

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



The latest information on MARCATOR products can be found on our website:  
[www.mahr.com](http://www.mahr.com), WebCode 206

► | Dial indicators due to their versatility rank as the most frequently applied transducer, just like our MarCator series. Our mechanical dial indicators have precision gears and pinions for a maximum accuracy. They are also available in shock and waterproof versions. Our digital indicator range contains highly precise electronic measuring systems, which make measuring functions possible yet without the loss of an analog display. With the simple operation, the large display that can be read error free and the possibility of a rapid and simple transmission of all your measurement results thus meeting all requirements of a modern measuring instrument.

## ▶ | MarCator. Dial and Digital Indicators

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# MarCator ANSI/AGD Dial Indicators

## OVERVIEW

### Dial Indicators Selection Guide

Grad	Range per Rev.	Total Range	Dial Style w/o Rev	Dial Style with Rev	Order number	
					w/o Rev Counter	with Rev Counter
<b>Group 0</b>						
<i>.0001"</i>	<i>.004"</i>	<i>.010"</i>	0-2-0	-	A1/2Q	
<i>.0001"</i>	<i>.010"</i>	<i>.025"</i>	0-5-0	-	A2I	
<i>.0005"</i>	<i>.020"</i>	<i>.050"</i>	0-10-0	-	A3Q	
<i>.001"</i>	<i>.040"</i>	<i>.100"</i>	0-20-0	-	A6Q	
.002 mm	.100	.250	0-5-0	-	N1/2O	
.005 mm	.500	1.25	0-25-0	-	N3I	
.010 mm	1.00	2.50	0-50-0	-	N6I	
<b>Group 1</b>						
<i>.0001"</i>	<i>.010"</i>	<i>.025"</i>	0-5-0	0-10	12I	12I-RC
<i>.00025"</i>	<i>.010"</i>	<i>.025"</i>	0-5-0	0-10	12Q	12Q-RC
<i>.00025"</i>	<i>.020"</i>	<i>.050"</i>	0-10-0	0-20	B3K	B3K-RC
<i>.0005"</i>	<i>.020"</i>	<i>.050"</i>	0-10-0	0-20	B3Q	B3Q-RC
<i>.0005"</i>	<i>.030"</i>	<i>.075"</i>	0-15-0	0-30	B5M	B5M-RC
<i>.0005"</i>	<i>.040"</i>	<i>.100"</i>	0-20-0	0-40	B6K	B6K-RC
<i>.0005"</i>	<i>.050"</i>	<i>.125"</i>	0-25-0	0-50	B7I	B7I-RC
<i>.001"</i>	<i>.020"</i>	<i>.050"</i>	0-10-0	0-20	B3W	B3W-RC
<i>.001"</i>	<i>.040"</i>	<i>.100"</i>	0-20-0	0-40	B6Q	B6Q-RC
<i>.001"</i>	<i>.050"</i>	<i>.125"</i>	0-25-0	0-50	B7O	B7O-RC
<i>.001"</i>	<i>.100"</i>	<i>.250"</i>	0-50-0	0-100	B8I	B8I-RC
.002 mm	.200	.500	0-10-0	0-20	O1I	O1I-RC
.005 mm	.500	1.25	0-25-0	0-50	O3I	O3I-RC
.010 mm	1.00	2.50	0-50-0	0-100	O6I	O6I-RC
.025 mm	2.50	6.25	0-125-0	0-250	O8I	O8I-RC
<b>Group 2</b>						
<i>.00005"</i>	<i>.004"</i>	<i>.010"</i>	0-2-0	0-4	C1/2K	C1/2K-RC
<i>.0001"</i>	<i>.008"</i>	<i>.020"</i>	0-4-0	0-8	C1K	C1K-RC
<i>.0001"</i>	<i>.010"</i>	<i>.025"</i>	0-5-0	0-10	2015781	2014761
<i>.00025"</i>	<i>.010"</i>	<i>.025"</i>	0-5-0	0-10	2015782	2014791
<i>.00025"</i>	<i>.020"</i>	<i>.050"</i>	0-10-0	0-20	2015783	2014808
<i>.0005"</i>	<i>.020"</i>	<i>.050"</i>	0-10-0	0-20	2015784	2014810
<i>.0005"</i>	<i>.030"</i>	<i>.075"</i>	0-15-0	0-30	2015786	2014811
<i>.0005"</i>	<i>.040"</i>	<i>.100"</i>	0-20-0	0-40	2015787	2014812
<i>.0005"</i>	<i>.050"</i>	<i>.125"</i>	0-25-0	0-50	2015790	2014814
<i>.001"</i>	<i>.020"</i>	<i>.050"</i>	0-10-0	0-20	2015785	2014809
<i>.001"</i>	<i>.040"</i>	<i>.100"</i>	0-20-0	0-40	2015789	2014813
<i>.001"</i>	<i>.050"</i>	<i>.125"</i>	0-25-0	0-50	2015791	2014815
<i>.001"</i>	<i>.100"</i>	<i>.250"</i>	0-50-0	0-100	2015792	2011049
.001 mm	.100	.250	0-5-0	0-10	P1/2I	P1/2I-RC
.002 mm	.200	.500	0-10-0	0-20	P1I	P1I-RC
.005 mm	.500	1.25	0-25-0	0-50	2015793	2014817
.010 mm	1.00	2.50	0-50-0	0-100	2015794	2014818
.020 mm	2.00	5.00	0-100-0	0-200	2015795	2014819
<b>1 Rev</b>						
<i>.0005"</i>	-	<i>.040"</i>	-	-	2014793	
<i>.001"</i>	-	<i>.080"</i>	-	-	2014792	
.010 mm	-	1.00	-	-	2014795	
.020 mm	-	2.00	-	-	2014794	
.010 mm	-	1.00	-	-	2014797	
.020 mm	-	2.00	-	-	2014796	

Grad	Range per Rev.	Total Range	Dial Style w/o Rev	Dial Style with Rev	Order number	
					w/o Rev Counter	with Rev Counter
<b>Group 3</b>						
.0001"	.008"	.020"	0-4-0	0-8	D1K	D1K-RC
.0001"	.010"	.025"	0-5-0	0-10	32I	32I-RC
.00025"	.010"	.025"	0-5-0	0-10	32Q	32Q-RC
.00025"	.020"	.050"	0-10-0	0-20	D3K	D3K-RC
.00025"	.030"	.075"	0-15-0	0-30	D5G	D5G-RC
.0005"	.020"	.050"	0-10-0	0-20	D3Q	D3Q-RC
.0005"	.030"	.075"	0-15-0	0-30	D5M	D5M-RC
.0005"	.040"	.100"	0-20-0	0-40	D6K	D6K-RC
.0005"	.050"	.125"	0-25-0	0-50	D7I	D7I-RC
.001"	.020"	.050"	0-10-0	0-20	D3W	D3W-RC
.001"	.040"	.100"	0-20-0	0-40	D6Q	D6Q-RC
.001"	.050"	.125"	0-25-0	0-50	D7O	D7O-RC
.001"	.100"	.250"	0-50-0	0-100	D8I	D8I-RC
.002 mm	.200	.500	0-10-0	0-20	Q1I	Q1I-RC
.005 mm	.500	1.25	0-25-0	0-50	Q3I	Q3I-RC
.010 mm	1.00	2.50	0-50-0	0-100	Q6I	Q6I-RC
.020 mm	2.00	5.00	0-100-0	0-200	Q8I	Q8I-RC
<b>Group 4</b>						
.0001"	.008"	.020"	0-4-0	0-8	E1K	E1K-RC
.0001"	.010"	.025"	0-5-0	0-10	42I	42I-RC
.00025"	.020"	.050"	0-10-0	0-20	E3K	E3K-RC
.00025"	.030"	.075"	0-15-0	0-30	E5G	E5G-RC
.0005"	.020"	.050"	0-10-0	0-20	E3Q	E3Q-RC
.0005"	.030"	.075"	0-15-0	0-30	E5M	E5M-RC
.0005"	.050"	.125"	0-25-0	0-50	E7I	E7I-RC
.001"	.020"	.050"	0-10-0	0-20	E3W	E3W-RC
.001"	.050"	.125"	0-25-0	0-50	E7O	E7O-RC
.001"	.100"	.250"	0-50-0	0-100	E8I	E8I-RC
.002 mm	.200	.500	0-10-0	0-20	R1I	R1I-RC
.005 mm	.500	1.25	0-25-0	0-50	R3I	R3I-RC
.010 mm	1.00	2.50	0-50-0	0-100	R6I	R6I-RC
.020 mm	2.00	5.00	0-100-0	0-200	R8I	R8I-RC
<b>Long Range</b>						
.0001"	.010"	.500"	–	0-10		42IQ
.001"	.100"	.500"	–	0-100		2014699
.001"	.100"	1.00"	–	0-100		2014698
.001"	.100"	1.00"	–	0-100		D8IS
.001"	.100"	2.00"	–	0-100		D8IT
.001"	.100"	3.00"	–	0-100		E8IU
.010"	1.00"	1.00"	–	0-1000		2014816
.010 mm	1.00	25.00	–	0-100		SP6IS
.010 mm	1.00	25.00	–	0-100		SQ6IS
.025 mm	2.50	50.00	–	0-25		Q8IT
.025 mm	2.50	75.00	–	0-25		R8IU

