

آزما صنعت گراد



نماینده انحصاری کمپانی **Mahr** آلمان

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- 0 +



EXACTLY

SIMPLE, ACCURATE AND INEXPENSIVE MEASUREMENT. MILLIMESS DIAL COMPARATORS.



The latest information on MILLIMESS products can be found on our website:

www.mahr.com, WebCode 207

► | 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 that 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. With a digital comparator with an inductive measuring system combined with most modern state of the art digital technology readings as small as $0.2 \mu\text{m}$ / $10 \mu\text{inch}$ 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 as well as the easy to use data transmission rounds off the complete Millimess spectrum. | ◀

► | Millimess. Digital and Dial Comparators

Inductive Digital Comparators

Overview

6- 2

Millimess 2100

6- 4

With background lit digital and analog display

Millimess 2000 / 2001

6- 6

With digital and analog display

μMaxμm® //

6- 8

With digital display

Maxμm® ///

6-10

With digital and analog display, probe

Mechanical Dial Comparators

Overview

6-14

Millimess 1000 A / 1000 B

6-17

With large dial

Millimess 1002 / 1003 / 1003 XL / 1004 / 1010 / 1050

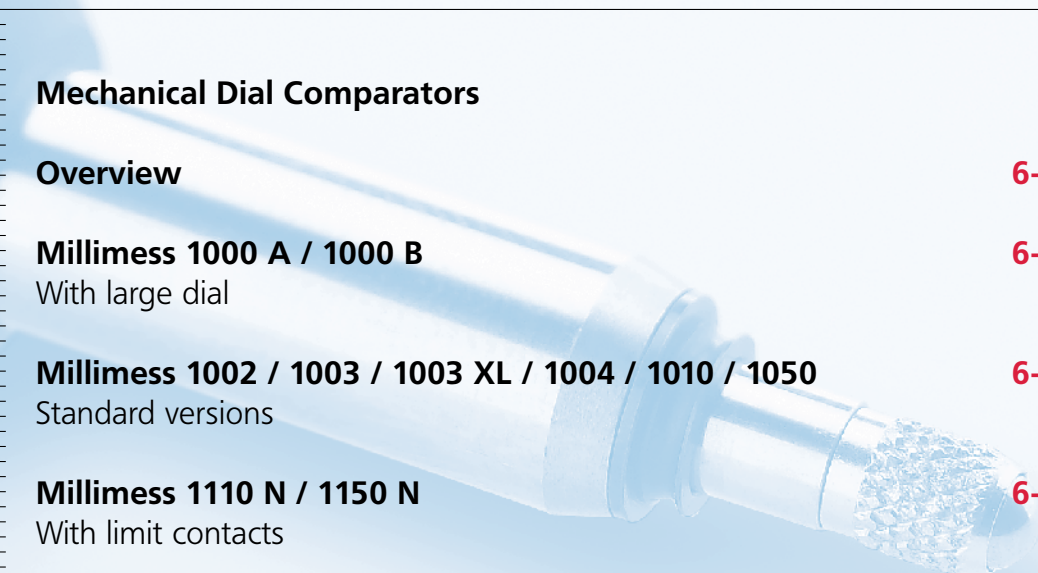
6-18

Standard versions

Millimess 1110 N / 1150 N

6-20

With limit contacts



Millimes. Digital Comparators (Short range)

OVERVIEW

Inductive Digital Comparators

	2100	2000
		
Catalog page	6 - 3	6 - 5
Measuring range	2.8 mm	1.8 mm
Resolution	mm / <i>inch</i> 0.0005 / <i>.00002"</i> 0.001 / <i>.00005"</i> 0.005 / <i>.0002"</i> 0.01 / <i>.0005"</i>	mm / <i>inch</i> 0.0002 / <i>.00001"</i> 0.0005 / <i>.00002"</i> 0.001 / <i>.00005"</i>
Mounting shank	8h6	8h6
Protection class	IP class acc. IEC 60529 	
Functions:		
ON/OFF	●	●
Zero set the display	●	●
Zero set the analog display	●	●
Switch between mm/inch	●	●
Reversal of counting direction	●	●
Enter a numerical value	●	●
Preset	●	●
Data key	●	●
Data via control instrument 2000sg	●	●
ABS/REL-switchable	●	●
Tolerance display	●	●
Dynamic measuring functions	Min, Max. Max-Min (Tir)	●
Resolution switchable	●	●
Analog display	●	●
Analog value switchable	●	●
Lock key function	●	●
Data output	USB Digimatic Opto RS232C	●
Control output	●	●



2001	μMaxμm® II	Maxμm® III
		
6 - 5	6 - 7	6 - 8
1.8 mm	2 mm	2 mm / 3.98 mm
mm / inch	mm / inch	mm / inch
0.0002 / .00001"	0.0002 / .00001"	0.0005 / .00002"
0.0005 / .00002"	0.0005 / .00002"	0.001 / .00005"
0.001 / .00005"	0.001 / .00005"	0.001 / .0001"
	0.001 / .0001"	0.005 / .0005"
	0.005 / .0002"	
	0.010 / .0005"	
	0.020 / .001"	
8h6	8h6 / 3/8"	8h6 / 3/8"
		
•	•	Auto
•	•	•
•	•	•
•	•	•
•	•	•
•	•	
•	•	
•	•	
•	•	
•	•	
•	•	
•	•	
•	•	
•	•	
•	Optional	Optional
•	•	•
•	•	•
•	•	•
•		

Millimess 2100

► | The Inductive Digital Comparator **Millimess** 2100. Tolerance monitoring is simplified with the color change in the background lit display.

Dynamic measuring functions:

- MAX / MIN for example, finding the reversal point
- MAX - MIN storing values for example when testing concentricity and flatness



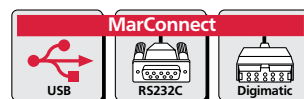
Tolerance function:

clearly visual tolerance excess due to the change of color in the background lit display.



Universal SPS Interface

The choice is yours:
MarConnect Data output, choose between USB, Digimatic or RS232C

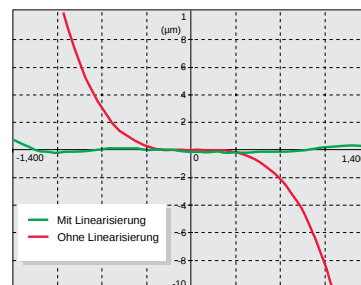


Control output can be connected to a SPS

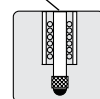


ABS System

Linearized, inductive **absolute measuring system**. Reference point is not lost when the instrument is switched off



Especially suited for use in a manufacturing environment. Waterproof: **protection class IP54** in accordance to IEC 60529



High precision rotary stroke bearings for a longer service life and higher capacity

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

Inductive Digital Comparator Millimess 2100 with background lit display



Features

Functions:

ON/OFF
RESET (zero setting the digital and analog displays)
- 0 - (set the analog display to zero)
PRESET (enter any numerical values)
DATA (data transmission)
mm/inch-switchable
Reversal of counting direction
RANGE (switch the measuring range and resolution)
ABS (reference to electrical zero point)
MAX / MIN memory, e.g. ideal to search for the reversal point
MAX-MIN e.g. testing concentricity and flatness

