproof. Our digital comparator with an inductive measuring system is equipped with highest precise technology - readings as small as 0.2 µm / 10 µinch are realized. The practical control functions (for example: tolerance monitoring or the storage of measuring values for dynamic measurements), the combined analog and digital display and the easy to use data transmission rounds off the complete Millimess spectrum.

Millimess. Digital and Dial Comparator

Digital and Dial Comparators Overview 242

Inductive digital comparator

Millimess 2001 244
For static and dynamic measurements

Millimess 2000 246
For static measurements

Millimess µMaxµm II 247
With digital display

Millimess Maxµm III 250
With digital and analog display, probe

Mechanical Dial Comparator

Millimess 1002 / 1003 / 1004 259
Standard Versions

Millimess 1000 A / 1000 B 261
With large dial

Millimess 1010 / 1010 T / 1050 / 1050 T 262
Mechanical Dial Comparators

Millimess 1002 Z / 1003 Z / 1004 Z / 1010 Z 263
Mechanical Dial Comparators

Millimess 1110 N / 1110 NT / 1150 N / 1150 NT 264
With limit contacts

Millimess. Digital and Dial Comparators

OVERVIEW

The Inductive Digital Comparator Millimess 2001: tolerance monitoring is simplified with the color change in the background lit display.

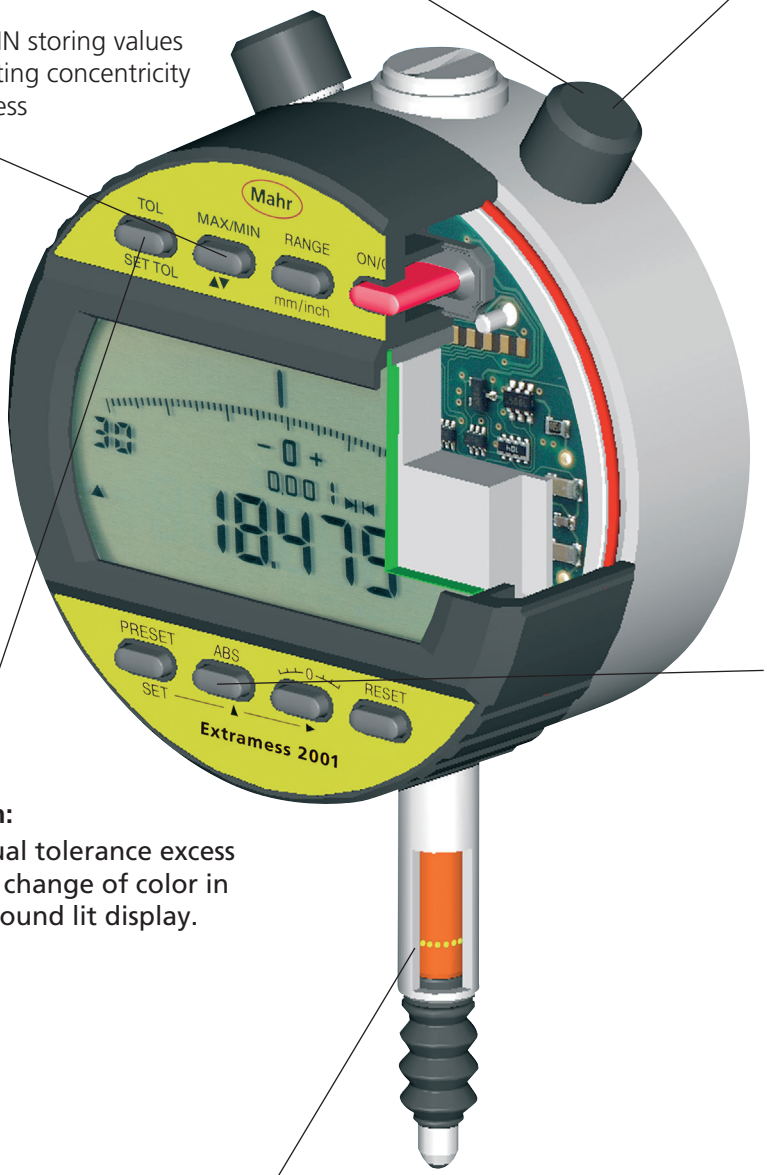
Dynamic measuring functions:

- MAX / MIN finding the reversal point
- MAX - MIN storing values when testing concentricity and flatness

Control output
can be connected to a SPS

Universal SPS Interface

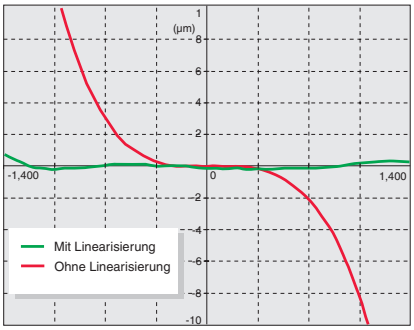
The choice is yours: **MarConnect** Data output, choose between USB, Digimatic or RS232C



- **Digimatic**
  To connect a Digimatic compatible evaluation instrument
- **Mahr Opto RS232C**
  for direct connection to a COM port on a pc

Absolute measuring system:

Linearized, inductive **absolute measuring system.** Reference point is not lost when the instrument is switched off



Tolerance function:

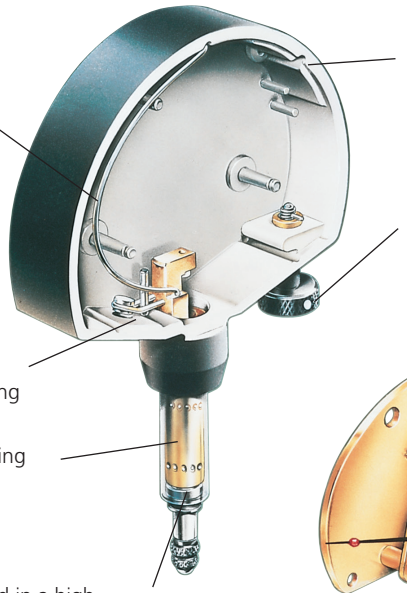
Clearly visual tolerance excess due to the change of color in the background lit display.

High precision rotary stroke bearings for a longer service life and higher capacity

Especially suited for use in a manufacturing environment.Waterproof: **protection class IP54** in accordance to IEC 60529

Code Initial	**IP**	International Protection
First Numeral	**5**	Dust protected
Second Numeral	**4**	Protection against splash water in all directions

Millimess. Design



Box type protective housing

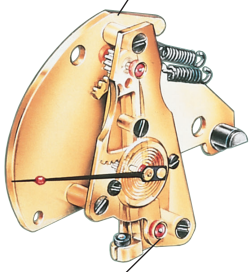
Constant measuring force

Lockable fine adjustment screw

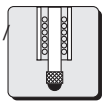
Self contained movement, which is quick and easy to remove and replace

Measuring spindle can be retracted with either a screw in cable release or with a lifting knob.

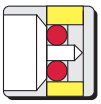
Mounting shank and measuring spindle are both made of hardened stainless steel



Measuring spindle is mounted in a high precision ball guide (Types 1000 / 1002 / 1003 / 1004) for minimal hystersis



Resistant to lateral forces (side play) acting on the measuring spindle

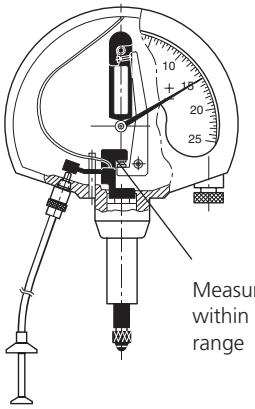


Maximum sensitivity and accuracy are ensured by the jeweled movement in conjunction with the precision gears and pinions

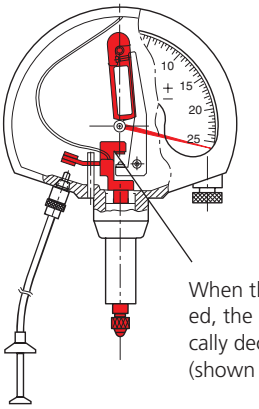
Easy to read scale

Adjustable tolerance markers

Millimess - Shockproof Mechanism



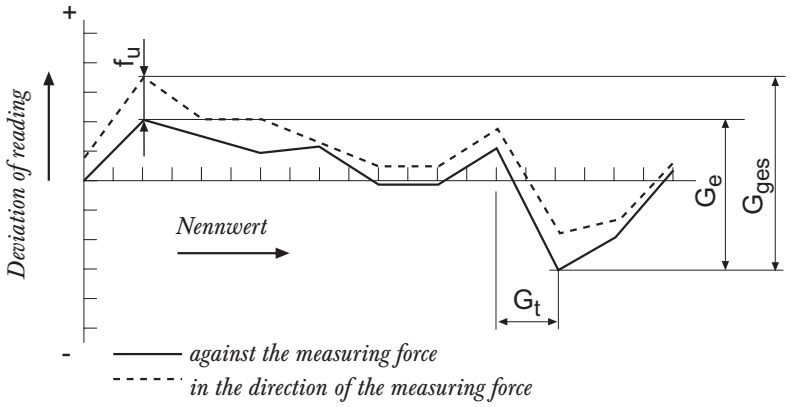
Measuring spindle within the measuring range



When the measuring range is exceeded, the movement will be mechanically decoupled (shown in red)

SHOCK PROOF

Millimess - Metrological characteristics



Millimess - Versions

Inductive Digital Comparator

Mechanical Dial Comparator

Mechanical Dial Comparator with limit contacts

Inductive digital comparator Millimess 2001

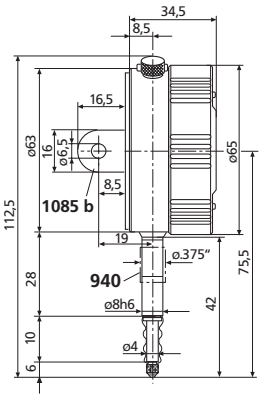
Application:

For static and dynamic measurements

Technical Data

Order no.		4346100	4346910	4346911
Product type		2001		
Measuring range	mm	± 0.9		
Measuring range	inch	± .035"		
Partial measuring range	mm	± 0.4		
Partial measuring range	inch	± .031"		
Resolution	mm	0.001, 0.0005, 0.0002		
Resolution	inch	.00001", .00002", .00005"		
Error limit	µm	0.6 ± 1 Digit		
Error limit in partial measuring range	µm	0.3 ± 1 Digit		
Standard		Factory standard		
Measuring force	N	0.7 –0.9		
Range of analog display	mm	± 0,030, ± 0,015, ± 0,006		
IP protection category		IP 54		
Supply voltage		230 V	115 V	100 V

Order no.	Mounting shaft
	mm
4346100	8
4346910	8
4346911	8



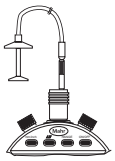
Functions:
- ON/OFF
- RESET (set display to zero)
- 0 (set the analog display to zero)
- PRESET (for entering a numerical value)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- Factor (adjustable)
- Remote-controlled via interface (optoRS232/USB)

- High contrast LCD
- Analog display with 4 mm pointer ensures better visual recognition, ideal when checking concentricity or flatness as well as searching for the reversal point when measuring bores
- 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
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 6.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB, Control output
- **Energy supply:** Integrated rechargeable batteries (max. 40 hrs.) or via the power source
- **Scope of delivery:** Instruction manual, Rubber bellows, Spanner for preliminary stroke setting, Power source, Case

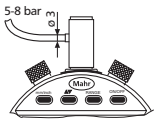
Inductive digital comparator Millimess 2001

Accessories

Order no.	Product name	Product type
4346010	Manual lifer with cable release	2000 h
4346011	pneumatic lifter	2000 p
4346012	Measuring force adjuster	2000 m
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4102232	Transmitter for e-Stick	2000 e
4102230	Receiver	e-Stick
4346031	Cables for control output for connection to PLC	2000 sps
4346035	Control unit for remote control of the RESET, PRESET, RANGE, DATA functions	2000 sg
4310103	Adapter bush (.375" / 8 mm)	940
4336310	lug back	1085 b
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	



2000 h



2000 p

2000 m

e-Stick

2000 sg

Inductive digital comparator Millimess 2000

Digimatic RS232C USB IP54 ABS

Application:

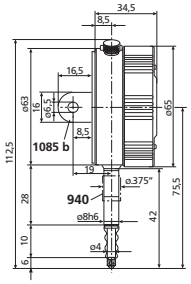
For static measurements

Functions:
- ON/OFF
- RESET (set display to zero)
- 0 (set the analog display to zero)
- PRESET (for entering a numerical value)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (display can be set to zero without losing reference to preset)

Technical Data

Order no.		4346000	4346900
Product type		2000	
Measuring range	**mm**	± 0.9	
Measuring range	**inch**	± .035"	
Partial measuring range	**mm**	± 0.4	
Partial measuring range	**inch**	± .031"	
Resolution	**mm**	0.001, 0.0005, 0.0002	
Resolution	**inch**	.00001", .00002", .00005"	
Error limit	**µm**	0.6 ± 1 Digit	
Error limit in partial measuring range	**µm**	0.3 ± 1 Digit	
Standard		Factory standard	
Measuring force	**N**	0.7 –0.9	
Range of analog display	**mm**	± 0,030, ± 0,015, ± 0,006	
IP protection category		IP 54	
Supply voltage		230 V	115 V

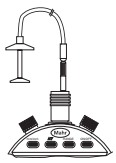
Order no.	Mounting shaft
	mm
4346000	8
4346900	8



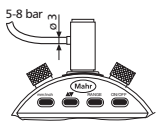
- High contrast LCD
- Analog display with 4 mm pointer ensures better visual recognition, ideal when checking concentricity or flatness as well as searching for the reversal point when measuring bores
- Operating and display unit (bezel) can be rotated through 280°
- Mounting shank and measuring spindle 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
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 6.5 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Integrated rechargeable batteries (max. 40 hrs.) or via the power source
- **Scope of delivery:** Instruction manual, Rubber bellows, Spanner for preliminary stroke setting, Power source, Case

Accessories

Order no.	Product name	Product type
4346010	Manual lifer with cable release	2000 h
4346011	pneumatic lifter	2000 p
4346012	Measuring force adjuster	2000 m
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4310103	Adapter bush (.375" / 8 mm)	940
4336310	lug back	1085 b
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	



2000 h



2000 p

2000 m

Inductive digital comparator Millimess µMaxµm II

Functions:
- ON/OFF
- PRESET (for entering a numerical value)
- RESET (set display to zero)
- Switch resolution
- Reversal of counting direction
- <0> (tolerance GO / NO GO display mode)
- mm/inch

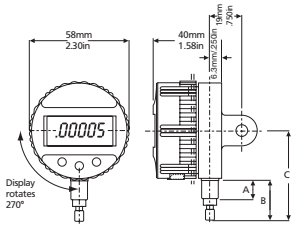
IP54 USB RS232C Digimatic

- Inductive absolute measuring system
- Large, high-contrast display with numerical and scale display
- Control and display unit rotatable through 270°
- Zero point setting is retained even after switching off the dial indicator
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Digit height:** 8 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery operation
- **Scope of delivery:** Instruction manual, Battery

Technical Data

Order no.		2034101	2034103	2034105	2034107
Product type		µMaxµm II			
Measuring range	**mm**	±1			
Measuring range	**inch**	± .040"			
Partial measuring range	**mm**	± 0.5			
Partial measuring range	**inch**	± .020"			
Resolution	**mm**	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02			
Resolution	**inch**	.00001", .00002", .00005", .0001", .0002", .0005", .001"			
Error limit	**µm**	± 5			
Error limit	**inch**	± .0002"			
Error limit in partial measuring range	**µm**	± 1.25			
Error limit in partial measuring range	**inch**	± .00005"			
Standard		Factory standard			
Measuring force	**N**	0.8 –1.1			
IP protection category		IP 54			

Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	**inch**	**inch**	**mm**	**mm**	**mm**	**mm**	**inch**
2034101	.46"	.95"	2.11"	11.7	24.1	53.6		.375"
2034103	1.5"	2.25"	3.41"	38	57.2	86.6		.375"
2034105	.46"	.95"	2.11"	11.7	24.1	53.6	8	
2034107	1.5"	2.25"	3.41"	38	57.2	86.6	8	



Accessories

Order no.	Product name	Product type
2210555	Lug back	EBK–1010
2210556	Back panel with cylindrical holder, Ø = .5", l = 1"	EBK–1012
2210557	Back panel with threaded bore 1/4–28, Ø = 11/16", l = .5"	EBK–1013
2210558	Back panel with rack	EBK–1014
2210559	Back panel with adjustable holder	EBK–1016
2210561	Flat back panel	EBK–1018
2212878	Splash guard cover	ECV–1307-W2
2232570	Measuring force springs 0.35N	SP–351
2201833	Thread adapter, M2.5 to #4–48	AD–185
4310103	Adapter bush (.375" / 8 mm)	940
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r
4102230	Receiver	e-Stick
4102232	Transmitter for e-Stick	2000 e

e-Stick

Inductive digital comparator Millimess µMaxµm II

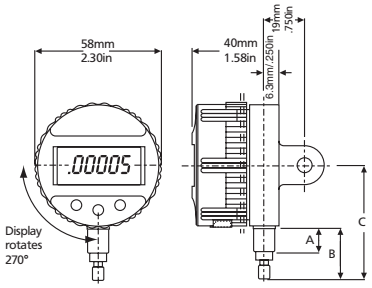
Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- ABS (display can be set to zero without losing reference to preset)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- Factor (adjustable)
- HOLD (storage of measured values)

- Inductive absolute measuring system
- Large, high-contrast display with numerical and scale display
- Control and display unit rotatable through 270°
- Zero point setting is retained even after switching off the dial indicator
- **Digit height:** 8 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery operation
- **Scope of delivery:** Instruction manual, Battery

Technical Data

Order no.		2034201	2034203	2034205	2034207
Product type		µMaxµm II			
Measuring range	**mm**	±1			
Measuring range	**inch**	± .040"			
Partial measuring range	**mm**	± 0.5			
Partial measuring range	**inch**	± .020"			
Resolution	**mm**	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02			
Resolution	**inch**	.00001", .00002", .00005", .0001", .0002", .0005", .001"			
Error limit	**µm**	± 5			
Error limit	**inch**	± .0002"			
Error limit in partial measuring range	**µm**	± 1.25			
Error limit in partial measuring range	**inch**	± .00005"			
Standard		Factory standard			
Measuring force	**N**	0.8 –1.1			
IP protection category		IP 54			

Order no.	a	b	c	a	b
	inch	inch	inch	mm	mm
2034201	.46"	.95"	2.11"	11.7	24.1
2034203	1.5"	2.25"	3.41"	38	57.2
2034205	.46"	.95"	2.11"	11.7	24.1
2034207	1.5"	2.25"	3.41"	38	57.2



Accessories

Order no.	Product name	Product type
2210555	Lug back	EBK–1010
2212878	Splash guard cover	ECV–1307-W2
4310103	Adapter bush (.375" / 8 mm)	940
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r
4102232	Transmitter for e-Stick	2000 e
4102230	Receiver	e-Stick
2210556	Back panel with cylindrical holder, Ø = .5", l = 1"	EBK–1012
2210557	Back panel with threaded bore 1/4–28, Ø = 11/16", l = .5"	EBK–1013
2210561	Flat back panel	EBK–1018
2210559	Back panel with adjustable holder	EBK–1016
2210558	Back panel with rack	EBK–1014
2232570	Measuring force springs 0.35N	SP–351

e-Stick

Inductive digital comparator Millimess µMaxµm II

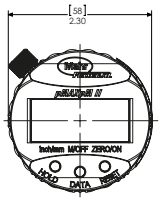
Functions:
- ON/OFF
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- ABS (display can be set to zero without losing reference to preset)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- Factor (adjustable)
- HOLD (storage of measured values)

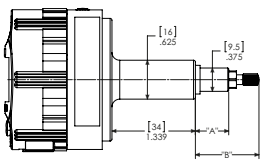
- Inductive absolute measuring system
- Large, high-contrast display with numerical and scale display
- Control and display unit rotatable through 270°
- Zero point setting is retained even after switching off the dial indicator
- **Digit height:** 8 mm
- **Data interface:** Digimatic, Opto RS232C, USB
- **Energy supply:** Battery operation
- **Scope of delivery:** Instruction manual, Battery

Technical Data

Order no.		2034401
Product type		µMaxµm II
Measuring range	**mm**	±1
Measuring range	**inch**	± .040"
Partial measuring range	**mm**	± 0.5
Partial measuring range	**inch**	± .020"
Resolution	**mm**	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02
Resolution	**inch**	.00001", .00002", .00005", .0001", .0002", .0005", .001"
Error limit	**µm**	± 5
Error limit	**inch**	± .0002"
Error limit in partial measuring range	**µm**	± 1.25
Error limit in partial measuring range	**inch**	± .00005"
Standard		Factory standard
Measuring force	**N**	0.8 –1.1
IP protection category		IP 54

Order no.	a	b	c
	inch	inch	inch
2034401	.46"	.95"	2.11"

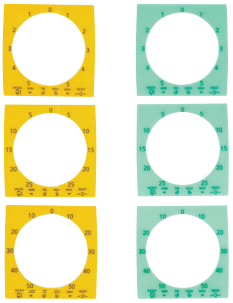




Accessories

Order no.	Product name	Product type
2212878	Splash guard cover	ECV–1307-W2
2232570	Measuring force springs 0.35N	SP–351
2201833	Thread adapter, M2.5 to #4–48	AD–185
4310103	Adapter bush (.375" / 8 mm)	940
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r

Inductive digital comparator Millimess Maxµm III



Functions:

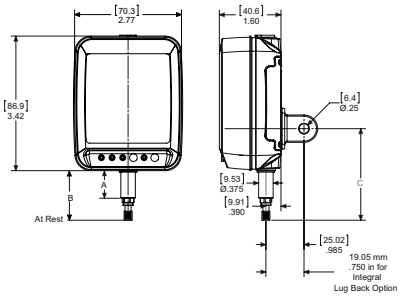
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)

- Large, high contrast digital, analog and fan display for better readability while testing flatness and concentricity as well as for searching the reversal point in bores
- Interchangeable dials
- Inductive absolute measuring system
- Metal cast housing with robust buttons
- **Energy supply:** Battery life approx. 4000 hrs.
- **Scope of delivery:** Interchangeable dials, Battery, Instruction manual

Technical Data

Order no.		2033101	2033103	2033105	2033107	2033102	2033104	2033106	2033108
Product type		Maxµm III							
Measuring range	mm	±1					±1.99		
Measuring range	inch	± .040"					± .100"		
Partial measuring range	mm	± 0.199							
Partial measuring range	inch	± .0199"							
Resolution	mm	0.0005, 0.001, 0.005					0.001, 0.005		
Resolution	inch	.00002", .00005", .0001", .0005"					.0001", .0005"		
Error limit	µm	± 10					± 14		
Error limit	inch	± .0004"					± .0007"		
Error limit in partial measuring range	µm	± 1							
Error limit in partial measuring range	inch	± .0001"							
Standard		Factory standard							
Overtravel	mm	0.8					1.3		
Measuring force	N	0.8 –1.1							
Range of analog display	mm	± 5, ± 25, ± 50					± 25, ± 50		
Data output Maxµm		No output							
IP protection category:		IP 54							

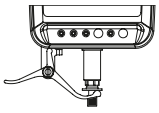
Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	inch	inch	mm	mm	mm	mm	inch
2033101	.670"	1.42"	2.50"	17	36	63.5		.375"
2033103	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033105	.670"	1.42"	2.50"	17	36	63.5	8	
2033107	1.5"	2.25"	3.33"	38	57	84.6	8	
2033102	.87"	1.84"	2.87"	22	47	73		.375"
2033104	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033106	.87"	1.84"	2.87"	22	47	73	8	
2033108	1.5"	2.25"	3.33"	38	57	84.6	8	



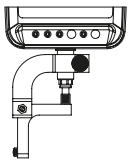
Inductive digital comparator Millimess Maxµm III

Accessories

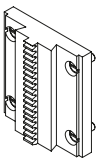
Order no.	Product name	Product type
2239138	Battery for MaxumIII Type CR 123A	
2209094	Lifting lever, left	EAS–1903
2210406	Right Angle Attachment - Spring Type (± .187" range)	EAT–1034-W1
2210407	Right Angle Attachment - Spring Type (± .060" range)	EAT–1035-W1
2210551	Back panel with rack	EBK–1005
2236895	Mounting block for back panel with rack	
2210552	Back panel with eyelets	EBK–1006
2210553	Back panel with adjustable holder	EBK–1007
2212877	Dust cover	ECV–1307-W1
2239040	Set of 3 inch and 3 metric scale overlay	
2217907	Spare screws for back panels	ESW–1252



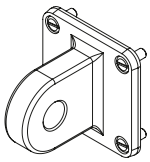
EAS–1903



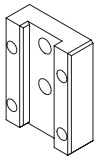
EAT–1034-W1



EBK–1005

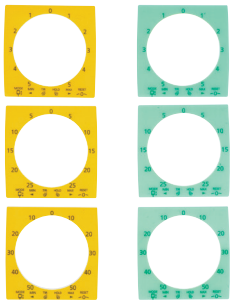


EBK–1006



EBK–1007

Inductive digital comparator Millimess Maxµm III



Functions:
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)

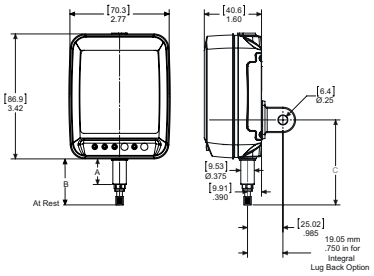
- Large, high contrast digital, analog and fan display for better readability while testing flatness and concentricity as well as for searching the reversal point in bores
- Interchangeable dials
- Inductive absolute measuring system
- Metal cast housing with robust buttons
- **Data interface:** RS232C, Digimatic, USB
- **Energy supply:** Battery life approx. 4000 hrs.
- **Scope of delivery:** Interchangeable dials, Battery, Instruction manual

- **Data interface:** RS232C, Digimatic, USB
- **Energy supply:** Battery life approx. 4000 hrs.
- **Scope of delivery:** Interchangeable dials, Battery, Instruction manual

Technical Data

Order no.		2033111	2033113	2033115	2033117	2033112	2033114	2033116	2033118
Product type		Maxµm III							
Measuring range	mm	±1				±1.99			
Measuring range	inch	± .040"				± .100"			
Partial measuring range	mm	± 0.199							
Partial measuring range	inch	± .0199"							
Resolution	mm	0.0005, 0.001, 0.005				0.001, 0.005			
Resolution	inch	.00002", .00005", .0001", .0005"				.0001", .0005"			
Error limit	µm	± 10				± 14			
Error limit	inch	± .0004"				± .0007"			
Error limit in partial measuring range	µm	± 1							
Error limit in partial measuring range	inch	± .0001"							
Standard		Factory standard							
Overtravel	mm	0.8				1.3			
Measuring force	N	0.8 –1.1							
Range of analog display	mm	± 5, ± 25, ± 50				± 25, ± 50			
Data output Maxµm		Data output 6 pin (E2)							
IP protection category		IP 54							

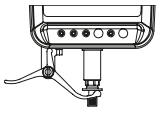
Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	inch	inch	mm	mm	mm	mm	inch
2033111	.670"	1.42"	2.50"	17	36	63.5		.375"
2033113	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033115	.670"	1.42"	2.50"	17	36	63.5	8	
2033117	1.5"	2.25"	3.33"	38	57	84.6	8	
2033112	.87"	1.84"	2.87"	22	47	73		.375"
2033114	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033116	.87"	1.84"	2.87"	22	47	73	8	
2033118	1.5"	2.25"	3.33"	38	57	84.6	8	



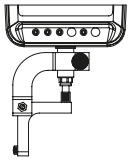
Inductive digital comparator Millimess Maxµm III

Accessories

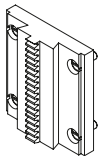
Order no.	Product name	Product type
2239138	Battery for MaxumIII Type CR 123A	
2209094	Lifting lever, left	EAS–1903
2210406	Right Angle Attachment - Spring Type (± .187" range)	EAT–1034-W1
2210407	Right Angle Attachment - Spring Type (± .060" range)	EAT–1035-W1
2210551	Back panel with rack	EBK–1005
2236895	Mounting block for back panel with rack	
2210552	Back panel with eyelets	EBK–1006
2210553	Back panel with adjustable holder	EBK–1007
2212877	Dust cover	ECV–1307-W1
2217907	Spare screws for back panels	ESW–1252
2239035	Digimatic data cable (2 m) (D, E1)	
2239036	Data cable RS232C (2 m) (D, E1)	
2200362	Foot Switch for send data (Maxµm) or dynamic reset/zeroing (832), 1,5m / 5 ft cable	300–50
2240545	Maxµm III, Unlock Setup & Unlock Calibration Key, (D, E1)	
2239040	Set of 3 inch and 3 metric scale overlay	



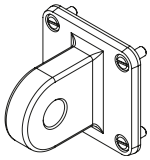
EAS–1903



EAT–1034-W1



EBK–1005



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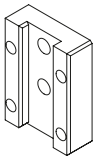
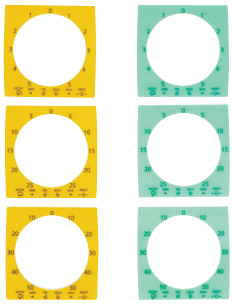


EBK–1007

Inductive digital comparator Millimess Maxµm III

RS232C | Digimatic | ABS System | TOL | MAX MIN | USB | IP54



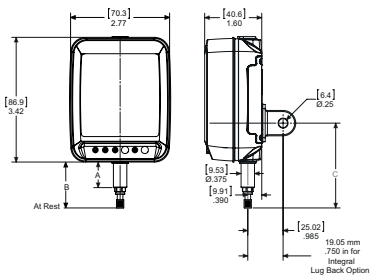
Functions:
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)

- Large, high contrast digital, analog and fan display for better readability while testing flatness and concentricity as well as for searching the reversal point in bores
- Interchangeable dials
- Inductive absolute measuring system
- Metal cast housing with robust buttons
- **Data interface:** RS232C, USB
- **Energy supply:** Battery life approx. 4000 hrs.
- **Scope of delivery:** Interchangeable dials, Battery, Instruction manual

Technical Data

Order no.		2033121	2033123	2033125	2033127	2033122	2033124	2033126	2033128
Product type		Maxµm III							
Measuring range	mm	±1				±1.99			
Measuring range	inch	± .040"				± .100"			
Partial measuring range	mm	± 0.199							
Partial measuring range	inch	± .0199"							
Resolution	mm	0.0005, 0.001, 0.005				0.001, 0.005			
Resolution	inch	.00002", .00005", .0001", .0005"				.0001", .0005"			
Error limit	µm	± 10				± 14			
Error limit	inch	± .0004"				± .0007"			
Error limit in partial measuring range	µm	± 1							
Error limit in partial measuring range	inch	± .0001"							
Standard		Factory standard							
Overtravel	mm	0.8				1.3			
Measuring force	N	0.8 –1.1							
Range of analog display	mm	± 5, ± 25, ± 50				± 25, ± 50			
Data output Maxµm		Data output 10 pin (E2)							
IP protection category		IP 54							

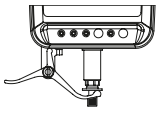
Order no.	a	b	c	a	b	c	Mounting shaft	Mounting shaft
	inch	inch	inch	mm	mm	mm	mm	inch
2033121	.670"	1.42"	2.50"	17	36	63.5		.375"
2033123	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033125	.670"	1.42"	2.50"	17	36	63.5	8	
2033127	1.5"	2.25"	3.33"	38	57	84.6	8	
2033122	.87"	1.84"	2.87"	22	47	73		.375"
2033124	1.5"	2.25"	3.33"	38	57	84.6		.375"
2033126	.87"	1.84"	2.87"	22	47	73	8	
2033128	1.5"	2.25"	3.33"	38	57	84.6	8	



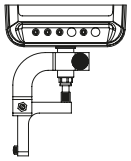
Inductive digital comparator Millimess Maxµm III

Accessories

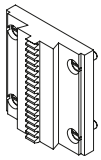
Order no.	Product name	Product type
2239138	Battery for MaxumIII Type CR 123A	
2209094	Lifting lever, left	EAS–1903
2210406	Right Angle Attachment - Spring Type (± .187" range)	EAT–1034-W1
2210407	Right Angle Attachment - Spring Type (± .060" range)	EAT–1035-W1
2210551	Back panel with rack	EBK–1005
2236895	Mounting block for back panel with rack	
2210552	Back panel with eyelets	EBK–1006
2210553	Back panel with adjustable holder	EBK–1007
2212877	Dust cover	ECV–1307-W1
2217907	Spare screws for back panels	ESW–1252
2239037	Digimatic data cable (2 m) (E2)	
2239038	Data Connection Cable RS232C (2 m) (E2)	
2200362	Foot Switch for send data (Maxµm) or dynamic reset/zeroing (832), 1,5m / 5 ft cable	300–50
2239040	Set of 3 inch and 3 metric scale overlay	
2240547	Maxµm III, Unlock Setup & Unlock Calibration Key, (E2)	
2209924	Hand Switch for Hold/Reset	EAS–2867
2209925	Foot Switch for Hold/Reset	EAS–2868
2121428	USB data cable (2 m) (E2)	



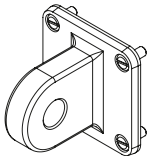
EAS–1903



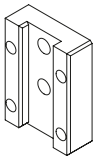
EAT–1034-W1



EBK–1005

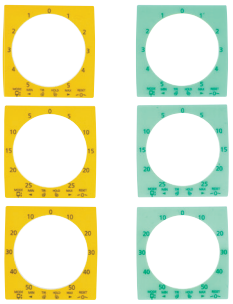


EBK–1006



EBK–1007

Display unit Millimess Maxµm III



Functions:
- RESET (set display to zero)
- mm/inch
- Reversal of counting direction
- RANGE (switch the measuring range and resolution)
- ABS (reference to the electrical zero point)
- TOL (enter tolerance limit values)
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- HOLD (storage of measured values)

- Large, high contrast digital, analog and fan display for better readability while testing flatness and concentricity as well as for searching the reversal point in bores
- Interchangeable dials
- Inductive absolute measuring system
- Metal cast housing with robust buttons
- **Data interface:** none
- **Energy supply:** Battery operation, Battery life approx. 4000 hrs.
- **Scope of delivery:** Interchangeable dials, Battery, Instruction manual

Technical Data

Order no.		2033001	2033011	2033021
Product type		Maxµm III		
Measuring range	**mm**	Depending on probe type		
Standard		Factory standard		
Measuring force	**N**	-		
Data output Maxµm		without data ouput	Data output 6-pin (D, E1)	Data output 10 pin (E2)
IP protection category		IP 54		

Accessories

Order no.	Product name	Product type
2239138	Battery for MaxumIII Type CR 123A	
2212877	Dust cover	ECV–1307-W1
2239040	Set of 3 inch and 3 metric scale overlay	
2217907	Spare screws for back panels	ESW–1252
2240545	Maxµm III, Unlock Setup & Unlock Calibration Key, (D, E1)	
2239035	Digimatic data cable (2 m) (D, E1)	
2239036	Data cable RS232C (2 m) (D, E1)	
2240547	Maxµm III, Unlock Setup & Unlock Calibration Key, (E2)	
2239037	Digimatic data cable (2 m) (E2)	
2239038	Data Connection Cable RS232C (2 m) (E2)	
2121428	USB data cable (2 m) (E2)	

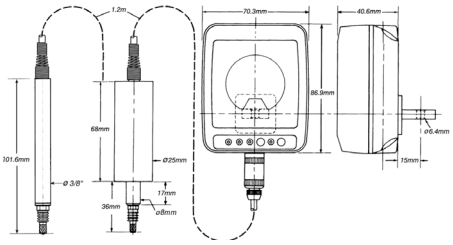
Digital probe Millimess Maxµm III

- Maxum transducers are available as replacement parts - refer to part price list for part numbers and pricing
- Maxum III remote indicating units are sold without digital transducer
- Any digital transducer may be used with a Maxum III remote indicating unit
- For alternate cable lengths, extension cables or special indicator options - call Mahr's Technical Assistance Group

Technical Data

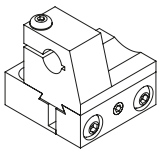
Order no.		2033091	2033093	2033095	2033097	2033092	2033094	2033096	2033098
Product type		Maxµm III							
Measuring range	mm	± 1,00				± 1,99			
Measuring range	inch	± .040"				± .100"			
Partial measuring range	mm	± 0,199							
Partial measuring range	inch	± .199							
Resolution	mm	0.0005, 0.001, 0.005				0.001, 0.005			
Resolution	inch	.00002", .00005", .0001", .0005"				.0001", .0005"			
Error limit	µm	± 10				± 14			
Error limit	inch	± .0004"				± .0007"			
Error limit in partial measuring range	µm	± 1.25							
Error limit in partial measuring range	inch	± .0001"							
Standard		Factory standard							
Measuring force	N	0.8 –1.1							

Order no.	a	a	Mounting shaft	Mounting shaft
	inch	mm	mm	inch
2033091	.670"	17		.375"
2033093	1.50"	38		.375"
2033095	.670"	17	8	
2033097	1.50"	38	8	
2033092	.670"	17		.375"
2033094	1.50"	38		.375"
2033096	.670"	17	8	
2033098	1.50"	38	8	

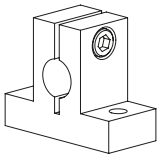


Accessories

Order no.	Product name	Product type
2009148	Adaptor - T-bracket, d = .375"	AAD–91
2208615	Adapter - Rack Bracket, for Maxµm III Transducer Probes, d = .375"	EAD–1007-W1
2208616	Adapter - Rack Bracket, for Maxµm III Transducer Probes, d = 8 mm	EAD–1007-W2
2236895	Mounting block for back panel with rack	



EAD–1007-W1



AAD–91

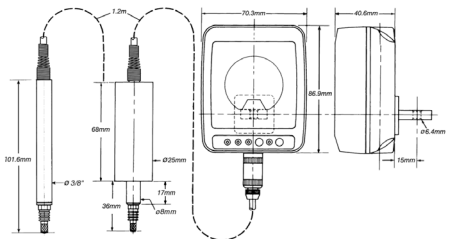
Digital probe Millimess Maxµm III

- Maxum transducers are available as replacement parts - refer to part price list for part numbers and pricing
- Maxum III remote indicating units are sold without digital transducer
- Any digital transducer may be used with a Maxum III remote indicating unit
- For alternate cable lengths, extension cables or special indicator options - call Mahr's Technical Assistance Group

Technical Data

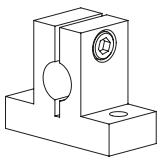
Order no.		2033099
Product type		Maxµm III
Measuring range	mm	± 1,00
Measuring range	inch	± .040"
Partial measuring range	mm	± 0,199
Partial measuring range	inch	± .199
Resolution	mm	0.0005, 0.001, 0.005
Resolution	inch	.00002", .00005", .0001", .0005"
Error limit	µm	± 10
Error limit	inch	± .0004"
Error limit in partial measuring range	µm	± 1.25
Error limit in partial measuring range	inch	± .0001"
Standard		Factory standard
Measuring force	N	0.8 –1.1

Order no.	a	a	Mounting shaft
	inch	mm	inch
2033099	3.25"	82.5	.375"

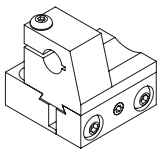


Accessories

Order no.	Product name	Product type
2009148	Adaptor - T-bracket, d = .375"	AAD–91
2208615	Adapter - Rack Bracket, for Maxµm III Transducer Probes, d = .375"	EAD–1007-W1
2208616	Adapter - Rack Bracket, for Maxµm III Transducer Probes, d = 8 mm	EAD–1007-W2
2236895	Mounting block for back panel with rack	



EAD–1007-W1



AAD–91

Mechanical Dial Comparator Millimess 1002 / 1002 T / 1003 / 1003 T / 1003 XL / 1003 XLT / 1004 / 1004 T

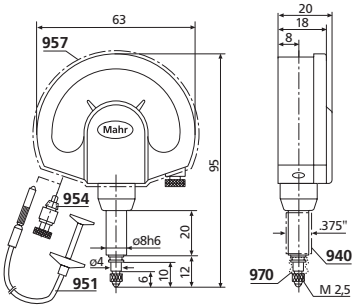
IP54 DIN 879-1

- 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
- Insensitive to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement and 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
- **Scope of delivery:** Case

Technical Data

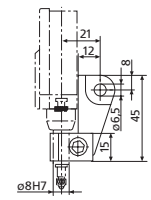
Order no.		4335000	4334102	4335005	4334000	4334103	4334005	4334001	4334006	4333000	4333005
Product type		1002		1002 T	1003		1003 T	1003 XL	1003 XLT	1004	1004 T
Measuring range	µm	± 25			± 50			± 130			
Graduation value	µm	0.5			1			2		5	
Type of dial face		25–0–25			50–0–50			130–0–130			
Error limit G_e	µm	0.5			1			2		3.5	
Error limit G_{ges}	µm	0.6			1.2			2.4		4	
Error limit G_t	µm	0.4			0.7			1.4		3	
Measuring value hysteresis f_u	µm	0.3			0.5			1			
Repeatability f_w	µm	0.3			0.5			1			
Standard		Factory standard			DIN 879–1			Factory standard			
Overtravel	mm	2.8						2.5			
Measuring force	N	1									
Scale diameter	mm	50									
Dial color		yellow	white	yellow	white	yellow		white			
IP protection category				IP 54			IP 54		IP 54		IP 54

Order no.	Mounting shaft	Scale diameter
	mm	mm
4335000	8	50
4334102	8	50
4335005	8	50
4334000	8	50
4334103	8	50
4334005	8	50
4334001	8	50
4334006	8	50
4333000	8	50
4333005	8	50



Accessories

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



963

Mechanical Dial Comparator Millimess 1003

DIN 879-1

Application:

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

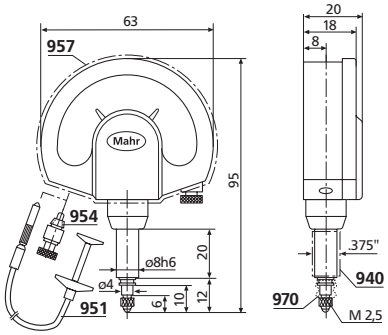
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Measuring spindle is mounted in a high precision ball guide for minimal hysteresis
- Insensitive to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement and 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

- **Scope of delivery:** Case

Technical Data

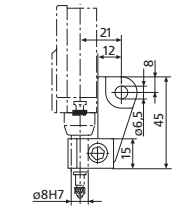
Order no.		4334075	4334070	4334050	4334076	4334071	4334010	4334011
Product type		1003						
Measuring range	µm	± 50						
Graduation value	µm	1						
Type of dial face		50–0–50						
Error limit G_e	µm	1						
Error limit G_{ges}	µm	1.2						
Error limit G_t	µm	0.7						
Measuring value hysteresis f_u	µm	0.5						
Repeatability f_w	µm	0.5						
Standard		DIN 879–1					Factory standard	
Overtravel	mm	2.8						
Measuring force	N	0.3	0.4	0.5	0.6	0.7	2	3
Scale diameter	mm	50						
Dial color		yellow						

Order no.	Mounting shaft	Scale diameter
	mm	mm
4334075	8	50
4334070	8	50
4334050	8	50
4334076	8	50
4334071	8	50
4334010	8	50
4334011	8	50



Accessories

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



963

Mechanical Dial Comparator Millimess 1000 A / 1000 B

- 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
- Insensitive to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement and 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

- **Scope of delivery:** Cable release, Case

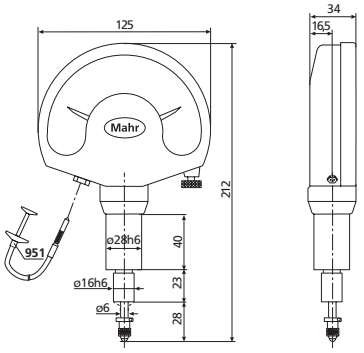
Application:

Very clear, reliable and fatigue-free readings due to extra-large housing. Ideal for test stations at which large numbers of serial parts are measured or can only be read at large intervals.

Technical Data

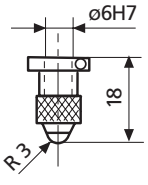
Order no.		4338100	4339100
Product type		1000 A	1000 B
Measuring range	µm	± 120	± 50
Graduation value	µm	1	
Type of dial face		120–0–120	50–0–50
Error limit G_e	µm	1.5	
Error limit G_{ges}	µm	2	
Error limit G_t	µm	0.7	
Measuring value hysteresis f_u	µm	1	
Repeatability f_w	µm	0.5	
Standard		Factory standard	
Overtravel	mm	4	
Measuring force	N	3.5	
Scale diameter	mm	110	
Dial color		yellow	

Order no.	Mounting shaft	Scale diameter
	mm	mm
4338100	28	110
4339100	28	110



Accessories

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



Mechanical Dial Comparator Millimess 1010 / 1010 T / 1050 / 1050 T

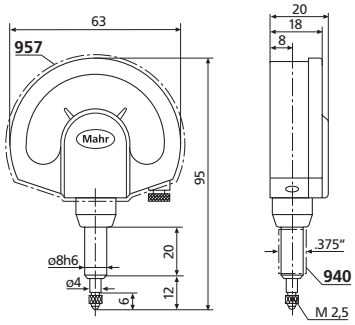
IP54

- 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
- Insensitive to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement and 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
- **Scope of delivery:** Case

Technical Data

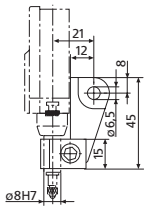
Order no.		4332000	4332005	4330000	4330005
Product type		1010	1010 T	1050	1050 T
Measuring range	mm	±0.25		±1.5	
Graduation value	mm	0.01		0.05	
Type of dial face		25–0–25		15–0–15	
Error limit G_e	µm	7		35	
Error limit G_{ges}	µm	8		40	
Error limit G_t	µm	4		24	
Measuring value hysteresis f_u	µm	2		10	
Repeatability f_w	µm	2		10	
Standard		Factory standard			
Overtravel	mm	2.5		0.3	
Measuring force	N	1			
Scale diameter	mm	50			
Dial color		white			
IP protection category		IP 54			

Order no.	Mounting shaft	Scale diameter
	mm	mm
4332000	8	50
4332005	8	50
4330000	8	50
4330005	8	50



Accessories

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



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Mechanical Dial Comparator Millimess 1002 Z / 1002 ZT / 1003 Z / 1003 ZT / 1004 Z / 1004 ZT / 1010 Z / 1010 ZT

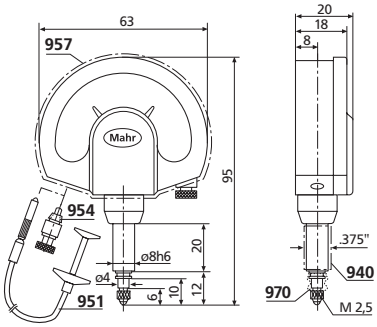
- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- Shockproof movement
- Mounting shank and measuring spindle are both made of hardened stainless steel
- Insensitive to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement and 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
- **Scope of delivery:** Case, Adapter bush 940, 8 mm to 3/8"

IP54

Technical Data

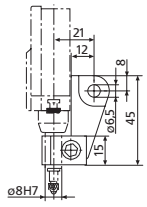
Order no.		4335900	4335905	4334900	4334905	4333900	4333905	4332900	4332905
Product type		1002 Z	1002 ZT	1003 Z	1003 ZT	1004 Z	1004 ZT	1010 Z	1010 ZT
Measuring range	inch	± .0010"		± .0020"		± .0050"		± .0100"	
Graduation value	inch	.00002"		.00005"		.0001"		.0005"	
Type of dial face		.001"–0–.001"		.002"–0–.002"		.005"–0–.005"		.01"–0–.01"	
Error limit G_e	inch	.00002"		.00005"		.0001"		.00035"	
Error limit G_{ges}	inch	.00003"		.00006"		.00012"		.0004"	
Error limit G_t	inch	.000014"		.000035"		.00005"		.00025"	
Measuring value hysteresis f_u	inch	.00001"		.000025"		.00003"		.0001"	
Repeatability f_w	inch	.00001"		.000025"		.00003"		.0001"	
Standard		Factory standard							
Measuring force	N	1							
Scale diameter	mm	50							
Dial color		white							
IP protection category			IP 54		IP 54		IP 54		IP 54

Order no.	Mounting shaft	Scale diameter
	mm	mm
4335900	8	50
4335905	8	50
4334900	8	50
4334905	8	50
4333900	8	50
4333905	8	50
4332900	8	50
4332905	8	50



Accessories

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



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Mechanical Dial Comparator with limit contacts Millimess 1110 N / 1110 NT

IP54

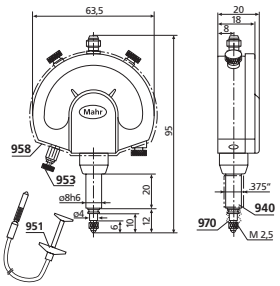
Application:

Can be applied for example as tolerance control or as a precision contacter in automatic control systems

- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- 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
- Insensitive to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement and in conjunction with the precision gears and pinions
- Self contained movement, which is both quick and easy to remove and replace
- Box type protective housing
- Constant measuring force
- Adjustable limit contacts made from high-grade precious metal
- Limit contacts are particularly well protected against vibration and mechanical overload
- **Scope of delivery:** Case, Instruction manual, Adjusting knob 953, Connection Cable 1,2m

Technical Data

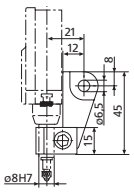
Order no.		4343100	4343105
Product type		1110 N	1110 NT
Measuring range	mm	±0.25	
Graduation value	mm	0.01	
Type of dial face		25–0–25	
Error limit G_e	µm	6.5	
Error limit G_{ges}	µm	12	
Error limit G_t	µm	5	
Measuring value hysteresis f_u	µm	3.5	
Repeatability f_w	µm	3.5	
Standard		Factory standard	
Overtravel	mm	0.3	
Measuring force	N	2	
Scale diameter	mm	50	
Dial color		white	
IP protection category			IP 54
Maximum switching capacity	mW	240	
Maximum switching voltage	V	24	
Maximum switching current	mA	100	
Switching accuracy with non-inductive load of 10 mA/24 V	µm	1.5	



Order no.	Mounting shaft	Scale diameter
	mm	mm
4343100	8	50
4343105	8	50

Accessories

Order no.	Product name	Product type
4372000	Cable release (250 mm)	951
4372020	Setting knob for setting the limit contacts without an additional setting standard	953
4372030	Lifting knob	954
4373031	Splash guard cover	958
4310103	Adapter bush (.375" / 8 mm)	940
4334786	Rubber bellows	970
4375002	Lug back to mount on mounting shank 8h6 mm	963
4345694	Connection cable (5 m), axial	
4345695	Connection cable (1,2 m), axial	



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Mechanical Dial Comparator with limit contacts Millimess 1150 N / 1150 NT

- Large, high contrast dial face
- Adjustable tolerance markers
- Lockable fine adjustment screw
- 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
- Insensitive to lateral forces (side play) acting on the measuring spindle
- Maximum sensitivity and accuracy are ensured by the jeweled movement and in conjunction with the precision gears and pinions
- Self contained movement, which is both quick and easy to remove and replace
- Box type protective housing
- Constant measuring force
- Adjustable limit contacts made from high-grade precious metal
- Limit contacts are particularly well protected against vibration and mechanical overload
- **Scope of delivery:** Case, Instruction manual, Adjusting knob 953, Connection Cable 1,2m

IP54

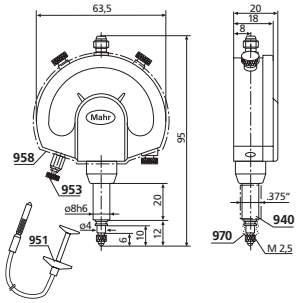
Application:

Can be applied for example as tolerance control or as a precision contacter in automatic control systems

Technical Data

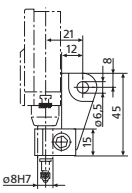
Order no.		4342100	4342105
Product type		1150 N	1150 NT
Measuring range	mm	±1.5	
Graduation value	mm	0.05	
Type of dial face		15–0–15	
Error limit G_e	µm	35	
Error limit G_{ges}	µm	60	
Error limit G_t	µm	25	
Measuring value hysteresis f_u	µm	17	
Repeatability f_w	µm	17	
Standard		Factory standard	
Overtravel	mm	2.5	3.5
Measuring force	N	1.5	
Scale diameter	mm	50	
Dial color		white	
IP protection category			IP 54
Maximum switching capacity	mW	240	
Maximum switching voltage	V	24	
Maximum switching current	mA	100	
Switching accuracy with non-inductive load of 10 mA/24 V	µm	7	

Order no.	Mounting shaft	Scale diameter
	mm	mm
4342100	8	50
4342105	8	50



Accessories

Order no.	Product name	Product type
4372000	Cable release (250 mm)	951
4372020	Setting knob for setting the limit contacts without an additional setting standard	953
4372030	Lifting knob	954
4373031	Splash guard cover	958
4310103	Adapter bush (.375" / 8 mm)	940
4334786	Rubber bellows	970
4375002	Lug back to mount on mounting shank 8h6 mm	963
4345694	Connection cable (5 m), axial	
4345695	Connection cable (1,2 m), axial	



963

COMPLEX MEASURING TASKS BROUGHT STRAIGHT TO THE POINT.
MILLIMAR

The requirements for electrical length measuring instruments are almost as broad as their scope of application. Reliability, precision as well as simple operation are the major demands, Millimar compact and column measuring instruments fulfill all these demands and requirements. Millimar probes are the most influential components of a measurement chain. Their characteristics determine the quality of the entire measurement; depending upon the type of application we have the corresponding probe for your requirements. For example; a Millimar Inductive Probe: robust, versatile and has an attractive price.

Millimar. Electrical and Pneumatic Length Measuring Instruments

Overview 268
Electronical Length Measuring Instruments

Overview 270
Inductive Probes Program

Millimar 830 272
Compact Amplifier

Millimar C1200 274
Compact Amplifier

Millimar 832 M / 832 F 275
Compact Amplifier

Millimar C 1208 / C 1216 / C 1240 / C 1245 278
Compact Amplifier

Millimar X 1715 / X 1741 282
Measurement Interface

Millimar 1901 TA 285
Amplifier with analog output

Millimar S 1840 M / S 1840 F 286
Compact column amplifier

Millimar P2001 / P2004 / P2010 / P2104 / P1300 288
Inductive Probe

Millimar 1301 / 1303 / 1304 K / 1318 / 1340 304
Inductive Probe

Millimar Lever Type Gage Heads EHE 312
Inductive Probe

Millimar EMD–832P–48 314
Electronic spirit level system for difference measurement

Ovierview 320
Millimar Standard Elements

Air Gaging Metrology 322

Millimar. Electrical Length Measuring Instruments

OVERVIEW

Evaluation Instruments

C 1200

- Compact, handy and simple to operate
- Extremely precise and easy-to- read due to the large, clearly defined analog or digital display
- Single, sum and differential measurement; limit switches and extreme value memories
- Highly accurate, long term stability and insensitive to environmental influences

C 1245

- Good zero stability even when changing the measuring range
- Short response time ideal for assessment of fast processes
- Analog or digital display
- Connect to a controller or a computer via the digital output
- Analog output (optional)

S 1840

Inductive Probes

- Large linearity range, strong output signal and insensitive to interference
- Precise measuring spindle and lever, frictionless ball or spring bearing for the highest resolution with the lowest hysteresis
- Cable is plugged into the probe allowing quick and simple maintenance (P1300)
- Robust construction for use on the shop floor; a variety of probes are available for all types of applications.

P1300 M

P2004 M

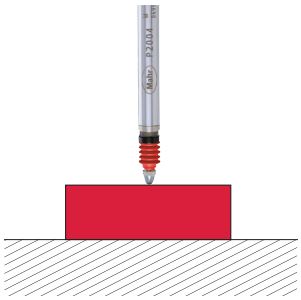
Millimar. Electrical Length Measuring Instruments

APPLICATIONS WITH INDUCTIVE PROBES

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

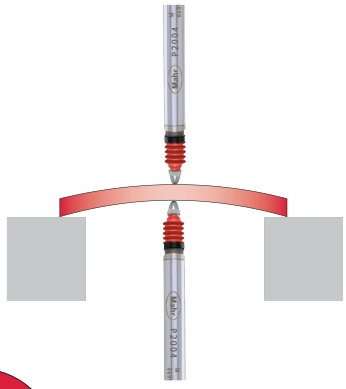
Thickness measurement



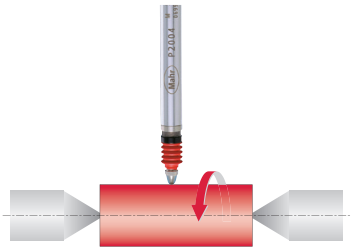
Sum measurement with 2 probes

Indicates the sum of deviation (total composite error) acquired from 2 probes irrespective of the form, support and concentricity deviation.

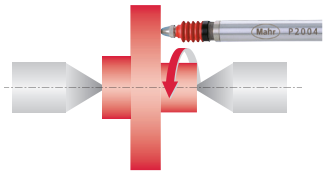
Thickness measurement

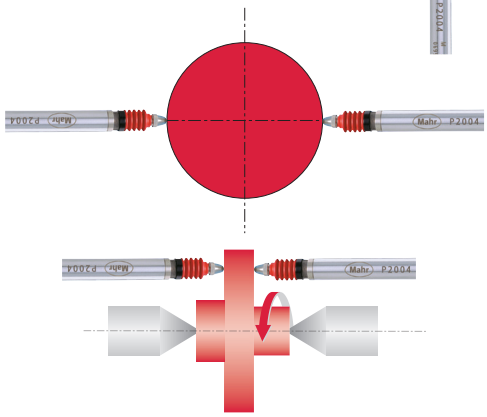


Radial run-out



Axial run-out

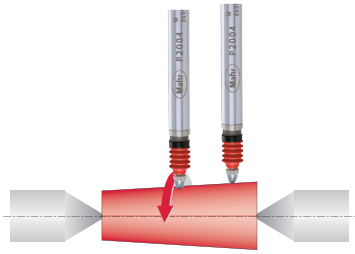




Difference measurement with 2 probes

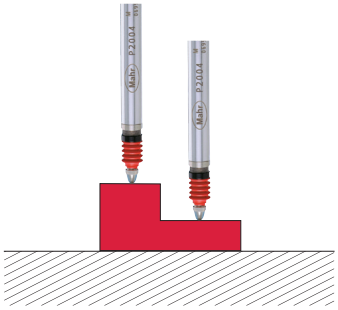
Shows the difference between the measured values acquired by 2 probes irrespective of the absolute dimension of the test piece. This is particularly suitable for dimensional comparison of two test points.

Form measurement of wedges, cones

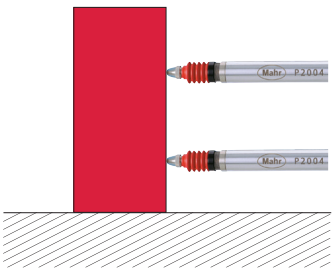


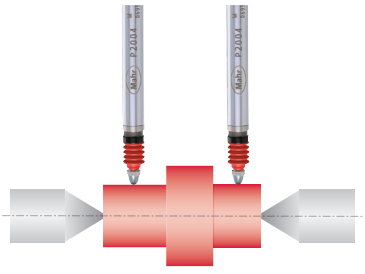
Height difference between 2 steps

Perpendicularity measurement



Concentricity measurement on 2 shaft diameters





Millimar. Electrical Length Measuring Instruments

INDUCTIVE PROBE PROGRAM

P1300-Series (Mahr half-bridge)

P1300 A

P1300 B

- Available in Mahr and Tesa compatibilities
- Well-proven and established Mahr half-bridge technology
- Easy to service: cable and probe can be seperated via the plug-in connector
- Simple to change to pneumatic lifting
- Measuring spindle runs in rotary stroke bearings

Page 304

P2000-Series

P2001

P2004

P2010 A

P2104 A

- Available in all prominent compatibilities (Available in various type compatibilities)
- Wide product spectrum measuring ranges from 1 to 10 mm plus models with a compressed air (pneumatic) lifter or vacuum retraction
- With rotary stroke bearings (except P2001)
- High linearity over the total measuring range
- Excellent electromagnetic shielding (EMC)
- All probes (except P2001) can be easily converted from axial to radial by mounting a slip-on cap, included in the scope of supply

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1301 / 1303 / 1304 K / 1318 (Mahr LVDT) / EHE-Series (Federal-LVDT)

1301

1303

1304 K

1318

EHE-2056

- Extremely robust in all operating conditions; measuring system is offset to guide and mounting shank
- Excellent clamping characteristics
- Measuring spindle runs in rotary stroke bearings (except 1318)
- Measuring spindle can be lifted with a cable release (1301/1303)
- Gaging pressure is less than 4g / .14 oz in either direction, with a change of less than 0.1 g per 25 µm / .0001" of contact travel and linearity of 0.1% over the full range ±0.250 mm ± .010", also clutch-mounted contact swivels through 280° arc for easy positioning (EHE-Series)

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1340 Mahr High Precision Probe

1340

- To obtain the best results, use in conjunction with Millitron C1240M
- Unprecedented measuring accuracy and minimum linearity error < 0.01 %, i.e. 0.4 µm over the total measuring range

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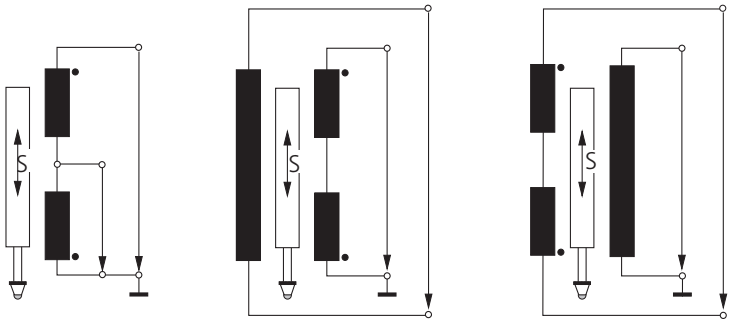
General Technical Data of Inductive Probes

The measuring principle of inductive probes is based on the change of position of the magnet's conductive core moving within a coil system. Generally, this is distinguished between a half-bridge and LVDT's.

The Mahr P2000 series of probes applies a high linear, patented VLDT transducer which is similar to an LVDT transducer. This also operates according to a differential transformer principle.



Half-bridge HB
(Differential Choke Coil)

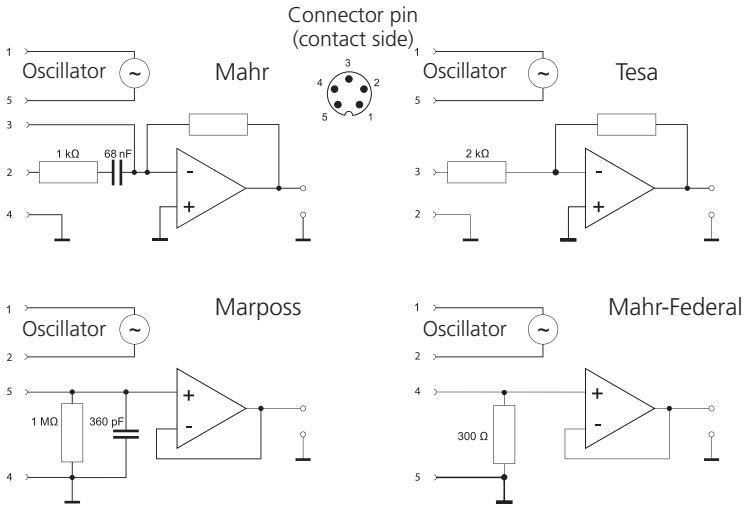
LVDT
(Linear Variable
Differential Transducer)

VLDT
(Very Linear
Differential Transducer)

Electrical specification of various compatibilities

		Type	Mahr	Tesa	Marposs	Mahr-Federal
Carrier frequency	KHz		19.4	13	7.5	5
Sensitivity	mV/V/mm	P2001 P2004 P2104	192	73.75	115	78.74
		P1300	192	73.75	—	—
		1301 1303 1304 K 1318	192	—	—	—
		P2010	19.2	29.5	11.5	7.874
Amplitude	Veff		5	3	3.5	2

Schematic drawings of Mahr input amplifiers according to the various compatibilities



Compact Amplifier Millimar 830M

- Battery operates more than 8 hours under full load
- Choice of Power Modules for 120 or 240 VAC operation
- ±2 volt analog output
- Conforms to CE Standards
- Dual input - for single or differential modes
- Normal/Reverse transducer setting
- Selectable ranges in either Inch or Metric units
- Calibration adjustments for each input
- Convenient, front-mounted controls
- Tilt base provides stable support and easy adjustment for best viewing angle
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		2121702	2121706	2121707
Product type		830M		
Range of analog display	**µm**	± 100, ± 20, ± 10		
Range of analog display	**inch**	± .004", ± .001", ± .0002"		
Graduation value	**µm**	5, 1, 0,5		
Graduation value	**inch**	200 µ", 50 µ", 10 µ"		
Probe inputs		2		
Compatibility		Mahr		
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B		
Response time analog display	**s**	0.5		
Response time analog output	**s**	0.015		
Data interface		none		
Analogue output		± 2 Vdc		
Energy supply		110 V / 60 Hz	230 V / 50 Hz, Mains adapter	240 V /50 Hz (UK)
Power supply connection		120 V	220 V (EU)	240 V (UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2121702	148	5.8"	165	6.5"	190	7.5"
2121706	148	5.8"	165	6.5"	190	7.5"
2121707	148	5.8"	165	6.5"	190	7.5"

Accessories

Order no.	Product name	Product type
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY–1015
2224530	Analog output connector	PRT–2380
2214166	Battery Eliminator for 110 V models	EKT–1237-W1
2211068	Battery charger 120 V	EBY–1016
2214167	Battery Eliminator for 220 V models	EKT–1237-W2
2211071	Battery charger (EU) 220 V	EBY–1019
2211072	Battery charger (UK) 240 V	EBY–1020

Compact Amplifier Millimar 830F

- Battery operates more than 8 hours under full load
- Choice of Power Modules for 120 or 240 VAC operation
- ±2 volt analog output
- Conforms to CE Standards
- Dual input - for single or differential modes
- Normal/Reverse transducer setting
- Selectable ranges in either Inch or Metric units
- Calibration adjustments for each input
- Convenient, front-mounted controls
- Tilt base provides stable support and easy adjustment for best viewing angle
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		2121700	2121704	2121705	2121703	2121710	2121711	2121701	2121708	2121709
Product type		830F								
Range of analog display	µm	± 100, ± 20, ± 10			± 200, ± 50, ± 10					
Range of analog display	inch	± .004", ± .001", ± .0002"			± .004", ± .001", ± .0001"			± .01", ± .002", ± .0004"		
Range of analog display	arc sec							± 1000 arc sec, ± 200 arc sec, ± 20 arc sec		
Graduation value	µm	5, 1, 0,5			10, 2,5, 0,5					
Graduation value	inch	200 µ", 50 µ", 10 µ"			200 µ", 50 µ", 5 µ"			500 µ", 100 µ", 20 µ"		
Graduation value	arc sec							50 sec, 10 sec, 1 sec		
Probe inputs		2								
Compatibility		Federal								
Response time analog display	s	0.5								
Response time analog output	s	0.015								
Data interface		none								
Analogue output		± 2 Vdc								
Energy supply		110 V / 60 Hz	230 V / 50 Hz, Mains adapter	240 V /50 Hz (UK)	110 V / 60 Hz	230 V / 50 Hz, Mains adapter	240 V /50 Hz (UK)	110 V / 60 Hz	230 V / 50 Hz, Mains adapter	240 V /50 Hz (UK)
Power supply connection		120 V	220 V (EU)	240 V (UK)	120 V	220 V (EU)	240 V (UK)	120 V	220 V (EU)	240 V (UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2121700	148	5.8"	165	6.5"	190	7.5"
2121704	148	5.8"	165	6.5"	190	7.5"
2121705	148	5.8"	165	6.5"	190	7.5"
2121703	148	5.8"	165	6.5"	190	7.5"
2121710	148	5.8"	165	6.5"	190	7.5"
2121711	148	5.8"	165	6.5"	190	7.5"
2121701	148	5.8"	165	6.5"	190	7.5"
2121708	148	5.8"	165	6.5"	190	7.5"
2121709	148	5.8"	165	6.5"	190	7.5"

Accessories

Order no.	Product description	Product type
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY–1015
2224530	Analog output connector	PRT–2380
2214166	Battery Eliminator for 110 V models	EKT–1237-W1
2211068	Battery charger 120 V	EBY–1016
2214167	Battery Eliminator for 220 V models	EKT–1237-W2
2211071	Battery charger (EU) 220 V	EBY–1019
2211072	Battery charger (UK) 240 V	EBY–1020

Compact Amplifier Millimar C1200

- **Functions:**
- ON/OFF
- mm/inch
- Reversal of counting direction
- Selectable measuring ranges
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- PRESET (for entering a numerical value)
- Switch resolution
- Factor (adjustable)
- DATA (data transmission)
- Menu interlock

- High-resolution, high-contrast color display
- Fully adjustable display for ideal viewing angle
- Extremely easy to operate
- Suitable for mains or battery operation
- Suitable for mobile use with battery operation
- Compact housing
- Suitable for wall mounting
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Power source, Instruction manual

Technical Data

Order no.		5312010
Product type		C1200
Range of digital display	µm	± 5000
Range of digital display	inch	± .19"
Range of analog display	µm	± 5000, ± 2000, ± 1000, ± 300, ± 100, ± 30, ± 10, ± 3
Range of analog display	inch	± .19", ± .07", ± .03", ± .01", ± .003", ± .001", ± .0003", ± .0001"
Resolution	µm	0,1
Resolution	inch	.000005"
Graduation value	µm	500, 200, 100, 20, 10, 2, 1, 0,2
Graduation value	inch	.019", .007", .002", .001", .0002", .0001", .00002", .00001"
Display		TFT color display, 110 mm (4.3"), 480x272 pixels
Probe inputs		1
Compatibility		Mahr
Measuring combination		+A, -A
Features		1
Test steps		1
Configuration		Keyboard
Data transmission rate	Values/s	30
Error limit, digital display		0,3 % (min. 0,2 µm)
Error limit, analog display		0,25 % of the full scale / 0,3% of the indicated value
Data interface		Opto RS232C, USB, Digimatic, Wireless
Energy supply		Mains adapter, 230 V/115 V; 50/60 Hz, Battery operation
IP protection category		IP 42

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5312010	150	5.9"	170	6.69"	130	5.12"

Accessories

Order no.	Product name	Product type
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r
4102232	Transmitter for e-Stick	2000 e
4102230	Receiver	e-Stick

e-Stick

Compact Amplifier Millimar 832 M

- Dynamics – simultaneously computes the minimum, maximum, TIR, nominal and actual gage-head signal for dynamic measurement capability
- Multi-Range – three selectable ranges in inch or metric units
- Message Center – display provides a simple "menu driven" setup procedure in English, French or Spanish
- RS–232 Output – for communicating with Data Collection Devices
- Two Gage Head Input, independent reading for providing the capability of summing diameter reading, matching clearances, runout and parallelism
- Angular units — selectable arc seconds or millirads for angular measurement applications (see Electronic Levels)
- User selectable password for full lockout capability or individual key lockout in both setup and gaging modes
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		2004000	2004001	2004002	2004003	2004004
Product type		832 M				
Range of digital display	**µm**	± 2000, ± 200, ± 20				
Range of digital display	**inch**	± .100", ± .010", ± .001"				
Range of digital display	**arc sec**	± 1000 arc sec, ± 200 arc sec				
Range of digital display	**rad**	± 5 mrad, ± 1 mrad				
Resolution	**µm**	1, 0,1, 0,02				
Resolution	**inch**	.0001", .00001", .000001"				
Resolution	**arc sec**	1 arc sec, 0.1 arc sec				
Resolution	**rad**	0.005 mrad, 0.0005 mrad				
Graduation value	**µm**	0,1, 0,01, 0,001				
Graduation value	**inch**	.005", .0005", .00005"				
Graduation value	**arc sec**	50 arc sec, 10 arc sec				
Tolerance display		5 LEDs				
Probe inputs		2				
Compatibility		Mahr				
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B				
Features		2				
Dynamic functions		Max, Min, TIR, Nominal				
Classification		5				
Response time control outputs	**s**	0.042				
Response time analog output	**s**	0.042				
Data interface		RS232C				
Control inputs		3, Hold/Resume, Reset/Zero, Send Data				
Control outputs		5 opto-coupled outputs				
Analogue output		± 5 V dc				
Energy supply		110 V / 60 Hz, Mains adapter	230 V / 50 Hz, Mains adapter	Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50–60 Hz via AC adapter		
Power supply connection		120 VAC	220 / 240 VAC (EU/UK)	120 VAC	220 VAC (EU)	240 VAC

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004000	254	10"	143	5.63"	168	6.63"
2004001	254	10"	143	5.63"	168	6.63"
2004002	254	10"	143	5.63"	168	6.63"
2004003	254	10"	143	5.63"	168	6.63"
2004004	254	10"	143	5.63"	168	6.63"

Compact Amplifier Millimar 832 F

RS232C

- Dynamics – simultaneously computes the minimum, maximum, TIR, nominal and actual gage-head signal for dynamic measurement capability
- Multi-Range – three selectable ranges in inch or metric units
- Message Center – display provides a simple "menu driven" setup procedure in English, French or Spanish
- RS–232 Output – for communicating with Data Collection Devices
- Two Gage Head Input, independent reading for providing the capability of summing diameter reading, matching clearances, runout and parallelism
- Angular units — selectable arc seconds or millirads for angular measurement applications (see Electronic Levels)
- User selectable password for full lockout capability or individual key lockout in both setup and gaging modes
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		2004005	2004006	2004007	2004008	2004009
Product type		832 F				
Range of digital display	**µm**	± 2000, ± 200, ± 20				
Range of digital display	**inch**	± .100", ± .010", ± .001"				
Range of digital display	**arc sec**	± 1000 arc sec, ± 200 arc sec				
Range of digital display	**rad**	± 5 mrad, ± 1 mrad				
Resolution	**µm**	1, 0,1, 0,02				
Resolution	**inch**	.0001", .00001", .000001"				
Resolution	**arc sec**	1 arc sec, 0.1 arc sec				
Resolution	**rad**	0.005 mrad, 0.0005 mrad				
Graduation value	**µm**	0,1, 0,01, 0,001				
Graduation value	**inch**	.005", .0005", .00005"				
Graduation value	**arc sec**	50 arc sec, 10 arc sec				
Tolerance display		5 LEDs				
Probe inputs		2				
Compatibility		Federal				
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B				
Features		2				
Dynamic functions		Max, Min, TIR, Nominal				
Classification		5				
Response time control outputs	**s**	0.042				
Response time analog output	**s**	0.042				
Data interface		RS232C				
Control inputs		3, Hold/Resume, Reset/Zero, Send Data				
Control outputs		5 opto-coupled outputs				
Analogue output		± 5 V dc				
Energy supply		110 V / 60 Hz, Mains adapter	Mains adapter, 230 V / 50 Hz	Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50–60 Hz via AC adapter		
Power supply connection		120 VAC	220 / 240 VAC (EU/UK)	120 VAC	220 VAC (EU)	220 / 240 VAC (EU/UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004005	254	10"	143	5.63"	168	6.63"
2004006	254	10"	143	5.63"	168	6.63"
2004007	254	10"	143	5.63"	168	6.63"
2004008	254	10"	143	5.63"	168	6.63"
2004009	254	10"	143	5.63"	168	6.63"

Accessories

Order no.	Product name	Product type
2212852	Oil splashguard storage cover non-transparent	ECV–1276
2212858	Oil splashguard cover transparent	ECV–1285
2211464	Foot switch for hold/measure 3 m / 10 ft cable	ECB–1857
2211465	Footswitch for Dynamic Reset (15 pin connector)	ECB–1858
2211466	Foot switch for data transmit, 3 m / 10 ft	ECB–1859
2200362	Foot Switch for send data (Maxμm) or dynamic reset/zeroing (832), 1,5m / 5 ft cable	300–50
2211462	Push button for dynamic reset/zeroing, 1,5 m / 5 ft cable	ECB–1855
2211467	Push button for data transmit, 1,5 m / 5 ft cable	ECB–1860
2211481	Push button for measurement hold/measure/data transmit, 3 m / 10 ft	ECB–1868
2214163	Control box with 5 Relays (120 V)	EKT–1236-W3
2214164	Control box with 5 Relays (220 V)	EKT–1236-W4
2214165	Control box with 5 Relays (240V)	EKT–1236-W5
2212333	Connector, 5-pin (Probe to amplifier)	ECN–1690
2212335	5pin Amphenol-connector for Millimar 832	ECN–1692
2212336	Phone plug male connector for Reset / Data	ECN–1693
2212339	9-Pin RS232 connector - male (Digital output)	ECN–1695-W1
2212340	15-Pin connector - male (Digital I/O)	ECN–1695-W2
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY–1015
2010000	Plug in Power Supply (832 units with 3 pin connector), 120 Vac	
2120315	Battery Charger for 832 Amp with 3 pin connector, 120 Vac	EBY–1028
2010001	Power Supply Module (832 amp with 3 pin connector), 220/240 Vac	
2120316	Battery Charger for 832 Amp with 3 pin connector, 220Vac Europe-an connector	EBY–1029
2120317	Battery Charger for 832 Amp with 3 pin connector, 240 Vac UK connector	EBY–1030

Compact Amplifier Millimar C 1208 M / C 1208 F / C 1216 M / C 1216 F / C1240 M

- Favorites: the SELECT button allows you to access frequently used settings directly
- Static measurements ± A, ±B and all combinations
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- Auto-detect mode. Up to 2 gages can be connected (inductive probe)
- Programmable via built-in keyboard or RS232 interface using MS Windows configuration software
- Backlit LCD for analog display and two-line digital display
- 5 three-color status lamps for warning and tolerance limits
- Up to 2 features can be displayed simultaneously
- extra resolution of 0,01 µm for a measuring range of ±200 µm (C1216, C1240 only)
- 2 inputs for inductive probes (compatible with either Mahr/ Mahr-Federal probes)
- RS232 interface
- 3 digital inputs for measuring start, master measurement, send measurement value, etc.
- 3 digital outputs for good, reject, rework, measuring time, etc.
- Analog output (C1216, C1240 only)
- programmable analog output voltage (max. ± 5 V) (C1216, C1240 only)
- Also compatible with Millimar 1340 high-precision probe (C1240 only)
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		5312080	5312082	5312160	5312162	5312163
Product type		C 1208 M	C 1208 F	C 1216 M	C 1216 F	C1240 M
Scale reading		Pointer, 61 graduations				
Digital display		7 digit LCD, 7 segments				
Range of digital display	µm	± 2000, ± 10000		± 200, ± 2000, ± 10000		
Range of analog display	µm	± 3, ± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related				
Range of analog display	inch	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .3", ± .1", tolerance related				
Resolution	µm	0,1		0,01, 0,1		
Resolution	inch	.000005"		.000005", .000001"		
Display		Background lit LCD,115 mm x 70 mm				
Tolerance display		5 LEDs, 3 colors				
Measuring range, inductive probe	µm	± 2000		± 200, ± 2000		
Probe inputs		2				
Compatibility		Mahr	Federal	Mahr	Federal	Mahr, Mahr 1340
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B				
Features		2				
Programs		2				
Test steps		1				
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Mean				
Configuration		PC, keyboard				
zero setter		Zero setting at any point				
Response time digital display	s	0.1				
Response time analog display	s	0.1				
Response time control outputs	s	0.02				
Response time analog output	s			0.02		
Response time measuring value memory	s	0.01				
Data transmission rate:	Values/s	40				
Error limit, digital display		0,3 % (min. 0,2 µm)				
Error limit, analog display		2.5% (10 x analog display)				
Error limit, analog output				0,5 %		
Temperature coefficient	µm/°C	0.005				
Data interface		RS232C, Wireless				
Control inputs		3 Optocoupler inputs, 24 V, 10 mA				
Control outputs		3 Optocoupler outputs, 24 V, 100 mA				
Analogue output				max. ± 5 V, sensitivity adjustable		
Energy supply		Mains adapter, 230 V/115 V; 50/60 Hz				
IP protection category		IP 42				

Compact Amplifier Millimar C 1208 M / C 1208 F / C 1216 M / C 1216 F / C1240 M

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5312080	165	6.5"	205	8.07"	160	6.29"
5312082	165	6.5"	205	8.07"	160	6.29"
5312160	165	6.5"	205	8.07"	160	6.29"
5312162	165	6.5"	205	8.07"	160	6.29"
5312163	165	6.5"	205	8.07"	160	6.29"

Accessories

Order no.	Product name	Product type
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7032401	25 pin connector, non-wired for I/O port	
3025712	Keypad dust cover	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Compact Amplifier Millimar C 1245 M / C 1245 T / C 1245 F / C 1245 /2*4M

- 16 characteristics can be defined
- With the formula editor (80 characters) the input channels C1 to C8 are mathematically linked with 4 basic arithmetical functions with factors and brackets
- Static measurements: current value, square root, arc tangent
- Dynamic measurements: Max, Min, Max-Min, Max+Min, mean
- Statistical **Functions:** n, x-bar, S, Xmax, Xmin, R
- Programmable via the integrated keypad or with MS-Windows configuration software via the RS232 interface
- Memory can store up to 500 measurements
- Measurement Start / Stop
- Analog indicator instrument for display of measurement values
- Two-line LCD for measuring values and help texts
- 5 three color status lamps for warning and tolerance limits
- Up to 3 features can be simultaneously displayed
- 2 input modules can be inserted into base unit
- Following modules are available:
- –4 or 8 inputs for Inductive Probes (Mahr, Mahr-Federal, Tesa compatiblity)
- –2 inputs for Incremental Probes
- RS232 interface
- 1 Analog output
- 3 digital inputs for measurement start, master measurement / zero, send data
- 6 digital outputs for GO, NO GO, rework, ALL GO, measuring time, 4 classes
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		5331250	5331251	5331253	5331291
Product type		C 1245 M	C 1245 T	C 1245 F	C 1245 /2*4M
Scale reading		145 mm x 80 mm			
Digital display		7 digit LCD, 7segments			
Range of digital display	µm	± 2000			
Range of analog display	µm	± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000			
Range of analog display	inch	± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3"			
Resolution	µm	0,1			
Display		analog scale, LCD 53 mm x 40 mm			
Tolerance display		5 LEDs, 3 colors			
Measuring range, inductive probe	µm	± 2000			
Probe inputs		4			8
Compatibility		Mahr	Tesa	Federal	Mahr
Measuring combination		Definition of the input combinations via formula editor			
Features		16			
Programs		6			
Test steps		6			
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Mean			
Statistical functions		N, x-bar, S, Xmax, Xmin, Range			
Classification		max. 998, max on I/O			
Configuration		PC, keyboard			
zero setter		Zero setting at any point			
Response time digital display	s	0.25			
Response time analog display	s	0.3			
Response time control outputs	s	0.02			
Response time analog output	s	0.02			
Response time measuring value memory	s	0.005			
Data transmission rate:	values/s	40			
Error limit, digital display		0,3 % (min. 0,2 µm)			
Error limit, analog display		2 %			
Error limit, analog output		0,1 %			
Temperature coefficient	µm/°C	0.005			
Data interface		RS232C, Wireless			
Control inputs		3 Optocoupler inputs, 24 V, 10 mA			
Control outputs		6 Optocoupler outputs, 24 V, 100 mA			
Analogue output		max. +/–4V, sensitivity adjustable			
Energy supply		230 V/115 V; 50/60 Hz			
IP protection category		IP 42			

Compact Amplifier Millimar C 1245 M / C 1245 T / C 1245 F / C 1245 /2*4M

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5331250	155	6.5"	210	8.07"	160	6.29"
5331251	155	6.5"	210	8.07"	160	6.29"
5331253	155	6.5"	210	8.07"	160	6.29"
5331291	155	6.5"	210	8.07"	160	6.29"

Accessories

Order no.	Product name	Product type
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7032401	25 pin connector, non-wired for I/O port	
3025712	Keypad dust cover	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Measurement Interface Millimar X 1715

- Static and dynamic measurements
- Equation editor
- Definition of 16 features are possible
- One or two point master measurement
- 1 to 8 measuring device inputs
- RS–232 interface
- Analog output
- 3 digital inputs and 6 digital outputs
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Power source, RS232C null modem cable, Instruction manual

Application:

Millimar X 1715 is a smartand universal measurementinterface system for complexmeasuring tasks on theproduction floor. It is ideal as asignal transformer betweensensors and the electronicmeasured data processsing.

Technical Data

Order no.		5331061	5331062	5331063	5331064
Product type		X 1715			
Resolution	µm	0,1			
Measuring range, inductive probe	µm	± 2000			
Both probe inputs		8		4	2
Compatibility		Mahr	Tesa	Mahr	
Measuring combination		Definition of the input combinations via formula editor			
Features		16			
Programs		6			
Test steps		6			
Dynamic functions		MAX, MIN, MAX-MIN, (MAX+MIN)/2, Mean			
Statistical functions		N, x-bar, S, Xmax, Xmin, Range			
Classification		max. 998, max. 5 on I/O			
Configuration		PC, keyboard			
Response time analog output	s	0,02			
Response time measuring value memory	s	0,005			
Data transmission rate	Values/s	40			
Error limit		0.3% (min. 0.2 µm)			
Temperature coefficient	µm/°C	0,005			
Data interface		RS232C, Wireless			
Control inputs		3 Optocoupler inputs, 24 V, 10 mA			
Control outputs		6 Optocoupler outputs, 24 V, 100 mA			
Analogue output		max. +/4V, sensitivity adjustable, 1 output			
Energy supply		230 V/115 V; 50/60 Hz			
IP protection category		IP 42			

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5331061	165	6.49"	160	6.30"	205	8.07"
5331062	165	6.49"	160	6.30"	205	8.07"
5331063	165	6.49"	160	6.30"	205	8.07"
5331064	165	6.49"	160	6.30"	205	8.07"

Measurement Interface Millimar X 1741

- Static and dynamic measurements
- Equation editor
- Definition of 16 features are possible
- One or two point master measurement
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Power source, RS232C null modem cable, Instruction manual

Application:

The Millimar X 1741 allows for easy and fast recording of measured values and calculating directly into the interface. Transfer only a few calculated features, thus increasing the reliability of your automated application.

Technical Data

Order no.		5331096	5331097	9037840	9038383
Product type		X 1741			
Resolution	µm	0,1			
Measuring range, inductive probe	µm	± 2000			
Both probe inputs		16	12	4	8
Compatibility		Mahr			
Measuring combination		Definition of the input combinations via formula editor			
Features		16			
Programs		6			
Test steps		6			
Dynamic functions		MAX, MIN, MAX-MIN, (MAX+MIN)/2, Mean			
Statistical functions		N, x-bar, S, Xmax, Xmin, Range			
Classification		max. 998, max. 79 on I/O			
Configuration		PC			
Response time control outputs	s	0,002			
Response time analog output	s	0,002			
Response time measuring value memory	s	0,005			
Data transmission rate	Values/s	40			
Error limit		0.3% (min. 0.2 µm)			
Error limit, analog output		5 %			
Temperature coefficient	µm/°C	0,005			
Data interface		RS232C, Wireless			
Control inputs		6 Optocoupler inputs, 24 V, 10 mA			
Control outputs		12 Optocoupler outputs, 24 V, 100 mA			
Analogue output		max. +/4V, sensitivity adjustable, 2 outputs			
Energy supply		230 V/115 V; 50/60 Hz			
IP protection category		IP 42			

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5331096	160	6.29"	235	9.25"	180	7.08"
5331097	160	6.29"	235	9.25"	180	7.08"
9037840	160	6.29"	235	9.25"	180	7.08"
9038383	160	6.29"	235	9.25"	180	7.08"

Measurement Interface Millimar X 1715 / X1741

Accessories

Order no.	Product name	Product type
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7032401	25 pin connector, non-wired for I/O port	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Amplifier with analog output Millimar 1901 TA

- Output voltage: ± 10 V (optional: ± 5 V / 0 V to 10 V) at end of measuring range. Output voltage can be set using jumpers.
- There is also an output signal available in the form of a current of ± 5 mA at the end of the measuring range
- Supply voltage 24 V, DC
- The housing of the 1901 TA is designed to fit inside the machine room
- Connection - One input for Mahr-compatible inductive probes
- **Scope of delivery:** 3 pin socket plug for analog output, 3 pin coupling bushing for power supply, Instruction manual

IP54

Application:

- The measuring amplifier 1901 TA is to be used in connection with an inductive probe for measurement control processes
- Provides the inductive probe with an AC voltage and converts the carrier fequency signal into output voltage

Technical Data

Order no.		5319011
Product type		1901 TA
Display		No display, amplifier with analog output
Measuring range, inductive probe	**µm**	± 125, ± 250, ± 500, ± 1000, ± 2000
Both probe inputs		1
Compatibility		Mahr
Features		1
Response time analog output	**s**	0,01
Data transmission rate	**Values/s**	90
Error limit, analog output		+/–0,3 %
Analogue output		• 1 output voltage: at end of range +/–10 V, Option: +/–5 V / 0–10 V • 1 current output: at end of range +/–5mA
Energy supply		24 V =
IP protection category		IP 54

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5319011	100	3.93"	170	6.69"	43	1.69"

Compact column amplifier Millimar S 1840 M / S 1840 F

- Easy-to-read 3-color analog display
- Measurement in conjunction with inductive probes (e. g. Mahr P2004) or electronic plug gages, etc.
- 2 inputs for inductive probes (compatible with probes from Mahr, Mahr-Federal, Tesa)
- Extensive calculation of input signals - ±A, ±B and all combinations
- Dynamic measurements - Max, Min, Max-Min, Average
- Programmable either via the integrated keypad or the RS232 interface by means of MS-Windows® configuration software
- Programmable warning and tolerance limits, exceeding the limit causes the color to change from yellow to red
- Backlit, two-line LCD for displaying measured values, help texts and units of measurement
- 1 analog output
- 3 digital inputs (e.g. measurement start, master measurement)
- 3 digital outputs for good – reject – rework, measuring time
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		5318400	5318402
Product type		S 1840 M	S 1840 F
Display		101 LED elements, 3 colors	
Scale reading		± .0003; .001; .003; .01; .03; .1; .3 inch	
Digital display		7 point LCD, 7 segment	
Range of digital display	µm	± 2000, ± 10000	
Range of analog display	µm	± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related	
Range of analog display	inch	± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related	
Resolution	µm	0,01, 0,1	
Tolerance display		via color changes in the analog display	
Measuring range, inductive probe	µm	± 200, ± 2000	
Both probe inputs		2	
Compatibility		Mahr	Federal
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B	
Features		2	
Programs		2	
Test steps		1	
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Mean	
Configuration		PC, keyboard	
Response time digital display	s	0,3	
Response time analog display	s	0,02	
Response time control outputs	s	0,02	
Response time analog output	s	0,02	
Response time measuring value memory	s	0,008	
Data transmission rate	Values/s	40	
Error limit, digital display		0,3% (min. 0,2 µm)	
Error limit, analog display		1% (101 LEDs)	
Temperature coefficient	µm/°C	0,005	
Data interface		RS232C, Wireless	
Control inputs		3 Optocoupler Inputs, 24 V, 10 mA	
Control outputs		3 Optocoupler Outputs, 24 V, 100 mA	
Analogue output		max. +/–5V, sensitivity adjustable	
Energy supply		Power source, 230 V/115 V; 50/60 Hz	
IP protection category		IP 42	

Compact column amplifier Millimar S 1840 M / S 1840 F

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5318400	144	5.67″	487	19.17″	47	1.85″
5318402	144	5.67″	487	19.17″	47	1.85″

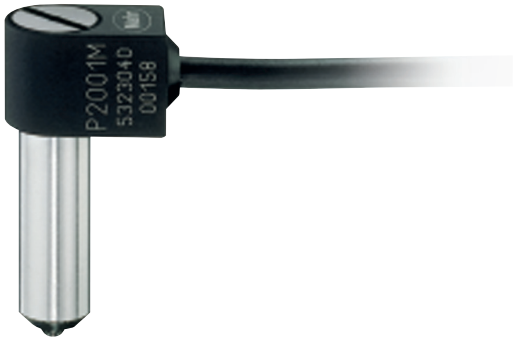
Accessories

Order no.	Product name	Product type
5330901	Base Plate for up to 3 columns	
5330902	Wall Mounting	
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7032401	25 pin connector, non-wired for I/O port	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Inductive Probe Millimar P2001

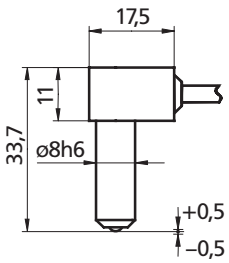
IP40



- Compact design
- Plain bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone

Technical Data

Order no.		5323040	5323041	5323043	5323044
Product type			P2001		
Measuring range	mm		± 0,5		
Measuring force	N		0,75 N +/–0,15 N		
Increase in measuring force	N/mm		0,1 N/mm		
Sensitivity deviation	%		0,3		
Repeatability f_w	µm		0,15		
Hysteresis f_u	µm		0,2		
Linearity deviation within +/–0,1 mm	µm		0,6		
Linearity deviation within +/–0,5 mm	µm		1,5		
IP protection category			IP 40		
Cable length	m		2,5		
Temperature coefficient	µm/°C		0,15		
Compatibility		Mahr VLDT	Tesa	Marposs	Federal



Inductive Probe Millimar P2001

Accessories

Order no.	Product description	Compati-bility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
5323133	Extension cable 2.5 m (Marposs)	Marposs	C2025 U
5323143	Extension cable 5 m (Marposs)	Marposs	C2050 U
5323153	Extension cable 7.5 m (Marposs)	Marposs	C2075 U
5323163	Extension cable 10 m (Marposs)	Marposs	C2100 U
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2004

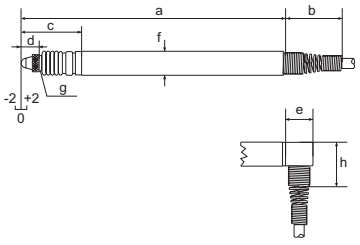
IP64

- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included in the scope of supply)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5323010	5323011	5323013	5323014
Product type		P2004			
Measuring range	**mm**	± 2			
Measuring range	**inch**	± .079"			
Distance to upper stop	**mm...mm**	+2.2 . . . 4.4			
Distance to upper stop	**inch...inch**	+ .09 ... .173"			
Distance to lower stop	**mm...mm**	–2.2 . . . 0			
Distance to lower stop	**inch...inch**	–.09 ... 0"			
Lifter / retraction		Standard model			
Measuring force	**N**	0,75 N +/–0,15 N			
Increase in measuring force	**N/mm**	0,2 N/mm			
Sensitivity deviation	**%**	0.3			
Repeatability f_w	**µm**	0.1			
Repeatability f_w	**inch**	4 µ"			
Hysteresis f_u	**µm**	0.5			
Hysteresis f_u	**inch**	20 µ"			
Linearity deviation within +/–0,5 mm	**µm**	0.4			
Linearity deviation within +/–.020"	**inch**	16 µ"			
Linearity deviation within +/–1,0 mm	**µm**	1.5			
Linearity deviation within +/–.039"	**inch**	60 µ"			
Linearity deviation within +/–2,0 mm	**µm**	3			
Linearity deviation within +/–.079"	**inch**	120 µ"			
IP protection category		IP 64			
Cable length	**m**	2.5			
Temperature coefficient	**µm/°C**	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	a	b	c	d	e	f	Dimension f	h
		mm	mm	mm	mm	mm	mm	inch	mm
5323010	M 2,5	88.7	28	21.3	6	9.2	8		14
5323011	M 2,5	88.7	28	21.3	6	9.2	8		14
5323013	M 2,5	88.7	28	21.3	6	9.2	8		14
5323014	4/48 UNF	88.7	28	21.3	6	9.2		0.375	14



Inductive Probe Millimar P2004

Accessories

Order no.	Product name	Compati-bility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
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		
7021546	Sealing bellows for probes with measuring spring		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2004 A

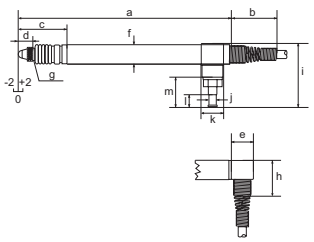
IP64

- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included in the scope of supply)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5323020	5323021	5323023	5323024
Product type		P2004 A			
Measuring range	**mm**	± 2			
Measuring range	**inch**	± .079"			
Distance to upper stop	**mm...mm**	+2.2 . . . 4.4			
Distance to upper stop	**inch...inch**	+ .09 ... .173"			
Distance to lower stop	**mm...mm**	–2.2 . . . 0			
Distance to lower stop	**inch...inch**	–.09 ... 0"			
Lifter / retraction		Vacuum Lifter			
Measuring force	**N**	0,75 N +/–0,15 N			
Increase in measuring force	**N/mm**	0,2 N/mm			
Sensitivity deviation	**%**	0.3			
Repeatability f_w	**µm**	0.1			
Repeatability f_w	**inch**	4 µ"			
Hysteresis f_u	**µm**	0.5			
Hysteresis f_u	**inch**	20 µ"			
Linearity deviation within +/–0,5 mm	**µm**	0.4			
Linearity deviation within +/–.020"	**inch**	16 µ"			
Linearity deviation within +/–1,0 mm	**µm**	1.5			
Linearity deviation within +/–.039"	**inch**	60 µ"			
Linearity deviation within +/–2,0 mm	**µm**	3			
Linearity deviation within +/–.079"	**inch**	120 µ"			
IP protection category		IP 64			
Cable length	**m**	2.5			
Temperature coefficient	**µm/°C**	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5323020	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323021	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323023	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323024	4/48 UNF	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2004 A

Accessories

Order no.	Product name	Compati-bility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
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		
5313420	Pneumatic Hand-Lifter for 1 Probe		1340/1
5313419	Pneumatic Foot Switch for max. 4 Probes		1340/1F
7021546	Sealing bellows for probes with measuring spring		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2004 B

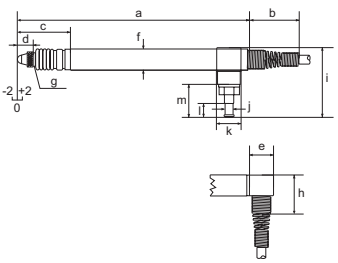
IP64

- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included in the scope of supply)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5323030	5323031	5323033	5323034
Product type		P2004 B			
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+2.2 . . . 4.4			
Distance to upper stop	inch... inch	+ .09 ... .173"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch... inch	–.09 ... 0"			
Lifter / retraction		Compressed Air Retraction (max. 1 bar)			
Measuring force	N	depending upon air pressure			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.1			
Repeatability f_w	inch	4 µ"			
Hysteresis f_u	µm	0.5			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0,5 mm	µm	0.4			
Linearity deviation within +/–.020"	inch	16 µ"			
Linearity deviation within +/–1,0 mm	µm	1.5			
Linearity deviation within +/–.039"	inch	60 µ"			
Linearity deviation within +/–2,0 mm	µm	3			
Linearity deviation within +/–.079"	inch	120 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5323030	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323031	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323033	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323034	4/48 UNF	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2004 B

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028220	Sealing bellows for probes with air retraction		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2010 A

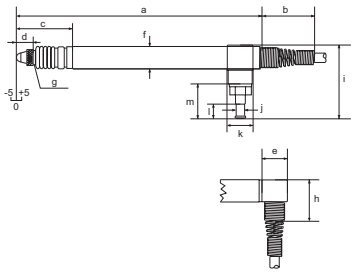
IP64

- Models with or without compressed air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5324020	5324021	5324023	5324024
Product type		P2010 A			
Measuring range	mm	± 5			
Measuring range	inch	± .197"			
Distance to upper stop	mm...mm	+5.3			
Distance to upper stop	inch...inch	+ .20"			
Distance to lower stop	mm...mm	–5.3			
Distance to lower stop	inch...inch	–.20"			
Lifter / retraction		Vacuum Lifter			
Measuring force	N	0,75 N +/–0,15 N			
Increase in measuring force	N/mm	0,1 N/mm			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	1			
Hysteresis f_u	inch	40 µ"			
Linearity deviation within +/–2,0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
Linearity deviation within +/–5,0 mm	µm	20			
Linearity deviation within +/–.197"	inch	200 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5324020	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324021	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324023	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324024	4/48 UNF	3,6	9	8,3	12,5	125,7	28	34	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2010 A

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028212	Measuring spring 0.25 N		
7027764	Measuring spring 0.5 N		
7028213	Measuring spring 0.75 N		
7028214	Measuring spring 1.0 N		
7028215	Measuring spring 1.25 N		
7027758	Sealing bellows long for probes with measuring spring		
5313419	Pneumatic Foot Switch for max. 4 Probes		1340/1F
5313420	Pneumatic Hand-Lifter for 1 Probe		1340/1
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2010 B

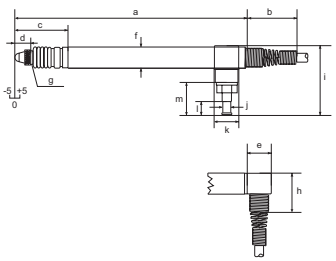
IP64

- Models with or without compressed air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5324030	5324031	5324033	5324034
Product type		P2010 B			
Measuring range	mm	± 5			
Measuring range	inch	± .197"			
Distance to upper stop	mm...mm	+5.3			
Distance to upper stop	inch...inch	+ .20"			
Distance to lower stop	mm...mm	–5.3			
Distance to lower stop	inch...inch	–.20"			
Lifter / retraction		Compressed Air Retraction (max. 1 bar)			
Measuring force	N	depending upon air pressure			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	1			
Hysteresis f_u	inch	40 µ"			
Linearity deviation within +/–2,0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
Linearity deviation within +/–5,0 mm	µm	20			
Linearity deviation within +/–.197"	inch	200 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5324030	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324031	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324033	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324034	4/48 UNF	3,6	9	8,3	12,5	125,7	28	34	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2010 B

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028221	Sealing bellows long for probes with air retraction		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2104 A

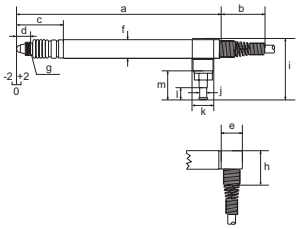
IP64

- Models with pneumatic lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5324070	5324071	5324073	5324074
Product type		P2104 A			
Measuring range	**mm**	± 2			
Measuring range	**inch**	± .079"			
Distance to upper stop	**mm...mm**	+8.4 . . . 10.4			
Distance to upper stop	**inch...inch**	.33 ... .41"			
Distance to lower stop	**mm...mm**	–2.2 . . . 0			
Distance to lower stop	**inch...inch**	–.09 ... 0"			
Lifter / retraction		Vacuum Lifter			
Measuring force	**N**	0,75 N +/–0,15 N			
Increase in measuring force	**N/mm**	0,1 N/mm			
Sensitivity deviation	**%**	0.3			
Repeatability f_w	**µm**	0.2			
Repeatability f_w	**inch**	8 µ"			
Hysteresis f_u	**µm**	0.5			
Hysteresis f_u	**inch**	20 µ"			
Linearity deviation within +/–0,5 mm	**µm**	0.5			
Linearity deviation within +/–.020"	**inch**	20 µ"			
Linearity deviation within +/–1,0 mm	**µm**	2			
Linearity deviation within +/–.039"	**inch**	80 µ"			
Linearity deviation within +/–2,0 mm	**µm**	4			
Linearity deviation within +/–.079"	**inch**	160 µ"			
IP protection category		IP 64			
Cable length	**m**	2.5			
Temperature coefficient	**µm/°C**	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5324070	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324071	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324073	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324074	4/48 UNF	3,6	9	8,3	12,5	128,7	28	37	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2104 A

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028212	Measuring spring 0.25 N		
7027764	Measuring spring 0.5 N		
7028213	Measuring spring 0.75 N		
7028214	Measuring spring 1.0 N		
7028215	Measuring spring 1.25 N		
7027758	Sealing bellows long for probes with measuring spring		
5313420	Pneumatic Hand-Lifter for 1 Probe		1340/1
5313419	Pneumatic Foot Switch for max. 4 Probes		1340/1F
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2104 B

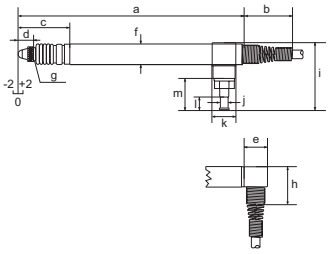
IP64

- Models with pneumatic lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5324080	5324081	5324083	5324084
Product type		P2104 B			
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+8.4 . . . 10.4			
Distance to upper stop	inch...inch	.33 ... .41"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch...inch	–.09 ... 0"			
Lifter / retraction		Compressed Air Retraction (max. 1 bar)			
Measuring force	N	depending upon air pressure			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	0.5			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0,5 mm	µm	0.5			
Linearity deviation within +/–.020"	inch	20 µ"			
Linearity deviation within +/–1,0 mm	µm	2			
Linearity deviation within +/–.039"	inch	80 µ"			
Linearity deviation within +/–2,0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5324080	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324081	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324083	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324084	4/48 UNF	3,6	9	8,3	12,5	128,7	28	37	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2104 B

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028221	Sealing bellows long for probes with air retraction		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P1300 MA / P1300 MA without cable

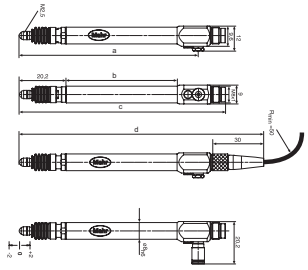
IP64

- Mahr compatibility
- Well-proven and established Mahr half-bridge technology
- Very easy to service: cables and probes can be separated via the plug-in connector
- Easy to convert to pneumatic lifting
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, Spanner for preliminary stroke setting, Hose connector for compressed air

Technical Data

Order no.		4400180	4400182
Product type		P1300 MA	P1300 MA without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Vacuum Lifter (Standard option)	
Measuring force	N	0,75 N +/–0,15 N	
Increase in measuring force	N/mm	0,3 N/mm	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0,5 mm	µm	0.4	
Linearity deviation within +/–.020"	inch	16 µ"	
Linearity deviation within +/–1,0 mm	µm	1.5	
Linearity deviation within +/–.039"	inch	60 µ"	
Linearity deviation within +/–2,0 mm	µm	3	
Linearity deviation within +/–.079"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Mahr half-bridge	

Order no.	a	b	c	d
	mm	mm	mm	mm
4400180	85,6	53,3	98,6	125
4400182	85,6	53,3	98,6	125



Accessories

Order no.	Product 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
4400238	Hose Connector 90° offset
7021546	Sealing bellows for probes with measuring spring
7026827	Measuring spring 0.25 N
7026828	Measuring spring 0.5 N
7026849	Measuring spring 0.75 N
7025579	Measuring spring 1.0 N
7025505	Measuring spring 1.25 N

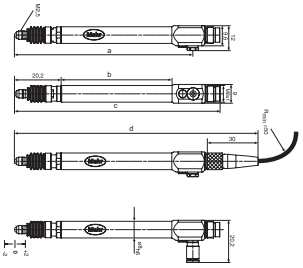
Inductive Probe Millimar P1300 MB / P1300 MB without cable

- Mahr compatibility
- Proven Mahr half-bridge technology
- Compressed Air Retraction
- Easy to service: cable and probe can be seperated via the plug in connector
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, Spanner for preliminary stroke setting, Hose connector for compressed air

IP64

Technical Data

Order no.		4400181	4400183
Product type		P1300 MB	P1300 MB without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Compressed Air Retraction (max. 1 bar)	
Measuring force	N	depending upon air pressure	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0,5 mm	µm	0.4	
Linearity deviation within +/–.020"	inch	16 µ"	
Linearity deviation within +/–1,0 mm	µm	1.5	
Linearity deviation within +/–.039"	inch	60 µ"	
Linearity deviation within +/–2,0 mm	µm	3	
Linearity deviation within +/–.079"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Mahr half-bridge	



Order no.	a	b	c	d
	mm	mm	mm	mm
4400181	85,6	53,3	98,6	125
4400183	85,6	53,3	98,6	125

Accessories

Order no.	Product 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
4400238	Hose Connector 90° offset
7028220	Sealing bellows for probes with air retraction

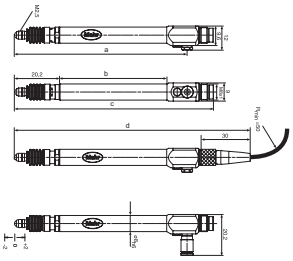
Inductive Probe Millimar P1300 TA / P1300 TA without cable

IP64

- Tesa compatibility
- Tesa half-bridge technology
- Easy to service: cable and probe can be seperated via the plug in connector
- Easy to convert to pneumatic lifting
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, Spanner for preliminary stroke setting, Hose connector for compressed air

Technical Data

Order no.		4400190	4400192
Product type		P1300 TA	P1300 TA without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Vacuum Lifter (Standard option)	
Measuring force	N	0,75 N +/–0,15 N	
Increase in measuring force	N/mm	0,3 N/mm	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0,5 mm	µm	1	
Linearity deviation within +/–.020"	inch	40 µ"	
Linearity deviation within +/–1,0 mm	µm	3	
Linearity deviation within +/–.039"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Tesa	



Order no.	a	b	c	d
	mm	mm	mm	mm
4400190	94,2	61,9	107,2	133,6
4400192	94,2	61,9	107,2	133,6

Accessories

Order no.	Product 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
4400238	Hose Connector 90° offset
7021546	Sealing bellows for probes with measuring spring
7026827	Measuring spring 0.25 N
7026828	Measuring spring 0.5 N
7026849	Measuring spring 0.75 N
7025579	Measuring spring 1.0 N
7025505	Measuring spring 1.25 N

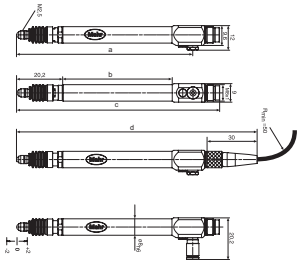
Inductive Probe Millimar P1300 TB / P1300 TB without cable

- Tesa compatibility
- Tesa half-bridge technology
- Compressed Air Retraction
- Easy to service: cable and probe can be seperated via the plug in connector
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, Spanner for preliminary stroke setting, Hose connector for compressed air

IP64

Technical Data

Order no.		4400191	4400193
Product type		P1300 TB	P1300 TB without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Compressed Air Retraction (max. 1 bar)	
Measuring force	N	depending upon air pressure	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0,5 mm	µm	1	
Linearity deviation within +/–.020"	inch	40 µ"	
Linearity deviation within +/–1,0 mm	µm	3	
Linearity deviation within +/–.039"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Tesa	



Order no.	a	b	c	d
	mm	mm	mm	mm
4400191	94,2	61,9	107,2	133,6
4400193	94,2	61,9	107,2	133,6

Accessories

Order no.	Product 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
4400238	Hose Connector 90° offset
7028220	Sealing bellows for probes with air retraction

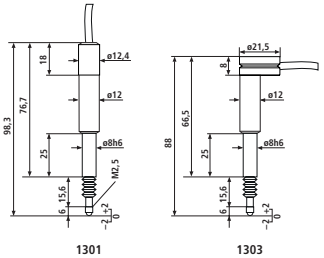
Inductive Probe Millimar 1301 / 1303

IP64

- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Measuring pin mounted in ball-bearing guide
- Measuring pin can be lifted using wire lifter
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Spanner for preliminary stroke setting

Technical Data

Order no.		5313010	5313030
Product type		1301	1303
Measuring range	mm	± 1	
Measuring range	inch	± .039"	
Distance to upper stop	mm...mm	+2.7	
Distance to upper stop	inch...inch	+ .106"	
Distance to lower stop	mm...mm	–1.1 . . . 0	
Distance to lower stop	inch...inch	–.043 ... 0"	
Lifter / retraction		Cable release	
Measuring force	N	0,75 N +/–0,15 N	
Increase in measuring force	N/mm	0,4 N/mm	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.2	
Hysteresis f_u	inch	8 µ"	
Linearity deviation within +/–0,5 mm	µm	0.5	
Linearity deviation within +/–.020"	inch	20 µ"	
Linearity deviation within +/–1,0 mm	µm	2	
Linearity deviation within +/–.039"	inch	80 µ"	
IP protection category		IP 64	
Cable length	m	1.5	
Temperature coefficient	µm/°C	0.09	
Compatibility		Mahr LVDT	



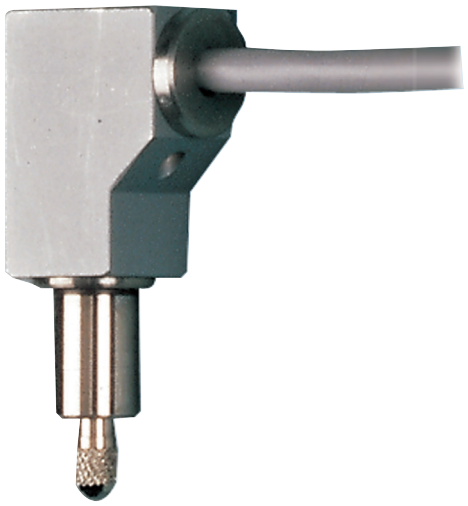
1301 1303

Accessories

Order no.	Product description	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2,5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7,5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10
5313990	Cable Release with clamp for 1301 / 1303		1399

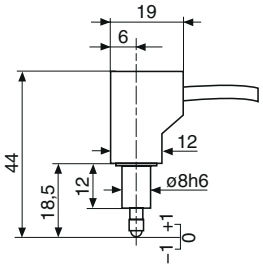
Inductive Probe Millimar 1304 K

- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Measuring pin mounted in ball bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone



Technical Data

Order no.		5313049
Product type		1304 K
Measuring range	mm	± 1
Measuring range	inch	± .039"
Distance to upper stop	mm...mm	+1.1
Distance to upper stop	inch...inch	+ .043"
Distance to lower stop	mm...mm	1.1
Distance to lower stop	inch...inch	–.043"
Measuring force	N	0,75 N +/–0,15 N
Increase in measuring force	N/mm	0,15 N/mm
Sensitivity deviation	%	1
Repeatability f_w	µm	0.15
Repeatability f_w	inch	6 µ"
Hysteresis f_u	µm	0.2
Hysteresis f_u	inch	8 µ"
Linearity deviation within +/–0,5 mm	µm	1
Linearity deviation within +/–.020"	inch	40 µ"
Linearity deviation within +/–1,0 mm	µm	4
Linearity deviation within +/–.039"	inch	160 µ"
IP protection category		IP 62
Cable length	m	1.5
Temperature coefficient	µm/°C	0.15
Compatibility		Mahr LVDT



Accessories

Order no.	Product description	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2,5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7,5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10

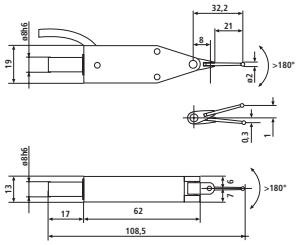
Inductive Probe Millimar 1318

IP50

- Dial test indicator inductive probe
- Flexible probe adjustment to contact surface
- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone

Technical Data

Order no.		5313180
Product type		1318
Measuring range	mm	–0.3 . . . 1
Measuring range	inch	–.12 ... + .39"
Distance to upper stop	mm...mm	+1.6
Distance to upper stop	inch...inch	+ .063"
Distance to lower stop	mm...mm	–0.37
Distance to lower stop	inch...inch	–.0146"
Measuring force	N	0,25 N +/–0,05 N
Increase in measuring force	N/mm	0,04 N/mm
Sensitivity deviation	%	0.5
Repeatability f_w	µm	0.03
Repeatability f_w	inch	1.2 µ"
Hysteresis f_u	µm	0.5
Hysteresis f_u	inch	20 µ"
Linearity deviation within +/–0,3 mm	µm	0.9
Linearity deviation within +/–.012"	inch	36 µ"
IP protection category		IP 50
Cable length	m	1.5
Compatibility		Mahr LVDT



Accessories

Order no.	Product description	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2,5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7,5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10
7003901	Stylus ø 0,5 mm, Carbide, l = 21 mm		
7003902	Stylus ø 1,0 mm, Carbide, l = 21 mm		
3005223	Stylus ø 2,0 mm, Carbide, l = 21 mm		
7003903	Stylus ø 3,0 mm, Carbide, l = 21 mm		
8004231	Stylus ø 2,0 mm, Ruby, l = 21 mm		

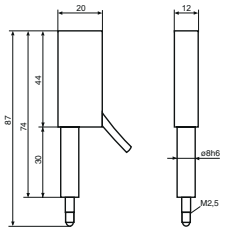
Inductive Probe Millimar 1340

- Only for use in conjunction with the Millimar C 1240 M compact length measuring instrument
- Maximum measuring accuracy and minimum linearity deviation < 0.01 %, i.e. 0.4 µm over the entire measuring range
- Probe protected against dirt and moisture, can therefore be used close to production
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone

IP64

Technical Data

Order no.		5313400
Product type		1340
Measuring range	mm	± 2
Measuring range	inch	± .079"
Distance to upper stop	mm...mm	+3
Distance to upper stop	inch...inch	+ .118"
Distance to lower stop	mm...mm	–2.2
Distance to lower stop	inch...inch	–.09"
Lifter / retraction		Vacuum Lifter
Measuring force	N	0,75 N
Increase in measuring force	N/mm	0,08 N/mm
Sensitivity deviation	%	0.3
Repeatability f_w	µm	0.08
Repeatability f_w	inch	3.15 µ"
Hysteresis f_u	µm	0.08
Hysteresis f_u	inch	3.15 µ"
Linearity deviation within +/–1,0 mm	µm	0.15
Linearity deviation within +/–.039"	inch	6 µ"
Linearity deviation within +/–2,0 mm	µm	0.4
Linearity deviation within +/–.079"	inch	16 µ"
IP protection category		IP 64
Cable length	m	1.5
Temperature coefficient	µm/°C	0.6
Compatibility		Mahr 1340



Accessories

Order no.	Product description	Product type
5313420	Pneumatic Hand-Lifter for 1 Probe	1340/1
5313419	Pneumatic Foot Switch for max. 4 Probes	1340/1F

Inductive Probe Millimar EHE–2048 / EHE–2050 / EHE–2052 / EHE–2056

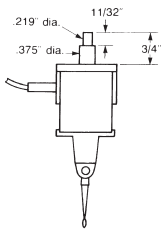
Clutch-mounted contact swivels through 280° arc for easy positioning

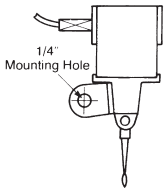
Application:

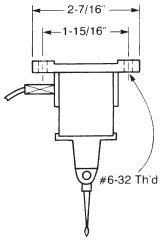
For use on test stands, surface plate work, or where light pressure is needed

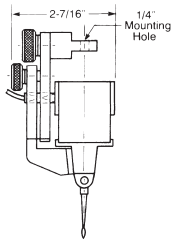
Technical Data

Order no.		2120417	2120419	2120420	2120422
Product type		EHE–2048	EHE–2050	EHE–2052	EHE–2056
Probe type		Post Bracket Back, (BK–108) tamper-proof mounted	Fixed Nose Mount (EAM–1045), tamper-proof mounted	Fixed Back Plate, (EPL–1140) tamper-proof mounted	Adjustable Nose Mount (EAT–1010), tamper-proof mounted. 3,8 mm /.150" fine adjustment for quick setup
Measuring range	**mm**	± 0.25			
Measuring range	**inch**	± .010"			
Measuring force	**N**	0,04 N (.14 oz.) in either direction			
Increase in measuring force	**N/mm**	0,001 N / 25µm			
Repeatability f_w	**µm**	0.1			
Repeatability f_w	**inch**	4 µ"			
Linearity deviation within +/–0,250 mm		0.1% (over full range)			
Linearity deviation within +/–.010"		0.1% (over full range)			
Cable length	**m**	1.2			
Compatibility		Federal			



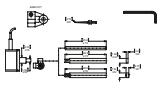




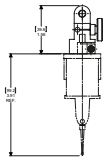


Accessories

Order no.	Product name	Compatibility	Product type
2216178	Stylus ø 1.6 mm/.062", Steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT–1004
2216180	Stylus ø 1.6 mm/.062" involute, Steel, l = 27.6 mm/1.085", 1:1 ratio up to 20°, involute tip	Federal	EPT–1008
2216179	Stylus ø 0.787 mm/.031", Carbide, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT–1007
2216184	Stylus ø 0.787 mm/.031", Steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT–1013
2216217	Stylus ø 1.6 mm/.062", Sapphire, l = 27.6 mm/1.085", 1:1 Ratio	Federal	EPT–1059-W1
2185448	Stylus ø 1.6 mm/.062", Sapphire, l = 122.8 mm/4.835", 4:1 ratio	Federal	EPT–1059-W4
2216218	Stylus ø 1.6 mm/.062", Sapphire, l = 59.3 mm/2.335", 2:1 Ratio	Federal	EPT–1059-W2
2185449	Stylus ø 1.6 mm/.062", Sapphire, l = 154.6 mm/6.085", 5:1 ratio	Federal	EPT–1059-W5
2216219	Stylus ø 1.6 mm/.062", Sapphire, l = 91.1 mm/3.585", 4:1 ratio	Federal	EPT–1059-W3
2208685	Adaptor to mount EHE–2048 on Model 2400 Stand		EAM–1071
2208910	Accessories kit for EHE–2048. Includes EAM–1071, CP–116, EPT–1013,two rectangular holding bars and a holding rod		EAS–1333
2210400	Fine adjust attachememt for EHE–2048		EAT–1026
2206061	Clamp for mounting EHE–2048 on model 2300 Stand		CP–116
2211459	Gagehead Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
2215585	Back plate mounting bracket for EHE–2052		EPL–1140
2210399	Adjustable nose mounting bracket for EHE–2056		EAT–1010



EAS–1333



EAT–1026

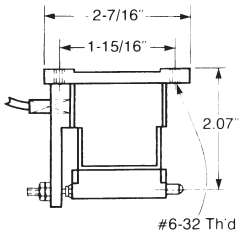
ECB–1852

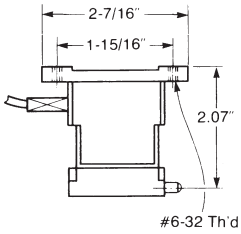
Inductive Probe Millimar EHE–2049 / EHE–2053 / EGH–2006 / EGH–2011

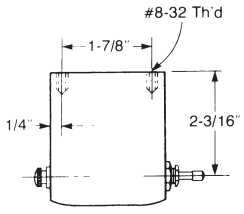
- Friction-free, straight line motion
- Adjustable pre-travel
- Gaging pressure provided by external spring, adjustable
- Contact Points (PT–223 normally furnished)

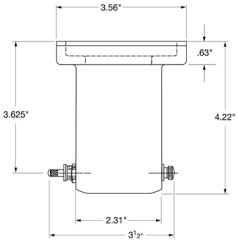
Technical Data

Order no.		2120418	2120421	2213258	2213259
Product type		EHE–2049	EHE–2053	EGH–2006	EGH–2011
Probe type		Pressure Spring mount, tamper-proof mounted. Permits setting pre-travel and provides ample gaging pressure regardless of Gagehead position	Fixed Back Plate EPL–1140 (15,8 mm / 0.625" wide), tamper-proof mounted. Provides means of attachment for mounting on adjustable plates or slides in fixtures for continuous duty application.	Housing is extended and equipped with heavy duty back plate forming suitable support for use with Model 700 Comparator Stand	Protective Housing encloses head in tamper-proof mounting. Permits adjustment of both gaging pressure and pre-travel.
Measuring range	**mm**	± 0.25			
Measuring range	**inch**	± .010"			
Measuring force	**N**	Adjustalbe 0,85 –4N (3oz. –14 oz.)			
Repeatability f_w	**µm**	0.01			
Repeatability f_w	**inch**	.5 µ"			
Linearity deviation within +/–0,250 mm		0.05% (over full range)			
Linearity deviation within +/–.010"		0.05% (over full range)			
Cable length	**m**	2.4			
Compatibility		Federal			



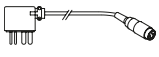






Accessories

Order no.	Product name	Compatibility	Product type
2211459	Gagehead Adaptor Cable. Adapts EHE–2XXX and P2XXXF gage heads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852



ECB–1852

Electronic levels - Differential Level System

RS232C

Application:

Used to determine any deviation in the right angle relationship between a horizontal surface and the earth's gravitational force (usually expressed as an angular or linear deviation from absolute level).