## Dial Indicators per ANSI/AGD

### Features

#### You get more with Mahr Federal 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, removable movement . . . saves 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, hobbled gears for more sensitive response, superior indicator accuracy with minimal hysteresis error
- Soft-tinted dials (green, inch, or yellow, metric) minimize eye strain
- Special steel alloy, balanced dial hand affords no-shift, precise reading
- Controlled rack and pinion mesh eliminates slope for precise response and reading
- Smooth-adjusting bezels for easy setup
- Positive pressure pull-back spring . . . 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 specialize 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. These are important because they greatly increase the speed, efficiency and convenience of obtaining desired results. A wide selection of Mahr Federal dial indicator accessories are shown in this catalog.
4. Options. You 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 Federal:

**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 Federal 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

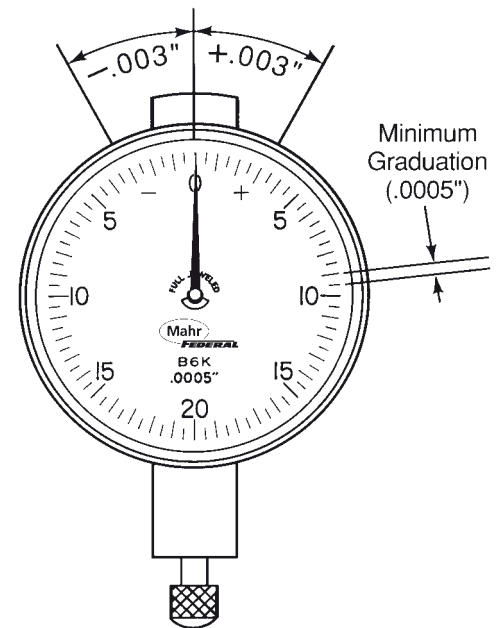
Since modern manufacturing involves a wide range of tolerances, choosing a dial indicator might be difficult, especially since the number of indicators available is so vast. The following guidelines were prepared to assist you in selecting the right model for your application.

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 Federal, 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 Federal'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 chose, 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.

*If your tolerance spread is .006" ( $\pm .003$ "), then, the most suitable minimum graduation value is .0005".*

TOLERANCE IS .006"



*Your tolerance spread is .006". You have chosen an ANSI/AGD Group 2 (Mahr Federal "C" Size) dial with a minimum graduation value of .0005". Mahr Federal 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 Federal. Chances are we can supply the range you need.*

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

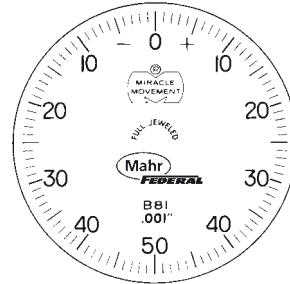
## Dial Indicators per ANSI/AGD

### 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 O.D. snap and bench thickness gages.

**Note:** If Revolution Counter models are ordered, counter dial numbered counterclockwise.

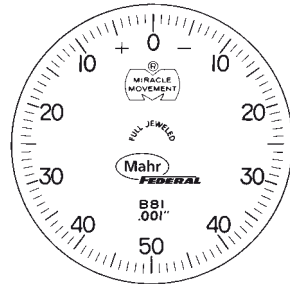


#### 2. Balanced (+) on left.

Indicates decreasing values when contact is depressed as in comparison bore\* and depth gages.

**Note:** With Revolution Counter models, counter dial numbered clockwise.

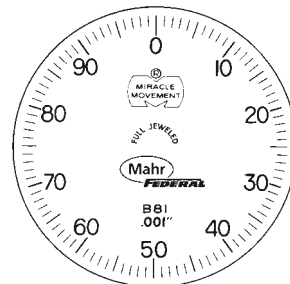
\* Will vary as dictated by motion transfer design.



#### 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.

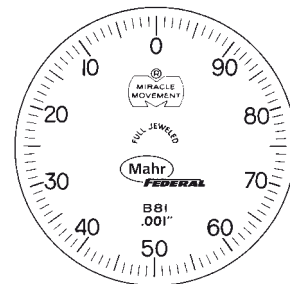
**Note:** With Revolution Counter models, counter dial numbered counterclockwise.



#### 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 Indicators per ANSI/AGD Group 0 - Mahr Federal Series A and N

Where available space prohibits the use of a larger dial indicator.



### Technical Data

#### Mahr Federal Series A (inch)

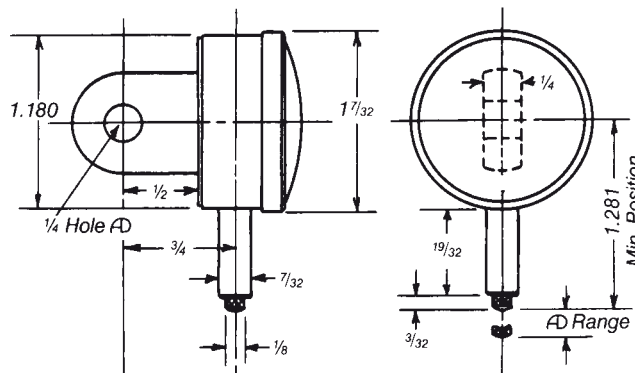
Dial: approx. 1.250" dia. with soft-green tint

Measuring range	Graduation value	Dial style	Range per revolution	Accuracy	Order no.
.010"	.0001"	0-2-0	.004"	± .0001"	A1/2Q
.025"	.0001"	0-5-0	.010"	± .0001"	A2I
.050"	.0005"	0-10-0	.020"	± .0005"	A3Q
.100"	.001"	0-20-0	.040"	± .001"	A6Q

#### Mahr Federal Series N (Metric – mm)

Dial: approx. 32 mm dia. with soft-yellow tint

Measuring range	Graduation value	Dial style	Range per revolution	Accuracy	Order no.
0.250	0.002	0-5-0	0.100	± 0.002 mm	N1/2Q
1.250	0.005	0-25-0	0.500	± 0.005 mm	N3I
2.500	0.010	0-50-0	1.00	± 0.010 mm	N6I

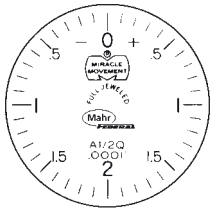


Backs can be rotated 90° and 180°



## Dial Indicators per ANSI/AGD Group 0 - Mahr Federal Series A and N

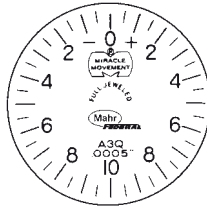
### Mahr Federal Series A



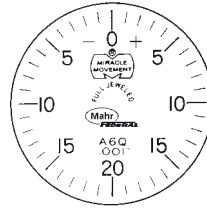
A1/2Q



A2I



A3Q

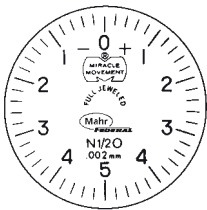


A6Q

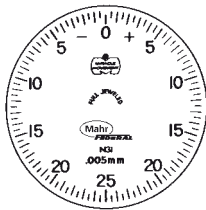
- Normally furnished: balanced dial with + on right; centered vertical lug back; regular contact point, .09" radiused, .093" long.

- Optional dials: balanced with + on left; continuous clockwise; continuous counter-clockwise. Order by part number and specify dial style desired.

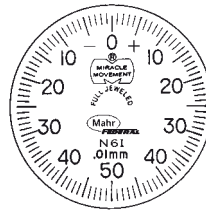
### Mahr Federal Series N



N1/2O



N3I

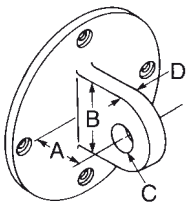


N6I

- For other dial styles or special requirements, call Mahr Federal.

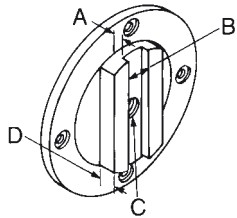
### Backs for ANSI Group 0 - Series A and N

Vertical (Centered) Lug Back is normally furnished and included in price of Indicator. Back can be rotated 90° for horizontal lug mounting.



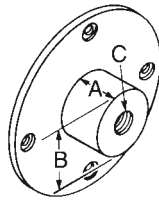
Vertical Lug (Centered)  
BK-37

A B C D  
1/2 11/16 1/4 1/4



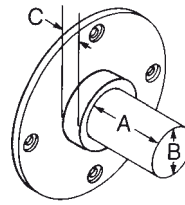
Adjustable  
BK-45

A B C D  
1/8 3/8 8-32 1/4



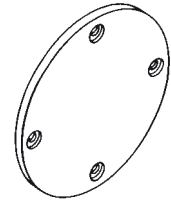
Screw Type  
BK-88

A B C  
1/2 11/16 1/4-28



Post  
BK-38

A B C  
5/16 7/32 1/16



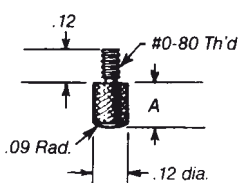
Flat  
BK-32

Split Bushing, BU-112 Fits Stem (.218" I.D. x .375" O.D.). .500" long.