TOL (entering tolerance)
Tolerance band max. 2.8 mm
LOCK: operating functions can be blocked via PC-Software

- Factor can be set / adjusted
- Linearized inductive absolute measuring system
- Measurement electronic is compensated for temperature
- Power supply via the mains power adapter
- MarConnect data output: choose either
USB
OPTO RS232C
Digimatic

- Dial Comparator can be remotely operated via the interface (Opto RS232C)
- Control output compatible to Dial Comparators with limit contacts
- Operating and display unit (bezel) can be rotated through 280°
- Measuring force spring is interchangeable
- Lower stop is adjustable
- Protection class IP54 according to IEC 60529

- Operating temperature 5 - 40°C
- High contrast background lit LCD with 6.5 mm high digits
- Analog display has a 4 mm long pointer which ensures better visual perception, ideal when checking concentricity and flatness and also to search for the reversal point when measuring bores
- Supplied with:
Mains adapter, rubber bellows and spanner for preliminary stroke setting

Technical Data

Measuring ranges switchable	Resolution switchable	Display range of the analog display	Span of error* G within	Over-travel	Meas. force	Order no.	
						230 V	115 V
mm (inch)	mm / inch	mm (inch)	±0.8mm ±1.4mm	mm	N		
±1.0 (.04")	0.0005 / .00002"	±0.015 (.0006")	1µm 2µm	1.8	0.7 - 0.9	4346200	4346201**
±1.4 (.055")	0.001 / .00005"	±0.030 (.0015")					
	0.005 / .0002"	±0.150 (.0060")					
	0.01 / .0005"	±0.300 (.0150")					

* 1 digit in any zero position

** Includes Adapter Bush 940

Inductive Digital Comparator 2000 / 2001



2000



2001



Features

Extramess 2000

Functions:

- ON/OFF
- RESET (Set the digital and analog display to zero)
- 0 - (Set analog display to zero)
- PRESET (enter any numerical values)
- mm/inch switchable
- Reversal of counting direction
- RANGE (Switch the measuring range and resolution)
- ABS (reference to electrical zero point)
- Battery charge level indicator
- Linearized inductive absolute measuring system
- Power supply via either the integrated rechargeable batteries (40 hrs.) or via the mains power adapter
- Rate measuring values are actualized 20 values/second
- MarConnect data output: choose either
USB
OPTO RS232C
Digimatic
- Comparator can be remotely operated via the interface
- High contrast LCD with 6.5 mm high digits. Analog display has a 4 mm long pointer for better visual perception, ideal when checking concentricity and flatness as well as search for the reversal point when measuring bores
- Operating and display unit (bezel) can be rotated 280°
- Measuring force spring is interchangeable
- Lower stop is adjustable
- Protection class IP54
- Operating temperature 5 - 40°C

- Supplied with:
Mains adapter, rubber bellows and spanner for preliminary stroke setting

Extramess 2001

- Features are identical to Extramess 2000, in addition:
MAX / MIN memory, e.g. ideal to search for the reversal point
MAX-MIN e.g. testing concentricity and flatness
TOL (entering tolerance)
Tolerance band max. 180 µm
- Block individual operating functions via Software (see accessories)

- Factor can be set / adjusted
- Control output compatible to Dial Comparators with limit contacts
- Supplied with:
Mains adapter, rubber bellows and spanner for preliminary stroke setting

Technical Data

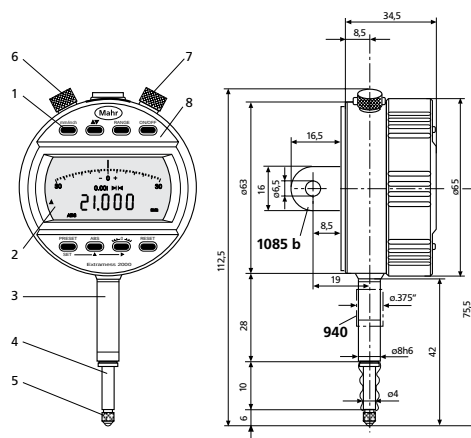
	Measuring ranges switchable	Resolution and readings	Display range of analog display	Span of error* G	Over-travel	Meas. force	Order no. 230 V	Order no. 115 V
	mm (inch)	mm / inch	mm (inch)	µm	mm	N		
2000	1.8 (.07")	0.001 / .00005"	± 0.030 (.0015")	0.6	2.4	0.7 - 0.9	4346000	4346900**
	1.8 (.07")	0.0005 / .00002"	± 0.015 (.0006")	0.6	2.4			
	0.8 (.031")	0.0002 / .00001"	± 0.006 (.0003")	0.3	2.9			
2001	1.8 (.07")	0.001 / .00005"	± 0.030 (.0015")	0.6	2.4	0.7 - 0.9	4346100	4346910**
	1.8 (.07")	0.0005 / .00002"	± 0.015 (.0006")	0.6	2.4			
	0.8 (.031")	0.0002 / .00001"	± 0.006 (.0003")	0.3	2.9			

* 1 digit in any zero position

** Includes Adapter Bush 940

Inductive Digital Comparators 2100 / 2000 / 2001

- 1 Operating buttons
- 2 Display
- 3 Mounting shank
- 4 Measuring spindle
- 5 Contact point 901H
- 6 Connection or mains power supply
- 7 Data output
- 8 Rotatable operating and display unit (bezel)



Control Instrument 2000sg



Features

- Remote control buttons: RESET, PRESET, RANGE*
- DATA-button for data transmission, option via foot switch
- Power is supplied by the Extramess
- Connect to the Extramess with the built-in control cable

- Data can be transferred to a PC with an optional data cable
- Splash waterproof according to IP54

Order no. 4346035

* Function is limited when used in conjunction with the 2100

Accessories

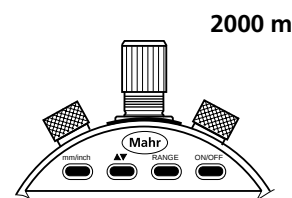
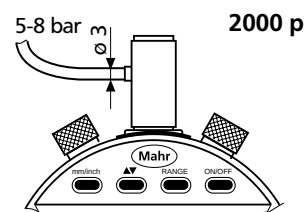
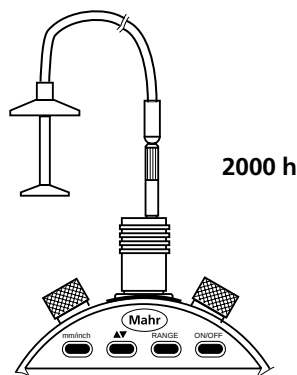
		Order no.
Data Connection Cable USB (2 m)	2000 usb	4346023
Data Connection Cable	2000 r	4346020
Opto RS232C (2 m), SUB-D jack 9-pin		
Data Connection Cable	2000 d	4346021
Digimatic (2 m), flat plug 10-pin		
Cable to connect control output to an SPS	2000 sps	4346031
Manual Lifter with cable release	2000 h	4346010
Pneumatic Lifter	2000 p	4346011
Measuring Force Adjuster	2000 m	4346012
Mounting Lug Horizontal/Vertical	1085 b	4336310
Adapter Bush for adapting mounting shank 8h6 mm to inch bore .375"	940	4310103