- Show any change in this comparison over time
- Compare the orientation attitude of separate or adjacent horizontal surfaces
- Level systems are angular-linear compatible
- Sensing heads are interchangeable with Federal electrical spec.'s to accommodate linear measurements
- Fast Response: quick response to slight angular changes permit taking fast and accurate measurements at various sensing head positions or taking dynamic position readings
- Resolution/Repeatability: Mahr Federal's Electronic Levels far exceed the sensitivity and accuracy of precision spirit levels with a resolution to 6 µin per foot (.1 arc second), compared to the spirit level's resolution of .0001" per foot. With repeatability at ±.1 arc second, Electronic Levels are ideal for ultra-high resolution profiling.
- Direct Dimensional Readout: multiplier feature permits operator to view displacement caused by the angular measurement of the level head; this is displayed as an inches per foot readout rather than arc seconds; eliminates readout confusion when switching from spirit levels to electronic levels
- Angular-Linear Compatible: sensing heads are easily interchangeable with Federal electrical spec.'s to accommodate linear measurements
- Electronic levels are much easier to use with an autocollimator or a laser based calibration system
- Performance is comparable and results are obtained without time consuming sight path alignments, cleaning of sensitive optical surfaces or hard to control environmental conditions
- The differential level system operates simultaneously with a single amplifier, permitting an immediate comparison between two surfaces
- Adjustable bases permit setup on surfaces that are out-of-level or square by as much as ± 1.5°
- **Scope of delivery:** Indicating instrument 832 F, 2 electronic level heads EGH–2103-W2 with 6m/20ft cable, 2 adjustable mounts EAT–1029, Remote data entry handswitch with 6m/20ft cable, Power source, Instruction manual, Case

Technical Data

Order no.		2120550	2120551
Product type		EMD–832P–48-W1	EMD–832P–48-W2
Range of digital display	µm	± 2000, ± 200, ± 20	
Range of digital display	inch	± .100", ± .010", ± .001"	
Range of digital display	arc sec	± 1000 arc sec, ± 200 arc sec	
Range of digital display	rad	± 1 mrad, ± 5 mrad	
Resolution	µm	1, 0,1, 0,02	
Resolution	inch	.0001", .00001", .000001"	
Resolution	arc sec	0.1 arc sec, 1 arc sec	
Resolution	rad	0.005 mrad, 0.0005 mrad	
Graduation value	arc sec	50 arc sec, 10 arc sec	
Tolerance display		LED 5, Class	LED, 5 Class
Probe inputs		2	
Compatibility		Federal	
Dynamic functions		Max, Min, TIR, Nominal	
Classification		5	
Data interface		RS232C	
Control inputs		3	
Control outputs		5	
Analogue output		±5Vdc	
Energy supply		Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50–60 Hz via AC adapter	Battery operation, 230 V / 50 Hz
Power supply connection		120 VAC 50/60Hz	220 VAC 50/60Hz (EU)
Compatibility		Federal	

Accessories

Order no.	Product name	Compatibility	Product type
2120373	Electronic Level gagehead with 2,5 m / 8 ft cable	Federal	EGH–2013-W1
2120374	Electronic Level gagehead with 6 m / 20 ft cable	Federal	EGH–2013-W2
2120363	Surface Plate Certification Software		EDD–1035
2120292	Adjustable Leveling Foot		EAT–1029
2120293	Magnetic Base		EAT–1054
2120294	Vee Base 120° (102 mm / 4")		EAT–1055
2120295	Right angle attachment with 120° vee faces (152 mm / 6")		EAT–1056
2120296	Adjustable three-pad base (50 –203 mm / 2 –8")		EAT–1057
2120297	3-Pad base (50 mm / 2")		EAT–1058
2120298	3-Pad base (102 mm / 4")		EAT–1059
2120299	3-Pad base (152 mm / 6")		EAT–1060
2120300	Base (l= 320 mm / 12.625") with integrated 120° vee ground base		EAT–1061
2120301	Spindleblock (l= 19 mm / .750")		EAT–1062

EAT–1029

EAT–1054

EAT–1055

EAT–1056

EAT–1058

EAT–1057

EAT–1062

EAT–1061

Electronic Levels - Automatic Profiling System

- Includes laptop computer and printer for automated surface plate profiling
- Surface plate profiling software provides automated collection of data and plotting of profile results
- Profiling software allows user to select surface plate size, number of runs to make and provided isometric or numeric graph with plate grade
- All features as standard differential level system
- Electronic levels are much easier to use with an autocollimator or a laser based calibration system
- Performance is comparable and results are obtained without time consuming sight path alignments, cleaning of sensitive optical surfaces or hard to control environmental conditions
- **Scope of delivery:** Indicating instrument 832 F, 2 electronic level heads EGH–2103-W2 with 6m/20ft cable, 2 adjustable mounts EAT–1029, Remote data entry handswitch with 6m/20ft cable, Notebook (EAS2836) with printer (ERO–1063) and cable (ECB–1775), Mahr Federal software (EDD–1035) for flatness measurement, Power source, Instruction manual, Case

RS232C

Application:

Ideally suited for highly precise profiles of surface plates and large machine surfaces. Accurate and timely data collection for profiles and Moody method plot.

Technical Data

Order no.		2120552	2120553
Product type		EMD–832P–50-W1	EMD–832P–50-W2
Range of digital display	**µm**	± 2000, ± 200, ± 20	
Range of digital display	**inch**	± .100", ± .010", ± .001"	
Range of digital display	**arc sec**	± 1000 arc sec, ± 200 arc sec	
Range of digital display	**rad**	± 1 mrad, ± 5 mrad	
Resolution	**µm**	1, 0,1, 0,02	
Resolution	**inch**	.0001", .00001", .000001"	
Resolution	**arc sec**	0.1 arc sec, 1 arc sec	
Resolution	**rad**	0.005 mrad, 0.0005 mrad	
Graduation value	**arc sec**	50 sec, 10 sec	
Tolerance display		LED 5 Class	
Probe inputs		2	
Compatibility		Federal	
Dynamic functions		Max, min, TIR, Nominal	
Classification		5	
Data interface		RS232C	
Control inputs		3	
Control outputs		5	
Analogue output		±5Vdc	
Energy supply		Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50–60 Hz via AC adapter	Battery operation, 230 V / 50 Hz
Power supply connection		120 VAC 50/60Hz	220 VAC 50/60Hz (EU)
Compatibility		Federal	

Accessories

Order no.	Product name	Compatibility	Product type
2120373	Electronic Level gagehead with 2,5 m / 8 ft cable	Federal	EGH–2013-W1
2120374	Electronic Level gagehead with 6 m / 20 ft cable	Federal	EGH–2013-W2
2120363	Surface Plate Certification Software		EDD–1035
2120292	Adjustable Leveling Foot		EAT–1029
2120293	Magnetic Base		EAT–1054
2120294	Vee Base 120° (102 mm / 4")		EAT–1055
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2120298	3-Pad base (102 mm / 4")		EAT–1059
2120299	3-Pad base (152 mm / 6")		EAT–1060
2120300	Base (l= 320 mm / 12.625") with integrated 120° vee ground base		EAT–1061
2120301	Spindleblock (l= 19 mm / .750")		EAT–1062

EAT–1029

EAT–1054

EAT–1055

EAT–1056

EAT–1058

EAT–1057

EAT–1062

EAT–1061

Millimar Standard Elements

Modular

The use of Millimar standard elements allows multi-gage measuring devices to be designed and implemented for the widest possible range of workpieces, e.g. rotationally symmetrical and non-rotationally symmetrical parts.
Rotationally symmetrical workpieces can be mounted between centers or on prismatic supports, whereas non-rotationally symmetrical workpieces often require a special holder.

Versatile

The versatility of the Millimar standard elements means that the right solution can be provided, regardless of the measurement task at hand.
Whether it's a question of external, internal or length measurements, the Millimar standard elements will be able to meet your requirements, even in the case of complex workpiece geometries. Thanks to the space saving design of the styli, a high number of measuring points can be inspected within a small area of the testpiece.
The pneumatic lifting mechanisms integrated into the measuring elements simplify the job of moving the testpiece into the measuring position and reduce the amount of wear on the stylus.

Flexible

The modular concept using Millimar standard elements is continued throughout the construction of the whole system. A generous amount of travel in the stylus (up to 20 mm / 0.79") allows a high degree of flexibility in terms of the variety of testpieces that can be accommodated.

Precise

The Millimar standard elements are specially designed for use in the workshop and are manufactured using a rigorous process. This guarantees that the measuring devices give stable and reliable measurements.
For example, using styli fitted with two ball-bearing guides for supporting the moving part, it is possible to achieve measurement accuracy at the µm scale, if this is required due to the tolerances of the feature being measured.

Reliable

All components are long lasting and low maintenance thanks to the use of rust proof materials, the selection of appropriate heat treatments, and the use of a lifting mechanism to minimize the effects of friction acting on the styli when the workpiece is inserted.

Economical

Our systems can either be constructed by the customer from standard elements obtained from the catalog, or alternatively we can provide ready-built devices as turn-key solutions. Whichever option you choose, you can be sure that you are purchasing a system that is tailored to your specific requirements on the most favorable of terms.

Below are just a few examples of the many factors that contribute to the cost effectiveness of the Millimar standard elements:
- Reusability of standard elements: Once manufacture of a particular type of workpiece has ceased, all standard elements used in the test equipment can be reused for a different type of workpiece.

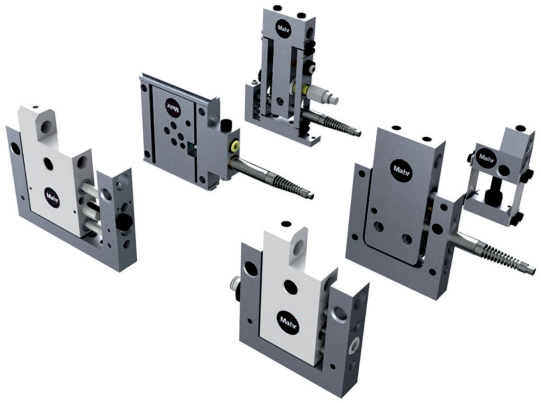
- A choice of different mechanisms for guiding the moving part of the stylus, according to the accuracy requirements of the measuring task (optimal price-performance ratio).
- Reduction in development and implementation time.
- Availability of the equipment: Our standard elements are manufactured under standard production conditions and are always available off the shelf and ready to use.

Detailed information can be found in the catalog –
Components for Length Metrology

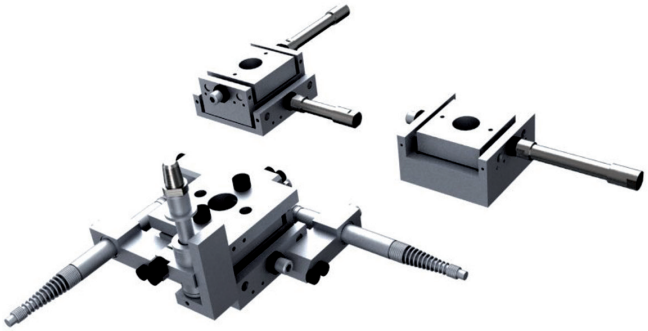
or visit our online shop at
https://eshop.mahr.com

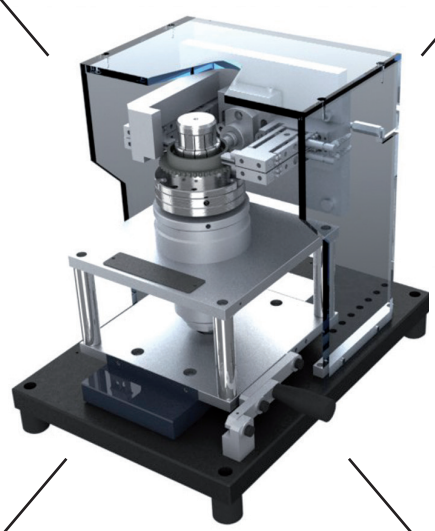
Millimar Standard Elements

Gage module
Travel distance: 5 - 10 - 20 mm

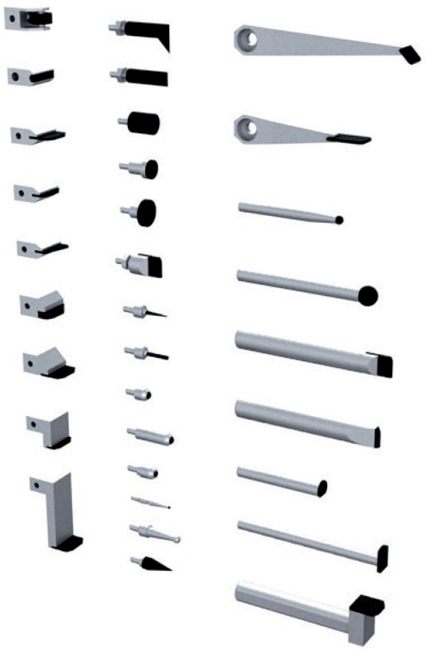


XY tables
Travel distance: 2.5 - 5 - 7 mm

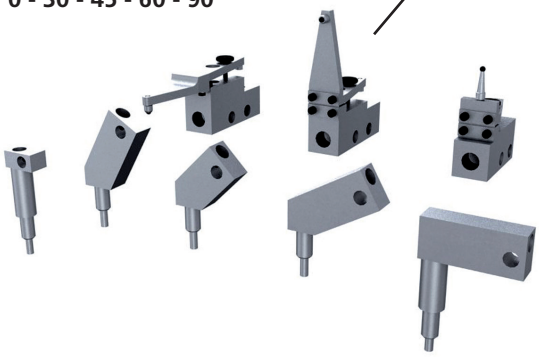




Styli



Angular adjustment
0 - 30 - 45 - 60 - 90°

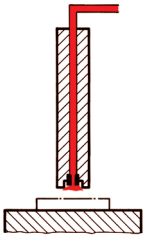


Millimar. Air Gages

PRECISION BEGINS AT THE START OF THE MEASURING PROCESS

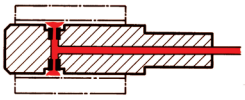
Air gages use the measuring effect of the change in pressure when a workpiece approaches a measuring jet. As the distance between jets and work surface decreases, the pressure increases while the velocity of flow and the respective volume flow decrease. The air measuring procedure has a realtively short but very linear measuring range.

1.



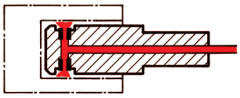
Thickness or wall thickness measurements with jet air gage.

2.



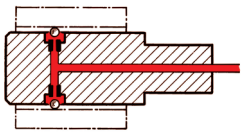
Diameter measurement of cylindrical through bores with jet air plug gage.

3.



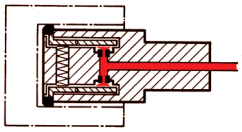
Diameter measurement of cylindrical blind bores with jet air plug gage.

4.



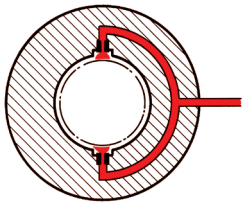
Diameter measurement of cylindrical through bores with ball contact plug gage.

5.



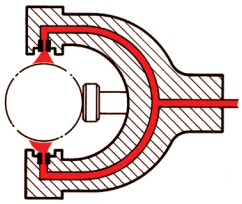
Diameter measurement of cylindrical blind bores with lever contact plug gage.

6.



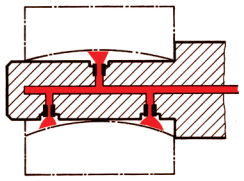
Diameter of thickness measurement with adjustable jet air caliper gage.

7.



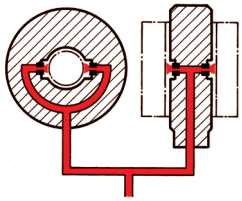
Diameter measurement of cylindrical shafts with jet air ring gage.

8.



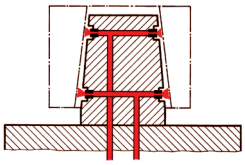
Straightness measurement of a cylindrical bore with special jet air plug gage.

9.



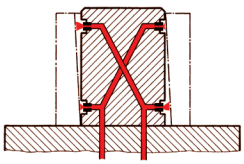
Mating measurement between bore and shaft with jet air plug gage and jet air ring gage.

10.



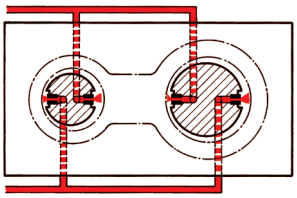
Taper pitch measurement of an inside taper with taper jet air plug gage measurement as per the differential measuring method.

11.



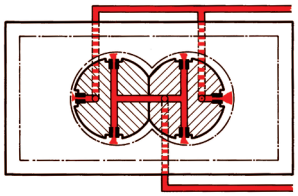
Measurement of a perpendicular position of a cylindrical bore to the front face with a special jet air plug gage measurement as per the differential measuring method.

12.



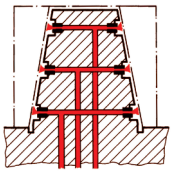
Measurement of hole distances of separated cylindrical bores with jet air plug gage measurement as per the differential measuring method.

13.



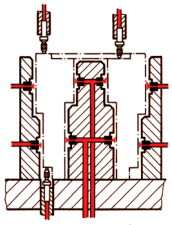
Measurement of hole distances of truncated cylindrical bores with jet air plug gages measurement as per the differential measuring method.

14.



Taper pitch measurement as well as form and diameter measurement of an inside taper with taper jet air plug gage.

15.



Multiple inside and outisde measurements with measuring jet air gages and contact probes in connection with a seven-column unit.

Millimar. Air Gage Metrology

Metrology

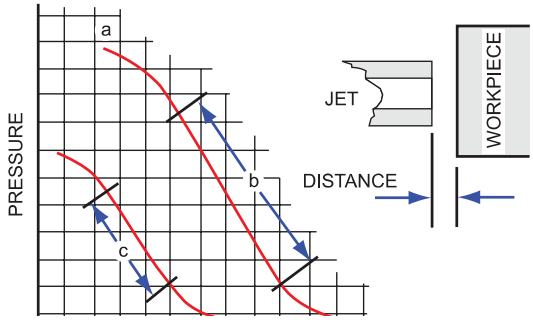
Millimar evaluation units work according to the principle of determination of changes in air pressure; the pressure differential between two chambers is measured. While one of the two chambers provides a constant reference pressure, the pressure of the other chamber (measuring chamber) is determined by the distance of the measuring jet of an air measuring value recorder to the test specimen.
Millimar evaluation units have two connection points that are each directly connected to one of the two pressure chambers. Thus, the measuring value is measured directly, without any conversion via a Piezo pressure sensor, and is then digitalized.
Magnifications from 2500:1 to 10000:1 are realized with exchangeable instrument jets.
Millimar measuring units must be supplied with constant air pressure through a pressure reducing valve. Measuring units with pressure reducing valves can be connected to all compressed air lines from 3.5 bar to 10 bar overpressure, whereby an air filter should be interconnected.
The air must be dry and oil free.

Metrological

- Universal, relilable, proven, especially high-performing
- All measuring methods: individual, total and differential measurements
- High accuracy, long-term stability, insensitive to environmental influences
- Up to 10000x magnification of the measuring values, large measuring ranges
- High measuring accuracy and reproducibility for the measuring results: depnding upon the magnification 0.5 µm to 20 µm
- Contact free measurements with measuring jets, no damage to the workpieces
- Reliable measurements of even uncleaned, oiled and lubricated workpieces, or workpieces with lapping paste. Measuring points are cleaned by the measuring air
- Linear display of the measuring values on a clear, large or long scale, easy and error-free reading of measuring results
- Measurement of diameters, distance between holes, tapers, eccentricities, alignment of bores, mating measurements, etc.
- Various measuring possibilities due to the corresponding adaption to existing measuring problems
- Airgage display unit for all applications
- Small, handy and easy to use
- Fully automatic working electrical units for measuring, control and sorting processes
- Measurement control unit for production machines
- **Millimar** single and multi-column units to set-up complete testing control units
- Due to their modularity and ability to be mounted close to each other, as well as their long-range scale readings, Millimar single and multi-column units can be set up as complete testing control systems
- Versatile measuring elements: jet air probes, jet air plugs gage, jet air ring gages, air caliper gages, angularity plug gages, angularity measuring rings, taper jet plug gages, taper jet ring gages and measuring units for mating parts for contact-free measurement
- Unusually long lifetime of the air measuring elements
- Robust model for the shop floor. Models for all applications.
- Special models for special tasks

General Technical Data of Air Gages

Air gaging is a measuring system that uses air pressure to determine the size of the measured part. The relationship between air pressure and distance of a restriction (workpiece) to the air escape (jets) can be plotted on a graph (line a).
As the distance between jets and work surface increases, the pressure decreases and the ratio becomes linear as represented by the straight section "B". This straight portion of the curve can be accurately calibrated, and represents the scale of the Dimensionair®. Compare its length with "C" on the other curve, which is the usable portion of other air gage scales. This longer linear scale gives the Dimensionair® its longer usable measuring range.



Dimensionair® Air Gages

- Operated with regular workshop compressed air (40–125 psi).
- An internal pressure regulator keeps the measuring pressure within the calibrated range.
- Zero offset of the instrument with just one setting standard and the zero adjuster.
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout. An integrated air filter removes dust and dirt particles from the air supply.
- Equipment connection on the front of the device; hand tightening is sufficient for tight connections
- No recalibration required after changing the measuring equipment; measurement can be resumed immediately after setting the instrument to zero
- 4 models available, choice of mm or inches
- **Scope of delivery:** Adapter for pneumatic plug gages, Mahr Federal compatible, Air filter, Supply hose AHO–2

Technical Data

Order no.		2095183	2095184	2095185	2095186	2095189	2095195	2095196	2095197	2095198
Product type		D–1250	D–2500	D–5000	D–10000	D–20000	D–4000	D–8000	D–16000	D–32000
Magnification		1250:1	2500:1	5000:1	10000:1	20000:1	4000:1	8000:1	16000:1	32000:1
Tooling ID		100	50	20	10	5	50	20	10	5
Inputs for pneumatic measuring equipment		1								
Number of Jets		1, 2, or 3								
Scale reading		Dial Diameter 82.6 mm / 3.25"					Dial Diameter 152.4 mm / 6"			
Range of analog display	inch	± .003"	± .0015"	± .00075"	± .0003"	± .00015"	± .0015"	± .00075"	± .0003"	± .00015"
Graduation value	inch	.0001"	.00005"	.00002"	.00001"	.000005"	.000025"	.00001"		.000005"
Display		Large analog scale with 2 tolerance markers								
Compatibility		Federal								
		1								
Air pressure		3 –10 bar / 40–125 psi								
Roughness surface parameters		Ra 100 µ" / 2,54 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm
Workpiece tolerance		± .002"	± .001"	± .0005"	± .0002"	± .0001"	± .001"	± .0005"	± .0002"	± .0001"

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2095183	187	7.125"	197	7.75"	127	5"
2095184	187	7.125"	197	7.75"	127	5"
2095185	187	7.125"	197	7.75"	127	5"
2095186	187	7.125"	197	7.75"	127	5"
2095189	187	7.125"	197	7.75"	127	5"
2095195	187	7.125"	197	7.75"	127	5"
2095196	187	7.125"	197	7.75"	127	5"
2095197	187	7.125"	197	7.75"	127	5"
2095198	187	7.125"	197	7.75"	127	5"

Accessories

Order no.	Product name	Product type
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85
2086965	Magnification kit, for calibrating pneumatic display units, Magnification: 1250:1	AMR-SPEC–136
2009183	Particle filter, filter size 5µm	AFL–10
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2086963	Magnification kit, for calibrating pneumatic display units, Magnification: 20000:1, 32000:1	AMR–15

AMR-SPEC–136

AFL–24

AAD–83

Dimensionair® Air Gages

- Operated with regular workshop compressed air (40–125 psi).
- An internal pressure regulator keeps the measuring pressure within the calibrated range.
- Zero offset of the instrument with just one setting standard and the zero adjuster.
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout. An integrated air filter removes dust and dirt particles from the air supply.
- Equipment connection on the front of the device; hand tightening is sufficient for tight connections
- No recalibration required after changing the measuring equipment; measurement can be resumed immediately after setting the instrument to zero
- 4 models available, choice of mm or inches
- **Scope of delivery:** Adapter for pneumatic plug gages, Mahr Federal compatible, Air filter, Supply hose AHO–2

Technical Data

Order no.		2095190	2095191	2095192	2095193	2095194	2095199	2095200	2095201	2095202
Product type		D–1250M	D–2500M	D–5000M	D–10000M	D–20000M	D–4000M	D–8000M	D–16000M	D–32000M
Magnification		1250:1	2500:1	5000:1	10000:1	20000:1	4000:1	8000:1	16000:1	32000:1
Tooling ID		100	50	20	10	5	50	20	10	5
Inputs for pneumatic measuring equipment		1								
Number of Jets		1, 2, or 3								
Scale reading		Dial Diameter 82.6 mm / 3.25"					Dial Diameter 152.4 mm / 6"			
Range of analog display	µm	± 76	± 38	± 19	± 7,6	± 3.8	± 38	± 19	± 7,6	± 3.8
Graduation value	µm	2	1	0,5	0,2	0,1	0,5	0,2		0,1
Display		Large analog scale with 2 tolerance markers								
Compatibility		Federal								
		1								
Air pressure		3 –10 bar / 40–125 psi								
Roughness surface parameters		Ra 100 µ" / 2,54 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm
Workpiece tolerance		± 50 µm	± 25 µm	± 13,5 µm	± 5 µm	± 2,5 µm	± 25 µm	± 13.5 µm	± 5 µm	± 2,5 µm

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2095190	187	7.125"	197	7.75"	127	5"
2095191	187	7.125"	197	7.75"	127	5"
2095192	187	7.125"	197	7.75"	127	5"
2095193	187	7.125"	197	7.75"	127	5"
2095194	187	7.125"	197	7.75"	127	5"
2095199	187	7.125"	197	7.75"	127	5"
2095200	187	7.125"	197	7.75"	127	5"
2095201	187	7.125"	197	7.75"	127	5"
2095202	187	7.125"	197	7.75"	127	5"

Accessories

Order no.	Product name	Product type
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85
2086963	Magnification kit, for calibrating pneumatic display units, Magnification: 20000:1, 32000:1	AMR–15
2009183	Particle filter, filter size 5µm	AFL–10
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23
2086965	Magnification kit, for calibrating pneumatic display units, Magnification: 1250:1	AMR-SPEC–136
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2094182	Magnification kit, for calibrating pneumatic display units, Magnification: 1260:1	DP60

AMR-SPEC–136

AFL–24

AAD–83

Dimensionair® Air Gages (single or dual master system)

Application:
Use in basic dual master air gage applications.

- The center is operated with regular workshop compressed air (3–10 bar).
- Internal pressure regulators and differential pressure gages guarantee optimum stability over the entire operating range.
- Measuring span and zero point can be set to adjust the measuring range to the interchangeable dial plates.
- Interchangeable dial plates for easy, cost effective coverage of different measuring ranges.
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout.
- An integrated air filter removes dust and dirt particles from the air supply.
- Equipment connection on the front of the device. Adapters are available for virtually any equipment configuration.
- **Scope of delivery:** Dial face (order no.: 2242662), Adapter for pneumatic plug gages, Mahr Federal compatible, Air filter, Supply hose AHO–2

Technical Data

Order no.		2098125
Inputs for pneumatic measuring equipment		1
Scale reading		Standard diameter 82.6 mm / 3.25″
Range of analog display	**inch**	± .0015″
Graduation value	**inch**	.00005″
Display		Large analog scale with 2 tolerance markers
Compatibility		Federal
Features		1
Air pressure		3 –10 bar / 40–125 psi
Data interface		none

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	**inch**	**mm**	**inch**	**mm**	**inch**
2098125	187	7.125″	197	7.75″	127	5″

Accessories

Order no.	Product name	Compatibility	Magnification	Range of analog display	Range of analog display	Graduation value	Graduation value	Product type
				inch	**µm**	**inch**	**µm**	
2242760	Dial face		1260:1	± .003″		.0001″		
2242761	Dial face		1875:1	± .002″		.0001″		
2242662	Dial face		2500:1	± .0015″		.00005″		
2242763	Dial face		3750:1	± .001″		.00005″		
2242764	Dial face		5000:1	± .00076″		.00002″		
2242765	Dial face		7500:1	± .0005″		.00002″		
2242766	Dial face		10000:1	± .0003″		.00001″		
2242770	Dial face		1260:1		± 76		2	
2242771	Dial face		1875:1		± 50		2	
2242772	Dial face		2500:1		± 38		1	
2242773	Dial face		3750:1		± 25		1	
2242774	Dial face		5000:1		± 19		0,5	
2242776	Dial face		10000:1		± 7,6		0,2	

Dimensionair® Air Gages (single or dual master system)

Order no.	Product name	Compatibility	Magnification	Range of analog display	Range of analog display	Graduation value	Graduation value	Product type
				inch	µm	inch	µm	
2086610	Adaptor 3/8–32 to 10/32, for Ø .109" (2,77mm) up to .494" (12,55mm)	Sheffield						AAD–313
2201587	Adaptor 3/8–32 to 1/2–20 for Ø .940" (23,88mm) up to 5.500" (139,7mm)	Sheffield						AAD–314
2201586	Adaptor 3/8–32 to 1/4–28 for Ø .494" (12,55mm) up to .940" (23,88mm)	Sheffield						AAD–312
2201515	Adaptor 3/8–32 to 10/32 with bleed for Ø .109" (2,77mm) up to .494" (12,55mm)	Sheffield						AAD–194
2201514	Adaptor 3/8–32 to 1/4–28 with bleed for Ø .494" (12,55mm) up to .940" (23,88mm)	Sheffield						AAD–193
2201516	Adaptor 3/8–32 to 1/2–20 with bleed for Ø .940" (23,88mm) up to 5.500" (139,7mm)	Sheffield						AAD–195
2201496	Adaptor 3/8–32 to 9/32–40	Federal	10000:1					AAD–165
2240621	Adaptor 3/8–32 to M8	Mahr						
2253424	Adaptor 3/8–32 to M10	Mahr						
2240623	Adaptor 3/8–32 to M12	Mahr						
2242767	Adaptor 3/8–32 to 1/8 barb							
2242777	Adapter 3/8–32 to Setlock	Moore						
2254565	Adaptor 3/8–32 inside thread to M12x1 outside thread							
2009183	Particle filter, filter size 5µm							AFL–10
2201992	Replacement Filter Element for AFL–10 Filter							AFL–21
2201993	Replacement Filter Element for AFL–24 Filter							AFL–23
2201994	Oil and Water Seperator Trap							AFL–24
2094182	Magnification kit, for calibrating pneumatic display units, Magnification: 1260:1		1260:1					DP60
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	Federal	2500:1, 4000:1					AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	Federal	5000:1, 8000:1					AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	Federal	10000:1, 16000:1					AMR–14
2248282	2-way manifold - low mag							AAD–82
2248283	3-way manifold - low mag							AAD–83
2248284	4-way manifold - low mag							AAD–84
2248285	5-way manifold - low mag							AAD–85

2248283

AMR-SPEC–136

AFL–24

Compact length measuring instrument Millimar 832 PE/F1 / 832 PE/F2

RS232C

- Digital and analog display in one unit.
- Large, high contrast digital display of the exact deviation from zero
- Analog display of measurement related information
- With its fixed ratio and controlled compressed air supply, the digital Dimensionair® is a sturdy, reliable system for manufacturing environments.
- Only one standard needed for zero offset; the instrument is precalibrated for the correct ratio
- Measuring ranges and resolutions for almost all measuring applications (including measuring equipment with 2, 3, 4 and 6 nozzles, air sensors and nozzle measuring probes, etc.)
- Suitable for dynamic measurement
- RS–232 output for communication with a data storage device, computer or printer, for statistical process control
- Master deviation – improved measurement with even more accurate automatic zero offset.
- **Scope of delivery:** Power source, Supply hose AHO–2, Adapter for pneumatic plug gages, Mahr Federal compatible

Technical Data

Order no.1-3		2004100	2004112	2004106	2004118	2004103	2004115	2004109	2004121
Order no.	4	2004101	2004113	2004107	2004119	2004104	2004116	2004110	2004122
Order no.	6	2004102	2004114	2004108	2004120	2004105	2004117	2004111	2004123
Product type		832 PE/F1		832 PE/F2		832 PE/F1		832 PE/F2	
Magnification		1260:1, 2500:1, 5000:1				10000:1, 20000:1			
Tooling ID		60, 50, 20				10, 5			
Inputs for pneumatic measuring equipment		1		2		1		2	
Number of Jets		1–3							
Range of digital display	µm	± 80, ± 40, ± 20				± 8, ± 4			
Range of digital display	inch	± .003", ± .0015", ± .00075"				± .0003", ± .00015"			
Resolution	µm	0,2				0,1			
Resolution	inch	.00001"				.000005"			
Graduation value	µm	4, 2, 1				0,4, 0,2			
Graduation value	inch	150 µ", 75 µ", 38 µ"				15 µ", 8 µ"			
Display		Display mode A (or A and B for 2 channel models only)							
Tolerance display		5 LEDs							
Compatibility		Federal							
Dynamic functions		Max, Min, Max-Min							
Statistical functions		Actual value, nominal value							
Response time digital display	s	0.43							
Response time (Air)		approx. 1 s (depending on the hose length of the measuring equipment)							
Error limit		+/–1 digit							
Repeatability [µm]		±1 digit or ±1% of the indication range (whichever is greater)							
Data interface		RS232C							
Control outputs		five TTL optocoupler outputs							
Analogue output		±5 VDC at maximum amplitude of the selected measuring range for signal ±A, ±B							
Energy supply		110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source

Compact length measuring instrument Millimar 832 PE/F1 / 832 PE/F2

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004100	254	10"	197	7.75"	216	10.25"
2004112	254	10"	197	7.75"	216	10.25"
2004106	254	10"	197	7.75"	216	10.25"
2004118	254	10"	197	7.75"	216	10.25"
2004103	254	10"	197	7.75"	216	10.25"
2004115	254	10"	197	7.75"	216	10.25"
2004109	254	10"	197	7.75"	216	10.25"
2004121	254	10"	197	7.75"	216	10.25"

Accessories

Order no.	Product name	Product type
7024634	Data Connection Cable RS232C (3 m)	
2212852	Oil splashguard storage cover non-transparent	ECV–1276
2212858	Oil splashguard cover transparent	ECV–1285
2211464	Foot switch for hold/measure 3 m / 10 ft cable	ECB–1857
2211465	Footswitch for Dynamic Reset (15 pin connector)	ECB–1858
2211466	Foot switch for data transmit, 3 m / 10 ft	ECB–1859
2211462	Push button for dynamic reset/zeroing, 1,5 m / 5 ft cable	ECB–1855
2211467	Push button for data transmit, 1,5 m / 5 ft cable	ECB–1860
2211481	Push button for measurement hold/measure/data transmit, 3 m / 10 ft	ECB–1868
2214163	Control box with 5 Relays (120 V)	EKT–1236-W3
2214165	Control box with 5 Relays (240V)	EKT–1236-W5
2010000	Plug in Power Supply (832 units with 3 pin connector), 120 Vac	
2010001	Power Supply Module (832 amp with 3 pin connector), 220/240 Vac	
2212340	15-Pin connector - male (Digital I/O)	ECN–1695-W2
2212336	Phone plug male connector for Reset / Data	ECN–1693
2212339	9-Pin RS232 connector - male (Digital output)	ECN–1695-W1
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2009183	Particle filter, filter size 5µm	AFL–10
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85

AMR-SPEC–136

AFL–24

AAD–84

Compact length measuring instrument Millimar C1208 PE/F

- When using pneumatic compact length measuring instruments we recommend using a supply filter (see accessories) at all times
- Favorites: the „SELECT" button allows you to access frequently used settings directly
- Static measurements ± A
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- 1-point or 2-point master measurement
- Programmable via the integrated keypad or the RS–232 interface with MS Windows D1000S configuration software

When using pneumatic compact length measuring instruments we recommend using a supply filter (see accessories)
Favorites: the "SELECT" button allows you to access frequently used settings
- Static measurements ± A
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average

Auto-detect mode (automatic detection).
- A pneumatic measuring instrument can be connected (nozzle plug gage or nozzle ring gage) – the instrument in use is automatically switched to the display
- 1-point or 2-point master measurement
- Programmable via the integrated keypad or the RS– 232 interface with MS Windows® D1000S configuration software
- Backlit LCD for scale display and two-line digital display
- 5 three-color status lamps for warning and tolerance limits
- 1 input for pneumatic measuring equipment (compatible with Mahr / Federal electrical spec.)
- RS– 232 interface
- 3 digital inputs for measurement start, master measurement, measured value transfer, ...
- 3 digital outputs for good, reject, rework, measuring time, ...
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		5312095	5312094	5312093
Product type		C1208 PE/F		
Display		Background illuminated LCD, 115 mm x 70 mm		
Scale reading		Pointer, 61 scale graduations		
Digital display		7 digit LCD, 7 segments		
Range of analog display	**µm**	± 3, ± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related		
Range of analog display	**inch**	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related		
Tolerance display		5 LEDs, 3 color		
Measuring span	**mm**	76	32	16
Measuring span	**µm**	76	32	16
Inputs for pneumatic measuring equipment		1		
Compatibility		Federal		
Magnification		2500:1	5000:1	10000:1
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B		
Features		1		
Programs		1		
Test steps		1		
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Average		
Configuration		PC, keyboard		
zero setter		Can be set to zero at any point		
Error limit, digital display		0,05 %		
Error limit, analog display		2% (decimal scale display)		
Temperature coefficient	**µm/°C**	0,005		
Air pressure		2,1 bar ± 5 %		
Air consumption in l/h		ca. 1–2 m^3		
Data interface		RS232C, Wireless		
Control inputs		3 optocoupler inputs, 24 V, 10 mA		
Control outputs		3 optocoupler outputs, 24 V, 100 mA		
Energy supply		Power source, 230 V/115 V; 50/60 Hz		
IP protection category		IP 43		

Order no.	Depth	Height	Width
	mm	mm	mm
5312095	165	205	160
5312094	165	205	160
5312093	165	205	160

Compact length measuring instrument Millimar C1208 PE/F

Accessories

Order no.	Product name	Product type
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
2121236	Supply filter with adapter kit	
3025712	Keypad dust cover	
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23

e-Stick

AMR-SPEC–136

AFL–24

AAD–84

Compact length measuring instrument Millimar C1245 PE/F1

- When using pneumatic compact length measuring instruments, we recommend using a supply filter at all times (see accessories)
- Analog pointer device for displaying the measured value
- Two-line LCD for displaying measured values and help texts
- 5 three color status lamps for warning and tolerance limits
- Up to 3 features can be displayed simultaneously
- 16 characters can be defined
- Using a formula editor (80 characters), input channels C1 to C8 can be mathematically linked via the 4 basic arithmetic operations with factors and brackets
- Static measurements: Instantaneous value, square root, arc tangent
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- Statistical **Functions:** N, x-bar, S, Xmax, Xmin, R
- Measured value memory for 5000 measured values
- Measurement start/stop via buttons, digital input, RS–232
- 1 input for pneumatic measuring equipment (compatible with Mahr / Mahr Federal)
- RS–232 interface
- 1 analog output
- 3 digital inputs for measurement start, master measurement / zero offset, data transfer
- 6 digital outputs for good, reject, rework, grouped goods, measuring time, 4 classes, BCD interface
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source, Pressure regulator

Technical Data

Order no.		5331271	5331272	5331273
Product type		C1245 PE/F1		
Display		analog pointer instrument, LCD 53 mm x 40 mm		
Scale reading		145 mm x 80 mm		
Digital display		7 digit LCD, 7 segments		
Range of analog display	µm	± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000		
Range of analog display	inch	± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3"		
Tolerance display		5 LEDs, 3 color		
Measuring span	mm	76	32	16
Measuring span	µm	76	32	16
Inputs for pneumatic measuring equipment		1		
Compatibility		Federal		
Magnification		2500:1	5000:1	10000:1
Measuring combination		Links entered via formula editor		
Features		16		
Programs		6		
Test steps		6		
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Average		
Statistical functions		N, x-bar, S, Xmax, Xmin, Range		
Classification		max. 998, max. at I/O		
Configuration		PC, keyboard		
zero setter		electrical, can be set to zero at any point		
Error limit, digital display		0,05 %		
Error limit, analog display		2 %		
Error limit, analog output		0,1 %		
Temperature coefficient	µm/°C	0,005		
Air pressure		2,1 bar ± 5 %		
Air consumption in l/h		ca. 1–2 m3		
Data interface		RS232C, Wireless		
Control inputs		3 optocoupler inputs, 24 V, 10 mA		
Control outputs		6 optocoupler outputs, 24 V, 100 mA		
Analogue output		max. ± 4 V, adjustable sensitivity		
Energy supply		230 V/115 V; 50/60 Hz		
IP protection category		IP 43		

Compact length measuring instrument Millimar C1245 PE/F1

Order no.	Depth	Height	Width
	mm	mm	mm
5331271	165	205	160
5331272	165	205	160
5331273	165	205	160

Accessories

Order no.	Product name	Product type
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
2121236	Supply filter with adapter kit	
3025712	Keypad dust cover	
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23

e-Stick

AMR-SPEC–136

AFL–24

AAD–84

Compact column measuring instrument Millimar S1840 PE/F

Technical Data

Order no.		5318455	5318457
Product type		S1840 PE/F	
Magnification		2500:1, 5000:1	10000:1
Inputs for pneumatic measuring equipment		1	
Scale reading		± 10, 30, 100, 300, 1000, 3000, 10000 µm	
Digital display		7 digit LCD, 7 segments	
Range of analog display	inch	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related	
Display		101 LED elements, 3 color	
Tolerance display		via color change of the analog display	
Measuring span	mm	76	16
Compatibility		Federal	
Measuring combination		+A, -A	
Features		1	
Programs		1	
Test steps		1	
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Average	
Configuration		PC, keyboard	
zero setter		electrical	
Response time digital display	s	0.5	
Response time analog display	s	0.5	
Error limit		0,5 –1 %	
Error limit, digital display		+/–1 place	
Error limit, analog display		1% (101 LEDs)	
Temperature coefficient	µm/°C	0.005	
Air pressure		2,1 bar ± 5%	
Air consumption in l/h		ca. 1–2 m^3	
Data interface		RS232C, Wireless	
Control inputs		3 optocoupler inputs, 24 V, 10 mA	
Control outputs		3 optocoupler outputs, 24 V, 100 mA	
Analogue output		1 V/mm	
Energy supply		Power source, 230 V/115 V; 50/60 Hz	
IP protection category		IP 43	

- With the Millimar S 1840 column measuring instrument, measuring results can be determined and assessed at a glance. Suitable for measurements with pneumatic measuring equipment. The Millimar S 1840 column measuring instrument offers a wide range of functions for the combined evaluation of signals from static and dynamic measurements. The measuring results are displayed with 101 three-color LEDs. If the programmable warning and tolerance limits are exceeded, the LED segments on the easy-to-read display change color accordingly from green to yellow or red.
- When using pneumatic compact amplifiers, it is recommended at all times to use both a pressure regulator and a supply filter (see accessories)
- Clear, three-color analog light bar display of warning and tolerance limits
- Backlit, two-line LCD for displaying measured values, help texts and units of measurement
- 1 channel
- RS–232 interface
- Analog output
- 3 digital inputs for measurement start, master measurement, etc.
- 3 digital outputs for good, reject, rework classification, measuring time, etc.
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- Can either be programmed via the integrated membrane keypad using the menu driven interface or via the configuration software for MS Windows®
- 1-point or 2-point master measurement
- Password block in setup mode
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Compact column measuring instrument Millimar S1840 PE/F

Order no.	Depth	Height	Width
	mm	mm	mm
5318455	144	487	47
5318456	144	487	47
5318457	144	487	47

Accessories

Order no.	Product description	Product type
5330914	Base foot with 1 pressure regulator	
5330915	Base foot with 2 pressure regulators	
5330916	Base foot with 3 pressure regulators	
2121236	Supply filter with adapter kit	
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Adapter Cable RS232-USB (1 m)	
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Mobile pneumatic length measuring instrument Millimar µDimensionair® II

Application:

Air Gaging Applications where a portable measurement and readout are needed

- Affordable
- Versatile
- Innovative
- Robust
- No other pneumatic measuring system is a versatile as the µDimensionair®, which can be used as a hand-held device, as a stationary table-top device or even directly on the machine tool. With its IP54 protection rating it is suitable for use in harsh workshop environments. The compressed air flowing out of the measuring equipment removes any contamination from the testpiece to ensure reliable measuring results.
- Direct and clear measuring results.
- Ideal for use in manufacturing environments
- The µDimensionair® II offers:
- Choice of setup with one standard or with Min/Max standards
- All other functions of the µMaxµm® II digital dial comparator:
- Dynamic measurement: Min, Max, measuring span
- Multiplication factor and hold function („freeze")
- Choice of data transfer with serial number
- MarConnect data output: USB, Opto RS–232C and Digimatic
- **Scope of delivery:** Instruction manual, Supply hose AHO–2

Technical Data

Order no.		2103200
Product type		µDimensionair® II
Magnification		5000:1, 2500:1, 1260:1
Inputs for pneumatic measuring equipment		1
Digital display		rotates through 270°
Storage temperature MAX	°C	60
Graduation value	µm	0,5, 1, 2
Graduation value	inch	.00002", .00005", .0001"
Display		Analog display with one-line digital display
Tolerance display		Two - over / under (3 class)
Compatibility		Federal
Features		1
Programs		1
Test steps		1
Dynamic functions		MAX, MIN, MAX-MIN
Statistical functions		Difference, Nominal Average
Response time (Air)		approx. 1 s
Error limit		± 1% of the total range
Air pressure		2.10 ± .01 bar
Repeatability [µm]		±1 numerical increment
Data interface		Digimatic, Opto RS232C, USB, Wireless
Energy supply		Battery operation, approx. 3000 h
IP protection category		IP 54

Order no.	Depth	Height	Length	Length (inch)	Width
	mm	mm	mm	inch	mm
2103200	60	3	100	4	70

Mobile pneumatic length measuring instrument Millimar µDimensionair® II

Accessories

Order no.	Product name	Product type
2238020	Pressure regulator with filter	
2095924	Pressure meter	
2239307	Universal bench mount	
2237666	Standard plastic handle	
2240993	Shut off slide valve	
2241109	Table stand for µDimensionair®	
2240594	Swivel coupling adapter for rotating tooling	
2201994	Oil and Water Seperator Trap	AFL–24
2237713	Connecting hose, 6 m	
2202076	Supply hose, 1.5 m	AHO–2
4102520	Battery 3 V, CR 2032	
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r

AFL–24

2240594

2241109

2240993

2239307

Dimensionair® Air Gages — Air Plugs

- Calibrated ID tooling for the Dimensionair® Air Gaging Systems
- Tooling is interchangeable without adjusting system magnification.
- Federal Air Plugs have large clearance (see table below), allowing easy entrance into the hole being measured and a greater measuring range.
- Long life - wide clearance and hard chrome (optional) body extends life of the Air Plug.
- Deep, recessed jets - Air jets are recessed into the plug body, protecting them from damage.
- Large jet size eliminates clogging from dirt and oils.

Plug identification

Air Plugs are marked with an identification number which identifies its size, number of jets, plug style, and the Dimensionair® Model the plug should be used with.

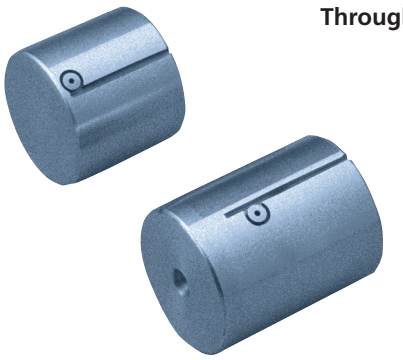
Identification	Nominal Size from		To & include		Clearance from Nominal Size	
	mm	*inch*	mm	*inch*	mm	*inch*
DP20	3	.123″	3.5	.140″	0.009	.00035″
	3.5	.140″	4.7	.185″	0.013	.0005″
	4.7	.185″	6.3	.248″	0.015	.0006″
	6.3	.248″	76.3	3.004″	0.023	.0009″
	76.3	3.004″	127	5.000″	0.071	.0028″
	Above 127	5.000″			0.081	.0032″
DP50	3	.123″	3.5	.140″	0.015	.0006″
	3.5	.140″	4.7	.185″	0.027	.0011″
	4.7	.185″	6.3	.248″	0.030	.0012″
	6.3	.248″	76.3	3.004″	0.045	.0018″
	76.3	3.004″	127	5.000″	0.071	.0028″
	Above 127	5.000″			0.081	.0032″
DP60	3	.123″	3.5	.140″	0.030	.0012″
	3.5	.140″	4.7	.185″	0.045	.0018″
	4.7	.185″	6.3	.248″	0.061	.0024″
	6.3	.248″	76.3	3.004″	0.081	.0032″
	76.3	3.004″	127	5.000″	0.089	.0035″
	above 127	5.000″			0.107	.0042″

For example: DP50-T2-1.000 is the identification number of an Air Plug for a 2095184 or a standard magnification 832 Dimensionair® (DP50), through-hole style with two jets (-T2), and 25 mm/1.000″ nominal size (-1.000).

The number (50) which identifies the Dimensionair® intended is marked on the plug and also appears on the dial of the Dimensionair® to help in matching the tooling to its corresponding Dimensionair® Model.

Ordering Information

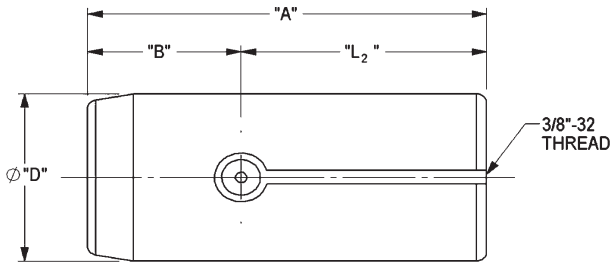
When ordering Air Plugs please specify:
1. Nominal ID Size and Tolerance.
2. Dimensionair® Model to be used.
3. Air Plug style (Through Hole, Blind Hole, or Counterbore).
4. Air Plug finish (Chrome-plated or Hardened Steel).
5. Please order Master Setting Ring at same time. Unless otherwise specified, Mahr will furnish a 2-jet, Through Hole, High Chrome Air Plug for a 2500:1 Dimensionair®.



Through Hole and Blind Hole Air Plugs

Through and Blind Holes

For air gages, an appropriate setting master according to accuracy grade XX, can be ordered seperately.



Through Holes

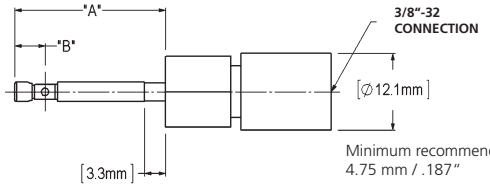
Nominal deviations from – to ø D		A		B		L2		Minimum length of bore		Measuring Range		Order no.	Measuring Range		Order no.	Measuring Range		Order no.
mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	µm	*(inch)*		µm	*(inch)*		µm	*(inch)*	
3.124 - 3.553	***(0.1230 - 0.1399)***	23.80	***(.937)***	4.75	***(.187)***	19.05	***(.750)***	4.75	***(.187)***	13	***(.0005)***	**2092975**	25	***(.0010)***	**2092945**	51	***(.0020)***	**2108672**
3.556 - 4.696	***(0.1400 - 0.1849)***	23.80	***(.937)***	4.75	***(.187)***	19.05	***(.750)***	4.75	***(.187)***	19	***(.00075)***	**2092976**	38	***(.0015)***	**2092946**	76	***(.0030)***	**2108673**
4.699 - 6.312	***(0.1850 - 0.2485)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	4.75	***(.187)***	25	***(.0010)***	**2092977**	51	***(.0020)***	**2092947**	102	***(.0040)***	**2108674**
6.314 - 9.484	***(0.2486 - 0.3734)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092978**	76	***(.0030)***	**2092948**	152	***(.0060)***	**2108675**
9.487 - 12.494	***(0.3735 - 0.4919)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092979**	76	***(.0030)***	**2092949**	152	***(.0060)***	**2108676**
12.497 - 13.688	***(0.4920 - 0.5389)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092980**	76	***(.0030)***	**2092950**	152	***(.0060)***	**2108677**
13.691 - 14.933	***(0.5390 - 0.5879)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092981**	76	***(.0030)***	**2092951**	152	***(.0060)***	**2108678**
14.935 - 20.978	***(0.5880 - 0.8259)***	41.28	***(1.625)***	15.88	***(.625)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092982**	76	***(.0030)***	**2092952**	152	***(.0060)***	**2108679**
20.980 - 28.699	***(0.8260 - 1.1299)***	41.28	***(1.625)***	15.88	***(.625)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092983**	76	***(.0030)***	**2092953**	152	***(.0060)***	**2108680**
28.702 - 37.691	***(1.1300 - 1.4839)***	41.28	***(1.625)***	15.88	***(.625)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092984**	76	***(.0030)***	**2092954**	152	***(.0060)***	**2108681**
37.694 - 44.193	***(1.4840 - 1.7399)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092985**	76	***(.0030)***	**2092955**	152	***(.0060)***	**2108682**
44.196 - 63.751	***(1.7400 - 2.5099)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092986**	76	***(.0030)***	**2092956**	152	***(.0060)***	**2108683**
63.754 - 76.299	***(2.5100 - 3.0039)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092987**	76	***(.0030)***	**2092957**	152	***(.0060)***	**2108684**
76.302 - 89.151	***(3.0040 - 3.5099)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092988**	76	***(.0030)***	**2092958**	152	***(.0060)***	**2108685**
89.154 - 104.115	***(3.5100 - 4.0990)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092989**	76	***(.0030)***	**2092959**	152	***(.0060)***	**2108686**
104.117 - 114.300	***(4.0991 - 4.5000)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092990**	76	***(.0030)***	**2092960**	152	***(.0060)***	**2108687**

Blind Holes

Nominal deviations from – to ø D		A		B		L2		Minimum length of bore		DP20 (5000:1) Measuring Range		Order no.	DP50 (2500:1) Measuring Range		Order no.	DP60 (1250:1) Measuring Range		Order no.
mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	µm	*(inch)*		µm	*(inch)*		µm	*(inch)*	
3.937 - 4.696	***(0.1550 - 0.1849)***	19.05	***(.750)***	3.96	***(.156)***	15.09	***(.594)***	6.35	***(.250)***	19	***(.00075)***	**2092991**	38	***(.0015)***	**2092961**	76	***(.0030)***	**2108688**
4.699 - 6.312	***(0.1850 - 0.2485)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	25	***(.0010)***	**2092992**	51	***(.0020)***	**2092962**	102	***(.0040)***	**2108689**
6.314 - 9.484	***(0.2486 - 0.3734)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092993**	76	***(.0030)***	**2092963**	152	***(.0060)***	**2108690**
9.487 - 11.859	***(0.3735 - 0.4669)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092994**	76	***(.0030)***	**2092964**	152	***(.0060)***	**2108691**
11.862 - 14.933	***(0.4670 - 0.5879)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092995**	76	***(.0030)***	**2092965**	152	***(.0060)***	**2108692**
14.935 - 20.978	***(0.5880 - 0.8259)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092996**	76	***(.0030)***	**2092966**	152	***(.0060)***	**2108693**
20.980 - 28.699	***(0.8260 - 1.1299)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092997**	76	***(.0030)***	**2092967**	152	***(.0060)***	**2108694**
28.702 - 37.691	***(1.1300 - 1.4839)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092998**	76	***(.0030)***	**2092968**	152	***(.0060)***	**2108695**
37.694 - 44.193	***(1.4840 - 1.7399)***	35.71	***(1.406)***	3.96	***(.156)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092999**	76	***(.0030)***	**2092969**	152	***(.0060)***	**2108696**
44.196 - 63.751	***(1.7400 - 2.5099)***	35.71	***(1.406)***	3.96	***(.156)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2093000**	76	***(.0030)***	**2092970**	152	***(.0060)***	**2108697**
63.754 - 76.299	***(2.5100 - 3.0039)***	35.71	***(1.406)***	3.96	***(.156)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2093001**	76	***(.0030)***	**2092971**	152	***(.0060)***	**2108698**
76.302 - 89.151	***(3.0040 - 3.5099)***	38.10	***(1.500)***	3.96	***(.156)***	34.14	***(1.344)***	6.35	***(.250)***	38	***(.0015)***	**2093002**	76	***(.0030)***	**2092972**	152	***(.0060)***	**2108699**
89.154 - 101.851	***(3.5100 - 4.0099)***	38.10	***(1.500)***	3.96	***(.156)***	34.14	***(1.344)***	6.35	***(.250)***	38	***(.0015)***	**2093003**	76	***(.0030)***	**2092973**	152	***(.0060)***	**2108700**
101.854 - 114.300	***(4.0100 - 4.5000)***	38.10	***(1.500)***	3.96	***(.156)***	34.14	***(1.344)***	6.35	***(.250)***	38	***(.0015)***	**2093004**	76	***(.0030)***	**2092974**	152	***(.0060)***	**2108701**

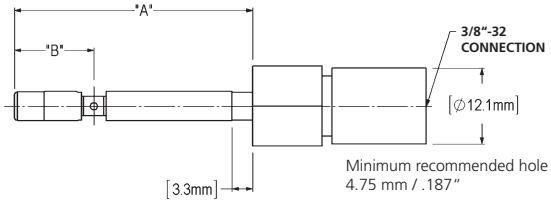
Through Hole Plugs (DP50 – DP20)

3.94-4.70 mm / .155-.185”



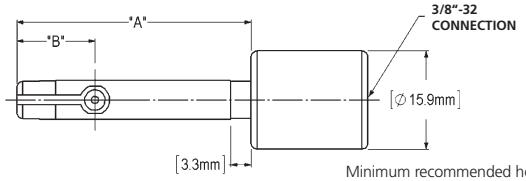
Minimum recommended hole length:
4.75 mm / .187”

4.70-6.30 mm / .185-.248”



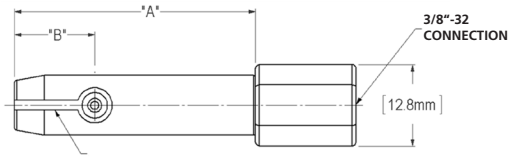
Minimum recommended hole length:
4.75 mm / .187”

6.30-9.49 mm / .248-.3735”



Minimum recommended hole length:
6.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”

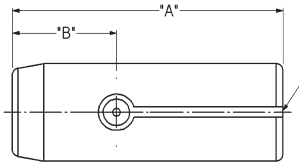
9.49-11.86 mm / .3735-.467”



Note: Air escape exits opposite end for plugs larger than 12.5 mm / .492”

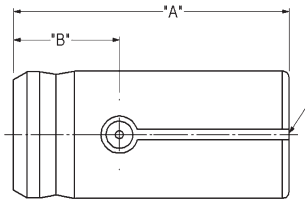
Minimum recommended hole length:
6.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”
May be used with AEX-1 or -2 Extensions for deep holes

11.86-14.94 mm / .467-.588”



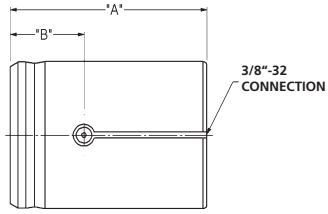
Minimum recommended hole length:
.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”
May be used with AHA-4 or -5 Extensions for deep holes

14.94-37.69 mm / .588-1.484”



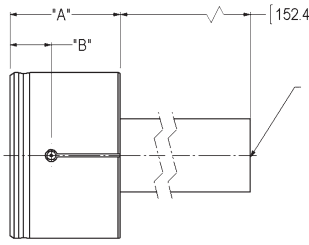
Minimum recommended hole length:
.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”
May be used with AHA-4 or -5 Extensions for deep holes

37.69-76.30 mm / 1.484-3.004”



Minimum recommended hole length:
.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”
May be used with AHA-4 or -5 Extensions for deep holes

76.30-114.30 mm / 3.004-4.500”



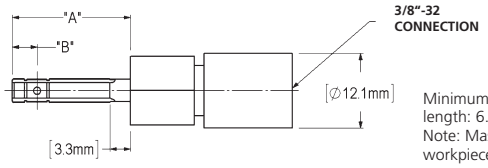
Minimum recommended hole length:
6.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”

Nominal Dimension mm / ***inch***						Minimum Hole Length*		**Measuring range**					
Including & Above		To	“A”		“B”	mm	inch	DP20		DP50		DP60	
3.12	***/.123”***	3.56	/ .140”	23.81	/ .938”	4.76	/ .188”	4.75	/ .187”	.013	/ .0005”	.025	/ .0010”	.051	/ ***.0020”***
3.56	/ .140”	4.70	/ .185”	23.81	/ .938”	4.76	/ .188”	4.75	/ .187”	.0200	/ .00075”	.038	/ .0015”	.076	/ ***.0030”***
4.70	/ .185”	6.30	/ .248”	38.10	/ 1.500”	12.70	/ .500”	4.75	/ .187”	.025	/ .0010”	.051	/ .0020”	.102	/ ***.0040”***
6.30	/ .248”	9.49	/ .3735”	38.10	/ 1.500”	12.70	/ .500”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
9.49	/ .3735”	14.94	/ .588”	38.10	/ 1.500”	12.70	/ .500”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
14.94	/ .588”	19.05	/ .750”	41.28	/ 1.625”	15.88	/ .625”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
19.05	/ .750”	37.69	/ 1.484”	41.28	/ 1.625”	15.88	/ .625”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
37.69	/ 1.484”	76.30	/ 3.004”	50.80	/ 2.000”	19.10	/ .750”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
76.30	/ 3.004”	114.30	/ 4.500”	50.80	/ 2.000”**	19.10	/ .750”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***

** If a guide sleeve or stop collar is used, minimum hole length can be as small as 1.78 mm / .070” for holes larger than 6.30 mm / .248”.*
*** A handle 152 mm / 6” long and 33.3 mm / 1.31” diameter is supplied with plugs over 76.30 mm / 3.004”.*

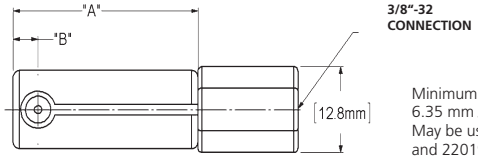
Blind Hole / Counterbore Plugs (DP50 – DP20)

3.94-4.70 mm / .155-.185”



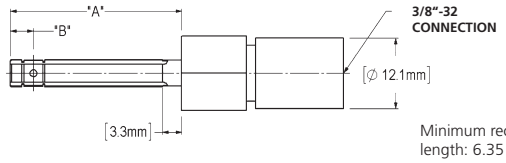
Minimum recommended hole length: 6.35 mm / .250“
Note: Masters must simulate workpiece for holes of this size

11.86-14.94 mm / .467-.588”



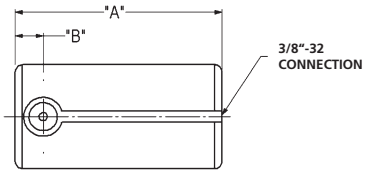
Minimum recommended hole length: 6.35 mm / .250“
May be used with Extensions 2201963 and 2201954

4.70-6.30 mm / .185-.248”



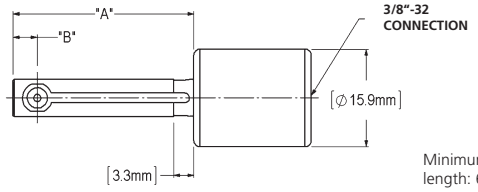
Minimum recommended hole length: 6.35 mm / .250“

14.94-37.69 mm / .588-1.484”



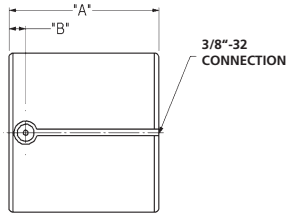
Minimum recommended hole length: 6.35 mm / .250“
May be used with Extensions 2202010 and 2202011

6.30-9.49 mm / .248-.3735”



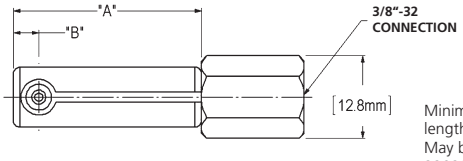
Minimum recommended hole length: 6.35 mm / .250“

37.69-76.30 mm / 1.484-3.004”



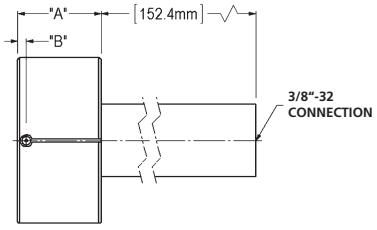
Minimum recommended hole length: 6.35 mm / .250“
May be used with Extensions 2202010 and 2202011

9.49-11.86 mm / .3735-.467”



Minimum recommended hole length: 6.35 mm / .250“
May be used with Extension 2202009

76.30-114.30 mm / 3.004-4.500”



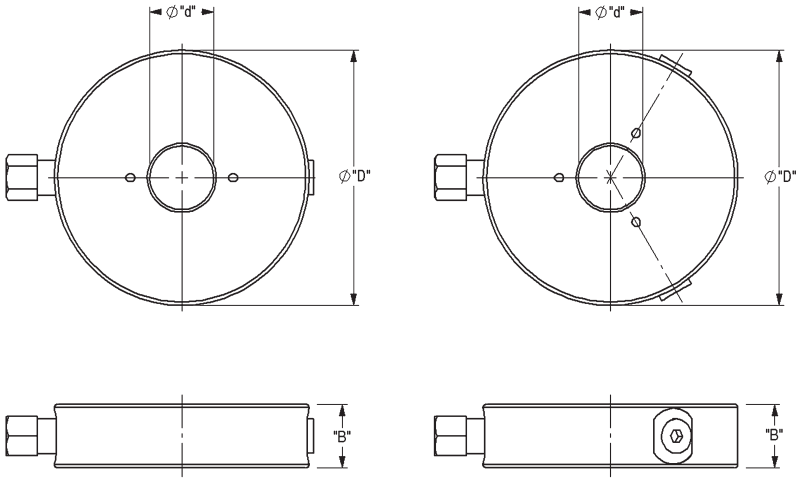
Super-blind Plugs

Blind Hole Air Plugs can be furnished to check shorter holes than listed above, and can be furnished to check closer to the bottom of a hole. Holes must be at least 2.79 mm/.110" long, and the distance from the end of the plug to the center-line of the jets can be as short as 2.16 mm/.075" for plugs below 6.34 mm/.250" or 2.16 mm/.095" for plugs above 6.34 mm/.250".

Nominal Dimension mm / ***inch***										Minimum Hole Length*			**Measuring range**							
Including & Above			To			“A”			“B”			mm	/	inch	DP20			DP50			DP60	
3.94	/	**.155”**	**4.70**	/	**.185”**	**19.10**	/	**.750”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.0200**	/	**.00075”**	**.038**	/	**.0015”**	.076	/ **.0030”**
4.70	/	**.185”**	**6.30**	/	**.248”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.025**	/	**.0010”**	**.051**	/	**.0020”**	.102	/ **.0040”**
6.30	/	**.248”**	**9.49**	/	**.3735”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
9.49	/	**.3735”**	**11.86**	/	**.467”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
11.86	/	**.467”**	**14.94**	/	**.588”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
14.94	/	**.588”**	**37.69**	/	**1.484”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
37.69	/	**1.484”**	**76.30**	/	**3.004”**	**35.71**	/	**1.406”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
76.30	/	**3.004”**	**114.30**	/	**4.500”**	**38.10**	/	**1.500”****	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”

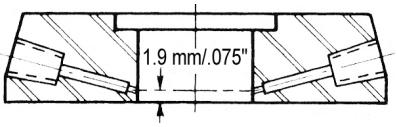
* *If a guide sleeve or stop collar is used, minimum hole length can be as small as 1.78 mm / .070” for holes larger than 6.30 mm / .248”.*
** *A handle 152 mm / 6” long and 33.3 mm / 1.31” diameter is supplied with plugs over 76.30 mm / 3.004”.*

Dimensionair® Air Rings

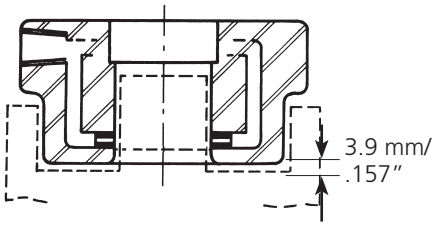


For applications where OD's need to be checked near a shoulder, or where part length is restricted, contact Mahr Federal for technical assistance about shoulder and Snout Type Air Rings.

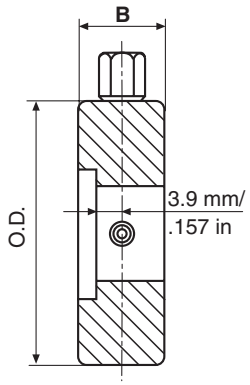
For every air gage, an appropriate setting master can be ordered.



Shoulder Type
(for 2500:1 & 4000:1
5000:1 & 8000:1 only)



Snout Types

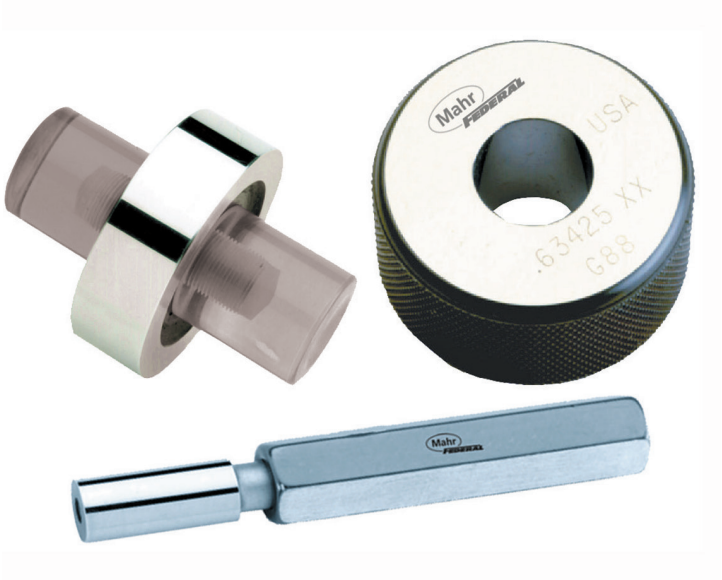


Counterbore Type

Nominal deviations from – to dia. **D** mm *(inch)*				ø D mm *(inch)*		B mm *(inch)*		2 Measuring Jets Measuring Range/type		3 Measuring Jets Measuring Range/type	
								38 µm (.0015") DR 20 5000:1	76 µm (.003") DR 50 2500:1	38 µm (.0015") DR 20-3 5000:1	76 µm (.003") DR 50-3 2500:1
6.299	- 7.592	(0.2480	- 0.2989)	76.20	(3.000)	25.40	(1.000)	2093025	2093005	2093035	2093015
7.595	- 9.294	(0.2990	- 0.3659)	76.20	(3.000)	25.40	(1.000)	2093026	2093006	2093036	2093016
9.296	- 13.002	(0.3660	- 0.5119)	76.20	(3.000)	25.40	(1.000)	2093027	2093007	2093037	2093017
13.005	- 21.003	(0.5120	- 0.8269)	76.20	(3.000)	25.40	(1.000)	2093028	2093008	2093038	2093018
21.006	- 25.400	(0.8270	- 1.0000)	76.20	(3.000)	25.40	(1.000)	2093029	2093009	2093039	2093019
25.403	- 38.351	(1.0001	- 1.5099)	101.60	(4.000)	25.40	(1.000)	2093030	2093010	2093040	2093020
38.354	- 44.450	(1.5100	- 1.7500)	101.60	(4.000)	25.40	(1.000)	2093031	2093011	2093041	2093021
44.453	- 50.797	(1.7501	- 1.9999)	127.00	(5.000)	25.40	(1.000)	2093032	2093012	2093042	2093022
50.800	- 63.500	(2.0000	- 2.5000)	127.00	(5.000)	25.40	(1.000)	2093033	2093013	2093043	2093023

Setting Standsards for indicating measuring instruments

AGD Masters



Master Rings

- Traceable certification and calibration available on request.
- Polished and lapped to size
- Non-gaging areas black oxidized — ring faces ground.
- Meet all requirements of ANSI Specification B47.1-1988
- Manufactured in accordance with ANSI Specification B89.1.6-1984.

Master Plugs

- Traceable certification and calibration available on request.
- Stabilized and hardened.
- 100 % usable gaging surface.
- Ends ground square
- Lapped finish.

Master Discs AGD Style 3

- Traceable certification and calibration available on request.
- Polished and lapped to size
- Non-gaging areas black oxidized — ring faces ground.
- Meet all requirements of ANSI Specification B47.1-1988
- Manufactured in accordance with ANSI Specification B89.1.5.
- Furnished with clear insulators.
- All dimensions are AGD style 3.

Accesories Air Gaging Instruments

Handles and Extensions

When an Air Plug is used with a hose, it should be equipped with a Handle to avoid excessive strain on the air connection and corrosion on the polished plug body. Handles may be combined for gaging deep holes.

Selection of a handle or extension is determined by the bore itself and whether or not it is preceded by a larger C-bored diameter. Corresponding thread sizes of the handle or extension must also be considered.

If no portion of the handle or extension enters the part, only thread sizes must be considered. If the plug does enter the part, then both O.D. and thread size must be considered.

2202010 and 2202011 Extensions — accepts Hose 2202074 on one end and the following plug sizes on the opposite end: all 8000:1 plugs up to 76.3 mm / 3.004".

2202012 Handle — accepts Hose 2202074 on one end and the following plug sizes on the opposite end: all 8000:1 plugs up to 76.3 mm / 3.004".
Has Bakelite insulating cover. Recommended for 37.7 mm / 1.484" up to 76.3 mm / 3.004" diameters.

2237666 — High impact and coolant resistant, lightweight composite handle — normally furnished with µDimensionair® and air snaps

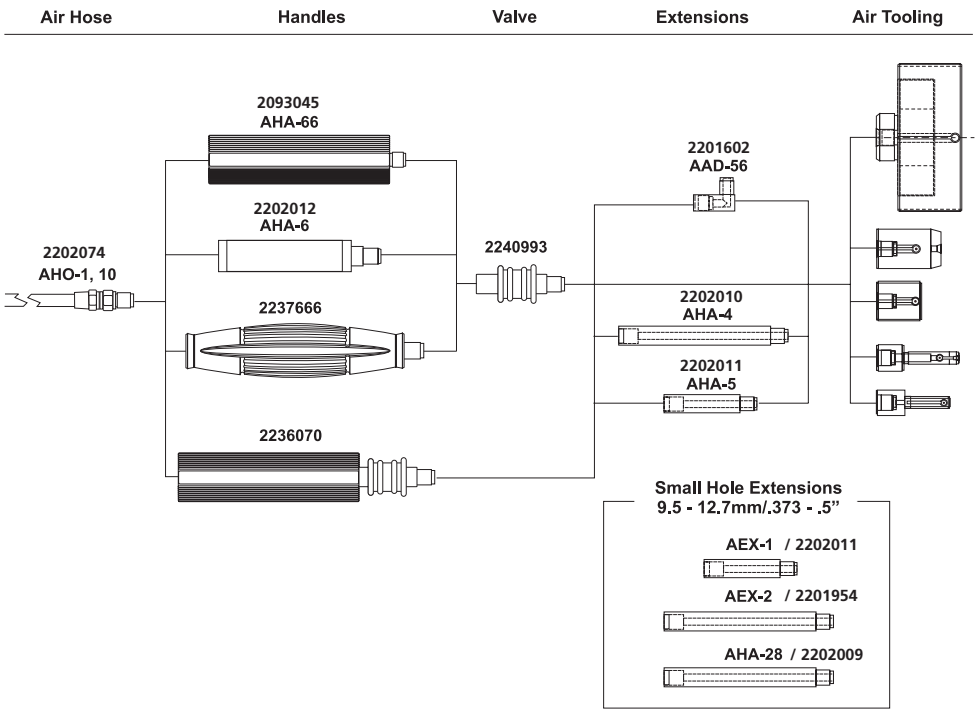
2093045 — lightweight aluminum handles with or without air shutoff valve.

2202003 Handle — used and furnished with 1250:1 thru 8000:1 through or blind hole plugs over 76.3 mm / 3.004".

2202009 Handle — Used with 2500:1 thru 8000:1 blind hole plugs in the 9.47 mm / .3735" to 11.8 mm / .467" range, using an Adaptor 2201588.

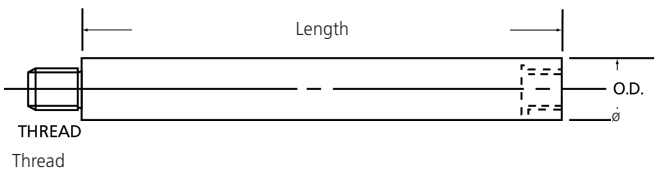
2201954 and 2201963 Extensions — used with 2500:1 thru 8000:1 through hole air plugs in the 9.47 mm / .3735" to 14.93 mm / .588" range and with 11.8 mm / .467" to 14.93 mm / .588" range blind hole plugs, using an Adaptor 2201601.

2201975 — extension used with an Adjustable Base 2204599. Provides easily configured base for bench mounted air tooling fixturing



Thread	ø			Length			Order no.
	mm	/	*inch*	mm	/	*inch*	
3/8-32	12.07	/	***.475"***	102	/	***4"***	**2202010**
3/8-32	12.07	/	***.475"***	51	/	***2"***	**2202011**
3/8-32	19	/	***.750"***	102	/	***4"***	**2202012**
1-1/8-18	33.4	/	***1.315"***	152	/	***6"***	**2202003**
3/8-32	12.7	/	***.500"***	133.3	/	***5.25"***	**2202006**
10-32	9.14	/	***.360"***	102	/	***4"***	**2202009**
5/16-32	9.02	/	***.355"***	51	/	***2"***	**2201954**
5/16-32	9.02	/	***.355"***	102	/	***4"***	**2201963**
3/8-32	9.5	/	***.374"***	61.7	/	***2.43"***	**2201975***

** Use on 2204599*



Single Jet Probe Millimar AAT–19 / AAT–20

- JetProbes and provide modular, convenient gage heads for use in hand-held gages and for designing into fixture gages
- 9.5 mm / .375" bodies provide standardized mounting configurations
- Compact size allows easy access to hard-to-reach dimensions
- JetProbes and are calibrated for instant use with Dimensionair® systems - just set zero and measure!
- Available in single-probe and matched-probe configurations
- JetProbes are similar to AirProbes, except they have an open jet at the end, instead of a contacting spindle.
- JetProbes are ideal for measuring flatness of surfaces which cannot be touched, or for building into fixture designs where air gaging is called for.
- JetProbes can be used with 2500:1, 5000:1 Dimensionair®s, and are supplied singly or in matched pairs. Order no. AAT–19 for single JetProbe or AAT–20 for a matched pair.
- JetProbes are supplied with AHO–1 Air Hose, a zero setting valve, and hardware for mounting to the Dimensionair®.

Technical Data

Order no.	2086612	2086613
Product type	AAT–19	AAT–20
Magnification	2500:1	
Design	Single jet probe	Matched jet probe pair

YOUR STABLE PARTNER FOR MANUFACTURING.

MARSTAND

MarStand Indicator Stands, Comparator Stands and Run out Testing Instruments offer high stablity which ensures precise measurements. Whether you are using a dial indicator, a dial comparator, a test indicator or a measuring probe, you will always have the best possible support.

MarStand. Comparator Stands, Indicator Stands, Center Bench

Indicator Stands

MarStand 815 GN 346
With Cast Iron Base

MarStand 2300 / 2400 347
For Electronic Measurements

MarStand 815 MA / 815 MB / 815 P / 815 MG / 349
With Magnetic Base

Post & Support Arm Assemblies

MarStand 815 XMA / 815 XMB / 815 XMS 285 / 815 XMS 485 / 815 XN / 815 XP 355
With Mounting thread and / or T-Slot

Center Bench

MarStand 818 356

Comparator Stands

MarStand 820 N / 820 NC / 820 FC / 820 NG / 820 FG 361
Small Version

MarStand 821 FG 364
Large Version

MarStand 824 NT / 824 FT / 824 GT 367
Heavy Version

Modular Units

MarStand 827 b 368

Indicator Stand with Delta Base MarStand 815 GN

Application:

- For use on measuring and control plates

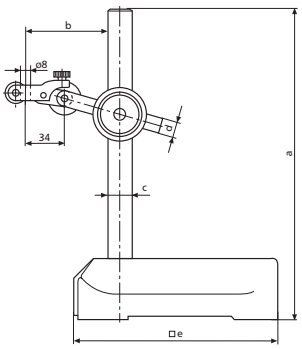
Indicator Stand with Base

- Sturdy base for stability and strength
- Convenient hand grip at the top of the base
- Structurally stable three-point support
- Stainless steel column and support arm
- Fine adjustment at support arm
- Display unit can be swiveled by ± 90°
- Easy to move, without vibration
- Front of the base is ground to allow movement along edges and rulers
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4413000	4413001	4413005	4413050	4413051	4413052
Product type		815 GN					
Fine adjustment range	mm	2					
Total height	mm	300	500	750	300	500	750
Total height	inch	12"	20"	30"	12"	20"	30"
Support arm reach (max.)	mm	185	200	230	185	200	230
Support arm reach (max.)	inch	7.28"	7.87"	9.06"	7.28"	7.87"	9.06"
Mounting hole			8H7			.375"	
Product weight	kg	4.20	9.00	10.00	4.20	9.00	10.00

Order no.	Base surface	a	b	c	d
		mm	mm	mm	mm
4413000	150 x 150 mm	300	185	18	14
4413001	190 x 180 mm	500	200	25	18
4413005	190 x 180 mm	750	230	35	25
4413050	150 x 150 mm	300	185	18	14
4413051	190 x 180 mm	500	200	25	18
4413052	190 x 180 mm	750	230	35	25



Indicator Stand with Delta Base MarStand 2300

Indicator Stand with Base

- Fine adjustment conveniently located in base
- Three-point base pads improve accuracy
- Contoured shape facilitates movement
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		2050451
Product type		2300
Fine adjustment		•
Total height	**mm**	457
Total height	**inch**	18“
Support arm reach (max.)	**mm**	86
Support arm reach (max.)	**inch**	3.375“
Attachment		5.55 mm / .218“

Order no.	Base surface	Column diameter	Column diameter	Column height
		mm	inch	
2050451	110 x 76 mm / 4.375 x 3“	25	.995“	430 mm / 17 in

Indicator Stand with Delta Base MarStand 2400

Technical Data

Order no.		2050462
Product type		2400
Fine adjustment		•
Fine adjustment range	mm	3.8
Fine adjustment range	inch	0.150"
Total height	mm	457
Total height	inch	18"
Support arm reach (max.)	mm	254
Support arm reach (max.)	inch	10"
Attachment		uses vertical Lug mounting

Order no.	Base surface	Column diameter	Column diameter	Column height
		mm	inch	
2050462	162 x 94 mm	31.8	1.25"	457 mm / 18 in

Indicator Stand with Base

- A stable Height Stand for electronic measurement
- Fine adjustment in the base allows easy operator set up, even at high magnification
- Up to 3.8 mm / .150" adjustment when arms fully extended
- Collar has Teflon bearings and metal to metal clamping
- Post is thermally heatisolated from the base
- Arm lock is independent of the pivot lock
- Uses vertical lug mounting
- EHE–2056 Lever gagehead mounts directly to arm (as shown)
- EHE–2048 Lever gagehead requires an EAM–1071 adapter
- CP–83 Extra arm and swivel clamp assembly (allows mounting two lever gage heads on one stand)
- **Scope of delivery:** excludes indicator

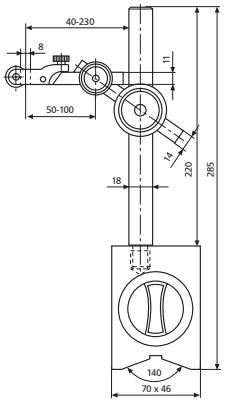
Indicator Stand with Magnetic Base MarStand 815 MA

Indicator Stand with Magnetic Base

- Support arm with two joints
- Base has a powerful ON/OFF permanent magnet
- Magnetic force is active across the surfaces and the V-shaped bottom plus the front of the base
- Post and support arm are made of stainless steel
- Support arm can be finely adjusted
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4416000	4416050
Product type		815 MA	
Fine adjustment range	mm	2	
Total height	mm	285	
Total height	inch	11.2"	
Support arm reach (max.)	mm	230	
Support arm reach (max.)	inch	9.06"	
Mounting hole		8H7	.375"
V-block for shaft diameter	mm	20 –100	
Magnetic force	N	450	
Product weight	kg	2.50	



Accessories

Order no.	Product name
4416001	Wooden Case

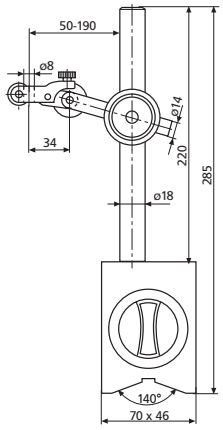
Indicator Stand with Magnetic Base MarStand 815 MB

Indicator Stand with Magnetic Base

- Support arm with one joint
- Base has a powerful ON/OFF permanent magnet
- Magnetic force is active across the surfaces and the V-shaped bottom plus the front of the base
- Post and support arm are made of stainless steel
- Support arm can be finely adjusted
- Indicating instrument can be rotated through ± 90°
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4417000	4417050
Product type		815 MB	
Fine adjustment range	mm	2	
Total height	mm	285	
Total height	inch	11.2"	
Support arm reach (max.)	mm	190	
Support arm reach (max.)	inch	7.48"	
Mounting hole		8H7	.375"
V-block for shaft diameter	mm	20 –100	
Magnetic force	N	450	
Product weight	kg	2.20	



Accessories

Order no.	Product name
4416001	Wooden Case

Indicator Stand with Magnetic Base MarStand 1492B–5 / 1492B–10 / 1492B–15

Indicator Stand with Magnetic Base

- Use with any MarTest Iindicator
- Support arms stepped at one end (.218" Dia.) for supplied swivel clamp (CP– 2199)
- Accommodates Vertical and Horizontal lug back mounts for AGD type Indicators
- Bases have powerful "ON/OFF" permanent magnets capable of attaching on any of four faces (three sides or bottom)
- **Scope of delivery:** Clamp CP–2199, excludes indicator

Technical Data

Order no.		2050360	2050358	2050359
Product type		1492B–5	1492B–10	1492B–15
Fine adjustment			•	
Total height	mm	237		460
Total height	inch	9.2"		18"
Support arm reach (max.)	mm	165	149	200
Support arm reach (max.)	inch	6.5"	5.9"	7.9"
Attachment		Dia. 5,54 mm / .218" post		

Order no.	Base surface	Column diameter	Column diameter	Column height
		mm	inch	
2050360	60 x 48 mm / 2.4 x 1.9"	10	.47"	178 mm / 7.0"
2050358	60 x 48 mm / 2.4 x 1.9"	10	.47"	178 mm / 7.0"
2050359	114 x 48 mm / 4.5 x 1.9"	20	.79"	401 mm / 15.8"

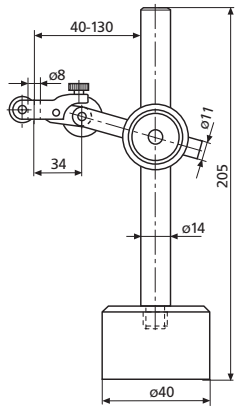
Indicator Stand with Magnetic Base MarStand 815 P

Indicator Stand with Magnetic Base

- Support arm has one joint
- Sturdy circular base with permanent magnet
- Post and support arm are made of stainless steel
- Support arm can be finely adjusted
- Indicating instrument can be rotated through ± 90°
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4422000	4422050
Product type		815 P	
Fine adjustment range	mm	1.5	
Total height	mm	205	
Total height	inch	8″	
Support arm reach (max.)	mm	130	
Support arm reach (max.)	inch	5.12″	
Mounting hole		8H7	.375″
Product weight	kg	0.70	



Indicator Stand with Magnetic Base MarStand 815 MG

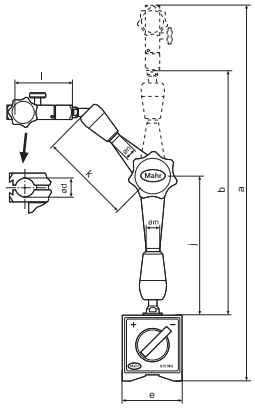
Indicator Stand with Magnetic Base

- 3D measuring stand, any position within the operating range can be reached
- 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 receptacle bore and dovetail for dial test indicator measuring devices
- Fitted with zero play micro-precision adjuster
- Powerful magnet can be switched on and off
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4420350	4420360	4420370
Product type			815 MG	
Fine adjustment range	mm		5	
Total height	mm	224	316	401
Total height	inch	8.8″	12.4″	15.8″
Support arm reach (max.)	mm	130	200	280
Support arm reach (max.)	inch	5.12″	7.87″	11.02″
Mounting hole			8H7	
V-block for shaft diameter	mm		6 –120	
Magnetic force	N	300	800	

Order no.	Base surface	j	k	l	m	a	b	d
		mm	mm	mm	mm	mm	mm	mm
4420350	34 x 34 mm	70	60	62	9	224	130	8
4420360	60 x 50 mm	120	80	64	10	316	200	8
4420370	60 x 50 mm	170	110	66	16	401	280	8



Indicator Stand with Magnetic Base MarStand 815 MG

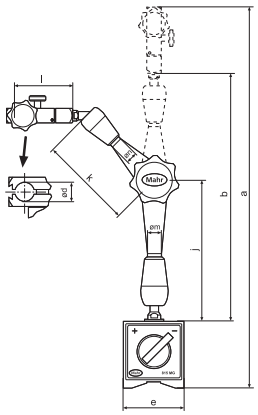
Indicator Stand with Magnetic Base

- 3D measuring stand, any position within the operating range can be reached
- easy positioning of all three joints with a securely fixed handle
- Very sturdy component, 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
- Powerful magnet can be switched on and off
- **Scope of delivery:** excludes indicator

Technical Data

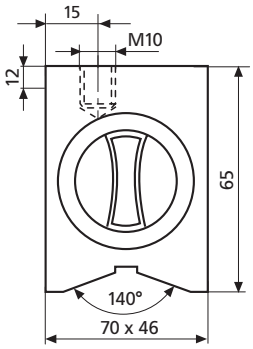
Order no.		4420380
Product type		815 MG
Fine adjustment range	mm	2
Total height	mm	444
Total height	inch	17.5“
Support arm reach (max.)	mm	330
Support arm reach (max.)	inch	13.00“
Mounting hole		8H7
V-block for shaft diameter	mm	6 –120
Magnetic force	N	1000

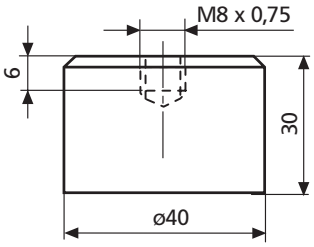
Order no.	Base surface	j	k	l	m	a	b	d
		mm	mm	mm	mm	mm	mm	mm
4420380	73 x 50 mm	201	129	67	21	444	330	8



Magnetic Base MarStand

Overview

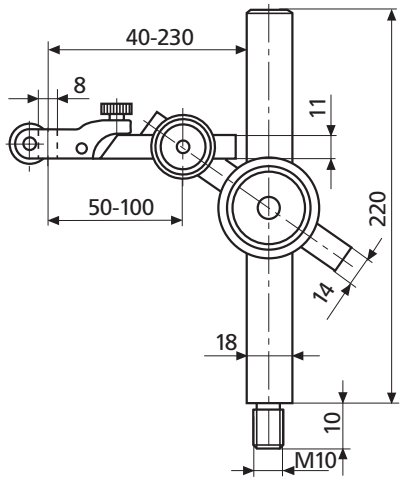


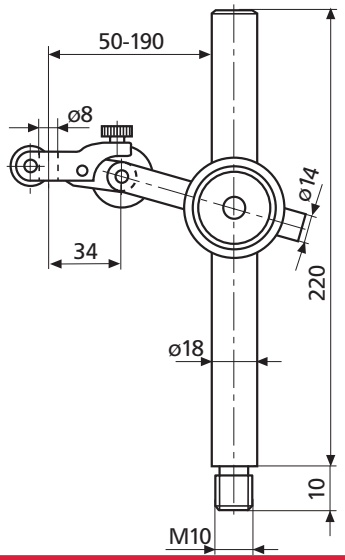


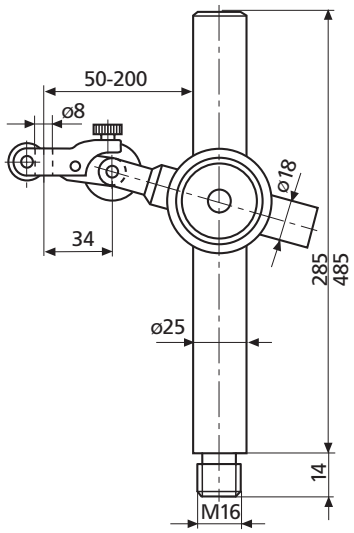
Order no.	4425000	4425002
Product type	**815 YM**	**815 YP**
Product	Standard version	Round version
	• Base has a powerful ON/OFF permanent magnet • With threaded mounting hole • V-groove in base • Front is flat • Magnetic force 450 N	• Permanent magnet plus threaded mounting hole • Underside of the base is flat • Magnetic force 250 N

Post and Support Assemblies MarStand

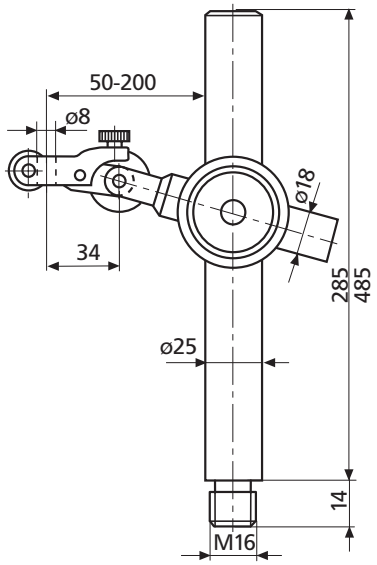
Overview

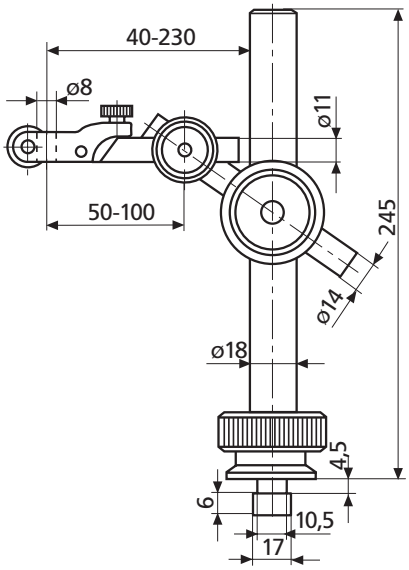


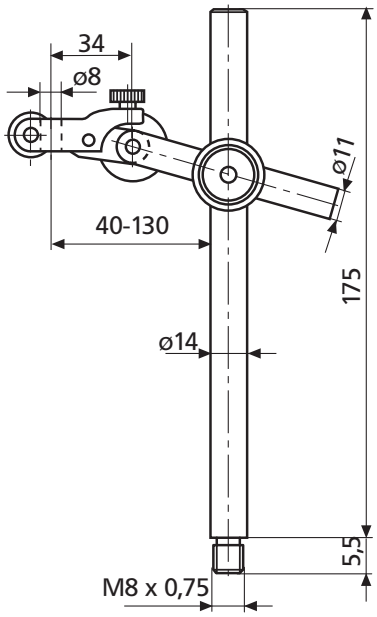




Order no.	4424005	4424006	4435011
Product type	**815 XMA**	**815 XMB**	**815 XMS 285**
Product	with mounting thread • Two joints • Post and support arm are made of stainless steel • With fine adjustment	with mounting thread • One joint • Post and support arm are made of stainless steel • With fine adjustment	Exceptionally sturdy design with mounting thread • One joint • Post and support arm are made of stainless steel • With fine adjustment







Order no.	4435015	4424000	4424015
Product type	**815 XMS 485**	**815 XN**	**815 XP**
Product	Exceptionally sturdy design with mounting thread • One joint • Stainless steel column and cantilever arms • Precision adjuster	for mounting in a T-slot • Two joints • Knurled nut for clamping to the post • Post and support arm are made of stainless steel • With fine adjustment	with mounting thread • One joint • Post and support arm are made of stainless steel • With fine adjustment

Radial run-out gage with center supports MarStand 818

Radial run-out gage with center supports

Unit composed of:

Bench:

- 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

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 height of 75 mm with a 90° prism for workpieces without a center, to a diameter of 20 mm (0.79“)
- **Scope of delivery:** Measuring bench, Measuring arm 818 XNB, Center supports, excludes indicator

Application:

- Ideal for quick and accurate concentricity / run-out checks

Technical Data

Order no.		4622200	4622201	4622202	4622203
Distance between centers	mm	0 –200	0 –350	0 –450	
Product type		818			
Height of centers	mm	50	75	100	150
T-groove width	mm	10H7		12H7	
Mounting hole		8H7			
Permitted height difference	mm	0.05			
Permitted lateral difference	mm	0.05			
Product weight	kg	8.00	12.00	35.00	38.00

Order no.	Column diameter	Structural dimensions (L x W) mm
	mm	mm
4622200	18	350 x 110
4622201	18	500 x 110
4622202	18	700 x 180
4622203	18	700 x 180

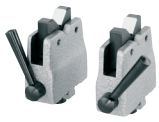
Radial run-out gage with center supports MarStand 818

Accessories

Order no.	Product name	Product type
4622210	V-support anvils in pairs, Diameter range 3 –15 mm, suitable for center height 50 / 75 mm	818 pe
4622275	Support Arm, Column height 205 mm, T-groove width 10 mm	818 XNB
4622220	Roller supports in pairs, Diameter range 3 –30 mm, T-groove width 10 mm	818 ab
4622215	V-support in pairs, Diameter range 5 –20 mm, T-groove width 10 mm	818 pb
4622276	Support Arm, Column height 260 mm, T-groove width 12 mm	818 XNB
4622211	V-support anvils in pairs, Diameter range 8 –45 mm, suitable for center height 100 mm	818 pe
4622277	Support Arm, Column height 360 mm, T-groove width 12 mm	818 XNB
4622221	Roller supports in pairs, Diameter range 4 –60 mm, T-groove width 12 mm	818 ab
4622216	V-support in pairs, Diameter range 5 –45 mm, T-groove width 12 mm	818 pb

818 pe

818 ab



818 pb

Center Bench with V-support MarStand 818

Center Bench with V-support

Unit composed of:

Bench:

- 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)

- **Scope of delivery:** Measuring bench, Measuring arm 818 XNB, V-supports, excludes indicator

Application:

- Ideal for quick and accurate concentricity / run-out checks

Technical Data

Order no.		4622260	4622261	4622262
Product type			818	
Height of v-supports	**mm**		70	120
Diameter range	**mm**		5 –20	5 –45
T-groove width	**mm**		10H7	12H7
Mounting hole			8H7	
Permitted height difference	**mm**		0.05	
Permitted lateral difference	**mm**		0.05	
Product weight	**kg**	6.50	9.50	30.00

Order no.	Column diameter	Structural dimensions (L x W) mm
	mm	mm
4622260	18	350 x 110
4622261	18	500 x 110
4622262	18	700 x 180

Accessories

Order no.	Product name	Product type
4622275	Support Arm, Column height 205 mm, T-groove width 10 mm	818 XNB
4622276	Support Arm, Column height 260 mm, T-groove width 12 mm	818 XNB
4622277	Support Arm, Column height 360 mm, T-groove width 12 mm	818 XNB

Center Bench with Roller support MarStand 818

Application:

- Ideal for quick and accurate concentricity / run-out checks

Center Bench with Roller support

Unit composed of:

Bench:

- 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)
- **Scope of delivery:** Measuring bench, Measuring arm 818 XNB, Balancing supports, excludes indicator

Technical Data

Order no.		4622250	4622251	4622252
Product type			818	
Height of roller supports	mm		65	100
Diameter range	mm		3 –30	4 –60
T-groove width	mm		10H7	12H7
Mounting hole			8H7	
Permitted height difference	mm		0.05	
Permitted lateral difference	mm		0.05	
Product weight	kg	6.50	9.50	30.00

Order no.	Column diameter	Structural dimensions (L x W) mm
	mm	mm
4622250	18	350 x 110
4622251	18	500 x 110
4622252	18	700 x 180

Accessories

Order no.	Product name	Product type
4622275	Support Arm, Column height 205 mm, T-groove width 10 mm	818 XNB
4622276	Support Arm, Column height 260 mm, T-groove width 12 mm	818 XNB
4622277	Support Arm, Column height 360 mm, T-groove width 12 mm	818 XNB

Small Comparator Stand made from steel MarStand 820 N / 820N

Small Comparator Stand made from steel

- Stable design
- Table plate made of hardened steel
- Rugged, ground stainless steel column
- Adjustable support arm for indicating instrument
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4430000	4430018
Product type		820 N	820N
Working range a	**mm**	0 –110	
Working range a	**inch**	0 –4.3"	
Grade		DIN 876/00	
Flatness tolerance		t_1 = 2(1 + L/1000) µm, L in mm	
Mounting hole		8H7	3/8"
Product weight	**kg**	2.60	

Accessories

Order no.	Product name	Quantity unit	Product type
4229000	107 V V-Block For shaft diameter 2 –25 V-angle 108° Sales volume: Unit	Piece	107 V

Small Comparator Stand made from ceramic MarStand 820 NC / 820 FC

Small Comparator Stand made from ceramic

- Stable design
- Ceramic table plate (very high hardness for lasting precision)
- Rugged, ground stainless steel column
- Adjustable support arm for indicating instrument
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4432100	4432120	4433100	4433110
Product type		820 NC		820 FC	
Working range a	**mm**	0 –110			
Working range a	**inch**	0 –4.3″			
Fine adjustment				•	
Fine adjustment range	**mm**			0.4	
Grade		DIN 876/00			
Flatness tolerance		t_1 = 2(1 + L/1000) µm, L in mm			
Mounting hole		8H7	3/8″	8H7	3/8″
Product weight	**kg**	4.00			

Accessories

Order no.	Product name	Quantity unit	Product type
4229000	107 V V-Block For shaft diameter 2 –25 V-angle 108° Sales volume: Unit	Piece	107 V

Small Comparator Stand, Plate made of granit MarStand 820 NG / 820 FG

Small Comparator Stand, Plate made of granit

- Stable design
- Table plate made of lapped black granite
- Rugged, ground stainless steel column
- Adjustable support arm for indicating instrument
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4430100	4430110	4431100	4431110
Product type		820 NG		820 FG	
Working range a	**mm**	0 –130			
Working range a	**inch**	0 –5.1"			
Fine adjustment				•	
Fine adjustment range	**mm**			0.4	
Grade		DIN 876/0			
Flatness tolerance		t_1 = 4(1 + L/1000) µm, L in mm			
Mounting hole		8H7	3/8"	8H7	3/8"
Product weight	**kg**	3.20			

Accessories

Order no.	Product name	Quantity unit	Product type
4229000	107 V V-Block For shaft diameter 2 –25 V-angle 108° Sales volume: Unit	Piece	107 V

Large Comparator Stand made from granite MarStand 821 NG / 821 FG

- Large Comparator Stand made from granite
- 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
- **Scope of delivery:** excludes indicator

Technical Data

Order no.		4435100	4435101	4435110	4435111	4435150	4435151	4435160	4435161
Product type		821 NG	821 FG	821 NG	821 FG	821 NG	821 FG	821 NG	821 FG
Working range a	**mm**	0 –250		0 –430		0 –250		0 –430	
Working range a	**inch**	0 –10″		0 –17″		0 –10″		0 –17″	
Fine adjustment			•		•		•		•
Fine adjustment range	**mm**		0.4		0.4		0.4		0.4
Grade		DIN 876/0							
Flatness tolerance		t_1 = 4(1 + L/1000) µm, L in mm							
Mounting hole		8H7				3/8″			
Product weight	**kg**	15.80		48.00		15.80		48.00	

Accessories

Order no.	Product name	Quantity unit	Product type
4229000	107 V V-Block For shaft diameter 2 –25 V-angle 108° Sales volume: Unit	Piece	107 V

Comparator Stand MarStand OMI–35B–21 / OMI–35B–30 / OMI–35B–32 / OMI–35B–41

Comparator Stand

- Model 35B has a precision ground base
- Indicator arms with and without fine adjustment are available
- Models are also available with lapped anvils for the highest precision
- Alternate post lengths, Indicators, Anvils and special fixturing available upon request
- For Dial or Digital Indicators having a horizontal lug back
- **Scope of delivery:** excludes indicator

Application:

Length Measurement with Plain Anvil (1" x 1" x 3") and Fine Adjustment

Technical Data

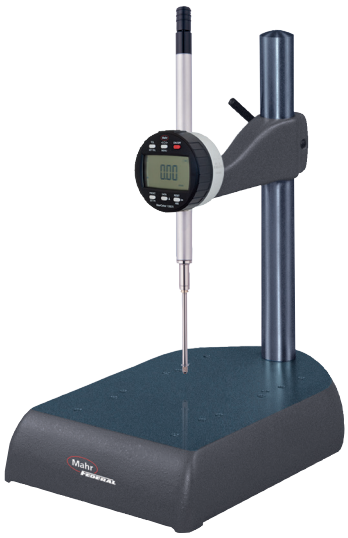
Order no.		2054319	2054320	2054321	2054322
Product type		OMI–35B–21	OMI–35B–30	OMI–35B–32	OMI–35B–41
Working range a	**mm**	0 –222			
Working range a	**inch**	0 –8.75"			
Fine adjustment		•		•	
Fine adjustment range	**mm**	1.5		1.5	
Fine adjustment range	**inch**	.06"		.06"	
Support arm reach (max.)	**mm**	62.5			
Support arm reach (max.)	**inch**	2.5"			
Mounting		Lug Back Mount - Requires Horizontal Lug Back Type Indicators or Accessories			
Plate		AL–96, plain surface			AL–97, serrated

Order no.	Column diameter	Table surface (A x B) mm
	mm	
2054319	32	25 x 75 mm
2054320	32	
2054321	32	
2054322	32	25 x 75 mm

Accessories

Order no.	Product name	Product type
2202343	Plain anvil, 75 mm x 25 mm x 25mm / 3" x 1" x 1"	AL–96
2202344	Serrated anvil, 75 mm x 25 mm x 25mm / 3" x 1" x 1"	AL–97
2202459	Fine adjustment arm	AM–146

MarStand OMI-NB–60 / OMI-NB–61



Application:

Length Measurement with No Platen and with No Fine Adjustment

- Model NB–60 and NB–61 have the largest base and greatest throat depth
- Indicator arms with and without fine adjustment are available
- Base has a pattern of 1/4–20 tapped holes for mounting platens or special tooling
- Only indicating instruments that have a horiziontal lug back can be used
- **Scope of delivery:** excludes indicator, without plate

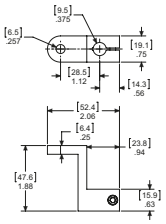
Technical Data

Order no.		2054324	2054325
Product type		OMI-NB–60	OMI-NB–61
Working range a	**mm**	0 –200	
Working range a	**inch**	0 –8.0"	
Fine adjustment		false	•
Fine adjustment range	**mm**		1.5
Fine adjustment range	**inch**		.06"
Support arm reach (max.)	**mm**	124	
Mounting		Lug Back Mount - Requires Horizontal Lug Back Type Indicators or Accessories	

Order no.	Column diameter	Table surface (A x B) mm
	mm	
2054324	32	238 x 165 mm
2054325	32	238 x 165 mm

Accessories

Order no.	Product name	Product type
2223500	Measuring plate, serrated, 152 mm x 203 mm / 6" x 8"	PL–147
2223599	Measuring plate, serrated, 114 mm x 152 mm / 4.5" x 6"	PL–99
2202460	Fine adjustment arm	AM–147
2009177	Adapter, Mounting Bracket, L-bracket with 0.375" hole	AAD–66



AAD–66

Heavy measuring table MarStand 824 NT / 824 FT / 824 GT

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

- **Scope of delivery:** excludes indicator, without plate

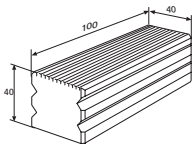
Technical Data

Order no.		4442100	4442105	4443100	4443105	4444200
Product type		824 NT		824 FT		824 GT
Working range a	mm	0 –210				0 –200
Working range a	inch	0 –8.2"				0 –8.0"
Fine adjustment				•		
Fine adjustment range	mm			0.4		3
Mounting hole		8H7	3/8"	8H7	3/8"	28H7
Product weight	kg	17.00		19.00		18.00

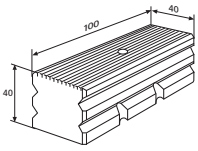
Accessories

Order no.	Product name	Quantity unit	Product type
4082731	Plate for single measurement (100 x 40 mm)		827 b 31
4082732	Plate for sum measurement (100 x 40 mm)		827 b 32
4082733	Plate for single measurement (130 x 130 mm)		827 b 33
4082734	Plate for sum measurement (130 x 130 mm)		827 b 34
4229000	107 V V-Block For shaft diameter 2 –25 V-angle 108° Sales volume: Unit	Piece	107 V

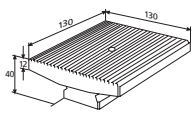
107 V



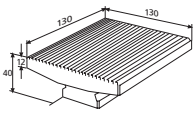
827 b 31



827 b 32



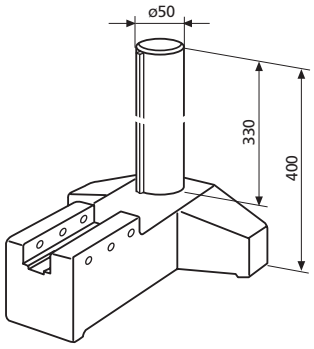
827 b 34

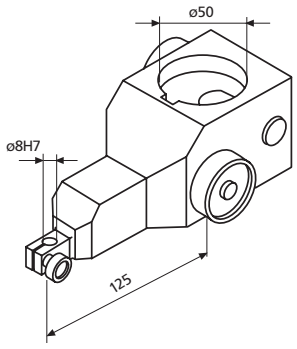


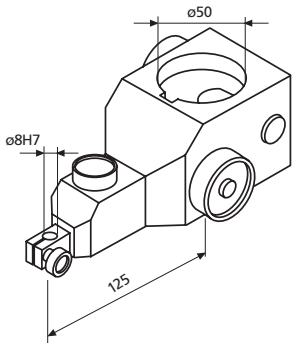
827 b 33

Base with Post MarStand

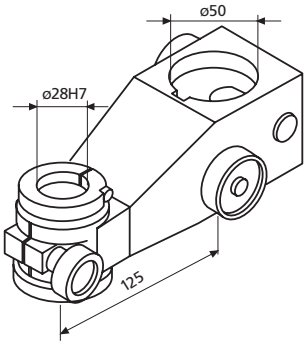
Overview

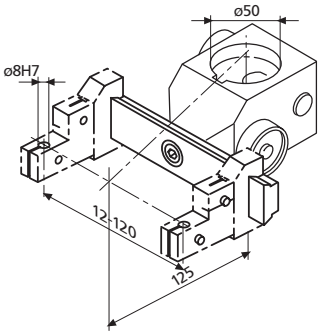


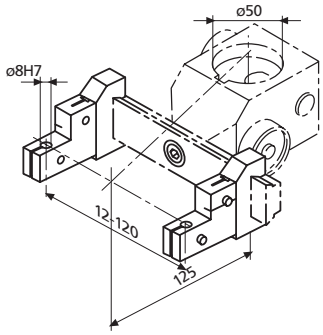




Order no.	4082705	4082716	4082717
Product type	**827 b 5**	**827 b 16**	**827 b 17**
Product	• T-shaped base which is made from a special cast iron • Post has a chrome finish	• Rugged construction for exceptionally high bending resistance • Locked against rotation, and height adjustable via rack	• Rugged construction for exceptionally high bending resistance • Locked against rotation, and height adjustable via rack



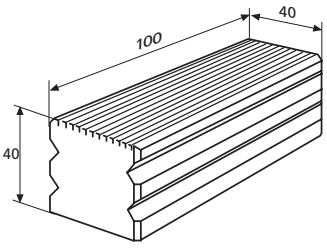


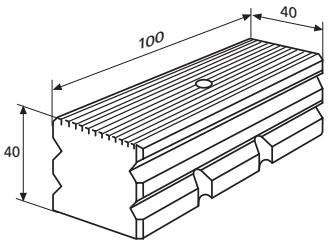


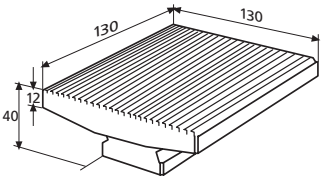
Order no.	4082718	4082719	4082714
Product type	**827 b 18**	**827 b 19**	**827 b 14**
Product	• Rugged construction for exceptionally high bending resistance • Locked against rotation, and height adjustable via rack	• Rugged construction for exceptionally high bending resistance • Locked against rotation, and height adjustable via rack	Probe holder, mounting hole 8 mm

Plate for single measurement MarStand

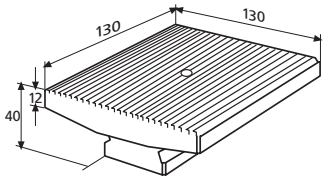
Overview

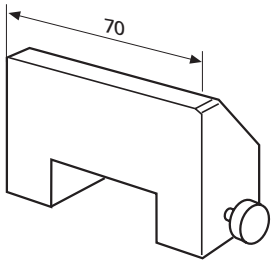


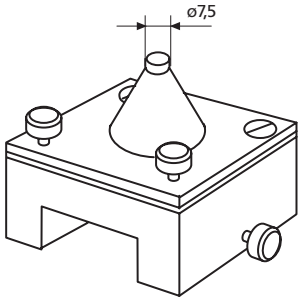




Order no.	4082731	4082732	4082733
Product type	**827 b 31**	**827 b 32**	**827 b 33**
Product	• For single measurement • Hardened and lapped • Reversible • One measuring surface with longitudinal ribbing • Both sides face lapped	• For compound measurement • Hardened and lapped • With 8 mm mounting bore and clamping device for inductive probes • Measuring surface with longitudinal ribbing	• For single measurement • Hardened and lapped • Reversible • Large measuring surface with longitudinal ribbing • Both sides face lapped







Order no.	4082734	4082735	4082736
Product type	**827 b 34**	**827 b 35**	**827 b 36**
Product	• For compound measurement • Hardened and lapped • With 8 mm mounting bore and clamping device for inductive probes • Large measuring surface with longitudinal ribbing	• Ensures that a workpiece is correctly positioned • To be attached to plates 827 b 31 and 827 b 32	• With adjustment screws for parallel alignment of 2 plan surfaces • Particularly suitable for mounting Pin Gages 426 M • To be attached to plates 827 b 31 and 827 b 32

THE BENCHMARK OF INDICATING MEASURING INSTRUMENTS.
MARAMETER.