### Points for ANSI Group 0 - Series A and N

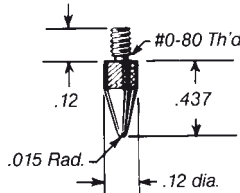
Regular PT-43 normally furnished



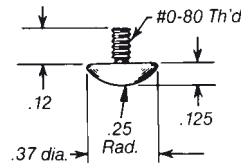
Dim. A Style

3/32" PT-43  
1/4" PT-204  
3/8" PT-205  
1/2" PT-207  
5/8" PT-208  
3/4" PT-209  
7/8" PT-210  
1" PT-211

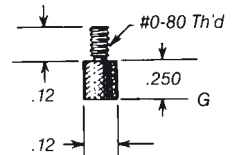
Taper PT-119



Button PT-118



Flat AL-61



## Dial Indicators per ANSI/AGD Group 1 - Mahr Federal Series B and O



### Technical Data

#### Mahr Federal Series B (inch)

Dial: approx. 1.750" dia. with soft-green tint

Measuring range	Graduation value	Dial style w/o Rev Counter	Dial style with Rev Counter	Range per revolution	Accuracy	Order no. w/o Rev Counter	Order no. with Rev Counter
.025"	.0001"	0-5-0	0-10	.010"	±.0001"	12I	12I-RC
.025"	.00025"	0-5-0	0-10	.010"	±.00025"	12Q	12Q-RC
.050"	.00025"	0-10-0	0-20	.020"	±.00025"	B3K	B3K-RC
.050"	.0005"	0-10-0	0-20	.020"	±.0005"	B3Q	B3Q-RC
.075"	.0005"	0-15-0	0-30	.030"	±.0005"	B5M	B5M-RC
.100"	.0005"	0-20-0	0-40	.040"	±.0005"	B6K	B6K-RC
.125"	.0005"	0-25-0	0-50	.050"	±.0005"	B7I	B7I-RC
.050"	.001"	0-10-0	0-20	.020"	±.001"	B3W	B3W-RC
.100"	.001"	0-20-0	0-40	.040"	±.001"	B6Q	B6Q-RC
.125"	.001"	0-25-0	0-50	.050"	±.001"	B7O	B7O-RC
.250"	.001"	0-50-0	0-100	.100"	±.001"	B8I	B8I-RC

#### Mahr Federal Series O (Metric, mm)

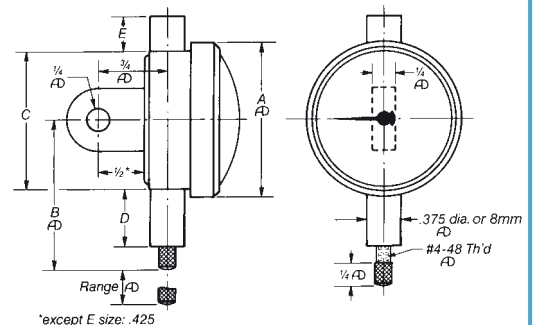
Dial: approx. 45 mm dia. with yellow tint

Measuring range	Graduation value	Dial style w/o Rev Counter	Dial style with Rev Counter	Range per revolution	Accuracy	Order no. w/o Rev Counter	Order no. with Rev Counter
0.500	0.002	0-10-0	0-20	0.200	± 0.004	O1I	O1I-RC
1.250	0.005	0-25-0	0-50	0.500	± 0.005	O3I	O3I-RC
2.500	0.010	0-50-0	0-100	1.000	± 0.010	O6I	O6I-RC
6.250	0.025	0-125-0	0-250	2.500	± 0.025	O8I	O8I-RC

### Dimensions

ANSI / AGD Group	Mahr Federal Styles	A mm/inch	B mm/inch	C mm/inch	D mm/inch	E mm/inch
1	B/O	42.86/ 1.688"	41.28/ 1.625"	38.10/ 1.5"	15.88/ .625"	8.73/ .344"
2	C/P	57.15/ 2.25"	50.80/ 2"	52.39/ 2.063"	18.26/ .719"	8.73/ .344"

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.



## Dial Indicators per ANSI/AGD Group 2 - Mahr Federal Series C and P



### Ordering Information

In addition to the information provided below, see pages 5-4 & 5-5 for complete instructions on ordering your dial indicators and accessories.

[www.mahr.com](http://www.mahr.com)

### Technical Data

#### Mahr Federal Series C (inch)

Dial: approx. 2.250" dia. with soft-green tint

Measuring range	Graduation value	Dial style w/o Rev Counter	Dial style with Rev Counter	Range per revolution	Accuracy	Order no. w/o Rev Counter	Order no. with Rev Counter	OLD Order no.
.020"	.0001"	0-4-0	0-8	.008"	± .0001"	C1K	C1K-RC	C1K
.025"	.0001"	0-5-0	0-10	.010"	± .0001"	2015781	2014761	C2I/22I
.025"	.00025"	0-5-0	0-10	.010"	± .00025"	2015782	2014791	C2Q/22Q
.050"	.00025"	0-10-0	0-20	.020"	± .00025"	2015783	2014808	C3K/23K
.050"	.0005"	0-10-0	0-20	.020"	± .0005"	2015784	2014810	C3Q/23Q
.075"	.0005"	0-15-0	0-30	.030"	± .0005"	2015786	2014811	C5M/25M
.100"	.0005"	0-20-0	0-40	.040"	± .0005"	2015787	2014812	C6K/26K
.125"	.0005"	0-25-0	0-50	.050"	± .0005"	2015790	2014814	C7I/27I
.050"	.001"	0-10-0	0-20	.020"	± .001"	2015785	2014809	C3W/23W
.100"	.001"	0-20-0	0-40	.040"	± .001"	2015789	2014813	C6Q/26Q
.125"	.001"	0-25-0	0-50	.050"	± .001"	2015791	2014815	C7O/27O
.250"	.001"	0-50-0	0-100	.100"	± .001"	2015792	2011049	C8I/28IN
<b>Super Sensitive Type (Inch)</b>								
.010"	.00005"	0-2-0	0-4	.004"	± .0001"	C1/2K	C1/2K-RC	C1/2K

#### Mahr Federal Series P (Metric, mm)

Dial: approx. 57 mm dia. with soft-yellow tint

Measuring range	Graduation value	Dial style w/o Rev Counter	Dial style with Rev Counter	Range per revolution	Accuracy	Order no. w/o Rev Counter	Order no. with Rev Counter	OLD Order no.
0.500	0.002	0-10-0	0-20	0.200	± 0.004	P1I	P1I-RC	P1I/21IN
1.250	0.005	0-25-0	0-50	0.500	± 0.005	2015793	2014817	P3I/23I
2.500	0.010	0-50-0	0-100	1.000	± 0.010	2015794	2014818	P6I/26I
5.000	0.020	0-100-0	0-200	2.000	± 0.020	2015795	2014819	P8I/28IM
<b>Super Sensitive Type (Metric – mm)</b>								
0.250	0.001	0-5-0	0-10	0.100	± 0.002	P1/2I	P1/2I-RC	P1/2I

These indicators are normally furnished with continuous dial (with R.C.) or + on right balance dial (w/o R.C.), lug back, .18" by .250" long contact and tolerance hands\*.

\* tolerance hands not supplied on C1K, C1/2K, P1I & P1/2I.

### Accessories

- Contact Points - see page 5-27 and 5-22
- Backs and Mounting Brackets - see pages 5-21 and 5-22
- Accessories - see pages 5-23 and 5-24

## Dial Indicators per ANSI/AGD Group 3 - Mahr Federal Series D and Q

Recommended for larger gages and greater visibility.



### Ordering Information

In addition to the information provided below, see pages 5-4 & 5-5 for complete instructions on ordering your dial indicators and accessories.

[www.mahr.com](http://www.mahr.com)

### Technical Data

#### Mahr Federal Series D (inch)

Dial: approx. 2.750" dia. with soft-green tint

Measuring range	Graduation value	Dial style w/o Rev Counter	Dial style with Rev Counter	Range per revolution	Accuracy	Order no. w/o Rev Counter	Order no. with Rev Counter
.020"	.0001"	0-4-0	0-8	.008"	±.0001"	D1K	D1K-RC
.025"	.0001"	0-5-0	0-10	.010"	±.0001"	32I	32I-RC
.025"	.00025"	0-5-0	0-10	.010"	±.00025"	32Q	32Q-RC
.050"	.00025"	0-10-0	0-20	.020"	±.00025"	D3K	D3K-RC
.075"	.00025"	0-15-0	0-30	.030"	±.00025"	D5G	D5G-RC
.050"	.0005"	0-10-0	0-20	.020"	±.0005"	D3Q	D3Q-RC
.075"	.0005"	0-15-0	0-30	.030"	±.0005"	D5M	D5M-RC
.100"	.0005"	0-20-0	0-40	.040"	±.0005"	D6K	D6K-RC
.125"	.0005"	0-25-0	0-50	.050"	±.0005"	D7I	D7I-RC
.050"	.001"	0-10-0	0-20	.020"	±.001"	D3W	D3W-RC
.100"	.001"	0-20-0	0-40	.040"	±.001"	D6Q	D6Q-RC
.125"	.001"	0-25-0	0-50	.050"	±.001"	D7O	D7O-RC
.250"	.001"	0-50-0	0-100	.100"	±.001"	D8I	D8I-RC

#### Mahr Federal Series Q (Metric – mm)

Dial: approx. 70 mm dia. with soft-yellow tint

Measuring range	Graduation value	Dial style w/o Rev Counter	Dial style with Rev Counter	Range per revolution	Accuracy	Order no. w/o Rev Counter	Order no. with Rev Counter
0.500	0.002	0-10-0	0-20	0.200	± 0.004	Q1I	Q1I-RC
1.250	0.005	0-25-0	0-50	0.500	± 0.005	Q3I	Q3I-RC
2.500	0.010	0-50-0	0-100	1.000	± 0.020	Q6I	Q6I-RC
5.000	0.020	0-100-0	0-200	2.000	± 0.020	Q8I	Q8I-RC

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.