Additional Accessories

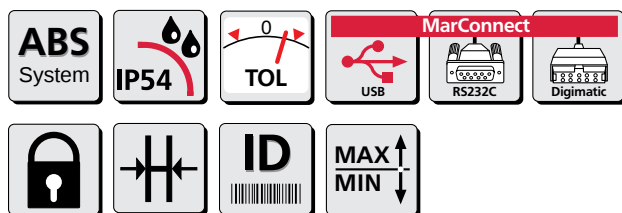
		Page
Contact Points	901-913	5-58
Special Holder	941	5-59

Accessories for Data Processing see Chapter 11

Measuring Force Springs	Order no.
0.25 N	4346050
0.5 N	4346051
0.75 N	4882284
1.0 N	4346052
1.5 N	4346053
2 N	4346054
2.5 N	4346055



Inductive Digital Comparator μ Max μ m® II



Advanced Functions:

- Dynamic mode operation: Max, Min, TIR
- Two point difference measurement – provides comparison of two readings or measuring locations.
 - Calculate the distance between 2 measured values
- Multiplier factor for ratio measurements
- Hold function – holds reading on display until ready to resume measuring
- Data output with serial number identification capability
- Data output with selectable continuous output or single request of reading(s)

Features

Functions:

- Inch/Metric – operator selectable with switchable resolution.
- Normal / Reverse Sensing
- Preset capabilities to view actual size
- "Absolute" Transducer – no overspeed errors or constant re-zeroing. Transducer always remembers its location, even if power is off
- High resolution digital readout and analog bar graph – digital display shows deviation from zero or actual dimension size (Preset)
- Lightweight, contamination resistant – ruggedly built to withstand hard use – gasketed case, crystal and stem assemblies resist fluid contamination
- Calibratable – if ever needed – values remembered even after battery change.
- MarConnect data output: USB, OPTO RS232C, Digimatic
- Auto-power down – provides extremely low battery consumption, assuring long life from readily available commercial batteries.
- Increased resolution (0.0002 mm / 10 μ inch) for today's demanding tolerances
- Unilateral Tolerances
- Go/NoGo Display Feature

Mode A:

Actual value + bargraph
Display of tolerance



Mode B:

GO/NOGO display



Optional Factory Configured Features:

- Locked Multiplier factor for ratio measurements
- Disabled sleep mode (manual ON/OFF)
- Locked inch or mm display unit
- Power up in inch or mm unit on battery change
- Calibration mode lockout (with password entry)
- Setup mode lockout with password entry

Technical Data

Model	Range		Resolution		Accuracy % of digital range	Stem diameter	Stem Length		Order no.
	mm	inch	mm	inch			mm	inch	
Standard						.375"	11.7	.46"	2034101
Standard						.375"	38.0	1.50"	2034103
Standard			0.0002	.00001"	±0.25% over ±0.50 mm / ±.020"	8 mm	11.7	.46"	2034105
Standard			0.0005	.00002"		8 mm	38.0	1.50"	2034107
			0.001	.00005"					
Advanced	±1.00	±0.040"	0.002	.0001"	±0.50 mm / ±.020" to ±1.00 mm / ±.040"	.375"	11.7	.46"	2034201
Advanced			0.005	.0002"		.375"	38.0	1.50"	2034203
Advanced			0.01	.0005"		8 mm	11.7	.46"	2034205
Advanced			0.02	.001"		8 mm	38.0	1.50"	2034207
Advanced Perpendicular						.375"	11.7	.46"	2034401

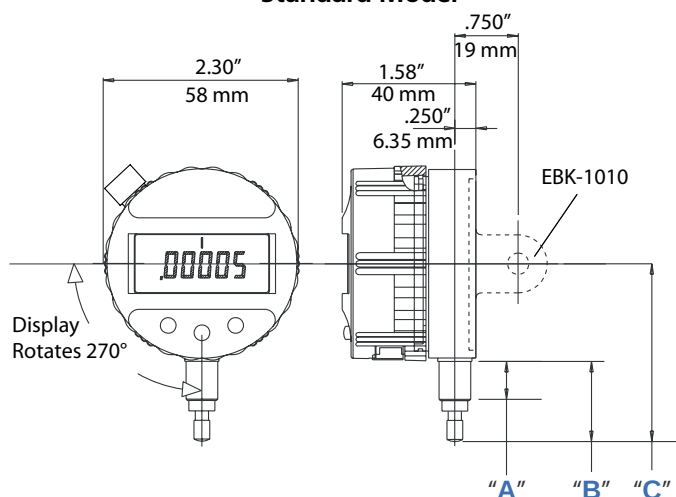
Technical Data

Display Range:	±1.067 mm / ±.042"
Spindle Range:	-1.25 to 1.50 mm / -.050 to +.060"
Resolution:	0.0002 mm / .00001"
Accuracy:	±0.5 mm range: 1.25µm (0.25%)
(% of range)	±1.0 mm range: 5.0µm (0.50%) ±.020" range: 50µinch (0.25%) ±.040" range: 200µinch (0.50%)
Thermal Stability	0.1% of full scale/F
Gaging Force:	85 to 122 g (grams) - at center of travel 3 to 4 oz (ounce) - at center of travel
Weight:	170 g / 6 oz
Spindle Velocity:	Unrestricted
Temperature	
Operating:	5° to 54°C / 40° to 130°F
Storage:	-17° to 60°C / 0° to 140°F
Repeatability:	± 1 LSD (Least Significant Digit)
Battery Life:	6000 hours ~ 12 months normal usage*

* normal usage = 12 hr/day x 7 day/wk

Contact Point:	(PT-223 radiused tip, 4-48 thread, furnished on 0.375" dia. Stem model) EPT-1037-W1 radiused tip, M2.5 thread furnished on 8 mm dia. stem model
Power:	3 volt lithium coin cell (2 per unit), type CR 2450. Order no. EBY-1018
Display:	Rotates through 270°

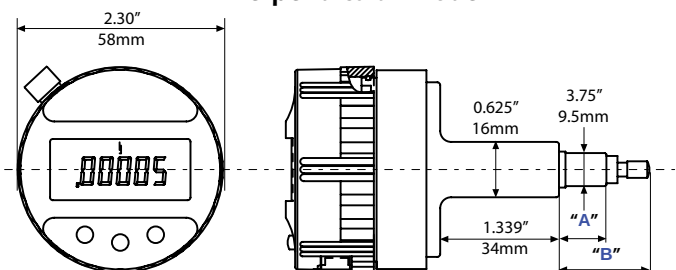
Standard Model



For contact points please refer to pages 5-25, 5-27, 5-60 & 5-61

Dimensions mm / inch	A	B	C
	11.7 / .46"	24.1 / .95"	53.6 / 2.11"
	38.0 / 1.50"	57.2 / 2.25"	86.6 / 3.41"