MaraMeter is the ideal measuring instrument for highly precise measurements of internal and external diameters on either an individual part or on serial components. Our indicating measuring instruments obtain the best results due to their constant measuring force, their exact transmission lever system, as well as their high parallelism on the measuring faces. For special measuring tasks such as threads, teeth, grooves or precision mechanical parts MaraMeter offers the right solution.

MaraMeter. Indicating Measuring Instruments

Indicating Measuring Instruments for Outside Dimensions, Indicating Snap Gages

MaraMeter 1000P / 300P 374
Indicating Snap Gage

MaraMeter 840 F / 840 FC / 840 FH / 840 FG / 840 FM / 840 FS 388
Indicating Snap Gage

MaraMeter 840 E 397
Indicating Snap Gage

MaraMeter 852 / 852 TS / 853 399
Indicating Snap Gage

Portable Thickness Gages

MaraMeter 22 P / 26 P / 838 A / 838 B / 838 AB / 57 B 409
With digital and/or analog diplay

Caliper Gages

MaraMeter 49 P / 838 TA / 838 EA / 838 TI / 838 EI 418
With digital and/or analog diplay

Depth Gages

MaraMeter 837 / 65 P-40 / 75 P-30 / 75 B-1 425

Indicating Measuring Instruments for Inside Dimensions

Dimentron Plug Inside Diameter Gages 436
Designed for high production ID gaging

MaraMeter 844 D 444
Indicating Plug Gage for rapid testing of serial components

MaraMeter 844 K 452
Self-centering Dial bore Gage

MaraMeter 1280 P Adjustable Bore Gages 459
Superior accuracy for production and inspection

MaraMeter 844 N / NH / NR / NB 462
Self-centering Dial Bore Gage

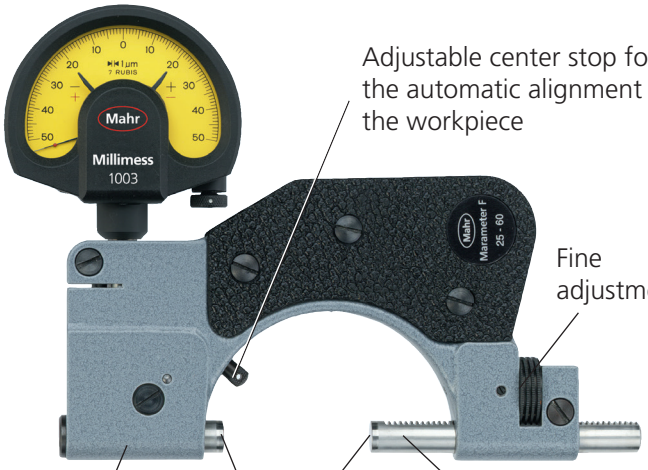
MaraMeter 844 Z 468
Dial Bore Gages for internal serrations

MaraMeter. Indicating Snap Gages

OVERVIEW

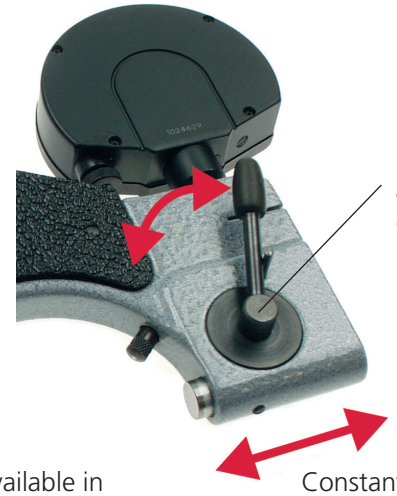
The Indicating Snap Gages **MaraMeter** 840 F / 300 P-1 are ideal for highly accurate and reliable results on cylindrical workpieces with a narrow tolerance.

MaraMeter 840 F



Adjustable center stop for the automatic alignment of the workpiece

Fine adjustment



Measuring spindle has a lever controlled retraction and is mounted in a long guideway

Constant measuring force

Rugged, forged steel frame with heat insulators

The measuring faces have excellent flatness and parallelism

Both anvils are available in hardened stainless steel, carbide tipped or ceramic (840 FC)

MaraMeter 300 P-1

Indicator can be rotated to read from front or rear of the gage.

Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / ***1"*** range of adjustment.

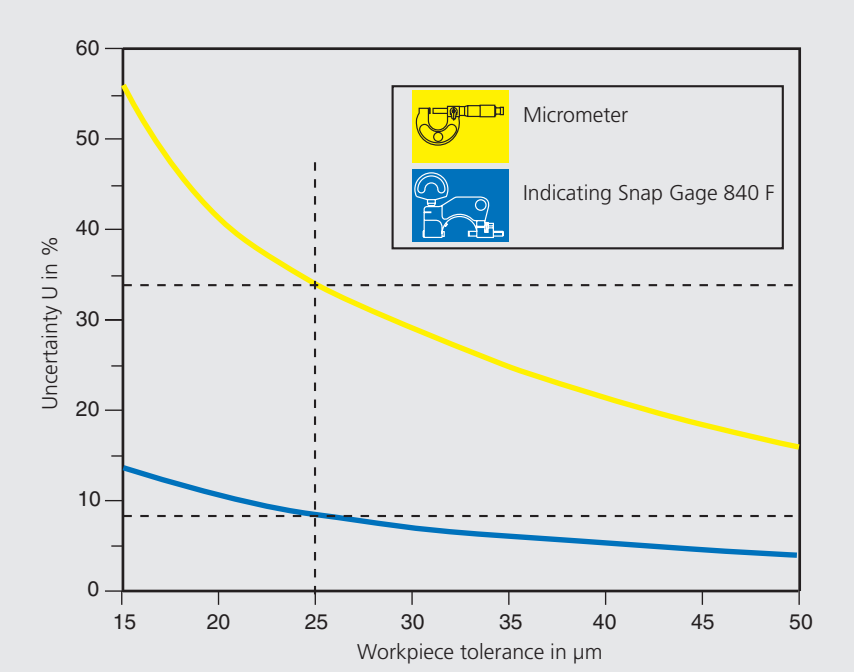
0.50 mm/ ***.020"*** Range of sensitive contact

Large 15.5 mm / ***.61"*** square tungsten carbide anvils provide flat, parallel, long-lasting working surfaces that ensure lasting precision that lasts.

Advantages of the Snap Gage 840 F compared to a Micrometer

- **Reduced Measuring Uncertainity**

The MaraMeter Indicating Snap Gages have a notably reduced measuring uncertainty in comparison to to a Micrometer.



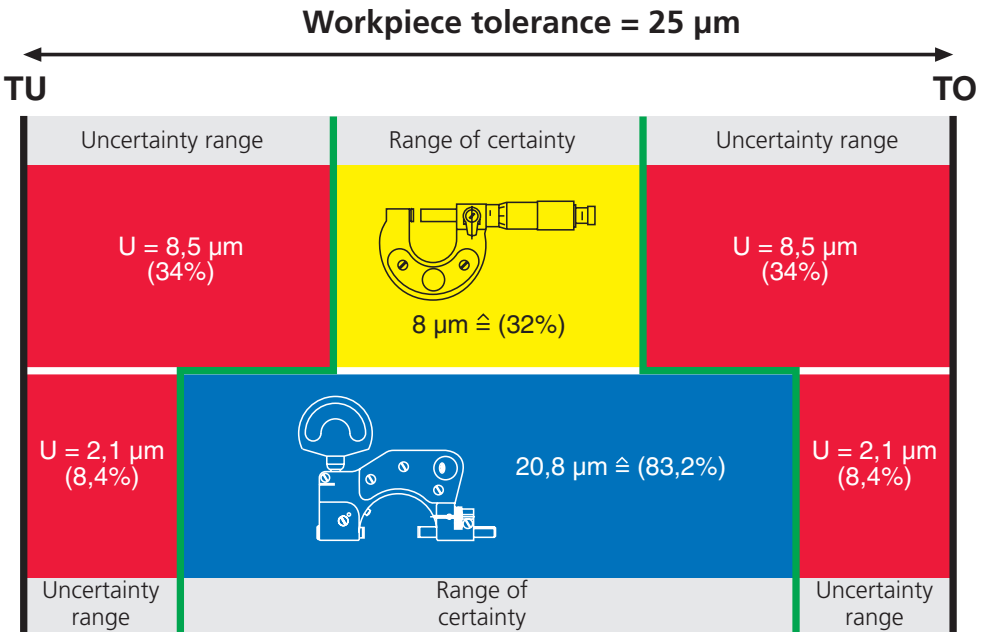
Measuring Uncertainty U is dependent upon the tolerance of the workpiece

- **Better utilization of the tolerance zone**

Example:
Workpiece tolerance 25 µm

The measured value in the uncertainty range can lie outside of the tolerance range, therefore the utilized tolerance of the Micrometer is reduced to only 32% (8 µm).

With a MaraMeter Indicating Snap Gage 840 F, 83% (20.8 µm) of the workpiece tolerance can be utilized.



Advantage:
With the Indicating Snap Gage the tolerance zone can be used to far greater extent, thus reducing the production costs.

Indicating Snap Gage MaraMeter 1000P

- Flat lower anvil (reference) adjustable over a broad range
- Radiused upper anvil (sensitive) spring loaded to counter balance the weight of the gage
- Indicator can be rotated to read from front or rear of the gage
- Anvils are tungsten carbide for long life
- **Scope of delivery:** Indicator, Insulating grip for ranges 44 –82 mm/ 1.75 –3.25" and above

Application:

The economical way to check outside diameters on the shop floor

Technical Data

Order no.	Product type	Measuring range	Graduation value	Probe path	Indicating instrument (included in delivery)
		inch	inch	inch	
2050007	1000P–1	0 –1"	.0005"	.020"	IDS–179 Indicator (B5M)
2050011	1000P–2	.75 –2"	.0005"	.020"	IDS–179 Indicator (B5M)
2050015	1000P–3	1.75 –3.25"	.0005"	.020"	IDS–179 Indicator (B5M)
2050017	1000P–4	3 –4.5"	.0005"	.020"	IDS–179 Indicator (B5M)
2050019	1000P–5	4 –6"	.0005"	.020"	IDS–179 Indicator (B5M)
2050021	1000P–6	6 –8"	.0005"	.020"	IDS–179 Indicator (B5M)
2050023	1000P–7	8 –10"	.0005"	.020"	IDS–179 Indicator (B5M)

Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26

Indicating Snap Gage MaraMeter 1000P-M

- Flat lower anvil (reference) adjustable over a broad range
- Radiused upper anvil (sensitive) spring loaded to counter balance the weight of the gage
- Indicator can be rotated to read from front or rear of the gage
- Anvils are tungsten carbide for long life
- **Scope of delivery:** Indicator, Insulating grip for ranges 44 –82 mm/ 1.75 –3.25" and above

Application:

The economical way to check outside diameters on the shop floor

Technical Data

Order no.	Product type	Measuring range	Graduation value	Measuring surface ø	Probe path	Indicating instrument (included in package)
		mm	mm	mm	mm	
2050008	1000P–1M	0 –25	0.01	13	0.5	IDS–288 (O6I)
2050012	1000P–2M	19 –50	0.01	13	0.5	IDS–288 (O6I)
2050016	1000P–3M	44 –82	0.01	13	0.5	IDS–288 (O6I)
2050018	1000P–4M	76 –114	0.01	16	0.5	IDS–288 (O6I)
2050020	1000P–5M	102 –152	0.01	16	0.5	IDS–288 (O6I)
2050022	1000P–6M	152 –203	0.01	19	0.5	IDS–288 (O6I)
2050024	1000P–7M	203 –254	0.01	19	0.5	IDS–288 (O6I)

Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26

Indicating Snap Gage MaraMeter EDI / EMD – 300P

USB RS232C Digimatic

Application:

- For rapid measurements of cylindrical parts such as shafts, bolts and spindles for thickness and length measurements

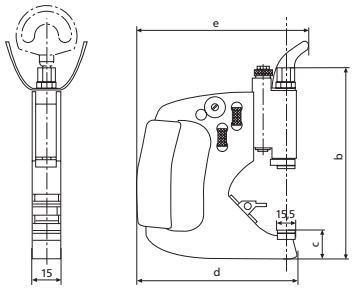
- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment.
- All Series 300P Snap Gages are fully adjustable with positive position locking at any point within the range.
- 0.50 mm / .020" movement of sensitive contact
- Snap Gages available over a wide range of sizes, styles, and readout configurations.
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel working surfaces ensuring precision that lasts.
- Indicator can be rotated to read from front or rear of the gage.
- All adjustments accomplished using a single hex wrench (furnished).
- **Scope of delivery:** Allen key

Technical Data

Type			EDI-300P-X	EDI-301P-X	EMD-300P-XD	EMD-301P-XD
Lifting lever						
Indicator included			µMaxum II (2034201)	µMaxum II (2034201)	MaxµmIII (2033119)	MaxµmIII (2033119)
Measuring range			**Order no.**	**Order no.**	**Order no.**	**Order no.**
mm	**inch**					
0 - 25,4	0 - 1"		2051658 (-1)	2051674 (-1)	2051730 (-1D)	2051806 (-1D)
25,4 - 50,8	1 - 2"		2051664 (-2)	2051680 (-2)	2051734 (-2D)	2051810 (-2D)
50,8 - 76,2	2 - 3"		2051666 (-3)	2051681 (-3)	2051758 (-3D)	2051834 (-3D)
76,2 - 101,6	3 - 4"		2051668 (-4)	2051687 (-4)	2051762 (-4D)	2051838 (-4D)
101,6 - 127	4 - 5"		2051669 (-5)	2051688 (-5)	2051766 (-5D)	2051842 (-5D)
127 - 152,4	5 - 6"		2051670 (-6)	2051689 (-6)	2051770 (-6D)	2051846 (-6D)
152,4 - 177,8	6 - 7"		2051671 (-7)	2051690 (-7)	2051774 (-7D)	2051850 (-7D)
177,8 - 203,2	7 - 8"		2051672 (-8)	2051691 (-8)	2051778 (-8D)	2051854 (-8D)
203,2 - 228,6	8 - 9"		2051673 (-9)	2051692 (-9)	2051782 (-9D)	2051858 (-9D)
228,6 - 254	9 - 10"		2051659 (-10)	2051675 (-10)	2051711 (-10D)	2051787 (-10D)
254 - 279,4	10 - 11"		2051660 (-11)	2051676 (-11)	2051715 (-11D)	2051791 (-11D)
279,4 - 304,8	11 - 12"		2051661 (-12)	2051677 (-12)	2051719 (-12D)	2051795 (-12D)
304,8 - 330,2	12 - 13"		2051662 (-13)	2051678 (-13)	2051723 (-13D)	2051799 (-13D)
330,2 - 355,6	13 - 14"		2063714 (-14)	2051679 (-14)	2051727 (-14D)	2051803 (-14D)
355,6 - 381	14 - 15"		2063715 (-15)	2063840 (-15)	2064215 (-15D)	2063846 (-15D)
381 - 406,4	15 - 16"		2063716 (-16)	2063841 (-16)	2064216 (-16D)	2063847 (-16D)
406,4 - 431,8	16 - 17"		2063717 (-17)	2063842 (-17)	2064217 (-17D)	2063848 (-17D)
431,8 - 457,2	17 - 18"		2063718 (-18)	2063843 (-18)	2064218 (-18D)	2063849 (-18D)
457,2 - 482,6	18 - 19"		2063719 (-19)	2063844 (-19)	2064219 (-19D)	2063850 (-19D)
482,6 - 508	19 - 20"		2063720 (-20)	2063845 (-20)	2064220 (-20D)	2063851 (-20D)
	Resolution	**mm**	0,0002/0,0005/0,001/0,005/0,01/0,02		0,0005/0,001/0,005	
		inch	.00001"/.00002"/.00005"/.0001"/.0002"/.0005"/.001"		.00002"/.00005"/.0001"/.0005"	
	Graduation	**mm**			0,001/0,005/0,01	
		inch			.0001"/.0005"/.001"	
	Mounting shaft	**inch**	3/8"	3/8"	3/8"	3/8"
	Size of measuring surface	**mm**	15,5 x 15,5	15,5 x 15,5	15,5 x 15,5	15,5 x 15,5
		inch	.61" x .61"	.61" x .61"	.61" x .61"	.61" x .61"
	Distance of movable anvil	**mm**	0,5	0,5	0,5	0,5
		inch	.02"	.02"	.02"	.02"
	Parallelism deviation	**µm**	4	4	4	4
		inch	.00016"	.00016"	.00016"	.00016"
	Measuring force	**N**	18	18	18	18

Indicating Snap Gage MaraMeter EDI / EMD – 300P

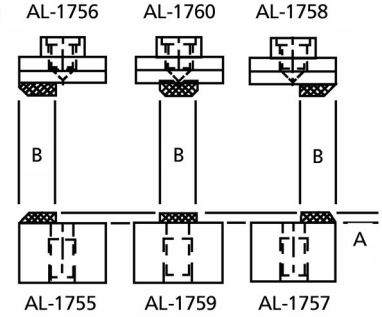
Measuring range		a	a	b	b	c	c	d	d	e	e
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
25,4 - 50,8	1 - 2"	25.4	1"	150	6"	29	1.16"	145	5.8"	158	6.3"
50,8 - 76,2	2 - 3"	50.8	2"	175	7"	29	1.16"	141	5.6"	154	6.16"
76,2 - 101,6	3 - 4"	76.2	3"	200	8"	29	1.16"	155	6.2"	167	6.7"
101,6 - 127	4 - 5"	101.6	4"	226	9"	29	1.16"	167	6.7"	180	7.2"
127 - 152,4	5 - 6"	127	5"	251	10"	29	1.16"	180	7.2"	193	7.7"
152,4 - 177,8	6 - 7"	152.4	6"	278	11"	30	1.2"	203	8"	215	8.6"
177,8 - 203,2	7 - 8"	177.8	7"	303	12"	30	1.2"	213	8.5"	226	9"
203,2 - 228,6	8 - 9"	203.2	8"	329	13"	30	1.2"	231	9.2"	244	9.7"
228,6 - 254	9 - 10"	228.6	9"	335	13.5"	30	1.2"	248	9.9"	261	10.4"
254 - 279,4	10 - 11"	254	10"	419	16.5"	38.1	1.5"	284	11.2"	297	11.7"
279,4 - 304,8	11 - 12"	279,4	11"	444	17.5"	38.1	1.5"	304	12.0"	317	12.5"
304,8 - 330,2	12 - 13"	304,8	12"	469	18.5"	38.1	1.5"	317	12.5"	330	13.0"
330,2 - 355,6	13 - 14"	330,2	13"	495	19.5"	38.1	1.5"	332	13.1"	345	13.6"
355,6 - 381	14 - 15"	355,6	14"	502	20.5"	38.1	1.5"	358	14.1"	368.3	14.5"
381 - 406,4	15 - 16"	381	15"	546	21.5"	38.1	1.5"	335	13.2"	345	13.6"
406,4 - 431,8	16 - 17"	406,4	16"	571	22.5"	38.1	1.5"	335	13.2"	345	13.6"
431,8 - 457,2	17 - 18"	431,8	17"	604	23.8"	50.8	2.0"	365	14.4"	375	14.8"
457,2 - 482,6	18 - 19"	457,2	18"	662	26.1"	83.8	3.3"	381	15.0"	381	15.0"
482,6 - 508	19 - 20"	482,6	19"	683	26.9"	78.4	3.1"	363	14.3"	368	14.5"



Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127mm / 5"	BA–71
2232441	Heavier force spring for EMD–30XP	SP–118
2232478	Lighter force spring for EMD–30XP	SP–192
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760
2243295	Lighter force spring for EMD–30XP	
2243297	Heavier force spring for EMD–30XP	

Plain Anvil Options
Front View



A = 2mm/.080in
B = 6.35mm/.250in

Indicating Snap Gage MaraMeter M – 300P / 301P, 300P – xM / 301P – xM

Application:

- For rapid measurements of cylindrical parts such as shafts, bolts and spindles for thickness and length measurements

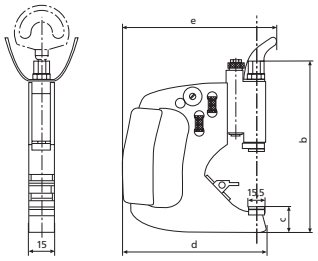
- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment.
- All Series 300P Snap Gages are fully adjustable with positive position locking at any point within the range.
- 0.50 mm / .020" Movement of sensitive contact.
- Snap Gages available over a wide range of sizes, styles, and readout configurations.
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces ensuring precision.
- Indicator can be rotated to read from front or rear of the gage.
- All adjustments accomplished using a single hex wrench (furnished).
- **Scope of delivery:** Allen key

Technical Data

Type		M-300P-x	300P-xM		M-301P-x	301P-xM	
Lifting lever					x	x	
Indicator included		None	x		None	x	
Measuring range		**Order no.**	**Order no.**	**indicator**	**Order no.**	**Order no.**	**indicator**
mm							
0 - 25,4		2003100 (-1)	2050496 (-1M)	IDS-206 (O1I)	2003110 (-1)	2050496 (-1M)	IDS-206 (O1I)
25,4 - 50,8		2003101 (-2)	2050498 (-2M)	IDS-206 (O1I)	2003111 (-2)	2050498 (-2M)	IDS-206 (O1I)
50,8 - 76,2		2003102 (-3)	2050510 (-3M)	IDS-206 (O1I)	2003112 (-3)	2050510 (-3M)	IDS-206 (O1I)
76,2 - 101,6		2003103 (-4)	2050513 (-4M)	IDS-206 (O1I)	2003113 (-4)	2050513 (-4M)	IDS-206 (O1I)
101,6 - 127		2003104 (-5)	2050515 (-5M)	IDS-206 (O1I)	2003114 (-5)	2050515 (-5M)	IDS-206 (O1I)
127 - 152,4		2003105 (-6)	2050517 (-6M)	IDS-208 (P1I)	2003115 (-6)	2050517 (-6M)	IDS-208 (P1I)
152,4 - 177,8		2003106 (-7)	2050526 (-7M)	IDS-208 (P1I)	2003116 (-7)	2050526 (-7M)	IDS-208 (P1I)
177,8 - 203,2		2003107 (-8)	2050528 (-8M)	IDS-208 (P1I)	2003117 (-8)	2050528 (-8M)	IDS-208 (P1I)
203,2 - 228,6		2003108 (-9)	2050530 (-9M)	IDS-208 (P1I)	2003118 (-9)	2050530 (-9M)	IDS-208 (P1I)
228,6 - 254		2063910 (-10)	2050487 (-10M)	IDS-208 (P1I)	2064110 (-10)	2050487 (-10M)	IDS-208 (P1I)
254 - 279,4		2063911 (-11)	2050489 (-11M)	IDS-208 (P1I)	2064111 (-11)	2050489 (-11M)	IDS-208 (P1I)
279,4 - 304,8		2063912 (-12)	2050491 (-12M)	IDS-208 (P1I)	2064112 (-12)	2050491 (-12M)	IDS-208 (P1I)
304,8 - 330,2		2063913 (-13)	2050493 (-13M)	IDS-208 (P1I)	2064113 (-13)	2050493 (-13M)	IDS-208 (P1I)
330,2 - 355,6		2063914 (-14)	2050495 (-14M)	IDS-208 (P1I)	2064114 (-14)	2050495 (-14M)	IDS-208 (P1I)
355,6 - 381		2063915 (-15)	2063824 (-15M)	IDS-208 (P1I)	2064115 (-15)	2063830 (-15M)	IDS-208 (P1I)
381 - 406,4		2063916 (-16)	2063825 (-16M)	IDS-208 (P1I)	2064116 (-16)	2063831 (-16M)	IDS-208 (P1I)
406,4 - 431,8		2063917 (-17)	2063826 (-17M)	IDS-208 (P1I)	2064117 (-17)	2063832 (-17M)	IDS-208 (P1I)
431,8 - 457,2		2063918 (-18)	2063827 (-18M)	IDS-208 (P1I)	2064118 (-18)	2063833 (-18M)	IDS-208 (P1I)
457,2 - 482,6		2063919 (-19)	2063828 (-19M)	IDS-208 (P1I)	2064119 (-19)	2063834 (-19M)	IDS-208 (P1I)
482,6 - 508		2063920 (-20)	2063829 (-20M)	IDS-208 (P1I)	2064120 (-20)	2063835 (-20M)	IDS-208 (P1I)
Graduation	**mm**		0,002			0,002	
Mounting shaft	**mm**	8			8		
Mounting shaft	**inch**		3/8"			3/8"	
Size of measuring surface	**mm**	15,5 x 15,5	15,5 x 15,5		15,5 x 15,5	15,5 x 15,5	
Distance of movable anvil	**mm**	0,5	0,5		0,5	0,5	
Parallelism deviation	**µm**	4	4		4	4	
Measuring force	**N**	18	18		18	18	

Indicating Snap Gage MaraMeter M – 300P / 301P, 300P – xM / 301P – xM

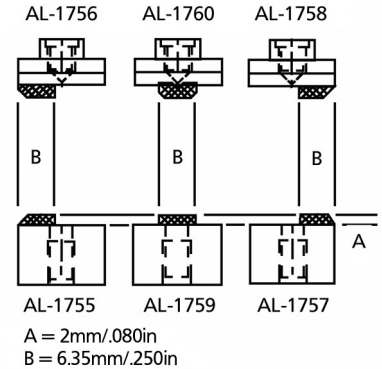
Measuring range	a	b	c	d	e
mm	mm	mm	mm	mm	mm
25,4 - 50,8	25.4	150	29	145	158
50,8 - 76,2	50.8	175	29	141	154
76,2 - 101,6	76.2	200	29	155	167
101,6 - 127	101.6	226	29	167	180
127 - 152,4	127	251	29	180	193
152,4 - 177,8	152.4	278	30	203	215
177,8 - 203,2	177.8	303	30	213	226
203,2 - 228,6	203.2	329	30	231	244
228,6 - 254	228.6	335	30	248	261
254 - 279,4	254	419	38.1	284	297
279,4 - 304,8	279.4	444	38.1	304	317
304,8 - 330,2	304.8	469	38.1	317	330
330,2 - 355,6	330.2	495	38.1	332	345
355,6 - 381	355.6	502	38.1	358	368.3
381 - 406,4	381	546	38.1	335	345
406,4 - 431,8	406.4	571	38.1	335	345
431,8 - 457,2	431.8	604	50.8	365	375
457,2 - 482,6	457.2	662	83.8	381	381
482,6 - 508	482.6	683	78.4	363	368



Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127mm / 5"	BA–71
2232441	Heavier force spring for M-300P & 300P-xM	SP–118
2232478	Lighter force spring for M-300P & 300P-xM	SP–192
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760

Plain Anvil Options
Front View



A = 2mm/.080in
B = 6.35mm/.250in

Indicating Snap Gage MaraMeter OMI – 300P / – 301P, 300P / 301P

Application:

- For rapid measurements of cylindrical parts such as shafts, bolts and spindles for thickness and length measurements

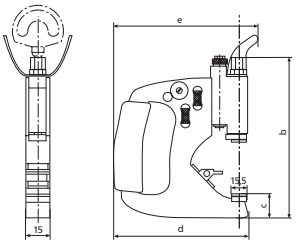
- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment.
- All Series 300P Snap Gages are fully adjustable with positive position locking at any point within the range.
- 0.50 mm / .020" Movement of sensitive contact.
- Snap Gages available over a wide range of sizes, styles, and readout configurations.
- Large 15.5 mm / .61" square tungsten carbide anvils provide flat, parallel, working surfaces that ensure lasting precision that lasts.
- Indicator can be rotated to read from front or rear of the gage.
- All adjustments accomplished using a single hex wrench (furnished).
- **Scope of delivery:** Allen key

Technical Data

Type		OMI-300P-x	300P-x		OMI-301P-x	301P-x	
Lifting lever					x	x	
Indicator included		None	x		None	x	
Measuring range		Order no.	Order no.	indicator	Order no.	Order no.	indicator
inch							
0 - 1"		2054281 (-1)	2050485 (-1)	IDT-102 (12l)	2054300 (-1)	2050562 (-1)	IDT-102 (12l)
1 - 2"		2054287 (-2)	2050497 (-2)	IDT-102 (12l)	2054306 (-2)	2050574 (-2)	IDT-102 (12l)
2 - 3"		2054288 (-3)	2050499 (-3)	IDT-102 (12l)	2054307 (-3)	2050576 (-3)	IDT-102 (12l)
3 - 4"		2054294 (-4)	2050511 (-4)	IDT-102 (12l)	2054313 (-4)	2050588 (-4)	IDT-102 (12l)
4 - 5"		2054295 (-5)	2050514 (-5)	IDT-102 (12l)	2054314 (-5)	2050590 (-5)	IDT-102 (12l)
5 - 6"		2054296 (-6)	2050516 (-6)	IDT-106 (22l)	2054315 (-6)	2050592 (-6)	IDT-106 (22l)
6 - 7"		2054297 (-7)	2050518 (-7)	IDT-106 (22l)	2054316 (-7)	2050594 (-7)	IDT-106 (22l)
7 - 8"		2054298 (-8)	2050527 (-8)	IDT-106 (22l)	2054317 (-8)	2050596 (-8)	IDT-106 (22l)
8 - 9"		2054299 (-9)	2050529 (-9)	IDT-106 (22l)	2054318 (-9)	2050598 (-9)	IDT-106 (22l)
9 - 10"		2054282 (-10)	2050486 (-10)	IDT-106 (22l)	2054301 (-10)	2050563 (-10)	IDT-106 (22l)
10 - 11"		2054283 (-11)	2050488 (-11)	IDT-106 (22l)	2054302 (-11)	2050565 (-11)	IDT-106 (22l)
11 - 12"		2054284 (-12)	2050490 (-12)	IDT-106 (22l)	2054303 (-12)	2050567 (-12)	IDT-106 (22l)
12 - 13"		2054285 (-13)	2050492 (-13)	IDT-106 (22l)	2054304 (-13)	2050569 (-13)	IDT-106 (22l)
13 - 14"		2054286 (-14)	2050494 (-14)	IDT-106 (22l)	2054305 (-14)	2050571 (-14)	IDT-106 (22l)
14 - 15"		2063315 (-15)	2063515 (-15)	IDT-106 (22l)	2063415 (-15)	2063615 (-15)	IDT-106 (22l)
15 - 16"		2063316 (-16)	2063516 (-16)	IDT-106 (22l)	2063416 (-16)	2063616 (-16)	IDT-106 (22l)
16 - 17"		2063317 (-17)	2063517 (-17)	IDT-106 (22l)	2063417 (-17)	2063617 (-17)	IDT-106 (22l)
17 - 18"		2063318 (-18)	2063518 (-18)	IDT-106 (22l)	2063418 (-18)	2063618 (-18)	IDT-106 (22l)
18 - 19"		2063319 (-19)	2063519 (-19)	IDT-106 (22l)	2063419 (-19)	2063619 (-19)	IDT-106 (22l)
19 - 20"		2063320 (-20)	2063520 (-20)	IDT-106 (22l)	2063420 (-20)	2063620 (-20)	IDT-106 (22l)
Graduation	inch		.0001"			.0001"	
Mounting shaft	inch	3/8"	3/8"		3/8"	3/8"	
Size of measuring surface	inch	.61" x .61"	.61" x .61"		.61" x .61"	.61" x .61"	
Distance of movable anvil	inch	.02"	.02"		.02"	.02"	
Parallelism deviation	inch	.00016"	.00016"		.00016"	.00016"	
Measuring force	N	18	18		18	18	

Indicating Snap Gage MaraMeter OMI – 300P / – 301P, 300P / 301P

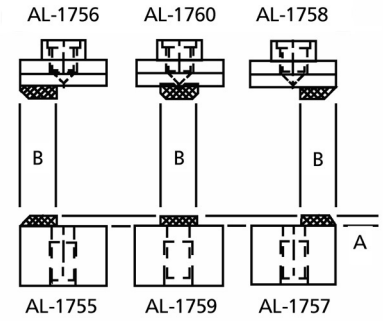
Measu-ring range	a	b	c	d	e
inch	mm	mm	mm	mm	mm
1 - 2"	25.4	150	29	145	158
2 - 3"	50.8	175	29	141	154
3 - 4"	76.2	200	29	155	167
4 - 5"	101.6	226	29	167	180
5 - 6"	127	251	29	180	193
6 - 7"	152.4	278	30	203	215
7 - 8"	177.8	303	30	213	226
8 - 9"	203.2	329	30	231	244
9 - 10"	228.6	335	30	248	261
10 - 11"	254	419	38.1	284	297
11 - 12"	279.4	444	38.1	304	317
12 - 13"	304.8	469	38.1	317	330
13 - 14"	330.2	495	38.1	332	345
14 - 15"	355.6	502	38.1	358	368.3
15 - 16"	381	546	38.1	335	345
16 - 17"	406.4	571	38.1	335	345
17 - 18"	431.8	604	50.8	365	375
18 - 19"	457.2	662	83.8	381	381
19 - 20"	482.6	683	78.4	363	368



Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127mm / 5"	BA–71
2232441	Heavier force spring for OMI-300P &300P	SP–118
2232478	Lighter force spring for OMI-300P &300P	SP–192
2202272	Plain anvil (lower), left (option)	AL–1755
2202273	Plain anvil (upper), left (option)	AL–1756
2202274	Plain anvil (lower), right (option)	AL–1757
2202275	Plain anvil (lower), right (option)	AL–1758
2202276	Plain anvil (lower), middle (option)	AL–1759
2202277	Plain anvil (lower), middle (option)	AL–1760

Plain Anvil Options
Front View



A = 2mm/.080in
B = 6.35mm/.250in

Indicating Snap Gage MaraMeter EDI – 300P – 3x / EMD – 300P –3x

Application:

- For rapid measurements of groove diameters

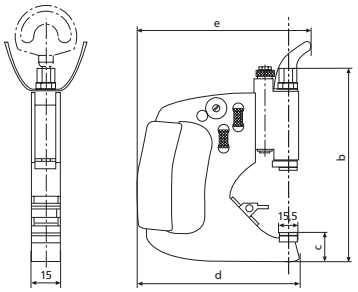
- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment.
- All Series 300P Snap Gages are fully adjustable with positive position locking at any point within the range.
- 0.50 mm / .020" Movement of sensitive contact.
- Snap Gages available over a wide range of sizes, styles, and readout configurations.
- Hardened Steel blade anvils AL-110 with 2,13 mm / .08"
- Indicator can be rotated to read from front or rear of the gage.
- All adjustments accomplished using a single hex wrench (furnished).
- **Scope of delivery:** Allen key

Technical Data

Type			EDI-300P-3x		EMD-300P-3x	
Indicator included			µMaxum II (2034201)		MaxµmIII (2033119)	
Measuring range			**Order no.**		**Order no.**	
mm	**inch**					
0 - 25,4	0 - 1"		2051667	(EDI-300P-31)	2051739	(EMD-300P-31)
25,4 - 50,8	1 - 2"		2063732	(EDI-300P-32)	2051743	(EMD-300P-32)
50,8 - 76,2	2 - 3"		2063733	(EDI-300P-33)	2051747	(EMD-300P-33)
76,2 - 101,6	3 - 4"		2063734	(EDI-300P-34)	2051751	(EMD-300P-34)
101,6 - 127	4 - 5"		2063735	(EDI-300P-35)	2051755	(EMD-300P-35)
127 - 152,4	5 - 6"		2063736	(EDI-300P-36)	2063836	(EMD-300P-36)
152,4 - 177,8	6 - 7"		2063737	(EDI-300P-37)	2063837	(EMD-300P-37)
177,8 - 203,2	7 - 8"		2063738	(EDI-300P-38)	2063838	(EMD-300P-38)
203,2 - 228,6	8 - 9"		2063739	(EDI-300P-39)	2063839	(EMD-300P-39)
	Resolution	**mm**	0,0002/0,0005/0,001/0,005/ 0,01/0,02		0,0005/0,001/0,005	
	Resolution	**inch**	.00001"/.00002"/.00005"/ .0001"/.0002"/.0005"/.001"		.00002"/.00005"/.0001"/.0005"	
	Graduation	**mm**			0,001/0,005/0,01	
	Graduation	**inch**			.0001"/.0005"/.001"	
	Mounting shaft	**inch**	3/8"		3/8"	
	Size of measuring surface	**mm**	2,13		2,13	
	Size of measuring surface	**inch**	.08"		.08"	
	Distance of movable anvil	**mm**	0,5		0,5	
	Distance of movable anvil	**inch**	.02"		.02"	
	Parallelism deviation	**µm**	4		4	
	Parallelism deviation	**inch**	.00016"		.00016"	
	Measuring force	**N**	18		18	

Indicating Snap Gage MaraMeter EDI – 300P – 3x / EMD – 300P –3x

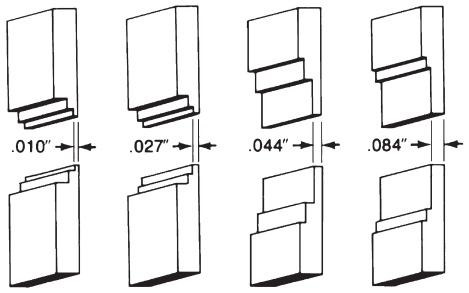
Measuring range		a	b	c	d	e
mm	inch	mm	mm	mm	mm	mm
0 - 25,4	0 - 1"	25.4	150	29	145	158
25,4 - 50,8	1 - 2"	50.8	175	29	141	154
50,8 - 76,2	2 - 3"	76.2	200	29	155	167
76,2 - 101,6	3 - 4"	101.6	226	29	167	180
101,6 - 127	4 - 5"	127	251	29	180	193
127 - 152,4	5 - 6"	152.4	278	30	203	215
152,4 - 177,8	6 - 7"	177.8	303	30	213	226
177,8 - 203,2	7 - 8"	203.2	329	30	231	244
203,2 - 228,6	8 - 9"	228.6	335	30	248	261



Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127mm / 5"	BA–71
2232478	Lighter force spring for EMD–30XP	SP–192
2232441	Heavier force spring for EMD–30XP	SP–118
2243295	Lighter force spring for EDI–30XP	2243295
2243297	Heavier force spring for EDI–30XP	2243297
2202239	Blade anvils, steel, width 0,25mm/.010", depth 0,76mm/.030" (option)	AL-107
2202240	Balde anvils, steel, width 0,69mm/.027", depth 1,02mm/.040" (option)	AL-108
2202241	Blade anvils, steel, width 1,12mm/.044", depth 5,08mm/.20" (option)	AL-109
2202242	Blade anvils, steel, width 2,13mm/.084", depth 6,35mm/.25" (standard)	AL-110
2202266	Blade anvils, carbide, width 0,25mm/.010", depth 0,76mm/.030" (option)	AL-1741
2202267	Blade anvils, carbide, width 0,69mm/.027", depth 0,76mm/.040" (option)	AL-1742
2202268	Blade anvils, carbide, width 1,12mm/.044", depth 5,08mm/.20" (option)	AL-1743
2202269	Blade anvils, carbide, width 2,13mm/.084", depth 6,35mm/.25" (option)	AL-1744

AL-107 AL-1741 **AL-108 AL-1742** **AL-109 AL-1743** **AL-110 AL-1744**



Indicating Snap Gage MaraMeter M 300P – 3x / M 301P – 3x

Application:

- For rapid measurements of cylindrical parts such as shafts, bolts and spindles for thickness and length measurements

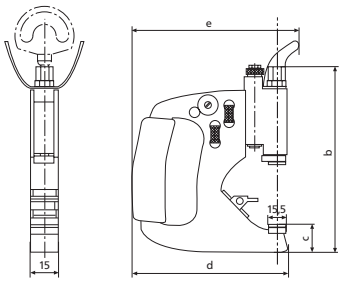
- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment.
- All Series 300P Snap Gages are fully adjustable with positive position locking at any point within the range.
- 0.50 mm / .020" Movement of sensitive contact.
- Snap Gages available over a wide range of sizes, styles, and readout configurations.
- Hardened Steel blade anvils AL-110 with 2,13 mm / .08"
- Indicator can be rotated to read from front or rear of the gage.
- All adjustments accomplished using a single hex wrench (furnished).
- **Scope of delivery:** Allen key (package excludes indicator)

Technical Data

Type		M 300P-3x		M 301P-3x	
Lifting lever				x	
Measuring range		**Order no.**		**Order no.**	
mm					
0 - 25,4		2063931	(- 31)	2064131	(- 31)
25,4 - 50,8		2063932	(- 32)	2064132	(- 32)
50,8 - 76,2		2063933	(- 33)	2064133	(- 33)
76,2 - 101,6		2063934	(- 34)	2064134	(- 34)
101,6 - 127		2063935	(- 35)	2064135	(- 35)
127 - 152,4		2063936	(- 36)	2064136	(- 36)
152,4 - 177,8		2063937	(- 37)	2064137	(- 37)
177,8 - 203,2		2063938	(- 38)	2064138	(- 38)
203,2 - 228,6		2063939	(- 39)	2064139	(- 39)
Mounting shaft	**mm**	8		8	
Size of measuring surface	**mm**	2,13 x 15,5		2,13 x 15,5	
Distance of movable anvil	**mm**	0,5		0,5	
Measuring force	**N**	18		18	

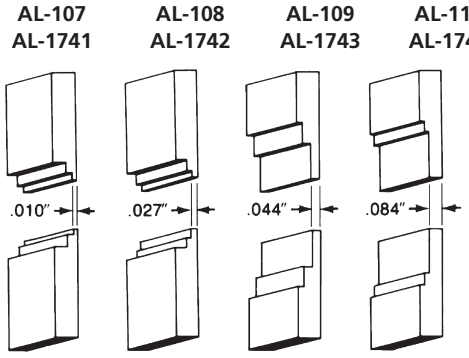
Indicating Snap Gage MaraMeter M 300P – 3x / M 301P – 3x

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
2050485	25.4	150	29	145	158
2050497	50.8	175	29	141	154
2050499	76.2	200	29	155	167
2050511	101.6	226	29	167	180
2050514	127	251	29	180	193
2050516	152.4	278	30	203	215
2050518	177.8	303	30	213	226
2050527	203.2	329	30	231	244



Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127mm / 5"	BA–71
2232478	Lighter force spring for M-300P & M-301P	SP–192
2232441	Heavier force spring for M-300P & M-301P	SP–118
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
2202239	Blade anvils, steel, width 0,25mm/.010", depth 0,76mm/.030" (option)	AL-107
2202240	Balde anvils, steel, width 0,69mm/.027", depth 1,02mm/.040" (option)	AL-108
2202241	Blade anvils, steel, width 1,12mm/.044", depth 5,08mm/.20" (option)	AL-109
2202242	Blade anvils, steel, width 2,13mm/.084", depth 6,35mm/.25" (standard)	AL-110
2202266	Blade anvils, carbide, width 0,25mm/.010", depth 0,76mm/.030" (option)	AL-1741
2202267	Blade anvils, carbide, width 0,69mm/.027", depth 0,76mm/.040" (option)	AL-1742
2202268	Blade anvils, carbide, width 1,12mm/.044", depth 5,08mm/.20" (option)	AL-1743
2202269	Blade anvils, carbide, width 2,13mm/.084", depth 6,35mm/.25" (option)	AL-1744



OMI-300P-3x / OMI-301P-3x, 300P-3x / 301P-3x

Application:

- For rapid measurements of cylindrical parts such as shafts, bolts and spindles for thickness and length measurements

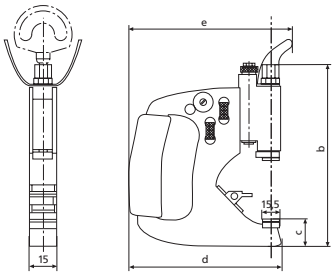
- Patented "Channel Lock" design assures precise parallel anvil surfaces throughout the full 25 mm / 1" range of adjustment.
- All Series 300P Snap Gages are fully adjustable with positive position locking at any point within the range.
- 0.50 mm / .020" Movement of sensitive contact.
- Snap Gages available over a wide range of sizes, styles, and readout configurations.
- Hardened Steel blade anvils AL-110 with 2,13 mm / .08"
- Indicator can be rotated to read from front or rear of the gage.
- All adjustments accomplished using a single hex wrench (furnished).
- **Scope of delivery:** Allen key

Technical Data

Type		OMI-300P-3x		300P-3x			OMI-301P-3x		301P-3x		
Lifting lever							x		x		
Indicator included				x					x		
Measuring range		Order no.		Order no.		indicator	Order no.		Order no.		indicator
inch											
0 - 1"		2054289	(- 31)	2054289	(- 31)	IDS-101 (B5M)	2054308	(- 31)	2050577	(- 31)	IDS-101 (B5M)
1 - 2"		2054290	(- 32)	2054290	(- 32)	IDS-101 (B5M)	2054309	(- 32)	2050579	(- 32)	IDS-101 (B5M)
2 - 3"		2054291	(- 33)	2054291	(- 33)	IDS-101 (B5M)	2054310	(- 33)	2050581	(- 33)	IDS-101 (B5M)
3 - 4"		2054292	(- 34)	2054292	(- 34)	IDS-101 (B5M)	2054311	(- 34)	2050583	(- 34)	IDS-101 (B5M)
4 - 5"		2054293	(- 35)	2054293	(- 35)	IDS-101 (B5M)	2054312	(- 35)	2050585	(- 35)	IDS-101 (B5M)
5 - 6"		2054336	(- 36)	2063536	(- 36)	IDS-106 (25M)	2063436	(- 36)	2063636	(- 36)	IDS-106 (25M)
6 - 7"		2054337	(- 37)	2063537	(- 37)	IDS-106 (25M)	2063437	(- 37)	2063637	(- 37)	IDS-106 (25M)
7 - 8"		2054338	(- 38)	2063538	(- 38)	IDS-106 (25M)	2063438	(- 38)	2063638	(- 38)	IDS-106 (25M)
8 - 9"		2054339	(- 39)	2063539	(- 39)	IDS-106 (25M)	2063439	(- 39)	2063639	(- 39)	IDS-106 (25M)
Graduation	inch			.0005"			3/8"		.0005"		
Mounting shaft	inch	3/8"		3/8"			.08" x .61"		3/8"		
Size of measuring surface	inch	.08" x .61"		.08" x .61"			.02"		.08" x .61"		
Distance of movable anvil	inch	.02"		.02"			18		.02"		
Measuring force	N	18		18					18		

OMI-300P-3x / OMI-301P-3x, 300P-3x / 301P-3x

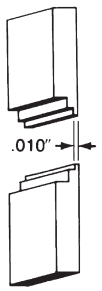
Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
2050485	25.4	150	29	145	158
2050497	50.8	175	29	141	154
2050499	76.2	200	29	155	167
2050511	101.6	226	29	167	180
2050514	127	251	29	180	193
2050516	152.4	278	30	203	215
2050518	177.8	303	30	213	226
2050527	203.2	329	30	231	244
2050529	228.6	335	30	248	261



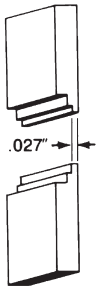
Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26
2204644	Bench stand for AGD style 3 disc masters up to 127mm / 5"	BA–71
2232478	Lighter force spring for OMI-300P	SP–192
2232441	Heavier force spring for OMI-300P	SP–118
2202239	Blade anvils, steel, width 0,25mm/.010", depth 0,76mm/.030" (option)	AL-107
2202240	Balde anvils, steel, width 0,69mm/.027", depth 1,02mm/.040" (option)	AL-108
2202241	Blade anvils, steel, width 1,12mm/.044", depth 5,08mm/.20" (option)	AL-109
2202242	Blade anvils, steel, width 2,13mm/.084", depth 6,35mm/.25" (standard)	AL-110
2202266	Blade anvils, carbide, width 0,25mm/.010", depth 0,76mm/.030" (option)	AL-1741
2202267	Blade anvils, carbide, width 0,69mm/.027", depth 0,76mm/.040" (option)	AL-1742
2202268	Blade anvils, carbide, width 1,12mm/.044", depth 5,08mm/.20" (option)	AL-1743
2202269	Blade anvils, carbide, width 2,13mm/.084", depth 6,35mm/.25" (option)	AL-1744

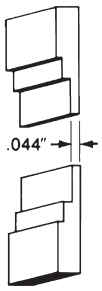
AL-107
AL-1741



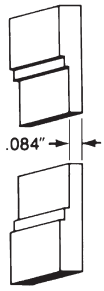
AL-108
AL-1742



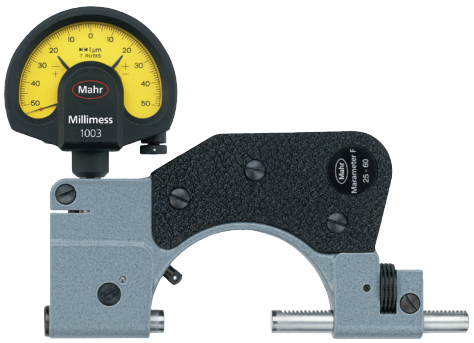
AL-109
AL-1743



AL-110
AL-1744



Indicating Snap Gage MaraMeter 840 F



Application:

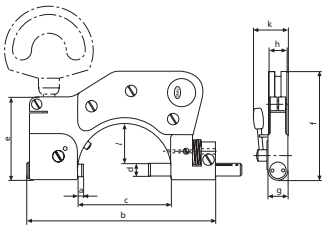
- For cylindrical parts such as shafts, bolts and spindles, for thickness and length measurements
- Universally applicable and extremely versatile. Each instrument spans a broad measuring range, within this range any dimension and fit can be very quickly and easily adjusted

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Measuring spindle and anvil spindle are made of hardened stainless steel, 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, thus eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Scope of delivery:** Flat contact point 903 (steel), Instruction manual, Wooden case (package excludes indicator)

Technical Data

Order no.	Product type	Measuring range	Measuring range	Distance of movable anvil	Parallelism deviation	Flatness deviation	Repeatability f_w	Measuring force	Frame size
		mm	inch	mm	µm	µm	µm	N	
4450000	840 F	0 –25	0 –1"	2	1	0.2	0.5	7.5	1
4450001	840 F	25 –60	1 –2.36"	2	2	0.2	0.5	7.5	2
4450002	840 F	50 –100	2 –4"	2.5	2	0.2	1	7.5	3
4450003	840 F	100 –150	4 –6"	2.5	2	0.2	1	7.5	4
4450004	840 F	150 –200	6 –8"	2.5	2	0.2	1	7.5	5

Order no.	k	l	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4450000	23	14	5	97	34	8	54	65	12	13
4450001	25	30	5	140	68	9	60	77	13	13
4450002	28	54	6.5	193	110	10	60	103	14	13
4450003	31	81	6.5	258	162	12	70	141	16	12
4450004	31	106	6.5	316	212	12	75	171	16	12



Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000	Inductive dial comparator, ± 0.9 µm	2000
4346100	Inductive dial comparator, ± 0.9 µm	2001
4450020	Base, for stationary application	840 Ff
4450050	Holder, Frame size 1	840 Fk/1
4450051	Holder, Frame size 2	840 Fk/2
4450052	Holder, Frame size 3	840 Fk/3
4450053	Holder, Frame size 4 + 5	840 Fk/4

1002

1004

1086 R

2001

2000

1003

1086 Ri

Indicating Snap Gage MaraMeter 840 FC

- **Longer service life due to the ceramic measuring faces**
- 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, thus eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces in connection with ceramic measuring faces
- **Scope of delivery:** Flat contact point 903 (steel), Instruction manual, Wooden case (package excludes indicator)

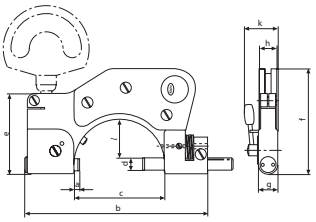
Application:

- 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, within this range any dimension and fit can be very quickly and easily adjusted

Technical Data

Order no.	Product type	Measuring range	Measuring range	Distance of movable anvil	Parallelism deviation	Flatness deviation	Repeatability f_w	Measuring force	Frame size
		mm	inch	mm	µm	µm	µm	N	
4450100	840 FC	0 –25	0 –1"	2	1	0.2	1	7.5	1
4450101	840 FC	25 –60	1 –2.36"	2	2	0.2	1	7.5	2

Order no.	k	l	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4450100	23	14	5	97	34	8	54	65	12	13
4450101	25	30	5	140	68	9	60	77	13	13



Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000	Inductive dial comparator, ± 0.9 µm	2000
4346100	Inductive dial comparator, ± 0.9 µm	2001
4450020	Base, for stationary application	840 Ff
4450050	Holder, Frame size 1	840 Fk/1
4450051	Holder, Frame size 2	840 Fk/2

1002

1004

1086 R

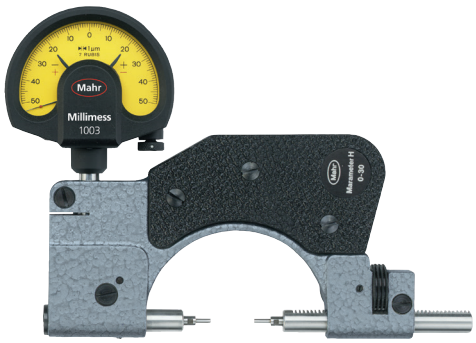
2001

2000

1003

1086 Ri

Indicating Snap Gage MaraMeter 840 FH



Application:

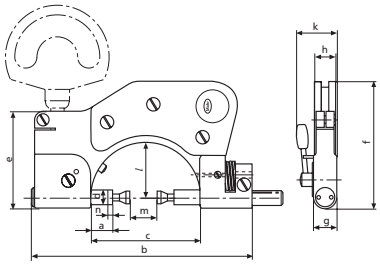
- For cylindrical parts such as shafts, bolts and spindles
- Universally applicable
- A wide variety of measurement problems can be solved with the broad range of interchangeable anvils

- 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 40 He
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, thus eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Scope of delivery:** Flat contact point 903 (steel), Spanner DIN 902–3,5, Wooden case (package excludes indicator)

Technical Data

Order no.	Product type	Measuring range	Measuring range	Distance of movable anvil	Repeatability f_w	Measuring force	Frame size
		mm	inch	mm	µm	N	
4451000	840 FH	0 –30	0 –1.18"	2	1	7.5	2
4451005	840 FH	30 –80	1.18 –3"	2.5	1	7.5	3

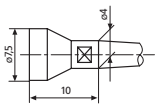
Order no.	k	l	n	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4451000	25	34	2	12.5	140	68	9	60	77	13	13
4451005	28	59	2.5	7.5	193	110	10	60	103	13	13



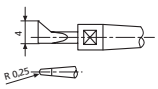
Indicating Snap Gage MaraMeter 840 FH

Accessories

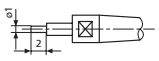
Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000	Inductive dial comparator, ± 0.9 µm	2000
4346100	Inductive dial comparator, ± 0.9 µm	2001
4880210	Spanner for 840 FH, to loosen anvils	
4450051	Holder, Frame size 2	840 Fk/2
4450020	Base, for stationary application	840 Ff
4152036	Measuring anvils, flat faces, carbide version	40 He 0H
4152011	Measuring anvils, stepped flat faces	40 He 1
4152033	Measuring anvils, stepped flat faces, carbide version	40 He 1H
4152012	Measuring anvils, stepped flat faces	40 He 2
4152037	Measuring anvils, offset end faces, carbide	40 He 2H
4152013	Measuring anvils, disc type anvils	40 He 3
4152014	Measuring anvils, disc type anvils with V-groove	40 He 4
4152015	Measuring anvils, Blade type anvils	40 He 5
4152016	Measuring anvils, offset blades	40 He 6
4152017	Measuring anvils, recessed blades	40 He 7
4152018	Measuring anvils, recessed flat faces with V-grooves on sleeve	40 He 8
4152019	Measuring anvils, recessed flat faces with slip on support	40 He 9
4152020	Measuring anvils, with clearance bores	40 He 10
4152021	Measuring anvils, with points	40 He 11
4450052	Holder, Frame size 3	840 Fk/3



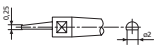
40 He 0H



40 He 6



40 He 1



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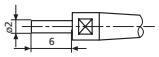

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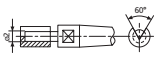

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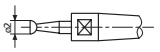
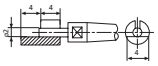


40 He 3



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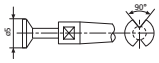

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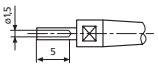
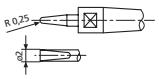
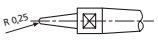


40 He 10



40 He 5



40 He 11

1004

1002

1003

2000

1086 Ri

1086 R

Indicating Snap Gage MaraMeter 840 FG

Application:

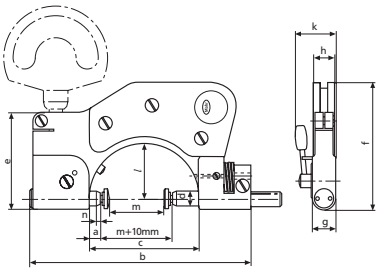
- For cylindrical parts such as shafts, bolts and spindles
- Universally applicable
- A wide variety of measurement problems can be solved with the broad range of interchangeable anvils

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guideway with lever controlled retraction
- Measuring spindle and anvil spindle have a 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, thus eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Scope of delivery:** Flat contact point 903 (steel), Wooden case (package excludes indicator)

Technical Data

Order no.	Product type	Measuring range	Measuring range	Distance of movable anvil	Repeatability f_w	Measuring force	Frame size
		mm	inch	mm	µm	N	
4454000	840 FG	0 –50	0 –2"	2	1	7.5	2
4454001	840 FG	40 –90	1.57 –3.57"	2.5	1	7.5	3

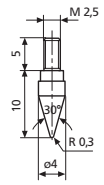
Order no.	k	l	n	a	b	c	d	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4454000	25	34	2	5	140	68	9	60	77	13	13
4454001	28	59	2.5	6.5	193	110	10	60	103	14	13



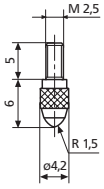
Indicating Snap Gage MaraMeter 840 FG

Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000	Inductive dial comparator, ± 0.9 µm	2000
4346100	Inductive dial comparator, ± 0.9 µm	2001
4450051	Holder, Frame size 2	840 Fk/2
4450020	Base, for stationary application	840 Ff
4360002	Standard contact point, Carbide, r = 1.5 mm	901 H
4360041	Spherical contact point, Carbide, l = 10 mm, r = 6 mm	902 H
4360043	Spherical contact point, Carbide, l = 15 mm, r = 6 mm	902 H
4360044	Spherical contact point, Carbide, l = 20 mm, r = 6 mm	902 H
4360101	Flat contact point, Carbide, l = 6 mm	903 H
4360103	Flat contact point, Carbide, l = 10 mm	903 H
4360105	Flat contact point, Carbide, l = 15 mm	903 H
4360106	Flat contact point, Carbide, l = 20 mm	903 H
4360131	Conical contact point, Carbide, r = 0.3 mm	904 H
4360150	Ball Contact Points, Carbide, l = 8.5 mm, d = 1,0 mm	906 H
4360151	Ball Contact Points, Carbide, l = 8.5 mm, d = 1,25 mm	906 H
4360152	Ball Contact Points, Carbide, l = 8.5 mm, d = 1,5 mm	906 H
4360153	Ball Contact Points, Carbide, l = 8.5 mm, d = 1,75 mm	906 H
4360154	Ball Contact Points, Carbide, l = 8.5 mm, d = 2,0 mm	906 H
4360155	Ball Contact Points, Carbide, l = 8.5 mm, d = 2,5 mm	906 H
4360156	Ball Contact Points, Carbide, l = 8.5 mm, d = 3,0 mm	906 H
4360157	Ball Contact Points, Carbide, l = 8.5 mm, d = 3,5 mm	906 H
4360158	Ball Contact Points, Carbide, l = 8.5 mm, d = 4,0 mm	906 H
4360159	Ball Contact Points, Carbide, l = 8.5 mm, d = 4,5 mm	906 H
4360160	Ball Contact Points, Carbide, l = 9 mm, d = 5,0 mm	906 H
4360161	Ball Contact Points, Carbide, l = 9 mm, d = 5,5 mm	906 H
4360162	Ball Contact Points, Carbide, l = 9 mm, d = 6 mm	906 H
4360163	Ball Contact Points, Carbide, l = 9 mm, d = 6,35 mm	906 H
4360164	Ball Contact Points, Carbide, l = 10 mm, d = 6,5 mm	906 H
4360165	Ball Contact Points, Carbide, l = 10 mm, d = 7 mm	906 H
4360166	Ball Contact Points, Carbide, l = 11 mm, d = 7,5 mm	906 H
4360167	Ball Contact Points, Carbide, l = 11 mm, d = 8,0 mm	906 H
4360168	Ball Contact Points, Carbide, l = 12 mm, d = 8,5 mm	906 H
4360169	Ball Contact Points, Carbide, l = 12 mm, d = 9,0 mm	906 H
4360170	Ball Contact Points, Carbide, l = 13 mm, d = 10,0 mm	906 H
4360200	Flat contact plates, Steel, Measuring surface ø 11.3 mm	907
4360201	Flat contact plates, Carbide, Measuring surface ø 7 mm	907 H
4360210	Spherical contact plates, steel, Measuring surface ø 12 mm	908
4360211	Spherical contact plates, Carbide, Measuring surface ø 12 mm	908 H
4360240	Pin contact point, Carbide, l = 2 mm, Measuring surface ø 1 mm	911 H1
4450052	Holder, Frame size 3	840 Fk/3



904;904 H



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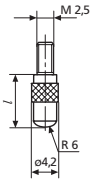
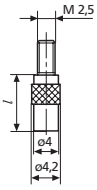


902;902 H



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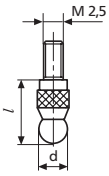
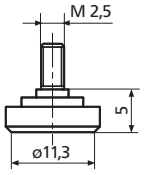


906 H



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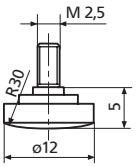
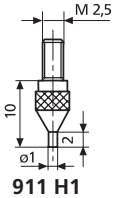


908 H



911 H1

2001

2000

1086 Ri

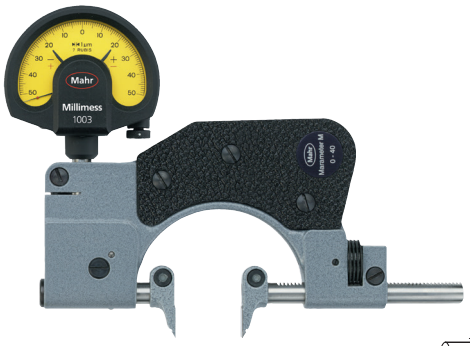
1086 R

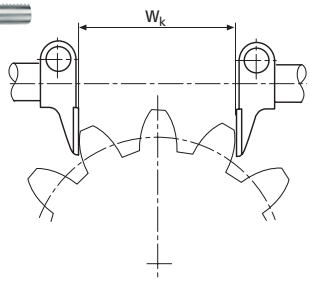
1002

1003

1004

Indicating Snap Gage MaraMeter 840 FM





Application:

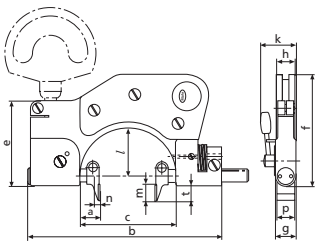
- For diameters of small hubs, registers, shoulders on shafts and groove widths
- For inspection for tooth span Wk as indirect, reference-free determination of tooth thickness on spur gears with straight and helical teeth
- Universally applicable and extremely versatile, each instrument spans a broad measuring range, within this range any dimension and fit can be very quickly and easily adjusted

- 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, thus 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
- **Scope of delivery:** Flat contact point 903 (steel), Instruction manual, Wooden case (package excludes indicator)

Technical Data

Order no.		4452000	4452001	4452002	4452003
Product type		840 FM	840 FM	840 FM	840 FM
Measuring range	mm	0 –40	40 –80	80 –130	130 –180
Measuring range	inch	0 –1.57“	1.57 –3“	3 –5“	5 –7“
Base tangent lengths starting from module m		0.5	0.5	1	1
Size of measuring surface		12 x 12 mm	12 x 12 mm	15 x 17 mm	15 x 17 mm
Distance of movable anvil	mm	2	2.5	2.5	2.5
Parallelism deviation	µm	2	3	3	3
Flatness deviation	µm	0.5	0.5	0.5	0.5
Repeatability fw	µm	1	1	1	1
Measuring force	N	75	75	9	9
Frame size		2	3	4	5

Order no.	k	l	m	p	t	a	b	c	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4452000	25	34	12	12	11	14	140	68	60	77	13	13
4452001	28	59	12	12	11	14	193	110	60	103	14	13
4452002	31	87	17	15	17	19	258	162	70	141	16	20
4452003	31	112	17	15	17	15	316	212	75	171	16	20



Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000	Inductive dial comparator, ± 0.9 µm	2000
4346100	Inductive dial comparator, ± 0.9 µm	2001
4450020	Base, for stationary application	840 Ff
4450051	Holder, Frame size 2	840 Fk/2
4450052	Holder, Frame size 3	840 Fk/3
4450053	Holder, Frame size 4 + 5	840 Fk/4

1004

1002

1003

2000

2001

1086 Ri

Indicating Snap Gage MaraMeter 840 FS

- Rigid frame; convenient handle with heat insulators open on one end to eliminate heat transfer from user's hand
- 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
- Maximum accuracy. Straight transfer of spindle movement to indicator. During the measurement, 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, thus eliminating user influence
- **Scope of delivery:** Wooden case, Allen key, excludes indicator

Application:

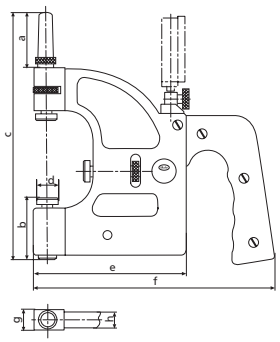
- For all kinds of cylindrical workpieces, whether directly on a machine tool or production control
- Universally applicable and extremely versatile, each instrument spans a broad measuring range, within this range any dimension and fit can be very quickly and easily adjusted

Technical Data

Order no.	Product type	Measuring range	Measuring range	Distance of movable anvil	Parallelism deviation	Flatness deviation	Repeatability f_w	Measuring force	Product weight
		mm	inch	mm	µm	µm	µm	N	kg
4455000	840 FS	10 –30	.39 –1.18"	0.7	3	0.5	1	13.5	0.60
4455001	840 FS	30 –60	1.18 –2.36"	0.7	3	0.5	1	13.5	0.90
4455002	840 FS	60 –100	2.36 –4"	0.7	3	0.5	1	13.5	1.30
4455003	840 FS	100 –150	4 –6"	0.7	3	0.5	1	15	1.70
4455004	840 FS	150 –200	6 –8"	0.7	3	0.5	1	15	2.00
4455005	840 FS	200 –250	8 –10"	0.7	3	0.5	1	15	2.20
4455006	840 FS	250 –300	10 –12"	0.7	3	0.5	1	15	2.50
4455007	840 FS	300 –350	12 –14"	0.7	4	0.5	1	15	3.30
4455008	840 FS	350 –400	14 –16"	0.7	4	0.5	1	15	3.30
4455009	840 FS	400 –450	16 –18"	0.7	4	0.5	1	15	4.30
4455010	840 FS	450 –500	18 –20"	0.7	4	0.5	1	15	4.70

Indicating Snap Gage MaraMeter 840 FS

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.	Product name	Product type
4335000	Millimess 0.5 µm, ± 25 µm	1002
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4333000	Millimess 5 µm, ± 130 µm	1004
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000	Inductive dial comparator, ± 0.9 µm	2000
4346100	Inductive dial comparator, ± 0.9 µm	2001

1004

1003

1002

1086 R

1086 Ri

2000

2001

Indicating Snap Gage MaraMeter 840 E

- 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, within this range any dimension and fit can be very quickly and easily adjusted
- Constant measuring force as a result of built-in spring, thus eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Scope of delivery:** Wooden case, excludes indicator

Technical Data

Order no.	Readings/Selectable resolution down to	Product type	Measuring range	Measuring surface ø	Parallelism deviation	Repeatability f_w	Measuring force	Frame size
	µm		mm	mm	µm	µm	N	
4453000	0.01	840 E	0 –25	7.5	0.3	0.1	4.5	1

Accessories

Order no.	Product name	Product type
5312010	Compact Amplifier	C1200
5312080	Compact Amplifier	C 1208 M
5312160	Compact Amplifier	C 1216 M
4450020	Base, for stationary application	840 Ff

C1200

C 1208 M

Indicating Bench Snap Gage MaraMeter 852 TS / 852 TSZ

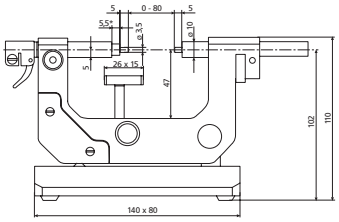
Application:

- For rapid measurements of diameters of cylindrical parts (shafts, bolts and shanks)
- For measuring pitch, root and outside diameters of all kinds of external threads as well as serrations
- For thickness and length measurement
- Particularly suited for batch produced parts

- Rugged steel frame, can be inclined up to 45° from the sturdy base
- Measuring spindle and anvil spindle 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, thus eliminating user influence
- **Scope of delivery:** plan carbide anvils Dia. 3,5 mm

Technical Data

Order no.		4510030	4510031	4510035
Product type		852 TS		852 TSZ
Measuring range	**mm**	0 –80		
Measuring range	**inch**	0 –3.15"		
Distance of movable anvil	**mm**	1.2		
Indicating instrument (included in package)		Millimess 1003	without	without
Parallelism deviation	**µm**	2		
Repeatability f_w	**µm**	1		
Measuring force	**N**	6.5		



Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000	Inductive dial comparator, ± 0.9 µm	2000
4346100	Inductive dial comparator, ± 0.9 µm	2001

2000

1086 R

2001

1086 Ri

1002

1003

1004

Indicating Thread Snap Gage MaraMeter 852

- Rugged, forged steel frame with heat insulators
- Measuring spindle is mounted in long guide way with lever cont-rolled retraction
- Measuring spindle and anvil spindle are both made of hardened stainless steel, with mounting bore for insertion of interchangeable anvils
- Adjustable center stop for auto-matic alignment
- Anvil spindle can easily be fine adjusted
- Constant measuring force as a result of built-in spring, thus eliminating user influence
- Maximum wear resistance due to non-contact positioning in conjunction with carbide tipped measuring faces
- **Scope of delivery:** Flat contact point 903 (steel), Wooden case (package excludes indicator)

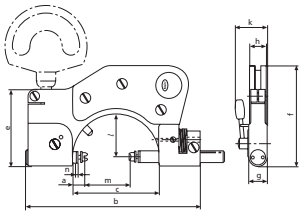
Application:

- For measuring pitch, root and outside diameters of all kinds of external threads as well as serrations
- Universally applicable and extremely versatile. Each instrument spans a broad measuring range

Technical Data

Order no.		4510000	4510001	4510002	4510003
Product type		852			
Measuring range	**mm**	0 –45	45 –85	85 –140	140 –190
Measuring range	**inch**	0 –1.77"	1.77 –3.34"	3.34 –5.51"	5.51 –7.48"
Distance of movable anvil	**mm**	2	2.5		
Repeatability f_w	**µm**	1			
Measuring force	**N**	7.5		9	
Frame size		2	3	4	5

Order no.	k	l	a	b	c	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm	mm
4510000	25	34	13	140	68	60	77	13	13
4510001	28	59	8	193	11	60	103	14	13
4510002	31	87	10	258	162	70	141	16	12
4510003	31	112	6	316	212	75	171	16	12



Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4334001	Millimess 2 µm, ± 130 µm	1003 XL
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000	Inductive dial comparator, ± 0.9 µm	2000
4346100	Inductive dial comparator, ± 0.9 µm	2001
4450051	Holder, Frame size 2	840 Fk/2
4450020	Base, for stationary application	840 Ff
4173210	Anvil flat, hardened steel	40 Za
4511190	Anvil flat, carbide tipped	40 Za
4450052	Holder, Frame size 3	840 Fk/3
4450053	Holder, Frame size 4 + 5	840 Fk/4

2000

1086 R

2001

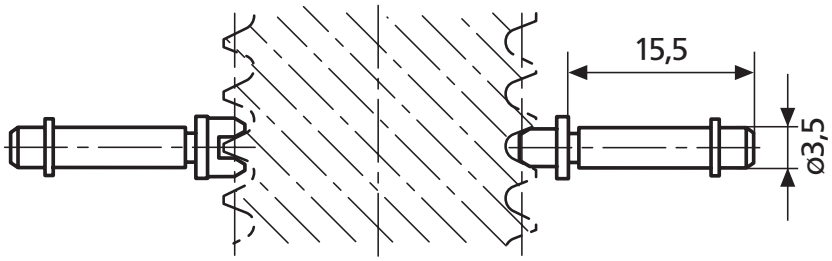
1086 Ri

1004

1002

1003

MaraMeter Thread anvils



- For pitch diameters
- Wear-resistant special steel, hardened
- With cylindrical mounting shank and retainer ring for rotatable mounting in the bore of 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 in mm	Blade Order no.	V-anvil Order no.
Pitch diameter, external thread		
Metric 60°		
0,2	**4173707**	**4173007**
0,25	**4173708**	**4173008**
0,3	**4173709**	**4173009**
0,35	**4173710**	**4173010**
0,4	**4173711**	**4173011**
0,45	**4173712**	**4173012**
0,5 –0,7	**4173700**	**4173000**
0,7 –1	**4173701**	**4173001**
1,25 –2	**4173702**	**4173002**
	4511104	**4511105**
2 –3,5	**4173703**	**4173003**
	4511107	**4511108**
3,5 –5	**4173704**	**4173004**
	4511139	**4511140**
5 –7	**4173705**	**4173005**
	4511141	**4511142**
7 –9	**4173706**	**4173006**

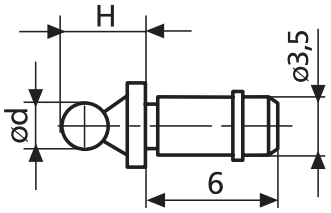
Thread pitch in TPI	Blade Order no.	V-anvil Order no.
UST 60°		
10 –7	**4173820**	**4173120**
14 –10	**4173819**	**4173119**
18 –14	**4173818**	**4173118**
24 –18	**4173817**	**4173117**
32 –24	**4173816**	**4173116**
4,5 –3	**4173822**	**4173122**
40 –32	**4173815**	**4173115**
48 –40	**4173814**	**4173114**
7 –4,5	**4173821**	**4173121**
Whitworth 55°		
10 –7	**4173748**	**4173048**
14 –10	**4173747**	**4173047**
18 –14	**4173746**	**4173046**
24 –18	**4173745**	**4173045**
3 –2,5	**4179410**	**4179408**
32 –24	**4173744**	**4173044**
4,5 –3	**4173750**	**4173050**
40 –32	**4173743**	**4173043**
7 –4,5	**4173749**	**4173049**

Ball contact Marameter

- For measuring gears and for special applications
- Carbide ball
- With cylindrical mounting shank and retainer ring
- For mounting into mounting bores of thread micrometers 40 Z and 852

Order no.	d	h
	mm	mm
4179150	0.5	5
4179151	0.551	5.1
4179152	0.62	5.1
4179153	0.623	5.1
4179154	0.63	5.1
4179155	0.722	5.2
4179156	0.862	5.4
4179157	0.895	5.4
4179158	0.965	5.5
4170550	1	5.5
4179159	1.1	5.6
4179160	1.118	5.6
4170551	1.25	5.8
4179161	1.125	5.6
4179162	1.35	5.9
4179163	1.372	5.9
4179164	1.385	5.9
4170552	1.5	6
4179165	1.524	6
4179166	1.54	6
4179167	1.6	6.1
4179168	1.65	6.2
4179169	1.7	6.2
4170553	1.75	6.3
4179170	1.782	6.3
4179171	1.8	6.3
4179172	1.829	6.3
4179173	1.9	6.4
4170554	2	6.5
4170568	2.032	6.5
4170569	2.2	6.7
4170564	2.25	6.8
4179174	2.284	6.8
4179175	2.386	6.9
4179176	2.438	6.9
4170556	2.5	7
4179177	2.667	7.2
4179178	2.704	7.2
4179179	2.713	7.2
4179180	2.721	7.2
4179181	2.743	7.2
4170565	2.75	7.3
4170557	3	7.5
4179182	3.048	7.5
4170570	3.2	7.7
4170566	3.25	7.8
4179183	3.4	7.9
4170558	3.5	8
4179184	3.658	8.2
4170571	3.7	8.2
4170559	4	8.5
4170560	4.5	9
4179185	4.835	9.3
4170561	5	9.5
4179186	5.25	9.8
4179187	5.486	10

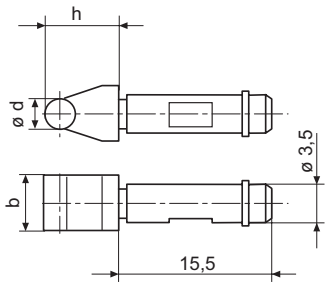
Order no.	d	h
	mm	mm
4170562	5.5	10
4170563	6	10.5
4179188	6.096	10.6
4179189	6.35	10.9
4170567	6.5	11
4170572	7	11.5
4170573	8	12.5
4170574	9	13.5
4170575	10	14.5



Roller blades,carbide MaraMeter

- For measuring gears for special applications
- Carbide measuring roller
- To be mounted in the mounting bores of the 40 Z and 852

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



Indicating thread snap gage MaraMeter 853

- 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 spindle are both 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, thus eliminating user influence
- Maximum wear resistance due to non-contact positioning
- **Scope of delivery:** Flat contact point 903 (steel), Wooden case, excludes indicator

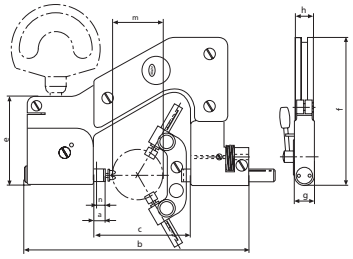
Application:

- For pitch, root and outside diameters on taps in conjunction with interchangeable anvils
- Universally applicable and extremely versatile. Each instrument spans a broad measuring range

Technical Data

Order no.		4511000	4511001
Product type		853	
Measuring range	**mm**	1.2 –35	35 –75
Measuring range	**inch**	.04 –1.37"	1.37 –3"
Distance of movable anvil	**mm**	8	
Repeatability f_w	**µm**	2	
Measuring force	**N**	7.5	

Order no.	n	a	b	c	e	f	g	h
	mm	mm	mm	mm	mm	mm	mm	mm
4511000	8	12	152	66	60	98	14	11.5
4511001	8	11.5	192	110	65	125	14	14



Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4332000	Millimess 0.01 mm, ±0.25 mm	1010
4311000	Precision Dial Indicator, 0.01 mm, 10 mm	810 S
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4511024	Interchangeable Support Yoke 3 flutes of taps for range 1,2–35 mm	853 qk 3
4511025	Interchangeable Support Yoke 3 flutes of taps for range 35–75mm	853 qg 3
4511026	Interchangeable Support Yoke 5 flutes of taps for range1,2–35 mm	853 qk 5
4511027	Interchangeable Support Yoke 5 flutes of taps for range 35–75 mm	853 qg 5
4511028	Interchangeable Support Yoke 7 flutes of taps for range 1,2–35 mm	853 qk 7
4511029	Interchangeable Support Yoke 7 flutes of taps for range 1,2–35 mm	853 qg 7
4511190	Anvil flat, carbide tipped	40 Za
4173210	Anvil flat, hardened steel	40 Za

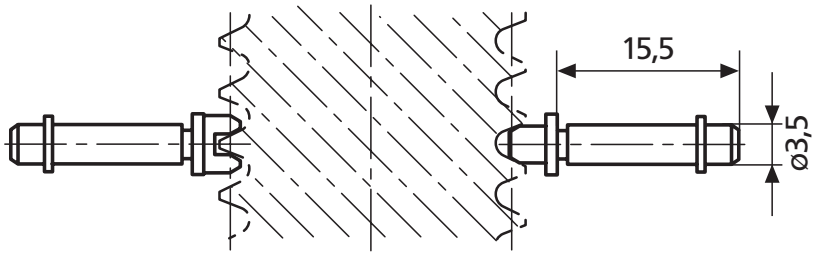
1004

810 S

1086 R

1086 Ri

MaraMeter Thread anvils



- For pitch diameters
- Wear-resistant special steel, hardened
- With cylindrical mounting shank and retainer ring for rotatable mounting in the bore of the dial comparator snap gage
- Adjustment with threaded setting plug 715 E

Accessories

Thread pitch in mm	Blade Order no.	V-anvil Order no.
Pitch diameter, external thread		
Metric 60°		
0,2	**4174007**	**4173051**
0,25	**4174008**	**4173052**
0,3	**4174009**	**4173053**
0,35	**4174010**	**4173054**
0,4	**4174011**	**4173055**
0,45	**4174012**	**4173056**
0,5 –0,7	**4174000**	**4173000**
0,7 –1	**4174001**	**4173001**
1,25 –2	**4174002**	**4173002**
2 –3,5	**4174003**	**4173003**
3,5 –5	**4173704**	**4173004**
5 –7	**4174005**	**4173005**
7 –9	**4174006**	**4173006**

Thread pitch in TPI	Blade Order no.	V-anvil Order no.
UST 60°		
60 –48	**4176113**	**4173124**
48 –40	**4176114**	**4173125**
40 –32	**4176115**	**4173115**
32 –24	**4176116**	**4173116**
24 –18	**4176117**	**4173117**
18 –14	**4176118**	**4173118**
14 –10	**4176119**	**4173119**
10 –7	**4176120**	**4173120**
7 –4,5	**4176121**	**4173121**
4,5 –3	**4176122**	**4173122**
Whitworth 55 °		
40 –32	**4176043**	**4173043**
32 –24	**4176044**	**4173044**
24 –18	**4176045**	**4173045**
18 –14	**4176046**	**4173046**
14 –10	**4176047**	**4173047**
10 –7	**4176048**	**4173048**
7 –4,5	**4176049**	**4173049**
4,5 –3	**4176050**	**4173050**
3 –2,5	**4179411**	**4179408**

Portable Thickness Gages MaraMeter 838 A

- Rugged, sturdy frame made from hard aluminum
- Built-in Digital or Dial Indicator
- With a lifting lever for the movable upper measuring spindle
- Convenient heat insulated handle, open at one end
- Versions with a throat depth of 200 mm have a removable stand
- **Scope of delivery:** Includes Indicator

Application:

- With flat measuring faces
- For measuring soft materials like foil, felt, rubber, paper and cardboard

Technical Data

Order no.	Product type	Measuring range	Measuring range	Throat depth	Throat depth	Resolution	Resolution	Resolution	Measuring surface ø	Measuring surface	Indicating instrument (included in package)
		mm	inch	mm	inch	mm/inch	mm	inch	mm	cm²	
4495120	838 A	0 –20	0 –.750″	50	2″	0.005 / .0001″	0.005	0.0001	11.3	1	MarCator 1075 R
4495121	838 A	0 –20	0 –.750″	100	4″	0.005 / .0001″	0.005	0.0001	11.3	1	MarCator 1075 R
4495122	838 A	0 –20	0 –.750″	200	8″	0.005 / .0001″	0.005	0.0001	11.3	1	MarCator 1075 R
4495125	838 A	0 –20	0 –.750″	50	2″	0.005 / .0001″	0.005	0.0001	20	3.14	MarCator 1075 R
4495126	838 A	0 –20	0 –.750″	100	4″	0.005 / .0001″	0.005	0.0001	20	3.14	MarCator 1075 R
4495127	838 A	0 –20	0 –.750″	200	8″	0.005 / .0001″	0.005	0.0001	20	3.14	MarCator 1075 R
4495130	838 A	0 –20	0 –.750″	50	2″	0.005 / .0001″	0.005	0.0001	30	7.06	MarCator 1075 R
4495131	838 A	0 –20	0 –.750″	100	4″	0.005 / .0001″	0.005	0.0001	30	7.06	MarCator 1075 R
4495132	838 A	0 –20	0 –.750″	200	8″	0.005 / .0001″	0.005	0.0001	30	7.06	MarCator 1075 R

Accessories

Order no.	Product name
4495050	Wooden case for throat depth 50mm
4495051	Wooden case for throat depth 100mm
4495052	Wodden case for throat depth 200mm

Portable Thickness Gages MaraMeter 838 A

- Rugged, sturdy frame made from hard aluminum
- Built-in Digital or Dial Indicator
- With a lifting lever for the movable upper measuring spindle
- Convenient heat insulated handle, open at one end
- Versions with a throat depth of 200 mm have a removable stand
- **Scope of delivery:** Includes Indicator

Application:

- With flat measuring faces
- For measuring soft materials like foil, felt, rubber, paper and cardboard

Technical Data

Order no.	Product type	Measuring range	Throat depth	Graduation value	Measuring surface ø	Measuring surface	Indicating instrument (included in package)
		mm	mm	mm	mm	cm^2	
4495000	838 A	0 –20	50	0.01	11.3	1	MarCator 810 S
4495001	838 A	0 –20	100	0.01	11.3	1	MarCator 810 S
4495002	838 A	0 –20	200	0.01	11.3	1	MarCator 810 S
4495103	838 A	0 –20	50	0.01	20	3.14	MarCator 810 S
4495104	838 A	0 –20	100	0.01	20	3.14	MarCator 810 S
4495105	838 A	0 –20	200	0.01	20	3.14	MarCator 810 S
4495109	838 A	0 –20	50	0.01	30	7.06	MarCator 810 S
4495110	838 A	0 –20	100	0.01	30	7.06	MarCator 810 S
4495111	838 A	0 –20	200	0.01	30	7.06	MarCator 810 S

Accessories

Order no.	Product name
4495050	Wooden case for throat depth 50mm
4495051	Wooden case for throat depth 100mm
4495052	Wodden case for throat depth 200mm

Portable Thickness Gages MaraMeter 838 B

- Rugged, sturdy frame made from hard aluminum
- Built-in Digital or Dial Indicator
- With a lifting lever for the movable upper measuring spindle
- Convenient heat insulated handle, open at one end
- Versions with a throat depth of 200 mm have a removable stand
- **Scope of delivery:** Includes Indicator

Application:

- With spherical measuring faces
- For measuring hard materials like sheet metal, hardboard, wooden panels and panes of glass

Technical Data

Order no.	Product type	Measuring range	Measuring range	Throat depth	Throat depth	Resolution	Graduation value	Measuring surface ø	Measurement surface radius	Indicating instrument (included in package)
		mm	inch	mm	inch	mm/inch	mm	mm	mm	
4495010	838 B	0 –20		50			0.01	12	30	MarCator 810 S
4495011	838 B	0 –20		100			0.01	12	30	MarCator 810 S
4495012	838 B	0 –20		200			0.01	12	30	MarCator 810 S
4495135	838 B	0 –20	0 –.750"	50	2"	0.005 / .0001"		12	30	MarCator 1075 R
4495136	838 B	0 –20	0 –.750"	100	4"	0.005 / .0001"		12	30	MarCator 1075 R
4495137	838 B	0 –20	0 –.750"	200	8"	0.005 / .0001"		12	30	MarCator 1075 R

Accessories

Order no.	Product name
4495050	Wooden case for throat depth 50mm
4495051	Wooden case for throat depth 100mm
4495052	Wodden case for throat depth 200mm

Portable Thickness Gages MaraMeter 838 AB

- Rugged, sturdy frame made from hard aluminum
- Built-in Digital or Dial Indicator
- With a lifting lever for the movable upper measuring spindle
- **Scope of delivery:** Includes Indicator

Application:

- Lower measuring face is flat
- Upper measuring face is spherical
- For measuring hard materials like sheet metal and hardboard

Technical Data

Order no.	Product type	Measuring range	Measuring range	Throat depth	Throat depth	Resolution	Graduation value	Measuring surface ø	Measuring surface	Measurement surface radius	Indicating instrument (included in package)
		mm	inch	mm	inch	mm/inch	mm	mm	cm^2	mm	
4495140	838 AB	0 –20	0 –.750"	50	2"	0.005 / .0001"		11.3	1	30	MarCator 1075 R
4495141	838 AB	0 –20	0 –.750"	100	4"	0.005 / .0001"		11.3	1	30	MarCator 1075 R
4495145	838 AB	0 –20	0 –.750"	50	2"	0.001 / .00005"		11.3	1	30	MarCator 1075 R
4495146	838 AB	0 –20	0 –.750"	100	4"	0.001 / .00005"		11.3	1	30	MarCator 1075 R
4495504	838 AB	0 –20		50			0.01	11.3	1	30	MarCator 810 S
4495517	838 AB	0 –20		100			0.001	11.3	1	30	Millimess 1003
4495519	838 AB	0 –20		50			0.001	11.3	1	30	Millimess 1003

Accessories

Order no.	Product name
4495050	Wooden case for throat depth 50mm
4495051	Wooden case for throat depth 100mm

Portable Thickness Gages MaraMeter XLI–22P–20

- Indicator built into gage frame for maximum ruggedness
- Lift-lever for one-hand operation
- Continuous reading dials with revolution counter for absolute measurement of thin materials, plastic films and small parts
- 6.3 mm / .25" diameter, flat steel contacts
- **Data interface:** Digimatic, RS232C, USB
- **Energy supply:** Battery operation
- **Scope of delivery:** Includes Indicator

Application:

Thickness Measurement of small parts from 0 to 1.0 inch

Technical Data

Order no.	Product type	Measuring range	Measuring range	Throat depth	Jaw depth	Resolution	Resolution	Size of measuring surface	Indicating instrument (included in package)
		mm	inch	mm	inch	mm	inch		
2057541	XLI–22P–20	0 –25	0 –1"	50	2"	0.0005, 0.001, 0.002, 0.005, 0.01	.00002", .00005", .0001", .0002", .0005"	6.3mm / 0.25inch Steel Contacts	4337651 1086 ZR

Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26

Portable Thickness Gages MaraMeter 22P–11 / 22P–15 / 22P–20

- Indicator built into gage frame for maximum ruggedness
- Lift-lever for one-hand operation
- Continuous reading dials with revolution counter for absolute measurement of thin materials, plastic films and small parts
- 6.3 mm / .25" diameter, flat steel contacts
- **Data interface:** none
- **Scope of delivery:** Includes Indicator

Application:

Thickness Measurement of small parts from 0 to 1.0 inch, depending on model

Technical Data

Order no.	Product type	Measuring range	Jaw depth	Graduation value	Size of measuring surface	Indicating instrument (included in package)
		inch	inch	inch		
2050446	22P–11	0 –.10"	1.13"	.0001"	6.3mm / 0.25inch Steel Contacts	Integral Indicator (22IN-RC dial)
2050447	22P–15	0 –.50"	2"	.001"	6.3mm / 0.25inch Steel Contacts	Integral Indicator (28IQN dial)
2050449	22P–20	0 –1"	2"	.001"	6.3mm / 0.25inch Steel Contacts	Integral Indicator (28ISN dial)

Technical Data

Order no.	Product type	Measuring range	Throat depth	Graduation value	Size of measuring surface	Indicating instrument (included in package)
		mm	mm	mm		
2050445	22P–10M	0 –2.54	28.6	0.002	6.3mm / 0.25inch Steel Contacts	Integral Indicator (P1I-RC dial)
2050448	22P–15M	0 –12.7	50	0.01	6.3mm / 0.25inch Steel Contacts	Integral Indicator (26I-RC dial)
2050450	22P–20M	0 –25	50	0.01	6.3mm / 0.25inch Steel Contacts	Integral Indicator (26I-RC dial)

Accessories

Order no.	Product name	Product type
2003150	Base/Bench Stand for 300P or 1000P style Snap Gage	BA–26

Portable Thickness Gages MaraMeter 26P–7

- Push-down movement
- Molded body fits shape of hand
- Built-in indicator
- Gage is normally open for easy part entry
- Push-down button to close the contacts
- Rugged and compact for roving inspection
- 6.3 mm / .25" diameter, flat steel contacts
- **Scope of delivery:** Includes Indicator

Application:

Thickness Measurement of small parts from 0 to .300 inch

Technical Data

Order no.	Product type	Measuring range	Jaw depth	Graduation value	Size of measuring surface	Indicating instrument (included in package)
		inch	inch	inch		
2050481	26P–7	0 –.30"	.63"	.001"	6.3mm / 0.25inch diameter	Integral Indicator (28IN-RC dial)

Technical Data

Order no.	Product type	Measuring range	Throat depth	Resolution	Graduation value	Size of measuring surface	Measuring surface ø	Probe path	Indicating instrument (included in package)
		mm	mm	mm	mm		mm	mm	
2050482	26P–7M	0 –7.6	16	0.01	0.01	6.3mm / 0.25inch diameter	6.3	2.5	Integral Indicator (26I-RC dial)

Portable Thickness Gages MaraMeter XLI–57B–15

Application:

Precision Thickness Measurement requiring dead weight load force

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- 0.003 mm / .0001" parallelism with tables up to 19 mm / .75" diameter
- 283 g / 10 oz. dead load weight for constant gaging pressure
- 10 mm / .407" diameter flat upper 54.0 mm / 2.125" lower contacts
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Gage is supplied with a lift lever so work can be easily placed between the table and contact
- Four-inch throat depth for part clearance
- **Data interface:** Digimatic, RS232C, USB, Integrated wireless
- **Energy supply:** Battery operation
- **Scope of delivery:** Includes Indicator

Technical Data

Order no.	Product type	Measuring range	Measuring range	Throat depth	Jaw depth	Resolution		Indicating instrument (included in package)	Parallelism deviation		Measuring force
		mm	inch	mm	inch	mm	inch		µm	inch	N
2057551	XLI–57B–15	0 –25	0 –1"	102	4"	0.0005, 0.001, 0.002, 0.005, 0.01	.00002", .00005", .0001", .0002", .0005"	4337628 (1086Ri)	3	.0001"	283gm / 10oz dead weight

Portable Thickness Gages MaraMeter 57B–14 / 57B–15

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- 0.003 mm / .0001" parallelism with tables up to 19 mm / .75" diameter
- 283 g / 10 oz. dead load weight for constant gaging pressure
- 10 mm / .407" diameter flat upper 54.0 mm / 2.125" lower contacts
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Gage is supplied with a lift lever so work can be easily placed between the table and contact
- Four-inch throat depth for part clearance
- **Data interface:** none
- **Scope of delivery:** Includes Indicator

Application:

Precision Thickness Measurement requiring dead weight load force

Technical Data

Order no.	Product type	Measuring range	Throat depth	Graduation value	Indicating instrument (included in delivery)	Parallelism deviation	Measuring force
		inch	inch	inch		µm	N
2050982	57B–14	0 –.10"	4"	.0001"	IDT–340 Indicator (32I-RC)	3	2.8
2050984	57B–15	0 –1"	4"	.001"	IDS–341 Indicator (D8IS)		2.8

Technical Data

Order no.	Product type	Measuring range	Throat depth	Resolution	Graduation value	Indicating instrument (included in package)	Measuring force
		mm	mm	mm	mm		N
2050983	57B–14M	0 –2.5	102	0.002	0.002	IDS–342 Indicator (Q1I-RC)	2.8
2050985	57B–15M	0 –25	102	0.01	0.01	IDS–343 Indicator (SQ6IS)	2.8

Portable Thickness Gages MaraMeter XLI–57B–13

Application:

For checking wall thickness of wire insulation andother small-diameter tubular parts

- Using the basic design of the Model 57B–13 (Model 57B–13M — Metric) Gage, the lower contact is PT–103, 1.10 mm / .043" diameter rod, mounted horizontally
- The 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 thickness of the wall of the tube
- An auxiliary weight on the Indicator provides a total dead-load weight of 25 grams
- (Replacement lower rod: PS–43)
- **Data interface:** Digimatic, Opto RS232C, USB, Integrated wireless
- **Energy supply:** Battery operation
- **Scope of delivery:** Includes Indicator

Technical Data

Order no.	Product type	Measuring range	Measuring range	Throat depth	Jaw depth	Resolution	Resolution	Indicating instrument (included in package)	Measuring force
		mm	inch	mm	inch	mm	inch		N
2057550	XLI–57B–13	0 –7.62	0 –.30"	102	4"	0.0005, 0.001, 0.002, 0.005, 0.01	.00002", .00005", .0001", .0002", .0005"	4337628 (1086Ri)	0.25

Accessories

Order no.	Product name	Product type
2225698	Replacement rod for PT–103 Pin, 0.043" diameter 0.687" length	PS–43
2225741	Pin, Ø=1.10mm / .043", lower contact 1.10 mm / 0.043" diameter pin, lower contact assembly	PT–103
2225869	Pin, Ø=0.05mm / .02", lower contact 0.050 mm / 0.020 in diameter pin, lower contact assembly	PT–2245

Portable Thickness Gages MaraMeter 57B–13

- Using the basic design of the Model 57B–13 (Model 57B–13M — Metric) Gage, the lower contact is PT–103, 1.10 mm / .043" diameter rod, mounted horizontally
- The 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 thickness of the wall of the tube
- An auxiliary weight on the Indicator provides a total dead-load weight of 25 grams
- (Replacement lower rod: PS–43) **Data interface:** none
- **Scope of delivery:** Includes Indicator

Application:

For checking wall thickness of wire insulation andother small-diameter tubular parts

Technical Data

Order no.	Product type	Measuring range	Throat depth	Jaw depth	Graduation value	Indicating instrument (included in package)	Measuring force
		inch	mm	inch	inch		N
2050980	57B–13	0 –.30"	102	4"	.0005"	IDS–116 Indicator (25M-RC)	0.25

Technical Data

Order no.	Product type	Measuring range	Throat depth	Graduation value	Indicating instrument (included in package)	Measuring force
		mm	mm	mm		N
2050981	57B–13M	0 –7.6	102	0.01	IDS–287 Indicator (26I-RC)	0.25

Accessories

Order no.	Product name	Product type
2225698	Replacement rod for PT–103 Pin, 0.043" diameter 0.687" length	PS–43
2225741	Pin, Ø=1.10mm / .043", lower contact 1.10 mm / 0.043" diameter pin, lower contact assembly	PT–103
2225869	Pin, Ø=0.05mm / .02", lower contact 0.050 mm / 0.020 in diameter pin, lower contact assembly	PT–2245

Portable Thickness Gages MaraMeter EMD–57B–11 / EMD–57B–11D / XLI–57B–11 / XLI–57B–12

Digimatic RS232C USB

Application:

Precision Thickness Measurement

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- Gage is furnished with a lift lever so work can be easily placed between the contacts
- Large 54 mm/ 2.125" diameter lower anvil provides convenient stage for small parts or flat materials
- 4.75 mm/ .187" diameter radiused upper contact normally provided
- 102 mm/ 4" throat depth for part clearance
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Available with Dial Indicator or Digital Electronic Indicator
- **Data interface:** none
- **Energy supply:** Battery operation
- **Scope of delivery:** Includes Indicator

Technical Data

Order no.	Product type	Measuring range	Measuring range	Throat depth	Jaw depth	Resolution	Resolution	Indicating instrument (included in package)
		mm	inch	mm	inch	mm	inch	
2051884	EMD–57B–11	0 –21.5	0 –1"	102	4"	0.0005, 0.001, 0.005	.00002", .00005", .0001", .0005"	2033101 Maxμm III
2051885	EMD–57B–11D	0 –21.5	0 –1"	102	4"	0.0005, 0.001, 0.005	.00002", .00005", .0001", .0005"	2033111 Maxμm III
2057548		0 –25		102	4"	0.0005, 0.001, 0.002, 0.005, 0.01	.00002", .00005", .0001", .0002", .0005"	4337651 (1086ZR)
2057549		0 –12.5		102	4"	0.0005, 0.001, 0.002, 0.005, 0.01	.00002", .00005", .0001", .0002", .0005"	4337650 (1086 ZR)

Portable Thickness Gages MaraMeter 57B–11 / 57B–12

- Solid casting with ribbed frame provides strength and rigidity for accurate measurements
- Gage is furnished with a lift lever so work can be easily placed between the contacts
- Large 54 mm/ 2.125″ diameter lower anvil provides convenient stage for small parts or flat materials
- 4.75 mm/ .187″ diameter radiused upper contact normally provided
- 102 mm/ 4″ throat depth for part clearance
- Indicator mounts with adjustable back for quick positioning for each gaging requirement
- Available with Dial Indicator or Digital Electronic Indicator
- **Data interface:** none
- **Scope of delivery:** Includes Indicator

Application:

Precision Thickness Measurement

Technical Data

Order no.	Product type	Measuring range	Throat depth	Throat depth	Graduation value	Indicating instrument (included in package)
		inch	mm	inch	inch	
2050976	57B–11	0 –1″	102	4″	.001″	IDS–160 Indicator (D8IS)
2050978	57B–12	0 –.50″	102	4″	.0005″	IDS–161 Indicator (D7I-RC)

Technical Data

Order no.	Product type	Measuring range	Throat depth	Graduation value	Indicating instrument (included in delivery)
		mm	mm	mm	
2050977	57B–11M	0 –25	102	0.01	IDS–285 Indicator (SQ6IS)
2050979	57B–12M	0 –12.5	102	0.01	IDS–286 Indicator (SQ6I)

Gage for external measurement MaraMeter 49P–17M / 49P–19M / 49P–1M / 49P–2M

- Generous clearance on jaws reaches over non-measured part protrusions for easy access to areas where thickness must meet critical dimensional specs
- Retraction lever is conveniently located for one-hand operation
- 0.02 mm or 0.1 mm / .01", .001", or 1/64" grads. available
- Continuous reading dials with revolution counters normally provided
- Cylindrical radius steel contact tips normally furnished**Data interface:** none
- **Scope of delivery:** Includes Indicator

Application:

The most widely used gages for checking medium tolerance dimensions on patterns, castings, forgings, dies, sheet metal

Technical Data

Order no.	Product type	Measuring range	Throat depth	Graduation value	Indicating instrument (included in package)	Measuring depth	Measuring force
		mm	mm	mm		mm	N
2050704	49P–17M	0 –50	100	0.02	IDS–305 Indicator (P1I-RC)	100	-
2050709	49P–19M	0 –50	200	0.02	IDS–305 Indicator (P1I-RC)	200	-
2050710	49P–1M	0 –75	100	0.1	IDS–306 Indicator (26I-RC)	100	-
2050718	49P–2M	0 –75	200	0.1	IDS–309 Indicator (23I-RC)	200	-

Technical Data

Order no.	Product type	Measuring range	Graduation value	Indicating instrument (included in delivery)	Measuring depth
		inch	inch		inch
2050702	49P–17	0 –2"	.001"	IDT–167 Indicator (22IN-RC)	4"
2050706	49P–19	0 –2"	.001"	IDT–167 Indicator (22IN-RC)	8"
2050696	49P–1	0 –3"	.01"	IDS–168 Indicator (28IN-RC)	4"
2050711	49P–2	0 –3"	.01"	IDS–168 Indicator (28IN-RC)	8"

Order no.	A	B	A	B
	mm	mm	inch	inch
2050704	31.75	31.75		
2050709	65.09	50.80		
2050710	31.75	31.75		
2050718	65.09	50.80		
2050702			1.25	1.25
2050706			2.5625	2
2050696			1.25	1.25
2050711			2.5625	2

Gege for External Measurement MaraMeter 838 TA

- Contact points are made of carbide
- Absolute measuring instrument
- Easy to read tolerance markers
- **IP protection category:** IP 65
- **Scope of delivery:** Test certificate

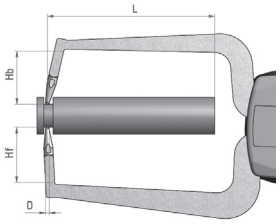
Application:

- For measuring thicknesses and wall thicknesses
- Easy to operate

Technical Data

Order no.	Product type	Measuring range	Graduation value	Measuring depth	Error limit	Repeatability	Dimension L	Diameter of measuring contact ball	Measuring force
		mm	mm	mm	mm	mm	mm	mm	N
4495550	838 TA	0 –10	0.005	35	0.015	0.005	35	1.5	0.8 –1.2
4495551	838 TA	0 –20	0.01	85	0.03	0.01	85	1.5	1.1 –1.6
4495552	838 TA	0 –20	0.01	85	0.03	0.01	85	1.5	1.1 –1.6
4495555	838 TA	0 –50	0.05	167	0.05	0.025	167	3	0.8 –1.7
4495556	838 TA	0 –50	0.05	169	0.05	0.025	169	3	0.8 –1.7

Order no.	D	Hb	Hf	Dimension L
	mm	mm	mm	mm
4495550	1.5	19.1	18.6	35
4495551	1.5	24.6	24.6	85
4495552	1.5	24.6	2.5	85
4495555	3	30	30	167
4495556	3	30	4.3	169



Gege for External Measurement MaraMeter 838 TAZ

- Contact points are made of carbide
- Absolute measuring instrument
- Easy to read tolerance markers
- **IP protection category:** IP 65
- **Scope of delivery:** Test certificate

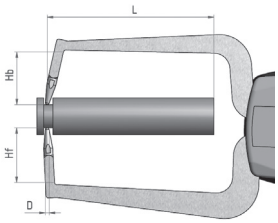
Application:

- For measuring thicknesses and wall thicknesses
- Easy to operate

Technical Data

Order no.	Product type	Measuring range	Graduation value	Error limit	Repeatabiltiy	L	Measuring contact ball diameter	Measuring force
		inch	inch	inch	inch	inch	inch	N
4495950	838 TAZ	0 –.40″	.0002″	.0008″	.0002″	1.37″	.6″	0.8 –1.2
4495951	838 TAZ	0 –.80″	.0005″	.0015″	.0005″	3.2″	.6″	1.1 –1.6
4495952	838 TAZ	0 –.80″	.0005″	.0015″	.0005″	3.2″	.6″	1.1 –1.6
4495955	838 TAZ	0 –2.0″	.001″	.002″	.001″	6.6″	.12″	0.8 –1.7
4495956	838 TAZ	0 –2.0″	.001″	.002″	.001″	6.7″	.12″	0.8 –1.7

Order no.	D	Hb	Hf	L
	inch	inch	inch	inch
4495950	.6″	.75″	.75″	1.37″
4495951	.6″	.97″	.97″	3.2″
4495952	.6″	.97″	.097″	3.2″
4495955	.12″	1.18″	1.18″	6.6″
4495956	.12″	1.18″	.17″	6.7″



Electronic Gage for External Measurement MaraMeter 838 EA

Functions:
- ON/OFF
- mm/inch
- TOL (enter tolerance limit values)
- ABS (display can be set to zero without losing reference to preset)
- DATA (Data transmission via connection cable)

- High contrast analog and digital LCD
- Tolerance is displayed with 2 LEDs
- **Data interface:** Digimatic, USB
- **Energy supply:** Battery operation (2x 1.5V AAA)
- **IP protection category:** IP 67
- **Scope of delivery:** Instruction manual, Battery, Test certificate

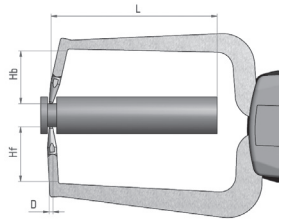
Application:

- Specified measuring programs according to application
- Absolute/Relative measuring program

Technical Data

Order no.	Product type	Graduation value	Measuring depth	Error limit	Repeatability	Dimension L	Diameter of measuring contact ball	Measuring force
		mm	mm	mm	mm	mm	mm	N
4495560	838 EA	0.005	35	0.015	0.005	35	1.5	0.8 – 1.2
4495561	838 EA	0.01	85	0.03	0.01	85	1.5	1.1 – 1.6
4495562	838 EA	0.01	85	0.03	0.01	85	1.5	1.1 – 1.6
4495563	838 EA	0.02	116	0.04	0.02	116	3	0.9 – 1.6
4495564	838 EA	0.02	167	0.06	0.04	167	3	0.8 – 1.7
4495565	838 EA	0.02	116	0.04	0.02	116	3	0.9 – 1.6
4495566	838 EA	0.02	169	0.06	0.04	169	3	0.8 – 1.7

Order no.	D	Hb	Hf	Dimension L
	mm	mm	mm	mm
4495560	1.5	19.1	18.6	35
4495561	1.5	24.6	24.6	85
4495562	1.5	24.6	2.5	85
4495563	3	30	30	116
4495564	3	30	30	167
4495565	3	30	4	116
4495566	3	30	4.3	169



Accessories

Order no.	Product name	Product type
4495079	Data Connection Cable USB (1.5 m)	838 usb
4495083	Digimatic data cable (1.5 m)	838 di (A)

Gage for Internal Measurement MaraMeter 838 TI

IP65

- Contact points are made of carbide
- Absolute measuring instrument
- Easy to read tolerance markers
- **IP protection category:** IP 65
- **Scope of delivery:** Test certificate

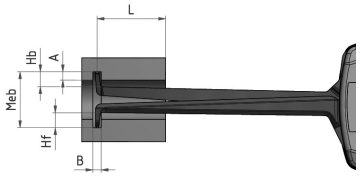
Application:

- For measuring bores and internal grooves
- Easy to operate

Technical Data

Order no.	Product type	Measuring range	Graduation value	Measuring depth	Error limit	Repeatability	groove depth	Groove width	Dimension L	Diameter of measuring contact ball	Measuring force
		mm	mm	mm	mm	mm	mm	mm	mm	mm	N
4495580	838 TI	5 –15	0.005	35	0.015	0.005	2.3	0.8	35	0.6	0.8 –1.2
4495581	838 TI	10 –30	0.01	85	0.03	0.01	5.2	1.2	85	1	1.1 –1.6
4495582	838 TI	20 –40	0.01	85	0.03	0.01	7	1.2	85	1	1.1 –1.6
4495583	838 TI	30 –50	0.01	85	0.03	0.01	7	1.2	85	1	1.1 –1.6
4495584	838 TI	40 –60	0.01	85	0.03	0.01	8.3	1.2	85	1	1.1 –1.6
4495585	838 TI	50 –70	0.01	85	0.03	0.01	8.3	1.2	85	1	1.1 –1.6
4495586	838 TI	15 –65	0.05	188	0.05	0.025	5.5	1.9	188	1.5	0.9 –1.9
4495587	838 TI	40 –90	0.05	192	0.05	0.025	8.3	2.4	192	2	0.9 –1.9

Order no.	A	B	D	Hb	Hf	Dimension L
	mm	mm	mm	mm	mm	mm
4495580	2.3	0.80	0.6	2.5	2.5	35
4495581	5.2	1.20	1	5.4	5.4	85
4495582	7	1.20	1	7.3	7.3	85
4495583	7	1.20	1	7.3	7.3	85
4495584	8.3	1.20	1	12.2	12.2	85
4495585	8.3	1.20	1	12.2	12.2	85
4495586	5.5	1.90	1.5	6	6	188
4495587	8.3	2.40	2	8.5	8.5	192



Gage for Internal Measurement MaraMeter 838 TIZ

- Contact points are made of carbide
- Absolute measuring instrument
- Easy to read tolerance markers
- **IP protection category:** IP 65
- **Scope of delivery:** Test certificate

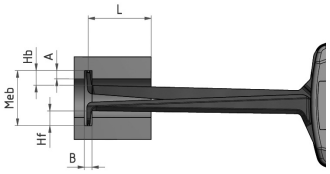
Application:

- For measuring bores and internal grooves
- Easy to operate

Technical Data

Order no.	Product type	Measuring range	Graduation value	Error limit	Repeatabiltiy	L	Measuring contact ball diameter	Measuring force
		inch	inch	inch	inch	inch	inch	N
4495980	838 TIZ	.20 –.60"	.0002"	.0008"	.0002"	1.37"	.024"	0.8 –1.2
4495981	838 TIZ	.40 –1.20"	.0005"	.0015"	.0005"	3.2"	.04"	1.1 –1.6
4495982	838 TIZ	.80 –1.60"	.0005"	.0015"	.0005"	3.2"	.04"	1.1 –1.6
4495983	838 TIZ	1.20 –2.00"	.0005"	.0015"	.0005"	3.2"	.04"	1.1 –1.6
4495984	838 TIZ	1.60 –2.40"	.0005"	.0015"	.0005"	3.2"	.04"	1.1 –1.6
4495985	838 TIZ	2.00 –2.80"	.0005"	.0015"	.0005"	3.2"	.04"	1.1 –1.6
4495986	838 TIZ	.60 –2.60"	.001"	.002"	.001"	7.5"	.06"	0.9 –1.9
4495987	838 TIZ	1.60 –3.60"	.001"	.002"	.001"	7.6"	.08"	0.9 –1.9

Order no.	Dimension A	Dimension B	D	Hb	Hf	L
	inch	inch	inch	inch	inch	inch
4495980	.09"	.032"	.024"	.97"	.97"	1.37"
4495981	.19"	.06"	.04"	.21"	.21"	3.2"
4495982	.26"	.08"	.04"	.29"	.29"	3.2"
4495983	.26"	.08"	.04"	.29"	.29"	3.2"
4495984	.31"	.08"	.04"	.33"	.33"	3.2"
4495985	.31"	.08"	.04"	.33"	.33"	3.2"
4495986	.2"	.08"	.06"	.25"	.25"	7.5"
4495987	.2"	.1"	.08"	.33"	.33"	7.6"



Electronic Gage for Internal Measurement MaraMeter 838 EI

Application:

- Specified measuring programs according to application
- Absolute/Relative measuring program

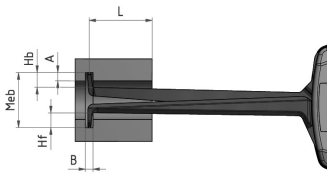
- **Fuctions:**
- ON/OFF
- mm/inch
- ABS (display can be set to zero without losing reference to preset)
- TOL (enter tolerance limit values)

- High contrast analog and digital LCD
- Tolerance is displayed with 2 LEDs
- **Data interface:** Digimatic, USB
- **Energy supply:** Battery operation (2x 1.5V AAA)
- **IP protection category:** IP 67
- **Scope of delivery:** Instruction manual, Battery, Test certificate

Technical Data

Order no.	Product type	Graduation value	Measuring depth	Error limit	Repeatability	groove depth	Groove width	Dimension L	Diameter of measuring contact ball	Measuring force
		mm	mm	mm	mm	mm	mm	mm	mm	N
4495590	838 EI	0.005	35	0.015	0.005	2.3	0.8	35	0.6	0.8 –1.2
4495591	838 EI	0.01	85	0.03	0.01	5.2	1.2	85	1	1.1 –1.6
4495592	838 EI	0.01	85	0.03	0.01	7	1.2	85	1	1.1 –1.6
4495593	838 EI	0.01	85	0.03	0.01	7	1.2	85	1	1.1 –1.6
4495594	838 EI	0.01	85	0.03	0.01	8.3	1.2	85	1	1.1 –1.6
4495595	838 EI	0.01	85	0.03	0.01	8.3	1.2	85	1	1.1 –1.6
4495598	838 EI	0.02	127	0.04	0.02	5.7	1.6	127	1.3	1.2 –1.7
4495599	838 EI	0.02	132	0.04	0.02	6.2	1.8	132	1.5	1.2 –1.7
4495600	838 EI	0.02	132	0.04	0.02	8.3	2.4	132	2	1.2 –1.7

Order no.	A	B	D	Hb	Hf	Dimension L
	mm	mm	mm	mm	mm	mm
4495590	2.3	0.80	0.6	2.5	2.5	35
4495591	5.2	1.20	1	5.4	5.4	85
4495592	7	1.20	1	7.3	7.3	85
4495593	7	1.20	1	7.3	7.3	85
4495594	8.3	1.20	1	12.2	12.2	85
4495595	8.3	1.20	1	12.2	12.2	85
4495598	5.7	1.60	1.3	5.7	5.7	127
4495599	6.2	1.80	1.5	6.5	6.5	132
4495600	8.3	2.40	2	8.5	8.5	132



Accessories

Order no.	Product name	Product type
4495079	Data Connection Cable USB (1.5 m)	838 usb
4495083	Digimatic data cable (1.5 m)	838 di (A)

MaraMeter 837

- Large measuring bridge hardened and chrome plated surface
- Plan grinded Measuring surface
- Holder for dial indicators with Ø 8 mm shank

Technical Data

Order no.		4494010	4494011	4494012
Product type			837	
Length of base	mm	80	100	150
Width of base	mm	16		20

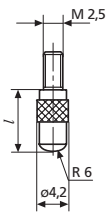
Accessories

Order no.	Product name	Product type
4311060	Precision Dial Indicator, 0.01 mm, 10 mm	810 AT
4336010	Digital Indicator, 0.01 mm, 12.5 mm	1075 R
4337131	Digital Indicator, 0.01 mm, 25 mm	1086 R
4360015	Spherical contact point, Steel, l = 25 mm, r = 6 mm	902
4360017	Spherical contact point, Steel, l = 35 mm, r = 6 mm	902
4360026	Spherical contact point, Steel, l = 45 mm, r = 6 mm	902
4360031	Spherical contact point, Steel, l = 55 mm, r = 6 mm	902
4360035	Spherical contact point, Steel, l = 65 mm, r = 6 mm	902
4360020	Spherical contact point, Steel, l = 75 mm, r = 6 mm	902
4360036	Spherical contact point, Steel, l = 85 mm, r = 6 mm	902
4360029	Spherical contact point, Steel, l = 95 mm, r = 6 mm	902

810 AT

1075 R

1086 R;1086 ZR



902;902 H

Indicating depth gage with needle contact and V-shaped base MaraMeter 65P–40

- V-shaped base and needle contact
- Movement is Push-Down style
- **Data interface:** none
- **Scope of delivery:** Includes Indicator

Application:

Ideal for measuring etch depth, pits, or small, shallow recesses

Technical Data

Order no.		2051075
Product type		65P–40
Length of base	inch	2.5"
Measuring range	inch	0 –.075"
Graduation value	inch	.0005"
Indicating instrument (included in package)		IDS–163 Indicator (25M-RC)

Technical Data

Order no.		2051076
Product type		65P–40M
Length of base	mm	64
Measuring range	mm	0 –2
Resolution	mm	0.01
Graduation value	mm	0.01
Indicating instrument (included in package)		IDS–319 Indicator (26I-RC)

Indicating Depth Gage MaraMeter 75P–30

- Rectangular, flat base and radiused contact point
- Supplied with contact point for measuring depths from the base as a reference
- Contact points for other depths are available upon request
- **Data interface:** none
- **Scope of delivery:** Indicator, Spherical measuring anvil (3 mm/0.13")

Application:

Shallow Depth Measurement

Technical Data

Order no.		2051088
Product type		75P–30
Length of base	mm	64
Length of base	inch	2.5"
Width of base	mm	14
Width of base	inch	.56"
Measuring range	inch	0 –.150"
Graduation value	inch	.0005"
Indicating instrument (included in package)		Special Indicator (25M-RC dial)

Technical Data

Order no.		2051089
Product type		75P–30M
Length of base	mm	64
Length of base	inch	2.5"
Width of base	mm	14
Width of base	inch	.75"
Measuring range	mm	0 –4
Resolution	mm	0.01
Graduation value	mm	0.01
Indicating instrument (included in package)		Special Indicator (26I-RC dial)

MaraMeter 75P–35M

- Depth Gages have three interchangeable contact points, allowing inspection of depths to 76 mm / 3″
- Check depths against a setting
- **Data interface:** none
- **Scope of delivery:** Indicator, Spherical measuring anvils (3 / 28 / 54 mm; 0.13″ / 1.13″ / 2.13″)

Application:

Deep Depth Measurement

Technical Data

Order no.		2051090
Product type		75P–35
Length of base	mm	64
Length of base	inch	2.5″
Width of base	mm	14
Width of base	inch	.75″
Measuring range	inch	0 –3″
Graduation value	inch	.001″
Indicating instrument (included in package)		(28ISN) dial

Technical Data

Order no.		2051091
Product type		75P–35M
Length of base	mm	64
Length of base	inch	2.5″
Width of base	mm	14
Width of base	inch	.75″
Measuring range	mm	0 –75
Resolution	mm	0.01
Graduation value	mm	0.01
Indicating instrument (included in package)		SP6IS dial

MaraMeter 75P–50 / 75P–51 / 75P–52 / 75P–53 / 75P–54 / 75P–55 / 75P–56

- Single and multi-purpose bases with choice of comparative or direct measurement indicators
- Collet mounting allows for interchanging indicators and bases to meet a wide range of requirements
- Wide range of contact points available to cover any depth measurement
- Setting masters available with anvil ground to specified depth (accuracy ±2.5µm/± .0001")

Application:

Modular Depth Gage for all applications

Technical Data

Order no.		2051092	2051094	2051096	2051098	2051100	2051102	2051104
Product type		75P–50	75P–51	75P–52	75P–53	75P–54	75P–55	75P–56
Length of base	**inch**	2"	3"	4"	6"	8"		
Width of base	**inch**			.75"				
Base diameter	**inch**						.75"	1.25"
Measuring range	**inch**				.075"			
Measuring positions		1		2	3		1	
Graduation value	**inch**				.0005"			
Indicating instrument (included in package)					IDS–171 Indicator (25M) -Comparative			

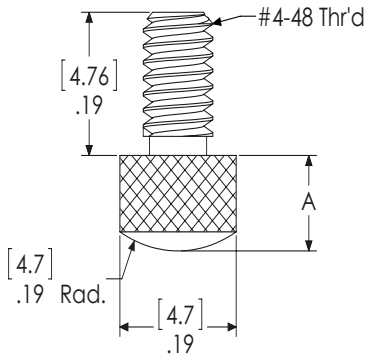
Technical Data

Order no.		2051093	2051095	2051097	2051099	2051101	2051103	2051105
Product type		75P–50M	75P–51M	75P–52M	75P–53M	75P–54M	75P–55M	75P–56M
Length of base	**mm**	50	76	102	152	203		
Width of base	**mm**			19				
Base diameter	**mm**						19	32
Measuring range	**mm**				2,50			
Measuring positions		1		2	3		1	
Resolution	**mm**				0.01			
Graduation value	**mm**				0.01			
Indicating instrument (included in package)					IDS–284 Indicator (26I) -Comparative			

MaraMeter 75P–50M / 75P–51M / 75P–52M / 75P–53M / 75P–54M / 75P–55M / 75P–56M

Accessories

Order no.	Product name	Product type	Measuring depth	Measuring depth
			mm	inch
2225799	Standard measuring anvil, spherical, A = 7/8"	PT–201	0 –1,60	0 –.063"
2225885	Standard measuring anvil, spherical, A = 1"	PT–232	1,60 –4,80	.063 –.188"
2225900	Standard measuring anvil, spherical, A = 1–1/8"	PT–305	4,80 –8	.188 –.313"
2225975	Standard measuring anvil, spherical, A = 1–1/4"	PT–565	8 –11	.313 –.438"
2225888	Standard measuring anvil, spherical, A = 1–3/8"	PT–239	11 –14	.438 –.563"
2225933	Standard measuring anvil, spherical, A = 1–1/2"	PT–50	14 –17,50	.563 –.688"
2225887	Standard measuring anvil, spherical, A = 1–5/8"	PT–235	17,50 –21	.688 –.813"
2225890	Standard measuring anvil, spherical, A = 1–3/4"	PT–241	21 –24	.813 –.938"
2225738	Standard measuring anvil, spherical, A = 1–7/8"	PT–100	24 –27	.938 –1.063"
2225934	Standard measuring anvil, spherical, A = 2"	PT–51	27 –30	1.063 –1.188"
2225891	Standard measuring anvil, spherical, A = 2–1/8"	PT–243	30 –33,40	1.188 –1.313"
2225986	Standard measuring anvil, spherical, A = 2–1/4"	PT–696	33,40 –37	1.313 –1.438"
2225739	Standard measuring anvil, spherical, A = 2–3/8"	PT–101	37 –40	1.438 –1.563"
2225892	Standard measuring anvil, spherical, A = 2–1/2"	PT–245	40 –43	1.563 –1.688"
2225740	Standard measuring anvil, spherical, A = 2–5/8"	PT–102	43 –46	1.688 –1.813"
2225976	Standard measuring anvil, spherical, A = 2–3/4"	PT–566	46 –49	1.813 –1.938"
2225893	Standard measuring anvil, spherical, A = 2–7/8"	PT–247	49 –52,4	1.938 –2.063"



MaraMeter EMD–75B–1 / EMD–75B–1D / 2057552 (XLI–75B–1) / 2057553 (XLI–75B–2)

- Available with Dial Indicator (75B–1 Models) or Maxμm®III and μMaxμm®II Digital Electronic Indicators (EMD–75B and XLI–75B Models)
- 89 x 102 mm / 3.50 x 4" hardened, ground work surface provides excellent reference surface
- Four #10–32 tapped holes provided for mounting part location fixturing
- Indicator vertically adjustable over 32 mm / 1.25"
- Two contact points provided, 6 mm / .25" and 32 mm / 1.25" to check features up to 50 mm / 2" deep
- **Data interface:** none
- **Energy supply:** Battery operation

Application:

Depth Measurement Inspection of small to medium parts

Technical Data

Order no.		2051888	2051889	2057552	2057553
Measuring surface		hardened steel			
Product type		EMD–75B–1	EMD–75B–1D	(XLI–75B–1)	(XLI–75B–2)
Length of base	mm	102			
Length of base	inch	4"			
Width of base	mm	89			
Width of base	inch	3.5"			
Measuring range	mm			0 –25	0 –12,5
Measuring range	inch			0 –1"	0 –.5"
Resolution	mm	0.0005, 0.001, 0.005		0.0005, 0.001, 0.002, 0.005, 0.01	
Resolution	inch	.00002", .00005", .0001", .0005"		.00002", .00005", .0001", .0002", .0005"	
Indicating instrument (included in package)		2033201 MaxumIII	2033211 MaxumIII	4337651 (1086 ZR)	4337650 (1086 ZR)
Measuring depth	mm			50	38
Measuring depth	inch			2"	1.5"

MaraMeter 75B–1

- Available with Dial Indicator (75B–1 Models) or Maxμm®III and μMaxμm®II Digital Electronic Indicators (EMD–75B and XLI–75B Models)
- 89 x 102 mm / 3.50 x 4" hardened, ground work surface provides excellent reference surface
- Four #10–32 tapped holes provided for mounting part location fixturing
- Indicator vertically adjustable over 32 mm / 1.25"
- Two contact points provided, 6 mm / .25" and 32 mm / 1.25" to check features up to 50 mm / 2" deep

Application:

Depth Measurement Inspection of small to medium parts

Technical Data

Order no.		2051077
Measuring surface		hardened steel
Product type		75B–1
Length of base	mm	102
Length of base	inch	4"
Width of base	mm	89
Width of base	inch	3.5"
Measuring range	inch	0 –1"
Graduation value	inch	.001"
Indicating instrument (included in delivery)		IDS–152 Indicator (28ISN)
Measuring depth	mm	25
Measuring depth	inch	2"

MaraMeter 75B–1M

- Available with Dial Indicator (75B–1 Models) or Maxµm®III and µMaxµm®II Digital Electronic Indicators (EMD–75B and XLI–75B Models)
- 89 x 102 mm / 3.50 x 4" hardened, ground work surface provides excellent reference surface
- Four #10–32 tapped holes provided for mounting part location fixturing
- Indicator vertically adjustable over 32 mm / 1.25"
- Two contact points provided, 6 mm / .25" and 32 mm / 1.25" to check features up to 50 mm / 2" deep

Application:

Depth Measurement Inspection of small to medium parts

Technical Data

Order no.		2051078
Measuring surface		hardened steel
Product type		75B–1M
Length of base	**mm**	102
Length of base	**inch**	4"
Width of base	**mm**	89
Width of base	**inch**	3.5"
Measuring range	**mm**	0 –25
Resolution	**mm**	0.01
Graduation value	**mm**	0.01
Indicating instrument (included in package)		IDS–310 Indicator (SP6IS)
Measuring depth	**mm**	25

Dimentron® Plug Gages

The Dimentron® System - Built for Performance

Dimentron® Plug Assembly — shown with *Maxμm®III* Indicator, Housing and Handle

Special depth gaging applications

The Dimentron plug gage, which makes up the plug body, the panto-assembly, its contacts and transfer rod, is the measuring system comprising the Dimentron plug. It can be interchanged by simply unscrewing it from the display assembly.