### Accessories

- Contact Points - see pages 5-27 and 5-22
- Backs and Mounting Brackets - see pages 5-21 and 5-22
- Accessories - see pages 5-23 and 5-24

## Dial Indicators per ANSI/AGD Group 4 - Mahr Federal Series E and R



### Technical Data

#### Mahr Federal Series E (inch)

Dial: approx. 3.625" dia. with soft-green tint

Measuring range	Graduation value	Dial style w/o Rev Counter	Dial style with Rev Counter	Range per revolution	Accuracy	Order no. w/o Rev Counter	Order no. with Rev Counter
.020"	.0001"	0-4-0	0-8	.008"	± .0001"	E1K	E1K-RC
.025"	.0001"	0-5-0	0-10	.010"	± .0001"	42I	42I-RC
.050"	.00025"	0-10-0	0-20	.020"	± .00025"	E3K	E3K-RC
.075"	.00025"	0-15-0	0-30	.030"	± .00025"	E5G	E5G-RC
.050"	.0005"	0-10-0	0-20	.020"	± .0005"	E3Q	E3Q-RC
.075"	.0005"	0-15-0	0-30	.030"	± .0005"	E5M	E5M-RC
.125"	.0005"	0-25-0	0-50	.050"	± .0005"	E7I	E7I-RC
.050"	.001"	0-10-0	0-20	.020"	± .001"	E3W	E3W-RC
.125"	.001"	0-25-0	0-50	.050"	± .001"	E7O	E7O-RC
.250"	.001"	0-50-0	0-100	.100"	± .001"	E8I	E8I-RC

#### Mahr Federal Series R (Metric, mm)

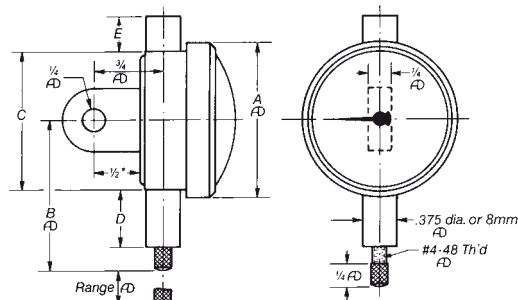
Dial: approx. 92 mm dia. with yellow tint

Measuring range	Graduation value	Dial style w/o Rev Counter	Dial style with Rev Counter	Range per revolution	Accuracy	Order no. w/o Rev Counter	Order no. with Rev Counter
0.500	0.002	0-10-0	0-20	0.200	± 0.004	R1I	R1I-RC
1.250	0.005	0-25-0	0-50	0.500	± 0.005	R3I	R3I-RC
2.500	0.010	0-50-0	0-100	1.000	± 0.010	R6I	R6I-RC
5.000	0.020	0-100-0	0-200	2.000	± 0.020	R8I	R8I-RC

### Dimensions

ANSI / AGD Group	Mahr Federal Styles	A mm/inch	B mm/inch	C mm/inch	D mm/inch	E mm/inch
3	D/Q	69.85/ 2.75"	53.98/ 2.125"	65.09/ 2.563"	15.88/ .625"	8.73/ .344"
4	E/R	92.08/ 3.625"	65.09/ 2.563"	87.31/ 3.438"	15.88/ .625"	8.73/ .344"

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.



## Easy Reading, Single Revolution Dial Indicator



### Easy reading

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

Measuring range	Graduation value	Stem diameter	Model no.	Order no.
2 mm	0.02 mm	.375"	P1RN-200	2014794
1 mm	0.01 mm	.375"	P1RN-100	2014795
2 mm	0.02 mm	8 mm	M1RN-200	2014796
1 mm	0.01 mm	8 mm	M1RN-100	2014797
.080"	.001"	.375"	C1RN-80	2014792
.040"	.0005"	.375"	C1RN-40	2014793

## High Performance, Dial Indicators per ANSI/AGD Group 2

### Features

- A well thought-out design, the use of high-quality components and materials as well as the precision engineered mechanism guarantee the outstanding quality of these indicators.
- 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

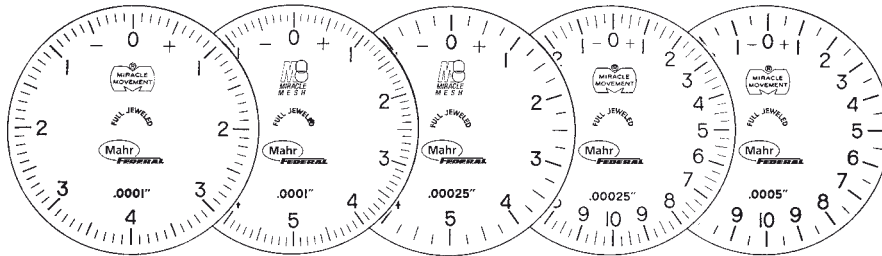
Measuring Range	Graduation value	Stem diameter	Dial style	Range per Rev.	Rev. Counter	Order no.
.250"	.001"	.375"	0-100	.100"	Standard	2016005
.500"	.001"	.375"	0-100	.100"	Speed read	2016004
1.00"	.001"	.375"	0-100	.100"	Speed read	2016002

### Accessories

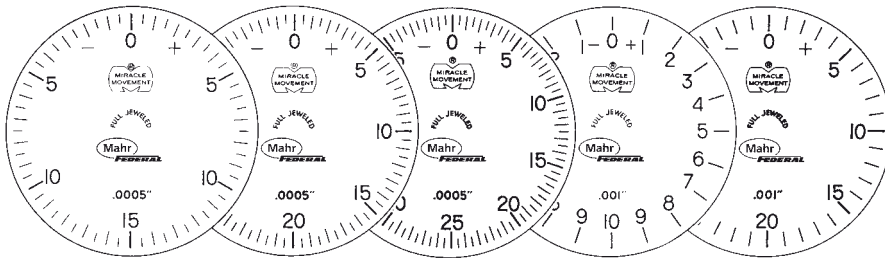
- Contact Points - see page 5-27

## Dial Styles for ANSI/AGD Groups 1 thru 4 Balanced Dials

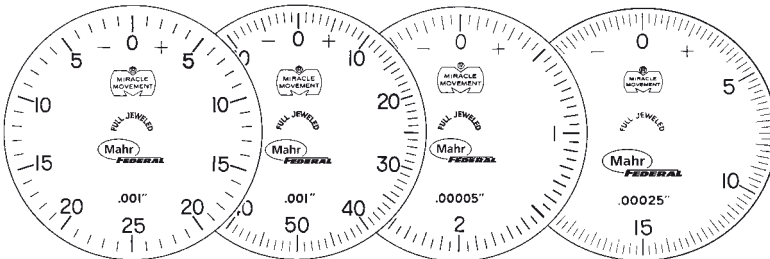
### Mahr Federal Series B thru E



<b>C1K</b>	<b>12I</b>	<b>12Q</b>	<b>B3K</b>	<b>B3Q</b>
<b>D1K</b>	<b>2015781</b>	<b>2015782</b>	<b>2015783</b>	<b>2015784</b>
<b>E1K</b>	<b>32I</b>	<b>32Q</b>	<b>D3K</b>	<b>D3Q</b>
	<b>42I</b>		<b>E3K</b>	<b>E3Q</b>

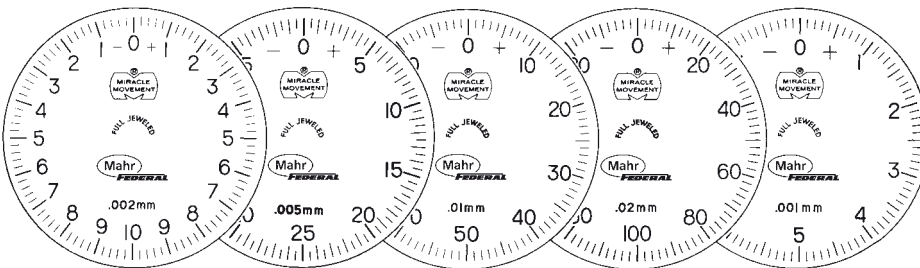


<b>B5M</b>	<b>B6K</b>	<b>B7I</b>	<b>B3W</b>	<b>B6Q</b>
<b>2015786</b>	<b>2015787</b>	<b>2015790</b>	<b>2015785</b>	<b>2015789</b>
<b>D5M</b>	<b>D6K</b>	<b>D7I</b>	<b>D3W</b>	<b>D6Q</b>
<b>E5M</b>		<b>E7I</b>	<b>E3W</b>	



<b>B7O</b>	<b>B8I</b>	<b>C1/2K</b>	<b>D5G</b>
<b>2015791</b>	<b>2015792</b>		<b>E5G</b>
<b>D7O</b>	<b>D8I</b>		
<b>E7O</b>	<b>E8I</b>		

### Mahr Federal Series O thru R



<b>O1I</b>	<b>O3I</b>	<b>O6I</b>	<b>Q8I</b>	<b>P1/2I</b>
<b>P1I</b>	<b>2015793</b>	<b>2015794</b>	<b>2015795</b>	
<b>Q1I</b>	<b>Q3I</b>	<b>Q6I</b>	<b>R8I</b>	
<b>R1I</b>	<b>R3I</b>	<b>R6I</b>		

Indicator O8I is not illustrated: Dial style is 0-125-0, minimum graduation is .025 mm

### Features

- Normally furnished: dial as illustrated; centered vertical lug back; regular contact point, .18" radiused, 1/4" long.
- Optional Dials: balanced dial with + on left; continuous clockwise; continuous counter-clockwise. (Order by part number and specify dial style desired.)
- Revolution Counters available, please specify when ordering, Includes continuous dial unless otherwise specified.
- For other dial styles or special requirements - call Mahr Federal.
- Indicator dimensions are located on pages containing individual ANSI/AGD descriptions.