Perpendicular Model



Accessories

	Order no.		Order no.
Backs:		Other Hardware:	
Flat Black (Standard on all models)	EBK-1018	Splash Cover	ECV-1307-W2
Post Back (.5" dia. x 1" long)	EBK-1012	Adaptor Bushing (8 mm to 3/8")	BU-197
Lug Back (Horizontal / Vertical)	EBK-1010	Thread Adaptor (M2.5 to 4-48 thread)	AD-185
Screw Back (11/16" dia x .5", 1/4-28 thread)	EBK-1013	Spring (for lighter gaging force: 35g)	SP-351
Adj. Slide Back (0.5" slot, 1/4-20 thread)	EBK-1016		
Adj. Rack Back*	EBK-1014		
* used on AT-28 or AT-116 - SE-33 or SE-73 Sold seperately.		For further mounting accessories refer to page 6-13	
Data Interface:			
USB Cable (for MarCom or PC, 2 m length)	4346023		
RS232 Cable (SUB-D jack 9-pin, 2m length)	4346020		
Digimatic Cable (10 pin plug, 2 m length)	4346021		
Transmitter (Mahr t, used w/ FM1 Receiver)	2121369		

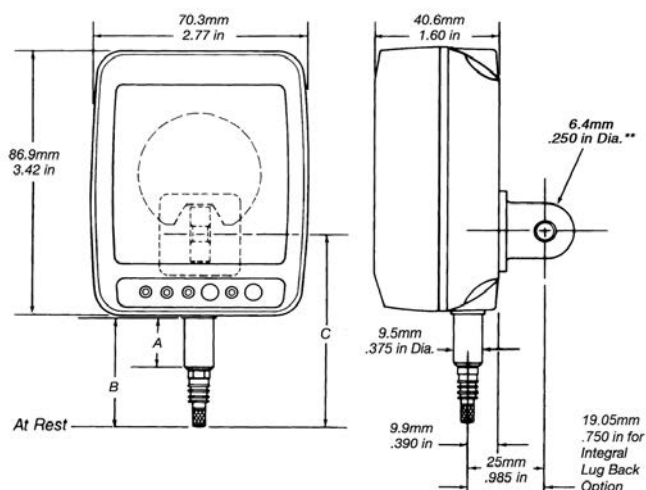
Maxum® III Digital Comparator

Features

- Features both digital display for accuracy and readability and unique fan analog display for trend and change
- User configurable in inch / metric units, normal / reverse sensing, resolution, analog scale, and tolerance setup & display
- Dynamic Capabilities: Min, Max, TIR, Hold, Reset
- Absolute Transducers - no overspeed errors. . . . no missed counts. . . . no missed readings
- Auto power down - provides extremely low battery consumption, assuring long life from readily available commercial batteries
- Data output - 3 formats - Maxum, serial, or digimatic
- Both integral and remote readout versions available
- Easily used on Snap Gages, Bore Gages, Comparator Stands, and Fixture Gages
- Special options available: setup mode or calibration lockout, remote external power, 4:5 ratio, 12 o'clock mounted integral transducer, integral vertical or horizontal lug back, 1.5, 2.0 or 3.0 inch stem length, and more. . . .
- IP54 protection
- Easy to select, order and operate!



Technical Data



For short range indicators — Standard Stem Length
($\pm 1.0 \text{ mm} / \pm .040''$ range indicators)

A	B	C
17 mm / .670''	36 mm / 1.42''	63.5 mm / 2.50''

For long range indicators — Standard Stem Length
($\pm 1.99 \text{ mm} / \pm .100''$ range indicators)

22 mm / .87''	47 mm / 1.84''	73 mm / 2.87''
----------------------	-----------------------	-----------------------

For both short and long range indicators —
Long Stem Lengths

38 mm / 1.5''	57 mm / 2.25''***	84.6 mm / 3.33''***
51 mm / 2''*	70 mm / 2.75''***	97.3 mm / 3.83''***
76 mm / 3''*	95 mm / 3.75''***	123 mm / 4.83''***

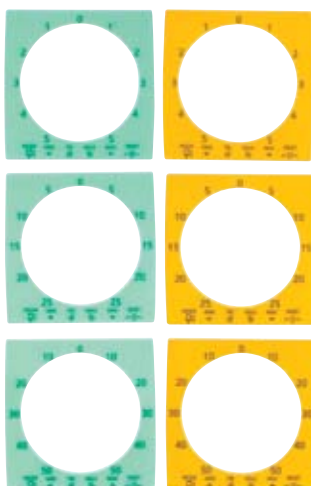
* Special Order Lengths

** Back supplied with remote indicating unit only

*** For long stem lengths add .220" to above lengths

Easily designed into your applications . . . full-size MaxumIII® Indicator and accessories, tracing templates or CAD files available on request.

Technical Data



Description	Short Range		Long Range	
Digital range				
Standard	±1.00 mm / ± .040"		±1.99 mm / ± .100"	
Reduced	±0.199 mm / ± .0199"		None	
Digital resolution	0.005 mm / .0005"		0.005 mm / .0005"	
Switchable	0.001 mm / .0001"		0.001 mm / .0001"	
	0.001 mm / .00005"			
	0.0005 mm / .00002"			
Analog range	5 or 25 or 50		25 or 50	
Analog resolution	0.01 mm / .001"		0.01 mm / .001"	
Switchable	0.005 mm / .0005"		0.005 mm / .0005"	
	0.001 mm / .0001"			
Total spindle travel	3.04 mm / .120"		6.35 mm / .250"	
Pre-Travel*	0.3 mm / .010"		1.06 mm / .020"	
Over-Travel*	0.8 mm / .030"		1.31 mm / .030"	
Accuracy				
Standard range	0.5% of Total Range		0.35% of Total Range	
Reduced range	0.25% of Total Range		N/A	
Repeatability	±One Least Digit		±One Least Digit	
Gaging force	3 - 4 oz / 85 - 112 grams, preloaded			
Operation temperature	10° to 55°C / 50° to 130°F			
Storage temperature	-20° to 65°C / -4° to 149°F			
IP Rating	54			
Weight	approx. 385 g / 13.6 oz.			
Battery life	approx. 4000 hours			
Power	3.0 volt Lithium battery (type CR123A or equivalent) Mahr Federal Order Number: 2239138			
Contact point	(Normally furnished — PT-223) for .375" dia. Stem, .250" long, radiused tip, 4-48 thread; (EPT-1037-W1) for 8 mm dia. stem, 6 mm long, radiused tip, M2.5 thread.			

* dependent on standard or reduced range selected. Standard range shown.

** Long Range Indicator Stem Length is .870" / 22 mm

Maxµm® III Digital Comparator

Technical Data

Maxµm® III Remote Indicating Unit*

No Digital Output Port
Digital Output -6 pin (D, E1)
Digital Output with Hold & Reset -10 pin (E2)

Order no.

2033001
2033011
2033021



Supplied with Lug back

* Maxµm® III Remote Indicating Units are NOT compatible with traditional Remote Transducer models EAS-XXXX.