The **plug body** is made of tough hardened 440 stainless steel, tempered and ground. Introduction into the bore is facilitated with 52-56 HRC hardness guide.

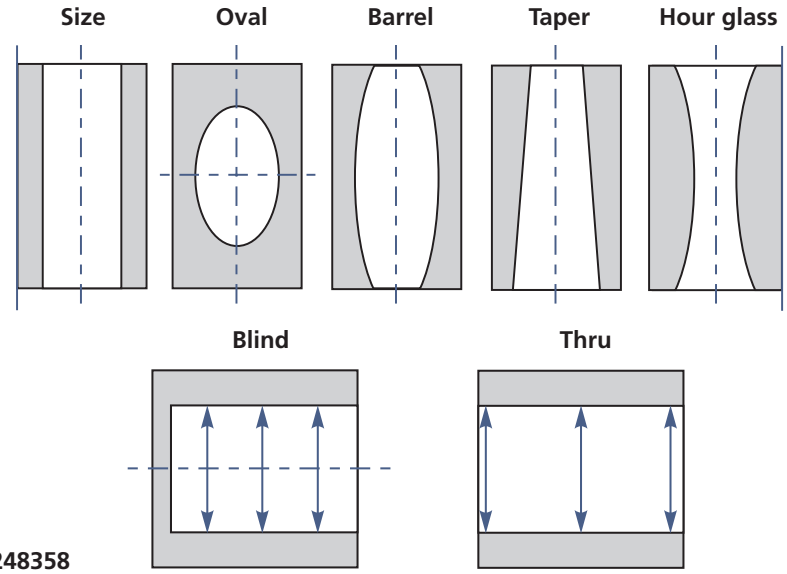
Standard **contacts** are made of tungsten carbide and based on the bore diameter range, come in two possible radii. Other contact materials are available based on the part being measured. Diamond, Ruby or hard-chrome-covered contacts are also available. Diamond or ruby contacts are suggested for soft aluminum or highly wearing applications; hard chromed ones (1000 HV) for aluminum and relevant alloys. Also based on the thickness of the surface, cylindrical contacts options are available.

Either 2 or 4 steel spring assemblies **form panto-spring assemblies**. The design of the transfer assembly is determined by the diameter of the plug. This panto-design produces true straight-line transfer to the V-rod.

A **transfer rod**, with spherical tungsten carbide tip, slides on a tempered steel V-shaped guide and inclined plane, transferring the measurement to the display device. This unique floating system has been designed and tested to resist for over 10,000,000 measuring cycles.

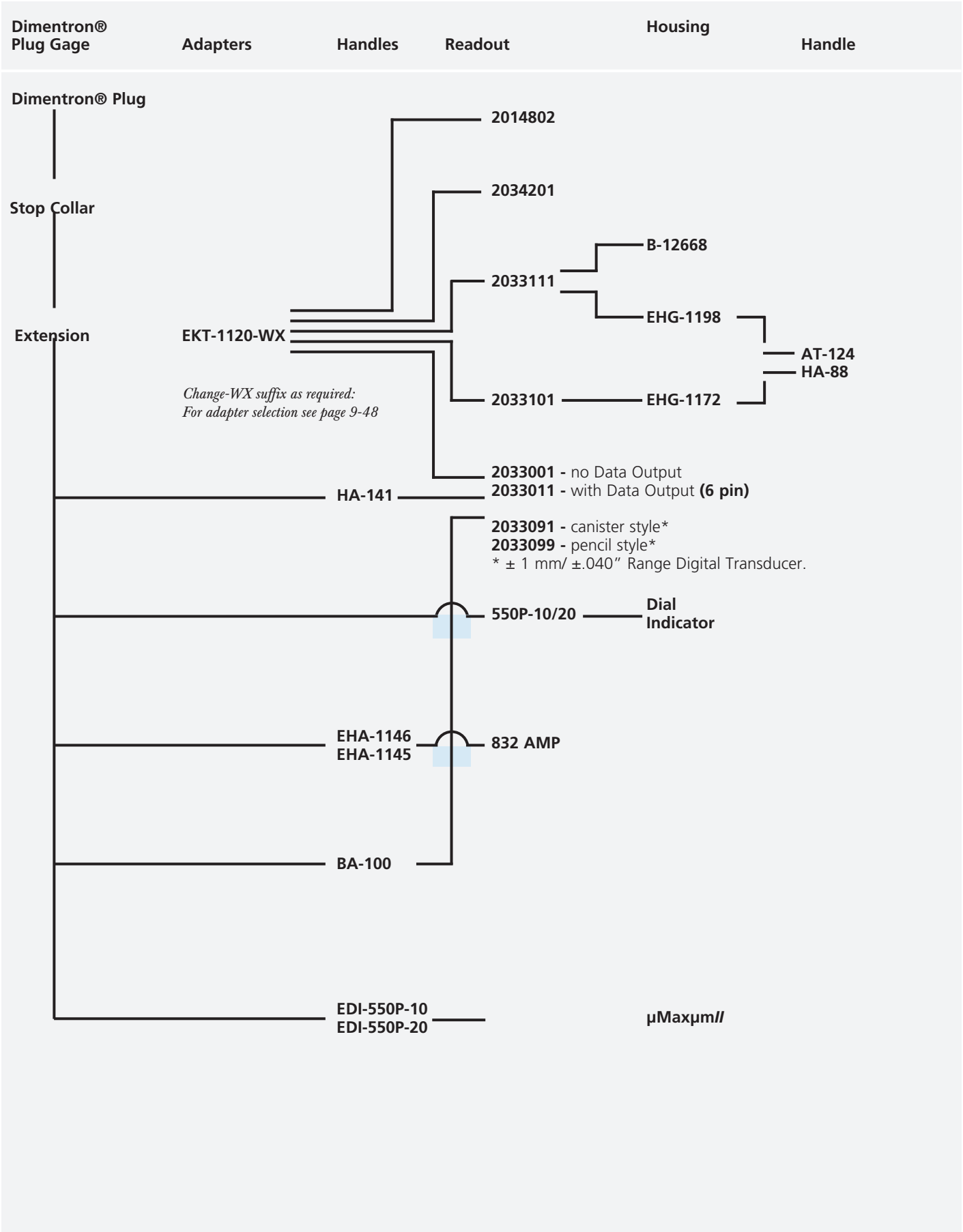
Though designed for the toughest shop conditions, wear items do occasionally need replacement. Because of the individual components **service is fast and easy**. All parts are available separately from Mahr and with standard tools, can be replaced in minutes to help maintain up time on the floor.

Shown with bench stand 2239307 & plug holder 2248358



Dimentron® Plug Inside Diameter Gages

The following table depicts available readouts for Dimentron® Plug Inside Diameter Gages. After making a Plug selection, follow the chart for all the components needed to compose a gaging system suited to your application.



Indicating plug gage for through hole MaraMeter Dimentron

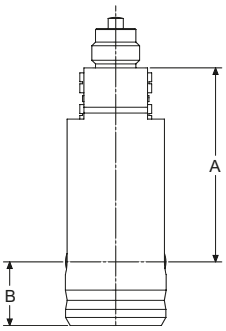
- Designed for high production ID gaging.
- High chrome content; hardened stainless steel bodies ground precisely for specified size measurement.
- Plug tooling interchangeable for quick changeover
- Easy measurement - insert plug into diameter and read (no rocking needed)
- Set to nominal dimension with a single master ring.
- Long Life Tungsten carbide contacts and V-Rod ensure durable motion transfer. Open design is conducive to easy rinse cleaning.
- Explore bores for taper, barrel shape, bell-mouth and 2-point out-of-round.
- Stop Collars available for all standard sizes.
- Captive V-Rod design.

Technical Data

Order no.	Product type	Nominal size	Nominal size	Max. part tolerance M01	Max. part tolerance 050	Max. part tolerance M02	Max. part tolerance 100	Max. part tolerance M05	Max. part tolerance 200	Max. part tolerance M08	Max. part tolerance 400
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2057604	Dimentron	3,180 –3,620	.12500 –.14260"	± 0,025	± .0010"	± 0,038	± .0015"				
		3,621 –5,500	.14265 –.21700"	± 0,025	± .0010"	± 0,046	± .0018"	± 0,076	± .0030"		
2057605	Dimentron	5,501 –7,940	.21705 –.31250"	± 0,025	± .0010"	± 0,046	± .0018"	± 0,069	± .0027"	± 0,102	± .0040"
		7,941 –8,200	.31255 –.32200"	± 0,030	± .0012"	± 0,051	± .0020"	± 0,069	± .0027"	± 0,127	± .0050"
2057606	Dimentron	8,201 –9,500	.32205 –.37500"	± 0,030	± .0012"	± 0,051	± .0020"	± 0,069	± .0027"	± 0,127	± .0050"
2057607	Dimentron	9,501 –12,700	.37505 –.50000"	± 0,038	± .0015"	± 0,058	± .0023"	± 0,086	± .0034"	± 0,137	± .0054"
2057608	Dimentron	12,701 –19,050	.50005 –.75000"	± 0,038	± .0015"	± 0,069	± .0027"	± 0,102	± .0040"	± 0,165	± .0065"
2057609	Dimentron	19,051 –25,400	.75005 –1.00000"	± 0,038	± .0015"	± 0,076	± .0030"	± 0,127	± .0050"	± 0,180	± .0071"
2057610	Dimentron	25,401 –38,000	1.00005 –1.50000"	± 0,038	± .0015"	± 0,076	± .0030"	± 0,152	± .0060"	± 0,221	± .0087"
2057611	Dimentron	38,001 –63,5	1.50000 - 2.50000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057612	Dimentron	63.5 –76.2	2.500 –3.000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057613	Dimentron	76.2 –88.9	3.000 –3.500"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057614	Dimentron	88.9 –101.6	3.500 –4.000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057615	Dimentron	101.6 –114.3	4.000 –4.500"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057616	Dimentron	114.3 –139.7	4.500 –5.500"					± 0,152	± .0060"	± 0,254	± .0100"
2057617	Dimentron	139.7 –165.1	5.500 –6.500"					± 0,152	± .0060"	± 0,254	± .0100"
2057618	Dimentron	165.1 –203.2	6.500 –8.000"					± 0,152	± .0060"	± 0,254	± .0100"
2057619	Dimentron	203.2 –228.6	8.000 –9.000"					± 0,152	± .0060"	± 0,254	± .0100"

Indicating plug gage for through hole MaraMeter Dimentron

Order no.	Nominal size	Nominal size	A	Dimension A	B	Dimension B
	mm	inch	mm	inch	mm	inch
2057604	3,180 –5,500	.12500 –.21700"	31,4	1.23"	6,4	.25"
2057605	5,501 –8,200	.21705 –0.3220"	34,8	1.37"	6,5	.256"
2057606	8,201 –9,500	0.3225 –.37500"	34,8	1.37"	6,5	.256"
2057607	9,501 –12,700	.37505 –.50000"	35,4	1.39"	13	.512"
2057608	12,701 –19,050	.50005 –.75000"	35,4	1.39"	13	.512"
2057609	19,051 –25,400	.75005 –1.00000"	48,3	1.90"	16	.63"
2057610	25,401 –38,000	1.00005 –1.50000"	48,3	1.90"	16	.63"
2057611	38,000 – 63,000	1.50000 – 2.50000"	46,7	1.84"	19	.748"
2057612–2057615	63,000 – 114,300	2.50000 – 4.50000"	46,7	1.84"	19	.748"
2057616–2057619	114,300 – 228,300	4.50000 – 9.00000"	46,7	1.84"	9,5	.375"



Accessories

Order no.	Product name	Product type
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337660	Digital Indicator, 0.0005 mm, 12.5 mm	1087 R
4337663	Digital Indicator, 0.0005 mm, 12.5 mm	1087 Ri
2050829	Bore Gage Handle with Indicator 221, grad. .0001"	550P–10
2050830	Bore Gage Handle with Indicator P1I, grad. 0,002 mm	550P–20
2203139	Adapter for Handle HA–88	AT–124
2203140	Adapter for mounting Maxμm III with protective housing to bench stand BA–26	AT–125
2204032	Protective housing for Maxμm III with output	B–12668
2204599	Base with tooling plate, plug to be mounted vertically or horizontally	BA–100
2051697	Bore Gage Handle with Digital Indicator μMaxum II, res. 0,001mm / .00005"	EDI–550P–10
2051698	Bore Gage Handle with Digital Indicator μMaxum II, res. 0,0005mm / .00002"	EDI–550P–20
2213388	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 3m/11ft. coiled cable	EHA–1145
2213389	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 1,5m/5ft. straight cable	EHA–1146
2214119	Adapter-set to mount Maxμm III indicator with 3/8" stem to a dimentron plug	EKT–1120-W1
2214120	Adapter-set to mount Maxμm III indicator with 8 mm stem to a dimentron plug	EKT–1120-W2
2214121	Adapter-set to mount dial indicators or μMaxum II with 3/8" stem to a dimentron plug	EKT–1120-W3
2214122	Adapter-set to mount dial indicators or μMaxum II with 8 mm stem to a dimentron plug	EKT–1120-W4
2214124	Adapter-set to mount dial comparators 1002 –1010 with 8 mm stem to a dimentron plug	EKT–1120-W6
2218595	Depth extension 50mm / 1.97" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–204
2218596	Depth extension 100mm / 3.94" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–205
2218597	Depth extension 200mm / 7.87" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–206
2218600	Depth extension 50mm / 1.97" for plug diameter 19,05mm /.75" and above	EX–210
2218601	Depth extension 100mm / 3.94" for plug diameter 19,05mm /.75" and above	EX–211
2218602	Depth extension 200mm / 7.87" for plug diameter 19,05mm /.75" and above	EX–212
2220037	Handle for Maxμm III digital transducers	HA–141
2220100	Handle to be mounted on protective housings EHG–1172 and EHG–1198 via Adapter AT–124	HA–88
2033101	Inductive dial comparator, ±1 mm/± .040", no output	Maxμm III
2033111	Inductive dial comparator, ±1 mm/± .040", with output (6-pin)	Maxμm III
2033201	Inductive dial comparator, ±1 mm/± .040", with data output (6-pin), "0" at 6 o'clock position	Maxμm III

Maxμm III

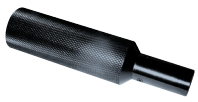
1086 R

1086 Ri

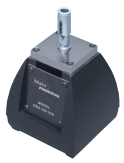
1087 R

1087 Ri

EDI–550P–10

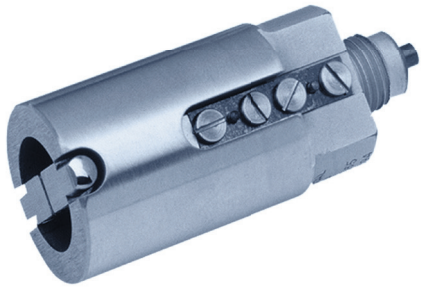


HA–141



BA–100

Indicating plug gage for blind hole MaraMeter Dimentron



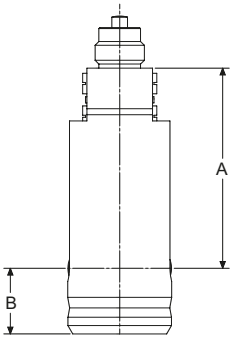
- Designed for high production ID gaging.
- High chrome content; hardened stainless steel bodies ground precisely for specified size measurement.
- Plug tooling interchangeable for quick changeover
- Easy measurement - insert plug into diameter and read (no rocking needed)
- Set to nominal dimension with a single master ring.
- Long life: Tungsten carbide contacts and V-Rod ensure durable motion transfer. Open design rinses clean easily.
- Explore bores for taper, barrel shape, bell-mouth and 2-point out-of-round.
- Stop Collars available for all standard sizes.
- Captive V-Rod design.

Technical Data

Order no.	Product type	Nominal size	Nominal size	Max. part tolerance M01	Max. part tolerance 050	Max. part tolerance M02	Max. part tolerance 100	Max. part tolerance M05	Max. part tolerance 200	Max. part tolerance M08	Max. part tolerance 400
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2057620	Dimentron	3,180 –3,620	.12500 –.14260"	± 0,025	± .0010"	± 0,038	± .0015"				
		3,621 –5,500	.14265 –.21700"	± 0,025	± .0010"	± 0,046	± .0018"	± 0,076	± .0030"		
2057621	Dimentron	5,501 –7,940	.21705 –.31250"	± 0,025	± .0010"	± 0,046	± .0018"	± 0,069	± .0027"	± 0,102	± .0040"
		7,941 –8,200	.31255 –.32200"	± 0,030	± .0012"	± 0,051	± .0020"	± 0,069	± .0027"	± 0,127	± .0050"
2057622	Dimentron	8,201 –9,500	.32205 –.37500"	± 0,030	± .0012"	± 0,051	± .0020"	± 0,069	± .0027"	± 0,127	± .0050"
2057623	Dimentron	9,501 –12,700	.37505 –.50000"	± 0,038	± .0015"	± 0,058	± .0023"	± 0,086	± .0034"	± 0,137	± .0054"
2057624	Dimentron	12,701 –19,050	.50005 –.75000"	± 0,038	± .0015"	± 0,069	± .0027"	± 0,102	± .0040"	± 0,165	± .0065"
2057625	Dimentron	19,051 –25,400	.75005 –1.00000"	± 0,038	± .0015"	± 0,076	± .0030"	± 0,127	± .0050"	± 0,180	± .0071"
2057626	Dimentron	25,401 –38,000	1.00005 –1.50000"	± 0,038	± .0015"	± 0,076	± .0030"	± 0,152	± .0060"	± 0,221	± .0087"
2057627	Dimentron	38,001 – 63,5	1.50000 – 2.50000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057628	Dimentron	63.5 –76.2	2.500 –3.000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057629	Dimentron	76.2 –88.9	3.000 –3.500"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057630	Dimentron	88.9 –101.6	3.500 –4.000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057631	Dimentron	101.6 –114.3	4.000 –4.500"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2057632	Dimentron	114.3 –139.7	4.500 –5.500"					± 0,152	± .0060"	± 0,254	± .0100"
2057633	Dimentron	139.7 –165.1	5.500 –6.500"					± 0,152	± .0060"	± 0,254	± .0100"
2057634	Dimentron	165.1 –203.2	6.500 –8.000"					± 0,152	± .0060"	± 0,254	± .0100"
2057635	Dimentron	203.2 –228.6	8.000 –9.000"					± 0,152	± .0060"	± 0,254	± .0100"

Indicating plug gage for blind hole MaraMeter Dimentron

Order no.	Nominal size	Nominal size	A	Dimension A	B	Dimension B
	mm	inch	mm	inch	mm	inch
2057620	3,180 –5,500	.12500 –.21700"	31,4	1.23"	4	.157"
2057621	5,501 –8,200	.21705 –0.3220"	34,8	1.37"	4	.157"
2057622	8,201 –9,500	0.3225 –.37500"	34,8	1.37"	4	.157"
2057623	9,501 –12,700	.37505 –.50000"	35,4	1.39"	4	.157"
2057624	12,701 –19,050	.50005 –.75000"	35,4	1.39"	4	.157"
2057625	19,051 –25,400	.75005 –1.00000"	48,3	1.90"	4	.157"
2057626	25,401 –38,000	1.00005 –1.50000"	48,3	1.90"	4	.157"
2057627	38,000 – 63,000	1.50000 – 2.50000"	46,7	1.84"	4	.157"
2057612–2057615	63,000 – 114,300	2.50000 – 4.50000"	46,7	1.84"	4	.157"
2057616–2057619	114,300 – 228,300	4.50000 – 9.00000"	46,7	1.84"	4	.157"



Accessories

Order no.	Product name	Product type
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337660	Digital Indicator, 0.0005 mm, 12.5 mm	1087 R
4337663	Digital Indicator, 0.0005 mm, 12.5 mm	1087 Ri
2050829	Bore Gage Handle with Indicator 221, grad. .0001"	550P–10
2050830	Bore Gage Handle with Indicator P1I, grad. 0,002 mm	550P–20
2203139	Adapter for Handle H–88	AT–124
2203140	Adapter for mounting Maxµm III with protective housing to bench stand BA–26	AT–125
2204032	Protective housing for Maxµm III with output	B–12668
2204599	Base with tooling plate, plug to be mounted vertically or horizontally	BA–100
2051697	Bore Gage Handle with Digital Indicator µMaxum II, res. 0,001mm / .00005"	EDI–550P–10
2051698	Bore Gage Handle with Digital Indicator µMaxum II, res. 0,0005mm / .00002"	EDI–550P–20
2213388	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 3m/11ft. coiled cable	EHA–1145
2213389	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 1,5m/5ft. straight cable	EHA–1146
2214119	Adapter-set to mount Maxµm III indicator with 3/8" stem to a dimentron plug	EKT–1120-W1
2214120	Adapter-set to mount Maxµm III indicator with 8 mm stem to a dimentron plug	EKT–1120-W2
2214121	Adapter-set to mount dial indicators or µMaxum II with 3/8" stem to a dimentron plug	EKT–1120-W3
2214122	Adapter-set to mount dial indicators or µMaxum II with 8 mm stem to a dimentron plug	EKT–1120-W4
2214124	Adapter-set to mount dial comparators 1002 –1010 with 8 mm stem to a dimentron plug	EKT–1120-W6
2218595	Depth extension 50mm / 1.97" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–204
2218596	Depth extension 100mm / 3.94" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–205
2218597	Depth extension 200mm / 7.87" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–206
2218600	Depth extension 50mm / 1.97" for plug diameter 19,05mm /.75" and above	EX–210
2218601	Depth extension 100mm / 3.94" for plug diameter 19,05mm /.75" and above	EX–211
2218602	Depth extension 200mm / 7.87" for plug diameter 19,05mm /.75" and above	EX–212
2220037	Handle for Maxµm III digital transducers	HA–141
2220100	Handle to be mounted on protective housings EHG–1172 and EHG–1198 via Adapter AT–124	HA–88
2033101	Inductive dial comparator, ±1 mm/± .040", no output	Maxµm III
2033111	Inductive dial comparator, ±1 mm/± .040", with output (6-pin)	Maxµm III
2033201	Inductive dial comparator, ±1 mm/± .040", with data output (6-pin), "0" at 6 o'clock position	Maxµm III

Maxµm III

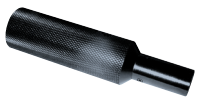
1086 R

1086 Ri

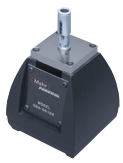
1087 R

1087 Ri

EDI–550P–10

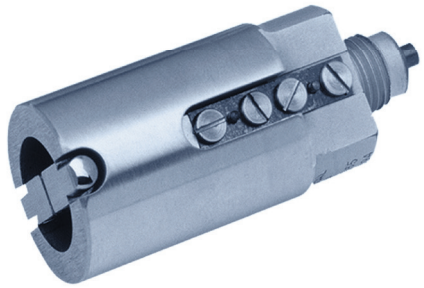


HA–141



BA–100

Indicating plug gage for super blind hole MaraMeter Dimentron



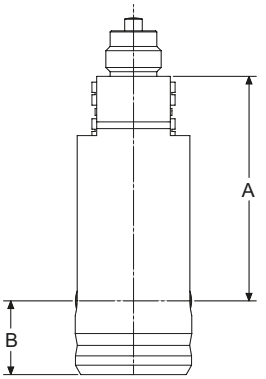
- Designed for high production ID gaging.
- High chrome content; hardened stainless steel bodies ground precisely for specified size measurement.
- Plug tooling interchangeable for quick changeover
- Easy measurement - insert plug into diameter and read (no rocking needed)
- Set to nominal dimension with a single master ring.
- Long life: Tungsten carbide contacts and V-Rod ensure durable motion transfer. Open design rinses clean easily.
- Explore bores for taper, barrel shape, bell-mouth and 2-point out-of-round.
- Stop Collars available for all standard sizes.
- Captive V-Rod design.

Technical Data

Order no.	Product type	Nominal size	Nominal size	Max. part tolerance M01	Max. part tolerance 050	Max. part tolerance M02	Max. part tolerance 100	Max. part tolerance M05	Max. part tolerance 200	Max. part tolerance M08	Max. part tolerance 400
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2058545	Dimentron	5,501 –7,940	.21705 –.31250″	± 0,025	± .0010″	± 0,046	± .0018″	± 0,069	± .0027″	± 0,102	± .0040″
		7,941 –8,200	.31255 –.32200″	± 0,030	± .0012″	± 0,051	± .0020″	± 0,069	± .0027″	± 0,127	± .0050″
2058546	Dimentron	8,201 –9,500	.32205 –.37500″	± 0,030	± .0012″	± 0,051	± .0020″	± 0,069	± .0027″	± 0,127	± .0050″
2058547	Dimentron	9,501 –12,700	.37505 –.50000″	± 0,038	± .0015″	± 0,058	± .0023″	± 0,086	± .0034″	± 0,137	± .0054″
2058548	Dimentron	12,701 –19,050	.50005 –.75000″	± 0,038	± .0015″	± 0,069	± .0027″	± 0,102	± .0040″	± 0,165	± .0065″
2058549	Dimentron	19,051 –25,400	.75005 –1.00000″	± 0,038	± .0015″	± 0,076	± .0030″	± 0,127	± .0050″	± 0,180	± .0071″
2058550	Dimentron	25,401 –38,000	1.00005 –1.50000″	± 0,038	± .0015″	± 0,076	± .0030″	± 0,152	± .0060″	± 0,221	± .0087″
2058551	Dimentron	38,001 – 63,5	1.50000 – 2.50000″			± 0,076	± .0030″	± 0,152	± .0060″	± 0,254	± .0100″
2058552	Dimentron	63.5 –76.2	2.500 –3.000″			± 0,076	± .0030″	± 0,152	± .0060″	± 0,254	± .0100″
2058553	Dimentron	76.2 –88.9	3.000 –3.500″			± 0,076	± .0030″	± 0,152	± .0060″	± 0,254	± .0100″
2058554	Dimentron	88.9 –101.6	3.500 –4.000″			± 0,076	± .0030″	± 0,152	± .0060″	± 0,254	± .0100″
2058555	Dimentron	101.6 –114.3	4.000 –4.500″			± 0,076	± .0030″	± 0,152	± .0060″	± 0,254	± .0100″
2058556	Dimentron	114.3 –139.7	4.500 –5.500″					± 0,152	± .0060″	± 0,254	± .0100″
2058557	Dimentron	139.7 –165.1	5.500 –6.500″					± 0,152	± .0060″	± 0,254	± .0100″
2058558	Dimentron	165.1 –203.2	6.500 –8.000″					± 0,152	± .0060″	± 0,254	± .0100″
2058559	Dimentron	203.2 –228.6	8.000 –9.000″					± 0,152	± .0060″	± 0,254	± .0100″

Indicating plug gage for super blind hole MaraMeter Dimentron

Order no.	Nominal size	Nominal size	A	Dimension A	B	Dimension B
	mm	inch	mm	inch	mm	inch
2058545	5,501 –8,200	.21705 –0.3220"	34,8	1.37"	2	.08"
	8,201 –9,500	0.3225 –.37500"	34,8	1.37"	2	.08"
2058546	9,501 –12,700	.37505 –.50000"	35,4	1.39"	2	.08"
2058547	12,701 –19,050	.50005 –.75000"	35,4	1.39"	2	.08"
2058548	19,051 –25,400	.75005 –1.00000"	48,3	1.90"	2	.08"
2058549	25,401 –38,000	1.00005 –1.50000"	48,3	1.90"	2	.08"
2058550	38,000 – 63,000	1.50000 – 2.50000"	46,7	1.84"	2	.08"
2058551–2058555	63,000 – 114,300	2.50000 – 4.50000"	46,7	1.84"	2	.08"
2058556–2058559	114,300 – 228,300	4.50000 – 9.00000"	46,7	1.84"	2	.08"



Accessories

Order no.	Product name	Product type
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337660	Digital Indicator, 0.0005 mm, 12.5 mm	1087 R
4337663	Digital Indicator, 0.0005 mm, 12.5 mm	1087 Ri
2050829	Bore Gage Handle with Indicator 221, grad. .0001"	550P–10
2050830	Bore Gage Handle with Indicator P1I, grad. 0,002 mm	550P–20
2203139	Adapter for Handle HA–88	AT–124
2203140	Adapter for mounting Maxμm III with protective housing to bench stand BA–26	AT–125
2204032	Protective housing for Maxμm III with output	B–12668
2204599	Base with tooling plate, plug to be mounted vertically or horizontally	BA–100
2051697	Bore Gage Handle with Digital Indicator μMaxum II, res. 0,001mm / .00005"	EDI–550P–10
2051698	Bore Gage Handle with Digital Indicator μMaxum II, res. 0,0005mm / .00002"	EDI–550P–20
2213388	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 3m/11ft. coiled cable	EHA–1145
2213389	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 1,5m/5ft. straight cable	EHA–1146
2214119	Adapter-set to mount Maxμm III indicator with 3/8" stem to a dimentron plug	EKT–1120-W1
2214120	Adapter-set to mount Maxμm III indicator with 8 mm stem to a dimentron plug	EKT–1120-W2
2214121	Adapter-set to mount dial indicators or μMaxum II with 3/8" stem to a dimentron plug	EKT–1120-W3
2214122	Adapter-set to mount dial indicators or μMaxum II with 8 mm stem to a dimentron plug	EKT–1120-W4
2214124	Adapter-set to mount dial comparators 1002 –1010 with 8 mm stem to a dimentron plug	EKT–1120-W6
2218595	Depth extension 50mm / 1.97" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–204
2218596	Depth extension 100mm / 3.94" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–205
2218597	Depth extension 200mm / 7.87" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–206
2218600	Depth extension 50mm / 1.97" for plug diameter 19,05mm /.75" and above	EX–210
2218601	Depth extension 100mm / 3.94" for plug diameter 19,05mm /.75" and above	EX–211
2218602	Depth extension 200mm / 7.87" for plug diameter 19,05mm /.75" and above	EX–212
2220037	Handle for Maxμm III digital transducers	HA–141
2220100	Handle to be mounted on protective housings EHG–1172 and EHG–1198 via Adapter AT–124	HA–88
2033101	Inductive dial comparator, ±1 mm/± .040", no output	Maxμm III
2033111	Inductive dial comparator, ±1 mm/± .040", with output (6-pin)	Maxμm III
2033201	Inductive dial comparator, ±1 mm/± .040", with data output (6-pin), "0" at 6 o'clock position	Maxμm III

Maxμm III

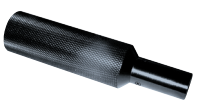
1086 R

1086 Ri

1087 R

1087 Ri

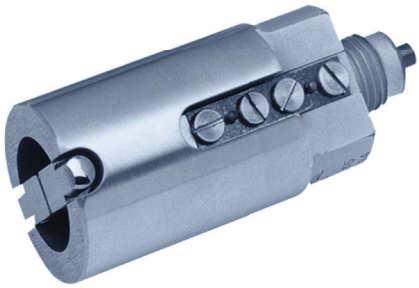
EDI–550P–10



HA–141

BA–100

Indicating plug gage for super super blind hole MaraMeter Dimentron



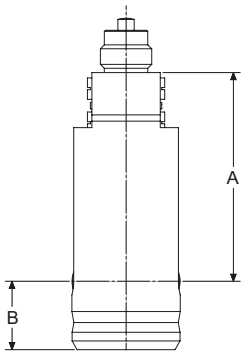
- Designed for high production ID gaging.
- High chrome content; hardened stainless steel bodies ground precisely for specified size measurement.
- Plug tooling interchangeable for quick changeover
- Easy measurement - insert plug into diameter and read (no rocking needed)
- Set to nominal dimension with a single master ring.
- Long life: Tungsten carbide contacts and V-Rod ensure durable motion transfer. Open design rinses clean easily.
- Explore bores for taper, barrel shape, bell-mouth and 2-point out-of-round.
- Stop Collars available for all standard sizes.
- Captive V-Rod design.

Technical Data

Order no.	Product type	Nominal size	Nominal size	Max. part tolerance M01	Max. part tolerance 050	Max. part tolerance M02	Max. part tolerance 100	Max. part tolerance M05	Max. part tolerance 200	Max. part tolerance M08	Max. part tolerance 400
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2058560	Dimentron	5,501 –7,940	.21705 –.31250"	± 0,025	± .0010"	± 0,046	± .0018"	± 0,069	± .0027"	± 0,102	± .0040"
		7,941 –8,200	.31255 –.32200"	± 0,030	± .0012"	± 0,051	± .0020"	± 0,069	± .0027"	± 0,127	± .0050"
2058561	Dimentron	8,201 –9,500	.32205 –.37500"	± 0,030	± .0012"	± 0,051	± .0020"	± 0,069	± .0027"	± 0,127	± .0050"
2058562	Dimentron	9,501 –12,700	.37505 –.50000"	± 0,038	± .0015"	± 0,058	± .0023"	± 0,086	± .0034"	± 0,137	± .0054"
2058563	Dimentron	12,701 –19,050	.50005 –.75000"	± 0,038	± .0015"	± 0,069	± .0027"	± 0,102	± .0040"	± 0,165	± .0065"
2058564	Dimentron	19,051 –25,400	.75005 –1.00000"	± 0,038	± .0015"	± 0,076	± .0030"	± 0,127	± .0050"	± 0,180	± .0071"
2058565	Dimentron	25,401 –38,000	1.00005 –1.50000"	± 0,038	± .0015"	± 0,076	± .0030"	± 0,152	± .0060"	± 0,221	± .0087"
2058566	Dimentron	38,001 - 63,5	1.50000 - 2.50000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2058567	Dimentron	63.5- 76.2	2.500- 3.000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2058568	Dimentron	76.2- 88.9	3.000- 3.500"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2058569	Dimentron	88.9- 101.6	3.500- 4.000"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"
2058570	Dimentron	101.6- 114.3	4.000- 4.500"			± 0,076	± .0030"	± 0,152	± .0060"	± 0,254	± .0100"

Indicating plug gage for super super blind hole MaraMeter Dimentron

Order no.	Nominal size	Nominal size	A	Dimension A	B	Dimension B
	mm	inch	mm	inch	mm	inch
2058560	5,501 –8,200	.21705 –0.3220"	34,8	1.37"	0,79	.031"
	8,201 –9,500	0.3225 –.37500"	34,8	1.37"	0,79	.031"
2058561	9,501 –12,700	.37505 –.50000"	35,4	1.39"	0,79	.031"
2058562	12,701 –19,050	.50005 –.75000"	35,4	1.39"	0,79	.031"
2058563	19,051 –25,400	.75005 –1.00000"	48,3	1.90"	0,79	.031"
2058564	25,401 –38,000	1.00005 –1.50000"	48,3	1.90"	0,79	.031"
2058565	38,000 – 63,000	1.50000 – 2.50000"	46,7	1.84"	0,79	.031"
2058566– 2058570	63,000 – 114,300	2.50000 – 4.50000"	46,7	1.84"	0,79	.031"



Accessories

Order no.	Product name	Product type
4337620	Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337660	Digital Indicator, 0.0005 mm, 12.5 mm	1087 R
4337663	Digital Indicator, 0.0005 mm, 12.5 mm	1087 Ri
2050829	Bore Gage Handle with Indicator 221, grad. .0001"	550P–10
2050830	Bore Gage Handle with Indicator P1I, grad. 0,002 mm	550P–20
2203139	Adapter for Handle HA–88	AT–124
2203140	Adapter for mounting Maxµm III with protective housing to bench stand BA–26	AT–125
2204032	Protective housing for Maxµm III with output	B–12668
2204599	Base with tooling plate, plug to be mounted vertically or horizontally	BA–100
2051697	Bore Gage Handle with Digital Indicator µMaxum II, res. 0,001mm / .00005"	EDI–550P–10
2051698	Bore Gage Handle with Digital Indicator µMaxum II, res. 0,0005mm / .00002"	EDI–550P–20
2213388	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 3m/11ft. coiled cable	EHA–1145
2213389	Handle assembly (inductive probe, HA–88 handle, AD–140 Adapter) with 1,5m/5ft. straight cable	EHA–1146
2214119	Adapter-set to mount Maxµm III indicator with 3/8" stem to a dimentron plug	EKT–1120-W1
2214120	Adapter-set to mount Maxµm III indicator with 8 mm stem to a dimentron plug	EKT–1120-W2
2214121	Adapter-set to mount dial indicators or µMaxum II with 3/8" stem to a dimentron plug	EKT–1120-W3
2214122	Adapter-set to mount dial indicators or µMaxum II with 8 mm stem to a dimentron plug	EKT–1120-W4
2214124	Adapter-set to mount dial comparators 1002 –1010 with 8 mm stem to a dimentron plug	EKT–1120-W6
2218595	Depth extension 50mm / 1.97" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–204
2218596	Depth extension 100mm / 3.94" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–205
2218597	Depth extension 200mm / 7.87" for plug diameter 9,5 –19,05mm /.375 –.75"	EX–206
2218600	Depth extension 50mm / 1.97" for plug diameter 19,05mm /.75" and above	EX–210
2218601	Depth extension 100mm / 3.94" for plug diameter 19,05mm /.75" and above	EX–211
2218602	Depth extension 200mm / 7.87" for plug diameter 19,05mm /.75" and above	EX–212
2220037	Handle for Maxµm III digital transducers	HA–141
2220100	Handle to be mounted on protective housings EHG–1172 and EHG–1198 via Adapter AT–124	HA–88
2033101	Inductive dial comparator, ±1 mm/± .040", no output	Maxµm III
2033111	Inductive dial comparator, ±1 mm/± .040", with output (6-pin)	Maxµm III
2033201	Inductive dial comparator, ±1 mm/± .040", with data output (6-pin), "0" at 6 o'clock position	Maxµm III

Maxµm III

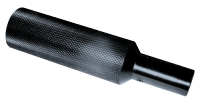
1086 R

1086 Ri

1087 R

1087 Ri

EDI–550P–10



HA–141

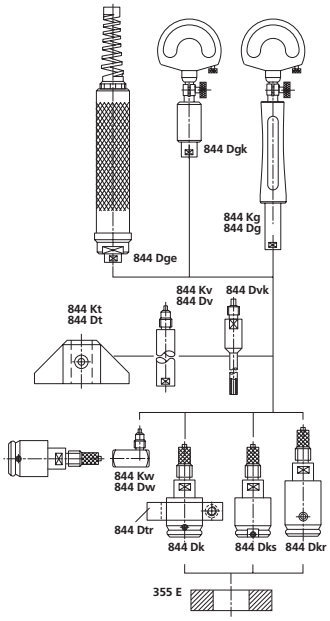
BA–100

Indicating plug gage MaraMeter 844 Dk

Application:

Standard model

- For rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerances **(for tolerances <10µm on request)**
- Rocking in the bore is unnecessary to determine the reversal point
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



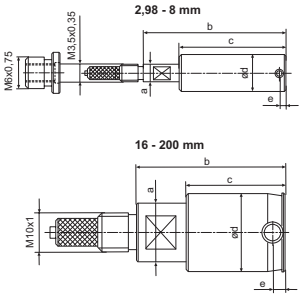
- Measuring head has a hardened chromium plated guide cylinder and carbide tipped anvils
- The carbide expanding pin transfers radial movement to indicating instrument
- Constant measuring force as a result of built-in spring, thus eliminating user influence
- Extensive modular system is composed of measuring head, holder, depth extension, right angle attachments and depth stops

Technical Data

Order no.	Product type	Nominal size	Measuring span	Manufacturing tolerance	Linearity deviation fe	Repeatability f_w	Measuring value hysteresis f_u
		mm	mm	mm / mm		µm	µm
4480184	844 Dk	2.980 –3.990	0.1	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478200	844 Dk	3.991 –8.000	0.1	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478201	844 Dk	8.001 –16.000	0.15	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478202	844 Dk	16.001 –25.000	0.2	–0.02 / –0.05	1%, min. 1 µm	1	0.4
4478204	844 Dk	25.001 –32.000	0.2	–0.02 / –0.05	1%, min. 1 µm	1	0.4
4478205	844 Dk	32.001 –44.000	0.2	–0.02 / –0.06	1%, min. 1 µm	1	0.4
4478206	844 Dk	44.001 –50.000	0.2	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478207	844 Dk	50.001 –60.000	0.2	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478208	844 Dk	60.001 –70.000	0.2	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478209	844 Dk	70.001 –80.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478210	844 Dk	80.001 –90.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478211	844 Dk	90.001 –100.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478212	844 Dk	100.001 –110.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478213	844 Dk	110.001 –120.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478214	844 Dk	120.001 –130.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478215	844 Dk	130.001 –140.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478216	844 Dk	140.001 –150.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478217	844 Dk	150.001 –160.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478218	844 Dk	160.001 –170.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478219	844 Dk	170.001 –180.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478220	844 Dk	180.001 –190.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478221	844 Dk	190.001 –200.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4

Indicating plug gage MaraMeter 844 Dk

Order no.	a	b	c	e	g	Nominal size
	mm	mm	mm	mm		mm
4480184	4	31.3	23.3	1.5	M6 x 0,75	2.980 –3.990
4478200	4	31.3	23.3	1.5	M6 x 0,75	3.991 –8.000
4478201	7.9	33.5	25	3	M6 x 0,75	8.001 –16.000
4478202	15	39	26	3.5	M10 x 1	16.001 –25.000
4478204	15	39	26	3.5	M10 x 1	25.001 –32.000
4478205	15	39	26	3.5	M10 x 1	32.001 –44.000
4478206	20	39.5	26	4	M10 x 1	44.001 –50.000
4478207	20	39.5	26	4	M10 x 1	50.001 –60.000
4478208	20	39.5	26	4	M10 x 1	60.001 –70.000
4478209	20	39.5	33	4	M10 x 1	70.001 –80.000
4478210	20	39.5	33	4	M10 x 1	80.001 –90.000
4478211	20	39.5	33	4	M10 x 1	90.001 –100.000
4478212	20	39.5	33	4	M10 x 1	100.001 –110.000
4478213	20	39.5	33	4	M10 x 1	110.001 –120.000
4478214	20	39.5	33	4	M10 x 1	120.001 –130.000
4478215	20	39.5	33	4	M10 x 1	130.001 –140.000
4478216	20	39.5	33	4	M10 x 1	140.001 –150.000
4478217	20	39.5	33	4	M10 x 1	150.001 –160.000
4478218	20	39.5	33	4	M10 x 1	160.001 –170.000
4478219	20	39.5	33	4	M10 x 1	170.001 –180.000
4478220	20	39.5	33	4	M10 x 1	180.001 –190.000
4478221	20	39.5	33	4	M10 x 1	190.001 –200.000



Accessories

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337620		Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624		Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000		Inductive dial comparator, ± 0.9 µm	2000
4346100		Inductive dial comparator, ± 0.9 µm	2001
4478851	M10 x 1	Standard Holder - Standard version	844 Dg
4478020	M6 x 0,75	Holder for Inductive Measuring Probes	844 Dge
4478021	M10 x 1	Holder 844 for Inductive Measuring Probes	844 Dge
4478050	M10 x 1	Short Holder - Short version	844 Dgk
4478110	M10 x 1	Right Angle Attachment, L = 36.7 mm, H = 17 mm	844 Dw
4470851	M6 x 0,75	Standard measuring instrument holder	844 Kg
4470110	M6 x 0,75	Right Angle Attachment, L = 26.5 mm, H = 22.5 mm	844 Kw
5312010		Compact Amplifier	C1200
5323010	M 2,5	Inductive Probe, ± 2 mm	P2004
5318400		Compact column amplifier	S 1840 M

1002

1004

1003

2001

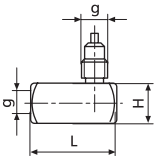
2000

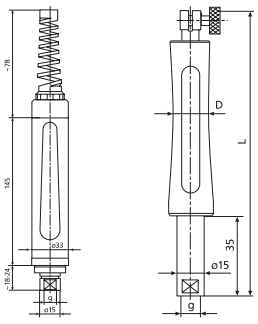
P2004

1086 R

S 1840 M;
S 1840 F

1086 Ri





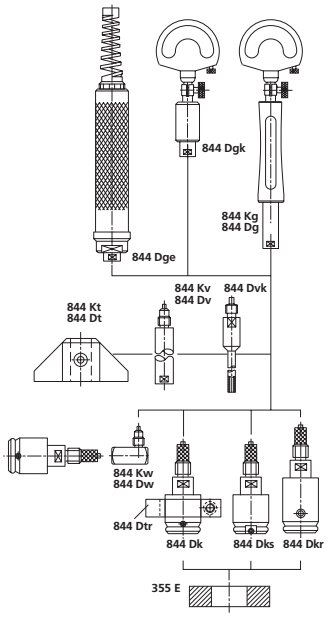
844 Dg

Indicating plug gage MaraMeter 844 Dkr

Application:

Model for through holes

- With extended guide cylinder for measuring through holes from the edge of the hole
- For the rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerances **(for tolerances <10µm on request)**
- Rocking in the bore is unnecessary to determine the reversal point
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values



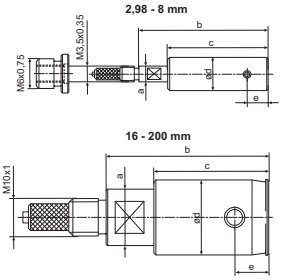
- Measuring head has a hardened chromium plated guide cylinder and carbide tipped anvils
- The carbide expanding pin transfers radial movement to indicating instrument
- Constant measuring force as a result of built-in spring, thus eliminating user influence
- Extensive modular system is composed of measuring head, holder, depth extension, right angle attachments and depth stops

Technical Data

Order no.	Product type	Nominal size	Measuring span	Manufacturing tolerance	Linearity deviation fe	Repeatability f_w	Measuring value hysteresis f_u
		mm	mm	mm / mm		µm	µm
4478272	844 Dkr	2.980 –3.990	0.1	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478250	844 Dkr	3.990 –8.000	0.1	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478251	844 Dkr	8.000 –16.000	0.15	–0.02 / –0.04	1%, min. 1 µm	1	0.4
4478252	844 Dkr	16.000 –25.000	0.2	–0.02 / –0.05	1%, min. 1 µm	1	0.4
4478254	844 Dkr	25.000 –32.000	0.2	–0.02 / –0.05	1%, min. 1 µm	1	0.4
4478255	844 Dkr	32.000 –44.000	0.2	–0.02 / –0.06	1%, min. 1 µm	1	0.4
4478256	844 Dkr	44.000 –50.000	0.2	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478257	844 Dkr	50.000 –60.000	0.2	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478258	844 Dkr	60.000 –70.000	0.2	–0.03 / –0.06	1%, min. 1 µm	1	0.4
4478259	844 Dkr	70.000 –80.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478260	844 Dkr	80.000 –90.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478261	844 Dkr	90.000 –100.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478262	844 Dkr	100.000 –110.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478263	844 Dkr	110.000 –120.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478264	844 Dkr	120.000 –130.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478265	844 Dkr	130.000 –140.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478266	844 Dkr	140.000 –150.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478267	844 Dkr	150.000 –160.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478268	844 Dkr	160.000 –170.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478269	844 Dkr	170.000 –180.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478270	844 Dkr	180.000 –190.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4
4478271	844 Dkr	190.000 –200.000	0.2	–0.04 / –0.07	1%, min. 1 µm	1	0.4

Indicating plug gage MaraMeter 844 Dkr

Order no.	a	b	c	e	g	Nominal size
	mm	mm	mm	mm		mm
4478272	4	35.8	27.8	6	M6 x 0,75	2.980 –3.990
4478250	4	35.8	27.8	6	M6 x 0,75	3.990 –8.000
4478251	7.9	39.5	31	9	M 6 x 0,75	8.000 –16.000
4478252	15	45	32	9.5	M10 x 1	16.000 –25.000
4478254	15	45	32	9.5	M10 x 1	25.000 –32.000
4478255	15	45	32	9.5	M10 x 1	32.000 –44.000
4478256	20	46	26	10.5	M10 x 1	44.000 –50.000
4478257	20	46	26	10.5	M10 x 1	50.000 –60.000
4478258	20	46	26	10.5	M10 x 1	60.000 –70.000
4478259	20	51	33	15	M10 x 1	70.000 –80.000
4478260	20	51	33	15	M10 x 1	80.000 –90.000
4478261	20	51	33	15	M10 x 1	90.000 –100.000
4478262	20	51	33	15	M10 x 1	100.000 –110.000
4478263	20	51	33	15	M10 x 1	110.000 –120.000
4478264	20	51	33	15	M10 x 1	120.000 –130.000
4478265	20	51	33	15	M10 x 1	130.000 –140.000
4478266	20	51	33	15	M10 x 1	140.000 –150.000
4478267	20	51	33	15	M10 x 1	150.000 –160.000
4478268	20	51	33	15	M10 x 1	160.000 –170.000
4478269	20	51	33	15	M10 x 1	170.000 –180.000
4478270	20	51	33	15	M10 x 1	180.000 –190.000
4478271	20	51	33	15	M10 x 1	190.000 –200.000



Accessories

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337620		Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624		Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000		Inductive dial comparator, ± 0.9 µm	2000
4346100		Inductive dial comparator, ± 0.9 µm	2001
4478851	M10 x 1	Standard Holder - Standard version	844 Dg
4478020	M6 x 0,75	Holder for Inductive Measuring Probes	844 Dge
4478021	M10 x 1	Holder 844 for Inductive Measuring Probes	844 Dge
4478050	M10 x 1	Short Holder - Short version	844 Dgk
4478110	M10 x 1	Right Angle Attachment, L = 36.7 mm, H = 17 mm	844 Dw
4470851	M6 x 0,75	Standard measuring instrument holder	844 Kg
4470110	M6 x 0,75	Right Angle Attachment, L = 26.5 mm, H = 22.5 mm	844 Kw
5312010		Compact Amplifier	C1200
5323010	M 2,5	Inductive Probe, ± 2 mm	P2004
5318400		Compact column amplifier	S 1840 M

1002

1004

1003

2001

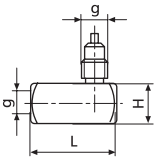
2000

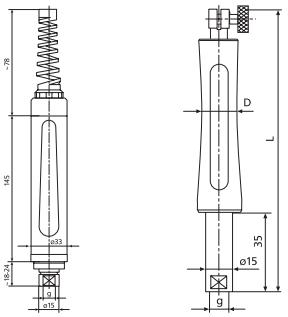
P2004

1086 R

S 1840 M;
S 1840 F

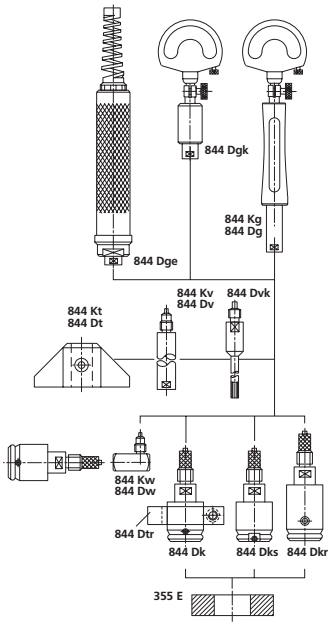
1086 Ri





844 Dg

Indicating plug gage MaraMeter 844 Dks



Application:

Model for blind holes

- For measurements close to the base of the hole
- For the rapid testing of diameter, roundness and conicity of bores
- Especially suitable for testing batches with tight tolerances **(for tolerances <10µm on request)**
- Rocking in the bore is unnecessary to determine the reversal point
- Ideal for use in conjunction with digital display units and for subsequent processing of measured values

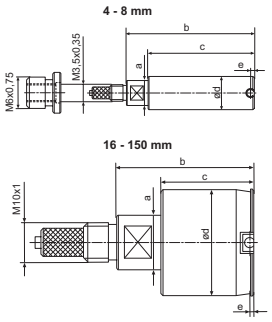
- Measuring head has a hardened chromium plated guide cylinder and carbide tipped anvils
- The carbide expanding pin transfers radial movement to indicating instrument
- Constant measuring force as a result of built-in spring, thus eliminating user influence
- Extensive modular system is composed of measuring head, holder, depth extension, right angle attachments and depth stops

Technical Data

Order no.	Product type	Nominal size	Measuring span	Manufacturing tolerance	Linearity deviation fe	Repeatability f_w	Measuring value hysteresis f_u
		mm	mm	mm / mm		µm	µm
4478285	844 Dks	4.000 –8.000	0.1	–0.02 / –0.04	2%, min. 1 µm	1	0.4
4478245	844 Dks	8.000 –16.000	0.15	–0.02 / –0.04	2%, min. 1 µm	1	0.4
4478230	844 Dks	16.000 –25.000	0.15	–0.02 / –0.05	2%, min. 1 µm	1	0.4
4478232	844 Dks	25.000 –32.000	0.15	–0.02 / –0.05	2%, min. 1 µm	1	0.4
4478233	844 Dks	32.000 –44.000	0.15	–0.03 / –0.06	2%, min. 1 µm	1	0.4
4478234	844 Dks	44.000 –50.000	0.15	–0.03 / –0.06	2%, min. 1 µm	1	0.4
4478235	844 Dks	50.000 –60.000	0.15	–0.03 / –0.06	2%, min. 1 µm	1	0.4
4478236	844 Dks	60.000 –70.000	0.15	–0.03 / –0.06	2%, min. 1 µm	1	0.4
4478237	844 Dks	70.000 –80.000	0.15	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478238	844 Dks	80.000 –90.000	0.15	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478239	844 Dks	90.000 –100.000	0.15	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478240	844 Dks	100.000 –110.000	0.15	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478241	844 Dks	110.000 –120.000	0.15	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478242	844 Dks	120.000 –130.000	0.15	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478243	844 Dks	130.000 –140.000	0.15	–0.04 / –0.07	2%, min. 1 µm	1	0.4
4478244	844 Dks	140.000 –150.000	0.15	–0.04 / –0.07	2%, min. 1 µm	1	0.4

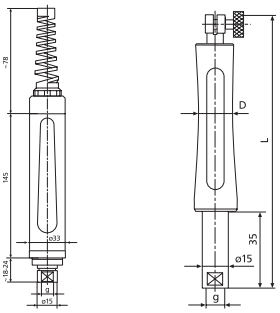
Indicating plug gage MaraMeter 844 Dks

Order no.	a	b	c	e	g	Nominal size
	mm	mm	mm	mm		mm
4478285	7.9	30.4	22.4	0.6	M6 x 0,75	4.000 –8.000
4478245	7.9	31.1	22.6	0.6	M6 x 0,75	8.000 –16.000
4478230	15	39	26	1	M10 x 1	16.000 –25.000
4478232	15	39	26	1	M10 x 1	25.000 –32.000
4478233	15	39	26	1	M10 x 1	32.000 –44.000
4478234	20	39	25.5	1	M10 x 1	44.000 –50.000
4478235	20	39	25.5	1	M10 x 1	50.000 –60.000
4478236	20	39	25.5	1	M10 x 1	60.000 –70.000
4478237	20	39	32.5	1	M10 x 1	70.000 –80.000
4478238	20	39	32.5	1	M10 x 1	80.000 –90.000
4478239	20	39	32.5	1	M10 x 1	90.000 –100.000
4478240	20	39	32.5	1	M10 x 1	100.000 –110.000
4478241	20	39	32.5	1	M10 x 1	110.000 –120.000
4478242	20	39	32.5	1	M10 x 1	120.000 –130.000
4478243	20	39	32.5	1	M10 x 1	130.000 –140.000
4478244	20	39	32.5	1	M10 x 1	140.000 –150.000



Accessories

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337620		Digital Indicator, 0.0005 mm, 12.5 mm	1086 R
4337624		Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4346000		Inductive dial comparator, ± 0.9 µm	2000
4346100		Inductive dial comparator, ± 0.9 µm	2001
4478851	M10 x 1	Standard Holder - Standard version	844 Dg
4478020	M6 x 0,75	Holder for Inductive Measuring Probes	844 Dge
4478021	M10 x 1	Holder 844 for Inductive Measuring Probes	844 Dge
4478050	M10 x 1	Short Holder - Short version	844 Dgk
4478110	M10 x 1	Right Angle Attachment, L = 36.7 mm, H = 17 mm	844 Dw
4470851	M6 x 0,75	Standard measuring instrument holder	844 Kg
4470110	M6 x 0,75	Right Angle Attachment, L = 26.5 mm, H = 22.5 mm	844 Kw
5312010		Compact Amplifier	C1200
5323010	M 2,5	Inductive Probe, ± 2 mm	P2004
5318400		Compact column amplifier	S 1840 M



844 Dg

1002

1004

1003

2001

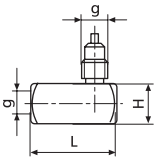
2000

P2004

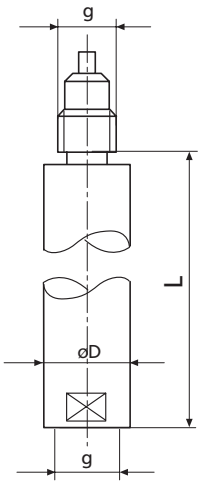
1086 R

S 1840 M;
S 1840 F

1086 Ri



Extension MaraMeter 844 Dv / 844 Kv

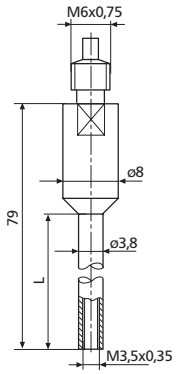


- For very deep bores
- Screws in between holder and measuring heads 844 Dk, 844 Dkr or 844 Dks
- Several extensions can be screwed together as of 8 mm
- Models 844 Dv and 844 Dvk made of Invar steel

Technical Data

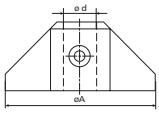
Order no.	Product type	Dimension L
		mm
4478080	844 Dv	64
4470070	844 Kv	64
4478070	844 Dv	64
4478071	844 Dv	80
4478072	844 Dv	100
4478073	844 Dv	125
4478074	844 Dv	250
4478075	844 Dv	500

Order no.	g	D	Dimension L	Product type (for table dimension)
		mm	mm	
4478080	M6x0,75 / M3,5x0,35	3.8	64	844 Dv
4470070	M6 x 0,75	8	64	844 Kv
4478070	M10 x 1	15	64	844 Dv
4478071	M10 x 1	15	80	844 Dv
4478072	M10 x 1	15	100	844 Dv
4478073	M10 x 1	15	125	844 Dv
4478074	M10 x 1	15	250	844 Dv
4478075	M10 x 1	15	500	844 Dv



Accessories

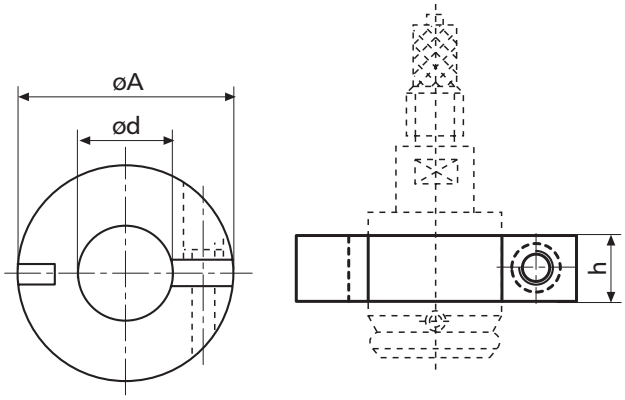
Order no.	Product name	Product type
4470115	Depth Stop, Mounting-ø d = 8 mm, A = 24 mm, h = 60 mm	844 Dt
4478115	Depth Stop, Mounting-ø d = 15 mm, A = 45 mm, h = 30 mm	844 Dt
4478116	Depth Stop, Mounting-ø d = 15 mm, A = 75 mm, h = 30 mm	844 Dt
4478117	Depth Stop, Mounting-ø d = 15 mm, A = 110 mm, h = 30 mm	844 Dt
4478118	Depth Stop, Mounting-ø d = 15 mm, A = 160 mm, h = 30 mm	844 Dt
4478119	Depth Stop, Mounting-ø d = 15 mm, A = 220 mm, h = 30 mm	844 Dt



844 Dt

Depth Stop Ring MaraMeter 844 Dtr

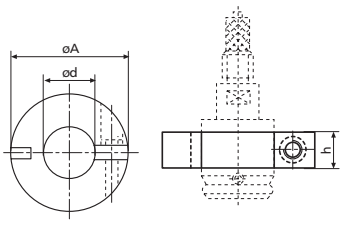
- For limiting depth of insertion of measuring head in bore
- Clamped onto the measuring head



Technical Data

Order no.	Product type	Mount diameter d	Stop surface diameter A
		mm	mm
4478130	844 Dtr	3 –5 mm >5 –8 mm >8 –11 mm >11 –15 mm >15 –20 mm	27 mm 30 mm 33 mm 37 mm 42 mm
4478131	844 Dtr	>20 –25 mm >25 –30 mm >30 –35 mm >35 –40 mm >40 –45 mm	50 mm 55 mm 60 mm 65 mm 70 mm
4478132	844 Dtr	>45 –50 mm >50 –60 mm >60 –70 mm >70 –80 mm	75 mm 85 mm 95 mm 105 mm
4478133	844 Dtr	>80 –90 mm >90 –100 mm	115 mm 125 mm

Order no.	Mount diameter d	Stop surface diameter A
	mm	mm
4478130	3 –5 mm >5 –8 mm >8 –11 mm >11 –15 mm >15 –20 mm	27 mm 30 mm 33 mm 37 mm 42 mm
4478131	>20 –25 mm >25 –30 mm >30 –35 mm >35 –40 mm >40 –45 mm	50 mm 55 mm 60 mm 65 mm 70 mm
4478132	>45 –50 mm >50 –60 mm >60 –70 mm >70 –80 mm	75 mm 85 mm 95 mm 105 mm
4478133	>80 –90 mm >90 –100 mm	115 mm 125 mm



Self centring dial bore gage MaraMeter 844 K

Application:

- Measuring the diameter, roundness and conicity of bores
- Spring loaded halves of measuring probe are split via expanding pin with precision lapped taper. This movement is transferred to indicating instrument

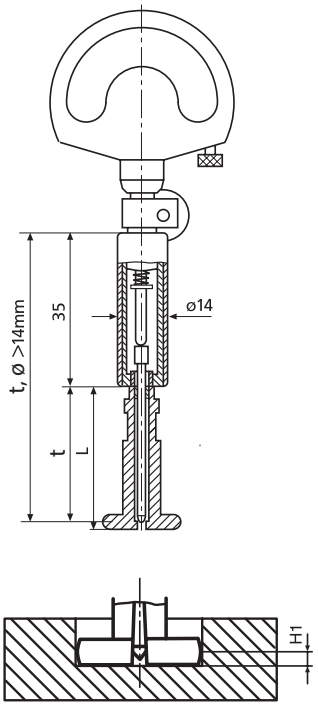
- Maximum wear resistance due to **hard chrome plating**
- Constant measuring force as a result of built-in spring, eliminating user influence
- Highly versatile, each gage covers a large range. Within the respective limits, quickly and easily adjustable to any size and any type of measuring application
- Extensive modular system is composed of measuring probe, holder, depth extensions, right angle attachments and depth stops
- **Scope of delivery:** Measuring holder, Probe, Expanding pin, Wooden case, excludes indicator

Technical Data

Order no.	Product type	Nominal size	Individual probe measuring range	Measuring range	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	mm	Piece		µm
4470000	844 K	0,50 0,55 0,60 0,70 0,80 0,90	**0,47** –0,53 0,52 –0,58 0,57 –0,67 0,65 –0,77 0,75 –0,87 0,85 - **0,97**	0.47 –0.97	6	2%, min. 1 µm	1
4470001	844 K	1,00 1,10 1,20 1,30 1,40	**0,95** –1,15 1,07 –1,25 1,17 –1,35 1,27 –1,45 1,37 - **1,55**	0.95 –1.55	5	2%, min. 1 µm	1
4470002	844 K	1,75 2,00 2,25 2,50 2,75 3,00 3,25 3,50 3,75 4,00	**1,50** –1,90 1,80 –2,20 2,05 –2,45 2,30 –2,70 2,55 –2,95 2,80 –3,20 3,05 –3,45 3,30 –3,70 3,55 –3,95 3,80 - **4,20**	1.5 –4.2	10	1%, min. 1 µm	1
4470003	844 K	4,00 4,50 5,00 5,50 6,00 6,50 7,00	**3,70** –4,30 4,20 –4,80 4,70 –5,30 5,20 –5,80 5,70 –6,30 6,20 –6,80 6,70 - **7,30**	3.7 –7.3	7	1%, min. 1 µm	1
4470004	844 K	7,50 8,00 8,50 9,00 9,50 10,00	**7,20** –7,80 7,70 –8,30 8,20 –8,80 8,70 –9,30 9,20 –9,80 9,70 - **10,30**	6.7 –10.3	7	1%, min. 1 µm	1
4470005	844 K	10,00 11,00 12,00 13,00 14,00 15,00 16,00 17,00 18,00	**9,40** –10,60 10,40 –11,60 11,40 –12,60 12,40 –13,60 13,40 –14,60 14,40 –15,60 15,40 –16,60 16,40 –17,60 17,40 - **18,60**	9.4 –18.6	9	1%, min. 1 µm	1

Self centring dial bore gage MaraMeter 844 K

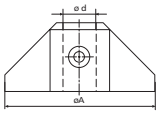
Order no.	Nominal size	Individual probe measuring range	Dimension H1	L mm	Measuring depth
	mm	mm			mm
4470000	0,50	**0,47** –0,53	0,25	19,50	1,25
	0,55	0,52 –0,58	0,27	19,50	1,5
	0,60	0,57 –0,67	0,29	19,50	1,7
	0,70	0,65 –0,77	0,31	19,50	2,2
	0,80	0,75 –0,87	0,33	19,50	2,55
	0,90	0,85 - **0,97**	0,35	19,50	2,65
4470001	1,00	**0,95** –1,15	0,6	19,50	10,5
	1,10	1,07 –1,25	0,6	19,50	10,5
	1,20	1,17 –1,35	0,6	19,50	10,5
	1,30	1,27 –1,45	0,6	19,50	10,5
	1,40	1,37 - **1,55**	0,6	19,50	10,5
4470002	1,75	**1,50** –1,90	0,9	25,30	16
	2,00	1,80 –2,20	0,9	25,30	16
	2,25	2,05 –2,45	0,9	25,30	16
	2,50	2,30 –2,70	1,2	30,60	21
	2,75	2,55 –2,95	1,2	30,60	21
	3,00	2,80 –3,20	1,2	30,60	21
	3,25	3,05 –3,45	1,2	30,60	21
	3,50	3,30 –3,70	1,2	30,60	21
	3,75	3,55 –3,95	1,2	30,60	21
	4,00	3,80 - **4,20**	1,2	30,60	21
4470003	4,00	**3,70** –4,30	2,0	47,30	38
	4,50	4,20 –4,80	2,0	47,30	38
	5,00	4,70 –5,30	2,0	47,30	38
	5,50	5,20 –5,80	2,0	47,30	38
	6,00	5,70 –6,30	2,0	47,30	38
	6,50	6,20 –6,80	2,0	47,30	38
	7,00	6,70 - **7,30**	2,0	47,30	38
4470004	7,50	**7,20** –7,80	2,0	47,30	38
	8,00	7,70 –8,30	2,0	47,30	38
	8,50	8,20 –8,80	2,0	47,30	45
	9,00	8,70 –9,30	2,0	47,30	45
	9,50	9,20 –9,80	2,0	47,30	45
	10,00	9,70 - **10,30**	2,0	47,30	45
4470005	10,00	**9,40** –10,60	3,3	48,50	45
	11,00	10,40 –11,60	3,3	48,50	45
	12,00	11,40 –12,60	3,3	48,50	45
	13,00	12,40 –13,60	3,3	48,50	45
	14,00	13,40 –14,60	3,3	48,50	45
	15,00	14,40 –15,60	3,3	48,50	45
	16,00	15,40 –16,60	3,3	48,50	80
	17,00	16,40 –17,60	3,3	48,50	80
	18,00	17,40 - **18,60**	3,3	48,50	80



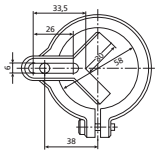
Self centring dial bore gage MaraMeter 844 K

Accessories

Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337662		Digital Indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664		Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
4346100		Inductive dial comparator, ± 0.9 µm	2001
4470115		Depth Stop, Mounting-ø d = 8 mm, A = 24 mm, h = 60 mm	844 Dt
4470120		Clampable angle stop for 844 Kst measuring stand	844 Ka
4470160		Ring gage sets, 0.5 / 0.55 / 0.6 / 0.7 / 0.8 / 0.9 mm	844 Ke
4470161		Ring gage sets, 1 / 1.1 / 1.2 / 1.3 / 1.4 mm	844 Ke
4470162		Ring gage sets, 1.75 / 2 / 2.25 / 2.5 / 2.75 / 3 / 3.25 / 3.5 / 3.75 / 4 mm	844 Ke
4470163		Ring gage sets, 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 mm	844 Ke
4470164		Ring gage sets, 7 / 7.5 / 8 / 8.5 / 9 / 9.5 / 10 mm	844 Ke
4470165		Ring gage sets, 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 mm	844 Ke
4470100		Measuring stand for quick measurements, Table diameter 58 mm, Max. object height approx. 100 mm	844 Kst
4470105		Floating holder for 844 Kst measuring stand	844 Ksts
4470070	M6 x 0,75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4470110	M6 x 0,75	Right Angle Attachment, L = 26.5 mm, H = 22.5 mm	844 Kw

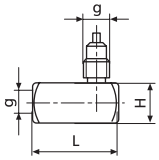


844 Dt



844 Ka

844 Kst



844 Kw / 844 Dw

1087 BRi

1087 BR

2001

1002

1003

1004

Self centring dial bore gage MaraMeter 844 KH

- Maximum wear-resistance due to **carbide tipped** faces
- Constant measuring force as a result of built-in spring thus eliminating user influence
- Highly versatile, each gage covers a large range. Within the respective limits, quickly and easily adjustable to any size and any type of measuring application
- Extensive modular system is composed of measuring probe, holder, depth extensions, right angle attachments and depth stops
- **Scope of delivery:** Measuring holder, Probe, Expanding pin, Wooden case, excludes indicator

Application:

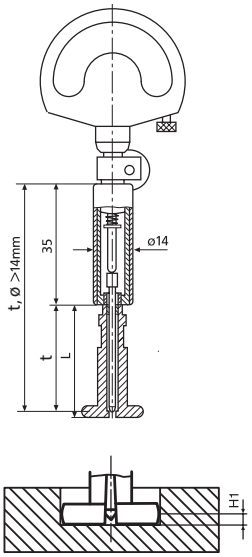
- Measuring the diameter, roundness and conicity of bores
- Spring loaded halves of measuring probe are split via expanding pin with precision lapped taper. This movement is transferred to indicating instrument

Technical Data

Order no.	Product type	Nominal size	Individual probe measuring range mm	Measuring range	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	mm	Piece		µm
4471002	844 KH	1,75 2,00 2,25 2,50 2,75 3,00 3,25 3,50 3,75 4,00	**1,50** –1,90 1,80 –2,20 2,05 –2,45 2,30 –2,70 2,55 –2,95 2,80 –3,20 3,05 –3,45 3,30 –3,70 3,55 –3,95 3,80 - **4,20**	1.5 –4.2	10	1%, min. 1 µm	1
4471003	844 KH	4,00 4,50 5,00 5,50 6,00 6,50 7,00	**3,70** –4,30 4,20 –4,80 4,70 –5,30 5,20 –5,80 5,70 –6,30 6,20 –6,80 6,70 - **7,30**	3.7 –7.3	7	1%, min. 1 µm	1
4471004	844 KH	7,50 8,00 8,50 9,00 9,50 10,00	**7,20** –7,80 7,70 –8,30 8,20 –8,80 8,70 –9,30 9,20 –9,80 9,70 - **10,30**	6.7 –10.3	7	1%, min. 1 µm	1
4471005	844 KH	10,00 11,00 12,00 13,00 14,00 15,00 16,00 17,00 18,00	**9,40** –10,60 10,40 –11,60 11,40 –12,60 12,40 –13,60 13,40 –14,60 14,40 –15,60 15,40 –16,60 16,40 –17,60 17,40 - **18,60**	9.4 –18.6	9	1%, min. 1 µm	1

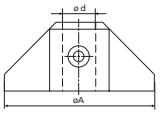
Self centring dial bore gage MaraMeter 844 KH

Order no.	Nominal size	Individual probe measuring range	Dimension H1	L mm	Measuring depth
	mm	mm			mm
4471002	1,75	**1,50** –1,90	0,9	25,30	16
	2,00	1,80 –2,20	0,9	25,30	16
	2,25	2,05 –2,45	0,9	25,30	16
	2,50	2,30 –2,70	1,2	30,60	21
	2,75	2,55 –2,95	1,2	30,60	21
	3,00	2,80 –3,20	1,2	30,60	21
	3,25	3,05 –3,45	1,2	30,60	21
	3,50	3,30 –3,70	1,2	30,60	21
	3,75	3,55 –3,95	1,2	30,60	21
	4,00	3,80 - **4,20**	1,2	30,60	21
4471003	4,00	**3,70** –4,30	2,0	47,30	38
	4,50	4,20 –4,80	2,0	47,30	38
	5,00	4,70 –5,30	2,0	47,30	38
	5,50	5,20 –5,80	2,0	47,30	38
	6,00	5,70 –6,30	2,0	47,30	38
	6,50	6,20 –6,80	2,0	47,30	38
	7,00	6,70 - **7,30**	2,0	47,30	38
4471004	7,50	**7,20** –7,80	2,0	47,30	38
	8,00	7,70 –8,30	2,0	47,30	38
	8,50	8,20 –8,80	2,0	47,30	45
	9,00	8,70 –9,30	2,0	47,30	45
	9,50	9,20 –9,80	2,0	47,30	45
	10,00	9,70 - **10,30**	2,0	47,30	45
4471005	10,00	**9,40** –10,60	3,3	48,50	45
	11,00	10,40 –11,60	3,3	48,50	45
	12,00	11,40 –12,60	3,3	48,50	45
	13,00	12,40 –13,60	3,3	48,50	45
	14,00	13,40 –14,60	3,3	48,50	45
	15,00	14,40 –15,60	3,3	48,50	45
	16,00	15,40 –16,60	3,3	48,50	80
	17,00	16,40 –17,60	3,3	48,50	80
	18,00	17,40 - **18,60**	3,3	48,50	80

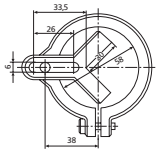


Accessories

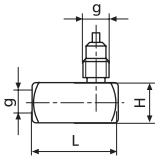
Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337662		Digital Indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664		Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
4346100		Inductive dial comparator, ± 0.9 µm	2001
4470115		Depth Stop, Mounting-ø d = 8 mm, A = 24 mm, h = 60 mm	844 Dt
4470120		Clampable angle stop for 844 Kst measuring stand	844 Ka
4470162		Ring gage sets, 1.75 / 2 / 2.25 / 2.5 / 2.75 / 3 / 3.25 / 3.5 / 3.75 / 4 mm	844 Ke
4470163		Ring gage sets, 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 mm	844 Ke
4470164		Ring gage sets, 7 / 7.5 / 8 / 8.5 / 9 / 9.5 / 10 mm	844 Ke
4470165		Ring gage sets, 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 mm	844 Ke
4470100		Measuring stand for quick measurements, Table diameter 58 mm, Max. object height approx. 100 mm	844 Kst
4470105		Floating holder for 844 Kst measuring stand	844 Ksts
4470070	M6 x 0,75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4470110	M6 x 0,75	Right Angle Attachment, L = 26.5 mm, H = 22.5 mm	844 Kw



844 Dt



844 Ka



844 Kw / 844 Dw

1087 BRi

1087 BR

2001

1002

1003

844 Kst

1004

Self centring dial bore gage MaraMeter 844 KS

- Maximum wear resistance due to **hard chrome plating**
- Constant measuring force as a result of built-in spring, thus eliminating user influence
- Highly versatile, each gage covers a large range. Within the respective limits, quickly and easily adjustable to any size and any type of measuring application
- Extensive modular system is composed of measuring probe, holder, depth extensions, right angle attachments and depth stops
- **Scope of delivery:** Measuring holder, Probe, Expanding pin, Wooden case, excludes indicator

Application:

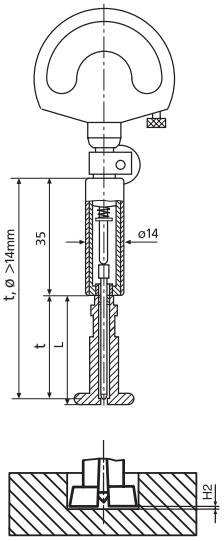
- Measuring the diameter, roundness and conicity of bores
- Spring loaded halves of measuring probe are split via expanding pin with precision lapped taper. This movement is transferred to indicating instrument

Technical Data

Order no.	Product type	Nominal size	Individual probe measuring range mm	Measuring range	Number of measuring probes	Linearity deviation fe	Repeatability f_w
		mm	mm	mm	Piece		µm
4482163	844 KS	1,75 2,00 2,25 2,50 2,75 3,00 3,25 3,50 3,75 4,00	**1,50** –1,90 1,80 –2,20 2,05 –2,45 2,30 –2,70 2,55 –2,95 2,80 –3,20 3,05 –3,45 3,30 –3,70 3,55 –3,95 3,80 - **4,20**	1.5 –4.2	10	1%, min. 1 µm	1
4482164	844 KS	4,00 4,50 5,00 5,50 6,00 6,50 7,00	**3,70** –4,30 4,20 –4,80 4,70 –5,30 5,20 –5,80 5,70 –6,30 6,20 –6,80 6,70 - **7,30**	3.7 –7.3	7	1%, min. 1 µm	1
4482165	844 KS	7,50 8,00 8,50 9,00 9,50 10,00	**7,20** –7,80 7,70 –8,30 8,20 –8,80 8,70 –9,30 9,20 –9,80 9,70 - **10,30**	6.7 –10.3	7	1%, min. 1 µm	1
4482166	844 KS	10,00 11,00 12,00 13,00 14,00 15,00 16,00 17,00 18,00	**9,40** –10,60 10,40 –11,60 11,40 –12,60 12,40 –13,60 13,40 –14,60 14,40 –15,60 15,40 –16,60 16,40 –17,60 17,40 - **18,60**	9.4 –18.6	9	1%, min. 1 µm	1

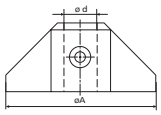
Self centring dial bore gage MaraMeter 844 KS

Order no.	Nominal size	Individual probe measuring range	Dimension H1	L mm	Measuring depth
	mm	mm			mm
4482163	1,75	**1,50** –1,90	0,3	25,30	16
	2,00	1,80 –2,20	0,3	25,30	16
	2,25	2,05 –2,45	0,3	25,30	16
	2,50	2,30 –2,70	0,3	30,60	21
	2,75	2,55 –2,95	0,3	30,60	21
	3,00	2,80 –3,20	0,3	30,60	21
	3,25	3,05 –3,45	0,3	30,60	21
	3,50	3,30 –3,70	0,3	30,60	21
	3,75	3,55 –3,95	0,3	30,60	21
	4,00	3,80 - **4,20**	0,3	30,60	21
4482164	4,00	**3,70** –4,30	0,5	47,30	38
	4,50	4,20 –4,80	0,5	47,30	38
	5,00	4,70 –5,30	0,5	47,30	38
	5,50	5,20 –5,80	0,5	47,30	38
	6,00	5,70 –6,30	0,5	47,30	38
	6,50	6,20 –6,80	0,5	47,30	38
	7,00	6,70 - **7,30**	0,5	47,30	38
4482165	7,50	**7,20** –7,80	0,5	47,30	38
	8,00	7,70 –8,30	0,5	47,30	38
	8,50	8,20 –8,80	0,5	47,30	45
	9,00	8,70 –9,30	0,5	47,30	45
	9,50	9,20 –9,80	0,5	47,30	45
	10,00	9,70 - **10,30**	0,5	47,30	45
4482166	10,00	**9,40** –10,60	1,0	48,50	45
	11,00	10,40 –11,60	1,0	48,50	45
	12,00	11,40 –12,60	1,0	48,50	45
	13,00	12,40 –13,60	1,0	48,50	45
	14,00	13,40 –14,60	1,0	48,50	45
	15,00	14,40 –15,60	1,0	48,50	45
	16,00	15,40 –16,60	1,0	48,50	80
	17,00	16,40 –17,60	1,0	48,50	80
	18,00	17,40 - **18,60**	1,0	48,50	80

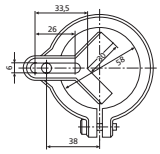


Accessories

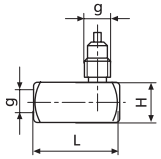
Order no.	g	Product name	Product type
4335000		Millimess 0.5 µm, ± 25 µm	1002
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4337662		Digital Indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664		Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
4346100		Inductive dial comparator, ± 0.9 µm	2001
4470115		Depth Stop, Mounting-ø d = 8 mm, A = 24 mm, h = 60 mm	844 Dt
4470120		Clampable angle stop for 844 Kst measuring stand	844 Ka
4470162		Ring gage sets, 1.75 / 2 / 2.25 / 2.5 / 2.75 / 3 / 3.25 / 3.5 / 3.75 / 4 mm	844 Ke
4470163		Ring gage sets, 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 mm	844 Ke
4470164		Ring gage sets, 7 / 7.5 / 8 / 8.5 / 9 / 9.5 / 10 mm	844 Ke
4470165		Ring gage sets, 10 / 11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 mm	844 Ke
4470100		Measuring stand for quick measurements, Table diameter 58 mm, Max. object height approx. 100 mm	844 Kst
4470105		Floating holder for 844 Kst measuring stand	844 Ksts
4470070	M6 x 0,75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4470110	M6 x 0,75	Right Angle Attachment, L = 26.5 mm, H = 22.5 mm	844 Kw



844 Dt



844 Ka



844 Kw / 844 Dw

1087 BRi

1087 BR

2001

1002

1003

844 Kst

1004

Adjustable Bore Gage MaraMeter 1280P

- Rugged construction for long life and low maintenance: Stainless steel gaging head, one piece centralizing yoke with replaceable tungsten carbide balls
- Heavy duty indicator for housing projects
- Flow-through design makes Series 1280P Bore Gages rinse clean, no disassembly required
- Outstanding stability: Holds mastered value
- All 1280P gages have a removable handle as a part of the Indicator Housing

Application:

Internal Diameter Bore Measurement

Technical Data

Order no.	Product type	Measuring range	Graduation value	Distance of movable anvil	Indicating instrument (included in package)	Measuring depth
		inch	inch	inch		inch
2050095	1280P–1W1	.50 –1.0"	.0001"	.025"	IDT–232 Indicator (22I-RC)	3"
2050124	1280P–2W2	1.0 –2.0"	.0001"	.025"	IDT–232 Indicator (22I-RC)	6"
2050164	1280P–3W2	2.0 –8.0"	.0001"	.025"	IDT–232 Indicator (22I-RC)	6"
2050096	1280P–1W2	.50 –1.0"	.0001"	.025"	IDT–232 Indicator (22I-RC)	6"
2050125	1280P–2W3	1.0 –2.0"	.0001"	.025"	IDT–232 Indicator (22I-RC)	12"
2050165	1280P–3W3	2.0 –8.0"	.0001"	.025"	IDT–232 Indicator (22I-RC)	12"

Technical Data

Order no.	Product type	Measuring range	Resolution	Graduation value	Distance of movable anvil	Indicating instrument (included in package)	Measuring depth
		mm	mm	mm	mm		mm
2050086	1280P–1MW1	12.5 –25	0.002	0.002	0.63	IDS–237 Indicator (P1I-RC)	76
2050109	1280P–2MW2	25 –50	0.002	0.002	0.63	IDS–237 Indicator (P1I-RC)	150
2050143	1280P–3MW2	50 –200	0.002	0.002	0.63	IDS–237 Indicator (P1I-RC)	150
2050087	1280P–1MW2	12.5 –25	0.002	0.002	0.63	IDS–237 Indicator (P1I-RC)	150
2050110	1280P–2MW3	25 –50	0.002	0.002	0.63	IDS–237 Indicator (P1I-RC)	300
2050144	1280P–3MW3	50 –200	0.002	0.002	0.63	IDS–237 Indicator (P1I-RC)	300

Adjustable Bore Gage MaraMeter 1280P

Order no.	Product name	Product type
2225972	Extension point, carbide, 12–16 mm / .50 –.625" for 128XP–1XXX	PT–562
2225977	Extension point, carbide, 16–19 mm / .625 –.75" for 128XP–1XXX	PT–567
2225978	Extension point, carbide, 19–22 mm / .75 –.875" for 128XP–1XXX	PT–568
2225966	Extension point, carbide, 22–25 mm / .875 –1" for 128XP–1XXX	PT–557
2225967	Extension point, steel, 12–16 mm / .50 –.625" for 128XP–1XXX	PT–558
2225968	Extension point, steel, 16–19 mm / .625 –.75" for 128XP–1XXX	PT–559
2225970	Extension point, steel, 19–22 mm / .75 –.875" for 128XP–1XXX	PT–560
2225971	Extension point, steel, 22–25 mm / .875 –1" for 128XP–1XXX	PT–561
2225963	Extension point, carbide, 25–32 mm / 1 –1.25" for 128XP–2XXX	PT–554
2225962	Extension point, carbide, 32–38 mm / 1.25 –1.5" for 128XP–2XXX	PT–553
2225961	Extension point, carbide, 38–45 mm / 1.5 –1.75" for 128XP–2XXX	PT–552
2225959	Extension point, carbide, 45–50 mm / 1.75 –2" for 128XP–2XXX	PT–550
2225964	Extension point, steel, 25–32 mm / 1 –1.25" for 128XP–2XXX	PT–555
2225965	Extension point, steel, 32–38 mm / 1.25 –1.5" for 128XP–2XXX	PT–556
2225979	Extension point, steel, 38–45 mm / 1.5 –1.75" for 128XP–2XXX	PT–569
2225960	Extension point, steel, 45–50 mm / 1.75 –2" for 128XP–2XXX	PT–551
2225866	Extension point, steel, for 128XP–3XXX	PT–2224
2225766	Extension point, carbide for 128XP–3XXX	PT–156
2218618	Extension set 50–64 mm/ 2–2.5" for 128XP–3XXX	EX–222
2218619	Extension set 64–76 mm/ 2.5–3" for 128XP–3XXX	EX–223
2218620	Extension set 76–89 mm/ 3–3.5" for 128XP–3XXX	EX–224
2218621	Extension set 89–100 mm/ 3.5–4" for 128XP–3XXX	EX–225
2218622	Extension set for 100–127 mm/ 4–5" (use with EX–223) and for 127–152mm/ 5–6" (use with EX–225) for 128XP–3XXX	EX–226
2218623	Extension set for 152–178 mm/ 6–7" (use with EX–223) and for 178–200mm/ 7–8" (use with EX–225) for 128XP–3XXX	EX–228

Adjustable Bore Gage MaraMeter 1282P

- Rugged construction for long life and low maintenance: Stainless steel gaging head, one piece centralizing yoke with replaceable tungsten carbide balls
- Heavy duty Indicator for housing protects
- Flow-through design makes Series 1280P Bore Gages rinse clean, no disassembly required
- Outstanding stability: Holds mastered value
- If gage capacity is 25 mm / 1" or greater, the Maxμm®III Indicator is covered with a cast aluminum protective housing
- **Data interface:** Digimatic, RS232C, USB
- **Energy supply:** Battery operation

Application:

Internal Diameter Bore Measurement

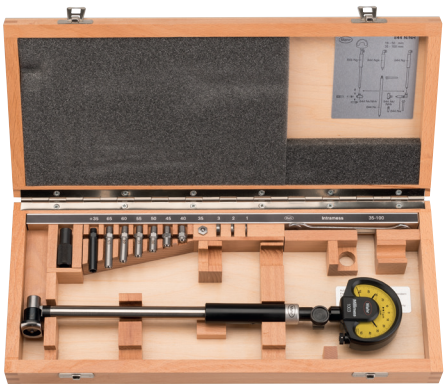
Technical Data

Order no.	Product type	Measuring range		Resolution		Graduation value		Distance of movable anvil		Measuring depth	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
2050277	1282P–1W1	12 –25	.50 –1"	0.001	.00005"	0.001	.001"	0.39	.020"	76	3"
2050306	1282P–2W2	25 –50	1 –2"	0.001	.00005"	0.001	.001"	0.39	.020"	150	6"
2050346	1282P–3W2	50 –203	2 –8"	0.001	.00005"	0.001	.001"	0.39	.020"	150	6"
2050278	1282P–1W2	12 –25	.50 –1"	0.001	.00005"	0.001	.001"	0.39	.020"	150	6"
2050307	1282P–2W3	25 –50	1 –2"	0.001	.00005"	0.001	.001"	0.39	.020"	300	12"
2050347	1282P–3W3	50 –203	2 –8"	0.001	.00005"	0.001	.001"	0.39	.020"	300	12"

Accessories

Order no.	Product name	Product type
2225972	Extension point, carbide, 12–16 mm / .50 –.625" for 128XP–1XXX	PT–562
2225977	Extension point, carbide, 16–19 mm / .625 –.75" for 128XP–1XXX	PT–567
2225978	Extension point, carbide, 19–22 mm / .75 –.875" for 128XP–1XXX	PT–568
2225966	Extension point, carbide, 22–25 mm / .875 –1" for 128XP–1XXX	PT–557
2225967	Extension point, steel, 12–16 mm / .50 –.625" for 128XP–1XXX	PT–558
2225968	Extension point, steel, 16–19 mm / .625 –.75" for 128XP–1XXX	PT–559
2225970	Extension point, steel, 19–22 mm / .75 –.875" for 128XP–1XXX	PT–560
2225971	Extension point, steel, 22–25 mm / .875 –1" for 128XP–1XXX	PT–561
2225963	Extension point, carbide, 25–32 mm / 1 –1.25" for 128XP–2XXX	PT–554
2225962	Extension point, carbide, 32–38 mm / 1.25 –1.5" for 128XP–2XXX	PT–553
2225961	Extension point, carbide, 38–45 mm / 1.5 –1.75" for 128XP–2XXX	PT–552
2225959	Extension point, carbide, 45–50 mm / 1.75 –2" for 128XP–2XXX	PT–550
2225964	Extension point, steel, 25–32 mm / 1 –1.25" for 128XP–2XXX	PT–555
2225965	Extension point, steel, 32–38 mm / 1.25 –1.5" for 128XP–2XXX	PT–556
2225979	Extension point, steel, 38–45 mm / 1.5 –1.75" for 128XP–2XXX	PT–569
2225960	Extension point, steel, 45–50 mm / 1.75 –2" for 128XP–2XXX	PT–551
2225866	Extension point, steel, for 128XP–3XXX	PT–2224
2225766	Extension point, carbide for 128XP–3XXX	PT–156
2218618	Extension set 50–64 mm/ 2–2.5" for 128XP–3XXX	EX–222
2218619	Extension set 64–76 mm/ 2.5–3" for 128XP–3XXX	EX–223
2218620	Extension set 76–89 mm/ 3–3.5" for 128XP–3XXX	EX–224
2218621	Extension set 89–100 mm/ 3.5–4" for 128XP–3XXX	EX–225
2218622	Extension set for 100–127 mm/ 4–5" (use with EX–223) and for 127–152mm/ 5–6" (use with EX–225) for 128XP–3XXX	EX–226
2218623	Extension set for 152–178 mm/ 6–7" (use with EX–223) and for 178–200mm/ 7–8" (use with EX–225) for 128XP–3XXX	EX–228

Self centring dial bore gage MaraMeter 844 N



Application:

- Measuring the diameter, roundness and conical form of a bore as well as the distances of parallel plane surfaces

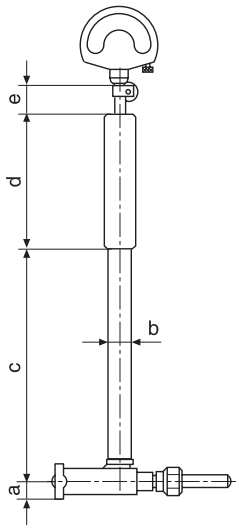
Technical Data

Order no.	Product type	Measuring range	Measuring range	Distance of movable anvil	Measuring depth	Error limit G_e	Repeatability f_w
		mm	inch	mm	mm	µm	µm
4474000	844 N	18 –50	.7 –2"	1.3	115	2	0.5
4474001	844 N	35 –100	1.4 –4"	1.3	148	2	0.5
4474002	844 N	100 –250	4 –10"	1.6	230	2	0.5
4474003	844 N	250 –400	10 –16"	2.6	366	3	1.5
4474004	844 N	400 –800	16 –32"	2.6	366	3	1.5
4474005	844 N	250 –800	10 –32"	2.6	366	3	1.5

- 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 the 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 as every instrument spans a broad measuring range, within this range it is quick and easy to adjust to any size
- Extensive modular system is composed of measuring head, holder, extensions, right angle attachments and depth stops
- **Invar steel** has a particularly low expansion coefficient and thus makes the instrument totally insensitive to any kind of heat. Body heat from the user, increases in ambient temperature have no influence on the measuring results
- **Scope of delivery:** Measuring holder, Measuring Head, Anvil spindle, Wooden case, excludes indicator

Self centring dial bore gage MaraMeter 844 N

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



Accessories

Order no.	Product name	Product type
4335000	Millimess 0.5 µm, ± 25 µm	1002
4334000	Millimess 1 µm, ± 50 µm	1003
4333000	Millimess 5 µm, ± 130 µm	1004
4337662	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
4346100	Inductive dial comparator, ± 0.9 µm	2001
4800120	Holder, Measuring span 0 –70mm	420 h
4800121	Holder, Measuring span 0 –120mm	420 h
4800122	Holder, Measuring span 100 –220mm	420 h
4800123	Holder, Measuring span 100 –420mm	420 h
4800124	Holder, Measuring span 400 –820mm	420 h
4474080	Adjustment bridge (70 x 12 mm), for measuring range 18 –250 mm	844 Neb
4474081	Adjustment bridge (165 x 17 mm), for measuring range 18 –400 mm	844 Neb
4474050	Short holder (18 –50 mm)	844 Ngk
4474051	Short holder (35 –100 mm)	844 Ngk
4474052	Short holder (100 –250 mm)	844 Ngk
4474053	Short holder (250 –800 mm)	844 Ngk
4474060	Extension (250 mm) for measuring range 35 –100 mm	844 Nv
4474061	Extension (250 mm) for measuring range 100 –250 mm	844 Nv
4474062	Extension (500 mm) for measuring range 100 –250 mm	844 Nv
4474063	Extension (250 mm) for measuring range 250 –800 mm	844 Nv
4474064	Extension (500 mm) for measuring range 250 –800 mm	844 Nv
4474066	Extension (250 mm) for measuring range 18 –50 mm	844 Nv
4474070	Right angle attachment, Bore depth45mm, for measuring range18 –50 mm	844 Nw
4474071	Right angle attachment, Bore depth55mm, for measuring range35 –100 mm	844 Nw
4474072	Right angle attachment, Bore depth70mm, for measuring range100 –250 mm	844 Nw
4470098	Base for mounting holder 420 h up to 420 mm	844 ef
4470095	Measuring jaw for holder 420 h	844 em

1004

1003

1002

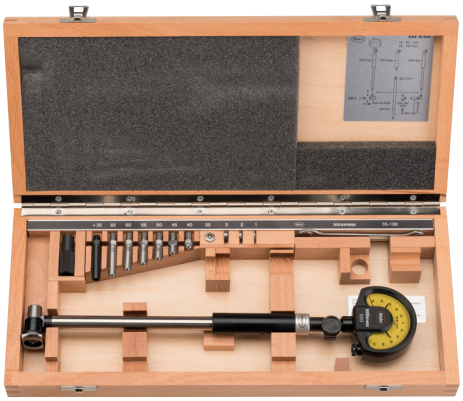
844 em;844 ef

1087 BR

1087 BRi

2001

Self centring dial bore gage MaraMeter 844 NH



Application:

- Measuring the diameter, roundness and conical form of a bore as well as the distances of parallel plane surfaces

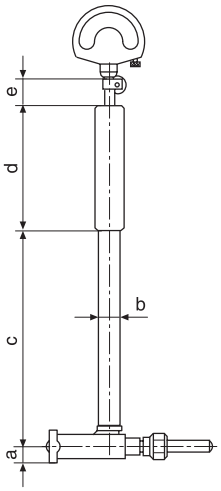
Technical Data

Order no.	Product type	Measuring range	Measuring range	Distance of movable anvil	Measuring depth	Error limit G_e	Repeatability f_w
		mm	inch	mm	mm	µm	µm
4475000	844 NH	18 –50	.7 –2"	1.3	115	2	0.5
4475001	844 NH	35 –100	1.4 –4"	1.3	148	2	0.5
4475002	844 NH	100 –250	4 –10"	1.6	230	2	0.5
4475003	844 NH	250 –400	10 –16"	2.6	336	3	1.5
4475004	844 NH	400 –800	16 –32"	2.6	336	3	1.5
4475005	844 NH	250 –800	10 –32"	2.6	336	3	1.5

- Measuring head consists of a carbide tipped moving anvil and an interchangeable stationary anvil with a **carbide ball**
- Transmission lever system transfers movement of the movable anvil to indicating instrument
- The broad centering bridge ensures automatic centering in the bore
- Resistant to temperature bacause the shank and transfer rod are made of **heat resistant Invar steel**
- Highly resistant to wear and tear due to the carbide tipped moving anvil
- Constant measuring force due to built-in spring, eliminating user influence
- Universally applicable and extremely versatile as every instrument spans a broad measuring range, within this range it is quick and easy to adjust to any size
- Extensive modular system is composed of measuring head, holder, extensions, right angle attachments and depth stops
- **Invar steel** has a particularly low expansion coefficient and thus makes the instrument totally insensitive to any kind of heat. Body heat from the user, increases in ambient temperature have no influence on the measuring results
- **Scope of delivery:** Measuring holder, Measuring Head, Anvil spindle, Wooden case, excludes indicator

Self centring dial bore gage MaraMeter 844 NH

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



Accessories

Order no.	Product name	Product type
4335000	Millimess 0.5 µm, ± 25 µm	1002
4334000	Millimess 1 µm, ± 50 µm	1003
4333000	Millimess 5 µm, ± 130 µm	1004
4337662	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
4346100	Inductive dial comparator, ± 0.9 µm	2001
4800120	Holder, Measuring span 0 –70mm	420 h
4800121	Holder, Measuring span 0 –120mm	420 h
4800122	Holder, Measuring span 100 –220mm	420 h
4800123	Holder, Measuring span 100 –420mm	420 h
4800124	Holder, Measuring span 400 –820mm	420 h
4474080	Adjustment bridge (70 x 12 mm), for measuring range 18 –250 mm	844 Neb
4474081	Adjustment bridge (165 x 17 mm), for measuring range 18 –400 mm	844 Neb
4474050	Short holder (18 –50 mm)	844 Ngk
4474051	Short holder (35 –100 mm)	844 Ngk
4474052	Short holder (100 –250 mm)	844 Ngk
4474053	Short holder (250 –800 mm)	844 Ngk
4474060	Extension (250 mm) for measuring range 35 –100 mm	844 Nv
4474061	Extension (250 mm) for measuring range 100 –250 mm	844 Nv
4474062	Extension (500 mm) for measuring range 100 –250 mm	844 Nv
4474063	Extension (250 mm) for measuring range 250 –800 mm	844 Nv
4474064	Extension (500 mm) for measuring range 250 –800 mm	844 Nv
4474066	Extension (250 mm) for measuring range 18 –50 mm	844 Nv
4474070	Right angle attachment, Bore depth45mm, for measuring range18 –50 mm	844 Nw
4474071	Right angle attachment, Bore depth55mm, for measuring range35 –100 mm	844 Nw
4474072	Right angle attachment, Bore depth70mm, for measuring range100 –250 mm	844 Nw
4470098	Base for mounting holder 420 h up to 420 mm	844 ef
4470095	Measuring jaw for holder 420 h	844 em

1004

1003

1002

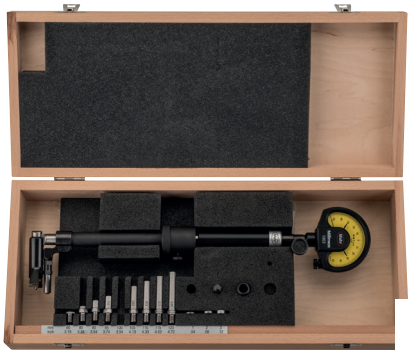
844 em;844 ef

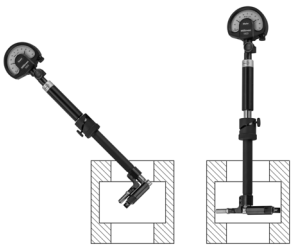
1087 BR

1087 BRi

2001

Self-centering dial bore gage MaraMeter 844 NR





Application:

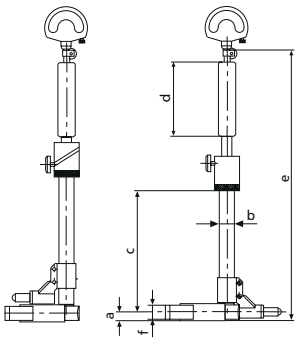
For measuring poorly accessible bore diameters, grooves and recesses

- Measuring head consists of a carbide tipped, movable measuring bolt and an opposing interchangeable stationary anvil with **carbide ball**
- Stationary measuring bolt can pivot through 180°, giving rise to a very long return travel path of up to 40% of the measured bore
- Movements of the measuring bolt are transmitted to the indicating instrument via the ring segment
- The broad centering bridge ensures automatic centering in the bore
- Resistant to temperature because the shaft and the transfer rod are made of **heat resistant Invar steel**
- Carbide tipped measuring contacts for high wear resistance
- Constant measuring force thanks to built-in and independent measuring force spring preventing external interference
- Universally applicable. Every instrument spans a broad measuring range. Within this range it is quick and easy to adjust to any size
- **Invar steel** makes the inside 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.
- **Scope of delivery:** Measuring holder, Measuring Head, Anvil spindle, Wooden case, excludes indicator

Technical Data

Order no.		4474580	4474590	4474600	4474610	4474620	4474630
Product type		844 NR					
Measuring range	mm	50 –70	60 –100	80 –150	120 –220	180 –360	290 –530
Measuring range	inch	2 –2.8"	2.4 –4"	3.2 –6"	4.7 –8.7"	7.1 –14.2"	11.4 –20.7"
Error limit G_e	µm	2				3	
Repeatability f_w	µm	1				1.5	

Order no.	a	b	c	d	e	f
	mm	mm	mm	mm	mm	mm
4474580	5	12	60	60	203	6
4474590	7	15	110	80	264	8
4474600	7	15	110	80	264	8
4474610	7.5	15	110	80	264	10
4474620	11	23	150	90	343	10
4474630	15	30	170	90	409	10



Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337662	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
4346100	Inductive dial comparator, ± 0.9 µm	2001

2001

1087 BRi

1087 BR

1002

1003

1004

Self-centering dial bore gage MaraMeter 844 NB

- Measuring head consists of a carbide tipped moving anvil and an interchangeable stationary anvil with a **carbide ball**
- Transmission lever system transfers movement of the movable anvil to indicating instrument
- The broad centering bridge ensures automatic centering in the bore
- Resistent 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 thus eliminating user influence
- Universally applicable and extremely versatile as every instrument spans a broad measuring range, within this range it is quick and easy to adjust to any size
- **Invar steel** has a particularly low expansion coefficient and thus makes the instrument totally insensitive to any kind of heat. Body heat from the user, increases in ambient temperature have no influence on the measuring results
- **Scope of delivery:** Measuring holder, Measuring Head, Anvil spindle, Wooden case (package excludes indicator)

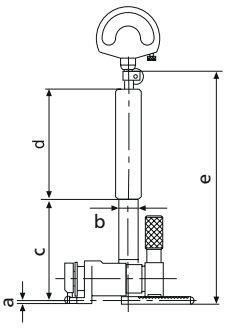
Application:

for **blind holes**, to measure almost to the base of a bore

Technical Data

Order no.		4474179	4474180	4474186
Product type			844 NB	
Measuring range	**mm**	20 –50	50 –110	110 –300
Measuring range	**inch**	0.79 –2"	2 –4.33"	4.33 –11.81"
Error limit G_e	**µm**	4	3	2.5
Repeatability f_w	**µm**		1	

Order no.	a	b	c	d	e
	mm	mm	mm	mm	mm
4474179	1.5	10	77	60	163
4474180	1.5	12	60	60	144
4474186	2	18	90	90	163



Accessories

Order no.	Product name	Product type
4333000	Millimess 5 µm, ± 130 µm	1004
4334000	Millimess 1 µm, ± 50 µm	1003
4335000	Millimess 0.5 µm, ± 25 µm	1002
4337662	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
4346100	Inductive dial comparator, ± 0.9 µm	2001

2001

1087 BRi

1087 BR

1002

1003

1004

Anvil for internal serration MaraMeter 844 Zk

- FunctionsMaximum wear resistance due to carbide ball anvils
- Constant measuring force due to built-in spring thus eliminating user influence
- Anvils, measuring heads, holder, spacer (intermediate piece) and depth extensions form a very comprehensive modular system which can rapidly be converted to measure further gear sizes
- **When ordering please state the required ball diameter**

Application:

- For diametrical two ball measurement MdK, to obtain the pitch diameter and conical form of internal gears in any position and at any depth

Technical Data

Order no.	Product type	Dimension over balls MdK	Ball diameter	Increment	Expanding pin
		mm	mm	mm	
4482450	844 Zk	3.5 –4.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482451	844 Zk	4 –4.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482452	844 Zk	4.5 –5.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482453	844 Zk	5 –5.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482454	844 Zk	5.5 –6.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482455	844 Zk	6 –6.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482456	844 Zk	6.5 –7.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482457	844 Zk	7 –7.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482458	844 Zk	7.5 –8.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482459	844 Zk	8 –8.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482460	844 Zk	8.5 –9.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482461	844 Zk	9 –9.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn6
4482462	844 Zk	9.3 –10.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482463	844 Zk	10.3 –11.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482464	844 Zk	11.3 –12.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482465	844 Zk	12.3 –13.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482466	844 Zk	13.3 –14.6	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482467	844 Zk	14.5 –16.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482468	844 Zk	15.5 –17.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482469	844 Zk	16.5 –18.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482470	844 Zk	17.5 –19.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482471	844 Zk	18.5 –20.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482472	844 Zk	19.5 –21.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482473	844 Zk	20.5 –22.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482474	844 Zk	21.5 –23.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482475	844 Zk	22.5 –24.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482476	844 Zk	23.5 –25.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482477	844 Zk	24.5 –26.1	1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	0.5	844 Kn7
4482550	844 Zk	3.5 –4.1	acc. to table (0,5–7,0mm)		844 Kn6
4482551	844 Zk	4 –4.6	acc. to table (0,5–7,0mm)		844 Kn6
4482552	844 Zk	4.5 –5.1	acc. to table (0,5–7,0mm)		844 Kn6
4482553	844 Zk	5 –5.6	acc. to table (0,5–7,0mm)		844 Kn6
4482554	844 Zk	5.5 –6.1	acc. to table (0,5–7,0mm)		844 Kn6
4482555	844 Zk	6 –6.6	acc. to table (0,5–7,0mm)		844 Kn6
4482556	844 Zk	6.5 –7.1	acc. to table (0,5–7,0mm)		844 Kn6
4482557	844 Zk	7 –7.6	acc. to table (0,5–7,0mm)		844 Kn6
4482558	844 Zk	7.5 –8.1	acc. to table (0,5–7,0mm)		844 Kn6
4482559	844 Zk	8 –8.6	acc. to table (0,5–7,0mm)		844 Kn6
4482560	844 Zk	8.5 –9.1	acc. to table (0,5–7,0mm)		844 Kn6
4482561	844 Zk	9 –9.6	acc. to table (0,5–7,0mm)		844 Kn6

Anvil for internal serration MaraMeter 844 Zk

Technical Data

Order no.	Product type	Dimension over balls MdK	Ball diameter	Increment	Expanding pin
		mm	mm	mm	
4482562	844 Zk	9.3 –10.6	acc. to table (0,5–7,0mm)		844 Kn7
4482563	844 Zk	10.3 –11.6	acc. to table (0,5–7,0mm)		844 Kn7
4482564	844 Zk	11.3 –12.6	acc. to table (0,5–7,0mm)		844 Kn7
4482565	844 Zk	12.3 –13.6	acc. to table (0,5–7,0mm)		844 Kn7
4482566	844 Zk	13.3 –14.6	acc. to table (0,5–7,0mm)		844 Kn7
4482567	844 Zk	14.5 –16.1	acc. to table (0,5–7,0mm)		844 Kn7
4482568	844 Zk	15.5 –17.1	acc. to table (0,5–7,0mm)		844 Kn7
4482569	844 Zk	16.5 –18.1	acc. to table (0,5–7,0mm)		844 Kn7
4482570	844 Zk	17.5 –19.1	acc. to table (0,5–7,0mm)		844 Kn7
4482571	844 Zk	18.5 –20.1	acc. to table (0,5–7,0mm)		844 Kn7
4482572	844 Zk	19.5 –21.1	acc. to table (0,5–7,0mm)		844 Kn7
4482573	844 Zk	20.5 –22.1	acc. to table (0,5–7,0mm)		844 Kn7
4482574	844 Zk	21.5 –23.1	acc. to table (0,5–7,0mm)		844 Kn7
4482575	844 Zk	22.5 –24.1	acc. to table (0,5–7,0mm)		844 Kn7
4482576	844 Zk	23.5 –25.1	acc. to table (0,5–7,0mm)		844 Kn7
4482577	844 Zk	24.5 –26.1	acc. to table (0,5–7,0mm)		844 Kn7
4482662	844 Zk	9.3 –10.6	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482663	844 Zk	10.3 –11.6	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482664	844 Zk	11.3 –12.6	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482665	844 Zk	12.3 –13.6	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482666	844 Zk	13.3 –14.6	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482667	844 Zk	14.5 –16.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482668	844 Zk	15.5 –17.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482669	844 Zk	16.5 –18.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482670	844 Zk	17.5 –19.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482671	844 Zk	18.5 –20.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482672	844 Zk	19.5 –21.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482673	844 Zk	20.5 –22.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482674	844 Zk	21.5 –23.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482675	844 Zk	22.5 –24.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482676	844 Zk	23.5 –25.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7
4482677	844 Zk	24.5 –26.1	7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	0.5	844 Kn7

Table (Sizes in mm)
0.500 - 0.551 - 0.620 - 0.623 - 0.630 - 0.722 - 0.862 - 0.895 - 0.965 - 1.100 - 1.118 - 1.125 - 1.250 - 1.350 - 1.372 - 1.385 - 1.524 - 1.540 - 1.600 - 1.650 - 1.700 - 1.750 - 1.782 - 1.800 - 1.829 - 1.900 - 2.032 - 2.250 - 2.284 - 2.386 - 2.438 - 2.667 - 2.704 - 2.713 - 2.721 - 2.743 - 2.750 - 3.048 - 3.250 - 3.400 - 3.658 - 4.835 - 5.250 - 5.486 - 5.500 - 6.000 - 6.096 - 6.350 - 6.500 - 7.000

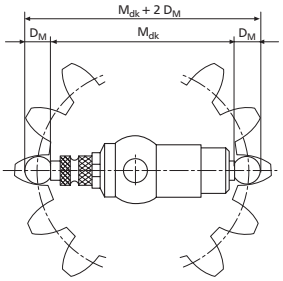
Accessories

Order no.	g	Product name	Product type
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4372030		Lifting knob	954
4470851	M6 x 0,75	Standard measuring instrument holder	844 Kg
4470070	M6 x 0,75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4470806		Expanding pin, steel	844 Kn6
4470808		Expanding pin, steel	844 Kn7

1003

1004

Measuring Head MaraMeter 844 z1 / 844 z2



Application:

- For diametrical two ball measurement MdK, to obtain the pitch diameter and conical form of internal gears in any position and at any depth

- Maximum wear resistance due to carbide ball anvils
- Constant measuring force due to built-in spring thus eliminating user influence
- Anvils, measuring heads, holder, spacer (intermediate piece) and depth extensions form a very comprehensive modular system which can rapidly be converted to measure further gear sizes
- **When ordering please state the required ball diameter**

Technical Data

Order no.	Product type	Measuring range	Dimension over balls MdK	Error limit G_e	Repeatability f_w
		mm	mm	µm	µm
4485000	844 z1	23.5 –26.5	26 –130.5	6	1
4485001	844 z2	46 –49	48.5 –333	6	1

Table (Sizes in mm)
0.500 - 0.551 - 0.620 - 0.623 - 0.630 - 0.722 - 0.862 - 0.895 - 0.965 - 1.100 - 1.118 - 1.125 - 1.250
1.350 - 1.372 - 1.385 - 1.524 - 1.540 - 1.600 - 1.650 - 1.700 - 1.750 - 1.782 - 1.800 - 1.829 - 1.900
2.032 - 2.250 - 2.284 - 2.386 - 2.438 - 2.667 - 2.704 - 2.713 - 2.721 - 2.743 - 2.750 - 3.048 - 3.250
3.400 - 3.658 - 4.835 - 5.250 - 5.486 - 5.500 - 6.000 - 6.096 - 6.350 - 6.500 - 7.000

Measuring Head MaraMeter 844 z1 / 844 z2

Accessories

Order no.	g	Product name	Product type
4334000		Millimess 1 µm, ± 50 µm	1003
4333000		Millimess 5 µm, ± 130 µm	1004
4488300		Floating Ball Anvil with carbide ball, Ball diameter 1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	844 z3
4488301		Floating Ball Anvil with carbide ball, Ball diameter acc. to table (0,5–7,0mm)	844 z3
4488302		Floating Ball Anvil with carbide ball, Ball diameter 5,0 mm, 7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	844 z3
4488320		Ball Anvils with carbide ball, Ball diameter 1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	844 z5
4488321		Ball Anvils with carbide ball, Ball diameter acc. to table (0,5–7,0mm)	844 z5
4488322		Ball Anvils with carbide ball, Ball diameter 7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	844 z5
4488330		Ball Anvils with carbide ball, Ball diameter 1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	844 z6
4488331		Ball Anvils with carbide ball, Ball diameter acc. to table (0,5–7,0mm)	844 z6
4488332		Ball Anvils with carbide ball, Ball diameter 7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	844 z6
4488340		Ball Anvils with carbide ball, Ball diameter 1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	844 z7
4488341		Ball Anvils with carbide ball, Ball diameter acc. to table (0,5–7,0mm)	844 z7
4488342		Ball Anvils with carbide ball, Ball diameter 7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	844 z7
4488350		Ball Anvils with carbide ball, Ball diameter 1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	844 z8
4488351		Ball Anvils with carbide ball, Ball diameter acc. to table (0,5–7,0mm)	844 z8
4488352		Ball Anvils with carbide ball, Ball diameter 7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	844 z8
4488360		Ball Anvils with carbide ball, Ball diameter 1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	844 z15
4488361		Ball Anvils with carbide ball, Ball diameter acc. to table (0,5–7,0mm)	844 z15
4488362		Ball Anvils with carbide ball, Ball diameter 7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	844 z15
4486501		Spacer (intermediate piece), 10 mm	844 z9
4486502		Spacer (intermediate piece), 20 mm	844 z10
4486503		Spacer (intermediate piece), 40 mm	844 z11
4486504		Spacer (intermediate piece), 80 mm	844 z12
4470851	M6 x 0,75	Standard measuring instrument holder	844 Kg
4470070	M6 x 0,75	Extensions, D = 8 mm, L = 64 mm	844 Kv
4488310		Floating Ball Anvil with carbide ball, Ball diameter 1,0 mm, 1,5 mm, 2,0 mm, 2,5 mm, 3,0 mm, 3,5 mm, 4,0 mm, 4,5 mm, 5,0 mm	844 z4
4488311		Floating Ball Anvil with carbide ball, Ball diameter acc. to table (0,5–7,0mm)	844 z4
4488312		Floating Ball Anvil with carbide ball, Ball diameter 7,5 mm, 8,0 mm, 8,5 mm, 9,0 mm, 9,5 mm, 10,0 mm	844 z4
4486505		Spacer (intermediate piece), 100 mm	844 z13

1003

1004

DO YOU HAVE DIVERSE MEASURING TASKS?
MULTIMAR MASTERS THEM WITH FLYING COLORS.