### Accessories

- Contact Points - see page 5-27 and 5-22
- Backs and Mounting Brackets - see pages 5-21 and 5-22
- Accessories - see pages 5-23 and 5-24

### Ordering Information

In addition to the information provided above, see pages 5-4 & 5-5 for complete instructions on ordering your dial indicators and accessories.

www.mahr.com

## Long Range and Extra Long Range Indicators



### Technical Data

#### Long Range/Extra Long Range (Inch)

Dial: soft-green tint

Measuring range	Graduation value	Dial style	Range per revolution	Accuracy	ANSI/AGD	Model no.	Order no.
.500"	.0001"	0-10	.010"	.0001"	4	42IQ	42IQ **
.500"	.001"	0-100	.100"	.001"	2	28IQN	2014699
1.000"	.001"	0-100	.100"	.001"	2	28ISN	2014698
1.000"	.001"	0-100	.100"	.001"	3	D8IS	D8IS
1.000"	.010"	0-1000	1.000"	.010"	2	29I	2014816
<b>Extra Long Range</b>							
2.000"	.001"	0-100	.100"	.001"****	3	D8IT	
3.000"	.001"	0-100	.100"	.001"****	4	E8IU	

- \* for first 2-1/2 revolutions only.
- \*\* hysteresis = .0003" for full range
- \*\*\* for first 1 inch of travel.

#### Long Range/Extra Long Range (Metric)

Dial: yellow tint

Measuring range	Graduation value	Dial style	Range per revolution	Accuracy	ANSI/AGD	Model no.	Order no.
25.000	0.010	0-100	1.000	0.020	2	SP6IS	
25.000	0.010	0-100	1.000	0.020	3	SQ6IS	
<b>Extra Long Range</b>							
50.000	0.025	0-25	2.500	0.025****	3	Q8IT	
75.000	0.025	0-25	2.500	0.025****	4	R8IU	

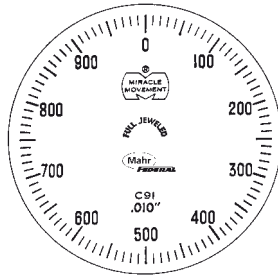
- \*\*\*\* for first 25 mm of travel.



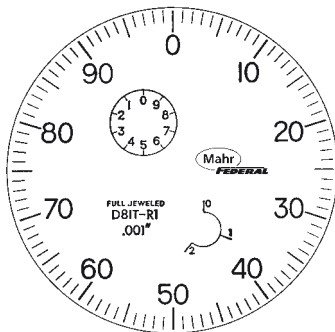
## Dial Styles for Long Range and Extra Long Range Indicators



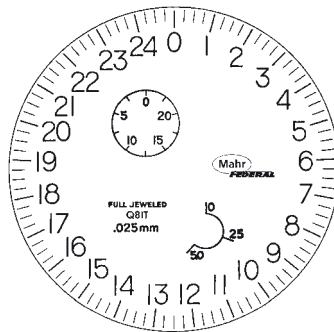
281QN, 281SN & D81S



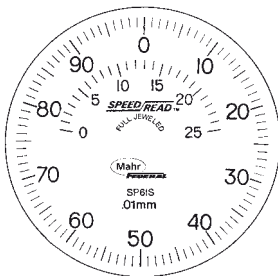
291



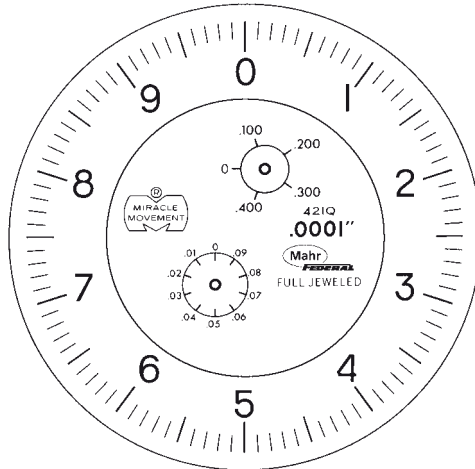
D81T & E81U



Q81T & R81U



SP61S & SQ61S



421Q

### Features

- Normally furnished: continuous clockwise dial; centered vertical lug back; regular contact point, .18" radius, .250" long.
- Long Range Models: include (1) revolution counter (except C91 without revolution counter). Extra Long Range Models: include (2) revolution counters.
- For other dial styles or special requirements - call Mahr Federal.
- Indicator dimensions are located on pages containing individual ANSI/AGD descriptions.

### Accessories

- Contact Points - see page 5-27 and 5-22
- Backs and Mounting Brackets - see pages 5-21 and 5-22
- Accessories - see pages 5-23 and 5-24

### Dial Indicator Modifications & Specials

Available to meet specific requirements.

- Special Ranges
- Restricted Hand Travel
- Special Dials
- High Temperature
- Special Contact Points
- 8 mm Stem Diameters Special Lengths
- Specified Contact Load
- Counter-clockwise Movement
- Special Stem Lengths
- Push-Down Action
- Special Ratio Movement
- Threaded Stems

### Ordering Information

In addition to the information provided above, see pages 5-4 & 5-5 for complete instructions on ordering your dial indicators and accessories.

www.mahr.com

## Series WC and WP Wetproof Dial Indicators

Splashproof protection from coolant, oil, or other contaminant's.



### Technical Data

#### Series WC and WP Wetproof Dial Indicators (Inch)

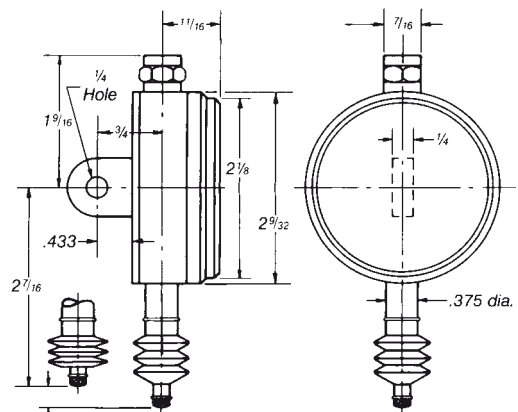
Dial: approx. 2-1/4" dia. with soft-green tint

Measuring range	Graduation value	Dial style	Range per revolution	Accuracy	Order no.
.025"	.0001"	0-10	.010"	.0001"	W22I
.050"	.00025"	0-20	.020"	.00025"	WC3K
.050"	.0005"	0-20	.020"	.0005"	WC3Q
.075"	.0005"	0-30	.030"	.0005"	WC5M
.100"	.0005"	0-40	.040"	.0005"	WC6K
.125"	.0005"	0-50	.050"	.0005"	WC7I
.250"	.001"	0-100	.100"	.001"	WC8I
1.000"	.001"	0-100	.100"	.001"	WC8IS

#### Series WC and WP Wetproof Dial Indicators (Metric)

Dial: approx. 57 mm dia. with soft-yellow tint

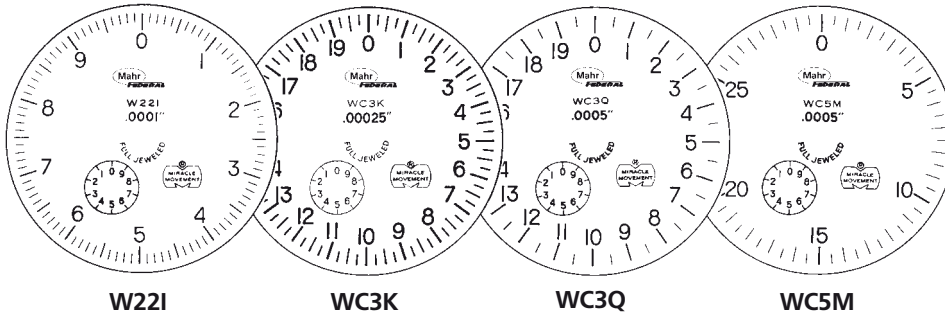
Measuring range	Graduation value	Dial style	Range per revolution	Accuracy	Order no.
0.500	0.002	0-20	0.200	0.004	WP1I
1.250	0.005	0-50	0.500	0.005	WP3I
2.500	0.010	0-100	1.000	0.010	WP6I