Maxµm® III Digital Transducer^①

Digital Transducers

Short Range

Long Range

Range	±1.00 mm / ±.040"	±1.99 mm / ±.100"
Total Spindle Travel	3.04 mm / .120"	6.35 mm / .250"
Pre-Travel**	0.3 mm / .010"	0.5 mm / .020"
Over-Travel**	0.8 mm / .030"	
Gaging Force	3-4 oz / 85-112 grams, preloaded	
Operation Temperature	10° to 55°C/50° to 130°F	
Storage Temperature	-20° to 65°C/-4° to 149°F	
Contact Point	(Normally furnished — PT-223) for .375" dia. Stem, .250" long, radiused tip, 4-48 thread; (EPT-1037-W1) for 8 mm dia. Stem, 6 mm long, radiused tip, M2.5 thread 2033099 has PT-225 - .125" long.	

** dependent on standard or reduced range selected. Standard range shown.

Transducer Type	Stem Length	Stem Diameter	Order no. Short Range	Order no. Long Range
Canister	17 mm / .670"	.375"	2033091	2033092 ^②
Canister	38 mm / 1.50"	.375"	2033093	2033094
Canister	17 mm / .670"	8.0 mm	2033095	2033096 ^②
Canister	38 mm / 1.50"	8.0 mm	2033097	2033098
Pencil	Body Diameter = .375"		2033099	—

Note: Cable length 4ft

① Digital Transducer models 203309X require an adaptor cable for use with traditional DEI-XXXXXX Maxµm and Maxµm Plus Indicating Units.

② Long Range Indicator Stem Length is .870" / 22 mm.

See Adaptor Cable selections as follows:

Adaptor Cables

Order no.

For DEI with 6 pin split connector (Short Range)
For DEI with 8 pin round connector (Long Range)

2239080
2239081

- Maxµm® and Maxµm Plus Transducers are available as Replacement Parts. Refer to Part Price List for Part Numbers and Pricing.
- Maxµm III Remote Indicating units sold separately from Digital Transducer.
- Any Digital Transducer may be used with a Maxµm III Remote Indicating unit.
- For English or Metric Contact Points visit pages 5-22, 5-27 and 5-52 thru 5-53.
- For alternate cable lengths or extension cables - call Mahr Federal's Technical Assistance Group.
- For special indicator options - call Mahr Federal's Technical Assistance Group.



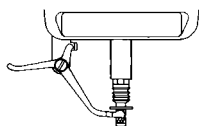
Pencil



Canister

Accessories

For Integral Maxµm® Indicators



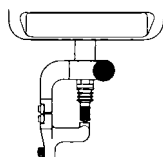
Lifting Levers¹⁾

Furnished with washer and longer contact point. Left Hand (shown)

Order no. **EAS-1903***

Right Hand (not shown)

Order no. **EAS-1904***



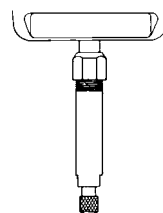
Right Angle Attachments

Lever Type (not shown)
(± .187" maximum range)

Order Model **EAT-1034-W1**

Spring Type (shown)
(± .060" maximum range)

Order Model **EAT-1035-W1**

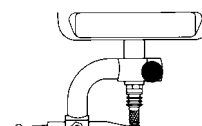


Auxiliary Plunger

3" long, .500" O.D.

Order no.

EAS-1912



Hole Attachments

Short Lever (shown)
(1.0" pivot to contact)

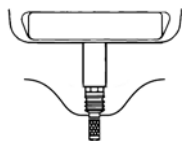
Order Model **EAT-1032-W1**

Long Lever (not shown)
(1.87" pivot to contact)

Order Model **EAT-1033-W1**

¹⁾ (For use on .670" stem length only,
DEI-XX1X1)

* Not for (±.100" / 1.99 mm



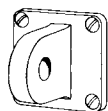
Ox-Bow Lifting Lever

Order no.

LR-40

* Other Accessories shown are for .375" stem models. Equivalent types are available for most Maxµm models having 8 mm stems. Adaptor Bushing (BU-197) may also allow 8mm stem indicators to be used with the above accessories. Full size Maxµm Indicator and accessories tracing templates are available on request.

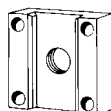
Backs for Maxµm® Indicators and Remote Indicating Units (Supplied with mounting screws)



Lug Back (.250" hole)

Mounts horizontally or vertically.

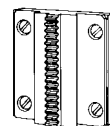
Order no. **EBK-1006**



Adjustable Slide Back

(.500" slot, 1/4-20 thread)

Order no. **EBK-1007**



Rack Back

Fits SE-33 (shown) and SE-73.
Adjustable Mounting Block (not shown).

Order no.

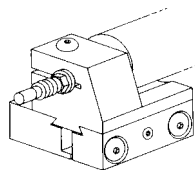
EBK-1005

Replacement Screws

2-56 x .218"

Order no.

ESW-1252

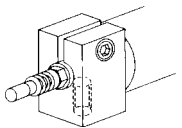


Rack Bracket (Shown mounted to SE-33
Adjustable Mounting Block.)

SE-33 and SE-73 Adjustable Mounting
Blocks are available separately. SE-33 is
supplied with hex-screw adjust. SE-73 is
supplied with knob adjust.

Order Model **EAD-1007-W1** (.375" I.D.)

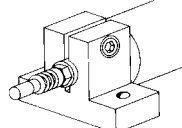
Order Model **EAD-1007-W2** (8 mm I.D.)



Square Bracket

(1/4-20 mounting thread)

Order Model **AAD-67**



T Bracket

Flange mounted.

Order Model **AAD-91**

* Mounting Brackets shown are for .375" stem models. Equivalent types are available for most Maxµm models having 8 mm stems. Adaptor Bushing (BU-197) may also allow 8 mm stem indicators to be used with the above accessories. Full size Maxµm Indicator and accessories tracing templates are available on request.

Other Maxµm Accessories

Order no.

Data Output Cables for Maxµm III

USB Cable (for MarCom / PC, length 2 m)

2121428

Serial Cable (6 pin to db9 pinF PC)

2239036

Serial Cable (10 pin to db9 pinF PC)

2239038

Digimatic Cable (6 pin to std 10 pin)

2239035

Digimatic Cable (10 pin to std 10 pin)

2239037

Send Data Footswitch used with Serial Cables above.