Regardless of whether gears, threads, cones or grooves are to be measured; the versatility of Multimar Universal Measuring Instruments combined with a broad range of accessories, ensures a perfect solution for nearly all your internal and external measuring requirements.

Multimar. Universal Measuring Instruments

Multimar 25 EWR 474
Digital universal calipers

Overview
Multimar 844 T and Accessoires 476

Multimar 844 T 480
Universal Measuring Instrument

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Mounting attachments

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Shoulder Anvils

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Multimar 844 Te 490
Measuring Arms

Multimar 844 Tp 491
Anvils for Measuring Arms

Multimar 844 Ts 492
Measuring Anvils

Multimar 844 Tk 495
Ball Anvils

Multimar 844 Ty 497
Holder for Measuring Rollers

Multimar 36 B 499
Indicator Gages for Internal (i.D) and External (O.D.) Measurments

Digital universal calipers Multimar 25 EWR

Application:

For measuring:
- Outside and inside diameters
- Centering shoulders
- Narrow collars
- External and internal tapers
- Dovetails
- Grooves
- Distances between hole centers

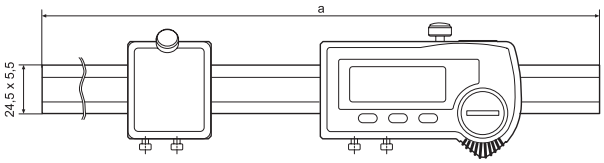
Functions:
- ON/OFF
- AUTO-ON / OFF
- RESET (set display to zero)
- mm/inch
- PRESET (for entering a numerical value)
- LOCK function (key lock)
- DATA (Data transmission via connection cable)

- Interchangeable measuring arms, contact blocks and stop elements (optional accessories) for easy adaptation to individual measuring tasks
- The digital display is always in the operator's line of vision due to the patented mounting fixture of the measuring elements provided on the upper and lower longitudinal face of the arm holders
- Application range can be extended by turning the measuring arms
- The two arm holders can be moved along the rail, providing a well-balanced weight distribution, even with small dimensions
- Slide and rail are made of hardened stainless steel
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Data interface:** USB, Digimatic, Opto RS232C, Wireless
- **Energy supply:** Battery life approx. 3 years
- **IP protection category:** IP 65
- **Scope of delivery:** Battery, Instruction manual, Mounting and resting blocks, Wooden case, without arms/attachments and anvils

Technical Data

Order no.		4119000	4119001	4119002	4119003
Product type		25 EWR			
Application range outside	**mm**	0 –300	0 –600	0 –1000	0 –1250
Resolution	**mm/inch**	0.01 / 0.0005			
Error limit	**mm**	0.03		0.04	

Order no.	a
	mm
4119000	480
4119001	790
4119002	1200
4119003	1450

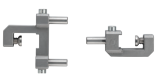


Accessories

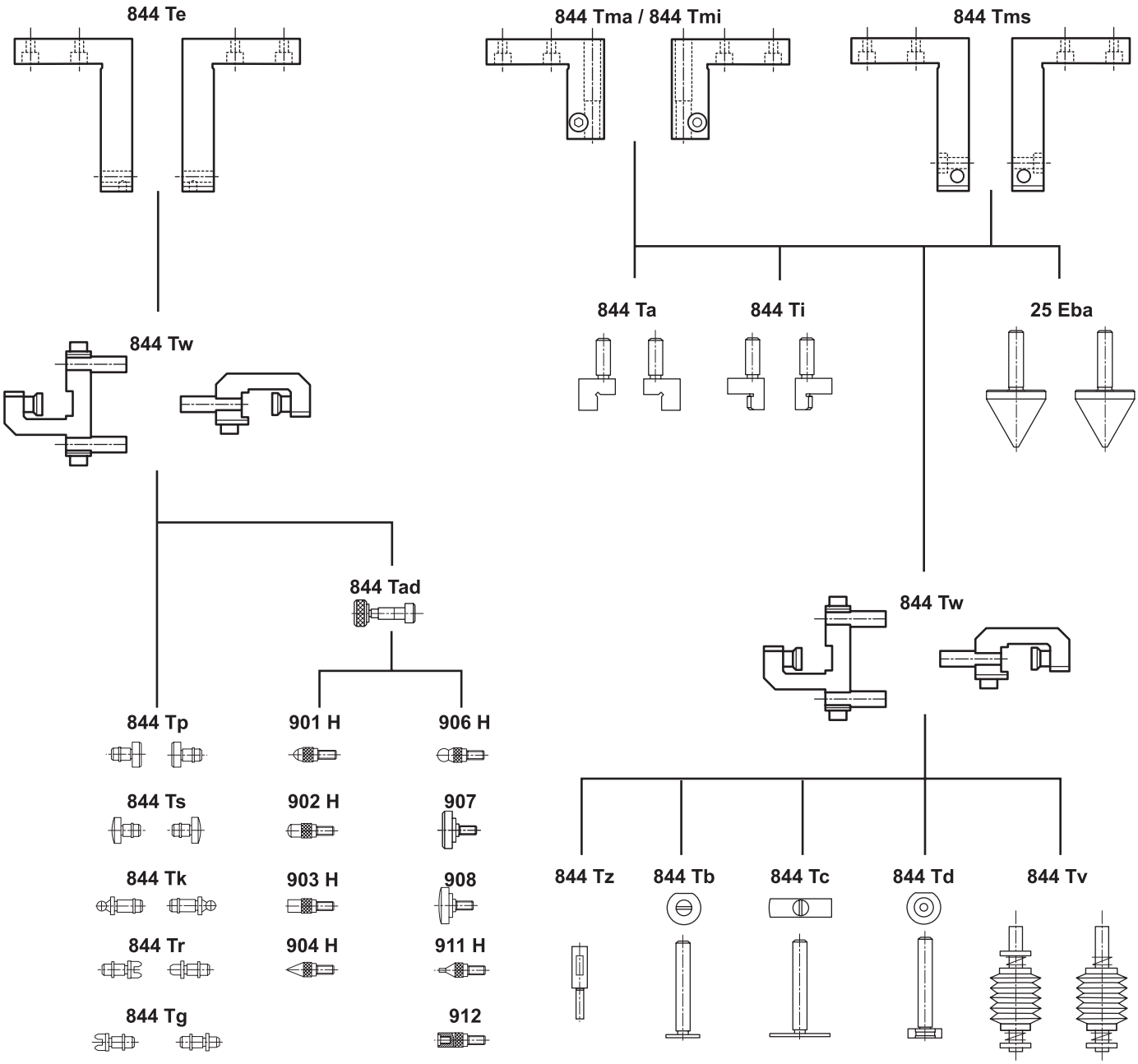
Order no.	Product name	Quantity unit	Product type
4102520	Battery 3 V, CR 2032		
4102915	Digimatic data cable (2 m)		16 EWd
4102410	Data Connection Cable RS232C (2 m)		16 EXr
4102357	Data Connection Cable USB (2 m)		16 EXu
4102231	Transmitter for e-Stick		16 EWe
4118520	Setting gage		25 Eel
4503030	Mounting attachments	Pair	844 Tma
4503031	Mounting attachments	Pair	844 Tmi
4503024	Measuring Arms, 25 mm	Pair	844 Te
4503025	Measuring Arms, 35 mm	Pair	844 Te
4503026	Measuring Arms, 70 mm	Pair	844 Te
4503027	Measuring Arms, 100 mm	Pair	844 Te
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	Pair	844 Tw
4119010	Measuring tips for drill hole intervals, Ø 2–20 mm		25 Eba
4119011	Measuring tips for drill hole intervals, Ø 10–40 mm		25 Eba
4503020	Case for accessories		844 Tzb

16 EWe

844 Tma



844 Tw


844 Te
844 Tma / 844 Tmi
844 Tms
844 Ta
844 Ti
25 Eba
844 Tw
844 Tad
844 Tp
901 H
906 H
844 Ts
902 H
907
844 Tk
903 H
908
844 Tr
904 H
911 H
844 Tg
912
844 Tw
844 Tz
844 Tb
844 Tc
844 Td
844 Tv

Multimar. Universal Gage 844 T for external and internal dimensions

OVERVIEW

The Universal Gage **Multimar** 844 T is easy to use and versatile; ideal for all your measuring requirements in dimensional metrology.

Applications

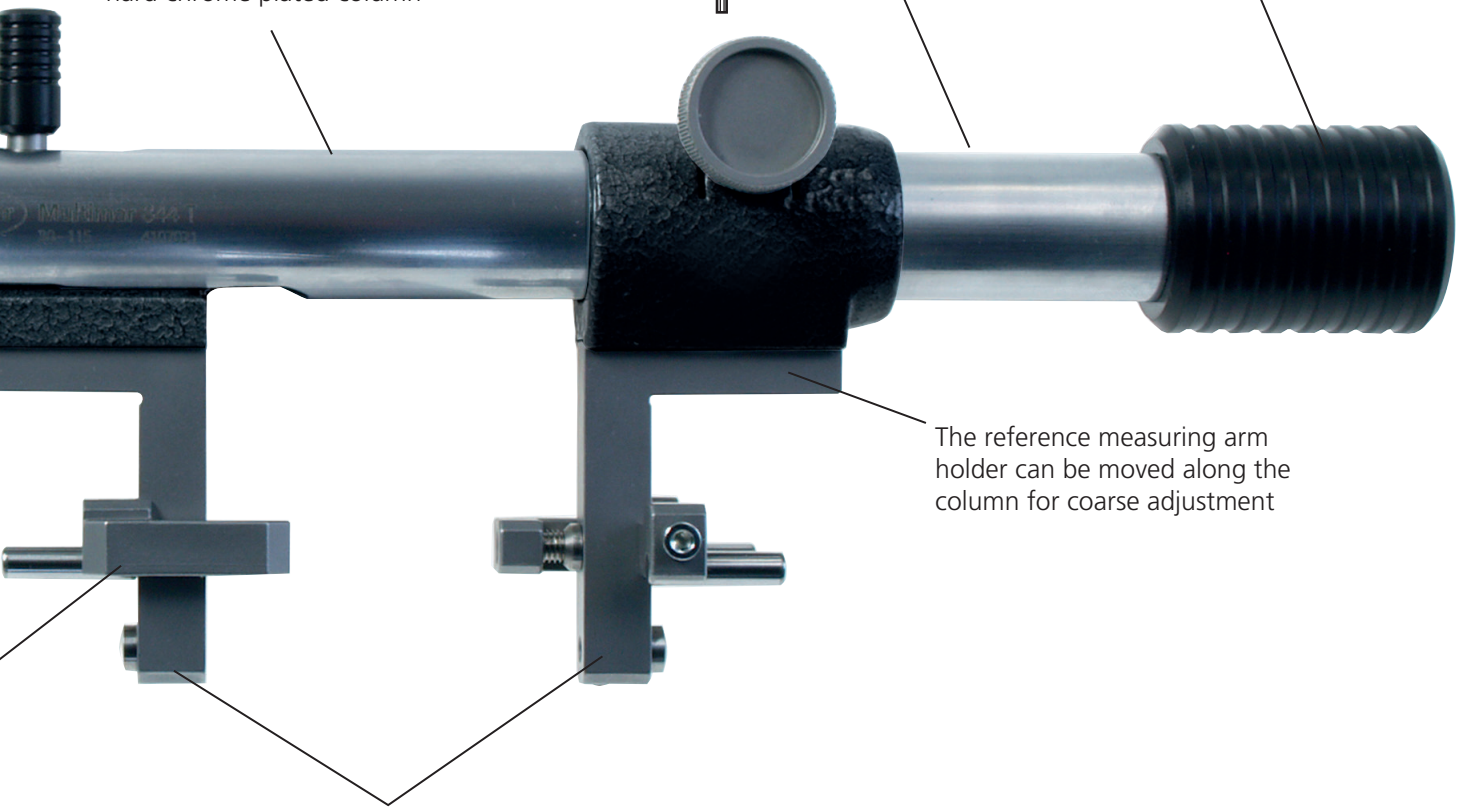
- For measuring:
  - External and internal dimensions
  - External and internal threads
  - Centering shoulders, narrow collars, recesses and grooves
  - External and internal tapers, external and internal tooth profiles/gears, etc.

Constant measuring force due to built-in measuring force spring

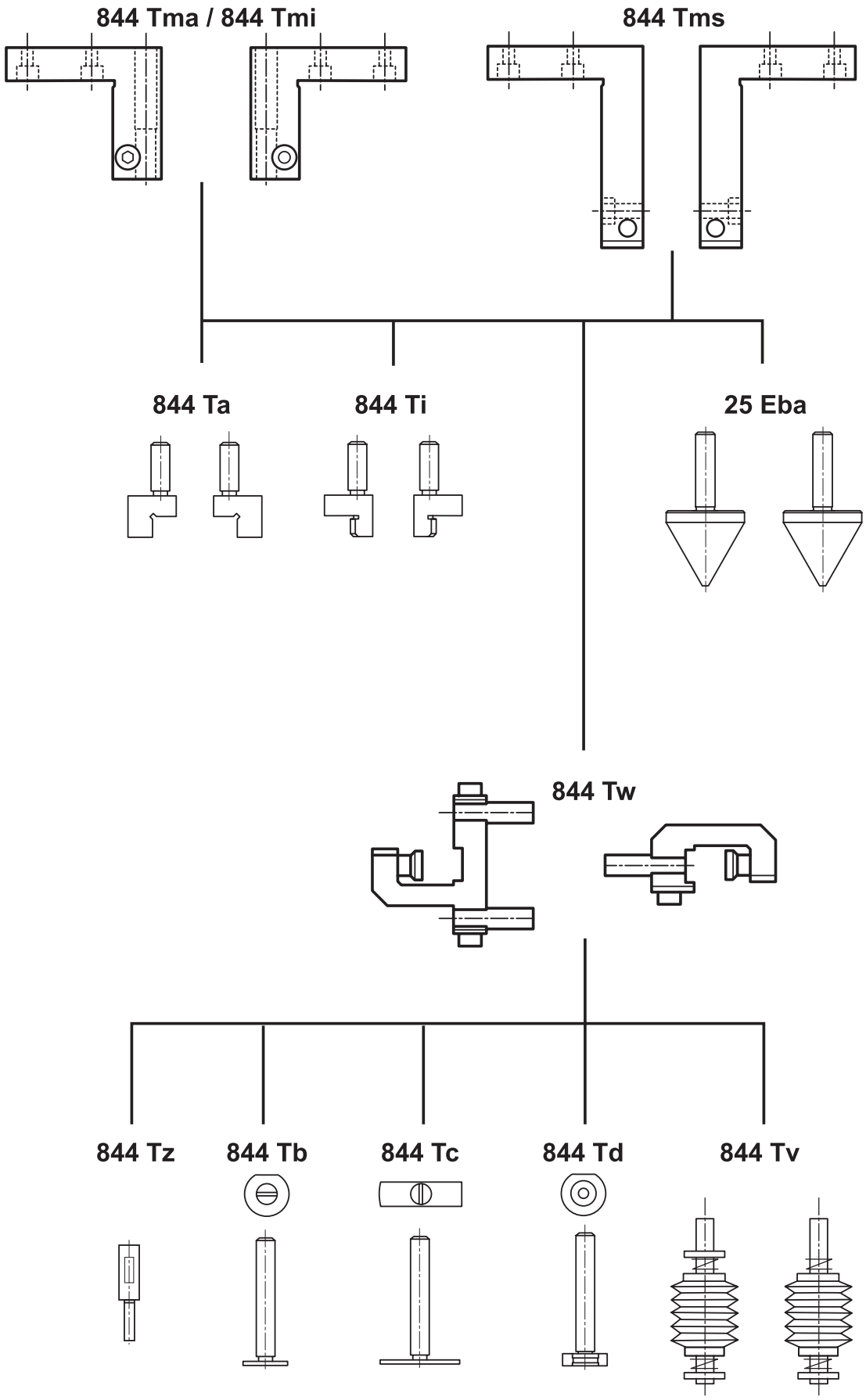
All indicating instruments with an 8 mm mounting shank are applicable

The movable measuring arm holder is mounted on a high precision ball guide to eliminate both play and friction; it also has extreme measuring sensitivity and accuracy due to optimal stability and ease of movement

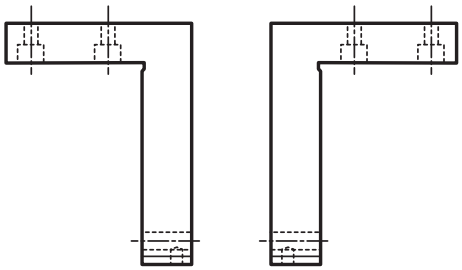
Stop with non-tilting 3-point support for adjusting the measuring depth


The basic Multimar 844 T gage is made of a rugged, ground and hard chrome plated column
The direction of the measuring force can be changed with an Allen key for either external or internal dimensions
Insulated handle, ideal against hand warmth
The reference measuring arm holder can be moved along the column for coarse adjustment
The measuring arms for measurement of external and internal dimensions. By simply reversing the measuring arms, the application range can be extended

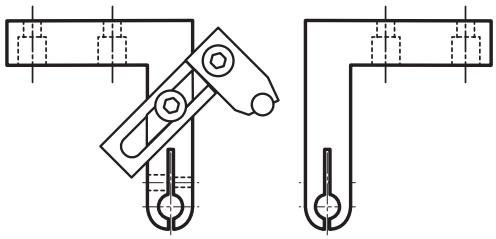
Universal Measuring Instrument Multimar 844 T



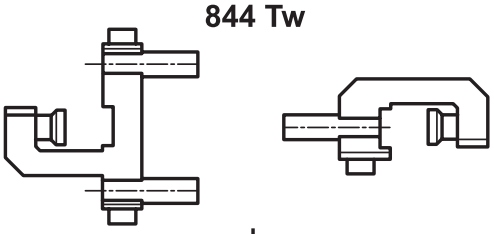
844 Te



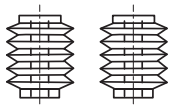
844 Ty



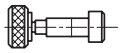
844 Tw



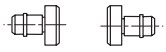
706 Vr



844 Tad



844 Tp



844 Ts

844 Tk

844 Tr

844 Tg

901 H

902 H

903 H

904 H

906 H

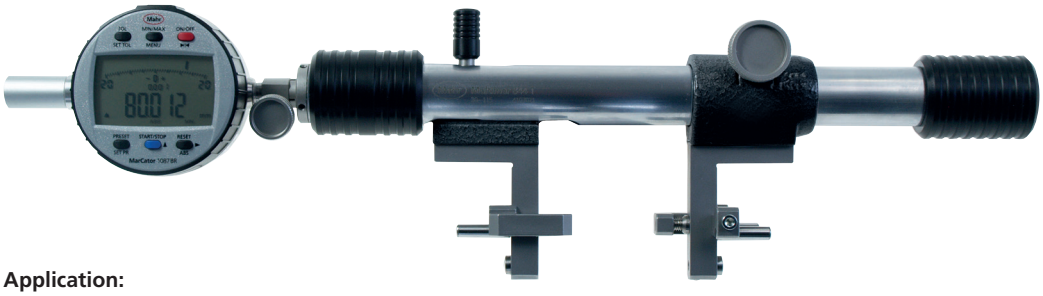
907

908

911 H

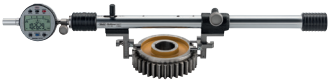
912

Universal Measuring Instrument Multimar 844 T



Application:

- External and internal dimensions
- External and internal threads
- Centering shoulders, narrow collars, recesses and grooves
- External and internal tapers, external and internal tooth profiles / gears, etc.

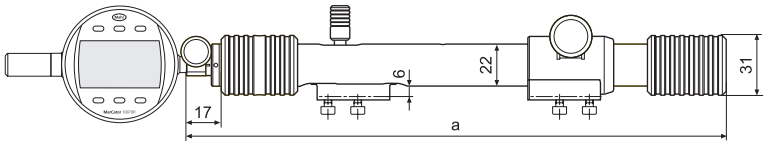


- Interchangeable measuring arms, contact blocks and stop elements (optional accessories) for easy adaptation to individual measuring tasks
- The movable measuring arm carrier is mounted on a high precision ball bearing guide for reduced play and friction
- Results in high measuring sensitivity, accuracy 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
- **Scope of delivery:** Instruction manual, Mounting and resting blocks, Wooden case, excludes indicator, without arms/attachments and anvils

Technical Data

Order no.		4503001	4503002	4503003	4503004	4503005	4503006	4503007
Product type		844 T						
Application range outside	mm	0 –85	80 –235	230 –585	580 –985	970 –1470	1470 –1970	1970 –2470
Application range inside	mm	30 –115	110 –265	260 –615	610 –1015	1000 –1500	1500 –2000	2000 –2500
Measuring force	N	5				10		
Probe path	mm	12						
Product weight	kg	0.78	1.01	1.59	2.22	2.52	2.68	2.86

Order no.	a
	mm
4503001	280
4503002	430
4503003	740
4503004	1140
4503005	1680
4503006	2180
4503007	2680



Universal Measuring Instrument Multimar 844 T

Accessories

Order no.	Product name	Quantity unit	Product type
4311000	Precision Dial Indicator, 0.01 mm, 10 mm		810 S
4333000	Millimess 5 µm, ± 130 µm		1004
4332000	Millimess 0.01 mm, ±0.25 mm		1010
4337662	Digital Indicator, 0.0005 mm, 12.5 mm		1087 BR
4337664	Digital Indicator, 0.0005 mm, 12.5 mm		1087 BRi
4503030	Mounting attachments	Pair	844 Tma
4503031	Mounting attachments	Pair	844 Tmi
4503024	Measuring Arms, 25 mm	Pair	844 Te
4503025	Measuring Arms, 35 mm	Pair	844 Te
4503026	Measuring Arms, 70 mm	Pair	844 Te
4503027	Measuring Arms, 100 mm	Pair	844 Te
4503040	Mounting attachments with 90° offset	Pair	844 Tms
4503041	Mounting attachments with 90° offset	Pair	844 Tms
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	Pair	844 Tw
4503012	Protection for indicator		844 Tsb
4503020	Case for accessories		844 Tzb
4450512	Stand		844 Tf

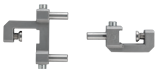
810 S

1004

1087 BR

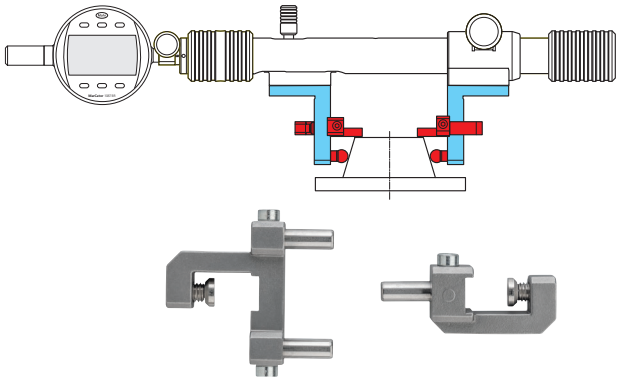
1087 BRi

844 Tma



844 Tw

Depth stops for 844 Tma, 844 Tmi, 844 Te Multimar 844 Tw



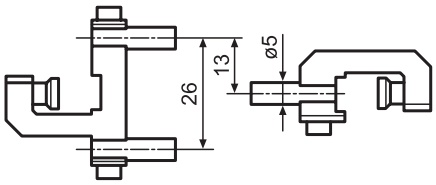
- Stops with stall protected 3-point support
- Hardened stop pins
- Interchangeable and adjustable

Application:

- For adjustment of the measuring depth in horizontal measuring position
- Precise stops in one plane for repeatable measurements
- To be mounted on 844 Tma, 844 Tmi, 844 Te
- For easy setting of the measuring depth, a mm scale is engraved on the measuring arms 844 Tma, 844 Tmi and 844 Te
- For percise stetting of the measuring depth (i.e. for taper measurements) gage blocks can be used

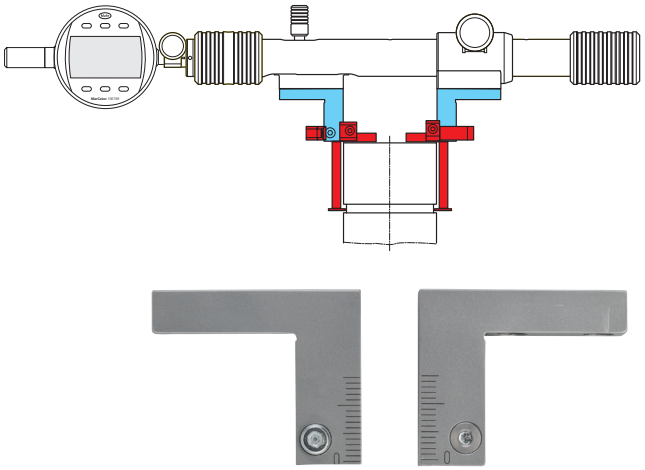
Technical Data

Order no.	Quantity unit	Product type
4503109	Pair	844 Tw



Mounting attachments Multimar 844 Tma / 844 Tmi

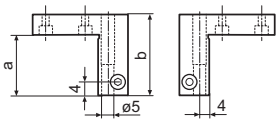
- For outside- (844 Tma) and inside diameters(844 Tmi)
- Stainless steel
- Lateral mm scale for easy positioning and adjustment of measuring limit stops
- Reversible measuring arms on measuring arm holders to increase the measuring range
- With ø 5 mm mounting bore for inserting interchangeable 844 Ta, 844 Ti, 844 Tb, 844 Tc, 844 Td, 844 Tz and 844 Tv measuring anvils



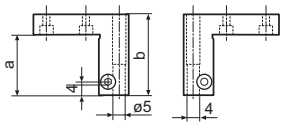
Technical Data

Order no.	Mounting hole	Quantity unit	Product type
	mm		
4503030	5	Pair	844 Tma
4503031	5	Pair	844 Tmi

Order no.	a	b	Mounting hole
	mm	mm	mm
4503030	24	32	5
4503031	24	32	5



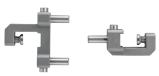
844 Tmi



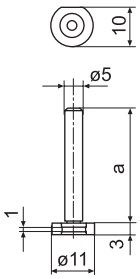
844 Tma

Accessories

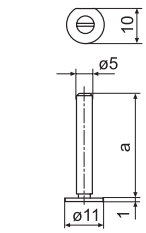
Order no.	Product name	Quantity unit	Product type
4500050	Shoulder Anvils, flat, hardened steel	Pair	844 Ta
4500055	Shoulder Anvils, spherical, hardened steel	Pair	844 Ti
4503015	Measuring anvils with measuring blades, Platelet diameter 11 mm, Adjustment range 0 –20 mm	Piece	844 Tb
4503016	Measuring anvils with measuring blades, Platelet diameter 11 mm, Adjustment range 20 –40 mm	Piece	844 Tb
4503017	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 0 –20 mm	Piece	844 Td
4503018	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 20 –40 mm	Piece	844 Td
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	Pair	844 Tw
4503114	Measuring anvils with measuring blades, Platelet length 20 mm, Adjustment range 0 –20 mm	Piece	844 Tc
4503115	Measuring anvils with measuring blades, Platelet length 20 mm, Adjustment range 20 –40 mm	Piece	844 Tc



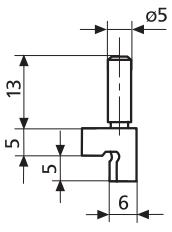
844 Tw



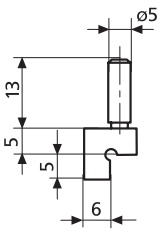
844 Td



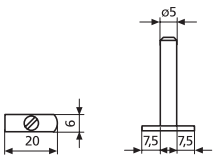
844 Tb



844 Ti



844 Ta



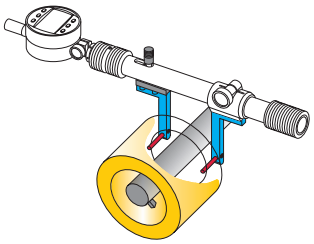
844 Tc

Mounting attachments with 90° offset Multimar 844 Tms

- For major and minor diameters
- Stainless steel
- Reversible measuring arms on measuring arm holders to increase the measuring range
- With ø 5 mm holder for inserting interchangeable 844 Ta, 844 Ti, 844 Tb, 844 Tc, 844 Td, 844 Tz and 844 Tv measuring anvils

Application:

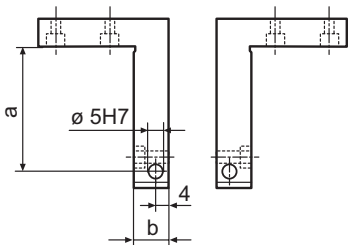
- Measure outer and inner dimensions with side probes
- in flat recesses
- in holes with center hub
- in holes with retracted drill rod



Technical Data

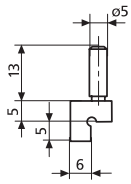
Order no.	Mounting hole	Throat depth	Quantity unit	Product type
	mm	mm		
4503040	5	50	Pair	844 Tms
4503041	5	100	Pair	844 Tms

Order no.	b	Mounting hole
	mm	mm
4503040	12	5
4503041	12	5

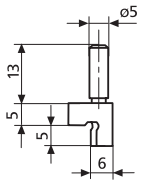


Accessories

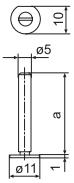
Order no.	Product name	Quantity unit	Product type
4500050	Shoulder Anvils, flat, hardened steel	Pair	844 Ta
4500055	Shoulder Anvils, spherical, hardened steel	Pair	844 Ti
4503015	Measuring anvils with measuring blades, Platelet diameter 11 mm, Adjustment range 0 –20 mm	Piece	844 Tb
4503016	Measuring anvils with measuring blades, Platelet diameter 11 mm, Adjustment range 20 –40 mm	Piece	844 Tb
4503017	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 0 –20 mm	Piece	844 Td
4503018	Anvils with round measuring faces, Diameter 11 mm, Adjustment range 20 –40 mm	Piece	844 Td
4503114	Measuring anvils with measuring blades, Platelet length 20 mm, Adjustment range 0 –20 mm	Piece	844 Tc
4503115	Measuring anvils with measuring blades, Platelet length 20 mm, Adjustment range 20 –40 mm	Piece	844 Tc
5113123	Measuring ball insert, Ø = 6 mm, Carbide	Piece	TR5C



844 Ta

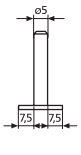


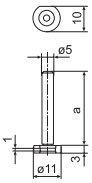
844 Ti



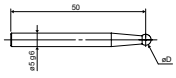
844 Tb

844 Tc





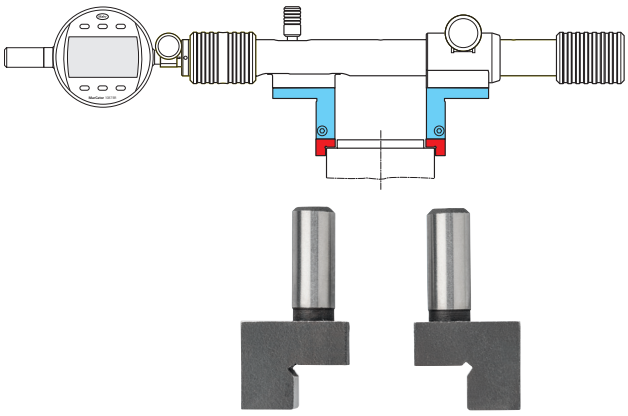
844 Td



TR5C

Shoulder Anvils Multimar 844 Ta

- With cylindrical mounting shaft to attach into the mounting attachments 844 Tma / 844 Tmi
- Flat; for external diameters
- Made of hardened steel



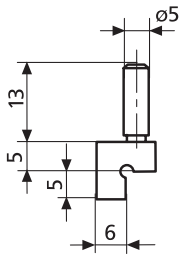
Application:

- For measuring narrow collars such as centering shoulders and other similar measuring tasks

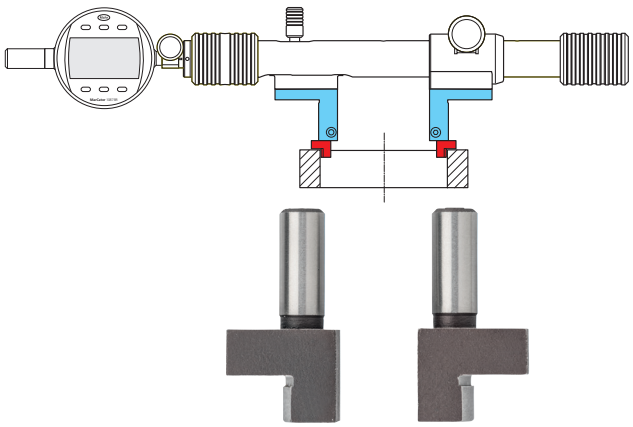
Technical Data

Order no.	Mounting shaft diameter	Quantity unit	Product type
	mm		
4500050	5	Pair	844 Ta

Order no.	Mounting-ø
	mm
4500050	5



Shoulder Anvils Multimar 844 Ti



- With cylindrical mounting shaft to attach into the mounting attachments 844 Tma / 844 Tmi
- Semi-cylindrical, for internal diameters
- Made of hardened steel

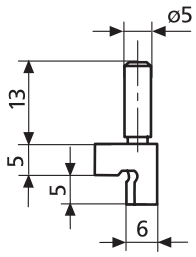
Application:

- For measuring narrow collars such as centering shoulders and other similar measuring tasks

Technical Data

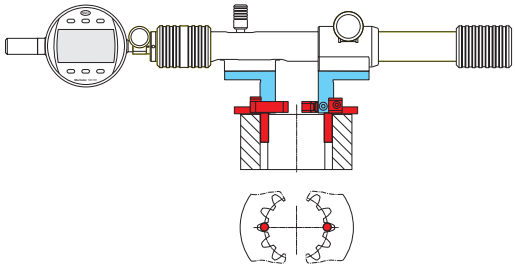
Order no.	Mounting shaft diameter	Quantity unit	Product type
	mm		
4500055	5	Pair	844 Ti

Order no.	Mounting-ø
	mm
4500055	5



Cylindrical Measuring Pins Multimar 844 Tz

- With cylindrical holding shaft for fixing in 844 Tma / 844 Tmi mounting attachments
- Made of hardened steel



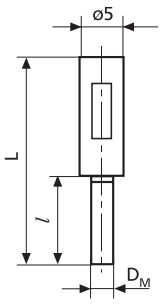
Application:

Determination of the dimension over 2 pins for inner and outer gears

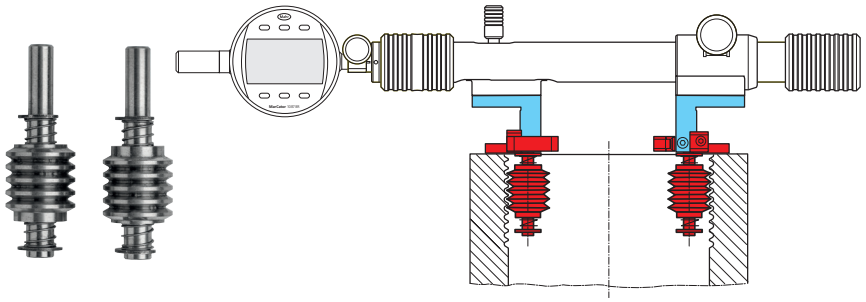
Technical Data

Order no.	D	Mounting shaft diameter	Manufacturing tolerance +/–	Quantity unit	Product type
	mm	mm	µm		
4500500	1	5	2	Pair	844 Tz
4500501	1.25	5	2	Pair	844 Tz
4500502	1.5	5	2	Pair	844 Tz
4500503	1.75	5	2	Pair	844 Tz
4500504	2	5	2	Pair	844 Tz
4500506	2.5	5	2	Pair	844 Tz
4500507	3	5	2	Pair	844 Tz
4500508	3.5	5	2	Pair	844 Tz
4500509	4	5	2	Pair	844 Tz
4500510	4.5	5	2	Pair	844 Tz
4500511	5	5	2	Pair	844 Tz
4500512	5.5	5	2	Pair	844 Tz
4500513	6	5	2	Pair	844 Tz

Order no.	D	Dimension L	l	Mounting-ø
	mm	mm	mm	mm
4500500	1	19.5	6	5
4500501	1.25	19.5	6	5
4500502	1.5	19.5	6	5
4500503	1.75	23.5	10	5
4500504	2	23.5	10	5
4500506	2.5	23.5	10	5
4500507	3	28.5	15	5
4500508	3.5	28.5	15	5
4500509	4	28.5	15	5
4500510	4.5	33.5	20	5
4500511	5	33.5	20	5
4500512	5.5	33.5	20	5
4500513	6	33.5	20	5



Multimar 844 Tv. Interchangeable measuring rollers



- With cylindrical holding shaft for fixing in 844 Tma / 844 Tmi mounting attachments
- Made of hardened steel
- Each with two springs to aid insertion in correct thread turn
- Contact rollers for other thread pitches (metric 60°) as well as for Whitworth and UST thread on request

Application:

Determining the pitch diameter of outer and inner threads

Technical Data

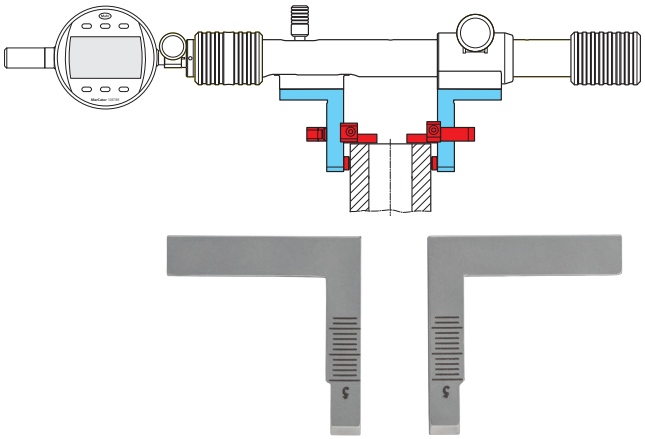
Order no.	Flank angle	Type of thread	Thread parameter	Thread pitch in TPI	Thread pitch in mm	d	Quantity unit	Product type
				TPI	mm	mm		
4501705	60°	Metric thread	Pitch diameter		0,5	5	Pair	**844 Tv**
4501706	60°	Metric thread	Pitch diameter		0,6	5	Pair	**844 Tv**
4501707	60°	Metric thread	Pitch diameter		0,7	5	Pair	**844 Tv**
4501708	60°	Metric thread	Pitch diameter		0,75	5	Pair	**844 Tv**
4501709	60°	Metric thread	Pitch diameter		0,8	5	Pair	**844 Tv**
4501710	60°	Metric thread	Pitch diameter		0,9	5	Pair	**844 Tv**
4501711	60°	Metric thread	Pitch diameter		1	5	Pair	**844 Tv**
4501712	60°	Metric thread	Pitch diameter		1,25	5	Pair	**844 Tv**
4501713	60°	Metric thread	Pitch diameter		1,5	5	Pair	**844 Tv**
4501714	60°	Metric thread	Pitch diameter		1,75	5	Pair	**844 Tv**
4501715	60°	Metric thread	Pitch diameter		2	5	Pair	**844 Tv**
4501716	60°	Metric thread	Pitch diameter		2,5	5	Pair	**844 Tv**
4501717	60°	Metric thread	Pitch diameter		3	5	Pair	**844 Tv**
4501718	60°	Metric thread	Pitch diameter		3,5	5	Pair	**844 Tv**
4501719	60°	Metric thread	Pitch diameter		4	5	Pair	**844 Tv**
4501720	60°	Metric thread	Pitch diameter		4,5	5	Pair	**844 Tv**
4501721	60°	Metric thread	Pitch diameter		5	5	Pair	**844 Tv**
4501722	60°	Metric thread	Pitch diameter		5,5	5	Pair	**844 Tv**
4501723	60°	Metric thread	Pitch diameter		6	5	Pair	**844 Tv**
4501750	55°	Whitworth thread	Pitch diameter	6		5	Pair	**844 Tv**
4501751	55°	Whitworth thread	Pitch diameter	7		5	Pair	**844 Tv**
4501752	55°	Whitworth thread	Pitch diameter	8		5	Pair	**844 Tv**
4501753	55°	Whitworth thread	Pitch diameter	9		5	Pair	**844 Tv**
4501754	55°	Whitworth thread	Pitch diameter	10		5	Pair	**844 Tv**
4501755	55°	Whitworth thread	Pitch diameter	11		5	Pair	**844 Tv**
4501756	55°	Whitworth thread	Pitch diameter	12		5	Pair	**844 Tv**
4501757	55°	Whitworth thread	Pitch diameter	13		5	Pair	**844 Tv**
4501758	55°	Whitworth thread	Pitch diameter	14		5	Pair	**844 Tv**
4501759	55°	Whitworth thread	Pitch diameter	16		5	Pair	**844 Tv**
4501760	55°	Whitworth thread	Pitch diameter	18		5	Pair	**844 Tv**
4501761	55°	Whitworth thread	Pitch diameter	19		5	Pair	**844 Tv**
4501762	55°	Whitworth thread	Pitch diameter	20		5	Pair	**844 Tv**
4501763	55°	Whitworth thread	Pitch diameter	22		5	Pair	**844 Tv**

Multimar 844 Tv. Interchangeable measuring rollers

Technical Data

Order no.	Flank angle	Type of thread	Thread parameter	Thread pitch in TPI	Thread pitch in mm	d	Quantity unit	Product type
				TPI	mm	mm		
4501764	55°	Whitworth thread	Pitch diameter	24		5	Pair	**844 Tv**
4501765	55°	Whitworth thread	Pitch diameter	28		5	Pair	**844 Tv**
4501766	55°	Whitworth thread	Pitch diameter	30		5	Pair	**844 Tv**
4501767	55°	Whitworth thread	Pitch diameter	32		5	Pair	**844 Tv**
4501768	55°	Whitworth thread	Pitch diameter	36		5	Pair	**844 Tv**
4501769	55°	Whitworth thread	Pitch diameter	40		5	Pair	**844 Tv**
4501800	60°	UST Thread	Pitch diameter	6		5	Pair	**844 Tv**
4501801	60°	UST Thread	Pitch diameter	7		5	Pair	**844 Tv**
4501802	60°	UST Thread	Pitch diameter	8		5	Pair	**844 Tv**
4501803	60°	UST Thread	Pitch diameter	9		5	Pair	**844 Tv**
4501804	60°	UST Thread	Pitch diameter	10		5	Pair	**844 Tv**
4501805	60°	UST Thread	Pitch diameter	11		5	Pair	**844 Tv**
4501806	60°	UST Thread	Pitch diameter	12		5	Pair	**844 Tv**
4501807	60°	UST Thread	Pitch diameter	13		5	Pair	**844 Tv**
4501808	60°	UST Thread	Pitch diameter	14		5	Pair	**844 Tv**
4501809	60°	UST Thread	Pitch diameter	16		5	Pair	**844 Tv**
4501810	60°	UST Thread	Pitch diameter	18		5	Pair	**844 Tv**
4501811	60°	UST Thread	Pitch diameter	19		5	Pair	**844 Tv**
4501812	60°	UST Thread	Pitch diameter	20		5	Pair	**844 Tv**
4501813	60°	UST Thread	Pitch diameter	22		5	Pair	**844 Tv**
4501814	60°	UST Thread	Pitch diameter	24		5	Pair	**844 Tv**
4501815	60°	UST Thread	Pitch diameter	28		5	Pair	**844 Tv**
4501816	60°	UST Thread	Pitch diameter	30		5	Pair	**844 Tv**
4501817	60°	UST Thread	Pitch diameter	32		5	Pair	**844 Tv**
4501818	60°	UST Thread	Pitch diameter	36		5	Pair	**844 Tv**
4501819	60°	UST Thread	Pitch diameter	40		5	Pair	**844 Tv**

Measuring Arms Multimar 844 Te

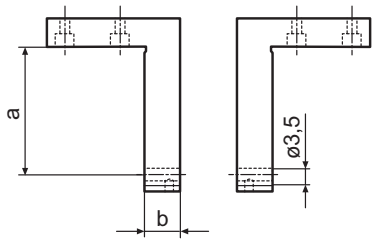


- For major and minor diameters
- Stainless steel
- Lateral mm scale for easy positioning and adjustment of measuring limit stops
- Reversible measuring arms on measuring arm holders to increase the measuring range
- 3.5 mm diameter holder for inserting interchangeable measuring anvils 844 Tp, 844 Ts, 844 Tk, 844 Tr and 844 Tg

Technical Data

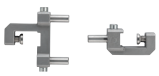
Order no.	Mounting hole	Throat depth	Quantity unit	Product type
	mm	mm		
4503024	3.5	25	Pair	844 Te
4503025	3.5	35	Pair	844 Te
4503026	3.5	70	Pair	844 Te
4503027	3.5	100	Pair	844 Te

Order no.	a	Mounting hole
	mm	mm
4503024	6	3.5
4503025	10	3.5
4503026	10	3.5
4503027	12	3.5

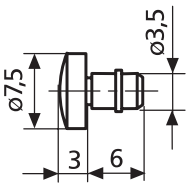


Accessories

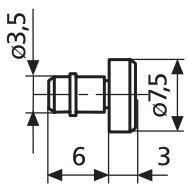
Order no.	Product name	Quantity unit	Product type
4500040	Anvils for Measuring Arms, flat, hardened steel	Piece	844 Tp
4500045	Measuring Anvils, spherical, hardened steel	Piece	844 Ts
4503080	Adapter Ø 3,5 - M2,5 for measuring arms 844 Te	Piece	844 Tad
4503109	Depth stops for 844 Tma, 844 Tmi, 844 Te	Pair	844 Tw



844 Tw



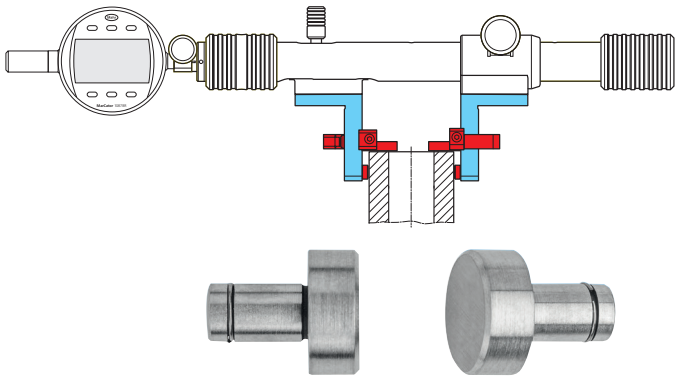
844 Ts



844 Tp

Anvils for Measuring Arms Multimar 844 Tp

- Hardened steel
- With cylindrical mounting shank and retainer ring which allows free rotation inside the bore of Measuring Arms 844 Te.



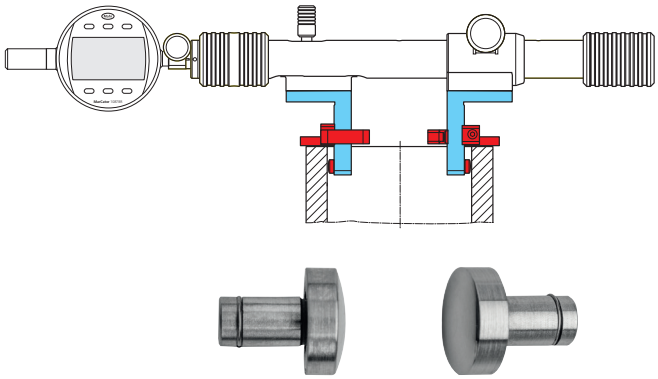
Application:

- Flat; for external diameters, distance and widths

Technical Data

Order no.	Mounting shaft diameter	Quantity unit	Product type
	mm		
4500040	3.5	Piece	844 Tp

Measuring Anvils Multimar 844 Ts



- Hardened steel
- With cylindrical mounting shank and retainer ring which allows free rotation inside the bore of Measuring Arms 844 Te.

Application:

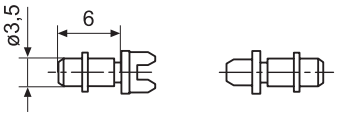
- Spherical; for internal diameters

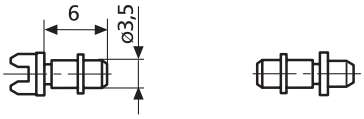
Technical Data

Order no.	Mounting shaft diameter	Quantity unit	Product type
	mm		
4500045	3.5	Piece	844 Ts

Multimar Thread anvils

- For pitch diameters
- With cylindrical mounting shank and retainer ring which ensures locking while permitting rotation in bore
- Hardened, wear-resistant special steel





Accessories

Thread pitch in mm	Taper Order no.	V-anvil Order no.	Blade Order no.
Pitch diameter, external thread			
Trapezoid 30°			
1		**4501150**	**4501350**
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**
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**
7 –9		**4501006**	**4501206**
Pitch diameter, internal thread			
Trapezoid 30°			
1	**4501831**	**4501830**	
1,5	**4501833**	**4501832**	
2	**4501835**	**4501834**	
3	**4501837**	**4501836**	
4	**4501839**	**4501838**	
5	**4501841**	**4501840**	
6	**4501843**	**4501842**	
7	**4501845**	**4501844**	
8	**4501847**	**4501846**	
9	**4501849**	**4501848**	
10	**4501851**	**4501830**	
12	**4174981**	**4174961**	
14	**4174982**	**4174962**	
16	**4174983**	**4174963**	
18	**4174984**	**4174964**	
20	**4174985**	**4174965**	

Multimar Thread anvils

Accessories

Thread pitch in mm	Taper Order no.	V-anvil Order no.	Blade Order no.
metric 60°			
0,5 –0,7	**4174600**	**4174300**	
0,7 –1	**4174601**	**4174301**	
1,25 –2	**4174602**	**4174302**	
2 –3,5	**4174603**	**4174303**	
3,5 –5	**4174604**	**4174304**	
5 –7	**4174605**	**4174305**	
7 –9	**4174606**	**4174306**	

Thread pitch in TPI	Taper Order no.	V-anvil Order no.	Blade 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**	

- For pitch diameters
- With cylindrical mounting shank and retainer ring which ensures locking while permitting rotation in bore
- Hardened, wear-resistant special steel

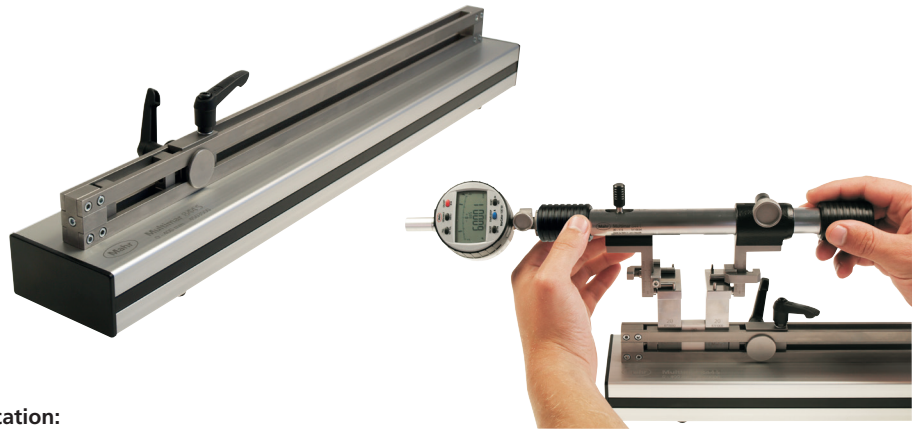
Ball Anvils Multimar

- Measuring ball made of carbide. With cylindrical mounting shank and retainer ring which allows free rotation inside the bore of Measuring Arms 844 Te.
- manufactoring tolerance ball ± 2 µm

Order no.	Dimension H	d
	mm	mm
4502620	3	0.5
4502621	3.1	0.551
4502622	3.1	0.62
4502623	3.1	0.623
4502624	3.1	0.63
4502625	3.2	0.722
4502626	3.4	0.862
4502627	3.4	0.895
4502628	3.5	0.965
4500350	3.5	1
4502629	3.6	1.1
4502630	3.6	1.118
4502631	3.6	1.125
4500351	3.8	1.25
4502632	3.9	1.35
4502633	3.9	1.372
4502634	3.9	1.385
4500352	4	1.5
4502635	4	1.524
4502636	4	1.54
4502637	4.1	1.6
4502638	4.2	1.65
4502639	4.2	1.7
4500353	4.3	1.75
4502640	4.3	1.782
4502641	4.3	1.8
4502642	4.3	1.829
4502643	4.4	1.9
4500354	4.5	2
4502543	4.5	2.032
4502540	4.8	2.25
4502644	4.8	2.284
4502544	4.8	2.3
4502645	4.9	2.386
4502646	4.9	2.438
4500356	5	2.5
4502647	5.2	2.667
4502648	5.2	2.704
4502649	5.2	2.713
4502650	5.2	2.721
4502651	5.2	2.743
4500618	5.3	2.75
4500357	5.5	3

Order no.	Dimension H	d
	mm	mm
4502652	5.5	3.048
4502541	5.8	3.25
4502653	5.9	3.4
4500358	6	3.5
4502654	6.2	3.658
4500359	6.5	4
4500360	7	4.5
4502655	7.3	4.835
4500361	7.5	5
4502656	7.8	5.25
4502657	8	5.486
4500362	8	5.5
4500363	8.5	6
4502658	8.6	6.096
4502545	8.9	6.35
4502542	9	6.5
4502547	9.5	7
4502548	10.5	8
4502549	11.5	9
4502550	12.5	10

Multimar 844 S. Setting device



- Simple handling via clamping element
- Accurate setting of nominal value using gage block combinations
- Instrument setting in horizontal or vertical position (using base 844 Sf)
- Rigid base made of anodized aluminum, for mobile or stationary use in the production or in the inspection room
- **Scope of delivery:** Basic unit 844 S, Instruction manual

Application:

For setting indicating instruments for internal and external dimensions i. e. Multimar 844 T and Marameter 844 N at any dimension by using gage block combinations.

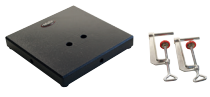
Technical Data

Order no.		4503500	4503501	4503502
Application range internal measurement up to	mm	400	1150	2180
Product type			844 S	

Order no.	device dimensions (LxBxH)
4503500	520 x 80 x 40 mm
4503501	1270 x 80 x 40 mm
4503502	2300 x 80 x 80 mm

Accessories

Order no.	Product description	Product type
4503510	T-shaped gage blocks (20mm) for measuring depth up to 40 mm	844 Sp
4503511	Riser blocks 30mm for extended measuring depths	844 Sph
4474080	Adjustment bridge (70 x 12 mm), for measuring range 18 –250 mm	844 Neb
4474081	Adjustment bridge (165 x 17 mm), for measuring range 18 –400 mm	844 Neb
4470095	Measuring jaw for holder 420 h	844 em
4503512	Fuß für Vertikaleinsatz, inkl. Schrauben und 2 Tischklemmen	844 Sf
4474082	Adjustment bridge (320 x 20 mm), for measuring range 18 –800 mm	844 Neb



844 Sf

844 em

844 Neb

844 Sph

844 Sp

Holder for Measuring Rollers Multimar 844 Ty

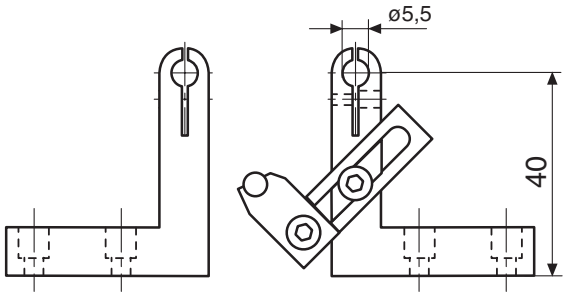
- With location bolts for the Measuring Rollers 706 Vr, plus a stop and stop pin

Application:

Determining the pitch diameter of outer threads

Technical Data

Order no.	Quantity unit	Product type
4502463	Pair	844 Ty



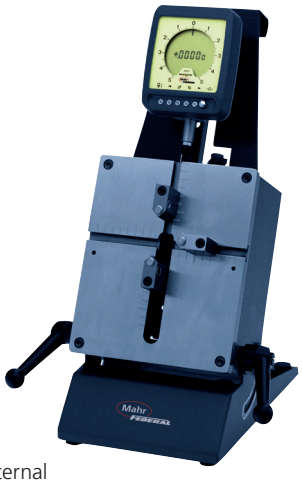
Multimar 844 Ty. Holder for Measuring Rollers

Accessories

Order no.	Product description	Product type
4450512	Stand	844 Tf
4521105	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 0.5 mm	706 Vr
4521106	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 0.6 mm	706 Vr
4521107	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 0.7 mm	706 Vr
4521108	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 0.75 mm	706 Vr
4521109	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 0.8 mm	706 Vr
4521110	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 0.9 mm	706 Vr
4521111	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 1 mm	706 Vr
4521112	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 1.25 mm	706 Vr
4521113	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 1.5 mm	706 Vr
4521114	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 1.75 mm	706 Vr
4521115	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 2 mm	706 Vr
4521116	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 2.5 mm	706 Vr
4521117	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 3 mm	706 Vr
4521118	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 3.5 mm	706 Vr
4521119	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 4 mm	706 Vr
4521120	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 4.5 mm	706 Vr
4521121	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 5 mm	706 Vr
4521122	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 5.5 mm	706 Vr
4521123	Thread Measuring Rollers, Pitch diameter, Metric thread 60, thread ascent 6 mm	706 Vr
4521219	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 40 TPI	706 Vr
4521218	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 36 TPI	706 Vr
4521217	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 32 TPI	706 Vr
4521216	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 30 TPI	706 Vr
4521215	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 28 TPI	706 Vr
4521214	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 24 TPI	706 Vr
4521213	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 22 TPI	706 Vr
4521212	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 20 TPI	706 Vr
4521211	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 19 TPI	706 Vr
4521210	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 18 TPI	706 Vr
4521209	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 16 TPI	706 Vr
4521208	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 14 TPI	706 Vr
4521207	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 13 TPI	706 Vr
4521206	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 12 TPI	706 Vr
4521205	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 11 TPI	706 Vr
4521204	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 10 TPI	706 Vr
4521203	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 9 TPI	706 Vr
4521202	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 8 TPI	706 Vr
4521201	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 7 TPI	706 Vr
4521200	Thread Measuring Rollers, Pitch diameter, Whitworth thread 55, thread ascent 6 TPI	706 Vr
4521319	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 40 TPI	706 Vr
4521318	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 36 TPI	706 Vr
4521317	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 32 TPI	706 Vr
4521316	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 30 TPI	706 Vr
4521315	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 28 TPI	706 Vr
4521314	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 24 TPI	706 Vr
4521313	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 22 TPI	706 Vr
4521312	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 20 TPI	706 Vr
4521311	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 19 TPI	706 Vr
4521310	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 18 TPI	706 Vr
4521309	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 16 TPI	706 Vr
4521308	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 14 TPI	706 Vr
4521307	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 13 TPI	706 Vr
4521306	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 12 TPI	706 Vr
4521305	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 11 TPI	706 Vr
4521303	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 9 TPI	706 Vr
4521302	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 8 TPI	706 Vr
4521301	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 7 TPI	706 Vr
4521300	Thread Measuring Rollers, Pitch diameter, UST Thread 60, thread ascent 6 TPI	706 Vr

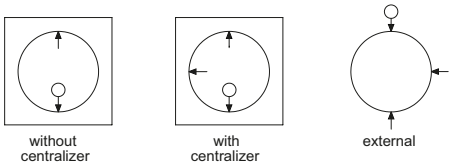
Indicator Gage Multimar EDI–36B / EMD–36B

- Excellent accuracy due to the parallel springs in the probe being frictionless and free of play.
- User friendly: the surface can be inclined between 0° and 90° with respect to the base.
- Adjustable measuring force
- **Data interface:** Digimatic, RS232C, USB
- **Energy supply:** Battery operation
- **Scope of delivery:** Set of jaws JW–9, Instruction manual



Application:

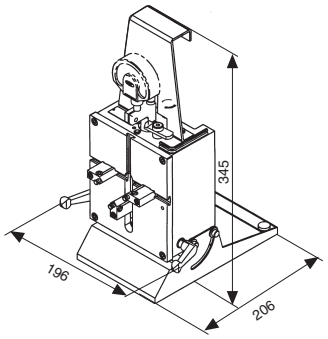
- For measuring internal and external diameters, centering edges, narrow shoulders and recesses.



Technical Data

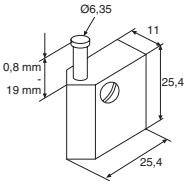
Order no.		2051693	2051695	2051863	2051873	2051864	2051874
Product type		EDI–36B–10	EDI–36B–20	EMD–36B–10	EMD–36B–20	EMD–36B–10D	EMD–36B–20D
Application range outside	mm	6 –127	6 –222	6 –127	6 –222	6 –127	6 –222
Application range outside	inch	.25 –5"	.25 –8.75"	.25 –5"	.25 –8.75"	.25 –5"	.25 –8.75"
Application range inside	mm	19 –89	19 –197	19 –89	19 –197	19 –89	19 –197
Application range inside	inch	.75 –3.5"	.75 –7.75"	.75 –3.5"	.75 –7.75"	.75 –3.5"	.75 –7.75"
Resolution	mm	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02		0.0005, 0.001, 0.005			
Resolution	inch	.00002", .00005", .0001", .0005"					
Measuring force, adjustable	N	0 –35					
Probe path , adjustable	mm	6 –10 mm					
Probe path , adjustable	inch	.25 –.40"					
Indicating instrument (included in delivery)		2034201 µMaxµm II		2033109 Maxµm III		2033111 Maxµm III	

Order no.	Mounting bore
	inch
2051693	.375"
2051695	.375"
2051863	.375"
2051873	.375"
2051864	.375"
2051874	.375"



Accessories

Order no.	Product name	Product type
2003210	Jaw set, Material steel	JW–9
2003211	Jaw Set used with 36B Gage, Made of carbide	JW–58
2003215	Contact for JW–69, Material steel	PS–55
2003216	Contact for JW–58, Made of carbide	PS–226

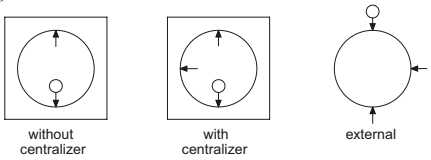


JW–9

Indicator Gage Multimar M36-B10 / M36B–20

Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses.

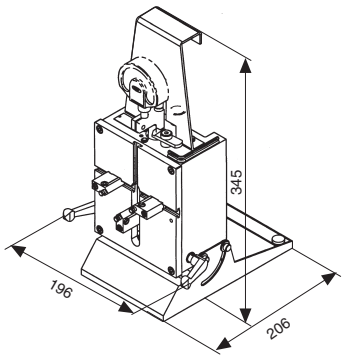


- Excellent accuracy due to parallel springs in the probe being frictionless and free of play.
- Surface can be inclined between 0° and 90° with respect to the base.
- Adjustable measuring force
- **Data interface:** none
- **Scope of delivery:** Instruction manual, Set of jaws JW–9, (JW–69 for M36B)

Technical Data

Order no.		2003200	2003201	2050644	2050648
Product type		M36B–10	M36B–20	36B–10M	36B–20M
Application range outside	**mm**	6 –127	6 –222	6 –127	6 –222
Application range outside	**inch**	.25 –5"	.25 –8.75"	.25 –5"	.25 –8.75"
Application range inside	**mm**	19 –89	19 –197	19 –89	19 –197
Application range inside	**inch**	.75 –3.5"	.75 –7.75"	.75 –3.5"	.75 –7.75"
Graduation value	**mm**			0.002	
Measuring force, adjustable	**N**	0 –35			
Probe path , adjustable	**mm**	6 –10 mm			
Probe path , adjustable	**inch**	.25 –.40"			
Indicating instrument (included in delivery)		NONE		IDS–317 Indicator (Q1I-RC)	IDS–317 Indicator (Q1I-RC)

Order no.	Mounting bore	Mounting hole
	inch	mm
2003200		8
2003201		8
2050644	.375"	
2050648	.375"	

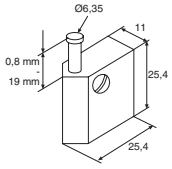


Accessories

Order no.	Product name	Product type
4337662	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BR
4337664	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
2220461	Jaw Set, Made of Steel - for Metric version M36B	JW–69
2225694	Contact Pin for Metric Jaw, Material Steel	PS–276
2003211	Jaw Set used with 36B Gage, Made of carbide	JW–58
2003216	Contact for JW–58, Made of carbide	PS–226

1087 BR

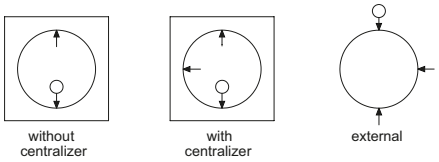
1087 BRi



JW–9

Indicator Gage Multimar 36B–10 / 36B–20

- Excellent accuracy due to parallel springs in the probe being frictionless and free of play.
- Surface can be inclined between 0° and 90° with respect to the base.
- Adjustable measuring force
- **Data interface:** none
- **Scope of delivery:** Set of jaws JW–9, Instruction manual



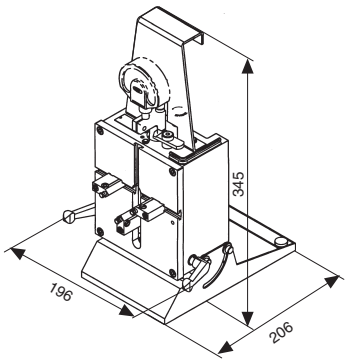
Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses.

Technical Data

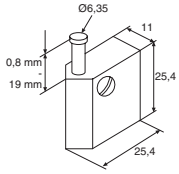
Order no.		2050643	2050647
Product type		36B–10	36B–20
Application range outside	**inch**	.25 –5"	.25 –8.75"
Application range inside	**inch**	.75 –3.5"	.75 –7.75"
Graduation value	**inch**	.0001"	
Measuring force, adjustable	**N**	0 –35	
Probe path , adjustable	**inch**	.25 –.40"	
Indicating instrument (included in delivery)		IDT–187 Indicator (32I-RC)	

Order no.	Mounting bore
	inch
2050643	.375"
2050647	.375"



Accessories

Order no.	Product name	Product type
2003210	Jaw set, Material steel	JW–9
2003211	Jaw Set used with 36B Gage, Made of carbide	JW–58
2003215	Contact for JW–9, Material steel	PS–55
2003216	Contact for JW–58, Made of carbide	PS–226



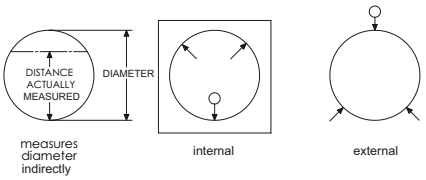
JW–9

Indicator Gage Multimar EDI–36B–9 / EDI–36B–19 / EMD–36–9D / EMD–36B–19D

USB RS232C Digimatic

Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses.

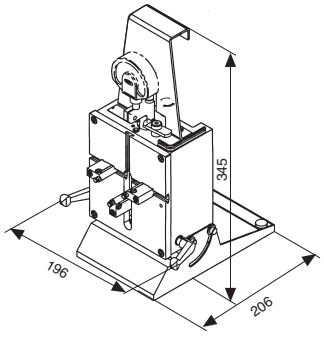


- Excellent accuracy due to the parallel springs in the probe being frictionless and free of play.
- User friendly: the surface can be inclined between 0° and 90° with respect to the base.
- Adjustable measuring force
- **Data interface:** Digimatic, RS232C, USB
- **Energy supply:** Battery operation
- **Scope of delivery:** Set of jaws JW–9, Instruction manual

Technical Data

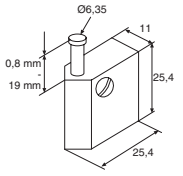
Order no.		2051696	2051694	2051881	2051871
Product type		EDI–36B–9	EMD-36B-9D	EMD–36–9D	EMD–36B–19D
Application range outside	**mm**	8 –127	8 –241	8 –127	8 –241
Application range outside	**inch**	.312 –5"	.312 –9.5"	.312 –5"	.312 –9.5"
Application range inside	**mm**	21 –117	21 –229	21 –117	21 –229
Application range inside	**inch**	.812 –4.625"	.812 –9"	.812 –4.625"	.812 –9"
Resolution	**mm**	0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02		0.0005, 0.001, 0.005	
Resolution	**inch**	.00001", .00002", .00005", .0001", .0002", .0005", .001"		.00002", .00005", .0001", .0005"	
Measuring force, adjustable	**N**	0 –35			
Probe path , adjustable	**mm**	6 –10 mm			
Probe path , adjustable	**inch**	.25 –.40"			
Indicating instrument (included in delivery)		2034201 µMaxµm II		2033145 MaxumIII (special 4:5 ratio)	

Order no.	Mounting bore
	inch
2051696	.375"
2051694	.375"
2051881	.375"
2051871	.375"



Accessories

Order no.	Product name	Product type
2003210	Jaw set, Material steel	JW–9
2003211	Jaw Set used with 36B Gage, Made of carbide	JW–58
2003215	Contact for JW–9, Material steel	PS–55
2003216	Contact for JW–58, Made of carbide	PS–226



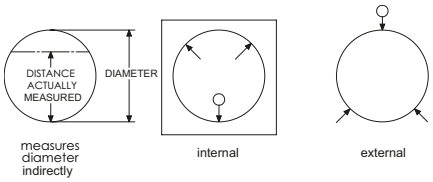
JW–9

Indicator Gage Multimar 36B–19 / 36B–9

- Excellent accuracy due to the parallel springs in the probe being frictionless and free of play.
- User friendly: the surface can be inclined between 0° and 90° with respect to the base.
- Adjustable measuring force
- **Data interface:** none
- **Scope of delivery:** Set of jaws JW–9, Instruction manual

Application:

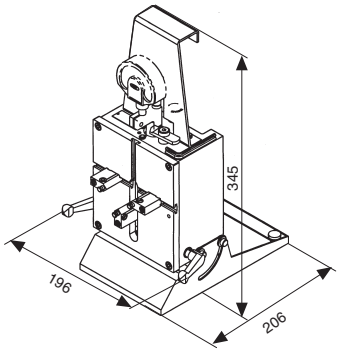
- For measuring internal and external diameters, centering edges, narrow shoulders and recesses.



Technical Data

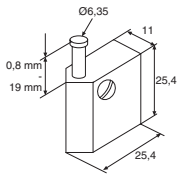
Order no.		2050645	2050652
Product type		36B–19	36B–9
Application range outside	**inch**	.312 –9.5"	.312 –5"
Application range inside	**inch**	.812 –9"	.812 –4.625"
Graduation value	**inch**	.0001"	
Measuring force, adjustable	**N**	0 –35	
Probe path , adjustable	**inch**	.25 –.40"	
Indicating instrument (included in delivery)		IDT–188 Indicator (32K-RC)	

Order no.	Mounting hole
	mm
2050645	9.53
2050652	9.53



Accessories

Order no.	Product name	Product type
2003210	Jaw set, Material steel	JW–9
2003211	Jaw Set used with 36B Gage, Made of carbide	JW–58
2003215	Contact for JW–9, Material steel	PS–55
2003216	Contact for JW–58, Made of carbide	PS–226



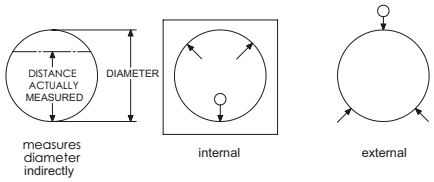
JW–9

Indicator Gage Multimar 36B–19M / 36B–9M

- Excellent accuracy due to the parallel springs in the probe being frictionless and free of play.
- User friendly: the surface can be inclined between 0° and 90° with respect to the base.
- Adjustable measuring force
- **Data interface:** none
- **Scope of delivery:** Set of jaws JW–9, Instruction manual

Application:

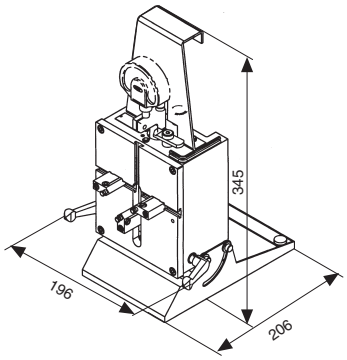
- For measuring internal and external diameters, centering edges, narrow shoulders and recesses.



Technical Data

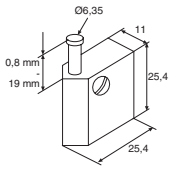
Order no.		2050646	2050653
Product type		36B–19M	36B–9M
Application range outside	**mm**	8 –241	8 –127
Application range inside	**mm**	21 –229	21 –117
Graduation value	**mm**	0.002	
Measuring force, adjustable	**N**	0 –35	
Probe path , adjustable	**mm**	6 –10 mm	
Indicating instrument (included in delivery)		IDS–318 Indicator (Q21-RC)	

Order no.	Mounting bore
	inch
2050646	.375"
2050653	.375"



Accessories

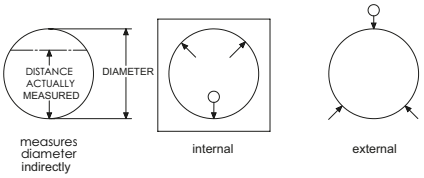
Order no.	Product name	Product type
2003210	Jaw set, Material steel	JW–9
2003211	Jaw Set used with 36B Gage, Made of carbide	JW–58
2003215	Contact for JW–9, Material steel	PS–55
2003216	Contact for JW–58, Made of carbide	PS–226



JW–9

Indicator Gage Multimar 36B–10-VT / 36B–20-VT

- Excellent accuracy due to the parallel springs in the probe being frictionless and free of play.
- User friendly: the surface can be inclined between 0° and 90° with respect to the base.
- Adjustable measuring force
- **Data interface:** Digimatic, RS232C, USB, Wireless
- **Energy supply:** Battery operation
- **Scope of delivery:** Set of jaws JW–9, Instruction manual



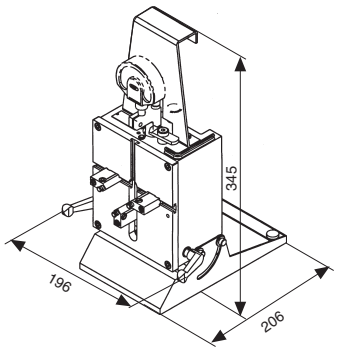
Application:

- For measuring internal and external diameters, centering edges, narrow shoulders and recesses.

Technical Data

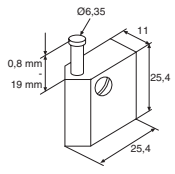
Order no.		2061657	2061658
Product type		36B–10-VT	36B–20-VT
Application range outside	**mm**	6 –127	6 –222
Application range inside	**mm**	19 –89	19 –197
Resolution	**mm**	0.0005, 0.001, 0.002, 0.005, 0.01	
Resolution	**inch**	.00002", .00005", .0001", .0002", .0005"	
Measuring force, adjustable	**N**	0 –35	
Probe path , adjustable	**mm**	6 –10 mm	
Probe path , adjustable	**inch**	.25 –.40"	
Indicating instrument (included in delivery)		4337662 (1087 BR)	

Order no.	Mounting hole
	mm
2061657	8
2061658	8



Accessories

Order no.	Product name	Product type
2003210	Jaw set, Material steel	JW–9
2003211	Jaw Set used with 36B Gage, Made of carbide	JW–58
2003215	Contact for JW–9, Material steel	PS–55
2003216	Contact for JW–58, Made of carbide	PS–226



JW–9

ARE YOU SEARCHING FOR THE RIGHT CONNECTIONS?
THEY ARE RIGHT HERE AT MARCONNECT.

Our new digital hand-held measuring instruments are equipped with MarConnect interface capability. Regardless of which interface standard you use, whether USB, Opto R S232 or Digimatic; MarConnect will always provide you with the optimal connection.

MARCONNECT. DATA PROCESSING

Overview
MarConnect MarCom Professional 5.2 508

MarConnect MarCom Professional 5.2 510
Clear and flexible data aquisition

MarConnect Wireless Data Transmission
MarConnect i-Stick 512
Wireless Data Receiver

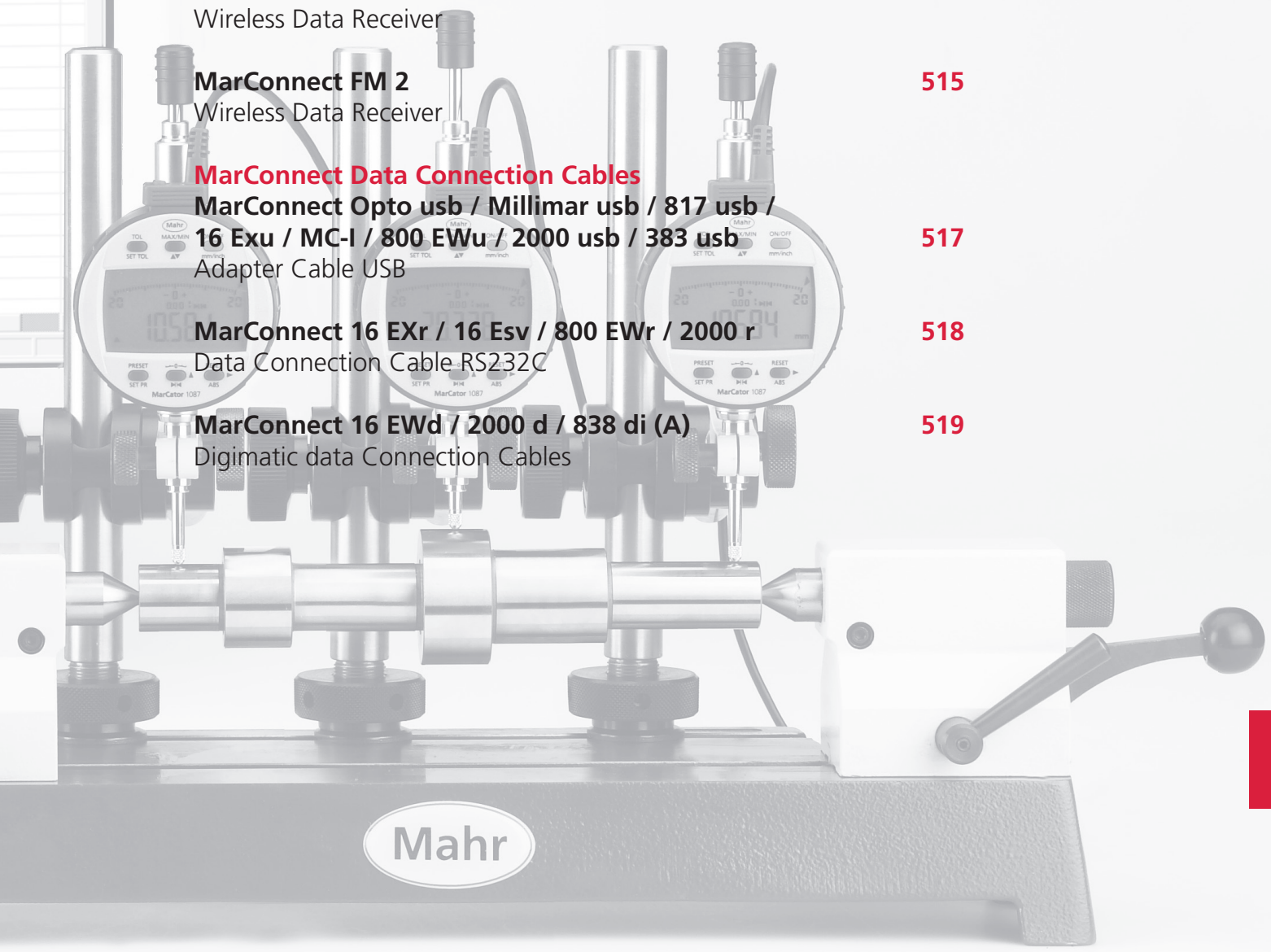
MarConnect e-Stick 514
Wireless Data Receiver

MarConnect FM 2 515
Wireless Data Receiver

MarConnect Data Connection Cables
MarConnect Opto usb / Millimar usb / 817 usb / 16 Exu / MC-I / 800 EWu / 2000 usb / 383 usb 517
Adapter Cable USB

MarConnect 16 EXr / 16 Esv / 800 EWr / 2000 r 518
Data Connection Cable RS232C

MarConnect 16 EWd / 2000 d / 838 di (A) 519
Digimatic data Connection Cables



SMAHRT CONNECTIVITY

Sending measuring results

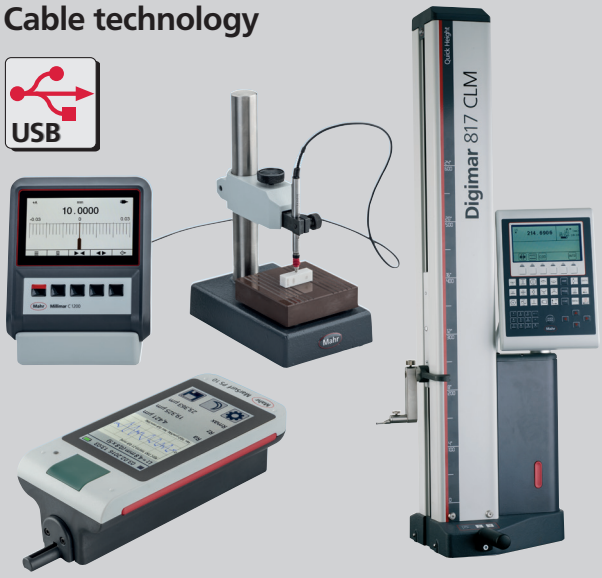
Integrated wireless technology

MarConnect
integrated wireless

Retrofitted wireless technology

Cable technology

USB



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HIGHLIGHT: Our contribution to Industry 4.0: You can now download MarCom Professional software free of charge!

transfer | **Data processing**

fessional 5.2

download:

com/marcom

Virtual interface box

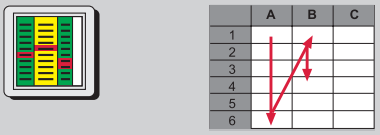
Intelligent Excel interface

Keyboard emulation

Text file

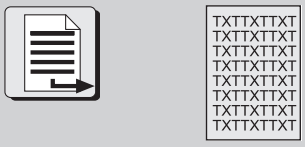
CAQ-/SPC-Software

Microsoft Office Excel®

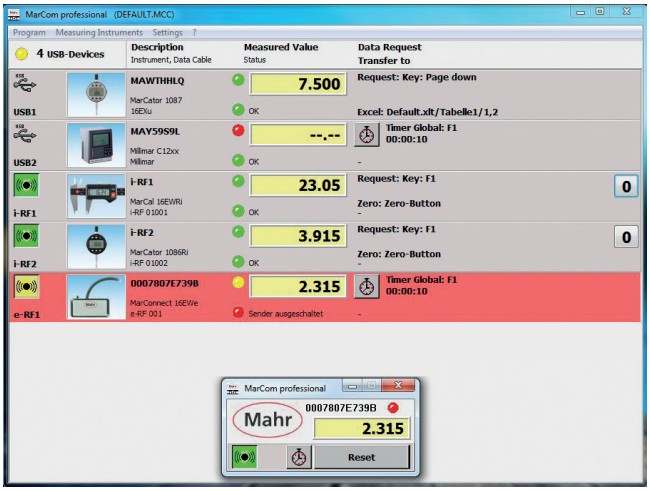


Any Windows software

Flexible data processing



MarConnect MarCom Prof. 5.2. Software interface



- Directly transfer measured values into MS Excel®, SPC Software using virtual interface box (MUX50 format), a text file or key code
- The measured values for each connected measuring instrument can be copied into a separate column, table or folder in MS Excel®
- USB hubs can also be connected as a measuring instrument interface
- Clear depiction of the selected measuring devices by means of icons
- Freely definable and configurable measurement cycles
- Flexible, user-friendly data transmission via the „Data" button on the measuring device or data cable or via a PC keyboard, timer, remote control or foot switch connected to a USB interface
- **Scope of delivery:** Driver, Instruction manual
- **Software:** MarCom Professional free downloa**d: www.mahr.com/marcom**(only for Mahr data cables and wireless systems with USB and RS232

Technical Data

Order no.	4102212
Product type	MarCom Prof. 5.2
Number of connectable wireless receivers for i-stick	4
Number of connectable measuring instruments with integrated wireless	32
Number of connectable wireless receivers for e-stick	1
Number of connectable transmission modules for e-stick	8
Number of connectable wireless receivers FM 2	1
Number of connectable transmission modules for wireless receiver FM 2	100
Number of connectable measuring instruments with USB interface	128
Number of connectable USB foot switches	128
Number of connectable measuring instruments with RS232C interface	2
Number of virtual interface boxes (8 inputs)	4
Languages:	German, English, French, Italian, Spanish, Dutch, Russian, Polish, Portugese, Czech, Chinese, Romanian, Hungarian, Japanese

Accessories

Order no.	Product description	Product type	For measuring instrument
4102220	Receiver	i-Stick	MarCal 16 EWRi / 30 EWRi MarCator 1086 Ri / 1087 Ri / 1087 BRi Micromar 40 EWRi
4102230	Receiver	e-Stick	Transmission modules 16 EWe, 2000 e, RS232 e
4102305	Receiver	FM 2	Transmission modules 16 EXf, 1082 f, 2000f, 817 f, RS232 f
4102231	Transmitter for e-Stick	16 EWe	MarCal 16 ER, 16 EWR, 16 EWV, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR, 40 EWS, 40 EWV, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR MarSurf PS1, PS10

MarConnect MarCom Prof. 5.2. Software interface

Accessories

Order no.	Product description	Product type	For measuring instrument
4102306	Transmitter for FM 2	16 EXf	MarCal 16 ER, 16 EWR, 16 EWV, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR, 40 EWS, 40 EWV, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR
4102357	16 EXu Data connection cable USB (2 m)	16 EXu	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR, 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, PS10, M300, M300C, Pocketsurf IV
4102410	Data connection cable RS232C (2 m)	16 EXr	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR, 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, PS10, M300, M300C, Pocketsurf IV
4102232	Transmitter for e-Stick	2000 e	Digimar 816 CL MarCator 1088 / 1088W Millimess 2000, 2001, 2100, µuMaxum II Millimar C1200
4102309	Transmitter for FM 2	2000 f	Digimar 816 CL MarCator 1088 / 1088W Millimess 2000, 2001, 2100, µMaxum II
4346023	2000 usb Data connection cable USB (2 m)	2000 usb	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II
4346020	Data connection cable RS232C (2 m)	2000 r	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II
7024634	Data connection cable RS232C (3 m)		Digimar 817 CLM Millimar C1208, C1216, 1240, C1245, S1840, S1841, X1715, X1745, 832
4102233	Transmitter for e-Stick	RS232 e	Millimar C1208, C1216, C1245, S1840 Digimar 817 CLM
4102331	Millimar - USB Adapter cable RS232-USB (1 m)	Millimar - USB	Millimar C1208, C1216, 1240, C1245, S1840, S1841, X1715, X1745, 832 (in conjunction with cable 7024634)
4102310	Transmitter for FM 2	817 f	Digimar 817 CLM
4102333	817 usb Adapter cable RS232-USB (1 m)	817 usb	Digimar 817 CLM (in conjunction with cable 7024634)
4102311	Transmitter for FM 2	RS232 f	Millimar C1208, C1216, C1245, S1840
4102307	Transmitter for FM 2	1082 f	Digimar M814 N/G Multimar 25 ES MarTool 106 ES
4102510	Data connection cable RS232C (2 m)	16 ESv	Digimar 814 G, 814 N Multimar 25 ES MarTool 106 ES
4102330	Opto usb Adapter cable RS232-USB (1 m)	Opto usb	Digimar M814 (in conjunction with cable 4102510) Multimar 25 ES (in conjunction with cable 4102510) MarTool 106 ES (in conjunction with cable 4102510)
4305121	800 EWu Data connection cable USB (2 m)	800 EWu	MarCal 31 EW MarTest 800 EW, 800 EWL
4305122	Data connection cable RS232C (2 m)	800 EWr	MarCal 31 EW MarTest 800 EW, 800 EWL
4495079	838 usb Data connection cable USB (1.5 m)	838 usb	Marameter 838 EI, 838 EA
4102553	USB-Hub 7-fold industrial model	USB-Hub	
4102554	USB 2.0 Docking Ball with 5 m extension cable, Interfaces: 1 x USB 2.0 Data , 1 x USB Power	MC-USB-Ext	
4102782	MC-I Data connection cable USB (0.1 m)	MC-I	Foot switch 16 ESf
4102058	Foot Switch to trigger data transmission	16 ESf	
4102221	Remote control for MarCom	MC-R	
4102239	Battery for eStick / FM2 transmission modules Type CR 1/3	CR1/3N	

FM 2

2000 f

16 EXf

16 EWe

e-Stick

MarConnect i-Stick. Receiver

Technical Data

Order no.		4102220
Number of channels		3
Frequency band	MHz	2400
Radio range		up to 6 m
Product type		i-Stick
Number of connectable wireless receivers for i-stick		4
Number of connectable measuring instruments with integrated wireless		32
For measuring instrument		MarCal 16 EWRi / 30 EWRi MarCator 1086 Ri / 1087 Ri / 1087 BRi Micromar 40 EWRi

- **Measurement without the nuisance of additional modules:** Unlike conventional wireless solutions, which have a large external transmitter with separate battery, the transmitter in Integrated Wireless is fully integrated.
- **Highly mobile:** Integrated Wireless gives you much more mobility. There is no cable to get in the way, either at the measuring station or when measuring on or at the machine or at large workpieces
- **Easy data transfer:** With Integrated Wireless you can transfer your measured values to the PC simply using the iStick. 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
- **Reliable transfer:** With Integrated Wireless you can be sure that your data will arrive safely. Measuring instruments with Integrated Wireless display messages to confirm whether the transmitted data has been correctly transferred or whether you are within receiving range of the iStick receiver
- **Long battery life:** The integrated wireless interface makes the measuring instrument exceptionally energy-efficient. And unlike conventional wireless systems, no additional battery is required
- **Affordable:** With Integrated Wireless you can connect up to 8 measuring instruments per iStick receiver. Expensive interface boxes are no longer necessary. With even one connected measuring instrument you get a wireless connection for the price of a cable
- **Scope of delivery:** i-stick wireless receiver, Driver
- **Software:** MarCom Professional free downloa**d: www.mahr.com/marcom**(only for Mahr data cables and wireless systems with USB and RS232

MarConnect i-Stick. Receiver

Accessories

Order no.	Product description	Product type
4103400	Digital Caliper, 0.01 mm, 0 –150 mm	16 EWRi
4103401	Digital Caliper, 0.01 mm, 0 –150 mm	16 EWRi
4103402	Digital Caliper, 0.01 mm, 0 –150 mm	16 EWRi
4103403	Digital Caliper, 0.01 mm, 0 –150 mm	16 EWRi
4103404	Digital Caliper, 0.01 mm, 0 –200 mm	16 EWRi
4103405	Digital Caliper, 0.01 mm, 0 –200 mm	16 EWRi
4103406	Digital Caliper, 0.01 mm, 0 –300 mm	16 EWRi
4103407	Digital Caliper, 0.01 mm, 0 –300 mm	16 EWRi
4126755	Digital Depth Gage, 0.01 mm, 0 –150 mm	30 EWRi
4126756	Digital Depth Gage, 0.01 mm, 0 –300 mm	30 EWRi
4126757	Digital Depth Gage, 0.01 mm, 0 –500 mm	30 EWRi
4337624	Digital Indicator, 0.0005 mm, 12.5 mm	1086 Ri
4337625	Digital Indicator, 0.0005 mm, 25 mm	1086 Ri
4337626	Digital Indicator, 0.0005 mm, 50 mm	1086 Ri
4337627	Digital Indicator, 0.0005 mm, 100 mm	1086 Ri
4337628	Digital Indicator, 0.0005 mm, 25 mm	1086 Ri
4337134	Digital Indicator, 0.01 mm, 12.5 mm	1086 Ri
4337135	Digital Indicator, 0.01 mm, 25 mm	1086 Ri
4337136	Digital Indicator, 0.01 mm, 50 mm	1086 Ri
4337137	Digital Indicator, 0.01 mm, 100 mm	1086 Ri
4337142	Digital Indicator, 0.0005 mm, 12.5 mm	1086 WRi
4337143	Digital Indicator, 0.0005 mm, 25 mm	1086 WRi
4337147	Digital Indicator, 0.01 mm, 12.5 mm	1086 WRi
4337148	Digital Indicator, 0.01 mm, 25 mm	1086 WRi
4337663	Digital Indicator, 0.0005 mm, 12.5 mm	1087 Ri
4337665	Digital Indicator, 0.0005 mm, 25 mm	1087 Ri
4337664	Digital Indicator, 0.0005 mm, 12.5 mm	1087 BRi
4157100	Digitale Bügelmessschraube, 0 –25 mm	40 EWRi
4157101	Digitale Bügelmessschraube, 25 –50 mm	40 EWRi
4157102	Digitale Bügelmessschraube, 50 –75 mm	40 EWRi
4157103	Digitale Bügelmessschraube, 75 –100 mm	40 EWRi
4102554	USB 2.0 Docking Ball with 5 m extension cable, Interfaces: 1 x USB 2.0 Data , 1 x USB Power	MC-USB-Ext

1087 BRi

1087 Ri

1086 Ri

1086 Ri

30 EWRi

16 EWRi

MarConnect e-Stick. Receiver

- To retrofit on all Mahr Hand Measuring instruments that have a data interface
- Wireless data transmission from a measuring instrument to a PC
- Secure data transmission due to the acknowledgement dialog of the received data from the PC to the measuring instrument
- Optical confirmation of received data on the transmitter
- Compact transmitter without an external antenna
- Bi-directional radio link (remote control from measuring instruments)
- Radio frequency is 2400 **MHz**
- **Scope of delivery:** e-stick wireless receiver, Driver
- **Software:** MarCom Professional free downloa**d: www.mahr.com/marcom**(only for Mahr data cables and wireless systems with USB and RS232

Technical Data

Order no.		4102230
Frequency band	**MHz**	2400
Radio range		up to 6 m
Product type		e-Stick
Number of connectable wireless receivers for e-stick		1
Number of connectable transmission modules for e-stick		8
For measuring instrument		Transmission modules 16 EWe, 2000 e, RS232 e

Accessories

Order no.	Product description	Product type	For measuring instrument
4102231	Transmitter for e-Stick	16 EWe	MarCal 16 ER, 16 EWR, 16 EWV, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR, 40 EWS, 40 EWV, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR MarSurf PS1, PS10
4102232	Transmitter for e-Stick	2000 e	Digimar 816 CL MarCator 1088 / 1088W Millimess 2000, 2001, 2100, µuMaxum II Millimar C1200
4102233	Transmitter for e-Stick	RS232 e	Millimar C1208, C1216, C1245, S1840 Digimar 817 CLM
4102239	Battery for eStick / FM2 transmission modules Type CR 1/3	CR1/3N	
4102554	USB 2.0 Docking Ball with 5 m extension cable, Interfaces: 1 x USB 2.0 Data , 1 x USB Power	MC-USB-Ext	

16 EWe

MarConnect FM 2. Funkempfänger

- Secure data transmission due to the acknowledgement dialog of the received data from the PC to the measuring instrument
- Optical confirmation of received data on the transmitter
- TWIN receiver for USB and RS232 interfaces
- Compact transmitter without an external antenna
- Theoretically unlimited amount of measuring instruments can be connected to a receiver
- Distance of radio wave up to 100 m (depending on the working environment)
- Radio frequency is 433 **MHz** (further frequencies are available upon request)
- Up to 69 channels are available per receiver, several receivers can be used at any one time
- Bi-directional radio link (remote control from measuring instruments)
- Triggering data via a hand switch is possible
- **Scope of delivery:** FM2 wireless receiver, Driver, USB cable
- **Software:** MarCom Professional free downloa**d: www.mahr.com/marcom**(only for Mahr data cables and wireless systems with USB and RS232

Technical Data

Order no.		4102305
Number of channels		69
Number of transmitters		100
Frequency band	**MHz**	433
Radio range		up to 100 m (depending on the working environment)
Product type		FM 2
For measuring instrument		Transmission modules 16 EXf, 1082 f, 2000f, 817 f, RS232 f

Order no.	Depth	Height	Width
	mm	mm	mm
4102305	25	120	60

MarConnect FM 2. Receiver

Accessories

Order no.	Product description	Product type	For measuring instrument
4102306	Transmitter for FM 2	16 EXf	MarCal 16 ER, 16 EWR, 16 EWV, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 EWR, 40 EWS, 40 EWV, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1087 R, 1087 BR
4102307	Transmitter for FM 2	1082 f	Digimar M814 N/G Multimar 25 ES MarTool 106 ES
4102309	Transmitter for FM 2	2000 f	Digimar 816 CL MarCator 1088 / 1088W Millimess 2000, 2001, 2100, µMaxum II
4102310	Transmitter for FM 2	817 f	Digimar 817 CLM
4102311	Transmitter for FM 2	RS232 f	Millimar C1208, C1216, C1245, S1840
4102239	Battery for eStick / FM2 transmission modules Type CR 1/3	CR1/3N	

16 EXf

2000 f

MarConnect Opto usb / Millimar - USB / 817 usb / 16 EXu / MC-I / 800 EWu / 2000 usb / 838 usb. Adapter cable RS232-USB

- For connecting the measuring instrument to a PC
- Data transfer to MarCom or other applications via virtual communication interface
- **Scope of delivery:** USB cable, Driver
- **Software:** MarCom Professional free downloa**d: www.mahr.com/marcom**(only for Mahr data cables and wireless systems with USB and RS232

Technical Data

Order no.	Cable length	Product type	For measuring instrument
	m		
4102330	1	Opto usb	Digimar M814 (in conjunction with cable 4102510) Multimar 25 ES (in conjunction with cable 4102510) MarTool 106 ES (in conjunction with cable 4102510)
4102331	1	Millimar - USB	Millimar C1208, C1216, 1240, C1245, S1840, S1841, X1715, X1745, 832 (in conjunction with cable 7024634)
4102333	1	817 usb	Digimar 817 CLM (in conjunction with cable 7024634)
4102357	2	16 EXu	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR, 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, PS10, M300, M300C, Pocketsurf IV
4102782	0.1	MC-I	Foot switch 16 ESf
4305121	2	800 EWu	MarCal 31 EW MarTest 800 EW, 800 EWL
4346023	2	2000 usb	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II
4495079	1.5	838 usb	Marameter 838 EI, 838 EA

Accessories

Order no.	Product description	Product type
4102221	Remote control for MarCom	MC-R
4102553	USB-Hub 7-fold industrial model	USB-Hub
4102058	Foot Switch to trigger data transmission	16 ESf

MarConnect 16 EXr / 16 ESv / 800 EWr / 2000 r.
Data connection cable RS232C

- 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)

Technical Data

Order no.	Cable length	Product type	For measuring instrument
	m		
4102410	2	16 EXr	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR, 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, PS10, M300, M300C, Pocketsurf IV
4102510	2	16 ESv	Digimar 814 G, 814 N Multimar 25 ES MarTool 106 ES
4305122	2	800 EWr	MarCal 31 EW MarTest 800 EW, 800 EWL
4346020	2	2000 r	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II
7024634	3		Digimar 817 CLM Millimar C1208, C1216, 1240, C1245, S1840, S1841, X1715, X1745, 832

MarConnect 16 EWd / 2000 d / 838 di (A).
Digimatic data cable

- For connection to Digimatic compatible interfaces and evaluation equipment

Application:

Data collection with Digimatic-compatible devices

Technical Data

Order no.	Cable length	Product type	For measuring instrument
	m		
4102915	2	16 EWd	MarCal 16 ER, 16 EWR, 18 EWR, 30 EWR, 30 EWN Digimar 814 SR Micromar 40 ER, 40 EWR, 40 EWV, 40 EWS, 44 EWR, 46 EWR MarCator 1075 R, 1086 R, 1086 Ri, 1087 R, 1087 Ri, 1087 BR, 1087 BRi MarSurf PS1, M300, M300C
4346021	2	2000 d	Digimar 816 CL MarCator 1088, 1088 W Millimess 2000, 2001, 2100, µMaxum II Millimar C1200
4495083	1.5	838 di (A)	Marameter 838 EI, 838 EA

THE COMPLETE SUPPORT FOR YOUR INSPECTION.
MARTOOL

MarTool measuring and inspection devices are indispensable aids for production metrology. Their easy handling makes them one of the most versatile tools for everyday testing. Whether measuring an angle on a workpiece or looking for a suitable surface plate for a precision height gage, with the outstanding quality of MarTool you cannot go wrong.