Backs can be rotated 90° and 180°

## Dial Styles for WC and WP Wetproof Dial Indicators

### Series WC indicators

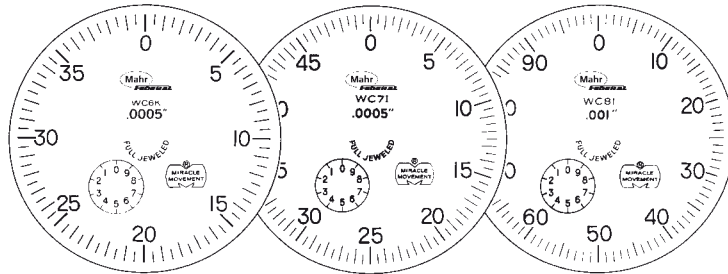


W221

WC3K

WC3Q

WC5M



WC6K

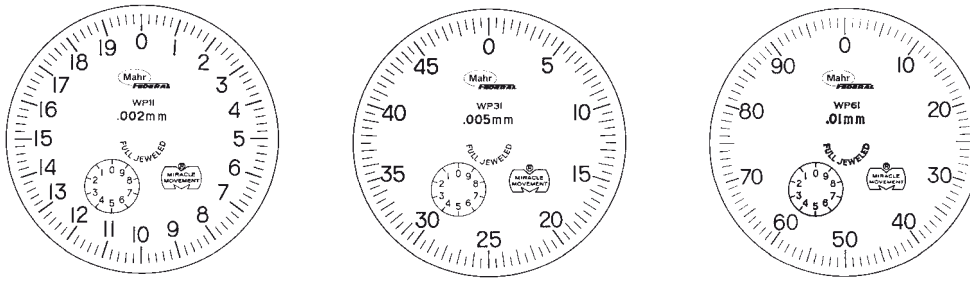
WC7I

WC8I/WC8IS

### Features

- Normally furnished: continuous clockwise dial with revolution counter; BK-63 centered vertical lug back; regular contact point, .18" radiused, .625" long
- Optional Dials: continuous counter-clockwise 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 Federal.

### Series WP indicators



WP1I

WP3I

WP6I

### Accessories

- Contact Points - see page 5-27 and 5-22
- Accessories - see pages 5-23 and 5-24

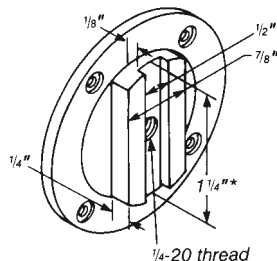
### Ordering Information

In addition to the information provided above, see pages 5-4 & 5-5 for complete instructions on ordering your dial indicators and accessories.

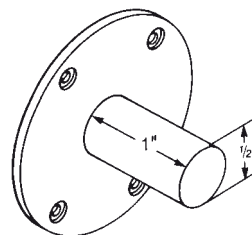
[www.mahr.com](http://www.mahr.com)

### Backs for Wetproof Dial Indicators

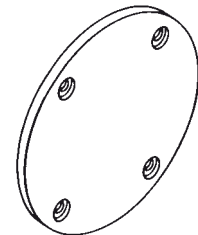
Vertical (centered) lug back is normally furnished and included in price of indicator. Back can be rotated 90° for horizontal lug mounting.



**BK-68**  
Adjustable Back



**BK-90**  
Post Back



**BK-97**  
Flat Back

## Perpendicular Dial Indicators

Provides improved readability where other style indicators cannot be used.



### Technical Data

#### Series F, G, J, V (Inch)

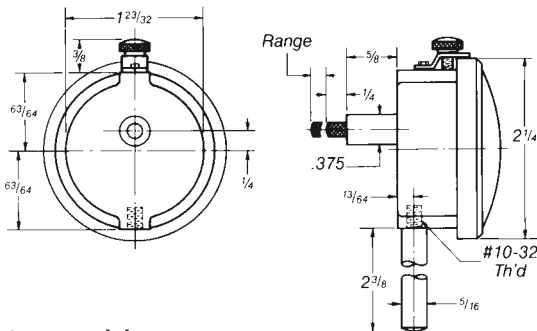
Dial: soft-green tint

Measuring range	Graduation value	Dial style	Range per revolution	Accuracy	Gear type	Dial Dia. (approx.)	Order no.
.008"	.0001"	0-4-0	.008"	.0001"	crown	2-1/4"	J1K
.040"	.0005"	0-20-0	.040"	.0005"	crown	2-1/4"	J6K
.100"	.0005"	0-12-0	.025"	.0005"	spiral	2-1/4"	G40
.100"	.001"	0-50-0	.100"	.001"	crown	2-1/4"	J8I
.100"	.001"	0-50-0	.100"	.001"	crown	1-11/16"	V8I
.200"	.001"	0-50-0	.100"	.001"	spiral	1-23/32"	F8I
.200"	.001"	0-50-0	.100"	.001"	spiral	2-1/4"	G8I

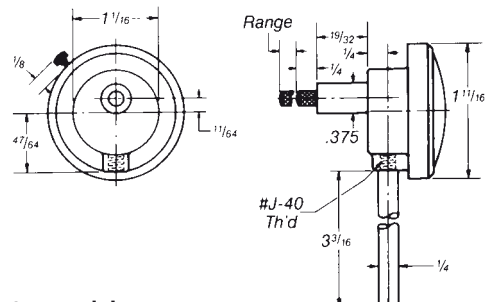
#### Series I, W (Metric)

Dial: yellow tint

Measuring range	Graduation value	Dial style	Range per revolution	Accuracy	Gear type	Dial Dia. (approx.)	Order no.
0.200	0.002	0-10-0	0.200	0.002	crown	57	W11
1.000	0.010	0-50-0	1.000	0.010	crown	57	W6I
2.500	0.025	0-125-0	2.500	0.025	crown	57	W8I
2.500	0.025	0-125-0	2.500	0.025	crown	43	I8I



J & W Models



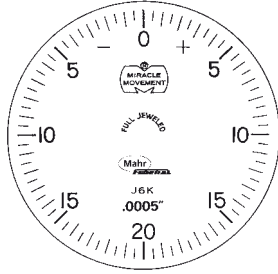
V & I Models

## Dial Styles for Perpendicular Indicators

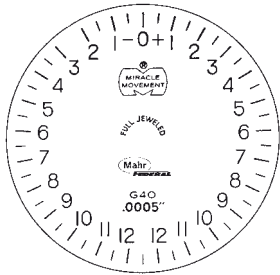
### Series J, G, V, F



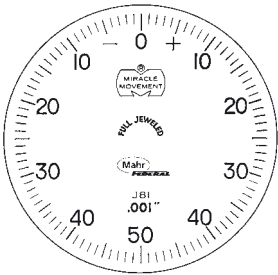
J1K



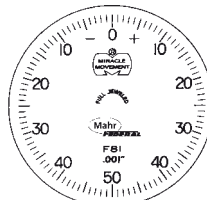
J6K



G40



J8I & G8I

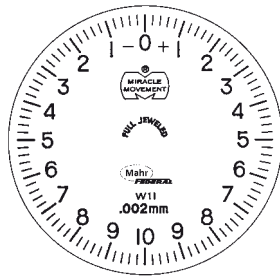


V8I & F8I

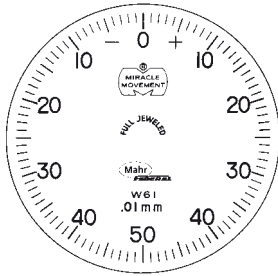
### Features

- 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" O.D. for "J & W" styles), 3/8-32 internally threaded bushings and AD-60 (.687" long x .500" O.D. for "G & F" Models) purchased separately. Bushings also available separately.
- For other dial styles or special requirements - call Mahr Federal.

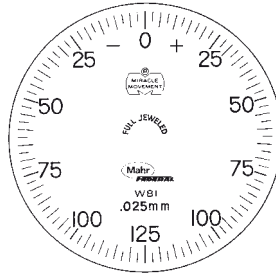
### Series W, I



W1I



W6I



W8I & I8I

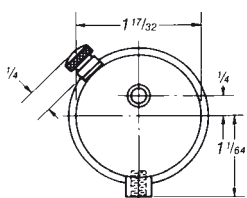
### Accessories

- Contact Points - see page 5-27 and 5-22
- Accessories - see pages 5-23 and 5-24

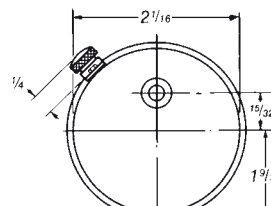
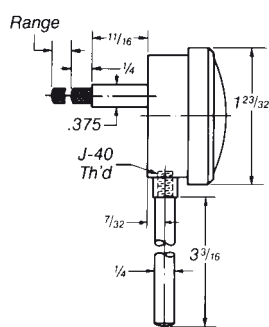
### Ordering Information

In addition to the information provided above, see pages 5-4 & 5-5 for complete instructions on ordering your dial indicators and accessories.