300-50

Transmitter (Maxµm III t, used w / FM 1 Receiver)

2121368

Mating Connectors — Maxµm III Models

For 6 pin data output type (D, E1)

ECN-1521

For 10 pin data output type (E2)

ECN-1689

Remote Switch Assembly (for Hold/Reset)

EAS-2867

Handswitch (10 pin data output model only)

EAS-2868

Footswitch (10 pin data output model only)

EAS-2868

Splashcover for Maxµm III

ECV-1307-W1

Battery for Maxµm III

2239138

Overlay Kit for Maxµm III

2239040

Access Key (6 pin)

2240545

Access Key (10 pin)

2240547

Millimes. Dial Comparators

OVERVIEW

Models				
Metric	1000 A	1000 B	1002	1003
				
Measuring range	± 100 µm	± 50 µm	± 25 µm	± 50 µm
Readings	1 µm	1 µm	0.5 µm	1 µm
Dial style	100-0-100	50-0-50	25-0-25	50-0-50
Accuracy*	Factory standard	Factory standard	Factory standard	DIN 879-1
G _{ges}	2 µm	2 µm	0.6 µm	1.2 µm
G ^e	1.5 µm	1.5 µm	0.5 µm	1 µm
f _u	1 µm	1 µm	0.3 µm	0.5 µm
G ^t	0.7 µm	0.7 µm	0.4 µm	0.7 µm
r	0.5 µm	0.5 µm	0.3 µm	0.5 µm
Order no. Standard	4338100	4339100	4335000	4334000
Order no. Waterproof 			4335005	4334005

Inch		1002 Z	1003 Z
Measuring range		± .0010"	± .0020"
Readings		.00002"	.00005"
Dial style		.001-0-.001	.002-0-.002
Accuracy*		Factory standard	Factory standard
G _{ges}		.000025"	.00006"
G ^e		.00002"	.00005"
f _u		.00001"	.000025"
G ^t		.000014"	.000035"
r		.00001"	.000025"
Order no. Standard		4335900	4334900
Order no. Waterproof 		4335905	4334905

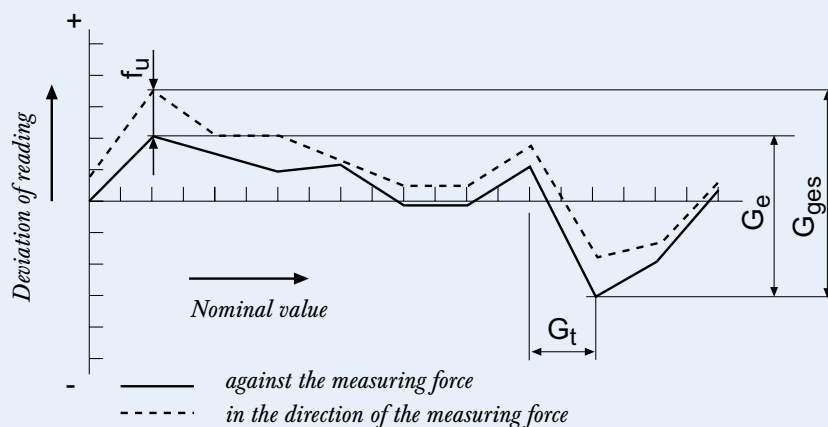
* Accuracy of 1004, 1010, 1010 Z, 1050 exceeds DIN 879-1

** Accuracy of 1110 N and 1150 N exceeds DIN 879-3

1003 XL	1004*	1010*	1050*	1110 N**	1150 N**
					
± 130 μm 2 μm	± 0.13 mm 5 μm	± 0.25 mm 0.01 mm	± 1.5 mm 0.05 mm	± 0.25 mm 0.01 mm	± 1.5 mm 0.05 mm
130-0-130	130-0-130	25-0-25	15-0-15		
DIN 879-1	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
2.4 μm	4 μm	8 μm	40 μm	12 μm	60 μm
2 μm	3.5 μm	7 μm	35 μm	6.5 μm	35 μm
1 μm	1 μm	2 μm	10 μm	3.5 μm	17 μm
1.4 μm	3 μm	4 μm	24 μm	5 μm	25 μm
1 μm	1 μm	2 μm	10 μm	0.5 μm	17 μm
4334001	4333000	4332000	4330000	4343100	4342100
4334006	4333005	4332005	4330005	4343105	4342105

1004 Z	1010 Z
± .0050"	± .0100"
.0001"	.0005"
.005-0-.005	.01-0-.01
Factory standard	Factory standard
.00012"	.0004"
.0001"	.00035"
.00003"	.0001"
.00005"	.00025"
.00003"	.0001"
4333900	4332900
4333905	4332905