MarTool. Measuring and Inspection Equipment

MarTool 106 ES / 106 UF 524
Universal Bevel Protractor

MarTool 107 G 525
Granite Surface Plate

MarTool 107 MH / 107 V 528
Magnetic V-block

Digital Universal Bevel Protractor MarTool 106 ES

Functions:
- ON/OFF
- RESET (set display to zero)
- Reversal of counting direction
- Switch resolution
- Selectable measuring ranges

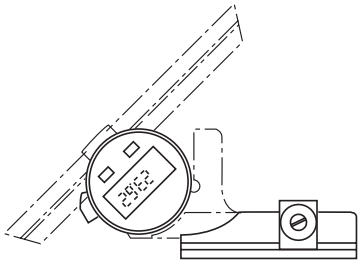
- High contrast analog display
- Automatic clamping of beam, moved at the touch of a button
- Precision adjuster for easy adjustment to the desired angle
- Clamping device with a push button, to prevent accidental adjustment of the set angle
- Base plate and beam made of stainless steel, with case-hardened measuring edges
- **Digit height:** 8.5 mm
- **Data interface:** Opto RS232C
- **IP protection category:** IP 51
- **Scope of delivery:** Beam, Battery, Instruction manual, Case

Technical Data

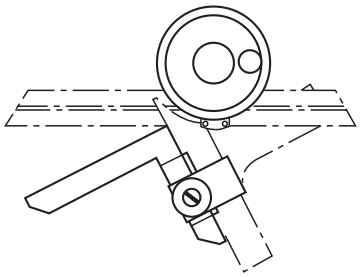
Order no.		4214600
Product type		106 ES
Rail length	mm	300
Measuring range in °	°	1x360° / 2x180° / 4x90° switchable
Resolution		1 minute / 0.01° switchable
Error limit		2′
Standard		Factory standard

Accessories

Order no.	Product description	Product type
4214620	Interchangeable Beam, 150 mm	106 ESs
4214621	Interchangeable Beam, 200 mm	106 ESs
4214622	Interchangeable Beam, 300 mm	106 ESs
4214630	Stand	106 ESv
4214062	Acute Angle Attachment	106 UFw
4102510	Data Connection Cable RS232C (2 m)	16 ESv
4102520	Battery 3 V, CR 2032	
4102330	Adapter Cable RS232-USB (1 m)	Opto usb

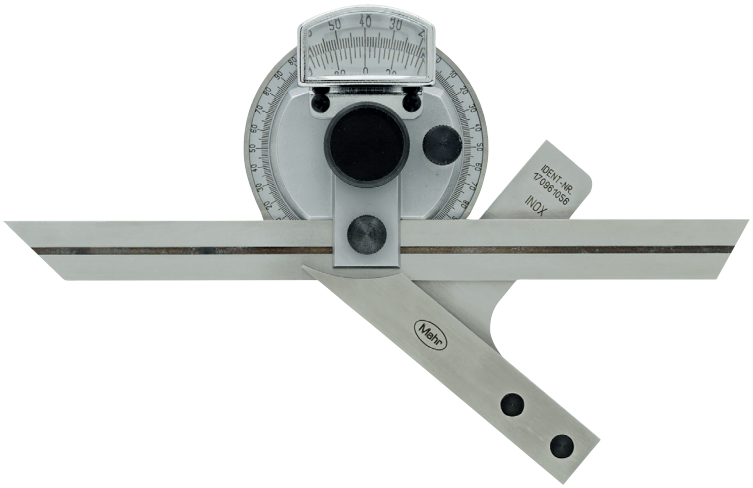


106 ESv



106 UFw

Universal Bevel Protractor MarTool 106 UF



- Vernier scale and main scale designed for parallax-free reading
- Anti-glare readout with satin chrome finish
- Knurled thumb screw for clamping the interchangeable rail
- Precision adjuster for easy adjustment to the desired angle
- Clamping device to prevent accidental adjustment of the set angle
- Base plate and beam made of stainless steel, with case-hardened measuring edges
- **Scope of delivery:** Magnifying reading lens, Beam, Case

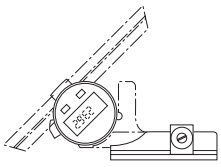
Technical Data

Order no.		4214050	4214051	4214052
Product type			106 UF	
Rail length	**mm**	150	200	300
Measuring range in °	**°**		360°	
Readings			5′	
Error limit			5′	
Standard			Factory standard	

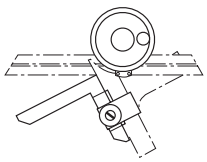
Order no.	Rail length
	mm
4214050	150
4214051	200
4214052	300

Accessories

Order no.	Product description	Product type
4214010	Interchangeable beam, 150 mm	106 Us
4214011	Interchangeable beam, 200 mm	106 Us
4214012	Interchangeable beam, 300 mm	106 Us
4214061	Stand	106 UFv
4214062	Acute Angle Attachment	106 UFw



106 ESv



106 UFw

Surface Plate made from granite MarTool 107 G

- Made of choice fine grain black granite (Diabas)
- High density structure thus extremely homogeneous
- Hardness 6–7 on the Mohs' hardness scale
- Surface plate is lapped and has a satin matt finish to prevent glare
- 100 % corrosion proof
- Non-magnetic and non-conductive
- Measuring instruments and test equipment are easy to slide over surface

Application:

- For measuring tasks, layout work, touching up and lapping precision parts
- Recommended assembly (with optional accessories):

- Up to 400 mm to be used on a workbench with adjustable plate supports 107 Asa
- From 630 mm to be used with a Stand 107 Us or Cabinet 107 Ug

Technical Data

Order no.		4221500	4221501	4221502	4221503	4221504	4221505	4221506	4221507	4221508
Product type		107 G								
Plate size	**mm**	400 x 250	400 x 400	630 x 400	630 x 630	800 x 500	1000 x 630	1200 x 800	1500 x 1000	2000 x 1000
Plate thickness	**mm**	60		80		100		150		200
Standard		DIN 876								
Tolerance class		00								
Flatness tolerance		t_t = 2(1 + L/1000) µm, L in mm								
Weight	**kg**	18	29	60	95	120	190	432	675	1200

Accessories

Order no.	Product description	Product type
4221560	Stand with cabinet, 630 x 400 mm	107 Us
4221570	Stand, 630 x 400 mm	107 Ug
4221069	Adjustable plate support	107 Asa
4221561	Stand with cabinet, 630 x 630 mm	107 Us
4221571	Stand, 630 x 630 mm	107 Ug
4221562	Stand with cabinet, 800 x 500 mm	107 Us
4221572	Stand, 800 x 500 mm	107 Ug
4221563	Stand with cabinet, 1000 x 630 mm	107 Us
4221573	Stand, 1000 x 630 mm	107 Ug
4221564	Stand with cabinet, 1200 x 800 mm	107 Us
4221574	Stand, 1200 x 800 mm	107 Ug
4221565	Stand with cabinet, 1500 x 1000 mm	107 Us
4221575	Stand, 1500 x 1000 mm	107 Ug
4221566	Stand with cabinet, 2000 x 1000 mm	107 Us
4221576	Stand, 2000 x 1000 mm	107 Ug

107 G;107 Us

107 Ug

Surface Plate made from granite MarTool 107 G

- Made of choice fine grain black granite (Diabas)
- High density structure thus extremely homogeneous
- Hardness 6–7 on the Mohs' hardness scale
- Surface plate is lapped and has a satin matt finish to prevent glare
- 100 % corrosion proof
- Non-magnetic and non-conductive
- Measuring instruments and test equipment are easy to slide over surface

Application:

- For measuring tasks, layout work, touching up and lapping precision parts
- Recommended assembly (with optional accessories):

- Up to 400 mm to be used on a workbench with adjustable plate supports 107 Asa
- From 630 mm to be used with a Stand 107 Us or Cabinet 107 Ug

Technical Data

Order no.		4221520	4221521	4221522	4221523	4221524	4221525	4221526	4221527	4221528
Product type		107 G								
Plate size	**mm**	400 x 250	400 x 400	630 x 400	630 x 630	800 x 500	1000 x 630	1200 x 800	1500 x 1000	2000 x 1000
Plate thickness	**mm**	60		80		100		150		200
Standard		DIN 876								
Tolerance class		0								
Flatness tolerance		$t_1 = 4(1 + L/1000)$ µm, L in mm								
Weight	**kg**	18	29	60	95	120	190	432	675	1200

Accessories

Order no.	Product description	Product type
4221560	Stand with cabinet, 630 x 400 mm	107 Us
4221570	Stand, 630 x 400 mm	107 Ug
4221069	Adjustable plate support	107 Asa
4221561	Stand with cabinet, 630 x 630 mm	107 Us
4221571	Stand, 630 x 630 mm	107 Ug
4221562	Stand with cabinet, 800 x 500 mm	107 Us
4221572	Stand, 800 x 500 mm	107 Ug
4221563	Stand with cabinet, 1000 x 630 mm	107 Us
4221573	Stand, 1000 x 630 mm	107 Ug
4221564	Stand with cabinet, 1200 x 800 mm	107 Us
4221574	Stand, 1200 x 800 mm	107 Ug
4221565	Stand with cabinet, 1500 x 1000 mm	107 Us
4221575	Stand, 1500 x 1000 mm	107 Ug
4221566	Stand with cabinet, 2000 x 1000 mm	107 Us
4221576	Stand, 2000 x 1000 mm	107 Ug

107 G;107 Us

107 Ug

Surface Plate made from granite MarTool 107 G

- Made of choice fine grain black granite (Diabas)
- High density structure thus extremely homogeneous
- Hardness 6–7 on the Mohs' hardness scale
- Surface plate is lapped and has a satin matt finish to prevent glare
- 100 % corrosion proof
- Non-magnetic and non-conductive
- Measuring instruments and test equipment are easy to slide over surface

Application:

- For measuring tasks, layout work, touching up and lapping precision parts
- Recommended assembly (with optional accessories):

- Up to 400 mm to be used on a workbench with adjustable plate supports 107 Asa
- From 630 mm to be used with a Stand 107 Us or Cabinet 107 Ug

Technical Data

Order no.		4221540	4221541	4221542	4221543	4221544	4221545	4221546	4221547	4221548
Product type		107 G								
Plate size	**mm**	400 x 250	400 x 400	630 x 400	630 x 630	800 x 500	1000 x 630	1200 x 800	1500 x 1000	2000 x 1000
Plate thickness	**mm**	60		80		100		150		200
Standard		DIN 876								
Tolerance class		1								
Flatness tolerance		t_1 = 10(1 + L/1000) µm, L in mm								
Weight	**kg**	18	29	60	95	120	190	432	675	1200

Accessories

Order no.	Product description	Product type
4221560	Stand with cabinet, 630 x 400 mm	107 Us
4221570	Stand, 630 x 400 mm	107 Ug
4221069	Adjustable plate support	107 Asa
4221561	Stand with cabinet, 630 x 630 mm	107 Us
4221571	Stand, 630 x 630 mm	107 Ug
4221562	Stand with cabinet, 800 x 500 mm	107 Us
4221572	Stand, 800 x 500 mm	107 Ug
4221563	Stand with cabinet, 1000 x 630 mm	107 Us
4221573	Stand, 1000 x 630 mm	107 Ug
4221564	Stand with cabinet, 1200 x 800 mm	107 Us
4221574	Stand, 1200 x 800 mm	107 Ug
4221565	Stand with cabinet, 1500 x 1000 mm	107 Us
4221575	Stand, 1500 x 1000 mm	107 Ug
4221566	Stand with cabinet, 2000 x 1000 mm	107 Us
4221576	Stand, 2000 x 1000 mm	107 Ug

107 G;107 Us

107 Ug

Magnetic V-block MarTool 107 MH

Application:

- To be used in an inspection room and workshop for both measuring and scribing
- To clamp workpieces during drilling, grinding and light milling work

- Integrated magnetic system
- When activating the switch, the upper, lower and opposite face are all simultaneously magnetized
- Protected against ingress of moisture
- 90° prismatic indentations on top and bottom
- Flat support surfaces top and bottom and on the end face opposite the switch
- Support and measuring surfaces hardened and ground
- Available individually or as a matched pair

Technical Data

Order no.		4230000	4230001
Quantity unit		Piece	Pair
Product type		107 MH	
For shaft diameter	**mm**	5 –65	
Length	**mm**	100	
Flatness	**µm**	5	
Parallelism	**µm**	5	
Asymmetry of V-slots	**µm**	5	
Deviation angle between front and sides for example block cutting	**µm**	5	
Standard		Factory standard	
Adhesive force on flat surface	**N**	1000	
Adhesive force prism	**N**	750	

Order no.	Height	Length	V-angle	Width
	mm	**mm**	**°**	**mm**
4230000	95	100	90	70
4230001	95	100	90	70

Accessories

Order no.	Product description
4230005	Wooden case for 1 V-Block 107 MH

V-Block MarTool 107 V

- Special steel, hardened and ground
- Available individually or as a matched pair

Application:

For testing of small cylindrical workpieces for their ovality and polygon error

Technical Data

Order no.		4229000	4229001
Quantity unit		Piece	Pair
Product type		107 V	
For shaft diameter	mm	2 –25	
Length	mm	30	
Parallelism between V-slot and bottom surface in µm	µm	2	

Order no.	Height	Length	V-angle	Width
	mm	mm	°	mm
4229000	30	30	108	30
4229001	30	30	108	30

MADE TO MEASURE.
MARGAGE

Back in 1871, when the metric system was introduced into the then German Empire, Mahr was already supplying dimensional standards to the weights and measures offices of several German states. 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. Thanks to our accreditation from the PTB (the National Metrology Institute of Germany) and the careful selection of the materials we use, we can guarantee the highest possible quality.

MarGage. Standards, Gages, Gage Blocks

MarGage 402 / 404 / 405 / 406 / 408 / 409 532
Rectangular Gage Block Set made of Steel

MarGage 411 / 412 / 413 / 415 538
Test Sets for Calipers

MarGage 402 C / 404 C / 405 C / 406 C / 408 C / 409 C 540
Rectangular Gage Block Set made of Ceramic

MarGage 418 C 546
Protective Rectangular Gage Block Set made of Ceramic

MarGage 419 C 547
Test Set for Micrometers

MarGage 417 549
Rectangular Gage Blocks made of Steel

MarGage 417 C
Rectangular Gage Block Set made of Ceramic 553

Accessoires for Rectangular Gage Blocks 557

Pin Gages / Plug Gages

MarGage 426 / 426 G / 426 S 561
Pin Gage with a handle made of steel

MarGage 426 D / 426 DS 568
Individual Plug Gages with handle made of steel

MarGage 426 A / 426 MS 570
Thread Pin Gage

Settings Standards

MarGage 355 E 573
Ring Gage

Calibration Services 576

Rectangular Gage Block Set made of Steel MarGage 402

- 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 class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800403	402	32	K	1,005 1,01 –1,09 1,1 –1,9 1 –9 10 –30 50	- 0,01 0,1 1 10 -	1 9 9 9 3 1
4800400	402	32	0	1,005 1,01 –1,09 1,1 –1,9 1 –9 10 –30 50	- 0,01 0,1 1 10 -	1 9 9 9 3 1
4800401	402	32	1	1,005 1,01 –1,09 1,1 –1,9 1 –9 10 –30 50	- 0,01 0,1 1 10 -	1 9 9 9 3 1
4800402	402	32	2	1,005 1,01 –1,09 1,1 –1,9 1 –9 10 –30 50	- 0,01 0,1 1 10 -	1 9 9 9 3 1

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Steel MarGage 404

- 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 class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800003	404	46	K	1,001 –1,009 1,01 –1,09 1,1 –1,9 1 –9 10 –100	0,001 0,01 0,1 1 10	9 9 9 9 10
4800000	404	46	0	1,001 –1,009 1,01 –1,09 1,1 –1,9 1 –9 10 –100	0,001 0,01 0,1 1 10	9 9 9 9 10
4800001	404	46	1	1,001 –1,009 1,01 –1,09 1,1 –1,9 1 –9 10 –100	0,001 0,01 0,1 1 10	9 9 9 9 10
4800002	404	46	2	1,001 –1,009 1,01 –1,09 1,1 –1,9 1 –9 10 –100	0,001 0,01 0,1 1 10	9 9 9 9 10

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Steel MarGage 405

- 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 class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800413	405	47	K	1,005 1,01 –1,19 1,2 –1,9 1 –9 10 –100	- 0,01 0,1 1 10	1 19 8 9 10
4800410	405	47	0	1,005 1,01 –1,19 1,2 –1,9 1 –9 10 –100	- 0,01 0,1 1 10	1 19 8 9 10
4800411	405	47	1	1,005 1,01 –1,19 1,2 –1,9 1 –9 10 –100	- 0,01 0,1 1 10	1 19 8 9 10
4800412	405	47	2	1,005 1,01 –1,19 1,2 –1,9 1 –9 10 –100	- 0,01 0,1 1 10	1 19 8 9 10

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Steel MarGage 406

- 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 class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800014	406	87	K	0,5 1,001 –1,009 1,01 –1,49 1 –9,5 10 –100	- 0,001 0,01 0,5 10	1 9 49 18 10
4800010	406	87	0	0,5 1,001 –1,009 1,01 –1,49 1 –9,5 10 –100	- 0,001 0,01 0,5 10	1 9 49 18 10
4800011	406	87	1	0,5 1,001 –1,009 1,01 –1,49 1 –9,5 10 –100	- 0,001 0,01 0,5 10	1 9 49 18 10
4800012	406	87	2	0,5 1,001 –1,009 1,01 –1,49 1 –9,5 10 –100	- 0,001 0,01 0,5 10	1 9 49 18 10

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Steel MarGage 408

- 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 class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800027	408	111	K	0,5 1,001 –1,009 1,01 –1,49 1 –24,5 25 –100	- 0,001 0,01 0,5 25	1 9 49 48 4
4800020	408	111	0	0,5 1,001 –1,009 1,01 –1,49 1 –24,5 25 –100	- 0,001 0,01 0,5 25	1 9 49 48 4
4800021	408	111	1	0,5 1,001 –1,009 1,01 –1,49 1 –24,5 25 –100	- 0,001 0,01 0,5 25	1 9 49 48 4
4800022	408	111	2	0,5 1,001 –1,009 1,01 –1,49 1 –24,5 25 –100	- 0,001 0,01 0,5 25	1 9 49 48 4

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Steel MarGage 409

- 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 class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800033	409	121	K	0,5 1,001 –1,009 1,01 –1,49 1,6 –1,9 1 –24,5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0,001 0,01 0,1 0,5 10 25	1 9 49 4 48 6 4
4800030	409	121	0	0,5 1,001 –1,009 1,01 –1,49 1,6 –1,9 1 –24,5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0,001 0,01 0,1 0,5 10 25	1 9 49 4 48 6 4
4800031	409	121	1	0,5 1,001 –1,009 1,01 –1,49 1,6 –1,9 1 –24,5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0,001 0,01 0,1 0,5 10 25	1 9 49 4 48 6 4
4800032	409	121	2	0,5 1,001 –1,009 1,01 –1,49 1,6 –1,9 1 –24,5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0,001 0,01 0,1 0,5 10 25	1 9 49 4 48 6 4

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Steel MarGage 412 / 413

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 class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Number
		Pieces		mm	
4800428	412	8	K	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	8
4800425	412	8	0	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	8
4800426	412	8	1	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	8
4800427	412	8	2	125 / 150 / 175 / 200 / 250 / 300 / 400 / 500	8
4800433	413	5	K	600 / 700 / 800 / 900 / 1000	5
4800430	413	5	0	600 / 700 / 800 / 900 / 1000	5
4800431	413	5	1	600 / 700 / 800 / 900 / 1000	5
4800432	413	5	2	600 / 700 / 800 / 900 / 1000	5

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800180	Optical parallel, Ø = 30 mm	421 P
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Steel MarGage 411 / 415

Vertical arrangement to save space

Tolerance class 1
For high standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

For testing and calibrating calipers

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Number
		Pieces		mm	
4800343	411	5	1	30 / 41,3 / 131,4 / 243,5 / 281,2	5
4800344	411	5	2	30 / 41,3 / 131,4 / 243,5 / 281,2	5
4800339	415	6	1	30 / 41,3 / 131,4 / 243,5 / 281,2 /481,1	6
4800340	415	6	2	30 / 41,3 / 131,4 / 243,5 / 281,2 /481,1	6

Rectangular Gage Block Set made of Ceramic MarGage 402 C

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800094	402 C	32	K	1,005 1,01 –1,09 1,1 –1,9 1 –9 10 –30 50	- 0,01 0,1 1 10 -	1 9 9 9 3 1
4800095	402 C	32	0	1,005 1,01 –1,09 1,1 –1,9 1 –9 10 –30 50	- 0,01 0,1 1 10 -	1 9 9 9 3 1
4800096	402 C	32	1	1,005 1,01 –1,09 1,1 –1,9 1 –9 10 –30 50	- 0,01 0,1 1 10 -	1 9 9 9 3 1
4800097	402 C	32	2	1,005 1,01 –1,09 1,1 –1,9 1 –9 10 –30 50	- 0,01 0,1 1 10 -	1 9 9 9 3 1

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability

- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- Similar coefficient of expansion to steel, allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive; it does not attract dust or dirt

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower Tolerance class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Rectangular Gage Block Set made of Ceramic MarGage 404 C

Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability

- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- Similar coefficient of expansion to steel, allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive; it does not attract dust or dirt

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower Tolerance class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800088	404 C	46	K	1,001 –1,009 1,01 –1,09 1,1 –1,9 1 –9 10 –100	0,001 0,01 0,1 1 10	9 9 9 9 10
4800008	404 C	46	0	1,001 –1,009 1,01 –1,09 1,1 –1,9 1 –9 10 –100	0,001 0,01 0,1 1 10	9 9 9 9 10
4800009	404 C	46	1	1,001 –1,009 1,01 –1,09 1,1 –1,9 1 –9 10 –100	0,001 0,01 0,1 1 10	9 9 9 9 10
4800004	404 C	46	2	1,001 –1,009 1,01 –1,09 1,1 –1,9 1 –9 10 –100	0,001 0,01 0,1 1 10	9 9 9 9 10

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Ceramic MarGage 405 C

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800423	405 C	47	K	1,005 1,01 –1,19 1,2 –1,9 1 –9 10 –100	- 0,01 0,1 1 10	1 19 8 9 10
4800420	405 C	47	0	1,005 1,01 –1,19 1,2 –1,9 1 –9 10 –100	- 0,01 0,1 1 10	1 19 8 9 10
4800421	405 C	47	1	1,005 1,01 –1,19 1,2 –1,9 1 –9 10 –100	- 0,01 0,1 1 10	1 19 8 9 10
4800422	405 C	47	2	1,005 1,01 –1,19 1,2 –1,9 1 –9 10 –100	- 0,01 0,1 1 10	1 19 8 9 10

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability

- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- Similar coefficient of expansion to steel, allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive; it does not attract dust or dirt

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower Tolerance class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Rectangular Gage Block Set made of Ceramic MarGage 406 C

Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability

- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- Similar coefficient of expansion to steel, allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive; it does not attract dust or dirt

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower Tolerance class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800016	406 C	87	K	0,5 1,001 –1,009 1,01 –1,49 1 –9,5 10 –100	- 0,001 0,01 0,5 10	1 9 49 18 10
4800018	406 C	87	0	0,5 1,001 –1,009 1,01 –1,49 1 –9,5 10 –100	- 0,001 0,01 0,5 10	1 9 49 18 10
4800019	406 C	87	1	0,5 1,001 –1,009 1,01 –1,49 1 –9,5 10 –100	- 0,001 0,01 0,5 10	1 9 49 18 10
4800017	406 C	87	2	0,5 1,001 –1,009 1,01 –1,49 1 –9,5 10 –100	- 0,001 0,01 0,5 10	1 9 49 18 10

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Ceramic MarGage 408 C

Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability

- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- Similar coefficient of expansion to steel, allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive; it does not attract dust or dirt

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800025	408 C	111	K	0,5 1,001 –1,009 1,01 –1,49 1 –24,5 25 –100	- 0,001 0,01 0,5 25	1 9 49 48 4
4800028	408 C	111	0	0,5 1,001 –1,009 1,01 –1,49 1 –24,5 25 –100	- 0,001 0,01 0,5 25	1 9 49 48 4
4800029	408 C	111	1	0,5 1,001 –1,009 1,01 –1,49 1 –24,5 25 –100	- 0,001 0,01 0,5 25	1 9 49 48 4
4800026	408 C	111	2	0,5 1,001 –1,009 1,01 –1,49 1 –24,5 25 –100	- 0,001 0,01 0,5 25	1 9 49 48 4

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower Tolerance class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Ceramic MarGage 409 C

Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability

- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- Similar coefficient of expansion to steel, allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive; it does not attract dust or dirt

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower Tolerance class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

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 standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and 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.

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
		Pieces		mm	mm	
4800036	409 C	121	K	0,5 1,001 –1,009 1,01 –1,49 1,6 –1,9 1 –24,5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0,001 0,01 0,1 0,5 10 25	1 9 49 4 48 6 4
4800038	409 C	121	0	0,5 1,001 –1,009 1,01 –1,49 1,6 –1,9 1 –24,5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0,001 0,01 0,1 0,5 10 25	1 9 49 4 48 6 4
4800039	409 C	121	1	0,5 1,001 –1,009 1,01 –1,49 1,6 –1,9 1 –24,5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0,001 0,01 0,1 0,5 10 25	1 9 49 4 48 6 4
4800037	409 C	121	2	0,5 1,001 –1,009 1,01 –1,49 1,6 –1,9 1 –24,5 30, 40, 60, 70 ,80 ,90 25, 50, 75, 100	- 0,001 0,01 0,1 0,5 10 25	1 9 49 4 48 6 4

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Block Set made of Ceramic MarGage 418 C

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Number
		Pieces		mm	
4800085	418 C	2	0	2	2
4800086	418 C	2	1	2	2

Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability

- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- Similar coefficient of expansion to steel, allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive; it does not attract dust or dirt

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

Tolerance class 1
For high standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and for checking precision gages.

- Pair of protective wood blocks as outer cover gage blocks
- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Rectangular Gage Block Set made of Ceramic MarGage 419 C

Resistant to both impact and breakage. Virtually no warping of material if surfaces become scratched or edges damaged. Longer retention of wringing ability

- Extremely durable, thus providing a long service life as well being highly robust compared to all other materials currently be used in metrology. Therefore the interval between inspections are distinctly greater
- The corrosion-resistant Circonimar is extremely resistant to alkalis, acids, oil, grinding fluid and other aggressive media even without protective measures
- Similar coefficient of expansion to steel, allowing unrestricted use even at unfavorable temperatures
- Non-magnetic Circonimar is anti-static, anti-magnetic and non-conductive; it does not attract dust or dirt

Tolerance class 1
For high standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and for checking precision gages.

For testing and calibrating outside micrometers

- **Scope of delivery:** wooden case with clear labeling strips, Mahr calibration certificate
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Technical Data

Order no.	Product type	Quantity per set	Tolerance class	Nominal sizes	Number
		Pieces		mm	
4800090	419 C	10	1	2,5 / 5,1 / 7,7 / 10,3 / 12,9 / 15,0 / 17,6 / 20,2 / 22,8 / 25 + 421 P, ø 30 mm	10

Rectangular Gage Block Set made of Steel MarGage

- Long used as the practical standards of dimensional measurement in precision manufacturing. With accuracies, materials and manufacturing methods greatly refined, gage blocks are now of highest quality and precision
- Used as comparison reference and utilization standards in the field of length measurement
- For checking gages and measuring instruments
- Used individually or in combinations by wringing several blocks together
- Mahr gage blocks are available from stock individually and as full sets in inches (rectangular only)
- Sets are manufactured to Grade 0 only, which meet or exceed ASME B89.1.9–2002 specifications
- Offered in steel to suit a wide range of service conditions. Steel blocks are extremely stable, hardened to Rc 62 minimum, and processed through a thorough seasoning cycle to relieve internal stresses before finish lapping
- All block sets are serialized and supplied in a fitted storage case (certification priced separately)
- **Scope of delivery:** Wooden case with clear labeling strips

Technical Data

Order no.	Quantity per set	Tolerance class	Nominal sizes	Increment	Number
	Pieces		inch	inch	
2176361	81	0	.1001″ –.1009″ .101″ –.149″ .050″ –.950″ 1.000″ –4.000″	.0001″ .001″ .050″ 1.00″	9 49 19 4
2176362	49	0	.1001″ –.1009″ .101″ –.109″ .010″ –.090″ .110″ –.190″ .100 –.900″ 1.000″ –4.000″	.0001″ .001″ .010″ .010″ .100″ 1.00″	9 9 9 9 9 4

Accessories

Order no.	Product name	Product type
4800140	Optical flat, Ø = 45 mm	421
4800170	Contact thermometer, Readings 0.2°C	422
4800142	Wooden tongs	423
4800130	Maintenance accessories	424

Rectangular Gage Blocks made of Steel MarGage 417/K

From nominal size 125 mm on, also supplied with wooden case
- Special sizes are available upon request

Calibration class K
As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower Tolerance class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

- **Scope of delivery:** Wooden case (gage blocks >125 mm)
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Nominal size	Order no.
mm	
0.5	4803409
1	4803419
1.0005	4803386
1.001	4803420
1.002	4803421
1.003	4803422
1.004	4803423
1.005	4803424
1.006	4803425
1.007	4803426
1.008	4803427
1.009	4803428
1.01	4803429
1.02	4803430
1.03	4803431
1.04	4803432
1.05	4803433
1.06	4803434
1.07	4803435
1.08	4803436
1.09	4803437
1.1	4803438
1.11	4803439
1.12	4803440
1.13	4803441
1.14	4803442
1.15	4803443
1.16	4803444
1.17	4803445
1.18	4803446
1.19	4803447
1.2	4803448
1.21	4803449
1.22	4803450
1.23	4803451
1.24	4803452
1.25	4803453
1.26	4803454
1.27	4803455
1.28	4803456
1.29	4803457
1.3	4803458
1.31	4803459
1.32	4803460
1.33	4803461
1.34	4803462
1.35	4803463
1.36	4803464
1.37	4803465
1.38	4803466
1.39	4803467
1.4	4803468
1.41	4803469
1.42	4803470
1.43	4803471
1.44	4803472
1.45	4803473
1.46	4803474
1.47	4803475

Nominal size	Order no.
mm	
1.48	4803476
1.49	4803477
1.5	4803478
1.6	4803479
1.7	4803480
1.8	4803481
1.9	4803482
2	4803483
2.5	4803484
3	4803485
3.5	4803486
4	4803487
4.5	4803488
5	4803489
5.5	4803490
6	4803491
6.5	4803492
7	4803493
7.5	4803494
8	4803495
8.5	4803496
9	4803497
9.5	4803498
10	4803499
10.5	4803500
11	4803501
11.5	4803502
12	4803503
12.5	4803504
13	4803505
13.5	4803506
14	4803507
14.5	4803508
15	4803509
15.5	4803510
16	4803511
16.5	4803512
17	4803513
17.5	4803514
18	4803515
18.5	4803516
19	4803517
19.5	4803518
20	4803519
20.5	4803520
21	4803521
21.5	4803522
22	4803523
22.5	4803524
23	4803525
23.5	4803526
24	4803527
24.5	4803528
25	4803529
30	4803530
40	4803531
50	4803532
60	4803533
70	4803534

Nominal size	Order no.
mm	
75	4803535
80	4803536
90	4803537
100	4803538
125	4803539
150	4803540
175	4803541
200	4803542
250	4803543
300	4803544
400	4803546
500	4803548
600	4803549
700	4803550
800	4803551
900	4803552
1000	4803553

Rectangular Gage Blocks made of Steel MarGage 417/0

Nominal size	Order no.
mm	
0.5	4801009
0.55	4801173
0.6	4801174
0.65	4801175
0.7	4801176
0.75	4801177
0.8	4801178
0.85	4801179
0.9	4801180
0.95	4801181
1	4801019
1.0005	4801720
1.001	4801020
1.002	4801021
1.003	4801022
1.004	4801023
1.005	4801024
1.006	4801025
1.007	4801026
1.008	4801027
1.009	4801028
1.01	4801029
1.02	4801030
1.03	4801031
1.04	4801032
1.05	4801033
1.06	4801034
1.07	4801035
1.08	4801036
1.09	4801037
1.1	4801038
1.11	4801039
1.12	4801040
1.13	4801041
1.14	4801042
1.15	4801043
1.16	4801044
1.17	4801045
1.18	4801046
1.19	4801047
1.2	4801048
1.21	4801049
1.22	4801050
1.23	4801051
1.24	4801052
1.25	4801053
1.26	4801054
1.27	4801055
1.28	4801056
1.29	4801057
1.3	4801058
1.31	4801059
1.32	4801060
1.33	4801061
1.34	4801062
1.35	4801063
1.36	4801064
1.37	4801065
1.38	4801066

Nominal size	Order no.
mm	
1.39	4801067
1.4	4801068
1.41	4801069
1.42	4801070
1.43	4801071
1.44	4801072
1.45	4801073
1.46	4801074
1.47	4801075
1.48	4801076
1.49	4801077
1.5	4801078
1.6	4801079
1.7	4801080
1.8	4801081
1.9	4801082
2	4801083
2.5	4801084
3	4801085
3.5	4801086
4	4801087
4.5	4801088
5	4801089
5.5	4801090
6	4801091
6.5	4801092
7	4801093
7.5	4801094
8	4801095
8.5	4801096
9	4801097
9.5	4801098
10	4801099
10.5	4801100
11	4801101
11.5	4801102
12	4801103
12.5	4801104
13	4801105
13.5	4801106
14	4801107
14.5	4801108
15	4801109
15.5	4801110
16	4801111
16.5	4801112
17	4801113
17.5	4801114
18	4801115
18.5	4801116
19	4801117
19.5	4801118
20	4801119
20.5	4801120
21	4801121
21.5	4801122
22	4801123
22.5	4801124
23	4801125

Nominal size	Order no.
mm	
23.5	4801126
24	4801127
24.5	4801128
25	4801129
30	4801130
40	4801131
50	4801132
60	4801133
70	4801134
75	4801135
80	4801136
90	4801137
100	4801138
125	4801139
150	4801140
175	4801141
200	4801142
250	4801143
300	4801144
400	4801146
500	4801148
600	4801149
700	4801150
800	4801151
900	4801152
1000	4801153

From nominal size 125 mm on, also supplied with wooden case

- Special sizes are available upon request

Tolerance class 0
For maximum accuracy requirements. To be used as basic standards in test laboratories and precision inspection rooms, where other gage blocks and high accuracy measuring instruments are calibrated.

- **Scope of delivery:** Wooden case (gage blocks >125 mm)
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Rectangular Gage Blocks made of Steel MarGage 417/1

From nominal size 125 mm on, also supplied with wooden case

- Special sizes are available upon request

Tolerance class 1
For high standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and for checking precision gages.

- **Scope of delivery:** Wooden case (gage blocks >125 mm)
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Nominal size	Order no.
mm	
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
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

Nominal size	Order no.
mm	
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
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

Nominal size	Order no.
mm	
23.5	4801326
24	4801327
24.5	4801328
25	4801329
30	4801330
40	4801331
41.3	4803179
50	4801332
60	4801333
70	4801334
75	4801335
80	4801336
90	4801337
100	4801338
125	4801339
131.4	4803180
150	4801340
175	4801341
200	4801342
243.5	4803181
250	4801343
300	4801344
400	4801346
481.1	4803182
500	4801348
600	4801349
700	4801350
800	4801351
900	4801352
1000	4801353

Rectangular Gage Blocks made of Steel MarGage 417/2

Nominal size	Order no.
mm	
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
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

Nominal size	Order no.
mm	
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
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

Nominal size	Order no.
mm	
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

From nominal size 125 mm on, also supplied with wooden case

- Special sizes are available upon request

Tolerance class 2
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Scope of delivery:** Wooden case (gage blocks >125 mm)
- **Coefficient of linear expansion:** 11,5 x 10^{-6} K^{-1}

Rectangular Gage Blocks made of Ceramic MarGage 417 C/K

- Ideal for all applications
- The outstanding features of all ceramic gage blocks from Mahr provide unrivalled flexibility in practical use
- Circonimar is equally well suited to inspection-room conditions and the rigors of workshop applications
- No material is easier to handle than Circonimar; it has excellent wringing properties, no corrosion, no need for lubrication, low weight and scratch resistant

Calibration class K

As primary factory standard, particularly for the calibration of subsidiary test laboratories, e.g. for gage blocks of lower Tolerance class. Supplied on request with DKD calibration certificate, indicating the deviation from the nominal size for each gage block.

- **Scope of delivery:** Wooden case (gage blocks >125 mm)
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Nominal size	Order no.
mm	
0.5	4804600
1	4804610
1.0005	4804761
1.001	4804611
1.002	4804612
1.003	4804613
1.004	4804614
1.005	4804615
1.006	4804616
1.007	4804617
1.008	4804618
1.009	4804619
1.01	4804620
1.02	4804621
1.03	4804622
1.04	4804623
1.05	4804624
1.06	4804625
1.07	4804626
1.08	4804627
1.09	4804628
1.1	4804629
1.11	4804630
1.12	4804631
1.13	4804632
1.14	4804633
1.15	4804634
1.16	4804635
1.17	4804636
1.18	4804637
1.19	4804638
1.2	4804639
1.21	4804640
1.22	4804641
1.23	4804642
1.24	4804643
1.25	4804644
1.26	4804645
1.27	4804646
1.28	4804647
1.29	4804648
1.3	4804649
1.31	4804650
1.32	4804651
1.33	4804652
1.34	4804653
1.35	4804654
1.36	4804655
1.37	4804656
1.38	4804657
1.39	4804658
1.4	4804659
1.41	4804660
1.42	4804661
1.43	4804662
1.44	4804663
1.45	4804664
1.46	4804665
1.47	4804666

Nominal size	Order no.
mm	
1.48	4804667
1.49	4804668
1.5	4804669
1.6	4804670
1.7	4804671
1.8	4804672
1.9	4804673
2	4804674
2.5	4804675
3	4804676
3.5	4804677
4	4804678
4.5	4804679
5	4804680
5.5	4804681
6	4804682
6.5	4804683
7	4804684
7.5	4804685
8	4804686
8.5	4804687
9	4804688
9.5	4804689
10	4804690
10.5	4804691
11	4804692
11.5	4804693
12	4804694
12.5	4804695
13	4804696
13.5	4804697
14	4804698
14.5	4804699
15	4804700
15.5	4804701
16	4804702
16.5	4804703
17	4804704
17.5	4804705
18	4804706
18.5	4804707
19	4804708
19.5	4804709
20	4804710
20.5	4804711
21	4804712
21.5	4804713
22	4804714
22.5	4804715
23	4804716
23.5	4804717
24	4804718
24.5	4804719
25	4804720
30	4804721
40	4804722
50	4804723
60	4804724
70	4804725

Nominal size	Order no.
mm	
75	4804726
80	4804727
90	4804728
100	4804729

Rectangular Gage Blocks made of Ceramic MarGage 417 C/0

Nominal size	Order no.
mm	
0.5	4804000
1	4804010
1.0005	4804759
1.001	4804011
1.002	4804012
1.003	4804013
1.004	4804014
1.005	4804015
1.006	4804016
1.007	4804017
1.008	4804018
1.009	4804019
1.01	4804020
1.02	4804021
1.03	4804022
1.04	4804023
1.05	4804024
1.06	4804025
1.07	4804026
1.08	4804027
1.09	4804028
1.1	4804029
1.11	4804030
1.12	4804031
1.13	4804032
1.14	4804033
1.15	4804034
1.16	4804035
1.17	4804036
1.18	4804037
1.19	4804038
1.2	4804039
1.21	4804040
1.22	4804041
1.23	4804042
1.24	4804043
1.25	4804044
1.26	4804045
1.27	4804046
1.28	4804047
1.29	4804048
1.3	4804049
1.31	4804050
1.32	4804051
1.33	4804052
1.34	4804053
1.35	4804054
1.36	4804055
1.37	4804056
1.38	4804057
1.39	4804058
1.4	4804059
1.41	4804060
1.42	4804061
1.43	4804062
1.44	4804063
1.45	4804064
1.46	4804065
1.47	4804066

Nominal size	Order no.
mm	
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
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

Nominal size	Order no.
mm	
75	4804126
80	4804127
90	4804128
100	4804129

- Ideal for all applications
- The outstanding features of all ceramic gage blocks from Mahr provide unrivalled flexibility in practical use
- Circonimar is equally well suited to inspection-room conditions and the rigors of workshop applications
- No material is easier to handle than Circonimar; it has excellent wringing properties, no corrosion, no need for lubrication, low weight and scratch resistant

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.

- **Scope of delivery:** Wooden case (gage blocks >125 mm)
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Rectangular Gage Blocks made of Ceramic MarGage 417 C/1

- Ideal for all applications
- The outstanding features of all ceramic gage blocks from Mahr provide unrivalled flexibility in practical use
- Circonimar is equally well suited to inspection-room conditions and the rigors of workshop applications
- No material is easier to handle than Circonimar; it has excellent wringing properties, no corrosion, no need for lubrication, low weight and scratch resistant

Tolerance class 1

For high standards of accuracy. As reference gage block for the inspection room. Designed to perform particularly accurate measurements. For setting indicating measuring instruments and for checking precision gages.

- **Scope of delivery:** Wooden case (gage blocks >125 mm)
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Nominal size	Order no.
mm	
0.5	4804200
1	4804210
1.0005	4804764
1.001	4804211
1.002	4804212
1.003	4804213
1.004	4804214
1.005	4804215
1.006	4804216
1.007	4804217
1.008	4804218
1.009	4804219
1.01	4804220
1.02	4804221
1.03	4804222
1.04	4804223
1.05	4804224
1.06	4804225
1.07	4804226
1.08	4804227
1.09	4804228
1.1	4804229
1.11	4804230
1.12	4804231
1.13	4804232
1.14	4804233
1.15	4804234
1.16	4804235
1.17	4804236
1.18	4804237
1.19	4804238
1.2	4804239
1.21	4804240
1.22	4804241
1.23	4804242
1.24	4804243
1.25	4804244
1.26	4804245
1.27	4804246
1.28	4804247
1.29	4804248
1.3	4804249
1.31	4804250
1.32	4804251
1.33	4804252
1.34	4804253
1.35	4804254
1.36	4804255
1.37	4804256
1.38	4804257
1.39	4804258
1.4	4804259
1.41	4804260
1.42	4804261
1.43	4804262
1.44	4804263
1.45	4804264
1.46	4804265
1.47	4804266

Nominal size	Order no.
mm	
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
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

Nominal size	Order no.
mm	
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

Rectangular Gage Blocks made of Ceramic MarGage 417 C/2

Nominal size	Order no.
mm	
0.5	4804400
1	4804410
1.0005	4804765
1.001	4804411
1.002	4804412
1.003	4804413
1.004	4804414
1.005	4804415
1.006	4804416
1.007	4804417
1.008	4804418
1.009	4804419
1.01	4804420
1.02	4804421
1.03	4804422
1.04	4804423
1.05	4804424
1.06	4804425
1.07	4804426
1.08	4804427
1.09	4804428
1.1	4804429
1.11	4804430
1.12	4804431
1.13	4804432
1.14	4804433
1.15	4804434
1.16	4804435
1.17	4804436
1.18	4804437
1.19	4804438
1.2	4804439
1.21	4804440
1.22	4804441
1.23	4804442
1.24	4804443
1.25	4804444
1.26	4804445
1.27	4804446
1.28	4804447
1.29	4804448
1.3	4804449
1.31	4804450
1.32	4804451
1.33	4804452
1.34	4804453
1.35	4804454
1.36	4804455
1.37	4804456
1.38	4804457
1.39	4804458
1.4	4804459
1.41	4804460
1.42	4804461
1.43	4804462
1.44	4804463
1.45	4804464
1.46	4804465
1.47	4804466

Nominal size	Order no.
mm	
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
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

Nominal size	Order no.
mm	
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

- Ideal for all applications
- The outstanding features of all ceramic gage blocks from Mahr provide unrivalled flexibility in practical use
- Circonimar is equally well suited to inspection-room conditions and the rigors of workshop applications
- No material is easier to handle than Circonimar; it has excellent wringing properties, no corrosion, no need for lubrication, low weight and scratch resistant
- **Tolerance class 2**

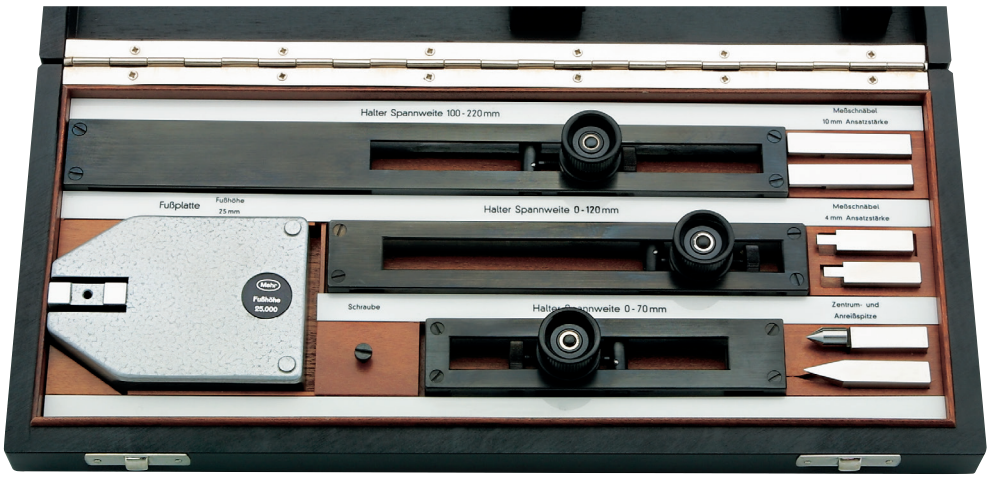
For checking production gages of quality IT 6 and IT 7. For setting indicating measuring instruments and for checking accurate dimensions in the jig and tool industry.

- **Scope of delivery:** Wooden case (gage blocks >125 mm)
- **Coefficient of linear expansion:** 9,5 x 10^{-6} K^{-1}

Gage block holder and measuring jaws accessory set MarGage 420

To be used in conjunction with Gage Blocks for gaging both workpieces and fixtures

- To check, set and adjust setting gages and measuring instruments
- For scribing and marking
- **Scope of delivery:** wooden case



Technical Data

Order no.	Product type
4800100	420

Accessories

Order no.	Product name	Set consists of	Product type
4800110	Measuring jaws, Thickness 2 x 2 mm = 4mm	•	420 m
4800111	Measuring jaws, Thickness 2 x 5 mm = 10 mm	•	420 m
4800112	Scriber tip	•	420 a
4800113	Centering point	•	420 z
4800120	Holder, Measuring span 0 –70mm	•	420 h
4800121	Holder, Measuring span 0 –120mm	•	420 h
4800122	Holder, Measuring span 100 –220mm	•	420 h
4800123	Holder, Measuring span 100 –420mm		420 h
4800124	Holder, Measuring span 400 –820mm		420 h
4800114	Stand	•	420 f

Optical flat MarGage 421

Used to test the surface flatness on precision components or measuring instruments according to the interference principle

- **Scope of delivery:** Case

Technical Data

Order no.	Product type	Diameter	Thickness	Flatness deviation
		mm	mm	µm
4800140	421	45	11	0.1
4800135	421	100	20	0.1
4800136	421	150	30	0.1
4800137	421	300	50	0.4

Optical parallel MarGage 421 P

For simultaneous testing of parallelism and flatness, e.g. of plane measuring surfaces of outside micrometers by the interference method

- **Scope of delivery:** Case

Technical Data

Order no.	Product type	Diameter	Thickness	Flatness deviation	Parallelism deviation
		mm	mm	µm	µm
4800180	421 P	30	12	0.15	0.4

Maintenance accessories MarGage 424

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

- **Scope of delivery:** Case

Technical Data

Order no.	Product type
4800130	424

Pin Gage with a handle MarGage 426 G

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- etc.

- Wear-resistant gage steel, hardened,multi-aged, ground and lapped
- Grade 0
- DIN 2269
- Manufacturing tolerance ± 0.5 µm

Technical Data

Order no.	Product type	Grade (DIN 876)	Ø mm	Increment	Manufacturing tolerance +/–	Usable length
			mm	mm	µm	mm
4828151	426 G	0	0.1 –0.19	0.01	0.5	25
4828152	426 G	0	0.2 –0.29	0.01	0.5	25
4828153	426 G	0	0.3 –0.49	0.01	0.5	25
4828154	426 G	0	0.5 –0.99	0.01	0.5	25
4828155	426 G	0	1 –2.99	0.01	0.5	57
4828156	426 G	0	3 –5.99	0.01	0.5	57
4828157	426 G	0	6 –10	0.01	0.5	57
4828351	426 G	0	0.1 –0.199	0.001	0.5	25
4828352	426 G	0	0.2 –0.299	0.001	0.5	25
4828353	426 G	0	0.3 –0.499	0.001	0.5	25
4828354	426 G	0	0.5 –0.999	0.001	0.5	25
4828355	426 G	0	1 –2.999	0.001	0.5	57
4828356	426 G	0	3 –5.999	0.001	0.5	57
4828357	426 G	0	6 –10	0.001	0.5	57

Pin Gage with a handle MarGage 426 G

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- etc.

- Wear-resistant gage steel, hardened, multi-aged, ground and lapped
- Grade 1
- DIN 2269
- Manufacturing tolerance ± 1.0 µm

Technical Data

Order no.	Product type	Grade (DIN 876)	Ø mm	Increment	Manufacturing tolerance +/–	Usable length
			mm	mm	µm	mm
4828161	426 G	1	0.1 –0.19	0.01	1	33
4828162	426 G	1	0.2 –0.29	0.01	1	33
4828163	426 G	1	0.3 –0.49	0.01	1	33
4828164	426 G	1	0.5 –0.99	0.01	1	33
4828165	426 G	1	1 –2.99	0.01	1	62
4828166	426 G	1	3 –5.99	0.01	1	62
4828167	426 G	1	6 –10	0.01	1	62
4828361	426 G	1	0.1 –0.199	0.001	1	33
4828362	426 G	1	0.2 –0.299	0.001	1	33
4828363	426 G	1	0.3 –0.499	0.001	1	33
4828364	426 G	1	0.5 –0.999	0.001	1	33
4828365	426 G	1	1 –2.999	0.001	1	62
4828366	426 G	1	3 –5.999	0.001	1	62
4828367	426 G	1	6 –10	0.001	1	62

Pin Gage with a handle MarGage 426 G

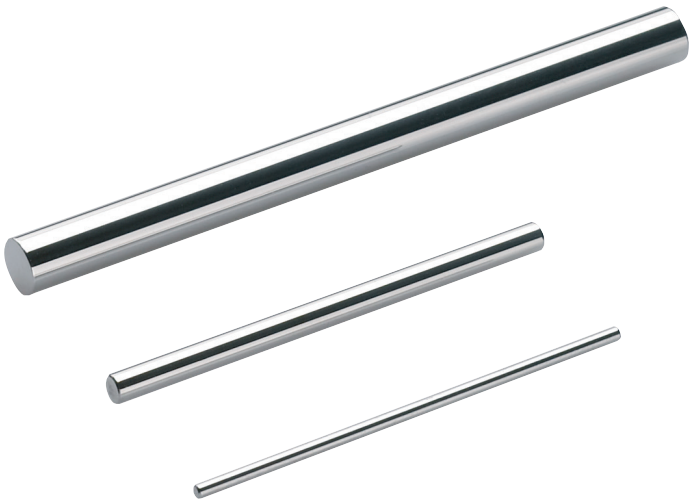
- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- etc.

- Wear-resistant gage steel, hardened, multi-aged and precision ground
- Better than Grade 2
- DIN 2269
- Manufacturing tolerance ± 1.5 µm

Technical Data

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Usable length
			mm	mm	µm	mm
4828171	426 G	2	0.1 –0.19	0.01	1.5	33
4828172	426 G	2	0.2 –0.29	0.01	1.5	33
4828173	426 G	2	0.3 –0.49	0.01	1.5	33
4828174	426 G	2	0.5 –0.99	0.01	1.5	33
4828175	426 G	2	1 –2.99	0.01	1.5	62
4828176	426 G	2	3 –4	0.01	1.5	43
4828177	426 G	2	6 –10	0.01	1.5	62

Pin Gage without a handle MarGage 426



- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- etc.

- Gage steel, hardened, multi-aged, ground and lapped
- Grade 0
- DIN 2269
- Manufacturing tolerance ± 0.5 µm
- from Ø 5.01 mm inscribed with diameter on the end face

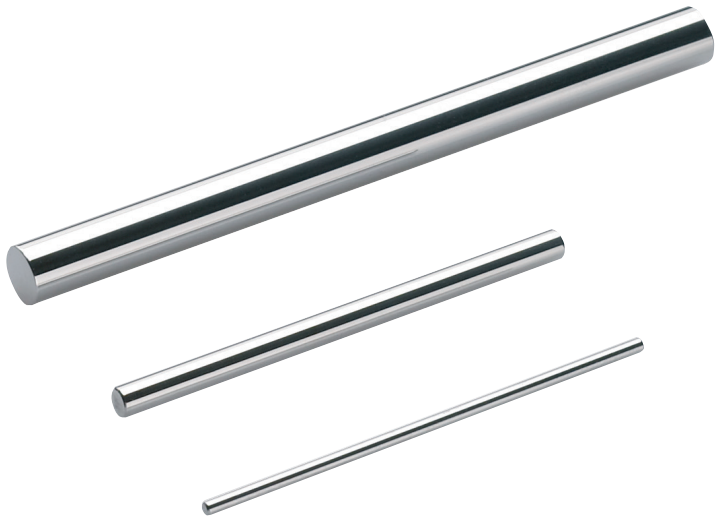
Technical Data

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Length
			mm	mm	µm	mm
4828103	426	0	0.3 –0.49	0.01	0.5	30
4828104	426	0	0.5 –0.99	0.01	0.5	30
4828105	426	0	1 –2.99	0.01	0.5	60
4828106	426	0	3 –5.99	0.01	0.5	60
4828107	426	0	6 –10	0.01	0.5	60
4828303	426	0	0.3 –0.499	0.001	0.5	30
4828304	426	0	0.5 –0.999	0.001	0.5	30
4828305	426	0	1 –2.999	0.001	0.5	60
4828306	426	0	3 –5.999	0.001	0.5	60
4828307	426	0	6 –10	0.001	0.5	60

Pin Gage without a handle MarGage 426

- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- etc.

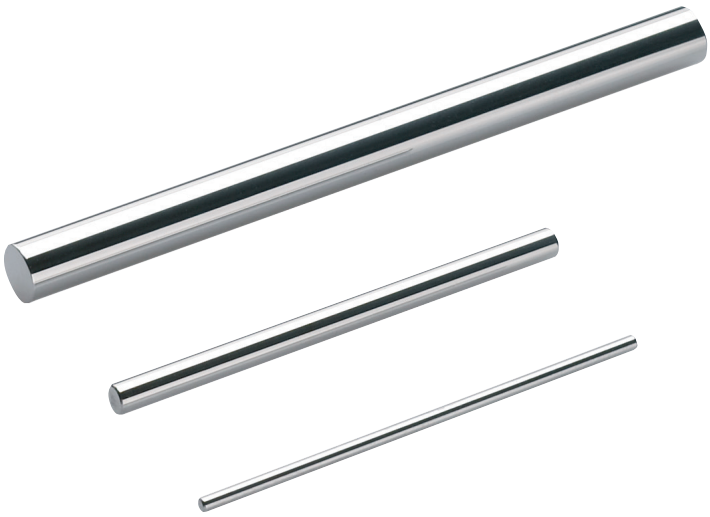
- Wear-resistant gage steel, hardened, multi-aged, ground and lapped
- Grade 1
- DIN 2269
- Manufacturing tolerance ± 1.0 µm
- from dia. 5.01 mm inscribed with diameter on the end face



Technical Data

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Length
			mm	mm	µm	mm
4828113	426	1	0.3 –0.49	0.01	1	40
4828114	426	1	0.5 –0.99	0.01	1	40
4828115	426	1	1 –2.99	0.01	1	70
4828116	426	1	3 –5.99	0.01	1	70
4828117	426	1	6 –9.99	0.01	1	70
4828118	426	1	10 –11.99	0.01	1	70
4828119	426	1	12 –13.99	0.01	1	70
4828120	426	1	14 –15.99	0.01	1	70
4828121	426	1	16 –18.99	0.01	1	70
4828122	426	1	19 –20	0.01	1	70
4828313	426	1	0.3 –0.499	0.001	1	40
4828314	426	1	0.5 –0.999	0.001	1	40
4828315	426	1	1 –2.999	0.001	1	70
4828316	426	1	3 –5.999	0.001	1	70
4828317	426	1	6 –9.999	0.001	1	70
4828318	426	1	10 –11.999	0.001	1	70
4828319	426	1	12 –13.999	0.001	1	70
4828320	426	1	14 –15.999	0.001	1	70
4828321	426	1	16 –18.999	0.001	1	70
4828322	426	1	19 –20	0.001	1	70

Pin Gage without a handle MarGage 426



- For use as setting standards for indicating measuring instruments
- For checking the parallelism and straightness of rulers on measuring and control plates
- For testing the distances between axes, tapers and other workpieces in conjunction with parallel gage blocks
- For determining the pitch diameter of threads or pitch circle diameter on gears.
- etc.

- Gage steel, hardened, multi-aged and precision ground
- Better than Grade 2
- DIN 2269
- Manufacturing tolerance ± 1.5 µm
- from Ø 5.01 mm inscribed with diameter on the end face

Technical Data

Order no.	Product type	Grade	Ø	Increment	Manufacturing tolerance +/–	Length
			mm	mm	µm	mm
4828133	426	2	0.3 –0.49	0.01	1.5	40
4828134	426	2	0.5 –0.99	0.01	1.5	40
4828135	426	2	1 –2.99	0.01	1.5	70
4828137	426	2	6 –9.99	0.01	1.5	70
4828138	426	2	10 –11.99	0.01	1.5	70
4828139	426	2	12 –13.99	0.01	1.5	70
4828140	426	2	14 –15.99	0.01	1.5	70
4828141	426	2	16 –18.99	0.01	1.5	70
4828142	426	2	19 –20	0.01	1.5	70

Pin Gage sets without handle MarGage 426 S

- To be used as setting standards for indicating measuring instruments, testing the distances between axes, tapers and other work pieces in conjunction with gage blocks
- Can also be used for determining pitch diameter of threads or pitch circle diameter on gears and serrations
- Gage steel, hardened, multi-aged, ground (grade 2) and lapped (grade 0 and 1)

Technical Data

Order no.	Product type	Grade	Ø	Increment	Quantity per set	Manufacturing tolerance +/–
			mm	mm	Pieces	µm
4828181	426 S	0	0.1 –0.5	0.01	41	0.5
4828182	426 S	0	0.5 –1	0.01	51	0.5
4828183	426 S	0	0.1 –1	0.01	91	0.5
4828184	426 S	0	1 –2	0.01	101	0.5
4828190	426 S	1	1 –10	0.1	91	1
4828191	426 S	1	0.1 –0.5	0.01	41	1
4828192	426 S	1	0.5 –1	0.01	51	1
4828193	426 S	1	0.1 –1	0.01	91	1
4828194	426 S	1	1 –2	0.01	101	1
4828195	426 S	1	2 –3	0.01	101	1
4828196	426 S	1	3 –4	0.01	101	1
4828197	426 S	1	4 –5	0.01	101	1
4828198	426 S	1	5 –6	0.01	101	1
4828199	426 S	1	6 –7	0.01	101	1
4828200	426 S	1	7 –8	0.01	101	1
4828201	426 S	1	8 –9	0.01	101	1
4828202	426 S	1	9 –10	0.01	101	1
4828210	426 S	2	1 –10	0.1	91	1.5
4828211	426 S	2	0.1 –0.5	0.01	41	1.5
4828212	426 S	2	0.5 –1	0.01	51	1.5
4828213	426 S	2	0.1 –1	0.01	91	1.5
4828214	426 S	2	1 –2	0.01	101	1.5
4828215	426 S	2	2 –3	0.01	101	1.5
4828216	426 S	2	3 –4	0.01	101	1.5
4828217	426 S	2	4 –5	0.01	101	1.5
4828218	426 S	2	5 –6	0.01	101	1.5
4828219	426 S	2	6 –7	0.01	101	1.5
4828220	426 S	2	7 –8	0.01	101	1.5
4828221	426 S	2	8 –9	0.01	101	1.5
4828222	426 S	2	9 –10	0.01	101	1.5

Individual Plug Gages with handle MarGage 426 D

- Unbreakable plastic handle inscribed with the diameter
- Gage is made of wear-resistant, hardened, multi-aged, ground and lapped steel
- For testing diameters of small bores
- To be used as setting standards for indicating measuring instruments and testing the distances between axes, grooves and slots on workpieces in conjunction with gage blocks

Technical Data

Order no.	Product type	Ø	Increment	Manufacturing tolerance +/–
		mm	mm	µm
4828230	426 D	0.06 –0.09	0.01	0.5
4828231	426 D	0.1 –0.19	0.01	0.5
4828232	426 D	0.2 –0.29	0.01	0.5
4828233	426 D	0.3 –0.49	0.01	0.5
4828234	426 D	0.5 –0.99	0.01	0.5
4828235	426 D	1 –2.99	0.01	0.5
4828236	426 D	3 –5.99	0.01	0.5
4828237	426 D	6 –10	0.01	0.5

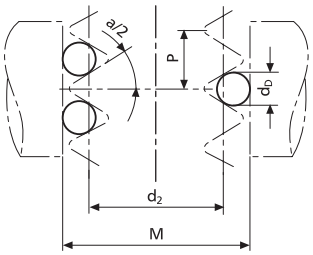
Plug Gage Sets MarGage 426 DS

- Unbreakable plastic handle inscribed with the diameter
- Set with pin gages in diameter increments of 0.01 mm
- Wear-resistant gage steel. hardened. multi-aged, ground and lapped plastic handle inscribed with the diameter
- For testing diameters of small bores
- To be used as setting standards for indicating measuring instruments, testing the distances between axes, grooves and slots on work pieces in conjunction with gage blocks

Technical Data

Order no.	Product type	Ø	Increment	Quantity per set	Manufacturing tolerance +/–	Usable length
		mm	mm	Pieces	µm	mm
4825000	426 DS	0.06 –0.3	0.01	45	0.5	2
4825001	426 DS	0.51 –1	0.01	50	0.5	5
4825002	426 DS	1.01 –1.5	0.01	50	0.5	5
4825003	426 DS	1.51 –2	0.01	50	0.5	6
4825004	426 DS	2.01 –2.5	0.01	50	0.5	8
4825005	426 DS	2.51 –3	0.01	50	0.5	8
4825006	426 DS	3.01 –3.5	0.01	50	0.5	8
4825007	426 DS	3.51 –4	0.01	50	0.5	10
4825008	426 DS	4.01 –4.5	0.01	50	0.5	10
4825009	426 DS	4.51 –5	0.01	50	0.5	10
4825010	426 DS	5.01 –5.5	0.01	50	0.5	10
4825011	426 DS	5.51 –6	0.01	50	0.5	10
4825703	426 DS	6.01 –6.5	0.01	50	0.5	14
4825704	426 DS	6.51 –7	0.01	50	0.5	14
4825705	426 DS	7.01 –7.5	0.01	50	0.5	14
4825706	426 DS	7.51 –8	0.01	50	0.5	14
4825707	426 DS	8.01 –8.5	0.01	50	0.5	18
4825708	426 DS	8.51 –9	0.01	50	0.5	18
4825709	426 DS	9.01 –9.5	0.01	50	0.5	18
4825710	426 DS	9.51 –10	0.01	50	0.5	18

Thread Pin Gage MarGage 426 A



Designed to be suspended over a test specimen

Set consists of 3 Pin Gages
- Manufacturing tolerance ± 0.5 µm
- Pin gage length: 32 mm
- For determining pitch diameter of external threads according to the three wire method

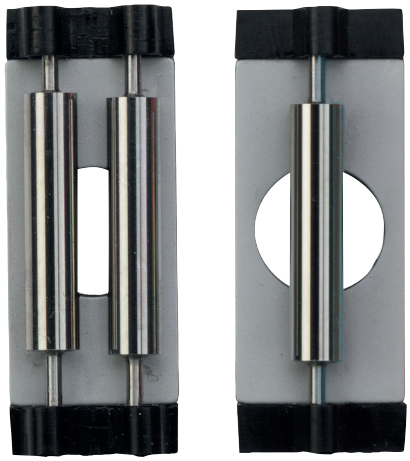
Technical Data

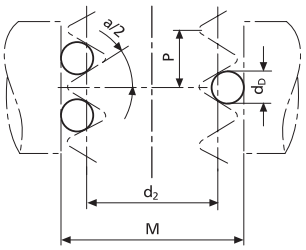
Order no.	Product type	Diameter	Metric	Whitworth	UST	Trapezoid	Manufacturing tolerance +/–
		mm	mm	TPI	TPI	mm	µm
4821000	426 A	0.17	0,25 / 0,3				0.5
4821001	426 A	0.195			80		0.5
4821002	426 A	0.22	0,35		72		0.5
4821003	426 A	0.25	0,4		64		0.5
4821004	426 A	0.29	0,45 / 0,5		56		0.5
4821005	426 A	0.335	0,6		48		0.5
4821006	426 A	0.39		40	44 / 40		0.5
4821007	426 A	0.455	0,7 / 0,75 / 0,8	32	36		0.5
4821008	426 A	0.53		28	32 / 28		0.5
4821009	426 A	0.62	1	26 / 24	24		0.5
4821010	426 A	0.725	1,25	22 / 20	20		0.5
4821011	426 A	0.895	1,5	19 / 18 / 16	18		0.5
4821012	426 A	1.1	1,75	14	16 / 14 / 13		0.5
4821013	426 A	1.35	2	12 / 11	12 / 11		0.5
4821014	426 A	1.65	2,5	10 / 9	10 / 9	3	0.5
4821015	426 A	2.05	3 / 3,5	8 / 7	8 / 7	4	0.5
4821016	426 A	2.55	4 / 4,5	6	6	5	0.5
4821017	426 A	3.2	5 / 5,5	5 / 4,5	5 / 4,5	6	0.5
4821018	426 A	4	6	4 / 3,5	4	7	0.5

Thread Pin Gages, holder pair MarGage

For determining pitch diameter of external threads according to the three wire method

- In conjunction with micrometers, indicating measuring instruments or measuring machines
- Each pair consists of: 1 holder with 1 pin gage and 1 holder with 2 pin gages
- Holder has a satin chrome finish, the retainer ring can be locked yet the measuring spindle can still rotate
- Pin gages are hardened and lapped. Freely floating in holder to allow proper positioning and contact with thread flanks
- Manufacturing tol. ± 0.5 µm
- (Mounting hole 6.35 mm = 1/4", 6.5 mm and 8 mm on request)
- For threads with outside diameter up to 95 mm

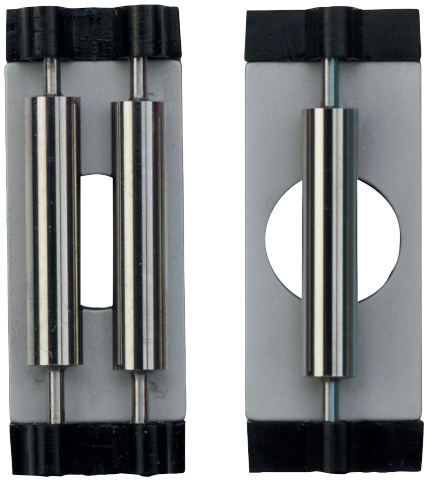


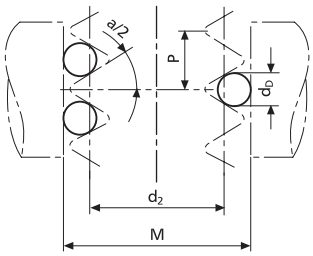


Technical Data

Order no.	Mounting hole	Diameter	Metric	Whitworth	UST	Trapezoid
		mm	mm	TPI	TPI	mm
4820010	7,5 mm	0.17	0,25 / 0,3			
4820011	7,5 mm	0.195			80	
4820012	7,5 mm	0.22	0,35		72	
4820013	7,5 mm	0.25	0,4		64	
4820014	7,5 mm	0.29	0,45 / 0,5		56	
4820015	7,5 mm	0.335	0,6		48	
4820016	7,5 mm	0.39		40	44 / 40	
4820017	7,5 mm	0.455	0,7 / 0,75 / 0,8	32	36	
4820018	7,5 mm	0.53		28	32 / 28	
4820019	7,5 mm	0.62	1	26 / 24	24	
4820020	7,5 mm	0.725	1,25	22 / 20	20	
4820021	7,5 mm	0.895	1,5	19 / 18 / 16	18	
4820022	7,5 mm	1.1	1,75	14	16 / 14 / 13	
4820023	7,5 mm	1.35	2	12 / 11	12 / 11	
4820024	7,5 mm	1.65	2,5	10 / 9	10 / 9	3
4820025	7,5 mm	2.05	3 / 3,5	8 / 7	8 / 7	4
4820026	7,5 mm	2.55	4 / 4,5	6	6	5
4820027	7,5 mm	3.2	5 / 5,5	5 / 4,5	5 / 4,5	6
4820028	7,5 mm	4	6	4 / 3,5	4	7
4820131	6,5 mm	0.25	0,4		64	
4820132	6,5 mm	0.17	0,25 / 0,3			
4820133	6,5 mm	0.22	0,35		72	
4820134	6,5 mm	0.29	0,45 / 0,5		56	
4820135	6,5 mm	0.335	0,6		48	
4820137	6,5 mm	0.455	0,7 / 0,75 / 0,8	32	36	
4820139	6,5 mm	0.62	1	26 / 24	24	
4820140	6,5 mm	0.725	1,25	22 / 20	20	
4820141	6,5 mm	0.895	1,5	19 / 18 / 16	18	
4820142	6,5 mm	1.1	1,75	14	16 / 14 / 13	
4820143	6,5 mm	1.35	2	12 / 11	12 / 11	
4820144	6,5 mm	1.65	2,5	10 / 9	10 / 9	3
4820145	6,5 mm	2.05	3 / 3,5	8 / 7	8 / 7	4
4820146	6,5 mm	2.55	4 / 4,5	6	6	5
4820147	6,5 mm	3.2	5 / 5,5	5 / 4,5	5 / 4,5	6
4820149	6,5 mm	0.195			80	
4820150	6,5 mm	0.39			44 / 40	
4820151	6,5 mm	0.53			32 / 28	
4820152	6,5 mm	4	6			7

Thread Pin Gages Set MarGage 426 MS





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
- **Scope of delivery:** wooden case

Technical Data

Order no.	Product 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

Ring Gage MarGage 355 E

Gage is made of special wear-resistant, hardened and lapped steel

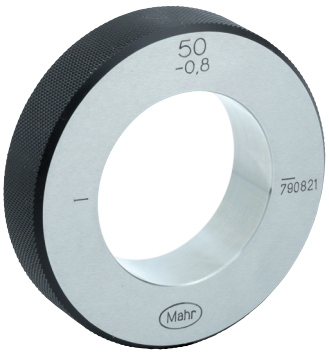
Dimensions: DIN 2250, Type C
Manufacturing tolerance:
DIN 2250 (JS4)
Uncertainty of actual deviation: 1/2 IT 1

Diameter	Order no.
mm	
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
52	4710072
53	4710073
54	4710074
55	4710075
56	4710076
57	4710077
58	4710078

Diameter	Order no.
mm	
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

Ring Gage MarGage 355 E

Ø mm	Order no.
mm	
101 –105	4714201
106 –110	4714202
111 –115	4714203
116 –120	4714204
121 –124	4714205
126 –130	4714206
131 –135	4714207
136 –140	4714208
141 –145	4714209
146 –150	4714210
151 –155	4714211
156 –160	4714212
161 –165	4714213
166 –170	4714214
171 –174	4714215
176 –180	4714216
181 –185	4714217
186 –190	4714218
191 –195	4714219
196 –200	4714220



Gage is made of special wear-resistant, hardened and lapped steel

Dimensions: DIN 2250, Type C
Manufacturing tolerance:
DIN 2250 (JS4)
Uncertainty of actual deviation:
--1/2 IT 1

Diameter increments of 1mm

- When placing an order, please inform us of the diameter

Ring Gage MarGage 355 E

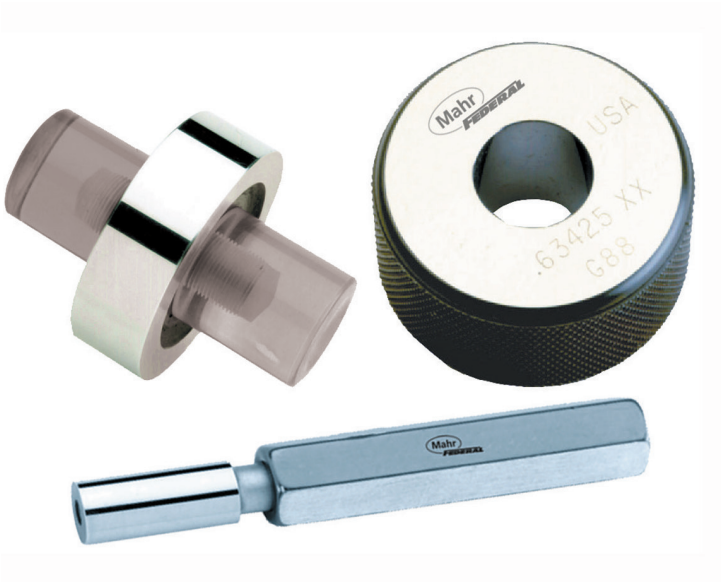
Gage is made of special wear-resistant, hardened and lapped steel

Dimensions: DIN 2250, Type C
Manufacturing tolerance: DIN 2250 (JS4)
Uncertainty of actual deviation: 1/2 IT 1

Ø mm	Order no.
mm	
1 –1.8	4732600
1.801 –3	4732641
3.001 –5	4732642
5.001 –10	4732635
10.001 –15	4732602
15.001 –20	4732603
20.001 –25	4732604
25.001 –32	4732605
32.001 –35	4732606
35.001 –40	4732607
40.001 –45	4732608
45.001 –50	4732609
50.001 –55	4732610
55.001 –60	4732611
60.001 –65	4732612
65.001 –70	4732613
70.001 –75	4732614
75.001 –80	4732615
80.001 –85	4732616
85.001 –90	4732617
90.001 –95	4732618
95.001 –100	4732619
100.001 –105	4732620
105.001 –110	4732636
110.001 –115	4732621
115.001 –120	4732637
120.001 –125	4732622
125.001 –130	4732638
130.001 –135	4732623
135.001 –140	4732639
140.001 –145	4732624
145.001 –150	4732640
150.001 –155	4732625
155.001 –160	4732626
160.001 –165	4732627
165.001 –170	4732628
170.001 –175	4732629
175.001 –180	4732630
180.001 –185	4732631
185.001 –190	4732632
190.001 –195	4732633
195.001 –200	4732634

Setting Standsards for indicating measuring instruments

AGD Masters



Master Rings

- Traceable certification and calibration available on request.
- Polished and lapped to size
- Non-gaging areas black oxidized — ring faces ground.
- Meet all requirements of ANSI Specification B47.1-1988
- Manufactured in accordance with ANSI Specification B89.1.6-1984.

Master Plugs

- Traceable certification and calibration available on request.
- Stabilized and hardened.
- 100 % usable gaging surface.
- Ends ground square
- Lapped finish.

Master Discs AGD Style 3

- Traceable certification and calibration available on request.
- Polished and lapped to size
- Non-gaging areas black oxidized — ring faces ground.
- Meet all requirements of ANSI Specification B47.1-1988
- Manufactured in accordance with ANSI Specification B89.1.5.
- Furnished with clear insulators.
- All dimensions are AGD style 3.

Calibration Services

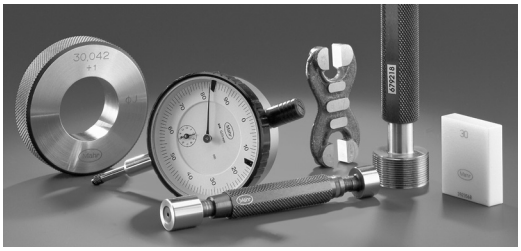
International Standards require complete documentation and calibration of all gaging instruments. Mahr Federal Inc., as well as being a manufacturer of quality dimensional measuring instruments, is an established primary source or high accuracy dimensional measurement services.

Mahr Federal offers an inspection and recalibration program for dimensional standards including:

- gage blocks / master rings / master discs and plugs / masterballs (roundness)
- cylindrical form and precision reference specimens surface roughness standards.

For these services, we have created an ideal environment - a metrology laboratory in Providence, Rhode Island that is ranked as one of the world's finest.:

- High quality measurements - 0.06 micron / 2.3 microinch uncertainty of measurement on gage blocks (up to 50 mm / 2" long).
- All measurements traceable to the Standards of the United States.
- Grand Masters/Primary standards used in our Measurement Center have been certified by NIST.
- Calibration system is certified to ISO-9001:2008 by NQA, USA and accredited to ISO 17025 NVLAP Lab Code 200605-0.
- We offer Fast turnaround and competitive prices.



Mahr Federal also specializes in the calibration and certification of the following gages including:

- Dial, Digital & Test Indicators
- Mikrokators®
- Micrometers
- Dial & Vernier Calipers
- Pin & Radius Gages
- Snaps, I.D. / O.D. & Bore Gages
- Dimentron® Plugs
- Plug & Ring Gages
- Groove, Caliper, Thickness
- Air Gages & Magnification Kits
- Electronic Amplifiers & Gage Heads
- Surface Finish Gages
- Level Systems

Certificate of Registration

nqa global assurance

This is to certify that the Quality Management System of:

Mahr Federal Inc. (HQ)
1139 Eddy Street
Providence RI 02905

Central function listed above. See appendix for additional locations

applicable to:

Sales, design, manufacture and servicing of dimensional gages and gaging systems and dimensional calibration services including field service for masters, standards and gages

has been assessed and approved by
National Quality Assurance, U.S.A., against the provisions of:

ISO 9001: 2008

For and on behalf of NQA, USA

Certificate Number: 10057
EAC Code: 35, 19
Certified Since: October 6, 1995
Valid Until: September 14, 2018
Reissued: August 24, 2016
Cycle Issued: August 22, 2016

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

Page 1 of 2

This approval is subject to the company maintaining its system to the required standard, which will be monitored by NQA, USA, 289 Great Road, Suite 105, Acton, MA 01720, an accredited organization under the ANSI-ASQ National Accreditation Board.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200605-0

Mahr Inc.
Providence, RI

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Calibration Laboratories

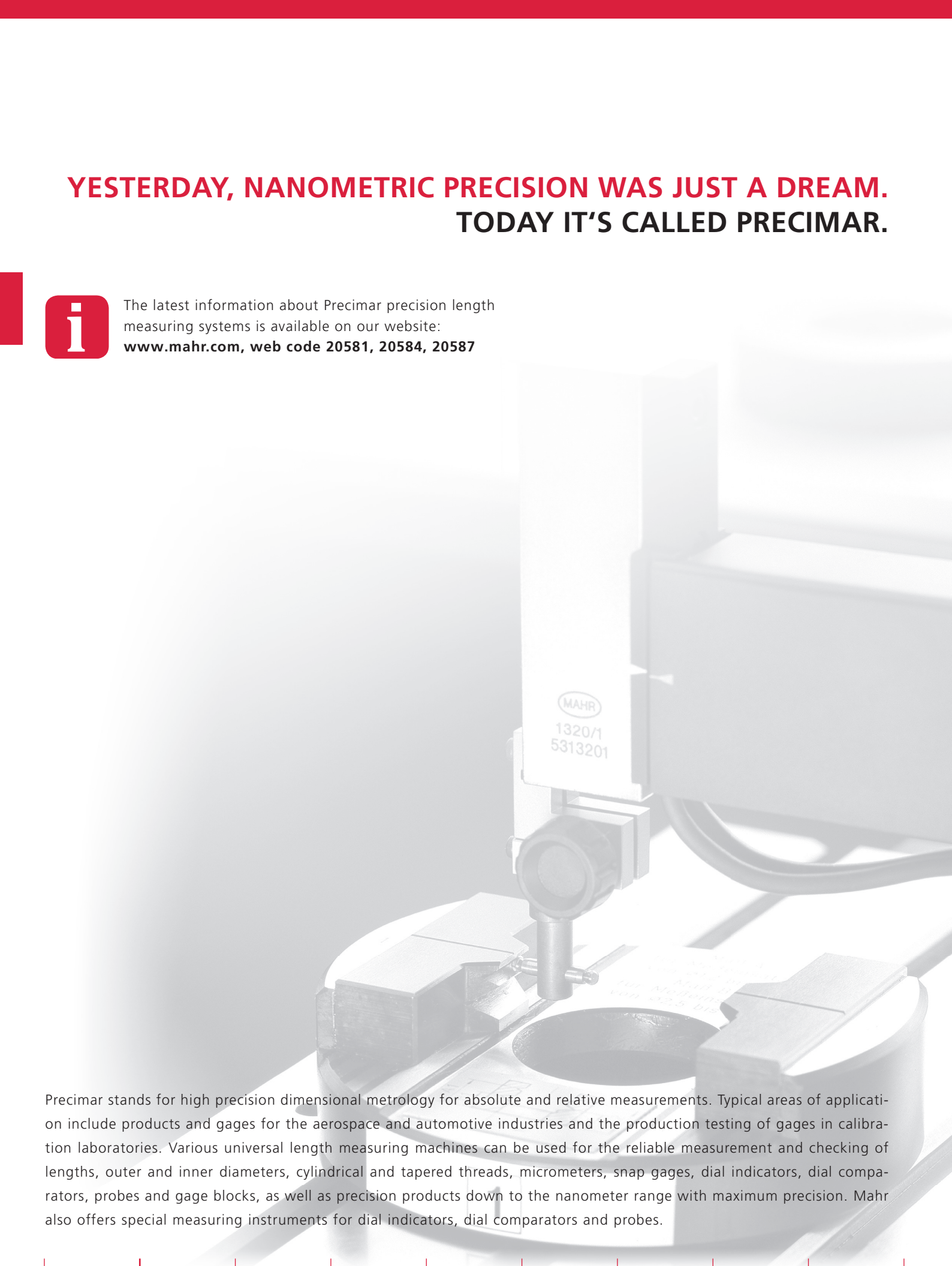
This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2017-03-31 through 2018-03-31
Effective Dates

For the National Voluntary Laboratory Accreditation Program

YESTERDAY, NANOMETRIC PRECISION WAS JUST A DREAM.
TODAY IT'S CALLED PRECIMAR.

The latest information about Precimar precision length measuring systems is available on our website:
www.mahr.com, web code 20581, 20584, 20587



Precimar stands for high precision dimensional metrology for absolute and relative measurements. Typical areas of application include products and gages for the aerospace and automotive industries and the production testing of gages in calibration laboratories. Various universal length measuring machines can be used for the reliable measurement and checking of lengths, outer and inner diameters, cylindrical and tapered threads, micrometers, snap gages, dial indicators, dial comparators, probes and gage blocks, as well as precision products down to the nanometer range with maximum precision. Mahr also offers special measuring instruments for dial indicators, dial comparators and probes.

Precimar. Precision length measurement

Precimar 826 PC 580
Gage Block Measuring Instrument

Precimar OPTIMAR 100 583
Dial Indicator Test Device

Precimar LINEAR 100 585
Length Measuring Instrument

Precimar LINEAR Serie 586
Setting Instrument

Precimar ULM-E 587
Calibration Measuring Instruments

Precimar ULM S-E 588
Calibration Measuring Instruments

Precimar ULM L-E 589
Calibration Measuring Instruments

Precimar PLM 600-E 590
Precision Length Measuring Machine

Precimar 828 CiM 1000 591
Precision Length Measuring Machine

Precimar 826 PC. Gage Block Measuring Instrument

The 826 PC gage block measuring instrument is quick, reliable and highly accurate. An open and extremely rigid L-shaped stand forms the base for the two counteracting precision measuring probes and the absolutely level measuring table.

- Rigid cast stand for temperature stability and heat resistance
- Fast adjustment of vertical slide with top probe
- Highly ergonomic, user friendly one-handed operation to position the gage blocks under the measuring probe
- Precision adjustment via torsionally rigid parallelogram springs
- Electropneumatic lifting of measuring probes
- Precision ball bearing guides for smooth manipulator actuation
- No influence on measurement from hand force
- Round carbide precision support pins make it easy to move the gage blocks on the measuring table
- Set value linked to the stored actual deviation of the reference gage block, avoiding the need for zero point setting
- Flattening correction
- Correction of differing coefficients of expansion
- Mean value generation

Technical Data

	826 PC
Application range [mm]	0.5 to 170
Direct measuring range [mm]	0,2
Repeatability [µm]	± 0,01
Mass [kg]	37

Accessories

- QMSOFT® / QM-Block 32 calibration software for the calibration and data management of gage blocks and gage block sets
- The evaluation program runs under WIN 7 Ultimate
- Excellent thermal insulation with wraparound acrylic glass screen
- 826 Va HS lifting device for fast and quiet pneumatic lifting of inductive probes via foot switch
- Temperature compensation
- Wooden pincers, gage block suction lifter, optical flat, lay-on thermometer

Applications

- Quick and easy high precision testing of European and US gage blocks up to 170 mm in length, as per ISO 3650

For more information, please visit our website: www.mahr.com

Precimar 130B. Gage Block Measuring Instrument

The 130B–24 and 130B–16 gage block measuring instruments from Mahr are the first choice for many large calibration laboratories. They are designed for comparative measurements of gage blocks.

- A unique floating measuring frame ensures exact point-to-point measurement
- Single sensor design for minimal electronic noise
- Precision balanced system for optimum adjustment of measuring forces
- Integrated measuring software and user interface
- Built-in positioning device for reproducible measuring positions

Technical Data

	130B–24 / 130B–16
Application range [mm]	0.25 to 100 (130B–24) / 2.5 to 600 (130B–16)
Direct measuring range [mm]	± 0,01
Repeatability [µm]	6 σ < 0,025
Mass [kg]	100 (130B–24) / 140 (130B–16)

Accessories

For further information please see our separate brochure.

Applications

- Quick and easy high precision testing of European and US gage blocks

For more information, please visit our website: www.mahr.com

Precimar. Dial Indicator Testing

Partially And Fully Automated Testing Of Indicating Measuring Equipment

Dial indicator test devices from Mahr stand for accurate and efficient measurement. These devices are designed for absolute measurement of dial indicators, dial comparators, dial test indicator measuring devices and 2 point bore gages, as well as inductive and incremental measuring probes. Typical areas of use include dial indicator testing in all sectors of industry, measuring rooms and calibration laboratories, as well as production testing by dial indicator manufacturers. The Optimar 100 from Mahr is a practical solution for both the cost effective, semi-automatic testing of analog dial indicators and the efficient, fully automatic testing of digital measuring equipment.

Precimar OPTIMAR 100. Dial Indicator Test Device

The OPTIMAR 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
- Suitable for horizontal use
- Testpiece help by a vertical guide
- Fast height adjustment to adapt measuring objects to different measuring ranges
- Rigid, box-shaped device housing
- For measuring objects with 8 mm, 28 mm, 3/8" shaft diameter
- Electronic handwheel for manual control of spindle movement. The sensitivity of the electronic handwheel adjusts automatically to the testpiece resolution
- All control elements are ergonomically arranged
- Complies with Ernst Abbe's comparator principle for maximum measuring accuracies
- LIF 101 measuring system with computer-aided deviation correction
- Checking of 2 point bore gages with no loss of accuracy
- Pre-positioning: automatic
- Fine positioning: electronic rotary knob

Technical Data

	OPTIMAR 100
Measuring range	100 mm, 4 inch (101,66 mm)
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0,2 + L/250)
Digital numerical increment [µm]	0,02
Device dimensions	235 x 216 x 480

Accessories

- Holder for dial test indicator measuring devices
- Wide choice of adapters for digital dial indicators and for inductive and incremental measuring probes
- Contect Mahr for the specific adapter
- Inductive probes from various manufacturers can be connected to via the probe box
- Holding device and software for testing 2 point bore gages with a moving measuring pin (test in accordance with VDI / VDE / DGQ 2618, Part 13.2, 2005)
- Device for force sensor upon request
- Calibration set for user calibration
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

Applications

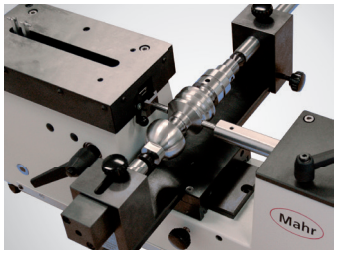
For testing of:

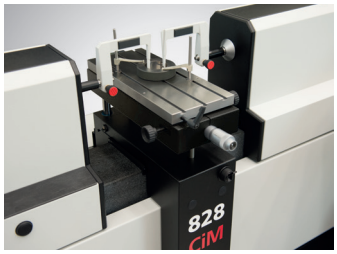
- Analog dial indicators
- Dial comparators
- Dial test indicator measuring devices
- Digital dial indicators
- Inductive and incremental probes
- 2 point bore gages

For more information, please visit our website: www.mahr.com

Precimar. Length Measurement For All Areas Of Use

Length measurement is used today in all sorts of different sectors. LINEAR length measuring instruments are setting and measuring instruments designed for general workshop use. The well established universal length measuring instruments (ULM) are standard instruments for quality assurance in calibration measurement. They are also used for highly accurate length measurements on precision parts. Motorized PLM and CiM instruments offer fast, reliable and user friendly measurement with the lowest possible uncertainty. With products ranging from the simple LINEAR length measuring instrument and the ULM devices through 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 LINEAR 100. Length Measuring Instrument

The LINEAR 100 is a universal, easy to operate length measuring instrument for quick and precise outside and inside measurements up to 100 mm, directly on the production line. The simple design of the instrument speeds up the measurement process and makes it quick and easy to adapt to new measuring tasks.

- Cushioned measuring spindle with 2 preselectable measuring forces
- Constant measuring force over the entire measuring range
- Complies with Ernst Abbe's comparator principle for outer measurements
- Infinitely adjustable measuring table height for accurate adjustment of measuring positions
- Combined outer/inner measurement possible without the need for recalibration
- Easy change measuring anvils can be selected to match specific measuring tasks
- Sturdy cast body to eliminate stresses and bending errors
- Height adjustable support tables for inner and outer measurements
- MarCheck measurement display (with optional stand): including 2 channels, USB connection for printer or stick, USB connection for PC, and RS 232 interface for easy transfer of measured values to PCs
- Measured values can be transferred to all MSWindows ® programs (e.g. Microsoft Excel ®) via the MarCom software (optional)
- Various accessories available upon request

Technical Data

	LINEAR 100
Direct measuring range [mm]	50
Measuring range for outer measurement [mm]	0 to 100
Measuring range for inner measurement [mm]	15 to 100
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0,7 + L/1000)

Accessories

- Outer measurement set (assorted measuring anvils)
- Inner measurement set (probe pair starting from 6 mm, floating plate, etc.)
- Centering tip mount set
- Support plate for cylindrical workpieces
- Foot switch, data cable, stand for display unit
- Outside and inside probes with M2.5 bore for gear measuring balls
- MarCom software for transferring measured values to MSWindows® programs

Applications

- Quick and easy high precision outer and inner measurements
- Outer diameter measurements (bolts, turned parts, etc.)
- Inner diameter measurements (bores, rings, etc.)
- 2 ball dimension checks on outer and inner gears

For more information, please visit our website: www.mahr.com

Precimar Linear Serie. Setting Instrument

LINEAR length measuring instruments from Mahr are ideal for use as a setting and adjusting instrument close to the production area. They offer precision setting of inside and outside comparative measuring instruments, inside micrometers, 2 point bore gages, dial comparator snap gages and many other measuring instruments.
As an infinitely adjustable dimensional standard, the LINEAR is a cost-
effective alternative to setting gages, adjustment rings and gage blocks.
Key advantages include the ease of handling, short set-up time and ability to set any dimension whatsoever. A switchable measuring force regulator, for both outside and inside measurements, delivers user-independent measuring results.

- The base bar is made from steel, providing the same thermal behavior as the setting and measuring objects
- Precision ground and lapped guide rail, non-rusting
- Glued on steel scale
- Easy to operate
- Precision adjustable to 1/10 µm
- Measured values displayed with MarCheck
- Display unit with extensive measuring functions, USB connection for printer or stick and USB connection and RS 232 interface for transfer to PC
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

Technical Data

	LINEAR 800	LINEAR 1200	LINEAR 2000
Measuring range for outer measurement [mm]	0 to 815	0 to 1215	0 to 2015
Measuring range for inner measurement [mm]	40 to 855	40 to 1255	40 to 2055
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0,7 + L/1000)	≤ (0,7 + L/1000)	≤ (0,7 + L/1000)
Repeatability [µm]	≤ 0.5	≤ 0.5	≤ 0.5
Device length [mm]	1250	1650	2450
Mass [kg]	approx. 155	approx. 210	approx. 320

Accessories

- Testing setups for outside micrometers
- Clamping devices for 2 point bore gages for universal measuring table
- Support for large, 2 point bore gages and their accurate positioning and setup on the LINEAR
- Adjustable height support for setting up large bore gages
- Support plates for rings > 200 mm
- Holding device for long measuring equipment
- Attachment for dial comparator snap gages
- Height measuring system for universal measuring table
- Additional support table for long measuring objects
- Measuring anvils with Ø 20 mm balls; with ball-ended gage blocks;
with Ø 15 mm and Ø 7.5 mm spindles
- Caliper, bore gages, plug-on heads, clamping elements
- Testing setups for depth gages
- Support for inside micrometers
- Temperature compensation

Applications

- Setting universal probes, e.g. Multimar 844 T
- Setting 2 point bore gages, e.g. Intramess 844 N
- Setting dial comparator snap gages, e.g. MaraMeter 840 F
- Checking and setting outer micrometers
- Checking adjustment dimensions, rods etc.
- Checking calipers
- Checking and setting inside micrometers
- Measuring cylindrical parts
- Measuring inner dimensions and bores, etc.

For more information, please visit our website: www.mahr.com

Precimar ULM-E. Calibration Measuring Instruments

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
- 100% compliant with Ernst Abbe's comparator principle
- Manual operation of measuring spindle
- Air bearings for smooth manual positioning of measuring element and counter bearing (not ULM 300-E)
- Object table height adjustment via pushbuttons (also positioning of predefined increments)
- Computer provided temperature measurement with 2 or 3 sensors
- Computer-aided correction of systematic instrument errors (CAA)
- Computer-aided instrument zero point stabilizing
- Computer-aided correction of temperature and measuring force influences
- Constant measuring force over the entire measuring spindle setting range
- Large object table with precision guidance in the Z direction and a loading capacity of 25 kg
- Automatic reversing point detection with static and dynamic adoption of measuring values
- Inner thread measurement supported by automatic Z positioning
- Highly flexible in application range
- Mahr 828 WIN measuring and evaluation software runs under MS Windows
- Optional use of measuring axis extensions

Technical Data

	ULM 300-E	ULM 600-E	ULM 1000-E	ULM 1500-E
Direct measuring range [mm]	100	100	100	100
Measuring range for outer measurement [mm]	0 to 305	0 to 640	0 to 1060	0 to 1560
Measuring range for inner measurement [mm]	0.5 to 305	0.5 to 485	0.5 to 905	0.5 to 1405
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0,09+L/2000)	≤ (0,09+L/2000) or ≤ (0,3+L/1500)	≤ (0,09+L/2000) or ≤ (0,3+L/1500)	≤ (0,09+L/2000) or ≤ (0,3+L/1500)
Repeatability [µm]	≤ 0.05	≤ 0.05 or 0.1	≤ 0.05 or 0.1	≤ 0.05 or 0.1
Measuring forces [N]	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11
Device length [mm]	685	1080	1500	2000
Mass [kg]	110	160	215	280

Accessories

Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

Applications

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers

For more information, please visit our website: www.mahr.com

Precimar ULM S-E. Calibration Measuring Instruments

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 push-buttons (also positioning of predefined increment)
- Computer provided temperature measurement with 3 sensors
- Computer-aided instrument zero point stabilizing and correction of systematic instrument errors (CAA)
- Constant measuring force over the entire measuring spindle setting range
- Computer-aided correction of temperature and measuring force influences
- Large object table with precision guidance in the Z direction and a loading capacity of 25 kg
- Mahr 828 WIN measuring and evaluation software runs under MS Windows®
- Optional use of measuring axis extensions
- Inner thread measurement supported by automatic Z positioning

Technical Data

	ULM 520 S-E	ULM 1000 S-E
Direct measuring range [mm]	Outer measurement: 0 to 520 Inner measurement: 0.5 to 365	Outer measurement: 0 to 1025 Inner measurement: 0,5 to 870
Measuring range for outer measurement [mm]	0 to 520	0 to 1025
Measuring range for inner measurement [mm]	0.5 to 365	0.5 to 870
Repeatability [µm]	with Abbe measuring element: ≤ 0.05 with base bed measuring system: ≤ 0.2	with Abbe measuring element: ≤ 0.05 with base bed measuring system: ≤ 0.2
Measuring forces [N]	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11
Device length [mm]	1080	1500
Mass [kg]	160	215

Accessories

Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

Applications

Calibration of:

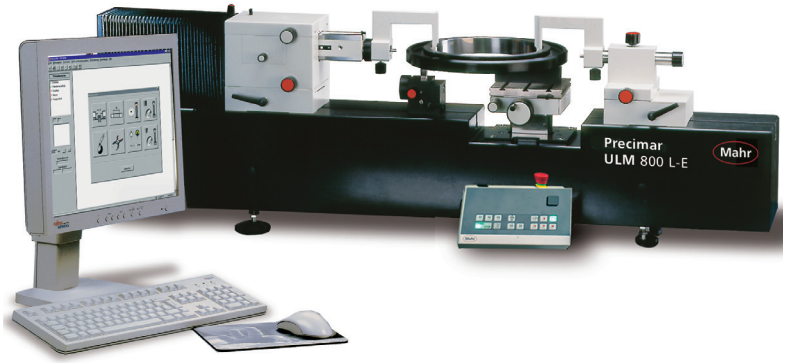
- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers

For more information, please visit our website: www.mahr.com

Precimar ULM L-E. Calibration Measuring Instruments

Universal length measuring instruments with laser measuring system. Comparator with horizontal base bed (highly homogeneous, rigid granite)
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
- 100% 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 in respect of environmental influences: temperature, air pressure (optionally also humidity)
- 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)
- Online temperature measurement and computer-aided correction of temperature and measuring force influences
- Constant measuring force over the entire measuring spindle setting range
- Large object table with precision guidance in the Z-direction and a loading capacity of 25 kg
- Automatic reversing point detection with static and dynamic adoption of measuring values
- Highly flexible within the application range (can be used for measuring both miniature and large measuring objects)
- Mahr 828 WIN measuring and evaluation software and MS Windows
- Inner thread measurement supported by automatic Z positioning



Technical Data

	ULM 800 L-E	ULM 1500 L-E
Direct measuring range [mm]	0 to 525	0 to 1115
Measuring range for outer measurement [mm]	0 to 830	0 to 1620
Measuring range for inner measurement [mm]	0.5 to 670	0.5 to 1465
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0,1+L/2000)	≤ (0,1+L/2000)
Repeatability [µm]	≤ 0,05	≤ 0,05
Measuring forces [N]	0.2 ; 1.0 to 4.5 ; 11	0.2 ; 1.0 to 4.5 ; 11
Device length [mm]	1500	2300
Mass [kg]	220	325

Accessories

Large number of accessory kits and modular components for solving a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

Applications

Calibration of

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers

For more information, please visit our website: www.mahr.com

Precimar PLM 600-E. Precision Length Measuring Machine

The PLM 600-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
- 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
- The latest machine control system (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 testpiece avoided.
- Automatic bore and inner thread measurement
- Automatic and manual Y adjustments are possible
- A factory calibration or DAkkS/DKD calibration is available for the Precimar PLM 600-E

Technical Data

Direct measuring range [mm]	200
Measuring range for outer measurement [mm]	0 to 600
Measuring range for inner measurement [mm]	0,5 to 445
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0,085 + L/1500)
Position deviation / error limit (L in mm) [µm] *	≤ (0.07 + L/2000)
Repeatability [µm]	≤ 0.05
Measuring forces [N]	0 to 13.9
Device length [mm]	1660
Mass [kg]	480

*** Proof can be carried out at Göttingen if required**

Accessories

Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Conical thread gages
- Gears
- Thread pitches

Applications

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers
- Precision length measurement

For more information, please visit our website: www.mahr.com

Precimar 828 CiM 1000. Precision Length Measuring Machine

The 828 CiM precision length measuring machine is an Abbe compliant comparator mounted on highly homogeneous rigid granite in a horizontal configuration

- Electronically controlled measuring force generation
- Motorized measuring spindle control with joystick and automatic contacting
- Air bearings for smooth positioning of measuring slide and counter bearing
- 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

Technical Data

	828 CiM 1000
Direct measuring range [mm]	300
Measuring range for outer measurement [mm]	0 to 1000
Measuring range for inner measurement [mm]	0.5 to 845
Measuring uncertainty MPE_{E1} (L in mm) [µm]	≤ (0,055 + L/1500)
Position deviation / error limit (L in mm) [µm] *	≤ (0,04+ L/2000)
Repeatability [µm]	≤ 0,03
Measuring forces [N]	0 to 13.9
Device length [mm]	2500
Mass [kg]	840

*** Proof can be carried out at Göttingen if required**

Accessories

Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Conical thread gages
- Gears
- Thread pitches
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

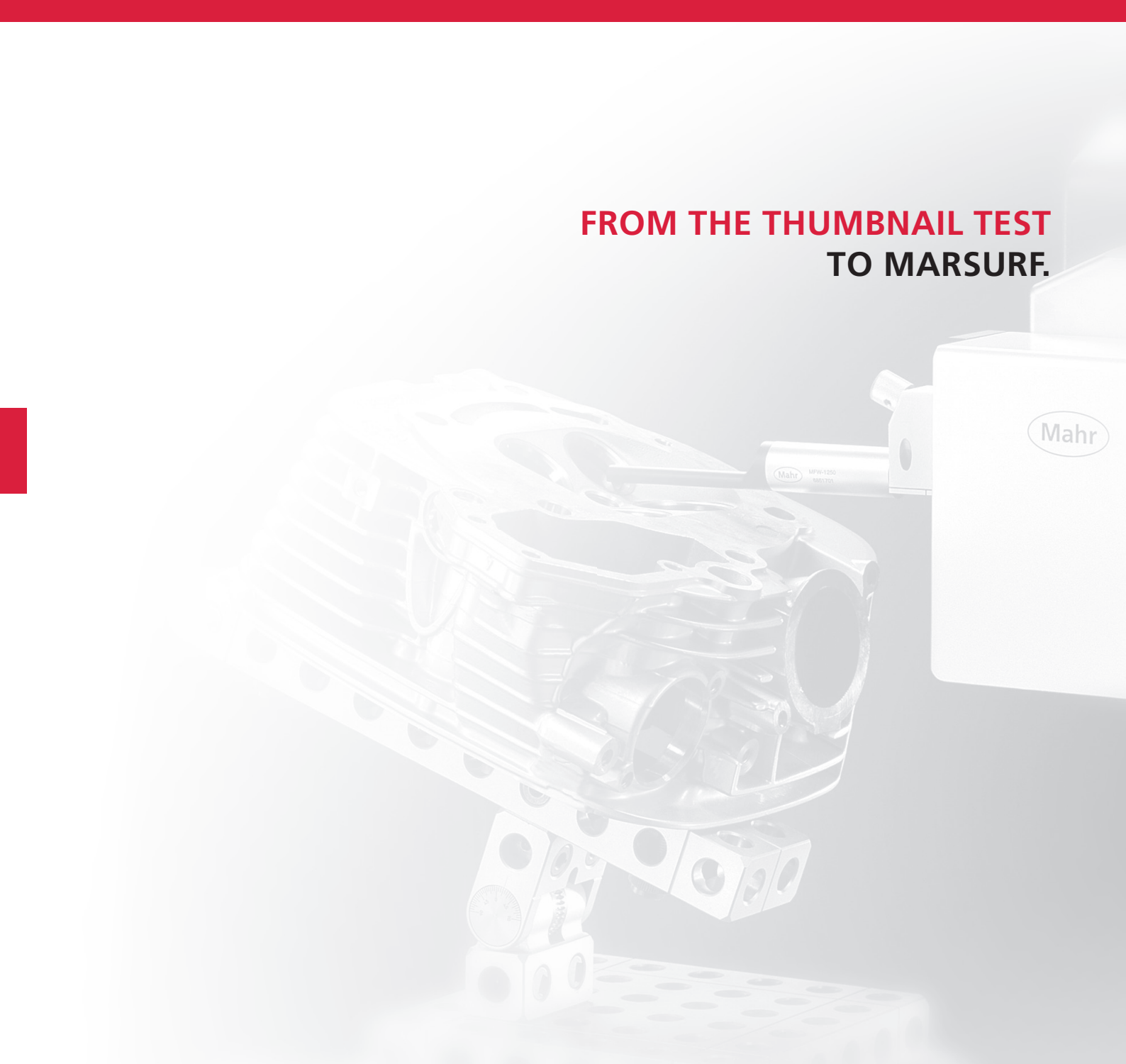
Applications

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers
- Precision length measurement

For more information, please visit our website: www.mahr.com

FROM THE THUMBNAIL TEST TO MARSURF.



Wherever surface structures influence the function, processing or appearance of components or products, careful testing is essential. But how can surfaces be tested? At the start of the 20th Century, experts still had to test by eye and touch. A practiced eye could detect features in the µm range, and even the much maligned thumbnail test delivered perfectly acceptable results. Currently however, we live in an age of exchangeable parts, fits and internationalization, where subjective tests like this are no longer adequate. Today, Computer aided measuring instruments provide objective data. Measurement and evaluation have become considerably easier. For decades, Mahr has been a worldwide pioneer in this area, as demonstrated by the company's numerous innovations and patented solutions in the field of roughness metrology. The interplay between the stylus, drive and measuring setup plays a key role in influencing the quality of surface measurement tasks. This is where Mahr's core expertise comes in, as demonstrated by the company's numerous innovations and patented solutions. Over time, we have succeeded in perfecting the stylus method which is now widespread throughout the world. But we can also meet the latest requirements for non-contact measurements, for example for extremely soft materials or the need for extremely short measurement times. Thanks to various optical sensors, MarSurf also meets these requirements. Top quality, the highest level of competence and perfect know how - all of this is provided by MarSurf surface metrology from Mahr.

MarSurf. Surface Measuring Instruments

MarSurf Surface Metrology system – The right solution for every task 594

MarSurf Pocket Surf IV 596
The Portable Surface Roughness Gage

MarSurf PS 10 598
Mobile Roughness Measuring Instrument

MarSurf M 300 600
Mobile Roughness Measuring Instrument

MarSurf M 300 C 602
Mobile Roughness Measuring Instrument

MarSurf M 400 605
Mobile Surface Measuring Instrument

MarSurf XR 1 607
Roughness measuring station

MarSurf XR 20 with GD 25 608
Roughness measuring station

MarSurf XR 20 with GD 120 609
Roughness measuring station

MarSurf XC 2 with CD 120 610
Contour measuring station

MarSurf XC 20 with PCV 200 611
Contour measuring station

MarSurf XCR 20 612
Roughness and contour measuring station

MarSurf UD 130/LD 130/LD 260 613
Combined contour and surface measuring station

MarSurf CNC *modular* 614

MarSurf CNC *premium* 615

MarSurf CWM 100 617

MarSurf WM 100 618

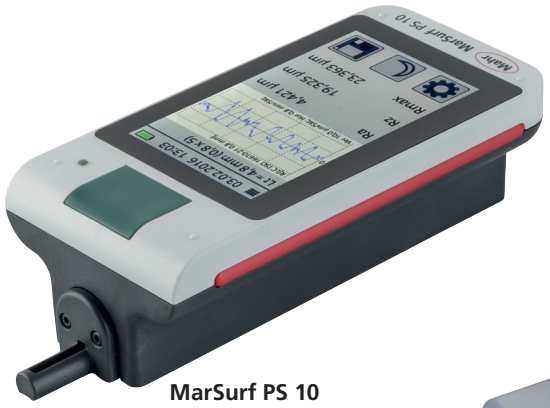
MarSurf XT 20, MfM, MfM plus 619

MarSurf. Surface Metrology System for all your industrial requirements

THE RIGHT SOLUTION FOR EVERY TASK

Integrated calibration standard

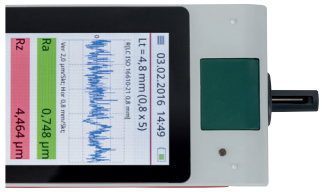
No external calibration standard necessary (patent pending). More secure standardized measurements.
A standard probe is integrated into MArSurf M 300 to check the default button – you can be sure that your results are correctly.



MarSurf PS 10

Probe with removable pick-up protection

Standardize Measuring, 2 µm diamond stylus tip, Measuring force 0,7 mN. Probe with open blade for various measurement tasks are available.



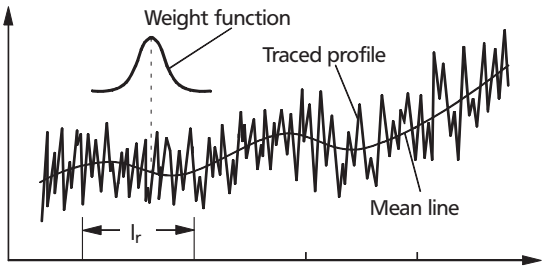
Bluetooth-Technology

Cable-free connection between evaluation unit and drive unit!
A further advantage is the connection of several drive units to only one evaluation unit.

MarSurf M 300 C

Automatic choice of cut off ...

…and tracing length ensures the right evaluation (also for unskilled workers)



Profil filters seperate into long wave and short wave components. The λc profile filter seperates the roughness profile from lang wave components (e. g. waviness). **R-profile** (roughness profile) represents the deviations of the primary profile from the mean line of the λc profile filter. When presenting the roughness profile, the mean line is the zero line.

Choice of Wavelength

EN ISO 4288, ASME B46.1

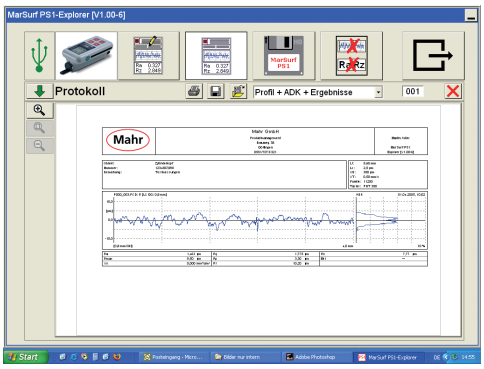
Periodic profiils	Non periodic profiils		Cut off wave-length	Single/ Total measu-ring range
R_{sm} (mm)	R_z (µm)	R_a (µm)	λ_c (mm)	l_r / l_n (mm)
> 0,013 to 0,04	to 0,1	to 0,02	0,08	0,08 / 0,4
> 0,04 to 0,13	> 0,1 to 0,5	> 0,02 to 0,1	0,25	0,25 / 1,25
> 0,13 to 0,4	> 0,5 to 10	> 0,1 to 2	0,8	0,8 / 4
> 0,4 to 1,3	> 10 to 50	> 2 to 10	2,5	2,5 / 12,5
> 1,3 to 4	> 50 to 200	> 10 to 80	8	8 / 40

MarSurf M 300

Integrated Memory

Large memory to store the results and profiles

The Software **„MarSurf M 300 Explorer“** can be used to secure and document your measuring results and profiles (simply use Drag & Drop)



Overhead Measuring

Mobile Roughness Measuring Instrument MarSurf Pocket Surf IV

Application:

A pocket-sized economically priced, completely portable instrument which 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.

- Durable cast aluminum housing to provide years of accurate and reliable surface finish gaging
- Can be used to measure any one of four, selectable, parameters: Ra, Rmax/Ry, Rz
- Review any of the parameters after the measurement is complete
- Selectable traverse length 1, 3 or 5 cut-offs of 0.8 mm/0.030"
- Operates in any position – horizontal, vertical, and upside down
- Four switchable probe positions – axial (folded) or at 90°, 180° or 270°
- Even difficult-to-reach surfaces such as inside and outside diameters are accessible
- MarConnect data output for easy SPC processing that is compatible with the most common data processing systems
- Easy-to-read LCD readout presents the measured roughness value, in micro inches or micro-meters, within half a second after the surface is traversed
- Out-of-range (high or low) and "low battery" signals are displayed
- Improved digital calibration process eliminates scandrivers and potentiometers to simplify and enhance the calibration process
- Improved battery life with easy to replace standard 9V battery

Technical Data

Order no.		2191800	2191802
Product type		Pocket Surf IV	
Parameters		Ra, Ry, Rmax, Rz	
Stylus		10 µm /.0004"	5 µm / .0002"
Data interface:		RS232C, USB	
Rechargeable batteries		Battery, 9V	
H x W x D	**mm**	140 x 76 x 6,35 mm	
Weight	**kg**	1.03	
Measuring principle		Skid probe system	
Probe		Piezoelectric skid probe	
Measuring range	**mm**	Ra –6.35 µm / 250 Ry, Rmax, Rz –25.3 µm / 999 µin	Ra –6,35 µm / 250 Ry, Rmax, Rz –25,3 µm / 999 µin
Profile resolution		0,01 µm / 1 µin	
Number n of sampling length according to ISO/JIS		Selected: 1 –5	
Measuring force	**N**	15 mN	

Mobile Roughness Measuring Instrument MarSurf Pocket Surf IV

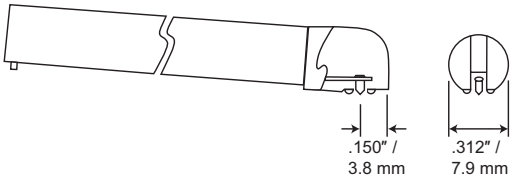
Accessories

Order no.	Product description	Product type
2008010	General purpose probe, 10µm/90°	EGH–1019
2213247	Transverse chisel probe, 10 µm	EGH–1020-W1
2213248	Parallel chisel probe, 10 µm	EGH–1020-W2
2213249	Small bore probe, 10µm/90°	EGH–1021
2213250	General purpose probe, 5µm/90°	EGH–1026
2213251	Small bore probe, 5µm/90°	EGH–1027
2213252	Groove bottom probe, 10µm/90°	EGH–1028
2008024	Compact height stand	EAS–2496
2008025	Universal Stand	EAS–2426
2008026	Column clamp and bracket for EAS–2426	EAS–2567
2008027	Adapter plate	EPL–1681
2008023	Portable V-fixture	EAS–2421
2008022	Bottom plate	EAS–2584
2008021	Bore adapter kit	EAS–2839
2008020	V-adapter kit	EAS–2739
2008030	Certified specimen, incl. test certificate	PMD–90101
2008031	Precision reference specimen, without certificate	EMD–90010
4102357	Data Connection Cable USB	16 EXu
4102410	Data Connection Cable RS232C	16 EXr
4102212	Software interface	MarCom Prof. 5.1
2238983	Certified reference speciman, double patch, 0,4 µm / 16 u" - 3,0 µm / 118 u", certified for Ra, Rz, Rmax, and Sm	
2008143	Certified Reference speciman, sinusoidal, single patch, certified for Ra 3,0 / 118 u", Rz 9,75 µm / 386 u" and Rmax 9,8 µm / 386 u"	

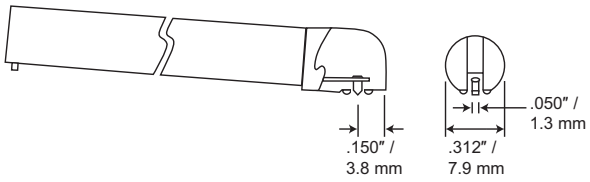
EAS–2421

EAS–2839

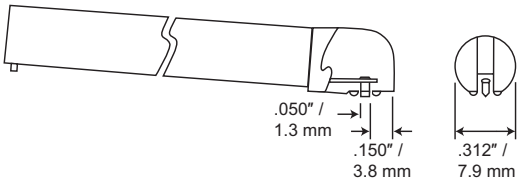
EAS–2739



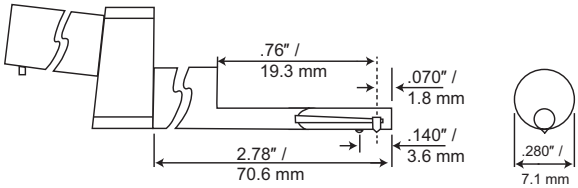
EGH-1019



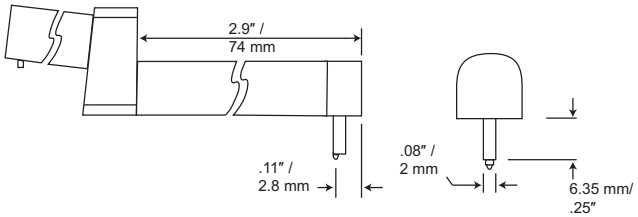
EGH-1020



EGH-1020W2



EGH-1023



EGH-1028

Mobile Roughness Measuring Instrument MarSurf PS 10

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.		6910230	6910232
Product type		PS 10	
Parameters		Ra, Rq, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, RS, CR, CF, CL, R, Ar, Rx	
Stylus		2 µm	5 µm
Calibration function		dynamic; Ra, Rz, Rsm	
Storage capacity		min. 1350 profiles, min. 500,000 results, min. 250 PDF records, expandable to 32 GB with microSD card	
Languages:		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish, Romanian	
Other		Lock/password protected, date/time	
Data interface:		USB, MarConnect (RS232), microSD Slot for SD / SDHC-Cards up to 32 GB	
System of protection		IP 40	
Rechargeable batteries		Lithium-ion battery, min. 1200 measurements	
Wide range power supply		100 to 264 V	
H x W x D	mm	160 mm x 77 mm x 50 mm	
Weight	kg	0.49	
Measuring principle		Stylus method	
Probe		inductive skidded probe	
Measuring range	mm	350 µm	
Profile resolution		8 nm	
Filter according to ISO/JIS		Gaussian filter as per ISO 16610–21 (formerly ISO 11562), special filter as per DIN EN ISO 13565–1, Lambda s filter as per DIN EN ISO 3274 (can be switched off)	
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm, automatic filter detection	
Number n of sampling length according to ISO/JIS		selectable: 1 to 16	
Short stroke under ISO/JIS		selectable	
Traversing length Lt according ISO/JIS		1.5 mm, 4.8 mm, 15 mm, N x Lc, variable, automatic	
Traversing length according ISO 12085 (MOTIF)		1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm	
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4.0 mm, 12.5 mm	
Measuring force	N	0.75 mN	

„sMAHRtSurf" - Simple, smart and mobile

- Compact roughness measuring instrument for mobile use
- Simple and intuitive to use: As easy to use as a smart phone
- Large, illuminated 4.3" TFT touch display
- Adjustable display
- Start button also serves as the Home button for direct access to the start screen
- Data backup as TXT, X3P or PDF file
- Creation of completed PDF measuring records in the measuring device
- Customer-specific comments for the PDF measuring record are entered directly into the MarSurf PS 10
- Power supply 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
- All the measuring positions you need: horizontal, vertical, upside down
- 31 surface parameters offer the same range of functions as a laboratory instrument.
- Error free operation thanks to an integrated, removable roughness standard
- Quick access to your frequently used functions via the Favorites list in the display
- Very short activation time: results available within seconds
- Automatic cutoff selection, so even non-specialists can be sure of getting the correct measuring results
- NEW: Additional version with transverse drive unit MarSurf PS 10 C2 available (article number 6910235)
- **Scope of delivery:**
- MarSurf PS 10 unit
- Drive unit (detachable)
- 1 standard probe conforming to standards
- Built-in rechargeable battery
- Roughness standard integrated into housing (detachable), including Mahr calibration certificate
- Probe protection
- Charger / 3 adapters
- Operating instructions
- Carry case with shoulder strap
- USB cable
- Extension cable for drive unit (length 1.2 m)
- Height adjustment (integrated)
- **Software:** MarCom Professional free download:**www.mahr.com/marcom**(only for Mahr data cables and wireless systems with USB and RS232 interface)

Mobile Roughness Measuring Instrument MarSurf PS 10

Accessories

Order no.	Product description	Product type
6850540	PHT pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe 2 µm	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/ 5µm
6111527	Standard probe 10 µm	PHT 6–350/ 10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6910209	Mount MarSurf PS 10 on measuring stand ST	ST-a3
6910435	RD 18 C / PS 10 upright holder for cylindrical drive unit, Ø 8 mm	ST-a2
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height Measuring and Scribing Instrument	814 SR
4426101	Height Measuring and Scribing Instrument	814 SR
4102410	Data connection cable RS232C	16 EXr
4102357	Data connection cable USB	16 EXu
4102231	Transmitter	16 EWe
4102230	Receiver	e-Stick
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6820420	Roughness standard with Mahr calibration certificate, profile depth 10 µm	PRN 10
6820601	Geometric Standard with sinusoidal groove profile, Profiltiefe 3 µm	PGN 3
6820602	Geometric Standard with sinusoidal groove profile, Profiltiefe 1,5 µm	PGN 1
6820605	Geometric Standard with sinusoidal groove profile, Profiltiefe 10 µm	PGN 10
9027715	Mahr-calibration certificate for PGN Standard	PGN
6980102	DKD (German Calibration Service) calibration certificate for PGN Standard	PGN
4413000	Indicator Stand with Base	815 GN
4413001	Indicator Stand with Base	815 GN
4413005	Indicator Stand with Base	815 GN
4416000	Indicator Stand with Magnetic Base	815 MA
6299054	Evaluation Software	SW XR 20

ST-D

814 Sh

ST-F

ST-G

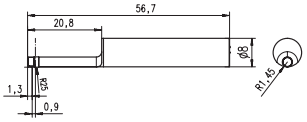
814 SR

109 PS

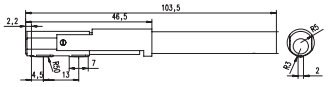
e-Stick

16 EWe

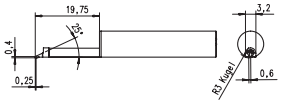
PHTR–100



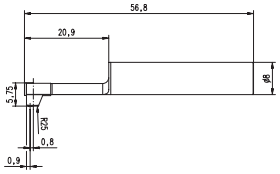
PHT 3–350



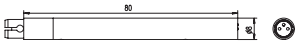
PT 150



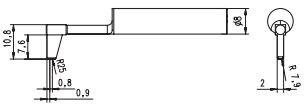
PHTF 0.5–100



PHT 6–350;PHT 6–350/ 5µm



PHT (80 mm)



PHT 11–100

Mobile Roughness Measuring Instrument MarSurf M 300

Application:

- For shafts and housing components
- For large scale machines
- For large workpieces
- For milling and turning parts
- For use on grinding and honing components
- On the production line, or directly upon a machine, ideal for rapid testing of the surface roughness of a workpiece in or on a machine.