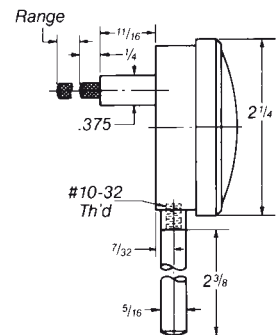
[www.mahr.com](http://www.mahr.com)



F8I Model



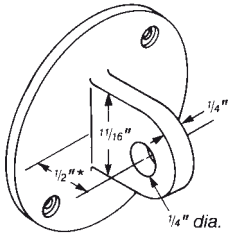
G Models



## Backs for ANSI/AGD Group 1, 2, 3, and 4 Dial Indicators

### Vertical Lug

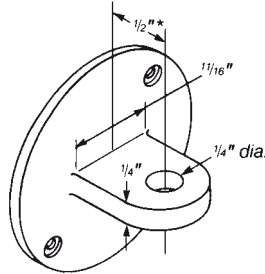
(centered) normally furnished



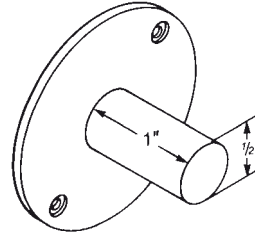
\*27/64" for E/R size

### Horizontal Lug

(centered)

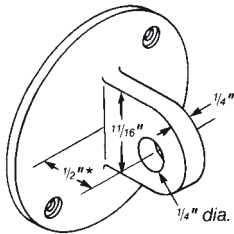


### Post

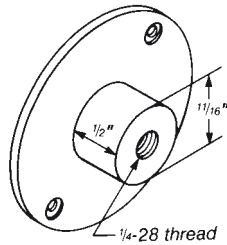


### Vertical Lug

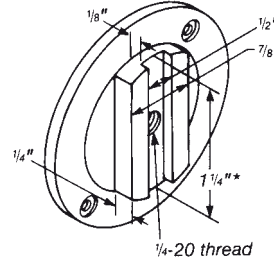
(offset) Left face of lug is on centerline of back



### Screw Type

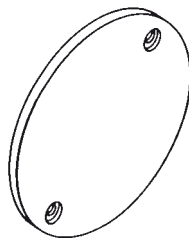


### Adjustable



\*7/8" for B/O size; no flats

### Flat



## Features

- Backs shown are for ANSI/AGD Groups 1,2,3,4, Long Range and Extra Long Range Indicators. Backs for ANSI/AGD Group 0 Indicators - see page 5-8. Backs for Wetproof Indicators - see page 5-18.
- To order - specify Back Order Number (from table below).
- Backs for ANSI/AGD Group 1 (Series B/O) Indicators can be repositioned 180°. Backs for ANSI/AGD Group 4 (Series E/R) Indicators can be repositioned 90° and 180°.
- For Special Backs - call Mahr Federal.

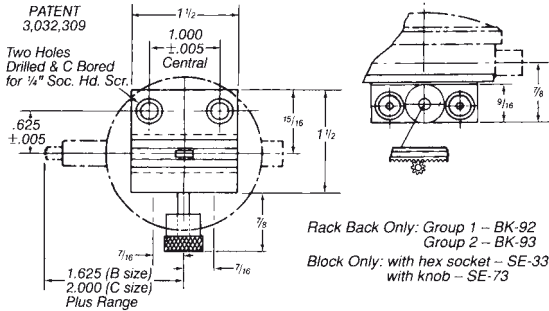
## Ordering Numbers

	ANSI/AGD			
	Group 1 Series B/O	Group 2 Series C/P	Group 3 Series D/Q	Group 4 Series E/R
Vertical Lug, Centered	BK-1600	BK-383	BK-431	BK-3
Vertical Lug, Offset	BK-1601	BK-2168	BK-545	BK-4
Horizontal Lug, Centered	BK-19	BK-400	BK-109	BK-3
Flat	BK-1660	BK-470	BK-473	BK-5
Post	BK-1634	BK-2093	BK-664	BK-17
Screw	BK-1661	BK-692	BK-177	BK-16
Adjustable	BK-1633	BK-531	BK-10	BK-18

## Adjustable Mounting Brackets

### Features

- Allows fast, positive indicator adjustments
- Ideal for permanent indicator mounting to fixtures
- Rack Back included with all Brackets
- Sizes for ANSI/AGD Groups 1 and 2



### Order Numbers

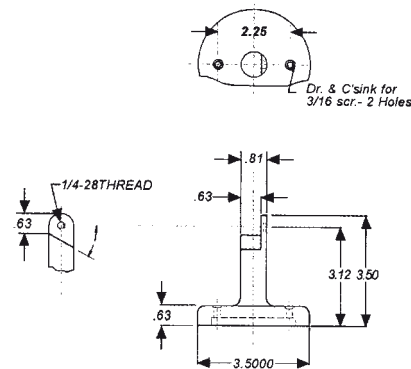
Mahr Federal Indicator	Used with	Order no.
Group 1	hex socket adjust	<b>AT-27</b>
Group 1	adjusting knob	<b>AT-115</b>
Group 2	hex socket adjust	<b>AT-28</b>
Group 2	adjusting knob	<b>AT-116</b>

## Universal Mounting Base

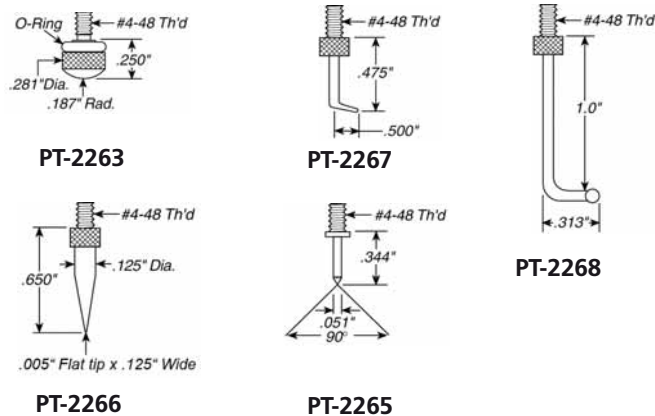
### Features

- Allows mounting indicator to custom fixtures
- Uses lug back to mount indicator
- Accommodates all size indicators

**Order no. BA-1051**



## Added flexibility for your Mahr Federal Dial Indicators



### Description

Shock Absorbing Contact. "O" ring over threads provides a barrier between metal surface and stem, minimizing damage if point is pushed in with excessive force.

**Order no.**

**PT-2263**

Chisel Point Contact for checking small slots. Furnished with a small lock nut for positioning on the indicator.

**PT-2266**

Small Offset Point Contact. Small tip, .010" radius, permits checking narrow recesses. Furnished with a lock nut for indicator positioning.

**PT-2267**

Needle Contact for checking into small areas. Correct length for use as a replacement on Mahr Federal 65P-40 Depth Gage.

**PT-2265**

Right Angle Contact with a .093" diameter ball for checking hard-to-reach grooves. Right angle allows checking to bottom or to top of a groove when used with a push down action Indicator. Its 1" length makes it long enough to be used with Mahr Federal 75P-50 Series Depth Gages.

**PT-2268**

Contact Thread Adapter, Male M2.5 thread to 4-48 Female thread (.375" length)

**AD-185**

4-48 Male to M2.5 Female Threaded Adapter

**2236519**

### Features

- Innovative Contact Points make your indicators more versatile.
- Minimize point damage with a shock absorbing contact without the need for a cushion gear.
  - Needle point perfect for checking small areas – etchings, pits and more.
  - Chisel point easily adapts to small slots or screw heads.
  - Small offset point for narrow recesses – grooves, holes and under ledges.
  - Right angle point makes hard to reach grooves easily accessible.

## Indicator Accessories

### Weights

Used with ANSI/AGD type and long range indicators. Applies constant pressure throughout indicator range. To order specify requirement.



### Lifting Levers - CAM Type.

Used with ANSI/AGD type and long range indicators.



### Protective Housing

For ANSI/AGD Group 2 indicators. Opens at rear so indicator can be mounted by its back. Mounts to indicator stem using a .687" O.D. bushing (not included). Order **HG-100** for Indicator models with ranges up to 6.35 mm / .250", **HG-101** for ranges of 6.35 mm / .250" to 25 mm / 1". Recommended bushings: **BU-111** split bushing, or **AD-87** split collet. See next page.

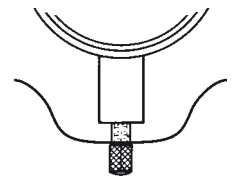


Use with Indicator Type	Order no. Left Hand	Order no. Right Hand
ANSI/AGD Group 1*	<b>LR-46</b>	<b>LR-47**</b>
ANSI/AGD Group 2*	<b>LR-48</b>	<b>LR-49**</b>
ANSI/AGD Group 3*	<b>LR-50</b>	<b>LR-51**</b>
ANSI/AGD Group 4*	<b>LR-68</b>	<b>LR-69</b>
Federal Models D8IT & Q8IT	<b>LR-115</b>	
Ox-Bow Lifting Lever	<b>LR-40</b>	

\* Up to 25 mm / 1" range

\*\* Requires case to have Bezel Clamp on Left

### Ox-Bow Lifting Lever - Type LR-40



### Magnetic Maximum Hand

For ANSI/AGD Groups 2 and 3 indicators having plain dials. Accurately indicates maximum reading. Easy to reset. Order **2014804** (Group 2, snap-on bezel), **2011341** (Group 3, screw-on bezel).



### Tolerance Hands

Used with ANSI/AGD, long range and some Perpendicular indicators. Furnished integrally with split bezel. Easily replaces regular bezel.