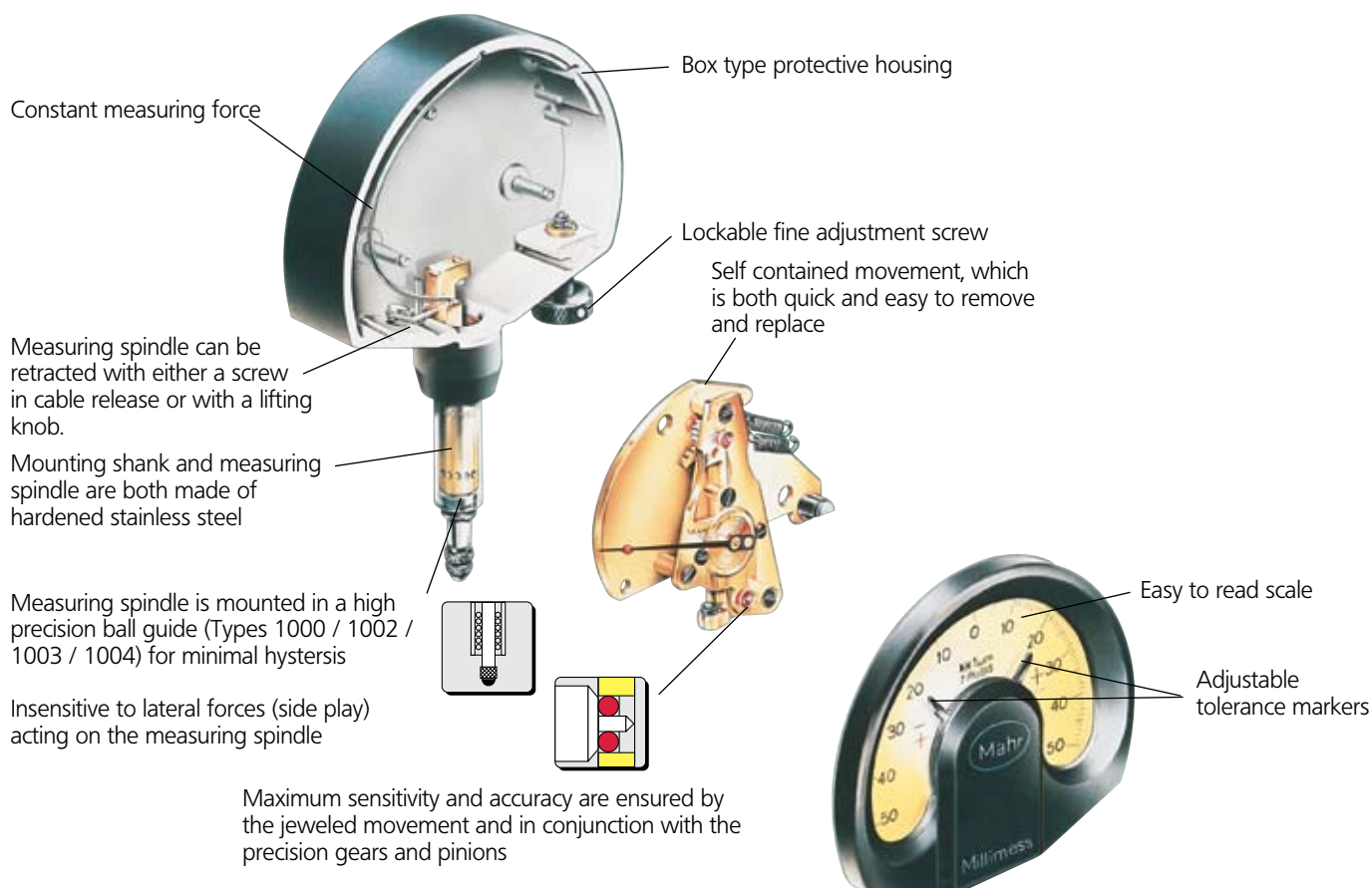
Metrological characteristics



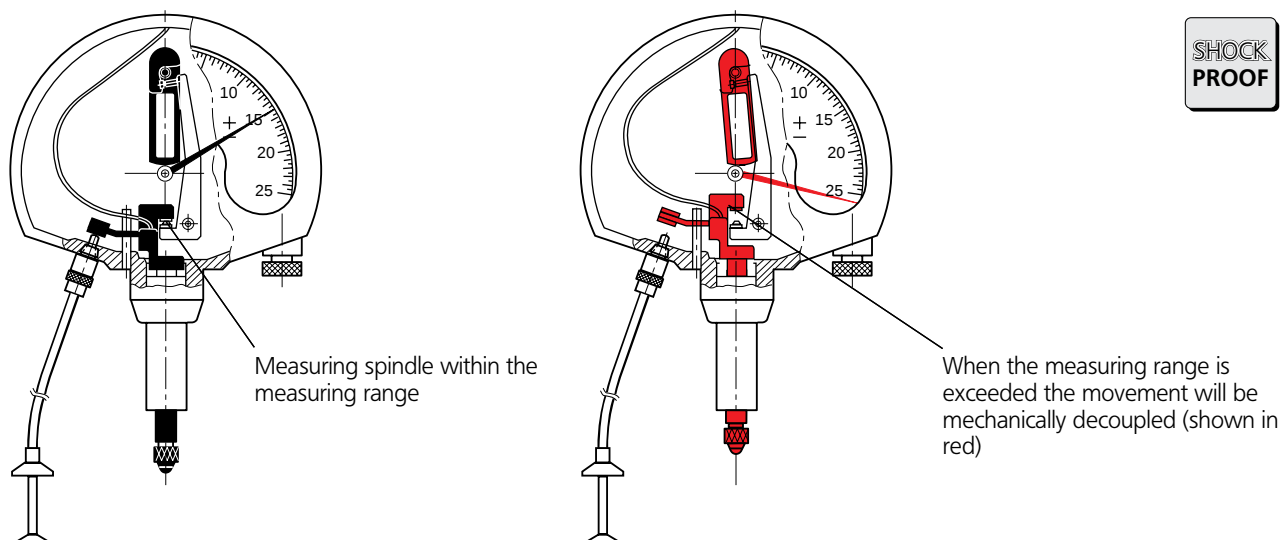
Millimess. Dial Comparators

OVERVIEW

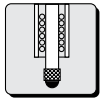
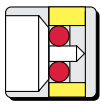
Design Features



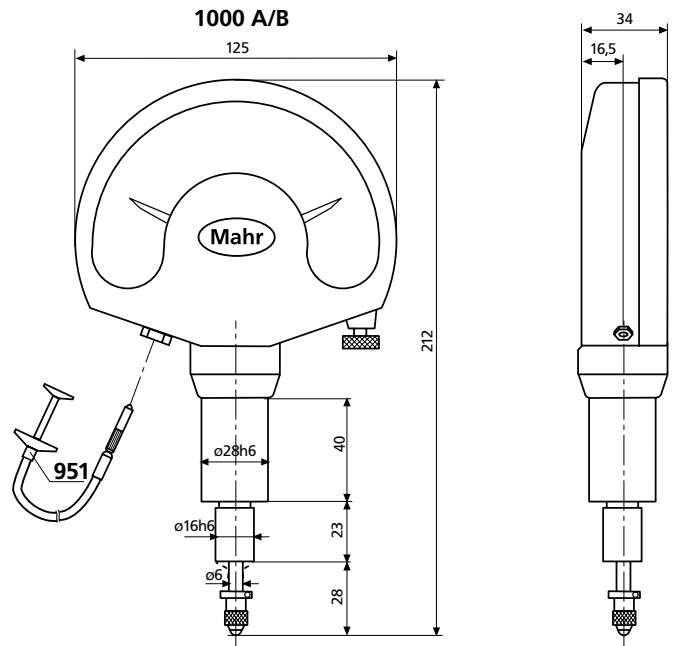
Shockproof Mechanism



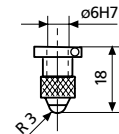
Mechanical Dial Comparator Large Type Millimess



1000 A



921



Features

- Large design
- Easy to read dial
- Shockproof movement
- Jeweled movement bearings
- Measuring spindle is mounted in a high-precision ball guide which precludes play
- Supplied with: Cable Release 951, case

Accessories

	Order no.	
Contact Points		
with Steel ball	921	4362001
with Ruby ball	921 R	4362002
Cable Release to raise the measuring spindle	951	4372000
Rubber Bellows to seal the open end of the measuring spindle		4338008
Additional Accessories		Page
Precision Stand	824 GT	8-15

Technical Data

	Measuring range	Reading	Overtravel	Measuring* force	Order no.
Metric					
1000 A	$\pm 120 \mu\text{m}$	$1 \mu\text{m}$	4 mm	$1.9 \pm 0.3 \text{ N}$	4338100
1000 B	$\pm 50 \mu\text{m}$	$1 \mu\text{m}$	4 mm	$1.9 \pm 0.3 \text{ N}$	4339100

* In the vertically mounted position

Mechanical Dial Comparators



1002



1003

DIN
879-1



1004



1003 XL

DIN
879-1



1003T**

DIN
879-1



Technical Data

	Measuring range	Readings	Overtravel	Measuring force	DIN 879-1	Order no. Standard*	Order no. Waterproof**
Metric							
1002	± 25 μm	0.5 μm	2.8 mm	1 N	●	4335000	4335005
1003	± 50 μm	1 μm	2.8 mm	1 N	●	4334000	4334005
1003	± 50 μm	1 μm	2.8 mm	0.3 N	●	4334075	
1003	± 50 μm	1 μm	2.8 mm	0.5 N	●	4334050	
1003	± 50 μm	1 μm	2.8 mm	0.7 N	●	4334071	
1003	± 50 μm	1 μm	2.8 mm	2 N	●	4334010	
1003	± 50 μm	1 μm	2.8 mm	3 N	●	4334011	
1003 XL	± 130 μm	2 μm	2.5 mm	1 N	●	4334001	
1004	± 0.13 mm	5 μm	2.5 mm	1 N		4333000	4333005
1010	± 0.25 mm	0.01 mm	2.5 mm	1 N		4332000	4332005
1050	± 1.5 mm	0.05 mm	0.3 mm	1 N		4330000	4330005
Inch							
1002 Z	± 0.0010"	0.00002"	0.11"	1 N	●	4335900	4335905
1003 Z	± 0.0020"	0.00005"	0.11"	1 N	●	4334900	4334905
1004 Z	± 0.0050"	0.0001"	0.10"	1 N		4333900	4333905
1010 Z	± 0.0100"	0.0005"	0.10"	1 N		4332900	4332905