Technical Data

Order no.		6910401	6910411
Product type		M 300	
Parameters		Ra, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rq, Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, S, CR, CF, CL, R, Ar, Rx, Rv	
Horizontal scale		dep. on cutoff	
Log contents		R-profile, MRK,P-profile (MOTIF),results	
Stylus		2 µm	5 µm
LC Display		high resolution color display, 3.5", 320 x 240 pixel	
Printing		automatic/manual record with time	
Printer		thermal printer, 384 points/horizontal line, 20 characters/line	
Printing speed		approx. 6 lines/second corresponds to approx. 25 mm/s (1 in/s)	
Thermopaper		Ø 40.0 mm–1.0 mm, width 57.5 mm–0.5 mm, coated	
Calibration function		dynamic	
Password protection		yes	
Lock for device settings		yes	
Languages:		German, English, French, Italian, Spanish, Portugese, Dutch, Swedish, Russian, Polish, Czech, Japanese, Chinese, Korean, Hungarian, Turkish	
Power Management		yes	
Interfaces		drive unit, power pack, USB, MarConnect	
Data interface:		RS232C, USB, Digimatic, USB A	
Relative humidity		30 % to 85 %	
System of protection		M 300 = IP 42, RD 18 = IP 40	
Operating temp. range		+5 °C to +40 °C	
Temperature range for storage		–15 °C to +55 °C	
Power supplied		NiMH battery, capacity: approx. 1,000 measurements (dep. on number and length of record printouts), plug-in power pack with three mains plugs, for input voltages from 90 V to 264 V	
(L x W x H) for Drive unit		130 mm x 70 mm x 50 mm	
(L x W x H) for Measuring instrument .		190 mm x 140 mm x 75 mm	
Weight	kg	4,1	
Measuring principle		stylus method	
Probe		Inductive skidded probe	
Measuring range	mm	350 µm, 180 µm, 90 µm (automatic switching)	
Profile resolution		8 nm	
Filter according to ISO/JIS		Gauß-Filter, Ls-Filter	
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm	
Number n of sampling length according to ISO/JIS		selectable: 1–5	
Short stroke under ISO/JIS		selectable	
Traversing length Lt according ISO/JIS		1,75 mm, 5,6 mm, 17,5 mm	
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4 mm, 12.5 mm	1,25 mm, 4 mm, 12,5 mm
Contacting speeds		0.5 mm/s	
Measuring force	N	approx. 0.7 mN	
Weight Drive unit		approx. 300 g	
Weight Measuring instrument		approx. 1 kg	

- MarSurf 300, the first portable roughness measuring unit with the option of wireless (Bluetooth) connection between the evaluation unit and drive unit.
- Bluetooth wireless connection
- Easy to use, with high-resolution color display and ATM-style user guidance
- Integrated standard in drive unit
- Large measuring range, 350 µm
- Automatic profile detection and corresponding selection of filter and traversing length conforming to standards
- Integrated memory for the results of up to 40,000 measurements and 30 profiles
- 16 languages (including 3 Asian languages)
- Integrated thermal graphics printer with high print quality
- Print the R-profile via the thermal graphics printer
- Log printed either by pressing a button or automatically
- Data transfer of results and profiles via USB interface to your PC
- Evaluation of most common parameters as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Integrated memory for results and profiles
- Tolerance monitoring
- Printing of R profile (ISO/ASME/JIS), P profile (MOTIF), material ratio curve, measuring record
- Setting of asymmetric intersection lines for peak count calculation
- Measuring units (µm/µin) and standards (ISO/JIS/ASME/MOTIF) are selectable
- Individual sampling lengths and short cutoff can be selected
- Lock for instrument settings
- Built-in rechargeable battery with power management
- AC adapter with interchangeable international plug adapters
- Date and time of measurement
- Suitable for use with stationary measuring station
- For use with PHT probe range
- MarSurf PS1/M300 Explorer software for recording measurements
- **Supplied with**
- Evaluation unit M 300 drive unit RD 18 with integrated roughness standard
- Standard pick-up PHT 6–350/2µm (conforming to standards)
- Power source with 3 adapters
- Height adjustment accessory
- Pick-up protection
- Pick-up protection with prismatic underside end face V-block
- 2 usb cables
- 1 roll of thermal paper
- Shoulder strap
- Carrying case
- Mahr calibration certificate
- Operating instructions

Mobile Roughness Measuring Instrument MarSurf M 300

Accessories

Order no.	Product description	Product type
6850540	Pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/ 5µm
6111527	Standard probe 10 µm	PHT 6–350/ 10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
6850541	Adapter for transverse tracing	PHT AQ
6850542	V-block holder	PS1 php
6910203	End face V-block	PS1 / RD18
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6910201	Mount for MarSurf PS1/RD18 on measuring stand ST	
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height Measuring and Scribing Instrument	814 SR
4426101	Height Measuring and Scribing Instrument	814 SR
4102357	Data Connection Cable USB	16 EXu
4102410	Data Connection Cable RS232C	16 EXr
4102915	Digimatic data cable	16 EWd
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6910205	Evaluation Software	SW PS1/M300 Explorer
6299054	Evaluation Software	SW XR 20
6820420	Roughness standard with Mahr calibration certificate	PRN 10
6820601	Geometric Standard with sinusoidal groove profile	PGN 3
6820602	Geometric Standard with sinusoidal groove profile	PGN 1
6820605	Geometric Standard with sinusoidal groove profile	PGN 10
2240360	PRN 10-2N - Same as above but without certificate, traceable to NIST using 2 µm probe	
2249863	PRN 105N - Same as above but without certificate, traceable to NIST using 5 µm probe	
2252018	PRN 10-10N - Same as above but without certificate, traceable to NIST using 10 µm probe	

ST-D

814 Sh

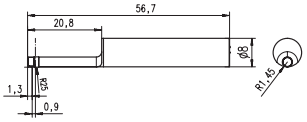
ST-F

ST-G

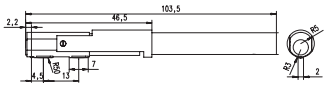
814 SR

109 PS

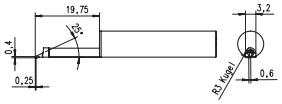
PHTR–100



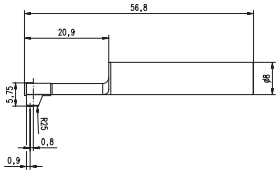
PHT 3–350



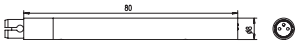
PT 150



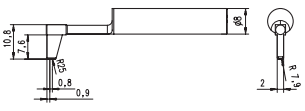
PHTF 0.5–100



PHT 6–350;PHT 6–350/ 5µm



PHT (80 mm)



PHT 11–100

Mobile Roughness Measuring Instrument MarSurf M 300 C

RS232C Digimatic USB

Application:

- For shafts and housing components
- For large scale machines
- For large workpieces
- For milling and turning parts
- For use on grinding and honing components
- On the production line or directly on the a machine; ideal for rapid testing of the surface roughness of a workpiece in or on a machine.

Technical Data

Order no.		6910431
Product type		M 300 C
Parameters		Ra, Rq, Rz (Ry (JIS) is equivalent to Rz), Rz (JIS), Rmax, Rp, RpA (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr (tp (JIS, ASME) is equivalent to Rmr), RSm, RSk, S, CR, CF, CL, R, Ar, Rx, Rv, W
Horizontal scale		dep. on cutoff
Log contents		R-profile, MRK,P-profile (MOTIF),results
Stylus		2 µm
LC Display		high resolution color display, 3.5", 320 x 240 pixel
Printing		automatic/manualrecord with time
Printer		Thermal printer, 384 points/horizontal line, 20 characters/line
Printing speed		approx. 6 lines/second corresponds to approx. 25 mm/s (1 in/s)
Thermopaper		Ø 40.0 mm –1.0 mm, width 57.5 mm–0.5 mm, coated
Calibration function		dynamic
Storage capacity		internal memory for max. 40000 results, max. 30 profiles
Password protection		yes
Lock for device settings		yes
Languages:		German, English, French, Italian, Japanese, Korean, Spanish, Dutch, Chinese, Polish, Czech, Portugese, Russian, Swedish, Hungarian, Turkish
Power Management		yes
Interfaces		drive unit, mains adaptor, USB, MarConnect
Data interface:		RS232C, Digimatic, USB, USB A
Relative humidity		30 % to 85 %
System of protection		M 300 = IP 42, RD 18 = IP 40
Operating temp. range		+5 °C to +40 °C
Temperature range for storage		–15 °C to +55 °C
Power supplied		NiMH battery, capacity: approx. 500 measurements (dep. on number and length of record printouts)
Rechargeable batteries		NiMH battery, capacity: approx. 500 measurements
Wide range power supply		plug-in power pack with three mains plugs, for input voltages from 90 V to 264 V
(L x W x H) for Drive unit		139 x 26 mm
(L x W x H) for Measuring instrument		190 x 140 x 75 mm
Weight	kg	4,1
Measuring principle		stylus method
Probe		Inductive skidded probe
Measuring range	mm	350 µm, 180 µm, 90 µm (automatic switching)
Profile resolution		8 nm
Filter according to ISO/JIS		Gauß-Filter, Ls-Filter
Cutoff lc according to ISO/JIS		0,25 mm, 0,8 mm, 2,5 mm, automatic
Number n of sampling length according to ISO/JIS		selectable: 1–5
Short stroke under ISO/JIS		selectable
Traversing length Lt according ISO/JIS		1,75 mm, 17,5 mm, 5,6 mm, automatic
Traversing length according ISO 12085 (MOTIF)		1 mm, 2 mm, 4 mm, 8 mm, 12 mm,16 mm
Evaluation lenth ln according to ISO/JIS		1.25 mm, 4 mm, 12.5 mm
Contacting speeds		0.5 mm/s
Measuring force	N	0,7 mN
Weight Drive unit		approx. 300 g
Weight Measuring instrument		approx. 1 kg

- Bright, illuminated color display
- Automatic selection of filter and traversing length conforming to standards
- Integrated thermal graphics printer of high print quality
- Print the r-profile via the thermal graphics printer
- Log printed either by pressing a button or automatically
- Data transfer of results and profiles via usb-interface to your Pc
- Evaluation of most common parameters conforming to standards and in accordance to iso/Jis as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Printing of R profile (iso/asme/Jis), P profile (motif), material ratio curve, measuring record
- Measuring units (µm/µinch) and standards (iso/Jis/asme/motif) are selectable
- Tolerance monitoring
- Integrated memory for results of up to 40000 measurements and 30 profiles
- Setting of asymmetric intersection lines for peak count calculation
- Individual sampling lengths and short cutoff can be selected
- Key pad lock and/or password protection for instrument settings
- Built-in rechargeable battery with power management
- Integrated roughness standard for the standard pick-up PHT 6–350
- Dynamic calibration function
- Date and/or time of measurement
- MarSurf PS1/M300 Explorer Software for recording measurements

- **Supplied with**
- Evaluation unit M 300 C
- Cylindrical drive unit RD18 C
- Handheld v
- Block with height adjustable feet
- Standard pick-up PHT 6–350/2µm (conforming to standards)
- Roughness standard PRN 10 with Mahr calibration certificate
- 1 roll of thermal paper
- Pick-up protection
- 8 mm mounting clamp for the drive unit
- Power source with 3 adapters
- 1 x usb cable (for connection to a PC)
- Shoulder strap
- Carrying case
- Operating instructions

Mobile Roughness Measuring Instrument MarSurf M 300 C

Accessories

Order no.	Product description	Product type
6850540	Pick-up extension 80 mm	PHT (80 mm)
6111520	Standard probe	PHT 6–350
6111526	Standard probe 5 µm	PHT 6–350/ 5µm
6111527	Standard probe 10 µm	PHT 6–350/ 10µm
6111521	Probe for bores with a dia. larger than 3 mm	PHT 3–350
6111524	Probe for grooves	PHT 11–100
6111525	Probe for concave and convex surfaces	PHTR–100
6111522	Probe for gear tooth flanks	PHTF 0.5–100
6111523	Probe for metal sheets	PT 150
6850715	Pick-up protection with header V-block, steel	PHT-ts4
6850541	Adapter for transverse tracing	PHT AQ
6850542	V-block holder	PS1 php
6910203	End face V-block	PS1 / RD18
6910426	Drive unit for transverse tracing for M 300C	RD 18 C2
6850738	Collet chucks for RD 18 C2 for ø 5 –80 mm	RD 18 C2
7028530	Pick-up protection header V-block, plastic	PHT-ts3
6851304	Mount for MarSurf RD18 C on measuring stand ST	PST-a2
6710803	Measuring stand 300 mm with cast iron base	ST-D
6710806	Measuring stand 300 mm with granite plate	ST-F
6710807	Measuring stand 300 mm with granite plate and T-slot	ST-G
2247086	Adjustable mounting bracket to connect to 814 SR	814 Sh
4426100	Height Measuring and Scribing Instrument	814 SR
4426101	Height Measuring and Scribing Instrument	814 SR
4102357	Data Connection Cable USB	16 EXu
4102410	Data Connection Cable RS232C	16 EXr
4102915	Digimatic data cable	16 EWd
6710401	V-block	PP
6710604	Parallel vice	PPS
6710529	XY Table	CT 120
4246819	Miniature precision vises, set	109 PS
6910205	Evaluation Software	SW PS1/M300 Explorer
6299054	Evaluation Software	SW XR 20
6820420	Roughness standard with Mahr calibration certificate	PRN 10
6820601	Geometric Standard with sinusoidal groove profile	PGN 3
6820602	Geometric Standard with sinusoidal groove profile	PGN 1
6820605	Geometric Standard with sinusoidal groove profile	PGN 10
2240360	PRN 10-2N - Same as above but without certificate, traceable to NIST using 2 µm probe	
2249863	PRN 105N - Same as above but without certificate, traceable to NIST using 5 µm probe	
2252018	PRN 10-10N - Same as above but without certificate, traceable to NIST using 10 µm probe	

ST-D

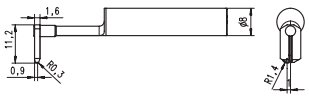
814 Sh

ST-F

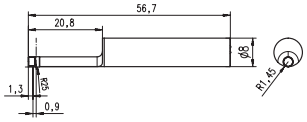
ST-G

814 SR

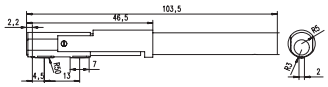
109 PS



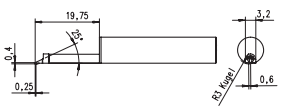
PHTR–100



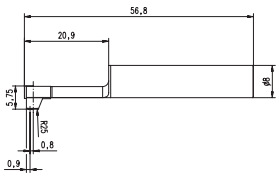
PHT 3–350



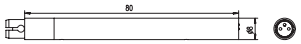
PT 150



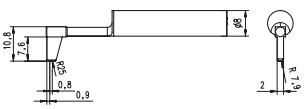
PHTF 0.5–100



PHT 6–350;PHT 6–350/ 5µm

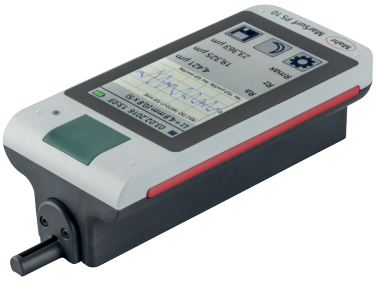


PHT (80 mm)



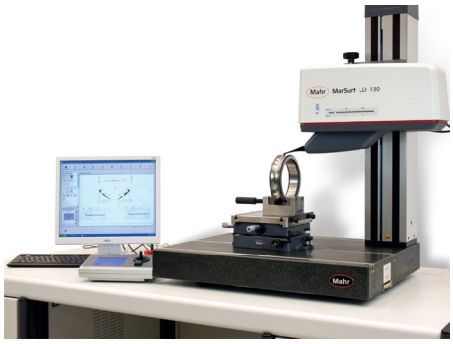
PHT 11–100

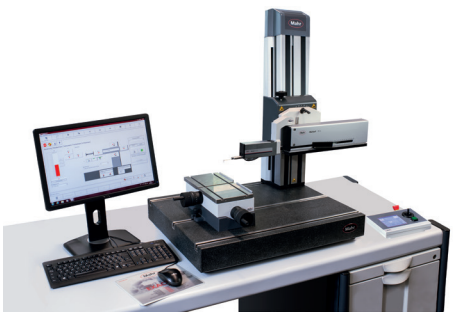
MarSurf. Surface Metrology



PORTABLE SURFACE ROUGHNESS MEASUREMENT

PORTABLE AND STATIONARY SURFACE MEASUREMENT FOR ROUGHNESS DEPTH AND CONTOURS



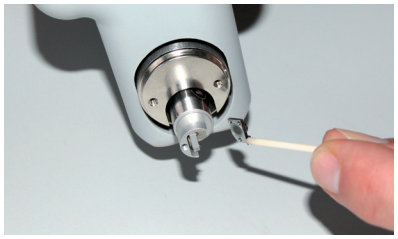


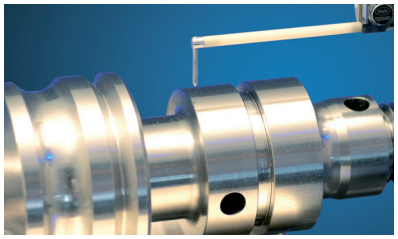
MarSurf M 400. Mobile Surface Measuring Instrument

MarSurf M 400. The best of the mobile devices
Both in the measuring room and increasingly also in the production area, there is a need for surface evaluations requiring skidless tracing.
This generally requires more highly skilled operators, more time and more adjustment work.
Within the "mobile surface metrology" range, MarSurf M 400 provides the necessary range of functions, while at the same time being quick and easy to use.

- Mobile and stationary measuring instrument
- Roughness and waviness measurements
- Traversing lengths up to 26 mm
- Over 50 R , W and P surface parameters
- Automatic choice of cut-off and traversing length in accordance with international standards
- Dynamic calibration function
- Cable and Bluetooth connection between drive unit and evaluation instrument (4 m)
- Magnetic probe holder (breakaway probe) BFW 250
- Motorized probe zero setting (max. 7.5 mm)

Supplied with:
- MarSurf M 400 evaluation instrument
- MarSurf SD 26 drive unit including BFW 250 probe system
- Standard probe arm (6852403)
- 1 roll of thermal paper
- Wide-range power supply unit with 3 adapters
- 2 x USB cables (for connecting to the PC and the M 400
- Operating instructions
- Case





BFW probe system with magnetic probe arm holder

Technical Data

Measuring principle	Stylus method
Probe	BFW skidless system
Measuring range	+/–250 µm (up to +/–750 µm with 3x probe arm length)
Profile resolution	Measuring range +/–250 µm: 8 nm Measuring range +/–25 µm: 0.8 nm
Filter according to ISO/JIS	Gaussian filter as per ISO 11562 Filter as per ISO 13565
Cutoff lc according to ISO/JIS	0,25 mm, 0,8 mm, 2,5 mm, automatical, variable
Number n of sampling length according to ISO/JIS	1–5
Contacting speeds	0,2 mm/s; 1,0 mm/s
Measuring force	0,7 mN
Surface parameters	Over 50 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Accessories

Measuring stand
- ST-D, ST-F and ST-G
- Holder on measuring stand

Other accessories
- CT 120 XY table, parallel vise, V-block
- Assorted probe arms for the BFW probe system

Applications

Machine building
Bearings, shafts, racks, valves

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Steel industry
Measurement of sheet metal surfaces
Measurement of roller surface

Medicine
Surface roughness measurement for hip and knee endoprostheses

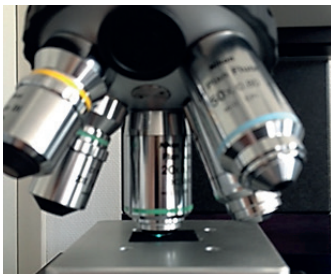
Aerospace
Turbine components

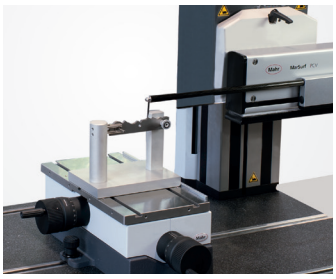
For more information, please visit our website: www.mahr.com

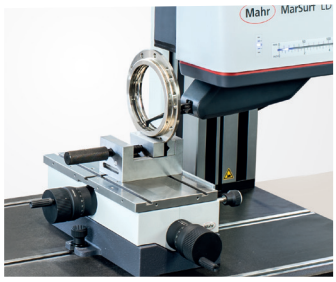
MarSurf. PC-based Stationary Surface Measuring Stations

Versatile And Powerful In Measuring Rooms And Laboratories

In surface measurement a distinction is made between mobile instruments, stationary workshop instruments and PC-based surface measuring instruments. This last group represent the cutting edge in surface measurement and evaluation. They satisfy all the requirements of a modern PC-based measuring and evaluation system. International standards, versatile evaluation methods, comprehensive documentation, large storage capacity, data export/import and networking with other systems have now become essential features of a PC-based system. Extensive QA procedures guarantee the highest quality and stability of software and hardware.







MarSurf XR 1. Roughness Measuring Station

MarSurf XR 1. The ideal instrument for a low-cost introduction to user-friendly surface metrology.
The PC-based instrument delivers all common surface parameters and profiles in accordance with international standards, both in the measuring room and in production. MarSurf XR 1 from Mahr stands for innovative roughness evaluation software.

- Over 80 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)
- Bandpass filter Ls in accordance with current standard; Ls can also be switched off or varied as required.
- Comprehensive measuring records
- Teach-in methods for the rapid creation of Quick & Easy measuring programs
- Automatic functions for choosing cut-off and traversing length in accordance with international standards (patented)
- 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 use

Drive units and probe options:
- Skidded or skidless tracing
- MarSurf RD 18 or MarSurf SD 26 drive units

Supplied with:
- MarSurf XR 1, XR 1 software, Mahr license key with standard license
- Drive unit adapter
- All-in-one PC optional
- MarSurf SD 26 and/or RD 18 drive unit set including probe system
- MFW 250 B probe system set
- MarSurf ST-G measuring stand
- CT 120 XY table

Technical Data

Measuring principle	Stylus method
Probe	BFW skidless system with MarSurf SD 26 drive unit and/or PHT skidded system with MarSurf RD 18 drive unit
Measuring range	+/–250 µm (up to +/–750 µm with 3x probe arm length) applies to BFW system 350 µm applies to PHT probe system
Filter according to ISO/JIS	Gaussian filter as per ISO 11562 Filter as per ISO 16610–21 / ISO 16610–31
Number n of sampling length according to ISO/JIS	1 to 50 (default: 5)
Traversing lengths	MarSurf GD 26 / SD 26: Automatic; 0.56 mm*; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm, Measurement up to stop, variable * Traversing length dependent on drive unit RD 18: Automatic; 1.75 mm; 5.6 mm; 17.5 mm
Measuring force	0.7 mN
Surface parameters	Over 80 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Accessories

General software options:
- Dominant waviness option (WDc) for MarWin
- ISO 13565–3 surface parameters option
- QS-STAT / QS-STAT Plus option
- Profile processing option
- User defined parameters between operator and authorized personnel
- Contour 1 for MarSurf XR 1 / XR 20 option (in conjunction with MarSurf SD 26 drive unit)
- All options on one MLK

Software options:
- Expanded evaluation option
- Multiple measurement option
- Expanded measuring record option
- Script program integration option
- Digital I/O set option

Applications

Machine building
Bearings, shafts, racks, valves, various components from the engineering and precision engineering industry

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

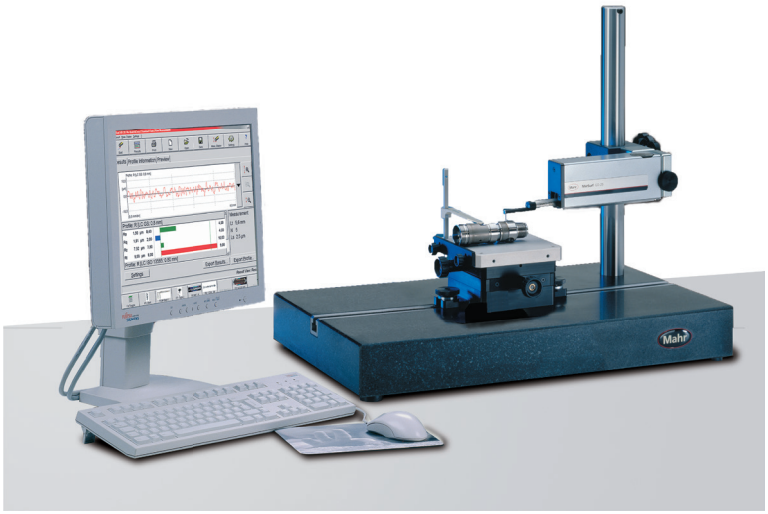
Medicine
Surface roughness measurement for hip and knee endoprostheses

Aerospace
Turbine components

Optics
Various optical components

For more information, please visit our website: www.mahr.com

MarSurf XR 20 with GD 25. Roughness Measuring Station



MarSurf XR 20, the perfect introduction to top-class surface metrology
The PC-based instrument delivers all common surface parameters and profiles in accordance with international standards, both in the measuring room and in production. The powerful MarSurf XR 20 combines decades of experience in surface metrology with innovative technology, easy-to-read icons and user-friendly operator assistance.

- Over 100 surface parameters available for R, P and W profiles in accordance with ISO / JIS, ASME or MOTIF (ISO 12085)
- Tolerance monitoring and statistics for all surface parameters
- Teach-in methods for the rapid creation of Quick & Easy measuring programs
- Comprehensive measuring records
- Automatic functions for choosing filter and traversing length in accordance with international standards
- Support for various calibration methods (static/dynamic) by specifying the Ra or Rz parameter
- Adjustable maintenance and calibration intervals
- Simulation mode for rapid familiarization with operating principle
- Multiple measuring station configurations for custom applications

Supplied with:

- MarSurf XR 20 including PC, Mid-Range Standard, XR 20 software, Mahr license key
- TFT monitor
- MarSurf GD 25 drive unit
- MFW 250 B probe system set
- MarSurf ST-G measuring stand
- PGN 3 calibration standard
- MCP 23 manual control panel
- CT 120 XY table

Technical Data

Measuring principle	Stylus method
Probe	R probe, MFW 250 B
Measuring range	MFW 250: ±25 µm, ±250 µm, (up to ±750 µm); ±1000 µin, ±10,000 µin (up to ±30,000 µin)
Filter according to ISO/JIS	Gaussian filter as per ISO 11562, filter as per ISO 16610–21/ISO 16610–31
Number n of sampling length according to ISO/JIS	1 to 50 (default: 5)
Traversing lengths	Automatic; 0.56 mm; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm*, Measurement up to stop, variable * Traversing length dependent on drive unit
Surface parameters	Over 100 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Accessories

- Parallel vise
- V-block

General software options:

- Dominant waviness option (WDc) for MarWin
- ISO 13565–3 surface parameters option
- QS-STAT / QS-STAT Plus option
- Profile processing option
- User defined parameters option
- Contour 1 for MarSurf XR 1 / XR 20 options
- All options on one MLK (Mahr license key)

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks, valves

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Medicine
Surface roughness measurement for hip and knee endoprostheses

Aerospace
Turbine components

Optics
Various optical components

For more information, please visit our website: www.mahr.com

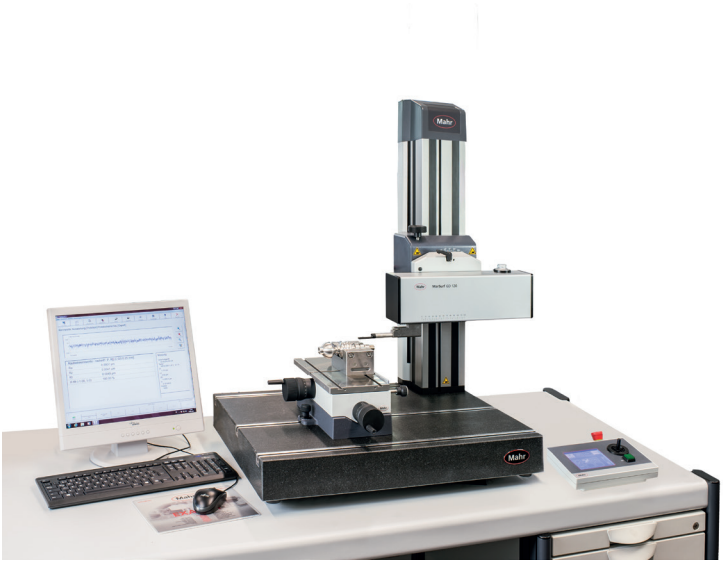
MarSurf XR 20 with GD 120. Roughness Measuring Station

MarSurf XR 20, the introduction to surface metrology

- PC based instrument delivers all common surface parameters and profiles in accordance with international standards (both in measuring room and in production)
- Combines decades of experience in surface metrology with innovative technology
  - Easy to read icons
  - User friendly operator assistance
- A sampling length of up to 120 mm is possible in conjunction with the GD 120 drive unit
  -In addition to surface roughness evaluations, profile and waviness evaluations can also be performed in this way
- Over 100 surface parameters available for R, P and W profiles in accordance with ISO / JIS, ASME or MOTIF (ISO 12085)
- Tolerance monitoring and statistics for all surface parameters
- Teach-in methods for the rapid creation of Quick & Easy measuring programs
- Comprehensive measuring records
- Automatic functions for choosing filter and traversing length in accordance with international standards
- Support for various calibration methods (static/dynamic) by specifying the Ra or Rz parameter
- Adjustable maintenance and calibration intervals
- Simulation mode for rapid familiarization with operating principle
- Multiple measuring station configurations for custom applications

Supplied with:

- MarSurf XR 20 including PC, Mid-Range Standard, XR 20 software, Mahr license key
- TFT monitor
- MarSurf GD 120 drive unit
- MFW 250 B probe system set
- MarSurf ST 500 measuring stand
- PGN–3 calibration standard
- MCP 23 manual control panel
- CT 300 XY table



Technical Data

Measuring principle	Stylus method
Probe	R probe, MFW 250 B
Measuring range	MFW 250: ±25 µm, ±250 µm, (up to ±750 µm); ±1000 µin, ±10,000 µin (up to ±30,000 µin)
Filter according to ISO/JIS	Gaussian filter as per ISO 11562, filter as per ISO 16610–21/ISO 16610–31
Number n of sampling length according to ISO/JIS	1 to 50 (default: 5)
Traversing lengths	Automatic; 0.56 mm; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm*, Measurement up to stop, variable * Traversing length dependent on drive unit
Surface parameters	Over 100 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Accessories

Optional:

- MarSurf ST 750 measuring stand
- Manual control panel with joystick and display
- Parallel vise
- V-block
- Equipment table
- Vibration dampening system
- Measuring cabinet

General software options:

- Dominant waviness option (WDc) for MarWin
- ISO 13565–3 surface parameters option
- QS-STAT / QS-STAT Plus option
- Profile processing option
- User defined parameters option
- Contour 1 for MarSurf XR 1 / XR 20 options
- Topography option

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks, valves

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Medicine
Surface roughness measurement for hip and knee endoprostheses

Aerospace
Turbine components

Optics
Various optical components

For more information, please visit our website: www.mahr.com

MarSurf XC 2 with CD 120. Contour Measuring Station

Your entry into precision contour measurement

• The quick, simple and inexpensive 2D contour measuring system satisfies all demands in terms of accuracy and range of evaluation criteria

• Consistently delivers safe and reliable results

• Parameters that are dependent on datum elements are recalculated as soon as a datum element is changed

• Password protected user access prevents improper use

• Outstanding calibration processes, including geometry calibration, measuring force calibration, compensation, etc.

• Sturdy, rigid probes

• Reliable drive unit

• Automatic lowering and raising of the probe arm at individually adjustable speeds

• Patented probe arm attachement for collision protection

Supplied with:

• MarSurf XC 2 including PC, Mid-Range Standard, MarSurf XC 2 software, Mahr license key

• TFT monitor

• MarSurf CD 120 drive unit

• MarSurf ST 500 measuring stand (including holder)

• Calibration set

• MCP 23 manual control panel

• CT 120 XY table including rotary adjustment

Technical Data

Measuring range	(in Z) 50 mm
Traversing lengths	0.2 mm to 120 mm
Measuring force	1 mN to 120 mN
Sampling angle	on smooth surfaces, depending on deflection: trailing edges up to 88°, leading edges up to 77°
Contacting speed (in Z)	0.1 to 1 mm/s
Resolution	In Z, relative to stylus tip: 0.38 µm (350 mm probe arm) / 0.19 µm (175 mm probe arm) In Z, relative to measuring system: 0.04 µm
Guide deviation	< 1 µm (over 120 mm)
Measuring speed	0.2 mm/s to 4 mm/s
Positioning speed	In X and return speed: 0.2 to 8 mm/s In Z: 0.2 to 10 mm/s
Probe arm length	175 mm, 350 mm
Tip radius	25 µm

Accessories

Optional:

• MarSurf ST 750 measuring stand

• Manual control panel with joystick and display MCP 21

• Parallel vise, V-block

• Equipment table

Software options:

• DXF import option

• Tangential elements option

• Thread evaluation option

• Chamfer option

• QS-STAT / QS-STAT Plus option

• Topography option

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks

Measurement close to the production area
Contour measurement in semi-automated operation

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine
Contour measurement for hip and knee endoprostheses
Contour measurement for medical screws
Contour measurement for dental implants

For more information, please visit our website: www.mahr.com

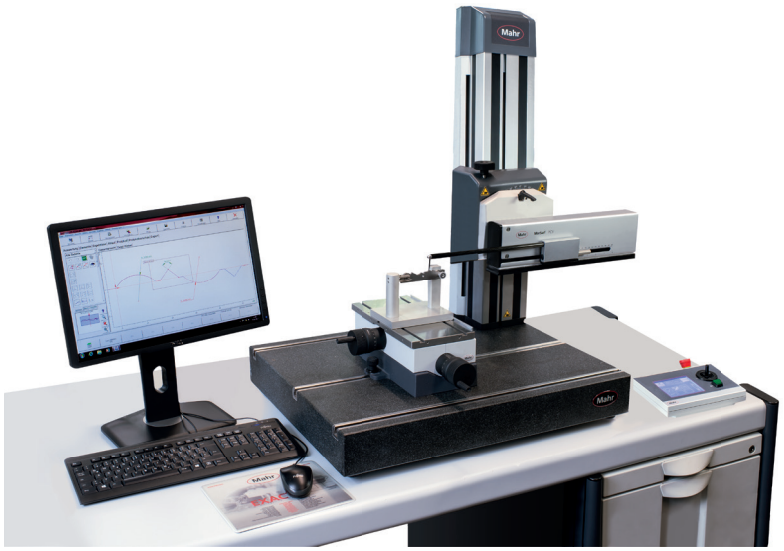
MarSurf XC 20 with PCV 200. Contour Measuring Station

The international benchmark for contour measurement
The MarSurf XC 20 is recognized as the ultimate in contour evaluation. What started some 30 years ago with the Konturograph - consisting of a drive unit and X-/Y-recorders — has developed into a top-quality contour measuring system using cutting-edge technology. The finely tuned device configuration offers superb performance standards. The drive unit and the measuring stand are controlled and positioned via the reliable measuring and evaluation software.

- User prompts can be displayed
- Interactive control elements support evaluations and automatic routines
- Measurement of upper and lower contours with a twin-stylus probe; a relative evaluation of the two contours is also possible
- Profile section images with evaluation of different parameters for each section
- Segmented measurement is possible across obstacles such as bores or steep sides
- Import and export of DXF files supported for setpoint/actual value comparison
- PCV 200 drive unit with patented probe arm magnetic attachment for reproducible probe arm change
- Patented probe system for measuring station flexibility
- Manually variable tracing forces also support flexibility
- Synthetic creation of nominal profiles from straight lines and circle arcs
- Easy comparison of nominal and actual profiles
  - Different tolerances can be selected by within a profile

Supplied with:

- MarSurf XC 20 including PC, Mid-Range Standard including XC 20 software, Mahr license key
- TFT monitor
- MarSurf PCV 200 drive unit
- MarSurf ST 500 measuring stand (including holder)
- Calibration set
- MCP 23 manual control panel
- CT 300 XY table



Technical Data

Measuring range	(in Z) 50 mm
Traversing lengths	0.2 mm to 200 mm
Measuring force	1 mN to 120 mN, below and above (can be set in MarSurf XC 20)
Sampling angle	on smooth surfaces, depending on deflection: trailing edges up to 88°, leading edges up to 77°
Contacting speed (in Z)	0.1 to 1 mm/s
Resolution	In Z, relative to stylus tip: 0.38 µm (350 mm probe arm) / 0.19 µm (175 mm probe arm) In Z, relative to measuring system: 0.04 µm
Guide deviation	< 1 µm (over 200 mm)
Measuring speed	0.2 mm/s to 4 mm/s
Positioning speed	In X and return speed: 0.2 to 8 mm/s In Z: 0.2 to 10 mm/s
Probe arm length	175 mm, 350 mm
Tip radius	25 µm

Accessories

Optional:
- MarSurf ST 750 measuring stand
- Manual control panel with joystick and display MCP 21
- Parallel vise, V-block
- Equipment table

Software options:
- Thread evaluation option
- Chamfer option
- QS-STAT / QS-STAT Plus option
- Topography option

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks

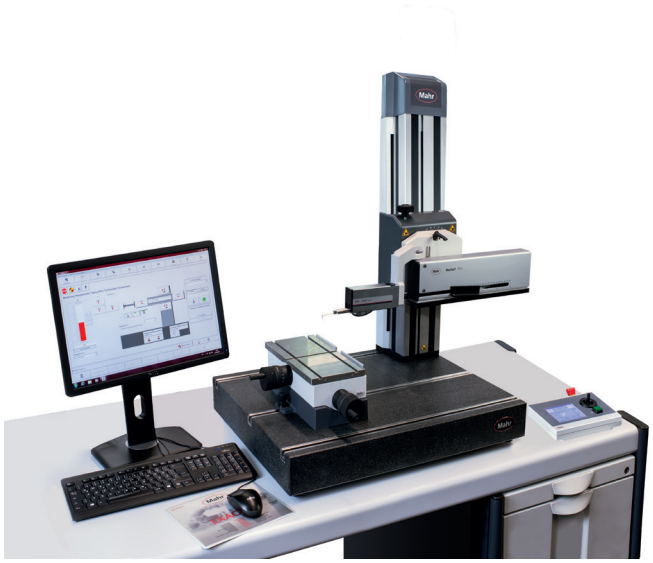
Measurement close to the production area
Contour measurement in semi-automated operation

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head

Medicine
Contour measurement for hip and knee endoprostheses
Contour measurement for medical screws
Contour measurement for dental implants

For more information, please visit our website: www.mahr.com

MarSurf XCR 20. Roughness and Contour Measuring Station



Roughness and contour measurement at a measuring station with MarSurf XCR 20
This combined measuring station allows both surface roughness and contour measurements to be performed at a single measuring station.
Depending on the measuring task, either the GD 25 drive unit for surface roughness measurements or the PCV drive unit for contour measurements can be activated. The two measuring systems are fixed to the measuring stand by means of a combi holder.

- Space-saving design: the two drive units can be adapted by means of the corresponding combi holder to MarSurf ST 500 or ST 750 measuring stands
- Roughness and contour evaluation from a single measurement
- High precision contour and roughness evaluation for components requiring a long stroke and very high resolution with the MarSurf LD 130 / LD 260 measuring system
- Quick changeover between roughness and contour measurement by switching within the software platform and swapping mechanical components such as the drive unit and probe

Options:
- MarSurf PCV 200 contour drive unit
- MarSurf GD 25 roughness drive unit

Supplied with:
- MarSurf XCR 20 including PC, MidRange Standard, MarSurf XCR 20 software, Mahr license key
- TFT monitor
- MarSurf PCV 200 / MarSurf GD 25 drive unit
- MarSurf ST 500 measuring stand (including combi holder)
- Calibration set, PGN–3
- MCP 21 manual control panel
- CT 300 XY table

Technical Data

Roughness	XR 20 with GD 25
Measuring principle	Stylus method
Probe	R probe, MFW 250 B
Measuring range	MFW 250: ±25 µm, ±250 µm, (up to ±750 µm); ±1000 µin, ±10,000 µin (up to ±30,000 µin)
Filter according to ISO/JIS	Gaussian filter as per ISO 11562, filter as per ISO 16610–21/OSO 16610–31
Number n of sampling length according to ISO/JIS	1 to 50 (default: 5)
Traversing lengths	Automatic; 0.56 mm; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm*, Measurement up to stop, variable * Traversing length dependent on drive unit
Surface parameters	Over 100 surface parameters for R, P and W profiles according to current ISO/JIS or MOTIF standards (ISO 12085)

Contour	XC 20 with PCV 200
Measuring range	(in Z) 50 mm
Traversing lengths	0.2 mm to 200 mm
Measuring force	1 mN to 120 mN, below and above (can be set in MarSurf XC 20)
Sampling angle	on smooth surfaces, depending on deflection: trailing edges up to 88°, leading edges up to 77°
Contacting speed (in Z)	0.1 to 1 mm/s
Resolution	In Z, relative to stylus tip: 0.38 µm (350 mm probe arm) / 0.19 µm (175 mm probe arm) In Z, relative to measuring system: 0.04 µm
Guide deviation	< 1 µm (over 200 mm)
Measuring speed	0.2 mm/s to 4 mm/s
Positioning speed	In X and return speed: 0.2 to 8 mm/s In Z: 0.2 to 10 mm/s
Probe arm length	175 mm, 350 mm
Tip radius	25 µm

Accessories

Optional:
- MarSurf ST 750 measuring stand
- Parallel vise
- Equipment table

Software options:
- Profile processing option
- Dominant waviness option
- User defined parameters
- Topography option
- QS-STAT / QS-STAT Plus option
- Thread evaluation option

Applications

Machine building
Bearings, threads, threaded rods, ball screws, shafts, racks, valves

Automotive industry
Steering, brake system, gearbox, crankshaft, camshaft, cylinder head, cylinder block, turbocharger

Medicine
Contour and surface roughness measurement for hip and knee endoprostheses, contour measurement for medical screws, contour and surface roughness measurement for dental implants

Aerospace
Turbine components

For more information, please visit our website: www.mahr.com

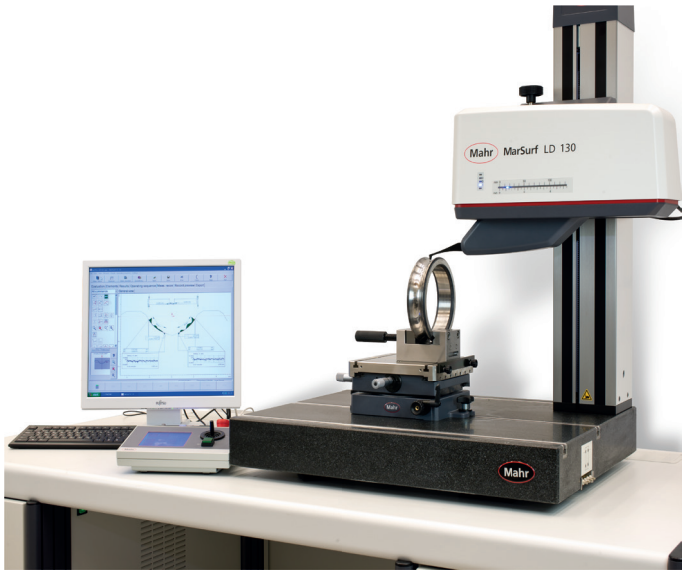
MarSurf LD 130 / LD 260. Combined Contour and Surface Measuring Station

MarSurf LD 130 / LD 260. A step into a new dimension
Combined contour and roughness measurements in just one step come courtesy of proven cutting-edge technology from Mahr metrology. The MarSurf LD 130 and MarSurf LD 260 measuring stations have been systematically developed to draw on the experience from the first generation of equipment.

- Roughness and contour in just one step
- High measuring and positioning speed reduces measuring times
- Innovative probe system removal
- Quick and reliable probe arm exchange with simultaneous probe arm detection by magnetic bracket
- Long measuring length up to 260 mm (MarSurf LD 260) with a measuring stroke of 13 mm (100 mm probe arm length) or 26 mm (200 mm probe arm length)
- Modular construction for ease of maintenance

Supplied with:

- MarSurf XCR 20 including MidRange LD, MarSurf XCR 20 software, Mahr license key
- TFT monitor
- MCP 21 manual control panel
- MarSurf LD 130 or LD 260 drive unit including LP D 14–10–2/60, LP D 14–10–500 probe system and probe arms
- Calibration standard for contour 1, accuracy class 1
- MarSurf ST 500 CNC measuring stand with 700 mm x 550 mm HG granite plate, including control module
- Dampening element set
- CT 300 XY table



Technical Data

Measuring range	13 mm (100 mm probe arm length) 26 mm (200 mm probe arm length)
Traversing lengths	0.1 mm –130 mm or 260 mm
Measuring force	0.5 mN to 30 mN, software-adjustable
Resolution	0.8 nm
Measuring speed	0.02 mm/s to 10 mm/s; for roughness measurements 0.1 mm/s to 0.5 mm/s is recommended
Positioning speed	0.02 mm/s to 200 mm/s

Accessories

- ST 750 measuring stand
- Parallel vise
- V-block, equipment table
- Measuring cabinet
- Extensive range of probe arms

Software options:

- Profile processing option
- Dominant waviness option (WDc) for MarWin
- ISO 13565–3 surface parameters option
- User defined parameters option (also requires the parameter or work by the application engineering team)
- Topography option (MarWin MarSurf XT only)
- MarSurf XT option with MfM / MfM plus
- Thread evaluation option
- Double stylus option for MarSurf LD 120 / MarWin
- Chamfer evaluation option (in accordance with Bosch standard)
- QS-STAT / QS-STAT Plus option
- Digital I/O set option

Applications

Machine building
Roller bearings, threads, threaded rods, ball screws, shafts, racks, ball heads, valves

Measurement close to the production area
Contour and surface roughness measurement in semi-automatic and fully automatic operation

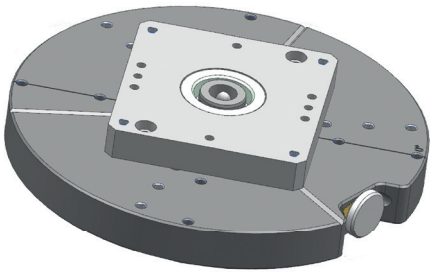
Automotive industry
Engine parts including cylinder block, cylinder head, crankshaft, camshaft, valves, steering, gearbox, injection systems, turbocharger

Medicine
Contour and surface roughness measurement for hip and knee endoprostheses
Contour measurement for medical screws
Contour and surface roughness measurement for dental implants

Optics
Contour and surface roughness measurement of aspherical lenses

For more information, please visit our website: www.mahr.com

MarSurf CNC *modular*



MarSurf CNC *modular*. CNC measuring stations based on standard components
A standard surface measuring station can be expanded into a user-friendly, semi-automatic CNC measuring station by adding auxiliary table axes and a measuring cabinet (optional)

- Plug-and-play configuration of the control unit
- Easy to operate MarSurf software measuring wizard
- Clever universal concept for workpiece holder and clamp
- Minimal training required

Supplied with:

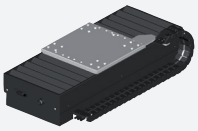
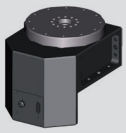
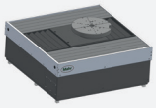
- MarSurf XR 20 measuring station with GD 120
- alternatively: MarSurf XC 20 measuring station with PCV
- alternatively: MarSurf LD 130 / LD 260 measuring station
- Including MidRange CNC controller
- MarSurf ST 500 / 750 CNC measuring stand
- MCP 21 manual control panel

Optional table axes

- T1S-L linear axis 200 mm
- T1S-R rotation axis
- T3S-LLR 3 table axes comprising 2 linear and one rotation axis

Optional measuring cabinet

Technical Data

	**T1S-L** Linear axis Complete with control module for MidRange CNC Displacement path 200 mm Dimensions 510 mm x 200 mm x 200 mm Bearing strength 50 kg
	**T1S-R** Rotation axis Complete with standard support plate and control module for MidRange CNC For use as a TA or TC axis Dimensions 270 mm x 200 mm x 210 mm Bearing strength 30 kg
	**T3S-LLR** 3 axis combination Complete with standard support plate and control module for MidRange CNC Multiaxis, monolithic structure comprising axes TX-TY-TC Bearing strength 30 kg

Accessories

- Table plate with clamping sphere adapter and universal clamping plate
- Standard measuring station upgraded to MarSurf CNC *modular*

Applications

Measurement close to the production area

- Pallet measurement
- Topography measurement
- Multiple measuring points on one part without reclamping
- Automatic X-axis alignment
- Universal measuring station for a wide variety of measuring tasks
- Automatic zenith search

For more information, please visit our website: www.mahr.com

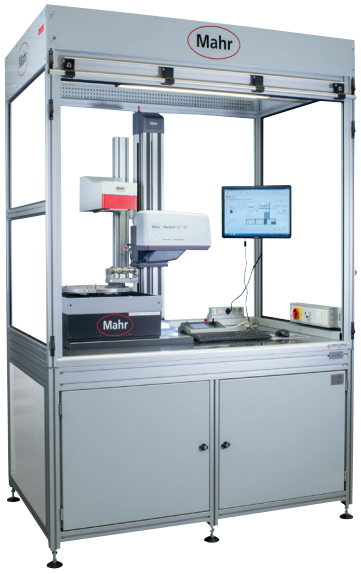
MarSurf CNC *premium*

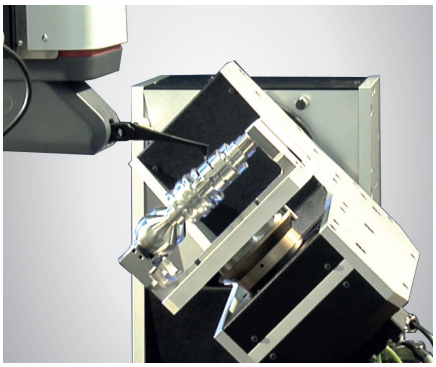
- MarSurf CNC ***premium***
- The MarSurf CNC concept is a high-quality solution for surface roughness and contour measurement in fully automatic manufacturing processes.Mahr has set standards worldwide with this measuring station concept.
- Complex measuring tasks can be performed fully automatically, without operator influence, reliably and with complete control.
- In conjunction with the probe arm changer, fully automatic procedures can be performed without operator influence with manual probe arm replacement, even in complex, multifaceted measuring tasks.

- A coordinated range of components, comprising motorized table and auxiliary axes along with tried-and-tested drive units and probe systems, forms the ideal basis for a perfect solution.

- The MarWin software platform from Mahr is a sophisticated, modular, cross-product control and evaluation system offering the necessary flexibility and process reliability for CNC operation in particular.

- **Probe arm changer TWE:**
- Up to 10 different probe arms from the LD system can be changed fully automatically.





Applications

- **Automotive industry**
- Injection system components
- **Engine parts**
- Cylinder head
- Cylinder block
- Crankshaft
- Camshaft
- Connecting rod
- **Automatic gearbox**
- Rack/steering nut
- Brake system components

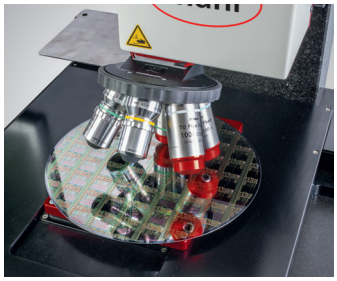
For more information, please visit our website: www.mahr.com

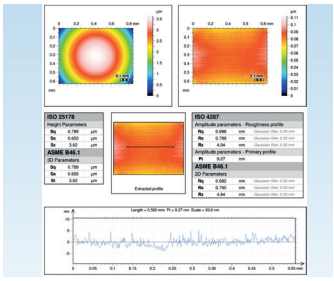
MarSurf. Optical Measuring Technology from Mahr

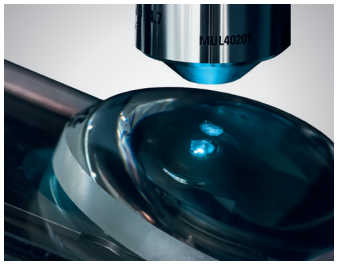
3D measuring Systems for Surface Analyses and Component Geometries

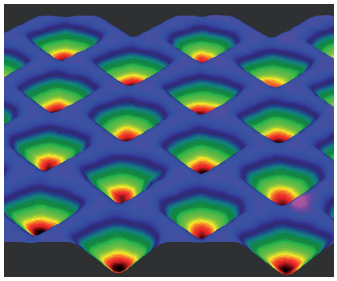
Optical measurement has become increasingly important in recent years. There are many benefits associated with optical testing of workpieces:

- No damage to or deformation of soft or fluid surfaces
- No wear on stylus tips
- Time savings through comprehensive measurement and also evaluation of new standardized surface parameters
- Statistically reliable results for heterogeneous surfaces with no clearly defined machining directions
- Fast and complete measurement of component geometriesWith Mahr on your side you can be sure of finding the right measurement solution. Decades of experience with both tactile and optical sensor systems give you the assurance of obtaining reliable results with appropriate equipment.









MarSurf CWM 100

- **MarSurf CWM 100**, a precision, computer-controlled optical measuring instrument with sub-nanometer resolution. This combined 3D measuring system comprises a confocal microscope **and** white light interferometer.
- Highest precision with sub-nanometer resolution
- Universal suitability for technical, optical and reflective surfaces. Also for surfaces of printed circuit boards and semiconductor products as well as biological tissues
- 2D surface analysis and measuring evaluations
- Topographic 3D surface analysis and measuring evaluations
- Intelligent measuring strategies - fast measurements – short measuring times
- Microscope image field sizes, easily expandable by fully automatic stitching
- Automatic table or object positioning: 100 mm x 100 mm, longer distances on request
- A wide range of lenses allows for an ideal adaptation to the measurement object
- Solid construction with granite base plate and granite column for the best possible vibration damping
- Professional evaluation software based on MountainsMap ©

Supplied with:

- Sensor system, comprising:
  - Confocal microscope KFM with 6x nosepiece
  - Camera, 780 x 580 pixels, up to 48 images/s (standard version)
  - 100 mm CNC-controlled Z-axis with integrated Heidenhain glass scale
  - One operating software with WLI and confocal software modules

- Granite base frame and column with sensor system and CNC-controlled object table
- CNC-controled motorized Z-axis and XY table for probe positioning and image field merging
- Lenses (optional):
  - 4x to 150x (confocal microscope)
  - 2.5x to 100x (white light interferometer)

Technical Data

Measuring principle	By interferometer, by white light interferometer and confocal Light source (KFM and WLI): LED, 505 nm
Measuring range	Sensor unit can be moved 100 mm in Z, CNC controlled Object table can be moved 100 mm in X and Y, CNC controlled Interferometer, white light interferometer: Measuring range (WLI): More as 4 mm (Standard mode), more as 20 mm in extended mode Confocal microscope: Measuring range (KFM): Up to 10 mm (depending on resolution in Z and lens)

Accessories

CT 120 two axis tilting table

Setting table angle +/–30°

Standards set

Confocal microscope:
KFM objective lenses 10x0.5; 20x0.75; 50x0.6 with 11 mm gap between object table and workpiece; 50x0.8; 100x0.9

White light interferometer:
WLI objective lenses 2.5x0.075; 5x0.13; 10x0.3; 20x0.4; 50x0.55; 100x0.7

Applications

Machine building
All types of metal surfaces (ground, rolled, etc.), also laser structured surfaces, ceramic and plastic surfaces, mold surfaces

Medicine
Metal, ceramic and plastic surfaces of implants, prostheses and instruments

Electronics
Surface analysis of coatings, measurement and analysis of electronic and semi-conductor components

Optics
Form and roughness analysis of various optical components (all materials)

For more information, please visit our website: www.mahr.com

MarSurf WM 100

- **MarSurf WM 100,** a 3D white light interferometer measuring system. This precision optical measuring instrument has sub-nanometer resolution and measuring accuracy.
- Maximum precision with sub-nanometer resolution and measuring accuracy
- Suitable for all optical and reflective surfaces, fine technical surfaces and surfaces of circuit boards, semiconductor products and biological tissue
- 2D surface analysis and measurement evaluations
- Topographical 3D surface analysis and measurement evaluations
- Fast measurements #96 short measuring times
- Manual table and object positioning in up to 4 axes
- Wide choice of lenses for perfect adjustment to the measuring object
- Sturdy design with granite base plate
- Professional evaluation software based on MountainsMap©

Supplied with:
- Sensor system, comprising:
  - WLI sensor head
  - Camera, 768 x 582 pixels, up to 48 f/s
  - 100 µm piezo drive z-measuring head
  - WLI software module, operating software
- Granite base and column with manual positioning of sensor system
- Manual XY object table for probe positioning
- 20x0.4 DI lens (white light interferometer)

Technical Data

WM 100	
Measuring principle	By interferometer, by white light interferometer Light source (WLI): LED, 505 nm
Measuring range	Sensor unit can be moved manually over 200 mm in Z Object table can be moved manually in X and Y Interferometer, white light interferometer: Measuring range (WLI): Up to 100 µm (vertical). More on request.

Applications

Machine building
All types of fine metal surfaces (ground, rolled, etc.), also laser structured surfaces, fine ceramic and plastic surfaces, mold surfaces

Medicine
Metal, ceramic and plastic surfaces of implants, prostheses and instruments

Electronics
Surface analysis of coatings, measurement and analysis of electronic and semi-conductor components

Optics
Roughness analysis of various optical components (all materials)

For more information, please visit our website: www.mahr.com

MarSurf Topografie-Software XT 20, MfM, MfM plus

Surface structures that are functionally relevant can often only by assessed and evaluated when depicted as a 3D topography.

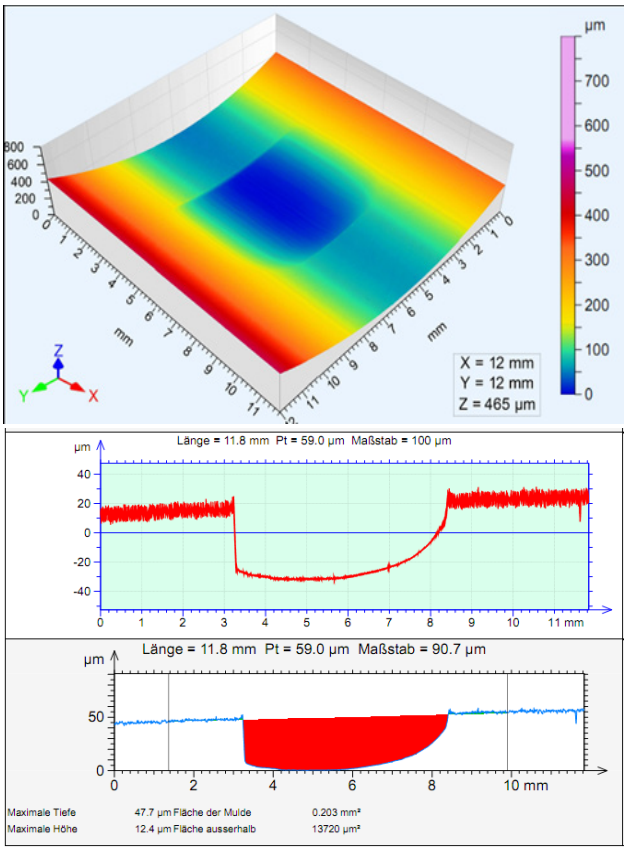
With the surface evaluation options MarSurf XT 20, MarSurf MfM and MfM plus you receive optimally tailored topography packages that can be used with tactile as well as optical metrology.

Readily available depiction types:

- 2D depiction of tracing section
- 3D topographical image
- false color depiction
- photorealistic depiction and much more

Enable a comprehensive and clear evaluation of the surface structure.

For topographical evaluation, wear testing is also required, not only 2D parameter but also 3D height parameter and volume parameters are needed to reliably analyze wear.



The essential evaluation features of the software MarSurf MfM and MfM plus

MarSurf MfM

Basis
- Documentation
- 8 languages
- Tolerances

Depiction and evaluation
- Photosimulation
- False color view
- 3D view
- Abbott-Firestone curve
- 3D basic parameter

Evaluation
- Include / exclude zones
- Zoom, symmetries, rotations
- Surface substraction
- Repair surface
- Merge surfaces

MarSurf MfM plus

Basis
- Documentation
- 8 languages
- Tolerances

Depiction and evaluation
- Photosimulation
- False color view
- 3D view
- Abbott-Firestone curve
- 3D basic parameter

Evaluation
- Include / exclude zones
- Zoom, symmetries, rotations
- Surface substraction
- Repair surface
- Merge surfaces
- FFT
- Auto correlation
- Intercorrelation
- Special filter methods
- 3D advanced parameters
- 3D motif evaluation
- Peak count distribution
- Spectral analysis
- Island volume

For more information, please visit our website: www.mahr.com

WE BELIEVE THAT FORM DEVIATION IS NOT A MATTER OF PERCEPTION. THAT IS WHY WE HAVE MARFORM.

The latest information about MARFORM products is available on our website:
www.mahr.com, web code 20570, 20575, 21052

The error-free functioning and durability of a workpiece is determined not only by its dimensions but above all by its shape. Requirements are rising all the time, whether in terms of roundness, flatness, straightness, coaxiality or run-out -- especially in the case of rotationally symmetrical workpieces. These can only be reliably tested and fulfilled with high-precision, specially optimized form testers. From fuel injection systems to microelectronics, precision engineering to medical technology: the key functional parts are becoming ever smaller and more precise. In order for manufacturing processes to abide by the specified tolerances, measurement uncertainty must be kept as low as possible. MarForm helps you to cut process costs, yet without driving up testing costs – MarForm has the perfect combination for every need by means of stable, innovative instruments offering a high degree of automation, flexibility and accuracy.

MarForm. Form Measuring Instruments

MarForm MMQ 100 623
Compact form measuring machine

MarForm MMQ 150 624
Compact form measuring machine

MarForm MMQ 200 625
Compact form measuring machine

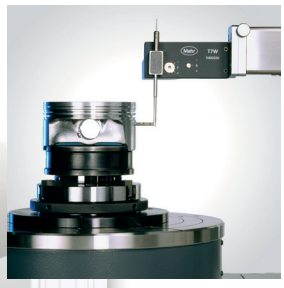
MarForm MMQ 400 626
Universal form measuring machine

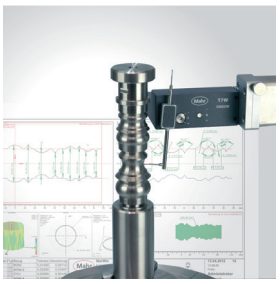
MarForm MFU 100 627
Reference form measuring station

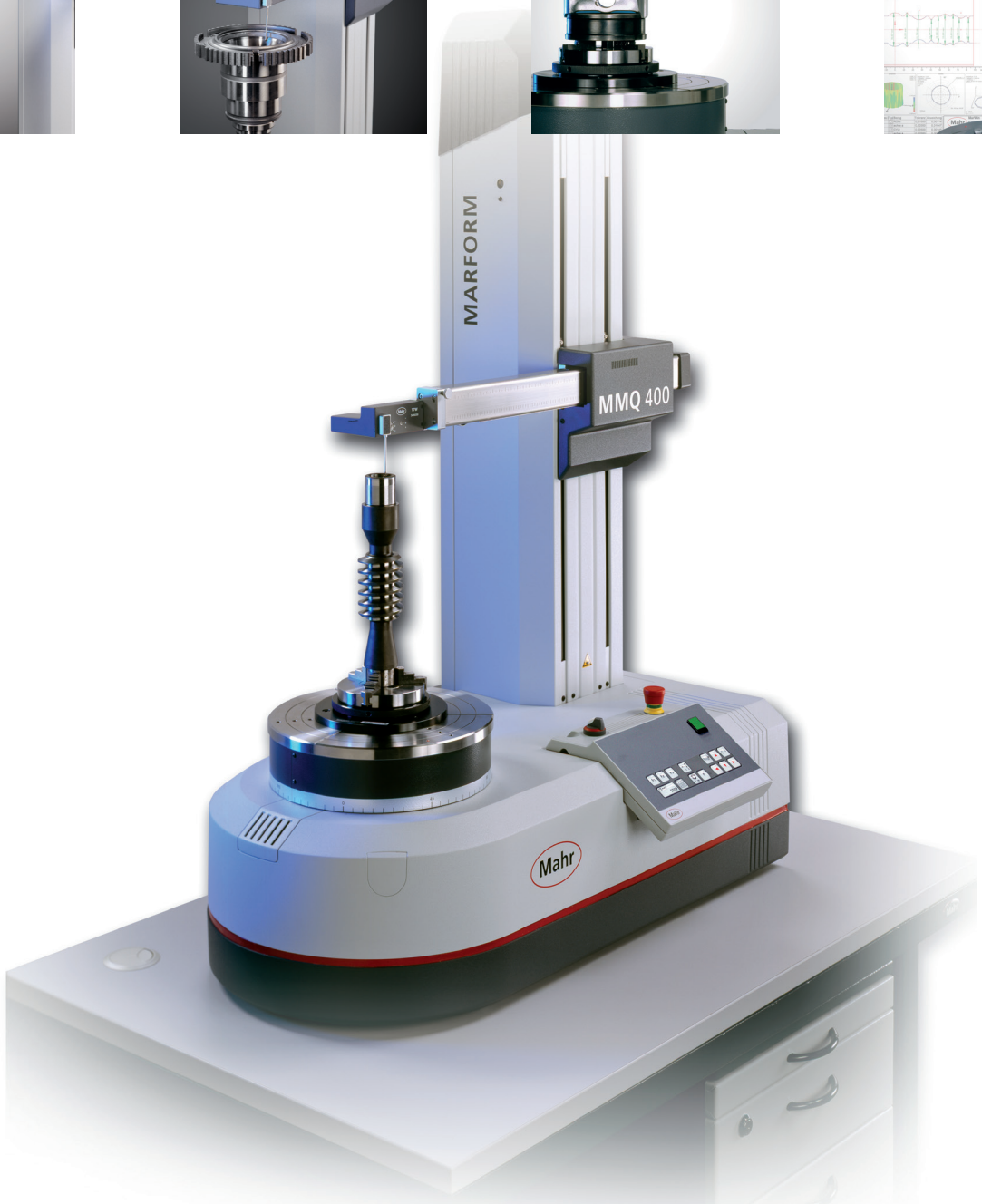
MarForm MFK 500 628
Reference form measuring station

MarForm. Formtester for a Wide Variety of Applications

In many aspects of our daily lives we put our faith in the reliable operation of technical components. From the ABS brakes, fuel injection system and gearbox in our car to our PC hard drive, from the compressor in the air conditioning system to the blades on our razor, not to mention the landing flaps on airplanes. The smooth interaction between moving parts is critical to their error-free function and durability. To guarantee this level of performance, rotationally symmetrical workpieces are manufactured under strict specifications for the permissible deviation from the ideal form. These tolerances can only be reliably tested with high-precision, specially optimized form testers. MarForm helps you to cut process costs, yet without driving up testing costs .



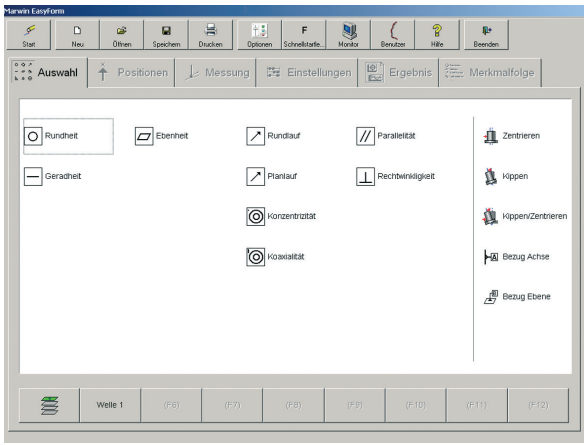




MarForm MMQ 100. Compact Form Measuring Machine

The MarForm MMQ 100 form tester is the ideal solution for simple yet precise measuring tasks.

- Fast and accurate measuring results
- Mechanical bearings for reliability
- Large measuring volume
- Low weight and compact size for greater mobility
- Fast, computer-aided workpiece alignment
- Centering and tilting knobs for coarse and fine adjustment
- Universal and reliable
- Workshop compatible, as no compressed air connection required
- Touchscreen design eliminates the need for a keyboard or mouse
- Digital encoders in Z and X transfer the measuring position directly to the software



Applications:

- Roundness
- Radial run-out
- Axial run-out
- Concentricity / Coaxiality
- Flatness (from a circular trace) (1)
- Straightness (from circular traces) (1)
- Parallelism (from circular traces) (1)
- Perpendicularity (from a circular trace) (1)
- Fourier analysis (waviness analysis)

Options:

- AdvancedForm
- Mahr QE QS-STAT data export

Versions

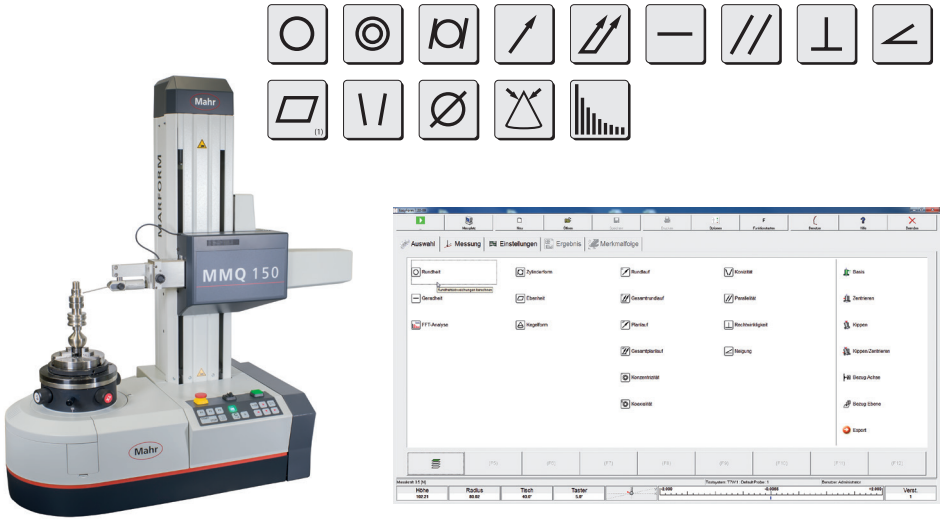
MMQ 100 with EasyForm is a powerful PC based evaluation system running under Windows® 7. It offers meaningful color reports with user friendly software for evaluating form and position tolerances (DIN ISO 1101): roundness, roundness within sections, radial runout, axial runout, concentricity, coaxiality, flatness(1), straightness(1), parallelism(1), perpendicularity(1).

The MMQ 100 measuring station with EasyForm comes as a complete system. The MMQ100 consists of the following:

- MarForm MMQ 100, with
- Digital encoders in X/Z
- T20W probe
- MarWin EasyForm software
- MarWin PC with WIN 7 operating system
- 24“ TFT monitor
- Touch sensitive touch screen monitor (optional)

For more information, please visit our website: www.mahr.com

MarForm MMQ 150. Compact Form Measuring Machines



MarForm MMQ 150 - The entry into the world of cylindricity metrology, the MMQ 150 is an automatic measuring machine for the testing of form and location tolerances:

- Use in production or measuring room
- Fast and easy operation
- Measuring accuracy, optimized for cylindricity tolerances
- Reduces number of rejected parts, saves time, lowers production costs
- Maintenance-free, high-precision mechanical bearings

Versions

The MMQ 150 measuring station consists of the following components:

- MarForm MMQ 150 form tester
- T20W length measuring probe with probe arm
- EasyForm Software for measuring and operating
- MarWin PC, Windows 7 operating system
- 24“ monitor
- Color inkjet printer
- Connecting cable

Applications:

- Roundness
- Concentricity / Coaxiality
- Cylindricity
- Radial run-out
- Axial run-out
- Total radial run-out (from circular traces) (1)
- Straightness
- Parallelism
- Perpendicularity (from a circular trace) (1)
- Angularity
- Flatness (from a circular trace) (1)
- Conicity
- Taper
- Fourier analysis (waviness analysis)

Options:

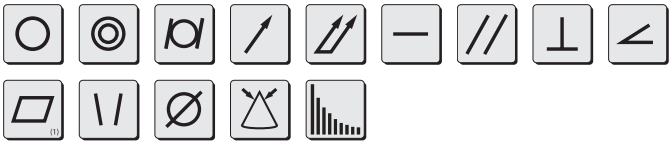
- Rim chuck Ø 100 mm
- Various additional clamps
- Optional commutator analysis
- Optional vibrational velocity analysis
- Upgrade to MarWin AdvancedForm
- 22“ touch screen instead of 24“ monitor
- Probe arms of various lengths and with various stylus ball geometries
- Various double probe arms
- Various calibration standards
- Various equipment tables, some with vibration compensation

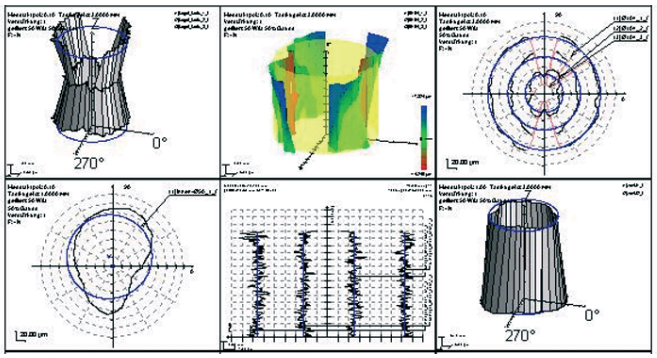
For more information, please visit our website: www.mahr.com

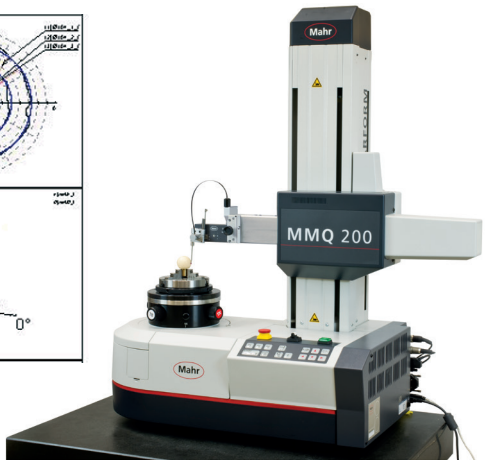
Marform MMQ 200. Compact Form Measuring Machine

The MMQ 200 is the compact form measuring machine for manufacturing workshops and inspection rooms.

- Proof of form and position deviations as per DIN/ISO 1101
- Fully automatic measuring sequences
- Precision roundness measuring axis (C)
- Motorized vertical measuring axis (Z)
- Motorized horizontal positioning axis (X)
- Manual centering and tilting table
- T20W manual length measuring probe or
- T7W motorized probe
- Ergonomic control panel, can also be used to start selected measuring programs (P1, P2, P3)







Applications:

- Roundness
- Concentricity / Coaxiality
- Cylindricity
- Radial run-out
- Axial run-out
- Total radial run-out (from circular traces) (1)
- Straightness
- Parallelism
- Perpendicularity (from a circular trace) (1)
- Angularity
- Flatness (from a circular trace) (1)
- Conicity
- Taper
- Fourier analysis (waviness analysis)

Options:

- 22" touchscreen TFT monitor instead of the 24" standard TFT
- Roughness measurement and evaluation with MMQ 200/T7W
- AdvancedForm software, diameter evaluation
- Various clamps
- Probe arms of various lengths and with various stylus ball geometries
- Various double probe arms
- Various calibration standards

Versions

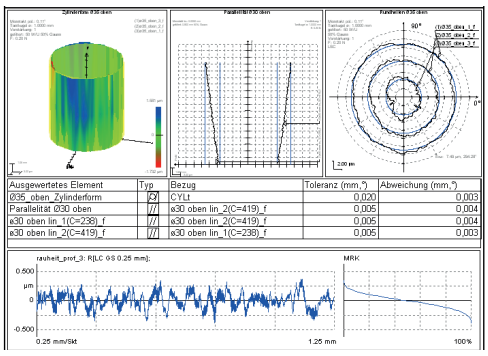
The MarForm MMQ 200 is available in two versions: As a measuring station with the universal measuring probe T20W and as a measuring station with the motorized measuring probe T7W, which takes automation another step forward with its unique motorization.
The MMQ 200 is operated with the EasyForm software. It is controlled by means of touchscreen technology, which also makes operation with the mouse exceptionally easy.

Form measuring station with T20W (order no. 9999485)
- MarForm MMQ 200 form tester
- T20W length measuring probe, manual, with probe arm
- EasyForm Software for measuring and operating
- Intel class PC, Windows 7 Ultimate 64 bit
- 24" TFT monitor
- Color inkjet printer with cable
- Rim chuck Ø 100 mm

Form measuring station with T7W (order no. 9999486)
- MarForm MMQ 200 form tester
- T7W length measuring probe with probe arm
- EasyForm Software for measuring and operating
- Intel class PC, Windows 7 Ultimate 64 bit
- 24" TFT monitor
- Color inkjet printer with cable
- Rim chuck Ø 100 mm

For more information, please visit our website: www.mahr.com

Marform MMQ 400. Universal Form Measuring Machine



MarForm MMQ 400 is suitable for universal use for extensive workpiece evaluation according to DIN ISO 1101.
High precision measuring axes in Z and X make every form measuring task possible. MarForm MMQ 400 is available in different versions for:

- High precision workpieces
- Unusually long workpieces
- Large and heavy workpieces
- Use in production or in the precision measuring room

Different modules are available with which the MarForm MMQ 400 can optimally be prepared for your requirements:

- Motorized or manual centering and tilting table
- Vertical axis (Z)with 900 mm, 500 mm or 350 mm measuring length
- Horizontal axis (X) with 180 mm or 280 mm measuring length and with digital linear scales in the X and Z axes; high probe position accuracy for measurements requiring high reproducibility.
- Manual or fully automatic probe with short measuring circuit, high linearity, low measuring force.
- Path control for the fast measuring of a nominal contour

Applications:

- Roundness
- Concentricity / Coaxiality
- Cylindricity
- Radial run-out
- Axial run-out
- Total run-out
- Straightness
- Parallelism
- Perpendicularity
- Angularity
- Flatness
- Conicity
- Diameter (optional)
- Taper
- Fourier analysis (waviness analysis)
- Cam profile (optional)

Options:

- Roughness measurement
- Switch between form probe with ruby ball and roughness probe PHT 6–350
- Piston testing with MarWin evaluation software
- Shaft twist testing and analysis with MarWin
- Cam profile testing
- Bar-to-bar variation analysis at commutators

- Contour measurement and evaluation
- Path control (MCPC)
- Shape evaluation
- Vibrational velocity analysis
- Dominant roundness waviness (MBN 10455)

For more information, please visit our website: www.mahr.com

Marform MMQ 400. Universal Form Measuring Machine

Versionen

The **MarForm MMQ 400-2** is available in five versions which are designed to meet your requirements and solve any of your measuring tasks.

- Motorized or manual centering and tilting table
- Vertical axis (Z) with measuring length of either 500 mm (19.67 in) or 900 mm (35.4 in) and horizontal axis (X) with measuring engthh of 280 mm (11.02 in) or
- Vertical axis (Z) with measuring length of 350 mm (13.78 in) and horizontal axis (X) with measuring length of 180 mm (7.09 in)
- With digital position decoders in the linear axes X and Z for best reproducability of measurements.

Your **MarForm MMQ 400-2** is available as a semi-automated measuring station with manual centering and tilting table or as a fully automated measuring station which, in conjunction with a motorized centering and tilting table and T7W probe, is perfect for the high precision testing of your parts without any operator intervention.

The **T7W** probe is fitted with a motor-driven rotational axis. This makes it possible to move the probe arm in steps of less than one degree to the required contacting position. Measurements can be performed on the generating surfaces and end faces. As a zero position probe, the **T7W** can also switch automatically between internal and external measurements or between end face measurements from above and below without operator intervention. Fully automatic measurement processes on complex workpieces can be carried out without operator intervention too.

The probe arms of the **T7W** are exchangeable. Its motor-driven rotational axis enables the construction of “multi-point probe arm units“ - i.e. probe arm units with a variety of contacting elements - making it possible to switch between different stylus ball geometries within a single measurement run.

For more information, please visit our website: www.mahr.com

MarForm MMQ. Formtester

Formtester	MMQ 100	MMQ 150	MMQ 200	MMQ 400–2 Z = 350 mm X = 180 mm	MMQ 400–2 Z = 500 mm X = 280 mm	MMQ 400–2 Z = 900 mm X = 280 mm
Roundness measuring unit, C-axis						
Roundness deviation (µm+µm/mm measuring height) **	0,05 + 0,0006	0,03 + 0,0006	0,03 + 0,0006	0,02 + 0,0005	0,02 + 0,0005	0,02 + 0,0005
Roundness deviation (µm+µm/mm measuring height) *	0,025 + 0,0003	0,015 + 0,0003	0,015 + 0,0003	0,01 + 0,00025	0,01 + 0,00025	0,01 + 0,00025
Axial run-out deviation (µm+µm/mm measuring radius) **	0,04 + 0,0006	0.4 + 0.0006	0,04 + 0,0006	0,04 + 0,0002	0,04 + 0,0002	0,04 + 0,0002
Axial run-out deviation (µm+µm/mm measuring radius) *	0,02 + 0,0003	0.02 + 0.0001	0,02 + 0,0001	0,02 + 0,0001	0,02 + 0,0001	0,02 + 0,0001
Centering and tilting table						
Centering and tilting table	manual	manual	manual	manual / automatic	manual / automatic	automatic
Table diameter	160	160	160	285	285	285
Table load capacity, centered (N)	200	200	200	600	600	400
Speed (rpm) 50 Hz / 60 Hz	5 / 6	1–15	1–15	0.2–15	0.2–15	0.2–15
Vertical straightness measuring untit, Z-axis						
Positioning path (mm), Z-axis	300, manual	-	-	-	-	-
Z-axis positioning	manual	-	-	-	-	-
Measuring path, motorized (mm), Z-axis	-	250	250	350	500	900
Straightness deviation / 100 mm measuring path (µm)**, Z-axis	-	0.4	0.15	0.15	0.15	0.15
Straightness deviation / total measuring path (µm)**, Z-axis	-	1	0.3	0.3	0.4	0.9
Parallelism deviation Z-/C-axis in tracing direction (µm)	-	1	0.5	0.5	0.8	2
Measuring speed (mm/s), Z-axis	-	0.5–30	0,5–30	0,1–30	0,1–30	0,1–30
Positioning speed (mm/s), Z-axis	-	0.5–50	0,5–100	0,5 –100	0,5 –100	0,5 –100
Horizontal straightness measuring unit, X-axis						
Positioning path (mm), X-axis	180, manual	150, motorized	150, motorized	-	-	-
Measuring path, motorized (mm), X-axis	-	-	-	180	280	280
Straightness deviation / 100 mm measuring path (µm)**, X-axis	-	-	-	0.4	0.8	0.8
Straightness deviation / total measuring path (µm)**, X-axis	-	-	-	0.8	1.5	1.5
Perpendicularity X-/C-axis (µm)	-	-	-	1	2	2
Positioning speed (mm/s), X-axis	-	0.5–30	0,5–30	0,5–30	0,5–30	0,5–30
Measuring speed (mm/s), X-axis	-	-	-	0,5–10	0,5–10	0,5–10

* Values as maximum deviation from LSC reference circle, filter 15 undulations/revolution.
** All values in accordance with DIN ISO 1101 at 20°C ±1°C in a vibration-neutral environment, filter 15 undulations/revolution LSC or 2.5 mm LSS, 5 rpm or 5 mm/s and standard probe arm with ball diameter 3 mm. Proof at the standard using error separation techniques. Given the number of different options available, only a few machines are described here by way of example. Technical data for "your" MMQ is available from Mahr on request.

For more information, please visit our website: www.mahr.com

MarForm. Reference Machines for Form and Position Tolerances

Our Most Accurate Form Measuring Machines

Precision form measurement cuts costs! MarForm is the name of our ultra-accurate form measuring system. These systems are used wherever information is required about the geometry of workpieces with very strict tolerances. ISO 1101 describes roundness, cylindricity, straightness, parallelism, etc., as form and position deviations. These features are monitored by form testers. The high accuracy of form measuring instruments can save you money, because you can maintain the necessary tolerance margins for your production. MarForm is a precision roundness and concentricity measuring machine.

MarForm MFU 100. Reference Form Measuring Station

Applications

- Checking product parts for form and position features
- Roundness, Concentricity / Coaxiality, Cylindricity, Radial run-out, Axial run-out, Total run-out, Straightness, Parallelism, Perpendicularity, Angularity, Flatness, Conicity, Diameter, Taper, Fourier analysis (waviness analysis), Line profile, Surface profile, Cam profile
- Recording of all profiles as high precision 3D coordinates with real-time spatial compensation of geometric deviations
- Perfect scanning of surfaces, roughness evaluation
- Scanning and evaluation of contours and shapes

Reference form measuring station in a new dimension.

The journey from high precision measuring axes to competent measurements is often a long one that the MFU 100 has mastered completely. Only the MFU 100 has integrated reference elements for the real-time spatial compensation of geometric deviations, recording all profiles as high-precision 3D coordinates.For decades

MarForm measuring machines have been recognized for their accuracy and stability. The new MarForm MFU 100 was developed with the claim of testing the shape and position features of product parts in a one liter measuring volume close to the production area and at a reasonable cost. In so doing, it has taken our long experience into a new dimension.

MarForm MFU 100 is a precision reference form measuring center which with its exceptionally low measurement uncertainty increases the tolerance margin for your production processes, thereby lowering production costs.

- Circular roundness measuring axis (C)
- Motorized centering and tilting table (X, Y, A, B)
- Vertical straightness measuring axis (Z)
- Horizontal straightness measuring axis (X)
- Tangential multifunction axis (Y)
- Motorized length measuring probe T7W
- MarWin evaluation software for form and position features

All axes are coordinated to ensure maximum measuring reliability. The horizontal X-axis extends beyond the center of the workpiece, allowing „true parallelism“ to be checked free from other measuring influences. The tangential Y-axis is an innovative new feature. This additional motorized axis, which is new to conventional form testers helps to locate the zenith of miniature workpiece geometries without operator influence. The actual precision measurement can then be started in exactly the right place. This significantly increases process accuracy.

The Y-axis is used together with the vertical Z-axis and the horizontal X-axis to determine the workpiece diameter. This allows tolerances to be checked in the sub-nanometer range by the maximum material principle, in accordance with standards, for the very first time and at a very reasonable price.

High-resolution digital scales in conjunction with the machine electronics provide a level of positioning accuracy which allows even miniature part geometries to be tested. MarForm MFU 100 is also suitable for error-free scanning of surfaces.

The MarWin software package offers the full range of functions of a modern measuring and evaluating application including user friendly records and electronic documentation in the company network.

The rigorous separation of control and evaluation functions ensures that MarForm MFU 100 is future-proof and expandable. New language versions, special evaluations and new standards are easy to incorporate. The MFU 100 is also ready for the addition of future sensor systems.

In short: MarForm MFU 100 brings form measuring machines for inspection rooms and production areas into a new dimension.

MarForm MFU 110 with optional optical sensor which is interchangeable with T7W (motorized)

For more information, please visit our website: www.mahr.com

MarForm MFK 500. Reference Form Measuring Station

Reference form measuring center for laboratory and measuring room, with a large measuring volume for heavy workpieces
The benchmark form measuring centers for laboratories and measuring rooms.

MFK form measuring center for comprehensive workpiece assessment. MFK form tester - ideal for testing engine blocks, cylinder heads, gear cases, hydraulic elements, crankshafts and camshafts. Generously sized, optimized design for high measuring accuracy throughout the machine. Long measuring and travel paths for easy, safe workpiece changing.

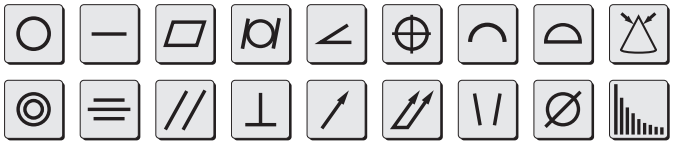
MarForm MFK 600 or MFK 500, built from individual coordinated components, offer flexibility and adaptability for a range of measuring tasks.

The form tester is based on a non-warping granite base, which is set up so that it is isolated from vibrations. Its high precision horizontal surface forms the datum plane for the measuring setup. The workpiece holder table supports and guides heavy workpieces by means of air bearings on the granite surface.

- Universal form measuring station with a large measuring volume for heavy workpieces
- MFK 600 with 5 measuring and set-up axes for measuring form elements and determining positions
- MFK 500 with 3 measuring and 4 set-up axes for measuring form elements
- Rotating measuring probes and automatic workpiece positioning make it easy to use and quick to set up
- Air bearings for low maintenance and continuous loading
- Collision-protected probe systems for diverse measuring tasks
- Large workpiece holder surface for large individual workpieces or workpiece pallets
- Roundness measuring device with automatic adjustment to the workpiece diameter, even with eccentric positioning
- Straightness measurements in 3 main coordinate directions
- Workpiece assessment as per ISO 1101
- Testing in machine and workpiece coordinates in accordance with production specifications
- Full evaluation of form and position features as well as diameter and position values
- Extensive accessories and choice of measuring probes for optimized performance of all measuring tasks
- Ready for use and easily expandable with additional movement axes for turning workpieces during a program sequence. In this way the most complex measuring tasks on V-engine blocks for example can be carried out without operator intervention

Roundness measuring device
In addition to the measuring spindle (C-axis), the roundness measuring device also includes an axis for automatically adjusting the measuring probe to the workpiece diameter (X-axis). In roundness measurements the X-axis adjusts the measuring probe to the workpiece shape, even with eccentric deviations which are bigger than the measuring probe range.

Straightness measuring device
The vertical straightness measuring device (Z-axis) guides the roundness measuring device on a granite surface. On the MFK 600 the accuracies of the horizontal straightness measuring device (Tx- and Ty-axis) are independent of the size, form and weight of the workpiece because the guides are separated from the air bearings. The MFK 500 offers the Tx-/Ty-axes of the motorized centering and tilting table as motorized positioning axes. Set-up axes (Ta and Tb) are integrated into the workpiece holder table and can automatically align workpieces mechanically in the machine volume.



Measurement performance
Automatic set-up functions integrated into measuring sequences allow for continuous operation. Measuring value processing in parallel with measuring value recording shortens the measuring time. A full range of accessories is available for the form measuring station to extend the possible applications.

Options:

- Additional movement axes for turning workpieces during a program sequence

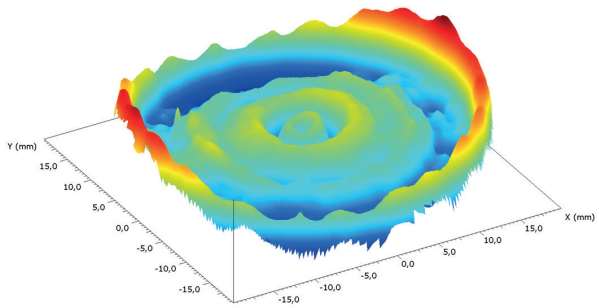
Applications

Checking of form and position features:
- Roundness, Straightness, Flatness, Cylindricity, Angularity, Position, Line profile, Surface profile, Taper, Concentricity / Coaxiality, Symmetry, Parallelism, Perpendicularity, Radial run-out, Axial run-out, Total run-out, Conicity, Diameter, Fourier analysis (waviness analysis)

Testing of:
- Engine blocks
- Cylinder heads
- Gear cases
- Hydraulic elements
- Crankshafts and camshafts

For more information, please visit our website: www.mahr.com

MarForm MFU 200 Aspheric 3D. Precision 3D Measuring Station



Mahr developed the MarForm MFU 200 Aspheric 3D to enable optical components to be tested in 2D / 3D quickly and close to the production area. MarForm measuring machines have been recognized for decades for their accuracy and stability.
With the MarForm MFU 200 Aspheric 3D this experience has now been made available to the optical industry.

Accuracy
The MarForm MFU 200 Aspheric 3D is a precision measuring instrument which with its very low measurement uncertainty is ideally suited to your process optimization requirements.

Measuring principle
The MarForm MFU 200 Aspheric 3D measures the topography of optical components. Of course, a quick 2D measurement can also be recorded with a profile across the zenith of the lens. For 3D measurements two linear profiles offset by 90° are first measured across the zenith of the lens in a single sequence. Then multiple concentric polar profiles are recorded by rotating the C-axis. These measuring points are used to generate a topography. Interrupted surfaces can be measured with the fully positionable probe arm.
Using the measuring station in a vibration-cushioned cabinet keeps external interference such as vibration and dirt away from the measuring objects.

Measuring procedure
Before starting the measurement, choose the nominal form type and set the parameters for the expected reference lens. In the next step the measuring data is recorded and compared with the nominal data for the lens. The RMS value, PV value and slope error are shown as parameters.
In the software the individual parameters for the aspheres, such as the radius of curvature R0, conical constant k and the aspheric coefficients Ai, can be adjusted to the measuring results when adjusting the nominal asphere to the fit asphere.
The differential topography between the measured values and the nominal lens is displayed as a color-coded line chart. The 2D profiles and the differential topography can then be exported in known formats for correction for the machine tool.
In addition to measuring spheres and aspheres as described above, other rotationally symmetrical objects can also be measured and evaluated using the nominal form as a conical profile or Sagitta of a 3D scatter plot.

$$z(h) = \frac{\frac{h^2}{R_0}}{1+\sqrt{1-(1+k)\left(\frac{h}{R_0}\right)^2}} + \sum_{n=2}^{5} A_{2n} \cdot h^{2n}$$

For more information, please visit our website: www.mahr.com

MarForm Software MarWin

MarWin gives you full control over your form measuring station. You can position, align, measure and document at the click of a mouse #96 and the graphical user interface keeps you fully informed at all times.

Functions can be selected with the mouse from pull-down menus in menu bars, just as in other Windows® applications.

AdvancedForm lets you stay in control of the form measuring station at all times. You can track the profile shape while it is being measured, and intervene if you wish. The controls can be adapted to individual requirements. Whether you are carrying out a quick individual measurement, starting a program sequence on a series component or converting a complex measuring task into a measuring program: AdvancedForm offers the ideal operating strategy for every task. As tasks can differ so greatly, there is no one operating strategy that is perfect for every application.

That is why AdvancedForm offers a variety of operating strategies:

- Favorite measuring runs for measurement using an existing measuring program
- Quick&Easy

for fast measurement; obtain a measuring result quickly, with minimal effort

- Teach-in programming

for creating, modifying and running a measuring program, with lots of different possibilities

- MarEdit (optional)

the operating level for application engineers and trained specialists for solving challenging tasks.
AdvancedForm shows you all necessary measuring and evaluation parameters in a clearly laid-out display. For many parameters there are default settings, which for most measuring tasks you can simply confirm. Of course you can also adjust individual parameters to the specific task.

Many functions, such as printing results, loading measuring programs or editing a program step, can be selected simply by clicking an icon.

The powerful teach-in programming feature of AdvancedForm allows you to create measuring programs for frequently measured workpieces. It can also be used to create measuring runs containing special positioning movements, measurements, evaluations and displays.

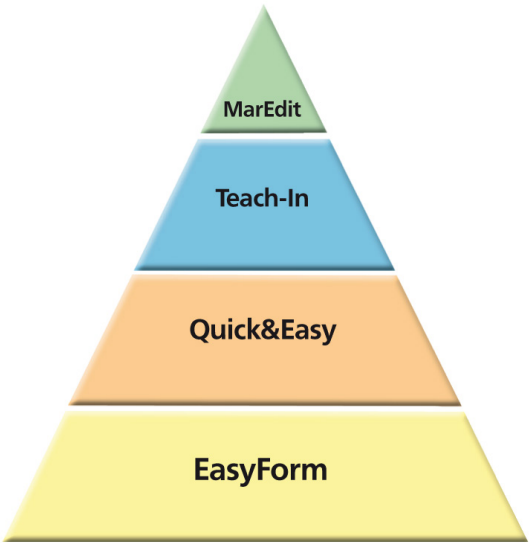
With teach-in programming, simply click on an icon, e.g. for measuring and evaluating a run, and a window opens in which you can describe the feature in more detail (e.g. radial or axial runout, datum, code name, tolerance, etc.). The number and type of measurements (true measurement or reevaluation of already measured profiles) are also specified in this window. Separate windows can be opened for editing measuring, evaluation and display parameters. In many cases, however, this is unnecessary, as default values are already entered which can be used for many measuring tasks. If different settings are required for specific measuring tasks, then the clear window layout will quickly take you to the right place, allowing you to optimize the settings in a flash.

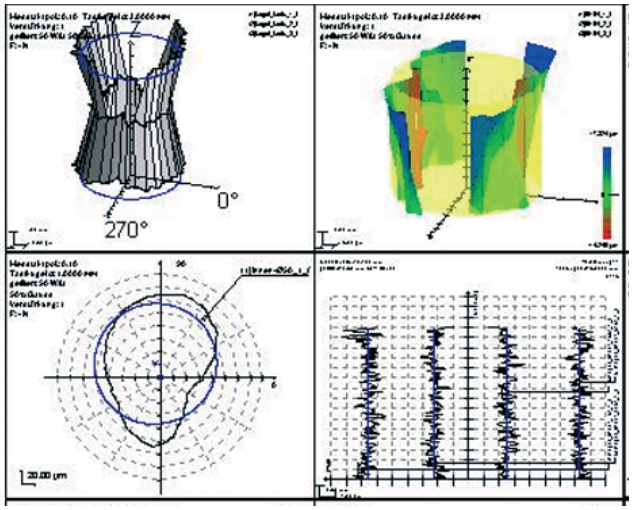
The design of a measuring record can be changed down to the smallest detail: The colors of the profile, reference and limits can be chosen individually; the scaling (in µm per graduation) and the type of graphic (polar or linear, centered or uncentered) as well as many other display parameters can be adjusted to suit.

Measuring programs for frequently measured series components can be saved and reopened and started as a measuring run (see above) at any time.

Meaningful graphical profile displays, with several profiles in one graphic if required, displayed in different colors and in various ways, are immediately available on the generously sized color screen. If you are interested in exact numerical values, you can choose to display the results as a table.

AdvancedForm displays standardized measurements and evaluations in a clear and meaningful format. Interactive design options are created in real-time with a 3D preview.





For more information, please visit our website: www.mahr.com

INNOVATIVE MEASURING TECHNOLOGY INCREASES YOUR GEAR TOOTH QUALITY. THAT IS WHY WE HAVE MARGEAR.

The latest information about MARGEAR products is available on our website:
www.mahr.com, web code 157

Maximum precision in manufacturing is an important basis for the success of a business. MarGear gear measuring technology allows you to carry out your measuring tasks on gears and gear cutting tools quickly, simply and accurately, in just one measuring process. The flexible systems — with or without mechanical alignment and reclamping, and with a combination of gear measuring technology and form and position evaluation — create the best possible conditions for gaining and retaining a competitive edge. By fully integrating measuring technology into production, you can achieve a closed quality control loop in gear manufacturing.

MarGear. Gear Measuring Instruments

MarGear GMX 275 C 637
Universal Gear Measuring Center

MarGear GMX 400 C 638
Universal Gear Measuring Center

MarGear GMX 400 ZL 639
Universal Gear Measuring Center

MarGear GMX 600 640
Universal Measuring Center for Gear, Form and Dimension Testing

MarGear GMX 275 W 642
Universal Gear Measuring Center

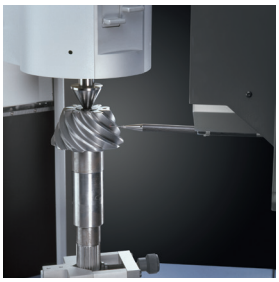
MarGear GMX 400 W 643
Universal Gear Measuring Center

MarGear GMX 400 ZLW 644
Universal Gear Measuring Centers

MarGear. Gear Measuring Technology from Experienced Specialists

Modern Solutions for Gear Measurement

The flexible and extremely accurate GMX range of measuring instruments offers a perfect combination of gear measuring instrument and form tester in a single system. From highly specialized gear analyses to fully integrated series measurement, MarGear is the ideal solution at every level of modern gear manufacturing.



MarGear GMX 275 C. Universal Gear Measuring Center

Fully automatic precision testing of gears and gear cutting tools up to an outer diameter of 275 mm.

The ideal solution for both universal and specialist gear manufacturing.

System solutions provide the ultimate in flexibility and availability within a modern gear wheel component production facility. MarGear GMX, a networked variant for use close to the production area, offers fast and efficient analysis of possible gear deviations.

This allows for a direct assessment of the deviation and an automatically generated machine error correction. **Gear and form measurements** carried out on a single measuring instrument.

High precision 3D scanning sensor combined with directly driven C axis for accuracy and efficiency..

Control unit:
4 axis Power PC Control unit:

Options:
- Tailstock up to clamping length 700 mm
- Active damping system

Technical Data

Measuring path (mm), X axis	180
Measuring path (mm), Y axis	150
Measuring path (mm), Z axis	320
Diameter max.* [mm]	275
Length	1560
Width	600
Height	1787
Mass [kg]	700
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

*** max. diameter of cylindrical gears**

Accessories

- Probe arm changer (5 boxes)
- Active vibration damping system
- Revolving counter tip

Applications

Fully automatic testing of:
- Straight and helical toothed cylindrical gears
- Spiral and hypoid bevel gears
- Crown gears
- Cylindrical worms
- Conical and asymmetrical cylindrical gears
- Segment gears
- Shaving cutters
- Hobs
- Cutting wheels
- Synchronous gears
- Beveloid gears
- 3D geometries, form and position measurements, diameters, distances
- Special gear cutting tools on request

For more information, please visit our website: www.mahr.com

MarGear GMX 400 C. Universal Gear Measuring Center

Precision, fully automatic testing of gears and gear cutting tools up to an outer diameter of 400 mm.

The ideal solution for both universal and specialist gear manufacturing.

System solutions provide the ultimate in flexibility and availability within a modern gear wheel component production facility. MarGear GMX, a networked variant for use close to the production area, offers fast and efficient analysis of possible gear deviations.

This allows for a direct assessment of the deviation and an automatically generated machine error correction.

Gear and form measurements carried out on a single measuring instrument.

High precision 3D scanning sensor combined with directly driven C axis for accuracy and efficiency.

Control unit:
4 axis Power PC Control unit:

Options:
- Tailstock up to clamping length 700 mm
- Active damping system

Technical Data

Measuring path (mm), X axis	200
Measuring path (mm), Y axis	200
Measuring path (mm), Z axis	320
Diameter max.* [mm]	400
Length	1560
Width	600
Height	1787
Mass [kg]	700
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

*** max. diameter of cylindrical gears**

Accessories

- Probe arm changer (5 boxes)
- Active vibration damping system
- Revolving counter tip

Applications

Fully automatic testing of:
- Straight and helical toothed cylindrical gears
- Spiral and hypoid bevel gears
- Crown gears
- Cylindrical worms
- Conical and asymmetrical cylindrical gears
- Segment gears
- Shaving cutters
- Hobs
- Cutting wheels
- Synchronous gears
- Beveloid gears
- 3D geometries, form and position measurements, diameters, distances
- Special gear cutting tools on request

For more information, please visit our website: www.mahr.com

MarGear GMX 400 ZL. Universal Gear Measuring Center

Precision, fully automatic testing of gears and gear cutting tools up to an outer diameter of 400 mm.

The ideal solution for both universal and specialist gear manufacturing.

System solutions provide the ultimate in flexibility and availability within a modern gear wheel component production facility. MarGear GMX, a networked variant for use close to the production area, offers fast and efficient analysis of possible gear deviations.

This allows for a direct assessment of the deviation and an automatically generated machine error correction.

Gear and form measurements carried out on a single measuring instrument.

High precision 3D scanning sensor combined with directly driven C axis for accuracy and efficiency.

Control unit:
4 axis Power PC Control unit:

Extended Z measuring range for measuring long drive shafts up to 650 mm.

Options:

- Tailstock up to clamping length 700 mm
- Active damping system

Technical Data

Measuring path (mm), X axis	200
Measuring path (mm), Y axis	200
Measuring path (mm), Z axis	650
Diameter max.* [mm]	400
Length	1560
Width	600
Height	2147
Mass [kg]	750
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

*** max. diameter of cylindrical gears**

Accessories

- Probe arm changer (5 boxes)
- Active vibration damping system
- Revolving counter tip

Applications

Fully automatic testing of:

- Straight and helical toothed cylindrical gears
- Spiral and hypoid bevel gears
- Crown gears
- Cylindrical worms
- Conical and asymmetrical cylindrical gears
- Segment gears
- Shaving cutters
- Hobs
- Cutting wheels
- Synchronous gears
- Beveloid gears
- 3D geometries, form and position measurements, diameters, distances
- Special gear cutting tools on request

For more information, please visit our website: www.mahr.com

MarGear GMX 600. Universal Measuring Center for Gear, Form and Dimension Testing

The successful combination of gear and form measurement in one clamping saves additional investment, maintenance costs and time.

Full functionality as a form tester up to an outer diameter of 600 mm.

The **MarGear GMX 600,** as a complete solution, can also be used for measuring crankshafts, camshafts and pistons.

High precision, fully automatic testing of gears and gear cutting tools. Also serves as an integrated formtester system solution.

High precision 3D scanning sensor combined with directly driven C axis for accuracy and efficiency.

Control unit:
5 axis Power PC Control unit: with fully automatic swivelling probe head.

Options:

- Active damping system
- Centering and tilting table (CNC)
- Centering and tilting table (CNC-XXL)

Technical Data

Measuring path (mm), X axis	300
Measuring path (mm), Y axis	600
Measuring path (mm), Z axis	700
Diameter max.* [mm]	600
Length	2314
Width	1671
Height	1865
Mass [kg]	2250
Max. workpiece weight [kg]	300 (with fixed support plate and tip) 100 (with automatic centering and tilting table)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.07 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.1 µm

*** max. diameter of cylindrical gears**

Accessories

- Probe arm changer (4 boxes)
- Active vibration damping system

Applications

Fully automatic testing of:

- Straight and helical toothed cylindrical gears
- Spiral and hypoid bevel gears
- Crown gears
- Cylindrical worms
- Conical and asymmetrical cylindrical gears
- Segment gears
- Shaving cutters
- Hobs
- Cutting wheels
- Synchronous gears
- Beveloid gears
- 3D geometries, form and position measurements, diameters, distances
- Form measurement with centering and tilting table
- Optional: Camshafts, crankshafts and pistons
- Special gear cutting tools on request

For more information, please visit our website: www.mahr.com

MarGear. MarGear GMX W series

Opening up a new dimension

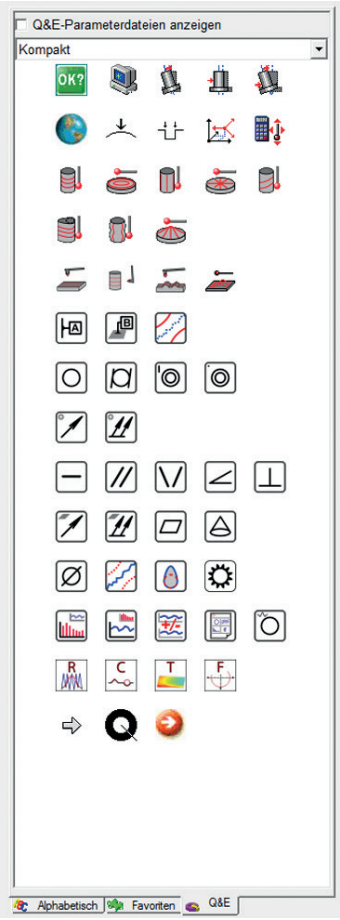
The W series extends the MarWin platform to Mahr gear measurement

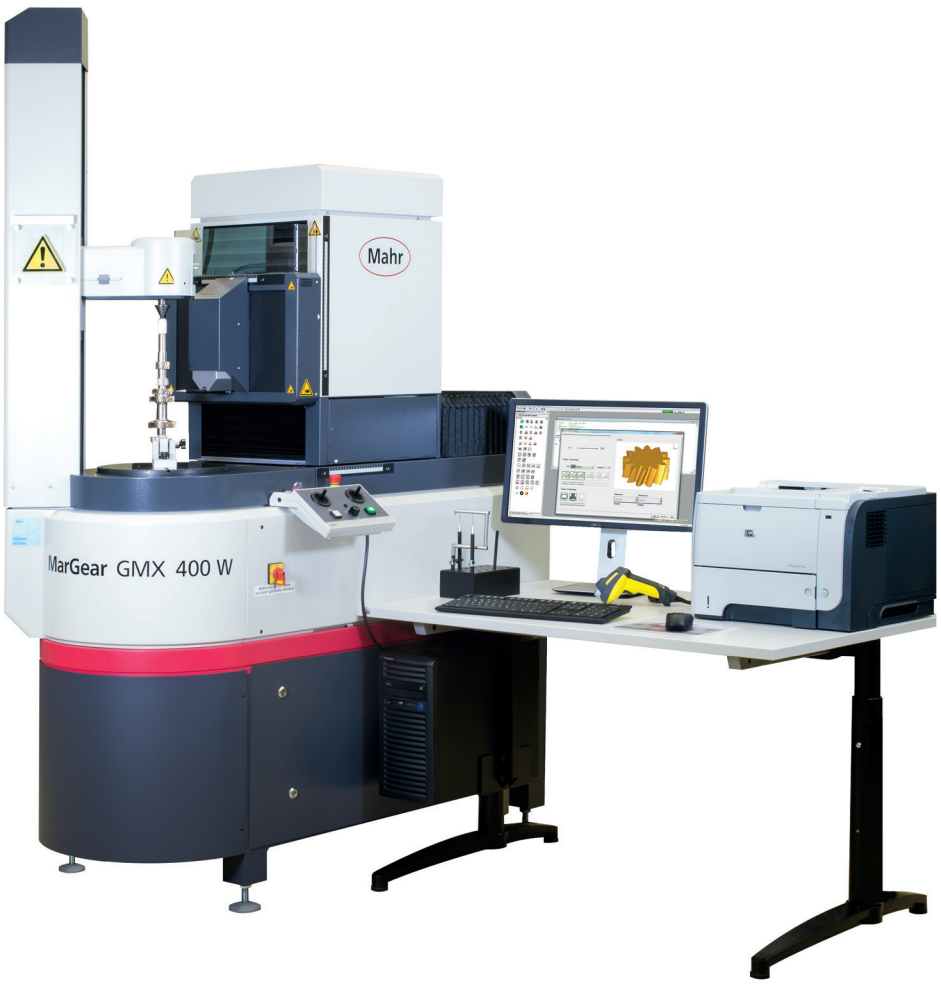
- MarEcon Control unit: with tracking mode
- Gear testing software runs under MarWin
- Intuitive GDE interface for gear data
- MarForm Advanced and Professional
- Easy program creation in Teach-In mode
- Integration of data matrix code scanners
- Uninterrupted movements
- High precision target positioning
- 3D visualization of gear geometry

In addition to simple controls, the new software offers users a variety of interfaces to simplify automation of the measuring procedure. When you import gear data, in GDE format for example, the software creates a 3D model of the gear for visual inspection and checks the tooth geometry for plausibility. This further reduces the possibility of operator errors.

Software highlights

The intuitive 'QE Cylindrical Gea' user interface provides a number of interfaces for importing and exporting data.
Using the QEP interface (Quick&Easy profile), you can archive profile and results data relating to a gear measurement in MarWin format and then reload it subsequently for evaluation.
The new 'QE Cylindrical Gear' module is the latest measuring module to be added to the MarWin platform. Q&E modules from the MarWin system can be linked together quickly and easily to create a complete program for a transmission shaft, for example.





MarGear GMX 275 W. Universal Gear Measuring Center

Precision, fully automatic testing of gears and gear cutting tools up to an outer diameter of 275 mm.

The ideal solution for both universal and specialist gear manufacturing.

System solutions provide the ultimate in flexibility and availability within a modern gear wheel component production facility. MarGear GMX, a networked variant for use close to the production area, offers fast and efficient analysis of possible gear deviations.

This allows for a direct assessment of the deviation and an automatically generated machine error correction.
Gear and form measurements carried out on a single measuring instrument.

High precision 3D scanning sensor combined with directly driven C axis for accuracy and efficiency.

Control unit:
4 axis Power PC Control unit:

Technical Data

GMX 275 W	
Measuring path (mm), X axis	180
Measuring path (mm), Y axis	150
Measuring path (mm), Z axis	320
Diameter max.* [mm]	275
Length	1560
Width	600
Height	1787
Mass [kg]	700
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

*** max. diameter of cylindrical gears**

Accessories

- Active vibration damping system
- Revolving counter tip
- Data matrix scanner
- Chuck 70 mm
- Chuck 200 mm
- Drive pin set
- Tailstock 450 mm or 700 mm

Applications

- Basic measuring station with AdvancedForm software
- Suitable for use as a gear measuring station with QE Cylindrical Gear

For more information, please visit our website: www.mahr.com

MarGear GMX 400 W. Universal Gear Measuring Center

Precision, fully automatic testing of gears and gear cutting tools up to an outer diameter of 400 mm.

Combining gear measuring tasks with various form and position features has never been easier.

With over 6000 units sold, the MarWin environment is a clear and simple way of creating complete programs in Teach-In mode. This improves programming efficiency and reduces the possibility of incorrect use.

Proven GMX realtime machine error correction is also used for positioning movements with the new MarEcon Control unit:, guarantees maximum speed and precision throughout the entire measuring and movement sequence.

Gear, form and dimension measurements are performed on one measuring instrument.

High precision 3D scanning sensor combined with directly driven C-axis for accuracy and speed

Control unit:
4 axis Control unit:

Technical Data

GMX 400 W	
Measuring path (mm), X axis	200
Measuring path (mm), Y axis	200
Measuring path (mm), Z axis	320
Diameter max.* [mm]	400
Length	1560
Width	600
Height	1787
Mass [kg]	700
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

*** max. diameter of cylindrical gears**

Accessories

- Probe arm changer (5 boxes)
- Active vibration damping system
- Revolving counter tip

Applications

Fully automatic testing of:

- Straight and helical toothed cylindrical gears
- Conical and asymmetrical cylindrical gears
- Segment gears
- 3D surfaces, diameters, distances, cone angles
- Form and position measurements
- GDE
- Data export

For more information, please visit our website: www.mahr.com

MarGear GMX 400 ZLW. Universal Gear Measuring Center

Precision, fully automatic testing of gears and gear cutting tools up to an outer diameter of 400 mm.

The ideal solution for both universal and specialist gear manufacturing.

System solutions provide the ultimate in flexibility and availability within a modern gear wheel component production facility. MarGear GMX, a networked variant for use close to the production area, offers fast and efficient analysis of possible gear deviations.

This allows for a direct assessment of the deviation and an automatically generated machine error correction.

Gear and form measurements carried out on a single measuring instrument.

High precision 3D scanning sensor combined with directly driven C axis for accuracy and efficiency.

Control unit:
4 axis Power PC Control unit:

Extended Z measuring range for measuring long drive shafts up to 650 mm.

Technical Data

GMX 400 ZLW	
Measuring path (mm), X axis	200
Measuring path (mm), Y axis	200
Measuring path (mm), Z axis	650
Diameter max.* [mm]	400
Length	1560
Width	600
Height	2147
Mass [kg]	750
Max. workpiece weight [kg]	60 (80 on request)
Accuracy	Accuracy class I for gear measurements in accordance with VDI/VDE 2612/2613 Group 1 at 20°C ± 2°C
Axial runout deviation (µm+µm/mm measuring radius)	0.11 µm + 0.0008 µm/mm
Radial runout deviation (µm in table height)	≤ 0.11 µm

*** max. diameter of cylindrical gears**

Accessories

- Active vibration damping system
- Revolving counter tip
- Data matrix scanner
- Chuck 70 mm
- Chuck 200 mm
- Drive pin set

Applications

Fully automatic testing of:

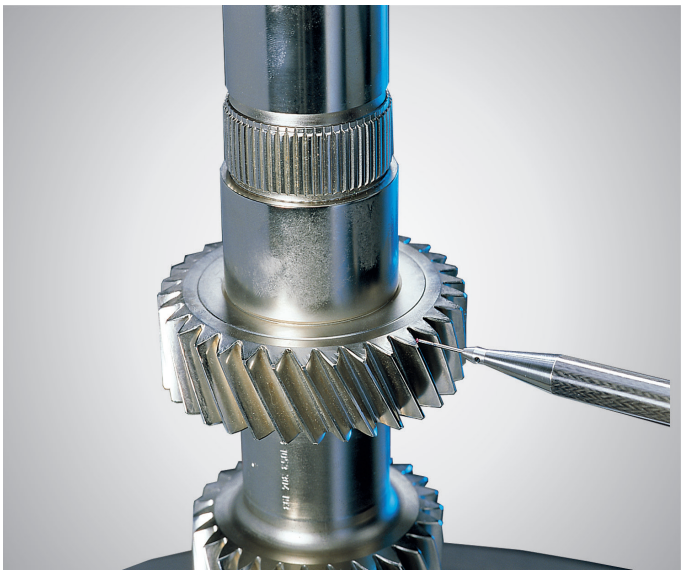
- Straight and helical toothed cylindrical gears
- Spiral and hypoid bevel gears
- Crown gears
- Cylindrical worms
- Conical and asymmetrical cylindrical gears
- Segment gears
- Shaving cutters
- Hobs
- Cutting wheels
- Synchronous gears
- Beveloid gears
- 3D geometries, form and position measurements, diameters, distances
- Special gear cutting tools on request

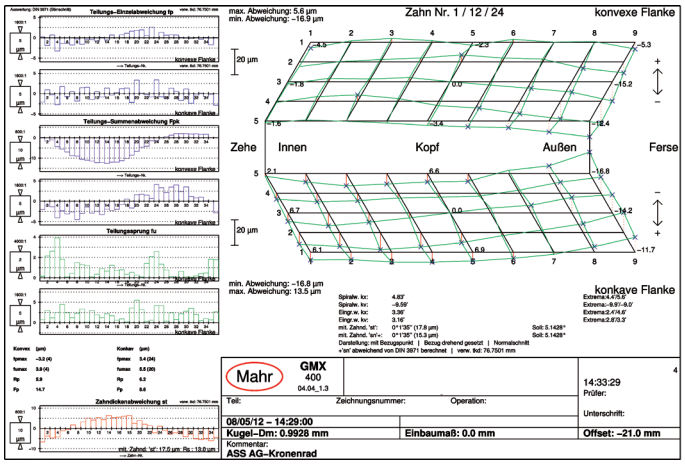
For more information, please visit our website: www.mahr.com

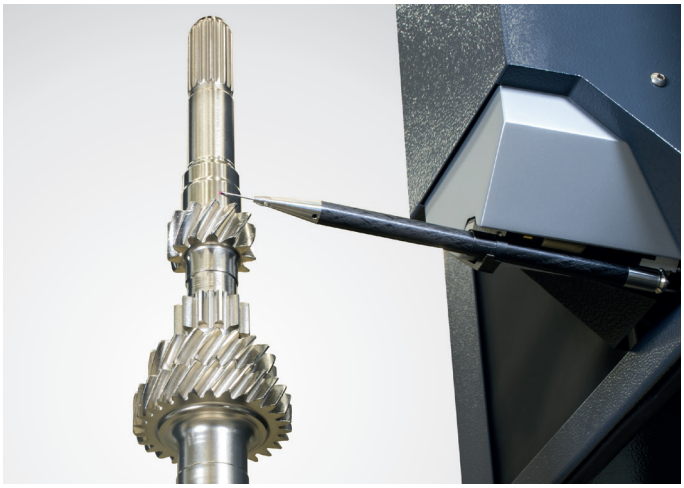
MarGear. Software Solutions

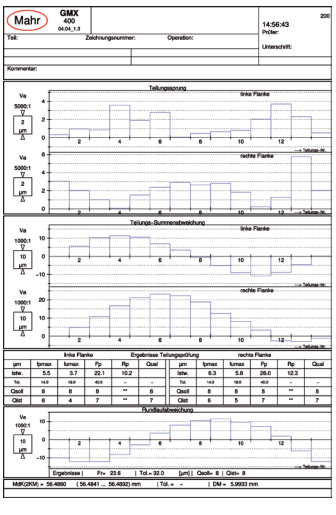
MarGear software solutions for the following measuring tasks:

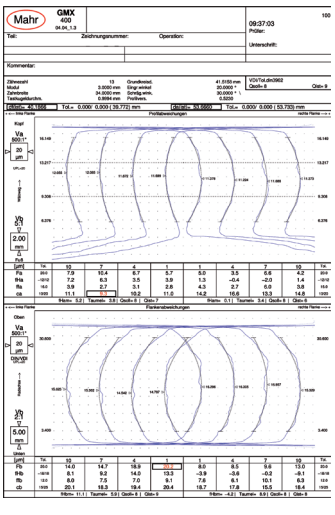
- Form, position and dimension
- Cylindrical gear
- Bevel gear
- Gear cutting tools
- Synchronous gears
- Polar contours

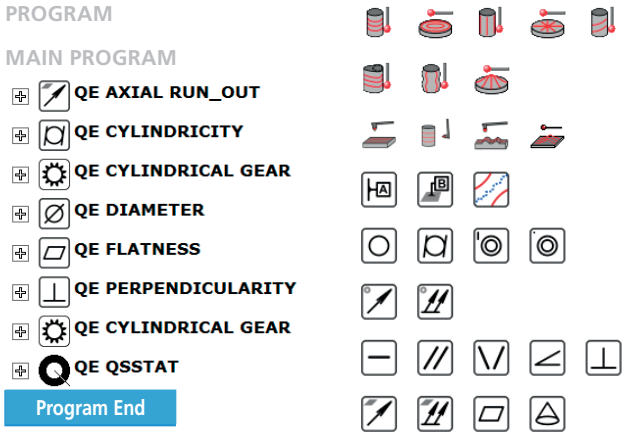












For more information, please visit our website: www.mahr.com

MAXIMUM MEASUREMENT ACCURACY IN PRECISION LENS PRODUCTION.

MAROPTO

The latest information about MAROPTO products is available on our website:
www.mahr.com, web code 21872

The role of dimensional metrology is expanding at a dramatic rate, in parallel with innovations in manufacturing processes. Given the ever more stringent accuracy requirements and falling cycle times in production (grinding, polishing etc.), rapid measurement directly at the manufacturing machine is absolutely essential. Measurement at the point of origin of the product, with rapid feedback to the manufacturing process to avoid waste. Flexible MarOpto measuring technology from Mahr is the right solution for quick and accurate measurement in production.

MAROPTO. MEASURING INSTRUMENTS FOR THE OPTICAL INDUSTRY

MarOpto FI 1040 Z 649
Fizeau-Interferometer

MarOpto FI 1100 Z 650
Fizeau-Interferometer

MarOpto FI 3100 VB 651
Fizeau-Interferometer

MarSurf LD 130 / 260 Aspheric 2D und 3D 652
Asphere measuring station

MarForm MFU 200 Aspheric 3D 653
Precision 3D measuring station

MarOpto. Fizeau Interferometers
Versatile and powerful in measuring rooms and production

MarOpto Fizeau interferometers are powerful interferometers that enable the non-contact measurement of flat or spherical surfaces and transmitted wavefront of optical components and assemblies. This makes them ideal for measuring optical components such as flats, prisms, lenses or precision workpieces such as bearings, sealing surfaces and polished ceramics.
Measurements can be performed using simple basic visual fringe inspection, IntelliPhase static spatial carrier analysis, or phase-modulated interferogram analysis. The MarOpto Fizeau interferometers offer flexibility and excellent performance for handling today's industrial applications.

MarOpto FI 1040 Z. Fizeau interferometer

Full featured 40 mm Fizeau interferometer for flat or spherical surfaces
The MarOpto FI 1040 Z is a full-featured interferometer that can provide non-contact measurements of flat or spherical surfaces and transmitted wavefront of optical components and assemblies. The MarOpto FI 1040 Z is therefore ideal for measuring optical components such as flats, prisms, lenses or precision metal parts such as bearings, sealing surfaces and polished ceramics. Measurements can be made using simple basic visual fringe inspection, IntelliPhase static spatial carrier analysis, or phase-modulated interferogram analysis. The MarOpto FI 1040 Z offers flexibility and unprecedented performance to handle today's industrial applications.

- 6x zoom for workpieces as small as 1.5 mm in diameter
- 3 modes of interferogram analysis: Phase shifting, IntelliPhase – static spatial carrier analysis, or fringe tracing (automated or manual)
- Small size allows easy integration into OEM systems
- Compact, rugged design
- Transmission spheres from F / 0.7 to F / 6.0

Applications

- Transmission and surface testing of small optics
- Measurements on optics, machined parts, ceramics, semiconductors, and wafers
- Integrated radius of curvature measurements

For more information, please visit our website: www.mahr.com

MarOpto FI 1100 Z. Fizeau interferometer

High accuracy measurement capability with unsurpassed flexibility and versatility
The MarOpto FI 1100 Z provides non-contact measurements of flat or spherical surfaces along with transmitted wavefront measurements of optical components and assemblies. Measurements may be made using basic visual fringe inspection, static fringe analysis, or phase-modulated interferogram analysis. The well-established IntelliWave™ software offers superior measurement and analysis capability. The MarOpto FI 1100 Z provides the versatility and reliability to handle today's advanced applications at unrivalled value for money.

- Total USB connectivity option (laptop or desktop) with 1k x 1k true spatial resolution
- Excellent versatility, stability and repeatability
- 1x to 6x zoom, focus and attenuation controls
- Vibration-insensitivity can be accomplished via Mahr's IntelliPhase™ static spatial carrier acquisition and analysis software
- Compact, lightweight and rugged design
- Compatible with all industry standard 4" (100mm) reference optics and accessories.
- High-accuracy measurements at an affordable price
- Configurations include horizontal, vertical look up and vertical look down. Optional workstations for flats and for radius of curvature measurements.

Applications

- Measurement of flat, concave or convex surfaces
- Prism, corner cube, wedge angle and homogeneity measurements
- Measurement of machined, ceramic, and wafer surfaces
- Wavefront analysis of optical systems & components
- Integration into OEM systems

For more information, please visit our website: www.mahr.com

MarOpto FI 3100 VB. Fizeau interferometer

Simultaneous phase-shifting for vibration-insensitive measurements in production
The MarOpto FI 3100 VB simultaneous phase-shifting Fizeau interferometer is a real-time, high-speed, truly vibration-insensitive metrology instrument with shutter speeds as fast as 10 µs. Ideally suited for shop/production floors, the MarOpto FI 3100 VB offers unsurpassed measurement accuracy, stability and repeatability. Mahr's new SPARC technology ensures measurement errors of less than /50 with no vibration isolation.

- Absolute vibration insensitivity
- Common path Fizeau geometry
- Can measure surfaces with 0.1% to 100% reflectivity
- 10 µs exposure times
- 1k x 1k resolution
- Compatible with all industry standard 4" (100mm) reference optics and accessories.

Applications

- Measurements of flat, concave and convex surfaces of any size
- Measurements over long distances, including in vacuum chambers
- In-situ measurements of optical, machined and wafer surfaces
- Dynamic measurements for thermodynamic events, moving objects, etc.
- Characterization & removal of birefringence effects

For more information, please visit our website: www.mahr.com

MarSurf LD 130 / 260 Aspheric 2D and 3D. Asphere measuring station

MarSurf LD 130 / LD 260. A step into a new dimension
MarSurf LD 130 / 260 Aspheric is a high-precision 2D / 3D surface measuring station for characterizing contour and roughness on optical components.
Checks the topography in the first machining operations

- Early detection of deviations, thus avoiding costly reworking.
- Differential profile output in machine-readable format for controlling the machine tool.

Increased flexibility

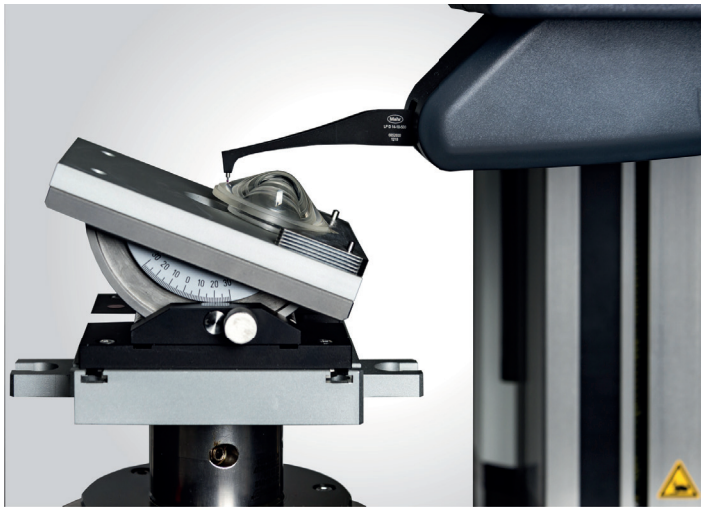
- Different types of rotationally symmetrical aspheres can be measured with one measuring system. No additional investment required.
- Large measuring range up to **260 mm** (up to 400 mm with the stitching option)
- Maximum measuring speed and dynamics (up to **10 mm/s** for large lenses / up to 0.02 mm/s for microlenses)
- Fully positionable stylus tip.

Bionic-style LP D probe arm

- Improved probe system dynamics thanks to increased rigidity and attenuation as well as a lower moment of inertia:
  - optimized overall design of the probe system
  - innovative choice of materials
- Probe arm with integrated chip for:
  - detecting and identifying the probe arm,
  - checking that the probe arm is inserted correctly,
  - providing information from probe arm.

Your results will be right

- The high-precision MarSurf LD 130 / 260 is the basis for the accurate measurement of your workpieces. The vertical resolution of 0.8 nm and form deviations of < 100 nm guarantee the exact reproduction of your asphere.
- Probe arm change with no need to recalibrate.
- Lenses with steep sides can be measured.



For more information, please visit our website: www.mahr.com

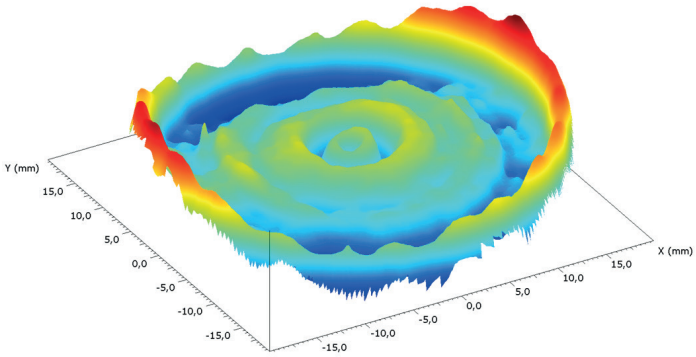
MarForm MFU 200 Aspheric 3D. Precision 3D measuring station

Mahr developed the **MarForm MFU 200 Aspheric 3D** to enable optical components to be tested in 2D / 3D quickly and close to the production area. MarForm measuring machines have been recognized for decades for their accuracy and stability.
With the **MarForm MFU 200 Aspheric 3D** this experience has now been made available to the optical industry.

Accuracy
The **MarForm MFU 200 Aspheric 3D** is a precision measuring instrument which with its very low measurement uncertainty is ideally suited to your process optimization requirements.

Measuring principle
The **MarForm MFU 200 Aspheric 3D** measures the topography of optical components. Of course, a quick 2D measurement can also be recorded with a profile across the zenith of the lens. For 3D measurements two linear profiles offset by 90° are first measured across the zenith of the lens in a single sequence. Then multiple concentric polar profiles are recorded by rotating the C-axis. These measuring points are used to generate a topography. Interrupted surfaces can be measured with the fully positionable probe arm.
Using the measuring station in a vibration-cushioned cabinet keeps external interference such as vibration and dirt away from the measuring objects.

Measuring procedure
Before starting the measurement, choose the nominal form type and set the parameters for the expected reference lens. In the next step the measuring data is recorded and compared with the nominal data for the lens.
The RMS value, PV value and slope error are shown as parameters.
In the software the individual parameters for the aspheres, such as the radius of curvature R0, conical constant k and the aspheric coefficients Ai, can be adjusted to the measuring results when adjusting the nominal asphere to the fit asphere.
The differential topography between the measured values and the nominal lens is displayed as a color-coded line chart. The 2D profiles and the differential topography can then be exported in known formats for correction for the machine tool.
In addition to measuring spheres and aspheres as described above, other rotationally symmetrical objects can also be measured and evaluated using the nominal form as a conical profile or Sagitta description of a 3D scatter plot.



$$z(h) = \frac{\frac{h^2}{R_0}}{1+\sqrt{1-(1+k)\left(\frac{h}{R_0}\right)^2}} + \sum_{n=2}^{5} A_{2n} \cdot h^{2n}$$

For more information, please visit our website: www.mahr.com

THE SECOND DIMENSION IN MEASURING TECHNOLOGY.
YOUR ENTRY INTO OPTICAL MEASURING TECHNOLOGY.

Quality control is in a state of transition throughout the manufacturing industry. The pressure is on to measure workpieces more quickly, more accurately and also more cheaply. This is where measuring microscopes from Mahr come into their own. These instruments can be used for monitoring distances from bores and checking the shape, angle or radii of workpieces. Mahr's instruments can also be used for the contactless measurement of miniature components or inspecting and measuring circuit board traces, quickly and close to the production area. Measuring microscopes are utilized in a wide range of business sectors and industries. These sectors include machine building, electrical engineering, plastics industry, medical technology, food and pharmaceuticals industries, and even forensic laboratories. Testing and calibration laboratories, research establishments and educational institutions also rely on Mahr measuring microscopes to achieve accurate measuring results at an affordable cost.

MarVision. Optical Measuring Instruments

Illuminated Magnifier

MarVision 130 LR / 130 WR 656
Illuminated magnifier

Stereo Zoom Microscope

MarVision SM 150 / SM 151 / 150–100 658
Stereo zoom microscope

MarVision SM 160 / SM 161 659
Stereo zoom microscope

Workshop Measuring Microscope

MarVision MM 200 660

MarVision MM 220 662

MarVision MM 420 664

MarVision MM 420 CNC 666

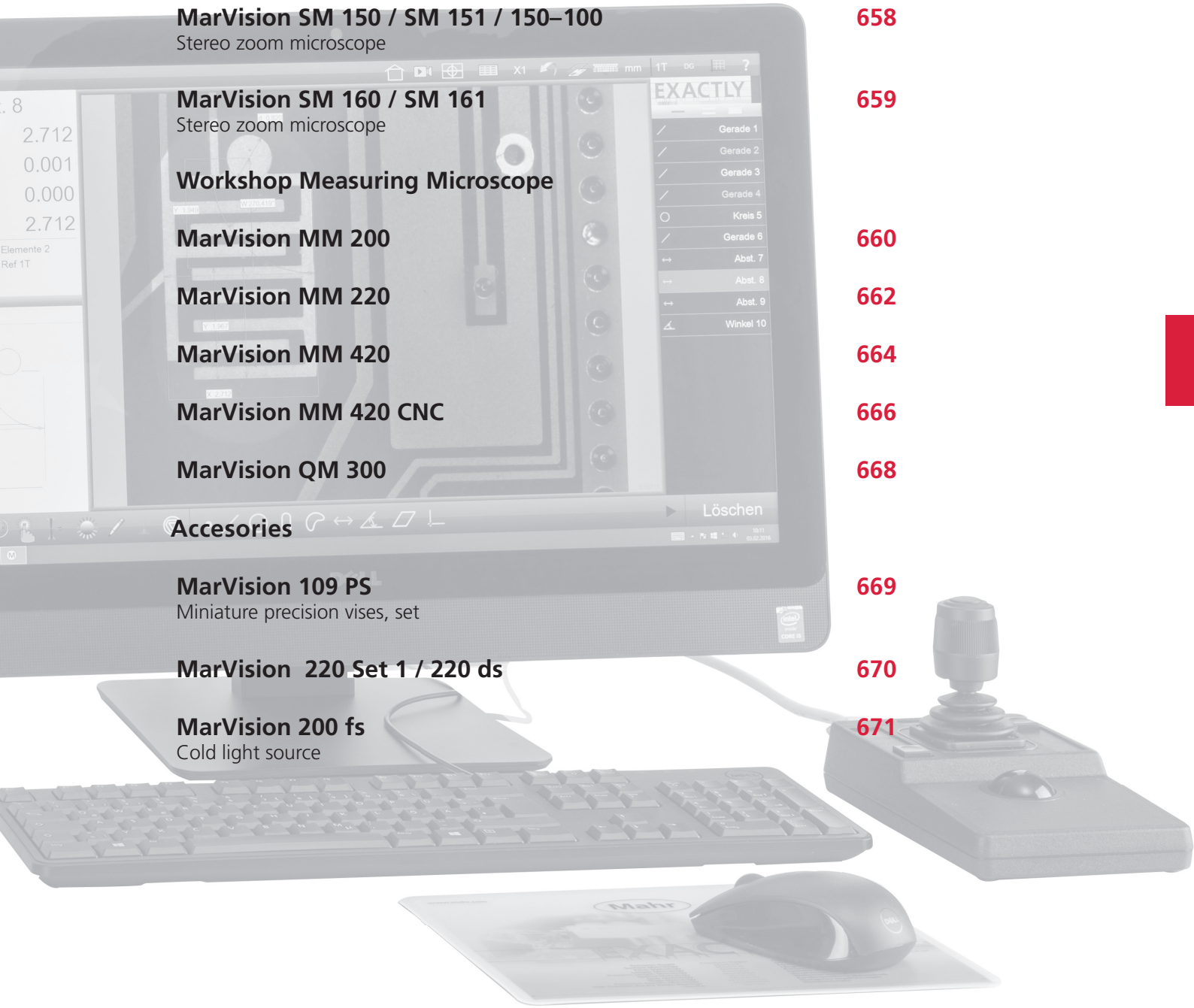
MarVision QM 300 668

Accesories

MarVision 109 PS 669
Miniature precision vises, set

MarVision 220 Set 1 / 220 ds 670

MarVision 200 fs 671
Cold light source



Illuminated magnifier MarVision 130 LR

Application:

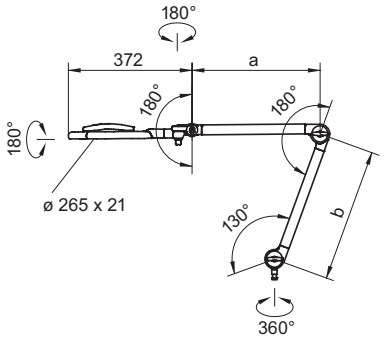
Viewing aids for visual checks, adjustments, miniature assembly work, precision work of all types

- 3D joint enables the lamp head to be positioned in all planes
- Wide operating range because of movable head joints
- Fully scratch resistant glass magnifier
- Sturdy aluminum and high performance plastic
- Light can be dimmed
- Large field of vision for distortion free viewing
- Maintenance free, LED life up to 50,000 h
- Excellent color reproduction
- Intensity 6000 lx with just 14 W
- 40% energy savings as comparison to conventional magnifier lamps
- **Scope of delivery:** Table mount, Magnifier cover, Instruction manual

Technical Data

Order no.		4299350	4299351
Product type		130 LR	130 LR
Dioptric power		3.5; with 11.5 additional lens	3.5; with 11.5 additional lens
Type of lamp		84x LED, 4 segments, 3 of them individually switchable	84x LED, 4 segments, 3 of them individually switchable
Field of vision - diameter	mm	153 mm	153 mm
Energy supply:		230 V/115 V; 50/60 Hz	110 V-240 V; 50/60 Hz

Order no.	a	b
	mm	mm
4299350	384	400



Accessories

Order no.	Product description	Product type
4299355	Table clamp for 130 LR	130 Tk
4299357	Additional magnifier, 3.5 diopter	130 Zl

Illuminated Magnifier MarVision 130 WR

- Aid for visual spot checks, adjustments, assembly of small parts and all types of precision work
- Illumination head with swiveling arm must be used either with Table base 130 t or Table clamp 130 kl
- 3D joint illumination head can be positioned at any level
- Spring relieved joints for easy positioning over a large scale action range without any readjustments
- Large diameter, cut glass lens with sharpness to the edge provides distortion free magnification
- Lens diameter 120 mm with double magnification; Fluorescent tubes provide a bright, almost shadow free illumination of objects and working area
- Low energy consumption due to energy saving lamp
- Not for sale in North America (230 Volts only)
- **Scope of delivery:** Instruction manual, without table clamp and fastenings

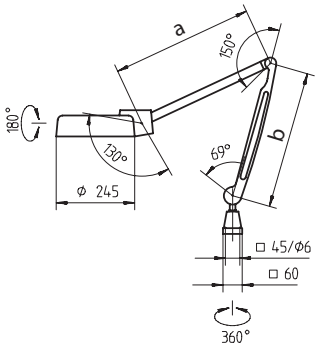
Application:

For checking sunken surfaces, e.g. bores, internal threads, etc.

Technical Data

Order no.		4299300
Product type		130 WR
Dioptric power		4
Type of lamp		Circular fluorescent tube
Magnification		2
Energy supply		230 V / 50 Hz

Order no.	a	b
	mm	mm
4299300	443	430



Accessories

Order no.	Product description	Product type
4299005	Ring form fluorescent tube	
4298320	Table clamp for 130 W/WR	130 kl
4298310	Pedestal for 130 W/WR	130 t

Stereo zoom microscope MarVision SM 150 / SM 150–100 / SM 151

Application:

- For the inspection of workpieces on the production line and in quality assurance

- High quality optics for light intensive and sharp 3D images
- Variable magnification due to adjustable zoom lens
- Focusing with an ergonomic hand wheel, mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45° and rotatable through 360°; with dioptric adjustment
- Integrated incident and transmitted illumination, continuously variable
- Optional digital camera mounting is possible (SM 151)
- **Scope of delivery:** ocular 10x, dust cover, glass plate and white / black plate, Instruction manual

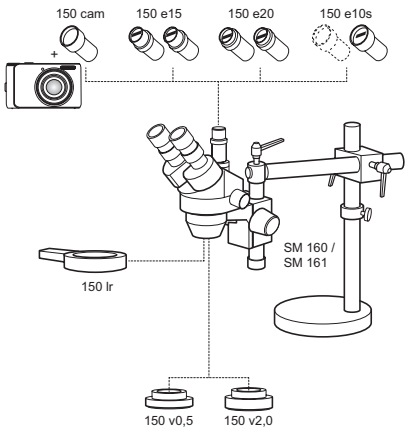
Technical Data

Order no.		4245001	4245027	4245002	4245061	4245062
Product type		SM 150	SM 150–100	SM 151	SM 150	SM 151
Observation tube angle		45°				
Camera connector		no		yes	no	yes
optical tube		Binocular		Trinocular	Binocular	Trinocular
Field of vision - diameter	mm	28 –5				
Magnification		variable 7x–45x				
Working distance	mm	105	205	105		
Max. object height	mm	75	175	75		
Illumination		12 V /15 W, Incident and transmitted light, variable				
Energy supply		230 V / 50 Hz			110 V / 60 Hz	

Order no.	Contact surface
4245001	260 x 200 mm
4245027	260 x 200 mm
4245002	260 x 200 mm
4245061	260 x 200 mm
4245062	260 x 200 mm

Accessories

Order no.	Product name	Product type
4245030	LED ring light	150 lr
4245043	Cold light source 240V	200 fs
4245042	Fiber optic gooseneck, 2-Arm, L=500mm D= 40mm	200 fl
4245010	Eyepiece lens 15x	150 e15
4245011	Eyepiece lens 20x	150 e20
4245012	Eyepiece lens 10x with glass reticle (1x)	150 e10s
4245021	Ancillary lens 2x	150 v2,0
4245020	Ancillary lens 0.5x	150 v0,5
4245026	Digital camera with adapter	150 cam
4245053	Cold light source 100 –120V	200 fs



Stereo zoom microscope MarVision SM 160 / SM 161

- High quality optics for light intensive and sharp 3D images
- Variable magnification due to adjustable zoom lens
- Focusing with an ergonomic hand wheel, mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45° and rotatable through 360°; with the dioptric adjustment
- Optional digital camera mounting is possible (SM 161)
- **Scope of delivery:** ocular 10x, dust cover, Instruction manual

Application:

- For the inspection of workpieces on the production line and in quality assurance

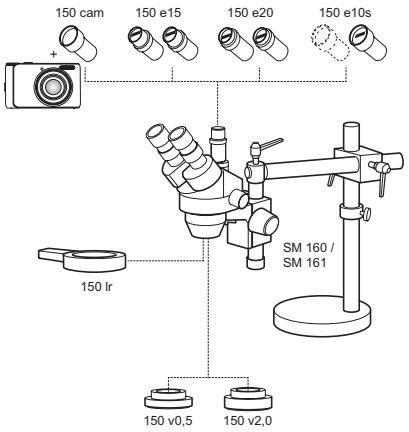
Technical Data

Order no.		4245003	4245004	4245063	4245064
Product type		SM 160	SM 161	SM 160	SM 161
Observation tube angle		45°			
Camera connector		no	yes	no	yes
optical tube		Binocular	Trinocular	Binocular	Trinocular
Field of vision - diameter	**mm**	28 –5			
Magnification		variable 7x–45x			
Working distance	**mm**	105			
Energy supply		230 V / 50 Hz		110 V / 60 Hz	

Order no.	Contact surface
4245003	230 x 230 mm
4245004	230 x 230 mm
4245063	230 x 230 mm
4245064	230 x 230 mm

Accessories

Order no.	Product name	Product type
4245030	LED ring light	150 lr
4245043	Cold light source 240V	200 fs
4245042	Fiber optic gooseneck, 2-Arm, L=500mm D= 40mm	200 fl
4245010	Eyepiece lens 15x	150 e15
4245011	Eyepiece lens 20x	150 e20
4245012	Eyepiece lens 10x with glass reticle (1x)	150 e10s
4245021	Ancillary lens 2x	150 v2,0
4245020	Ancillary lens 0.5x	150 v0,5
4245026	Digital camera with adapter	150 cam
4245053	Cold light source 100 –120V	200 fs



Workshop Measuring Microscope MarVision MM 200

Application:

- For measuring distances and angles (with the ocular head 200 w) for example: punched and flexible parts, plastic components, as well as electronic circuit boards

- High quality optics for light intensive and sharp 3D images
- Zoom lens with continuous variable magnification and/or fixed lens
- Focusing with an ergonomic hand wheel, mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45°; with dioptric adjustment
- LED ring light, dimmable
- LED back light, dimmable
- Robust cast stand
- Stable XY table precision mounted
- **Data interface:** RS232C, USB
- **Scope of delivery:** ocular 10x with cross line reticules, 2 digital micrometer heads, 50 mm, Instruction manual

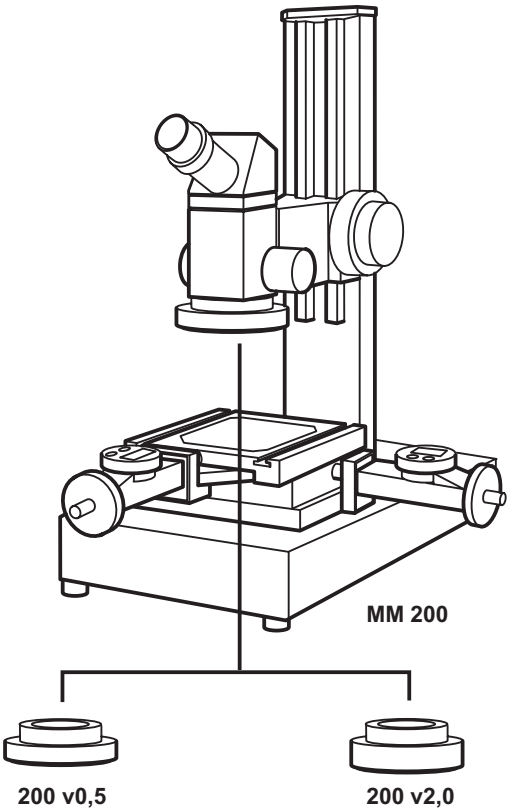
Technical Data

Order no.		4246000	4246001	4246005	4246006
Product type		MM 200			
Measuring range X/Y	**mm**	50 / 50			
Table size	**mm**	150 x 150			
Maximum table load	**kg**	15			
Measuring system		Micrometer heads			
Measuring system - resolution	**mm**	0,001			
Measuring system - Error limit	**µm**	8			
Measuring system - Repeatability	**µm**	2			
Magnification		fixed lens 32x	Variable zoom 8x–40x	fixed lens 32x	Variable zoom 8x–40x
Field of view	**mm**	6	23 –4	6	23 –4
Working distance	**mm**	75			
Max. object height	**mm**	190			
Illumination		LED Incident and transmitted light, individually adjustable			
Energy supply:		230 V / 50 Hz		110 V / 60 Hz	
H x W x D	**mm**	535 x 410 x 470			

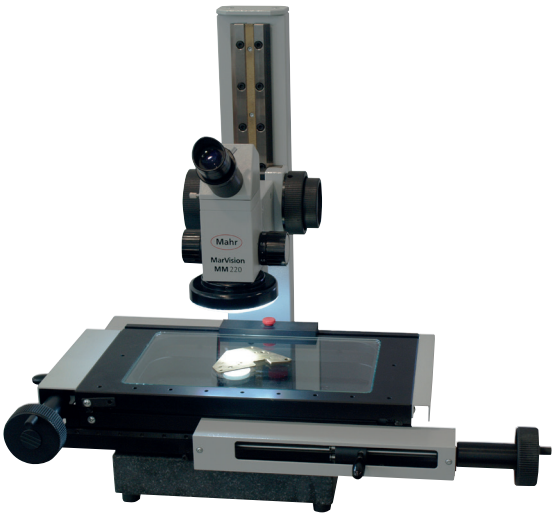
Workshop Measuring Microscope MarVision MM 200

Accessories

Order no.	Product name	Product type
4246010	Optional eyepiece head with angle measuring device	200 w
4246018	Optional eyepiece lens with angle measuring device and holder	200 wk
4246020	Ancillary lens 0.5x	200 v0,5
4246021	Ancillary lens 2.0x	200 v2,0
4245042	Fiber optic gooseneck, 2-Arm, L=500mm D= 40mm	200 fl
4245043	Cold light source 240V	200 fs
4246070	Protective cover for MM200	
4305122	Data Connection Cable RS232C (2 m)	800 EWr
4305121	800 EWu Data Connection Cable USB (2 m) incl. Software MarCom Std.	800 EWu
4102212	Software interface	MarCom Prof. 5.1
4245053	Cold light source 100 –120V	200 fs



Workshop Measuring Microscope MarVision MM 220



Application:

- For measuring distances (QC 100); bore holes and angles and determination of geometric elements (points, lines, circles, distances, intersections, etc.) (QC 200) for example: punched and flexible parts, plastic components as well as electronic circuit boards

Technical Data

Order no.		4246100	4246105	4246200	4246205	4246101	4246106	4246201	4246206	4246202	4246207
Product type		MM 220									
Operating and display unit		QC 100		QC 200		QC 100		QC 200			
Measuring range X/Y	mm	100 / 100				200 / 100				250 / 170	
Z travel path	mm	200									
Maximum table load	kg	20									
Measuring system		built-in incremental measuring scale									
Measuring system - resolution	mm	0,001									
Measuring system - E1 X/Y	µm	1,9 + (L/100) L in mm									
Measuring system - E2 XY	µm	2,9 + (L/100) L in mm									
Magnification		variable zoom 8x–40x									
Image field - diameter	mm	23 –4									
Max. height of test piece	mm	185									
Max. height of test piece / 0.5-fold	mm	110									
200 extension in Z	mm	385									
200 extension in Z / 0.5-fold	mm	310									
Illumination		LED Incident and transmitted light, individually adjustable									
Energy supply		230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz
H x W x D	mm	550 x 480 x 430				550 x 650 x 530				550 x 700 x 600	

Measuring Microscope

- High quality optics for light intensive and sharp images
- Zoom lens with continuous variable magnification
- Focusing with an ergonomic hand wheel, can be mounted either side, ideal for either a left or right handed operator
- Prism head tilted to 45° with dioptric adjustment
- LED ring light, dimmable
- LED back light, dimmable
- Robust cast stand
- Stable XY table precision mounted
- Quick and fine adjustment of all axes
- Excellent accuracy and reliability due to the optical incremental measuring system

Operating and Display Unit QC 100

- Large, high contrast backlit graphic LCD display
- Displays for X and Y axis

Operating and Display Unit QC 200

- Large, high contrast backlit graphic LCD display
- Measurement and evaluation functions for points, lines, circles, angles, distances and intersecting straight lines
- ´Magic` function is a time saving feature that automatically recognizes the geometric pattern of data points
- Simply create a measuring program with the Teach-In mode
- Easy program sequence due to on screen graphic guidance
- Operator prompts are available in several languages
- RS232 interface for processing measured data
- **Data interface:** RS232C, USB
- **Scope of delivery:** standard stop bar 220 as, operating and display unit QC 100 or operating and display unit QC 200, Instruction manual

Workshop Measuring Microscope MarVision MM 220

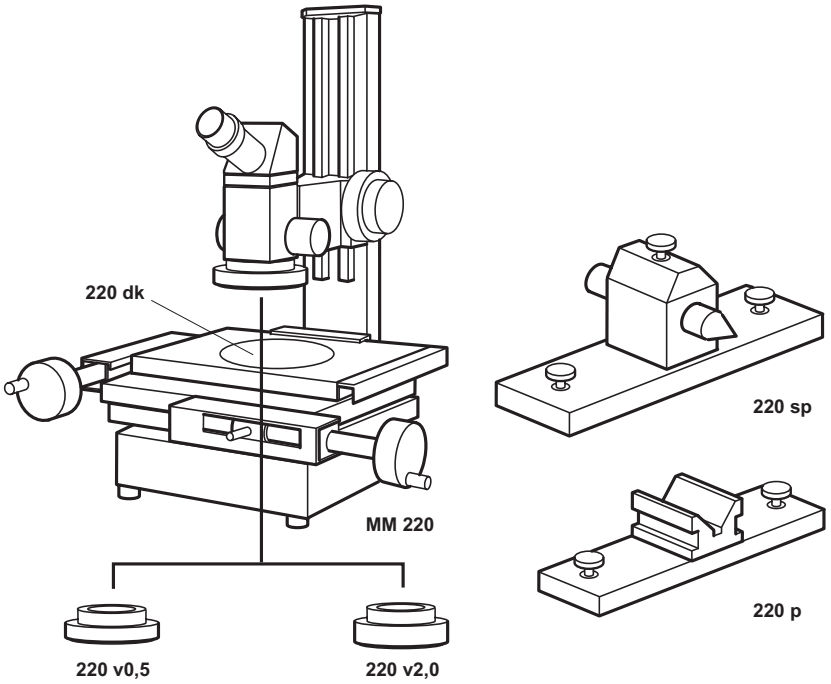
Accessories

Order no.	Product name	Product type
4246010	Optional eyepiece head with angle measuring device	200 w
4247050	Optional **Telecentric LED transmitted light** for measuring rotationally symmetric parts	200 ld
4246051	Optional Z axis, extended by 200 mm	320 Zv
4246111	Foot switch for QC 220	200 qcs
4246020	Ancillary lens 0.5x	200 v0,5
4246021	Ancillary lens 2.0x	200 v2,0
4246801	Prisms, Pair, for diameter 5–55 mm (measuring tables 100x100 mm, 200x100 mm)	220 p
4246802	Center support, Pair, center height 40 mm (measuring tables 100x100 mm, 200x100 mm)	220 sp
4246806	Center support, pivoting, Pair, center height 50 mm, distance between centers 130 mm (measuring table 200 x 100 mm)	220 sps
4246920	Pivoting glass plate, D = 100 mm (measuring table 200 x 100 mm)	200 dk
4246921	Pivoting glass plate, D = 100 mm (measuring table 250 x 170 mm)	200 dg
4246821	90° stop for MM 220 / MM 320	220 as90
4245043	Cold light source 240V	200 fs
4245042	Fiber optic gooseneck, 2-Arm, L=500mm D= 40mm	200 fl
4246901	Calibration standard for circles, with calibration certificate	320 nkz
4246071	Protective cover for measuring tables 100x100 and 200x100 mm	
4246850	Clamping elements in wooden case	220 Set 1
4246851	Rack rails for measuring range 200 x 100 mm	220 Set 2/1
4246852	Rack rails for measuring range 250 x 170 mm	220 Set 2/2
4246854	V-supports, jaw chuck and tailstock	220 Set 3
4246855	Rotating swivel holder without jaw chuck and rack rails	220 ds

220 p

220 sp

220 sps



Workshop measuring microscope MarVision MM 420

Application:

- Measurement or determination of geometric elements (point, straight line, circle, distance, intersection point, etc.) by automatic edge detection, e.g. on punched and bent components, plastic components, and circuit boards.

Technical Data

Order no.		4247600	4247605	4247601	4247606	4247602	4247607	4247603	4247608
Product type		MM 420							
Measuring range X/Y	mm	100 / 100		200 / 100		250 / 170		400 / 250	
Size of table	mm	270 x 210		370 x 210		420 x 280		600 x 480	
Maximum table load	kg	20							
Measuring system		built-in incremental scale							
Measuring system - resolution	mm	0,001							
Measuring system - E1 X/Y	µm	1,9 + (L/100)						3,9 + (L/100)	
Measuring system - E2 XY	µm	2,9 + (L/100)						4,9 + (L/100)	
Magnification		35 –225x							
Max. height of test piece	mm	115						290	
Max. height of test piece / 0.5-fold	mm	20						200	
Max. height of test piece with coax.	mm	115						260	
200 extension in Z	mm	315							
200 extension in Z / 0.5-fold	mm	220							
Illumination		LED back and front illumination, adjustable							
Energy supply		230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz
H x W x D	mm	700 x 480 x 430		700 x 650 x 550		700 x 700 x 600		800 x 1000 x 900	

Measuring microscope

- Integrated color camera
- Zoom lens, optionally motorized
- LED ring light: 1 ring and 4 segments, individually switchable and dimmable
- LED transmitted light: dimmable
- Solid granite base
- Sturdy steel XY table, precision-mounted
- Quick and fine adjustment of axes
- Optical incremental measuring system for outstanding accuracy and reliability
- Laser pointer for position finding
- **Control and display unit with M3 software and touchscreen PC**
- 23" touchscreen with keyboard and mouse
- Windows 10 Pro operating system, further software can be installed
- Operation via the Multi-Touch screen or with a mouse/keyboard
- Large video screen
- Reference/actual evaluation with tolerances
- Record output with company logo
- Graphical display with dimensioning
- Automatic edge detection, even on low contrast parts
- Stitching
- Statistics
- **Scope of delivery:** M3 software with touchscreen PC, standard stop bar 220 as, Instruction manual, Calibration certificate

Workshop measuring microscope MarVision MM 420

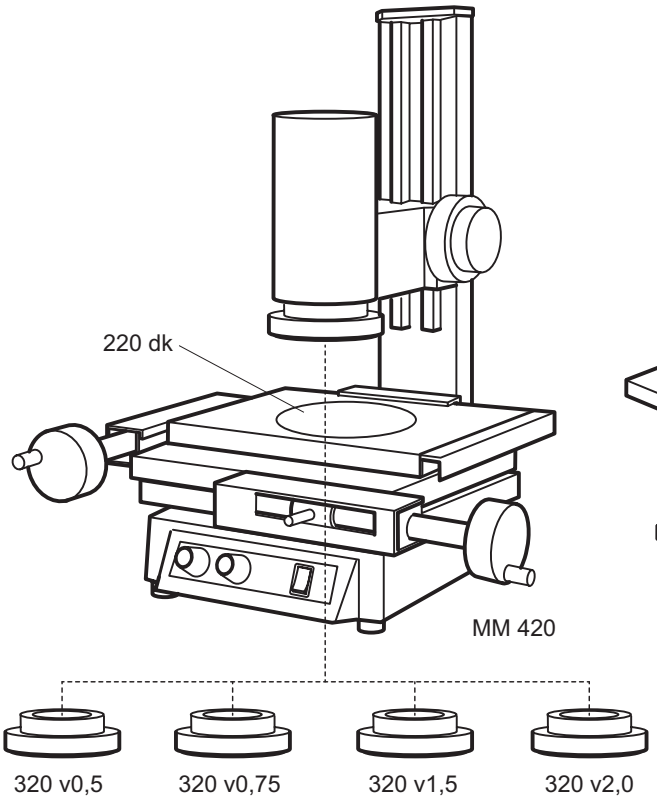
Accessories

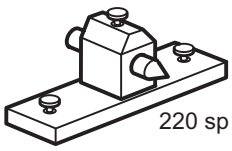
Order no.	Product name	Product type
4246114	Optional DXF file integration for M3 software	
4247028	Optional Navitar zoom 6.5:1, motorized	320 zmo
4247027	Optional TV adapter, 0.67x (instead of 1.0x)	320 tv0,67
4247050	Optional **Telecentric LED transmitted light** for measuring rotationally symmetric parts	200 ld
4245300	Optional **coaxial LED incident light** for zoom lens	320 kaz
4246050	Optional Z axis with measuring system	320 zm
4246051	Optional Z axis, extended by 200 mm	320 Zv
4246052	Optional Z axis, extended by 200 mm, including measuring system	320 zvm
4247020	Ancillary lens 0.5x (for Navitar objective lens only)	320 v0,5
4247021	Ancillary lens 0.75x (for Navitar objective lens only)	320 v0,75
4247022	Ancillary lens 1.5x (for Navitar objective lens only)	320 v1,5
4247023	Ancillary lens 2.0x (for Navitar objective lens only)	320 v2
4246801	Prisms, Pair, for diameter 5–55 mm (measuring tables 100x100 mm, 200x100 mm)	220 p
4246831	Prisms, Pair, for diameter 5–55 mm (measuring table 250 x 170 mm)	220 p
4246832	Prisms, Pair, for diameter 5–55 mm (measuring table 400 x 250 mm)	220 p
4246802	Center support, Pair, center height 40 mm (measuring tables 100x100 mm, 200x100 mm)	220 sp
4246833	Center support, Pair, center height 40 mm (measuring table 250 x 170 mm)	220 sp
4246834	Center support, Pair, center height 40 mm (measuring table 400 x 250 mm)	220 sp
4246806	Center support, pivoting, Pair, center height 50 mm, distance between centers 130 mm (measuring table 200 x 100 mm)	220 sps
4246807	Center support, pivoting, Pair, center height 50 mm, distance between centers 130 mm (measuring table 250 x 170 mm)	220 sps
4246808	Center support, pivoting, Pair, center height 50 mm, distance between centers 130 mm (measuring table 400 x 250 mm)	220 sps
4246920	Pivoting glass plate, D = 100 mm (measuring table 200 x 100 mm)	200 dk
4246921	Pivoting glass plate, D = 100 mm (measuring table 250 x 170 mm)	200 dg
4246821	90° stop for MM 220 / MM 320	220 as90
4246901	Calibration standard for circles, with calibration certificate	320 nkz
4246071	Protective cover for measuring tables 100x100 and 200x100 mm	
4246072	Protective cover for measuring table 250x170 mm	
4246073	Protective cover for measuring table 400x250 mm	

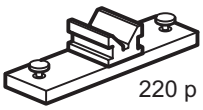
220 p

220 sp

220 sps







Workshop measuring microscope MarVision MM 420 CNC

Application:

- Measurement or determination of geometric elements (point, straight line, circle, distance, intersection point, etc.) by automatic edge detection, e.g. on punched and bent components, plastic components, and circuit boards.

Technical Data

Order no.		4247701	4247702	4247706	4247707
Product type		MM 420 CNC			
Measuring range X/Y	**mm**	200 / 100	250 / 170	200 / 100	250 / 170
Size of table	**mm**	370 x 210	420 x 280	370 x 210	420 x 280
Maximum table load	**kg**	20			
Measuring system		built-in incremental scale			
Measuring system - resolution	**mm**	0,001			
Measuring system - E1 X/Y	**µm**	1.9 + (L/100)	1,9 + (L/100)	1.9 + (L/100)	1,9 + (L/100)
Measuring system - E2 XY	**µm**	2.9 + (L/100)			
Magnification		35 –225x			
Max. height of test piece	**mm**	200			
Max. height of test piece / 0.5-fold	**mm**	110			
Max. height of test piece with coax.	**mm**	200			
Max. height of test piece with coax. / 0.5-fold	**mm**	110			
Illumination		LED back and front illumination, adjustable			
Energy supply		230 V / 50 Hz		110 V / 60 Hz	

Measuring microscope

- 3 axis CNC control with servo motor and joystick
- Axis movement and speed regulation controlled via the joystick
- Integrated color camera
- Mechanical and motorized zoom lens
- LED ring light: 1 ring and 4 segments, individually switchable and dimmable
- LED transmitted light: dimmable
- Solid granite base
- Sturdy steel XY table, precision mounted
- Optical incremental measuring system for outstanding accuracy and reliability
- Laser pointer for position finding
- **Control and display unit with M3 software and touchscreen PC**
- 23" touchscreen with keyboard and mouse
- Windows 10 Pro operating system, further software can be installed
- Operation via the Multi-Touch screen or with a mouse/keyboard
- Large video screen
- Reference/actual evaluation with tolerances
- Record output with company logo
- Graphic display with dimensioning
- Automatic edge detection, even on low contrast parts
- Stitching
- Statistics

Scope of delivery: M3 software with touchscreen PC, standard stop bar 220 as, Instruction manual, Calibration certificate

Workshop measuring microscope MarVision MM 420 CNC

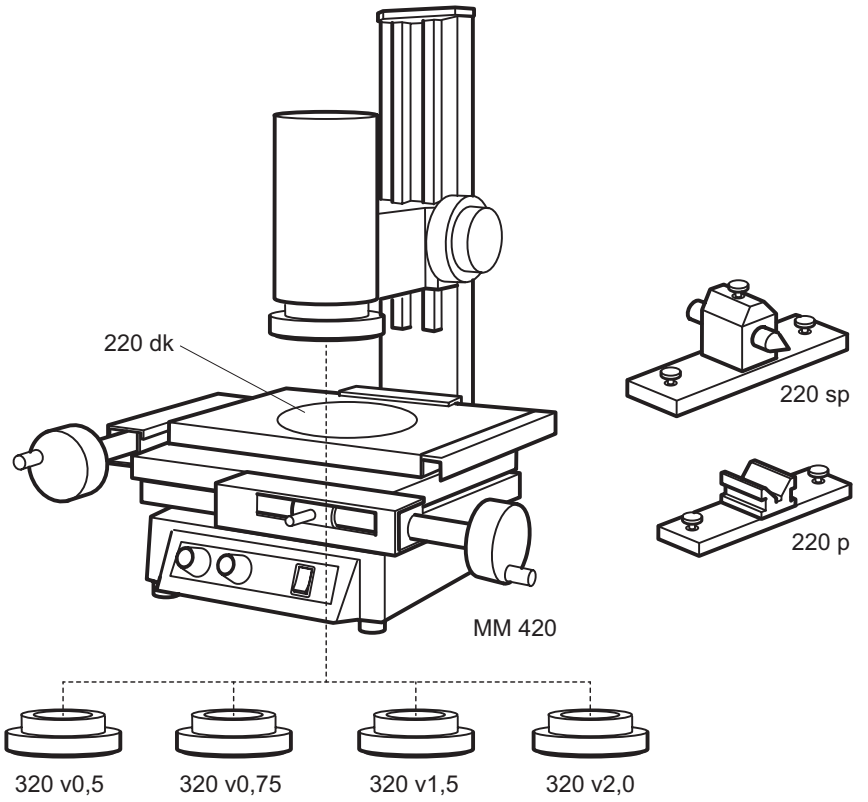
Accessories

Order no.	Product name	Product type
4246114	Optional DXF file integration for M3 software	
4247027	Optional TV adapter, 0.67x (instead of 1.0x)	320 tv0,67
4247050	Option **Telecentric LED transmitted light** for measuring rotationally symmetric parts	200 ld
4245302	Optional **coaxial LED incident light** for zoom lens	320 kac
4247020	Ancillary lens 0.5x (for Navitar objective lens only)	320 v0,5
4247021	Ancillary lens 0.75x (for Navitar objective lens only)	320 v0,75
4247022	Ancillary lens 1.5x (for Navitar objective lens only)	320 v1,5
4247023	Ancillary lens 2.0x (for Navitar objective lens only)	320 v2
4246801	Prisms, Pair, for diameter 5–55 mm (measuring tables 100x100 mm, 200x100 mm)	220 p
4246831	Prisms, Pair, for diameter 5–55 mm (measuring table 250 x 170 mm)	220 p
4246802	Center support, Pair, center height 40 mm (measuring tables 100x100 mm, 200x100 mm)	220 sp
4246833	Center support, Pair, center height 40 mm (measuring table 250 x 170 mm)	220 sp
4246806	Center support, pivoting, Pair, center height 50 mm, distance between centers 130 mm (measuring table 200 x 100 mm)	220 sps
4246807	Center support, pivoting, Pair, center height 50 mm, distance between centers 130 mm (measuring table 250 x 170 mm)	220 sps
4246920	Pivoting glass plate, D = 100 mm (measuring table 200 x 100 mm)	200 dk
4246921	Pivoting glass plate, D = 100 mm (measuring table 250 x 170 mm)	200 dg
4246821	90-degree stop for MM 220 / MM 320	220 as90
4246901	Calibration standard for circles, with calibration certificate	320 nkz
4246071	Protective cover for measuring tables 100x100 and 200x100 mm	
4246072	Protective cover for measuring table 250x170 mm	

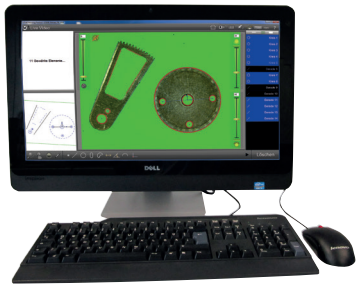
220 p

220 sp

220 sps



MarVision QM 300



Technical Data

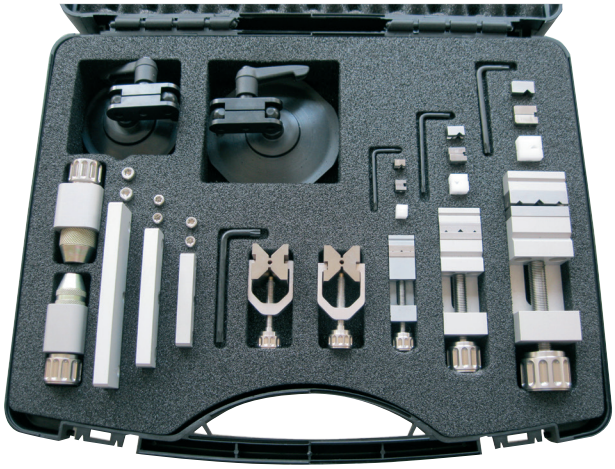
Order no.		4247800	4247803	4247801	4247804	4247802	4247805
Product type		QM 300					
Measuring range X/Y	mm	32 x 24		57 x 42		96 x 72	
Z travel path	mm	30					
Measuring system - E2 XY	µm	4 + L/50 (L in mm)		4,5 + L/50 (L in mm)		7,5 + L/50 (L in mm)	
Illumination		Front illumination: LED ring light Back illumination: LED, telecentric					
Energy supply		230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz	230 V / 50 Hz	110 V / 60 Hz
H x W x D	mm	330 x 230 x 580		330 x 240 x 720		340 x 250 x 820	

Order no.	H x W x D
	mm
4247800	330 x 230 x 580
4247803	330 x 230 x 580
4247801	330 x 240 x 720
4247804	330 x 240 x 720
4247802	340 x 250 x 820
4247805	340 x 250 x 820

- **Measuring microscope**
- Fixed telecentric lens
- Integrated USB color camera
- LED ring light: switchable and dimmable
- LED transmitted light: switchable and dimmable
- Measuring table with height adjustment
- **Control and display unit with M3 software and touchscreen PC**
- Large, high contrast color LCD display with backlight
- 4 display modes: Video live image, digital display, element display and tolerance display
- Automatic part detection
- Automatic measurement of all features of a part within the image field
- Comparison of measurement with the CAD drawing via DXF function
- Measuring and evaluation functions for point, straight line, circle, angle, distance, intersection point
- ´Magic` function for automatic geometry recognition from the measured measuring points
- Teach-in methods for easy measuring program creation
- Trouble-free program sequence with graphical route guidance
- Lighting control
- Multilingual user guidance
- RS232 interface for measuring data processing
- USB printer port
- USB stick connection
- Updateable via USB stick for a future-proof system
- **Scope of delivery:** M3 software with touchscreen PC, Instruction manual

Miniature precision vises, set MarVision 109 PS

- 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.	Product type	Set contents
4246016	109 PS	
4246017	109 PS	
4246816	109 PS	Jaw width 15 / 25 mm
4246817	109 PS	Jaw width 25 / 35 mm
4246818	109 PS	Jaw width 15 / 25 / 35 mm, with stand and V-blocks
4246819	109 PS	Jaw width 15 / 25 / 35 mm, with stand and V-blocks and miniature dividing attachments

MarVision 220 Set 1 / 220 Set 2/1 / 220 Set 2/2 / 220 Set 2/3 / 220 Set 3 / 220 ds

Clamping elements

Application:

For clamping workpieces on measuring microscopes

Technical Data

Order no.	Product type	Set contents
4246850	220 Set 1	Clamping elements in wooden case
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
4246854	220 Set 3	V-supports, jaw chuck and tailstock
4246855	220 ds	Rotating swivel holder without jaw chuck and rack rails

Cold light source MarVision 200 fs

- High intensity
- Up to 30% higher yield with electronic control
- Offers cooler color temperature for measuring colored surfaces
- Patented light guide for uniform illumination

Technical Data

Order no.	Product type	Illumination	Energy supply
4245043	200 fs	Illuminance 8 mlx, 30 W	230 V / 50 Hz
4245053	200 fs	Illuminance 8 mlx, 30 W	110 V / 60 Hz

Accessories

Order no.	Product name	Product type
4245042	Fiber optic gooseneck, 2-Arm, L = 500 mm, D = 40 mm	200 fl

MAXIMUM MEASUREMENT ACCURACY IN MANUFACTURING.
MAHR SHAFT MEASURING TECHNOLOGY

The latest information about MARSHAFT products is available on our website:
www.mahr.com, WebCode 11935

The role of dimensional metrology is expanding at a dramatic rate, in parallel with innovations in manufacturing processes. Given the ever more stringent accuracy requirements and falling cycle times in production (turning, milling, grinding, etc.), rapid measurement directly at the manufacturing machine is absolutely essential. Measurement at the point of origin of the product, with rapid feedback to the manufacturing process to avoid waste. Flexible MarShaft shaft measuring technology from Mahr is the right solution for quick and accurate measurement in production.

MarShaft. Shaft Measuring Instruments

MarShaft MAN 674
Manual Tactile Shaft Measuring Machine

MarShaft MAN with MarCheck 675
Measuring Value Display for MarShaft Measuring Machines

MarShaft MAN Shaft Measuring Instruments 676
Optical Measuring System OMS 120

MarShaft SCOPE 350 / 750 / 1000 *plus* 678
Optical Shaft Measuring Units

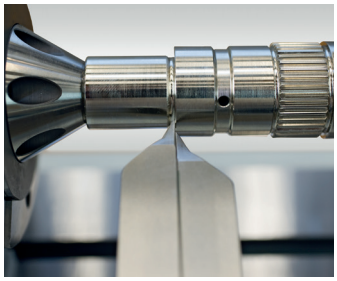
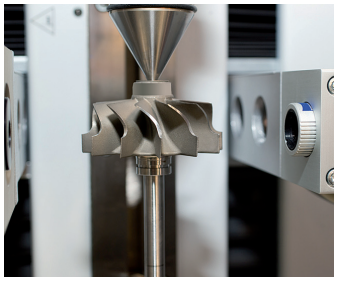
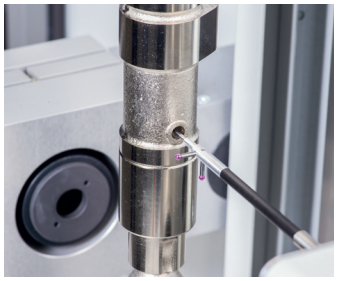
MarShaft SCOPE 250 *plus* 671

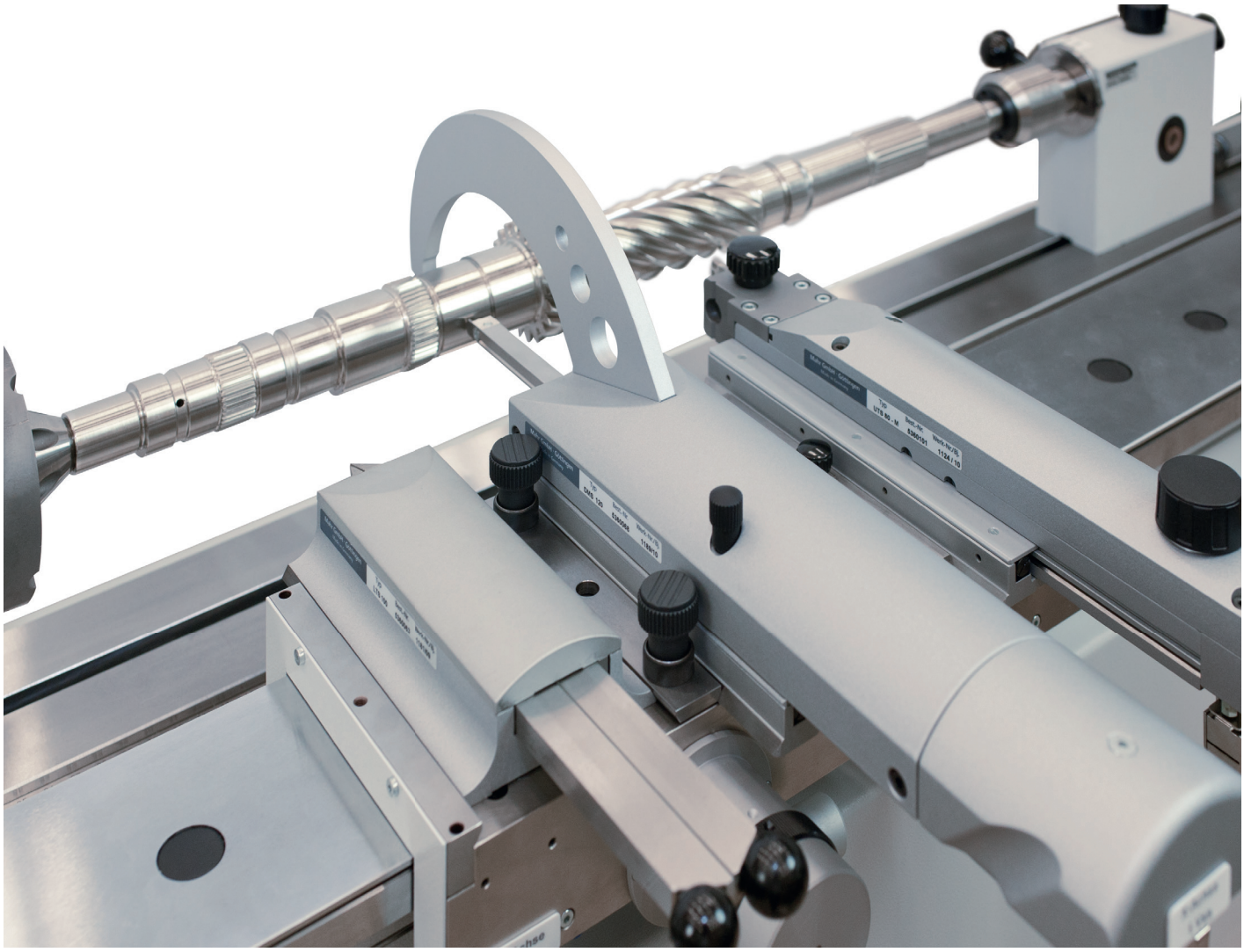
MarShaft SCOPE 250 *plus* 680

MarShaft Software EasyShaft 681

MarShaft. Measurement of Shaft-Type Parts in Production.

MarShaft shaft measuring instruments are mostly used in production. However, with their high measuring accuracy they can also be used in measuring laboratories. The instruments are available in various sizes, and their modular design allows them to be optimized to individual measuring tasks. Inline measurement directly in the manufacturing process saves the time and expense of measurements in the measuring room and increases productivity.



MarShaft MAN. Manual Tactile Shaft Measuring Machine

MarShaft MAN is a universal, modular shaft measuring instrument for the fast and flexible measurement of shaft-type testpieces.
Precision workpieces can be produced cost-effectively and to a high level of quality across all manufacturing stages — from cutting to length through to hard finishing — if the individual process steps are kept consistently stable. That is exactly where production-floor characteristics testing with MarShaft MAN comes in. Short feedback times on reaching the tolerance limits and seamless documentation of all functional data relating to the component soon pay off.
The MarShaft MAN shaft measuring center is the right solution for your quality control.
The MarShaft MAN shaft measuring center is available in a number of different instrument sizes (workpiece lengths up to 400 mm / 800 mm / 1200 mm / 1600 mm / 2000 mm / 2400 mm, diameters from 120 mm to 220 mm) and its modular design allows it to be adapted to individual measuring tasks. The measuring modules (e.g. diameter, length, roundness module) can be arranged in any order or can easily be added at a later date.

Advantages at a glance:

- No operator influence
- Highly accurate measuring results
- Excellent repeatability
- Measuring system for all typical measuring tasks, including: Length, diameter, radial run-out, axial run-out, recess width, cone angle, roundness, coaxiality, concentricity and much more
- Automatic measuring force application to avoid operator influence
- Good workshop compatibility for direct use in production
- User-friendly MarCheck evaluation computer (2 models)

Technical Data

MarShaft MAN, length and diameter measurement, MarCheck II measuring computer	
Measuring range length (Z) (mm)	400 / 800 / 1200 / 1600 / 2000 / 2400
Measuring range diameter (X) (mm)	120 or 220
Workpiece weight (max.) in kg	20 / 60
Length/diameter resolution (mm)	0,0001
Angle resolution (°)	0,001
Length error limit (Z) (µm)	(3 + L/100) µm, L (length) in mm
Diameter error limit (X) (µm)	(0.8 + L/100) µm, L (length) in mm
Drive	manual
Lens	Optical measuring system (OMS) with matrix camera and software

Applications

Typical workpieces:
Crankshaft, camshaft, gear shaft, rack, axle journal, hollow shaft, drive shaft, piston

Typical measuring tasks:
Length, diameter, radial run-out/axial run-out

Other measuring tasks:
Distance, recess width, depth, increment, recess diameter, roundness, taper, angle, radius, intersection point, position of cross-holes, and much more

For more information, please visit our website: www.mahr.com

MarShaft MAN with MarCheck.
Measuring Value Display for MAN Shaft Measuring Machines

MarCheck is a new compact measuring and evaluating unit for the manual mesauring machine MarShaft MAN and is characterized by its ease of handling and high performance scope. The user requires only very little training, thus the unit can be immediately impelemented, saving time and costs.
The large, clear, LCD monochrome display (240 x 160 dots) can display up to three measuring chanals simultaneously. Activation of the individual measuring canals on the display takes place automatically when measuring with the corresponding measuring axis. The measuring direction is shown. The MarCheck has three measuring chanals for two linear measuring axes (Z and X) and one rotary measuring axis (C), which can be reconfigured to a linear measuring axis (R) if needed. For runout and roundness measurements, the precision measuring spindle (C axsis) is controlled by MarCheck and automatically switched on an off.

Technical Data

MarShaft MAN with MarCheck, measured value display for MAN shaft measuring instruments	
Resolution per measuring channel can be independently set	0.0001 mm; 0.001 mm; 0.01 mm 0.00001 inch; 0.0001 inch; 0.001 inch 0.001° decimal; ° min, sec
Incremental inputs	T1; T2; T3 (sin/cos 1 Vss) 15 pin. Sub D
Interface data	1x RS 232; 1x USB 2.0 type A, 1x USB 2.0 type B
Grating constant	selectable; 2 µm; 4 µm; 10 µm; 20 µm; 40 µm
Max. permissible travel speed	0.2 m/s when G = 2 µm 0.4 m/s when G = 4 µm 1 m/s when G = 10 µm 2 m/s when G = 20 µm for MarShaft MAN 4 m/s when G = 40 µm
Input signal - cutoff frequency	<100 kHz at sin/cos 1 Vss
Frequency check response threshold	100
Measuring units	mm / inch selectable in MENU
Standard languages	German; English; French Additonal langages can be installed via USB interface and an external PC

Measuring and programming functions

- Evaluation of diameter, length dimensions, distances, taper, symmetry, distance between centers, roundness, axia runout, radial runout, concentricity, workpiece axis reference calcluation, maximum/ minimum function, preset function for reference points outside of the workpiece.
- Teach-in programming, data can be saved in MarCheck, external PC or USB stick, printing with external printer, up to 40 measuring programs can be saved.
- Q-DAS interface for the evaluation of machine capability testing in Q-DAS Software®

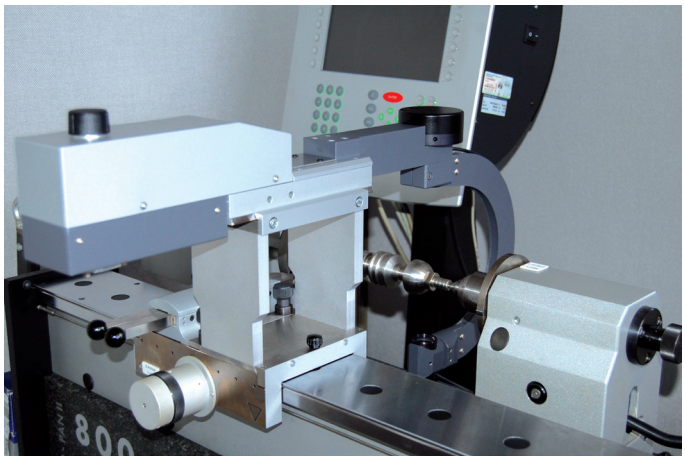
Performance features

- Large, clear, backlit LCD monochrome display (240 x 160 points)
- 3 measuring canals (Z axis, X axis, and C/R axis)
- Digit size approx. 13 mm
- 1 USB interface max. 3GB USB stick
- 1 USB interface for PC (selectable RS232 interface, evaluation of data in Excel or MarCom software) or software installation (update)
- Connection of a ink jet printer possible
- Measurement of roungness and runout takes place with the DMS 120,
  no additional R axis required
- Automatic acquisition of measuring values after having reach the
  measuring force the user has set
- Automatic acquisition of the calibration values from the individual
  measuring modules

For more information, please visit our website: www.mahr.com

MarShaft MAN Shaft Measuring Instruments.
OMS 120 Optical Measuring System

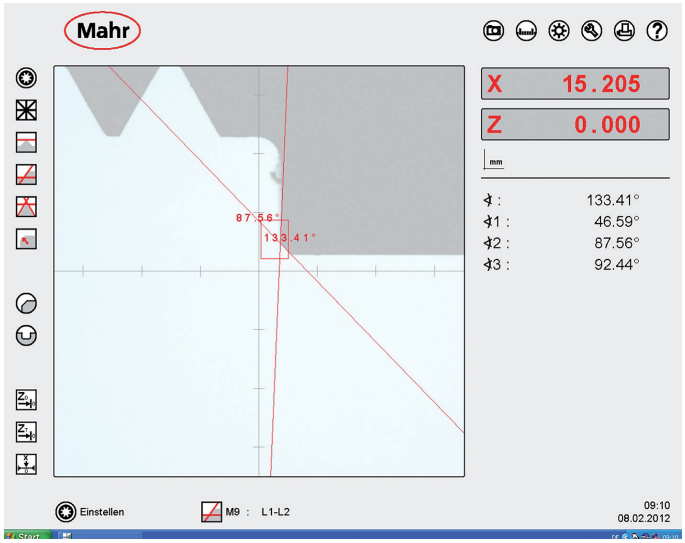
In conjunction with the evaluation software, the optical measuring system OMS 120 can be used to measure geometry elements which cannot be contacted or evaluated with the available contacting measuring probes of MarShaft MAN. The operating concept is optimized for use directly on the production line and can be used without any knowledge of metrology whatsoever. The testpiece contour is mapped on the camera chip using the shadow image method and displayed on the monitor. High-quality, telecentric optical components are used for precision mapping. To this end the corresponding testpiece contour is positioned only roughly in the camera's image field. There is no need for precision adjustment in the Z or X direction. The software has quick measuring functions which automatically evaluate the relevant feature results for the current measuring task.



Quick measuring functions

- Recess
- Chamfer
- Radius
- Straight line
- Intersection point line-line A quick measuring function analyses multiple feature results at the same time. The relevant results can be selected for recording or for data transfer. Most shaft measuring tasks can be performed in a quick and user-friendly manner using these functions.

A whole range of manual analysis functions are available for measuring tasks which are not covered by the quick measuring functions.



Technical data

Traverse path in X-direction: 120 mm
Measurement resolution: 0.001 mm

For more information, please visit our website: www.mahr.com

MarShaft SCOPE 350 / 700 / 1000 *plus*

Tactile measuring unit with y-measuring axis 60 mm

The MarShaft SCOPE plus is a universal, fully automatic optical shaft measuring system for testing rotationally symmetrical workpieces.

The MarShaft SCOPE plus has a highly accurate roundness measuring axis (C), a vertical measuring axis (Z) and a horizontal measuring axis (X).

A tactile measuring system with an inductive measuring probe is available as an option, for measuring radial and axial run-out or straightness, for example. The measuring device is calibrated to the optical measuring system, so it can perform tactile and optical measuring tasks in combination.

The new MarWin EasyShaft software provides a high level of flexibility and exceptionally user-friendly operation.

The measuring sequences are carried out fully automatically, free from operator influences.

The MarShaft SCOPE plus is suitable for use in both the harsh workshop environment and in the inspection room. Zoom functions allow the smallest details to be measured, which with conventional measuring methods are difficult if not impossible to test.

- Automatic measuring procedure
- Matrix camera, 1280 x 1024 pixels
- User-friendly touchscreen operation
- One measuring instrument for multiple measuring tasks
- Good workshop compatibility
- MarWin EasyShaft software provides a high level of flexibility and user-friendly operation

Options:

- Tactile measuring unit for measuring radial run-out and axial run-out
- Temperature compensation
- Thread measurement
- Turbocharger shaft measurement
- Camshaft measurement
- Piston measurement
- Manual control panel
- MarWin Professional Shaft - software

Technical Data

Freestanding model	
Measuring range length (Z) (mm)	350 / 750 / 1000
Measuring range diameter (X) (mm)	80 or 120
Workpiece weight (max.) in kg	15 (optional 30)
Length/diameter resolution (mm)	0.01 to 0.0001
Angle resolution (°)	0.01 to 0.0001
Length error limit (Z) (µm)	(2 + L/125) L in mm (2 σ at 20 °C ± 1 °C on reference standard)
Diameter error limit (X) (µm)	(1,0 + L/125) L in mm (2 σ at 20 °C ± 1 °C on reference standard)
Drive	Servo motors
Lens	Telecentric precision lens High-resolution CCD array

Applications

Typical workpieces

- Turned parts
- Tripods
- Transmission shaft
- Rack
- Axle journal
- Hollow shaft
- Drive shaft
- Piston
- Camshaft
- Turbocharger shafts
- Bone screws
- Worm gears
- Balance shafts
- Hydraulic parts
- Valves (diesel engine)
- Injection valves and much more

For more information, please visit our website: www.mahr.com

MarShaft. Scope 600 *plus* 3D

Mahr is pleased to provide a new measurement method for the special camshaft application using the new MarShaft SCOPE 600 plus 3D: A combination of optical and touch sensors allow for a first ever functionally complete 3D Inspection of the workpiece. Due to this market need Mahr further developed our highly anticipated and received MarShaft SCOPE 750 plus System. The advanced System now utilizes a new 2D Touch Probe, a motorized tailstock and a calibration for the linear axes. A Matrix camera optically measures characteristics such as diameters, lengths, radii, geometries, location characteristics, cam angle or cam lift in seconds. The additional 2D Sensor detects features that are not optically measurable: concave cam shapes, axial run out on large shoulders, reference elements in the axial direction such as blind holes. For this system, the tactile and optical systems are aligned/ adjusted to exist within one measuring coordinate system. This unit operates in conjunction with the MarWin software platform, thus providing full 3D functionality. Features:

- Complete measuring of camshafts, including cam angle and all cam profiles
- Measurement of conturs
- No use of radial drivers
- Direct measurement of reference (2 flat,, blind borehole or keyway)
- Measurement of keyway grooves
- Measurement of blind boreholes
- 100% 3D function with the new 2D probesystem 1320–2
- Additional Y- measuring axis
- Special calibration of the linear axis (Z-X-Y)
- MarShaf Professional Software
- Manual panel

Options:

- Barcode-Scanner
- Signal light (red, yellow, green)
- Coated tip (no driver required)
- Vibration isolation system
- Temperature compensation
- Thread Measurement
- Turbocharger shaft measurement

Technical Data

MarShaft SCOPE 600 plus 3D	
Measuring range length (Z) (mm)	600
Measuring range diameter (X) (mm)	120
Workpiece weight (max.) in kg	15
Length/diameter resolution (mm)	0.01 to 0.0001
Angle resolution (°)	0.01 to 0.0001
Length error limit (Z) (µm)	(2,0 + L/125) L in mm (at 20 °C ± 1 °C on reference standard)
Diameter error limit (X) (µm)	(1,0 + L/125) L in mm (at 20 °C ± 1 °C on reference standard)
Drive	Servo motors
Lens	Telecentric precision lensHigh-resolution CCD array

Applications
- Complete measurement of camshafts

Typical workpieces
- Camshaft
- Eccentric shafts
- Shafts with keyways or blind boreholes

For more information, please visit our website: www.mahr.com

MarShaft SCOPE 250 *plus*

The role of dimensional metrology is expanding at a dramatic rate, in parallel with innovations in manufacturing processes. Given the ever more stringent accuracy requirements and falling cycle times in production (turning, milling, grinding, etc.), rapid measurement directly at the manufacturing machine is absolutely essential. Measurement at the point of origin of the product, with rapid feedback to the manufacturing process to avoid waste. Mahr's flexible MarShaft SCOPE 250 *plus* shaft measuring machine offers the right measuring solution for the fast, precise and fully automatic measurement of rotationally symmetrical workpieces in production.

The MarShaft SCOPE 250 *plus* has a high precision roundness measuring axis (C) and a vertical measuring axis (Z) with a measuring range of 250 mm. At its heart is the state-of-the-art, high-resolution CMOS matrix camera (live image) with an image field of 1088 x 2048 mm. The extremely high image acquisition rate of over 120 images per second keeps measuring times to a minimum. Zoom functions allow the smallest details to be measured, which with conventional measuring methods are difficult if not impossible to test.

Technical Data

MarShaft SCOPE 250 plus	
Measuring range length (Z) (mm)	250
Measuring range diameter (X) (mm)	40
Length/diameter resolution (mm)	0.01...0.0001
Angle resolution (°)	0.01...0.0001
Length error limit (Z) (µm)	≤ (3.0+l/125) l in mm
Diameter error limit (X) (µm)	≤ (1.5+l/40) l in mm
Lens	Telecentric precision optics High-resolution CMOS camera

Applications

Typical workpieces

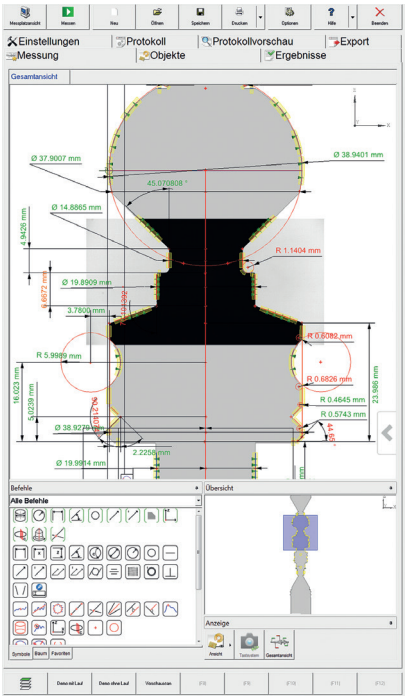
- Turned parts
- Journals
- Hollow shafts
- Drive shafts
- Turbocharger shafts
- Bone screws
- Balance shafts
- Hydraulic parts
- Valves (gasoline engine)
- Injection valves and many more

Performance features at a glance:

- New, high-resolution CMOS matrix camera with a 40 mm live image field allows fast scanning with over 120 images per second
- High accuracy for diameter and length measurement
- Extremely fast measuring times thanks to high measuring speeds of up to 200 mm/s
- By using Mahr's MarWin software platform, you can benefit from our decades of experience in length, shape, position and contour measurement
- Affordable entry-level price into the small optical shaft measuring machine segment

For more information, please visit our website: www.mahr.com

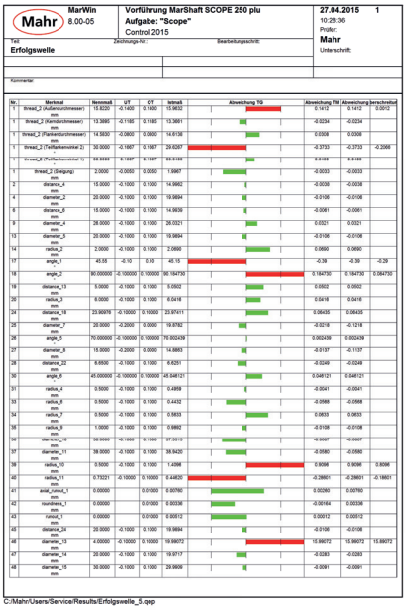
MarWin Software EasyShaft



MarWin EasyShaft software is the measuring, control and evaluation system for the MarShaft SCOPE plus. It offers precision measurement of diameters, lengths, contour features and form and position tolerances in accordance with standards, along with many new evaluation and documentation options, all with a well-laid-out, intuitive user interface. The software runs entirely under the familiar Windows® operating system. The user interface is compatible with other Windows® applications, reducing the familiarization time substantially. All Windows®-compatible printers can be used for record output.

Performance features at a glance:

- The familiar Windows® user interface makes for a short learning curve
- The user interface is used as standard across all Mahr products (e.g. EasyForm or Contour 1)
- Clear, windows-based layout
- User-friendly, 100% touchscreen functionality
- Predefined macros for easy programming (e.g. diameter measurement at a mouse click)
- Many functions can be selected directly via meaningful icons
- Touchscreen-controllable machine axes
- The live image from the matrix camera is permanently displayed during measurement, i.e. direct visual assessment of the workpiece condition (e.g. soiling) even during measurement
- For individual and series measurements: the ideal operating strategy for every task
- User-friendly, state-of-the-art measuring program management
- Time-optimized measuring program sequence (shortest measuring times)
- Meaningful measuring records — in black-and-white or color — output to all Windows® printers
- Future-proof investment, runs under Windows 7 Ultimate
- Optional data export to statistics programs extends the range of functions of the EasyShaft software



EasyShaft program window

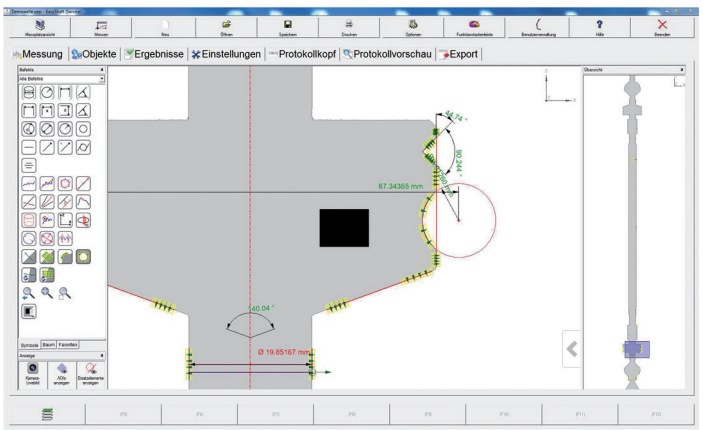
The EasyShaft software gives you full control over the MarShaft SCOPE. The touchscreen gives you direct access to positioning, programming, measurement and documentation. The excellent, simple user interface helps you keep track of everything you need to know.

Many functions, such as loading measuring results or adding feature measurements, can be selected simply by clicking an icon.

EasyShaft commands

The clearly laid-out command bar contains all the commands required for measuring and evaluating features.

- Macros (composed sequences of evaluation actions, e.g. diameter, radius, distance or angle)
- Features which can be calculated (e.g. direct distance, distance in X and Z, angle, angle sector, radius, roundness, straightness, radial run-out, axial run-out, cylindricity, symmetry)
- Substitute elements which can be calculated (e.g. point, line, circle, point on straight line, intersection point, symmetry straight line, parallel straight line, extreme point, C-reference)



Display palette (touchscreen control of machine axes)

- Used to show or hide the display palette
- Used to select the zoom range
- Joystick for the C-axis
- Joystick for the X- and Z-axis
- Zoom in incrementally
- Zoom in or out continuously
- Zoom out incrementally

For more information, please visit our website: www.mahr.com

DIMENSIONAL MEASURING TECHNOLOGY FOR PRODUCTION

MAHR CUSTOMER SOLUTIONS

The latest information about MARSOLUTION customer solutions can be found on our website:
www.mahr.com, WebCode 14520

The design and manufacture of high-precision and reliable workpiece-specific gages requires immense measuring experience and expertise. State-of-the-art Millimar length measuring components produce reliable measuring equipment for a wide range of workpiece geometries with varying levels of automation. Our range of products and services covers all the necessary project steps right up to ready-to-use handover of the measuring equipment: Development, design, production, installation, commissioning and training.

MarSolution. Customer-specific Measuring Technology

MarSolution. Millimar Standard Components 685

MarSolution. Standardized Measuring Devices 686

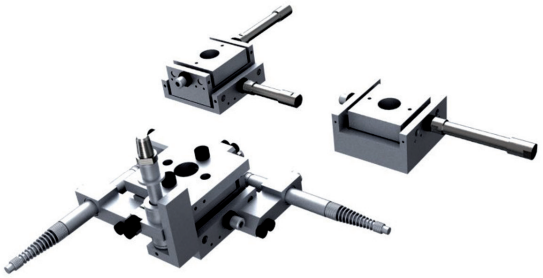
MarSolution. Customer Specific Measuring Units 687

MarSolution. Software D1200X 689

MarSolution. Measuring Devices Based on Millimar Standard Elements

Millimar standard elements can be used for the flexible design and cost-effective realization of multi-gage measuring devices for a wide range of workpieces, e.g. rotationally symmetrical and non-rotationally symmetrical parts. Rotationally symmetrical workpieces can be mounted between centering tips or on prismatic supports, whereas non-rotationally symmetrical workpieces require a special holder. The extensive range of standard elements includes, for example, vertical and horizontal measuring stands, holders, coordinate measuring tables, block elements, spring parallelograms, swivel elements and a range of measuring anvils.

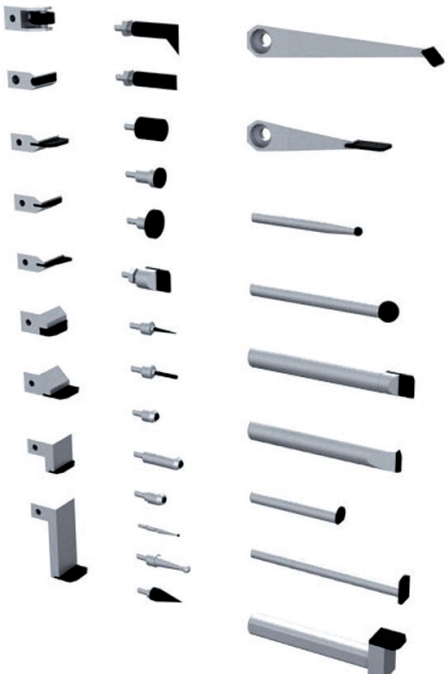
Gage modules
Travel distance: 5 –10 –20 mm

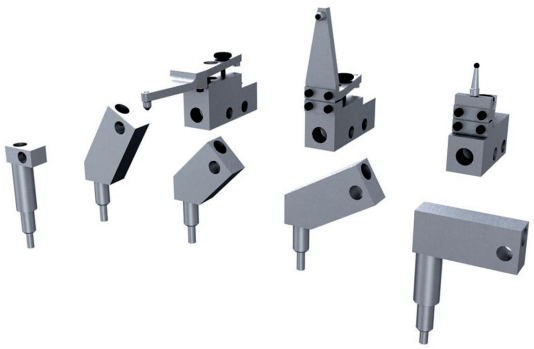


XY tables
Travel distance:
2,5 –5 –7 mm

Angular adjustment
0 –30 –45 –60 –90°

Measuring inserts





MarSolution. Measuring Devices Based on Millimar Standard Elements

Versatile

The versatility of the Millimar standard elements means that the right solution can be provided, whatever the measurement task at hand.

Whether outer, inner or length measurements, the Millimar standard elements can be adapted to the most diverse test requirements, even with awkward to reach workpiece geometries.

Thanks to the compact design of the anvils, a large number of measuring points can be inspected within a small area of the testpiece.

The pneumatic lifting mechanisms integrated in the measuring elements simplify the job of moving the testpiece into the measuring position and reduce wear to the measuring anvils.

Flexible

The modular concept using Millimar standard elements throughout the whole system and a generous amount of travel in the measuring anvils (up to 20 mm) allow a high degree of flexibility in terms of the variety of testpieces that can be accommodated.

Precise

The Millimar standard elements are specially designed for use in the workshop and are manufactured using a rigorous process. This guarantees that the measuring devices give stable and reliable measurements.

For example, using measuring anvils fitted with two ball-bearing guides for supporting the moving part, it is possible to achieve measurement repeatability in the µm range if this is required due to the tolerances of the feature being measured.

Reliable

All components are long-lasting and low-maintenance thanks to the use of rust-proof materials and the selection of appropriate heat treatments. The use of lifting mechanisms to minimize the effects of friction on the measuring anvils when the workpiece is inserted, further reduces component wear.

Economical

Our systems can either be constructed by the customer from standard catalog elements, or alternatively we can provide turn-key solutions. Whichever option you choose, you can be sure that you are purchasing a system that is tailored to your specific requirements on the most favorable of terms.

Below are just a few examples of the many factors that contribute to the cost effectiveness of the Millimar standard elements:

- Standard elements can be reused: Once manufacture of a particular type of workpiece has ceased, all standard elements used in the test equipment can be reused to create new test equipment for a different type of workpiece.
- A choice of different mechanisms for guiding the moving part of the measuring anvils according to the accuracy requirements of the measuring task (optimal value for money).
- Reduction in development and implementation time.
- Availability of devices: Our standard elements are manufactured under standard production conditions and are always available off the shelf and ready to use.

For more information, please visit our website: www.mahr.com

MarSolution. Standardized Measuring Devices

Mahr's "MarSolution" product group offers special customized solutions in dimensional measuring technology – semi and fully automatic measuring systems that work directly in production. Mahr uses its tried and tested standard components (Millimar measuring interface, probes and standard elements) to provide reliable and accurate measuring technology. Always the right solution for your task. Mahr offers solutions for various sectors and industries.

Vertical measuring device with pivoting workpiece holder between centers

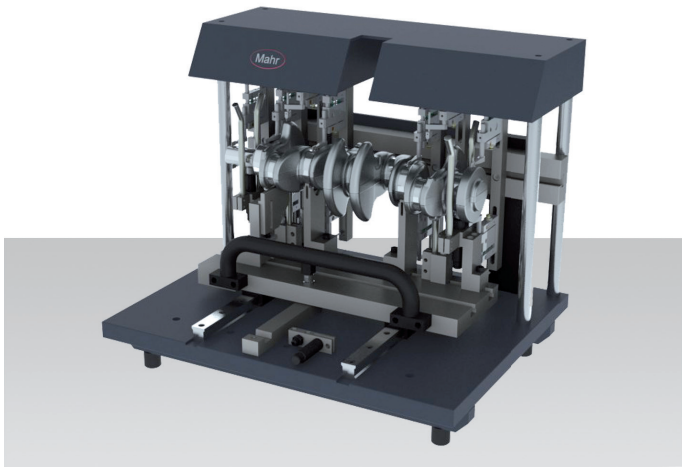
These measuring devices allow inspection of diameter, length, and radial and axial run-out for rotationally symmetrical parts.
With manual or automatic swivel workpiece holder between centers.

Motorized rotation also allows the option of dynamic workpiece measurement.

Measuring device with rotary table

Measuring devices with rotary table allow combined external and internal measurements and automatic radial and axial run-out testing.

This measuring device can also be motorized to enable dynamic measurements.



Horizontal measuring device

Workpiece holder on vees or between centers, including workpiece loading table.

The horizontal measuring devices allow workpieces to be held on vee supports or between centers. This system is particularly suitable for heavy workpieces.

The workpiece can be inserted in the workpiece holder outside of the actual measuring station.

For more information, please visit our website: www.mahr.com

MarSolution. Customer-specific Measuring Devices

RPM series - commutator shaft measuring device

The RPM measuring device is a simple and accurate solution for measuring diameters, roundness, radial runout and bar-to-bar height, for example, of the commutator shaft or precision shaft in the electric motor.

The RPM offers the following benefits:
- Simple operation for efficient measuring
- Fast measurements
- Powerful functional analysis using the D1200X software

TC series - housing measuring device

These measuring devices can be used to measure various types of housing, for example turbochargers, pumps, electric motors, housing. The measuring device is available as a standalone solution for close-to-production use or as an integrated version for 100% production control.

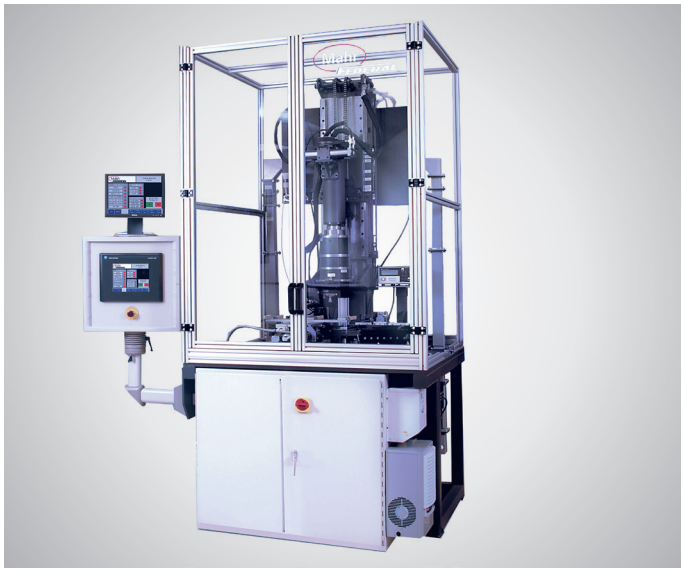
CR 240A: Automated measuring devices for connecting rods

Simple measuring devices can be used to control various work sequences. Automatic solutions can perform all the measuring tasks for the final inspection.

For example, the CR 240A measuring station can measure the usual dimensional features on a connecting rod and also offers the following functions:
- Interchangeable measuring heads with pneumatic plug gages and Millimar P2004 inductive probe
- Laser engraving of connecting rods, the complete housing protects against laser beams
- Camera for check reading
- Precise weighing system
- D1200X measuring software with clear and simple user guide
- Measurement results can be evaluated online to allow tool adjustments, statistical analysis, etc.

For more information, please visit our website: www.mahr.com

MarSolution. Customer-specific Measuring Devices



Dynamic measurements of the inner diameter of cylinder bores and wall thicknesses

The cylinder liner measuring machine is a standalone version for automatically measuring the inner diameter of bores and the wall thickness of a diesel cylinder liner.
A handling device allows fully automatic loading and unloading. The measuring machine is directly integrated in the production line. The cycle time for a complete measurement is less than 2 seconds.

The measuring instrument consists of three stations:

- The first station is the charging station where the temperature of the socket is measured.
- At the second station the inner diameter of the bore is measured using a pneumatic plug gage. The second station also contains the diameter setting master for the pneumatic plug gage; the plug gage is automatically calibrated at regular intervals. This process guarantees maximum measuring accuracy and stability of the measuring results, even in the harshest of manufacturing environments.
- At the third station a tactile measurement determines the wall thickness of the socket. The probes are automatically positioned at the relevant measuring points after loading. The wall thickness measurement takes just seconds. The probes are parked before the socket is removed from the measuring device to minimize wear to the contacting measuring elements.

Dynamic measuring of deformations in half-bearings
Type 2152447 is an automatic standalone measuring instrument for measuring dimensional changes caused by pressure to half-bearings (e.g. for connecting rods).

The half-bearing is automatically conveyed into the measuring machine and inserted into the relevant test chamber (semicircular holder), secured at one side, and a defined pressure is applied to the other free side (e.g. according to the operating mode of the subsequent motor assembly). A tactile probe system simultaneously measures the dimensional change circumferential to the half-bearing. After the measurement, the half-bearing is removed by the handling device.

To ensure measuring accuracy throughout the process, the measuring device is automatically calibrated at regular intervals using a setting master.

The entire process is computer-controlled with user-definable force parameters. Measuring records and databases can be created.

Measuring device for checking diameters on large rings

Large rings (e.g. bearing rings) are subject to the most stringent tolerances. Checking these requires flexible measuring equipment that can cover a range of inner and outer diameters.

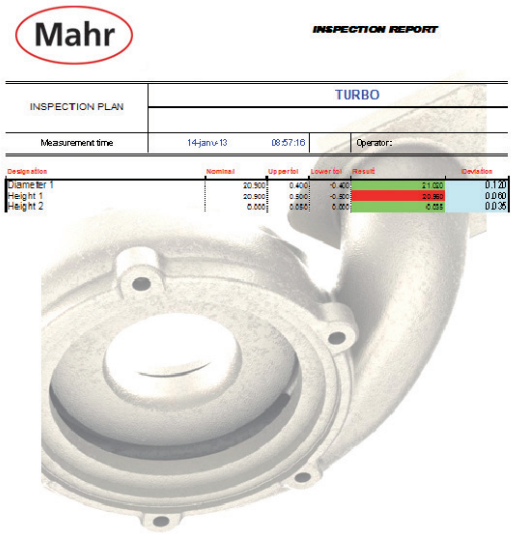
The measuring device for large rings means that inner and outer diameters can be measured with just one device.

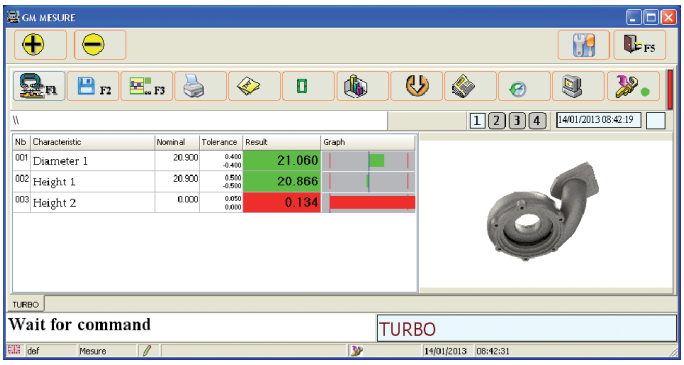
It can measure inner diameters from 63.5 mm up to maximum 825 mm and outer diameters from 76.2 mm up to maximum 831 mm.

For more information, please visit our website: www.mahr.com

MarSolution. D1200X Software

- Windows®-based software
- Microsoft ACCESS® database
- Password protected menus and access privileges
- Non-restrictive formula editor
- Easy-to-program test plans - simply fill in the on-screen forms
- User-programmable calculation formula
- Quick-select options for displaying measurements performed
- Simple sensor adjustment using an on-screen assistant
- Storage of calibration history
- Measurement value display (numeric and bar graph views)
- Storage of measurements (manual or automatic)
- Sensor workspace monitoring with alarm output
- Statistical analysis of measurement results, with visualization using histograms and SPC control charts
- Automatic calibration requests defined by hours and number of measurements
- Comments can be added to faulty measurement values to indicate the cause
- Statistical analyses
- Tests to determine normal distribution
- Integrated measuring system analysis (R&R) and gage capability
- Data export module supporting numerous formats
- QDAS, SUMEQ, SESAME, QUASAR and other interfaces supported
- Option to use I/O port for automatic control
- Can be used in automatic production lines with dialog control





For more information, please visit our website: www.mahr.com

MORE THAN JUST PRODUCTS

SERVICES FROM MAHR

News about MAHR
You can find your nearest SERVICE CENTER
on our website:
www.mahr.com, WebCode 14801

In addition to its many branches and agencies, Mahr also has a worldwide service network. To find the appropriate contact, visit the Mahr's website at **www.mahr.com** or refer to the back page of this catalog. Besides product related services, additional services are also available from various Mahr sites, reflecting the available experience and expertise in each case. We are happy to help with all your metrology questions, no matter how specific.

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Mahr Academy

The **Mahr Academy** offers application specific product training courses and basic technical seminars. These programs can be held at fixed venues on predetermined dates, or arranged internally within your company. The subjects offered are relevant to all employees who work either directly or indirectly on production tasks. The courses are beneficial to new employees on the shop floor, in the inspection room and in the design department. They are equally valuable to employees who are looking to expand their knowledge.

MahrExpert seminars stand for:

- Trainers with practical experience
- Training concepts based on proven educational techniques
- Extensive, always up-to-date training documents
- Expert advice on all questions relating to the improved quality of technical products

We offer the following seminars:

- Product training at three levels (easy, advanced, professional)
- Basic training and seminars (on length metrology, surface metrology, form measurement, gear and cordinate metrology, AUKOM 1 Basic)
- Professional training to become an authorized measuring instrument representative and gage monitoring, measurement uncertainty, measuring instrument capability and process capability (organized and run in cooperation with the Technical Academy Wuppertal TAW/AfQ)

Application Advice

Do you need help with designing solutions for metrological tasks? Do you need to create measuring programs for complex workpieces? Do your users need some basic product training?

Take advantage of the services offered by our application engineering specialists, with their extensive knowledge and many years of experience in dimensional metrology.

The terms **Precimar, MarForm, MarSurf, Millimar** and **MarShaft** represent core skills in the fields of length metrology, form, contour and roughness metrology and shaft metrology. Our application engineering and technical service specialists also offer:

- Sample measurements
- Help with commissioning equipment
- Program creation
- Product training
- Measuring equipment capability testing
- User training

For more information, please visit our website: www.mahr.com

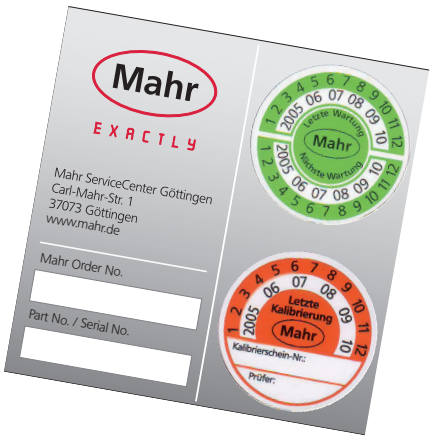
Technical Service

Mahr quality guidelines set high standards in which **Mahr measuring instruments** are developed and manufactured, using the very latest technology available. This guarantees that consistently, all **Mahr measuring instruments** are of the highest quality.

To assure that your machine/measuring station receives the best possible care, Mahr operates an efficient worldwide service organization. The **Mahr Service Organization**, run by trained specialists, is equipped with cutting edge tools and instruments, many of which have been specially developed, and stocks an extensive range of spare parts.

Mahr works according to progressive, tried-and-tested guidelines and offers a range of complementary services. To ensure the best results from your **Mahr measuring equipment** at all times, we recommend you use only the services offered by the **Mahr Service Organization**. This is the only way of ensuring that only **original Mahr spare parts** and servicing procedures are used, reflecting the stringent **Mahr quality standard**.

Visit Mahr's website at **www.mahr.com** to find your nearest **Mahr Service Center**.



Maintenance for Measuring Systems

The **operational availability** of your measuring equipment is very important. To ensure smooth operation over many years, Mahr recommends your equipment be **regularly inspected**. Regular inspection of your measuring equipment results in **considerable advantages**:

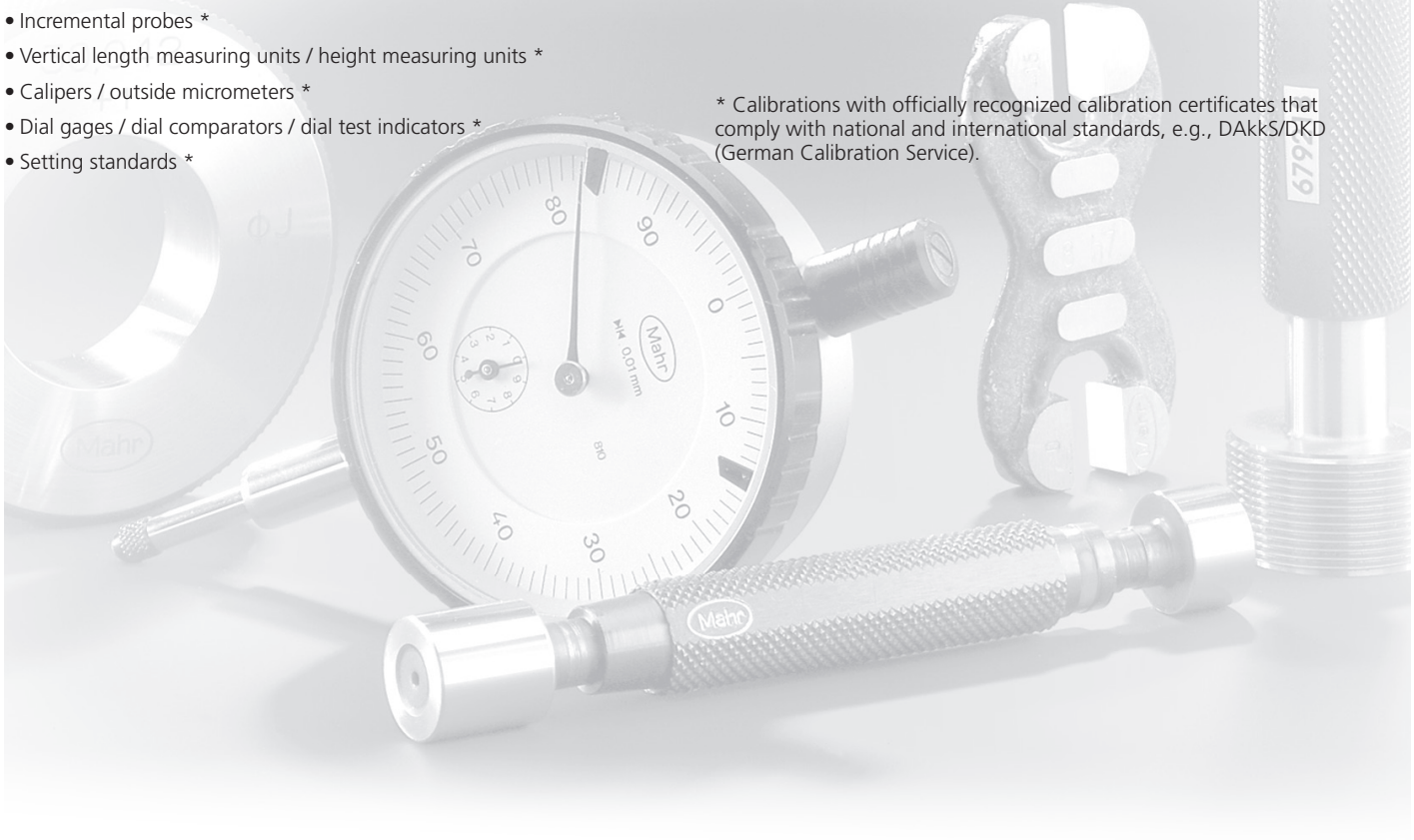
- Unexpected equipment failures are prevented
- Wear parts are exchanged in reasonable time and within the framework of the agreed service intervals
- Keeps your equipment running at peak performance, including incorporation of future product improvements
- Provides the best conditions for your quality assurance system
- With a service agreement you minimize operation costs and optimally retain the value of your machine. Preventative maintenance can be planned and leads to an undisturbed operation of production
- Maximal operational readiness by the setting of all mechanisms, pneumatic and electronic functions as well as the examination of software used
- Complete, intensive examination is conducted only by Mahr specialists
- Calibration certificates are issued
- Early detection of trouble due to wear leads to a decrease in idle time and ensuing costs

Calibration Services Measuring Systems

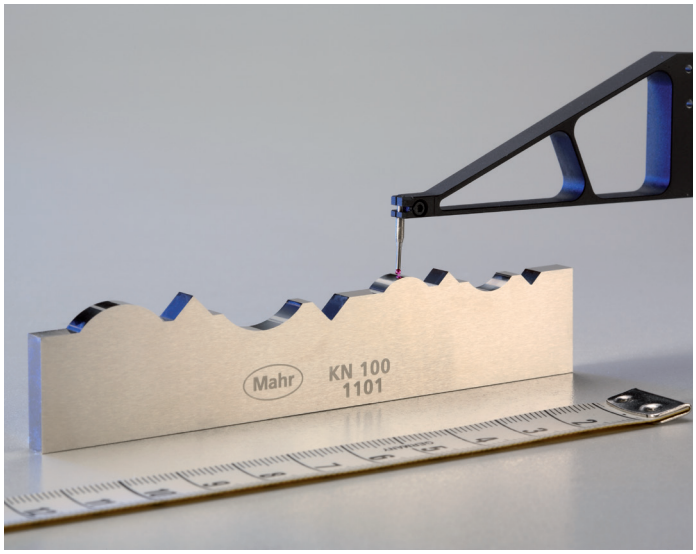
Mahr runs **laboratories** for **various instruments** and **instrument sizes** in the field of **length metrology**. These ensure high dimensional accuracy and **very low measurement uncertainties**. In principle, **all measuring equipment** can be calibrated We provide the following core services::

- Gage calibration (length) *
- Parallel gage blocks *
- Setting rings / setting plug gages / setting disks / pin gages *
- Geometry and roughness standards *
- Optical flats
- Inductive probes with / without display unit *
- Thread plug gages / thread ring gages *
- Incremental probes *
- Vertical length measuring units / height measuring units *
- Calipers / outside micrometers *
- Dial gages / dial comparators / dial test indicators *
- Setting standards *
- Magnification standards (flicks) *
- Contour standards *
- Stylus instruments / roughness measuring units *
- Testing cylinders / cylinder squares *
- Roundness standards *
- Length measuring units *
- Multi-shaft standards *
- Dial comparator and dial gage testers *
- Super fine roughness standards *
- Custom objects on request

* Calibrations with officially recognized calibration certificates that comply with national and international standards, e.g., DAkkS/DKD (German Calibration Service).



Calibration Services Measuring Systems



DAkkS
Deutsche
Akkreditierungsstelle
D-K-15074-01-00

DAkkS/DKD (German Calibration Service) is a signatory of the multilateral agreement by the European cooperation for Accreditation **(EA)** and the International Laboratory Accreditation Cooperation **(ILAC)** concerning the mutual recognition of calibration certificates.

Your **Mahr contact** will provide you with information on national and international recognition, e.g., as part of the multilateral agreements **www.european-accreditation.org and www.ilac.org**

Mahr Inc. offers an inspection and recalibration program for dimensional standards, and calibration and certification services for a wide range of gages. ISO/IEC 17025 Accreditation defines general requirements for the competence of testing and calibration laboratories.

NVLAP® National Voluntary Laboratory Accreditation Program

CALIBRATION LABORATORIES NVLAP LAB CODE 200605-0

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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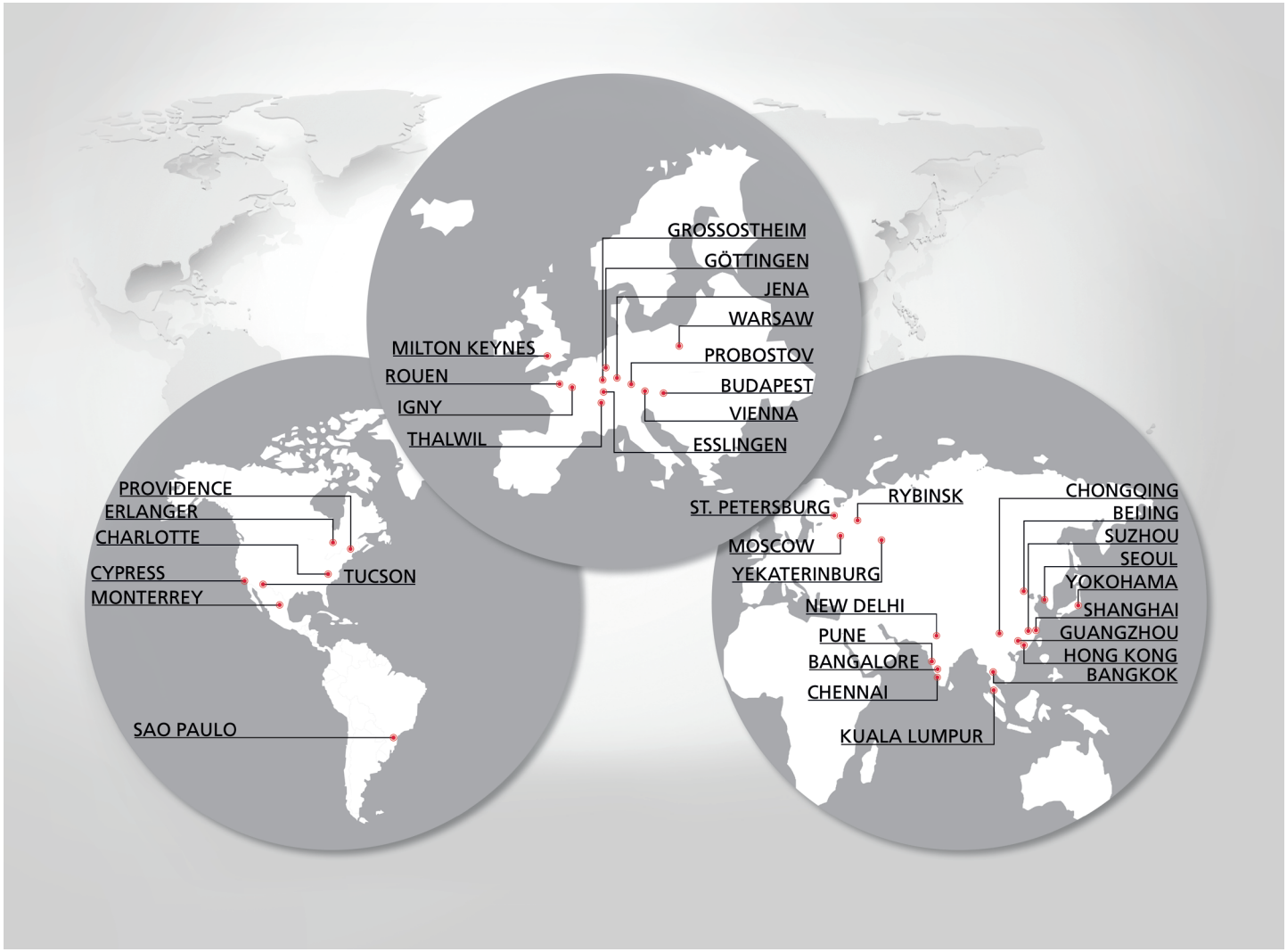

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