* Incl. Plastic Case; Adapter 940 (for inch instruments only)

** IP54, Incl. Plastic Case, Splash Guard Cover 957, Rubber Bellows (only for 1002/1003/1004); Adapter 940 (for inch instruments only)

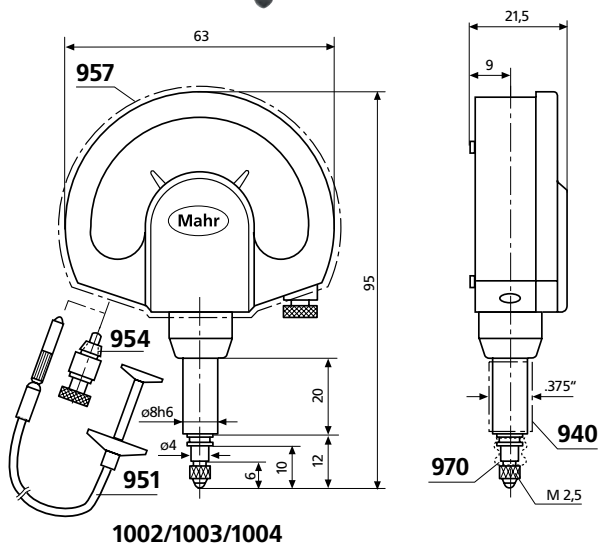
Mechanical Dial Comparators



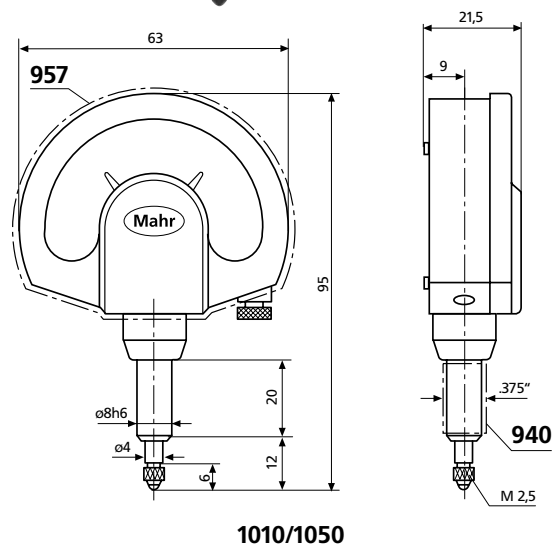
1010



1050



1002/1003/1004

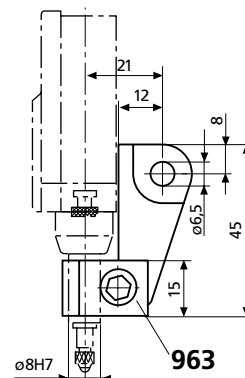


1010/1050

Accessories

	Order no.	
Adapter Bush for adapting mounting shank 8h6 mm to inch bore .375"	940	4310103
Cable Release to raise the measuring spindle	951	4372000
Lifting Knob for lifting the measuring spindle	954	4372030
Splash Guard Cover	957	4373030
Rubber Bellows for 1002/1003/1004 to seal the open end of the measuring spindle	970	4334786
Mounting Lug to mount on mounting shank 8h6 mm	963	4375002

Additional Accessories	Page	
Contact Points	901-913	5-58
Special Holder	941	5-59
Sensor Lever	943	5-59



Mechanical Dial Comparators with limit contacts



Features

- Can be applied for example as tolerance control or as a precision contactor in automatic control systems
- Design features are identical with Mechanical Dial Comparators, but with the addition of adjustable limit contacts; made from high-grade precious metal
- Limit contacts are particularly well protected against vibration and mechanical overload

Technical Data

		Measuring range	Readings	Overtravel	Measuring force	Order no. Standard*	Order no. Waterproof**
Metric							
1110 N	Elzentimess	± 0.25 mm	0.01 mm	2.3 mm	2 N	4343100	4343105
1150 N	Eldezimess	± 1.5 mm	0.05 mm	0.3 mm	1.5 N	4342100	4342105

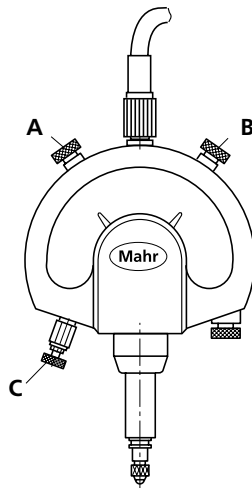
* Incl. Plastic Case, Setting Knob 953, Cable (1.2m)

** IP54, Incl. Plastic Case, Splash Guard Cover 957, Rubber Bellows (only for 1110)

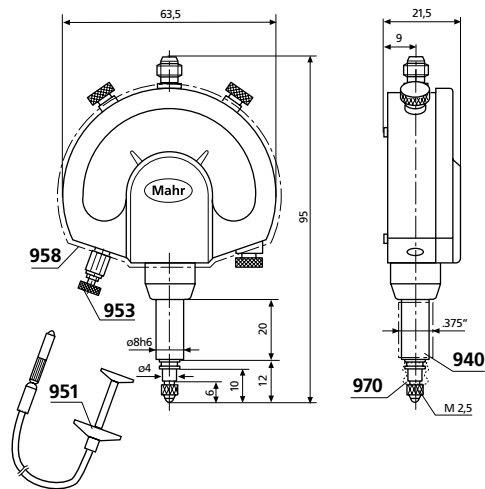
Mechanical Dial Comparators with limit contacts

Electrical Specifications

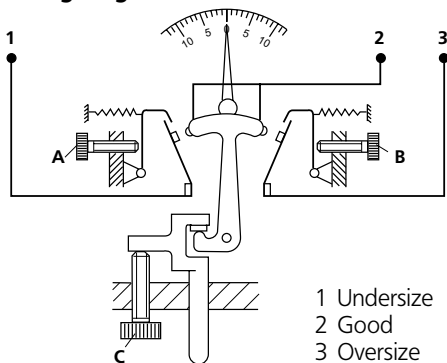
	Contact uncertainty with non-inductive load of 10 mA/24V	max. contact rating	max. contact voltage	max. contact current
1110 N	$\pm 1.5 \mu\text{m}$	240 mW	24 V	100 mA
1150 N	$\pm 7 \mu\text{m}$			



1110/1150



Wiring diagram



Accessories

	Order no.		Order no.
Connection Cable (1.2 m), axial	4345695	Splash Guard Cover	958 4373031
Connection Cable (5 m), axial	4345694	Rubber Bellows to seal the open end of the measuring spindle	970 4334786
Adapter Bush for adapting mounting shank 8h6 mm to inch bore .375"	940 4310103	Mounting Lug to mount on mounting shank 8h6 mm	963 4375002
Cable Release to raise the measuring spindle	951 4372000		
Setting Knob for setting the limit contacts without an additional setting standard	953 4372020	Additional Accessories	Page
Lifting Knob for lifting the measuring spindle	954 4372030	Contact Points	901-913 5-58
		Special Holder	941 5-59
		Sensor Lever	943 5-59

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