Styles for Groups 1 and 4 indicators available on special order; consult Mahr Federal Customer Resource Center.

Use with Indicator Type	Order no. Snap-on Bezel	Order no. Screw-type Bezel
ANSI/AGD Group 1	<b>HD-128</b>	<b>HD-59</b>
ANSI/AGD Group 2	<b>BZ-2503</b>	<b>HD-57</b>
ANSI/AGD Group 4		<b>HD-53</b>

### Range Limiting Caps

Used with ANSI/AGD type indicators. Adjustable thru 9.52 mm / .375" to limit range to any desired amount. Order **CS-123**.



### Electronic Probe Adapter

Permits using electronic probes with many Mahr Federal dial indicators. Order **AD-138**.





## Indicator Accessories

### Hole Attachments

For ANSI/AGD type and perpendicular indicators with .375" diameter stems. For measuring internal surfaces. Order **AT-7293**, 47.50 mm/ 1.87" long, **AT-7294**, 25 mm /1" long.



### Split Collet

For .375" diameter stem indicators. Six-finger grip permits easy, secure indicator adjustment. Requires 1/2-32 threaded hole. O.D. is 17.45 mm/ .687". Can be used with protective housings, page 5-23, Order **AD-87**. For 1/2-32 tap, Order **V-892**. 8 mm stem, Order **AD-190**.



### Brake Attachment

For ANSI/AGD indicators with .001" graduations. Requires indicator modification for assembly. Range limited to 6.35 mm/ .250" for Group 1 indicators; and to 12 mm/ .500" for Group 2 indicators. Order **AT-A-7** stem mount, **AT-81** dust cap mount.



### Threaded Bushing

For ANSI/AGD indicators with 5/16-32 threaded stems (an available option from Mahr Federal). Permits conventional stem mounting of indicator in gages and fixtures. Order **AD-62**, .625" long, .500" O.D., 5/16-32 internal thread. Threaded bushings for perpendicular indicators, see page 5-19.



### Auxiliary Plungers

For extending reach of all ANSI/AGD type and perpendicular indicators with .375" diameter stems and ranges up to 6.35 mm/ .250" range. Attaches to indicator stem by integral split collet. Body is 12 mm/ .500" O.D. Order **AT-25**, 57 mm/ 2.25" long, **AT-26**, 104 mm/ 4" long. Special lengths available. Replacement contact. **PT-184**, 8-32 thread.



### Dust Guard

For ANSI/AGD perpendicular indicators with .375" diameter stems. Recommended for ranges of 7.62 mm/ .300" or less. Oil resistant to protect spindle and bushing from dust, mist and contaminant's. Order **GU-2**. For sealed indicators, see Wetproof models, page 5-17.



### Split Bushings

Fits all ANSI/AGD type and perpendicular indicators, Permits safe, non-cramping stem mounting. Order **BU-94** without counterbore, **BU-80** with counterbore, .375" stem hole x .500" O.D., **BU-111** for use with protective housings (.375" stem hole x .687" O.D.), **BU-112** (.218" stem hole x .375" O.D.), **BU-197** with shoulder, **4310103** without shoulder. (8 mm stem hole x .375" O.D.)



### Right Angle Attachments

For ANSI/AGD type and perpendicular indicators (.375" diameter stems), For making measurements at right angle to spindle movement, Order **A-9**, regular type with flat spring hinge; for ranges up to 3.05 mm/ .120". Replacement spring: **SP-56**. Order **AT-24**, long range type with pivot-type bearing; for ranges up to 9.50 mm/ .375".



## Indicator Calibrator with Digital Readout

### Features

#### Model 400B-50

- A precision, benchtop instrument, providing a convenient means for calibrating a wide variety of precision measuring instruments, including dial indicators, test indicators, AirProbes®, electronic gage heads, or any other device that magnifies the linear displacement of a contact point or measuring spindle – user selectable for either inch or metric units.
- Two calibration stations provide high magnification and long range in a single unit. Incorporated within the micrometer-style control is a rotary encoder which senses the amount of movement and displays the actual displacement on a digital readout.
- Digital readout consists of six high visibility, LED digits and operator-accessible controls for inch/metric units, range selection, zero reset, and polarity/direction.
- RS232 Output.



400B-50 Indicator Calibrator with Digital Readout

### Technical Data

	Range	Minimum Graduation	Accuracy		
<b>Inch</b>					
High mag. station	.100"	.00001"	±20µ"	<ul style="list-style-type: none"> <li>• Normally furnished:  <b>AM-178</b> Arm Assembly;  <b>AT-119</b> Mounting Clamp for .375" /9.5 mm dia. stems and probes;  <b>BU-112</b> Bushing (.218" I.D. to .375" O.D.).  <b>BU-197</b> Bushing (8 mm I.D. to .375" O.D.).  <b>AT-117</b> Adaptor for holding gage blocks.</li> <li>• Also Available:  <b>AT-120</b> Adaptor for test indicators with long contacts.  <b>AT-122</b> Adaptor for test indicators with short contacts.  <b>AT-121</b> Adaptor for AGD type indicators with lug backs.</li> </ul>	
Low mag. station	.500"	.00005"	±50µ"		
<b>Metric (mm)</b>					
High mag. station	2.5	0.0001	±0.4 µm		
Low mag. station	12.5	0.0005	±1.5 µm		
Display	6-digit, 7-segment LED				
Output	RS-232				
Power	115Vac/60Hz/220Vac/50Hz-switchable				
Dimensions Calibrator (approx.)	330 x 200 x 285 mm h /13 x 8 x 11.25" h				
Readout Unit	170 x 125 x 80 mm h /6.625 x 5 x 3.25" h				
Weight Calibrator (approx.)	11.8 kg /26 lb.				
Readout Unit	0.8 kg /1.75 lb				

### Upgrade Kit

#### EKT-1204

A kit is available to upgrade Models 400B-5 and 400B-25 Universal Calibrators to digital readout units with RS-232 output. The kit consists of a precision micrometer style controller with a digital encoder, which replaces the mechanical head, plus a digital readout unit.

## Dial Indicator Calibrator

### Features

#### 400B-3 and 400B-4 Shop-floor Calibrators

All too often we have blinders on and don't look at the whole picture on how a precision gage can do more than what's its intended to do. Take for example our Dial Indicator Calibrators 400B-3 & 400B-4. We look at it and know that its purpose is to calibrate AGD dial indicators right? But let's take it a step further! If we add the Universal centering support frame 800b (part number 4305893) from the test indicator section of our catalog and an 8mm to .375" bushing (part number 4310103) we now have the ability to calibrate test indicators having a .0001" / .002mm resolution giving the once only dial indicator calibrator a DUAL PURPOSE!

- For checking dial indicators (both ANSI/AGD and perpendicular styles) and other transducers.
- Large micrometer wheel has widely spaced graduations for easy setting and reading.
- Adjustable crosshair provides on-the-mark setting.
- Tungsten carbide anvil for maximum wear resistance.
- Indicator clamped in-line with micrometer spindle.



**400B-3**  
Dial Indicator Calibrator



### Technical Data

	Range	Minimum Graduation	Accuracy	Order no.
<b>Metric (mm)</b>	0-25	0.002	within 0.001*	<b>400B-4</b>
<b>Inch</b>	<b>0-1.000"</b>	<b>.0001"</b>	<b>within .000050**</b>	<b>400B-3</b>

- Normally furnished:  
**BU-112** Bushing (.218" I.D. to .375" O.D.)  
**AD-58** Bushing (.275" I.D. to .375" O.D.)  
**BU-197** Bushing (8 mm I.D. to .375" O.D.)

\* Accuracy calibration as specified in Federal Specification GGG-105B.

## Universal Calibrator

### Features

#### Model 400B-5 and 400B-25

- Highest accuracy calibrator for precise monitoring of any gaging transducer— mechanical Indicator, air probe, or electronic gage head.
- Two calibrating stations: one for high magnification transducers and one for long range (up to 12.5 mm/ .500").
- Easy to use: fine adjustment; large bi-directional reading micrometer head; carbide reference anvils; adjustable viewing angle.
- Furnished in a fitted wooden storage case.



**400B-5**  
Universal Calibrator

### Technical Data

	Range	Minimum Graduation	Accuracy	Order no.
<b>Metric (mm)</b>	2.5 12.5	0.0002 0.001	±0.4 μm ±0.8 μm	<b>400B-25</b>
<b>Inch</b>	<b>.100"</b> <b>.500"</b>	<b>.000010"</b> <b>.000050"</b>	<b>±20 μm"</b> <b>±30 μm"</b>	<b>400B-5</b>

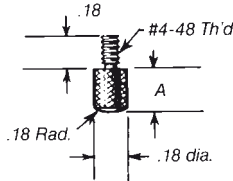
- Normally furnished:  
**AM-178** Arm Assembly;  
**AT-119** Mounting Clamp for 9.5 mm / .375" dia. stems and probes;  
**BU-112** Bushing (.218" I.D. to .375" O.D.);  
**BU-197** Bushing (8 mm I.D. to .375" O.D.);  
**AT-117** Adaptor for holding gage blocks.

- Also Available:  
**AT-120** Adaptor for test indicators with long contacts  
**AT-122** Adaptor for test indicators with short contacts  
**AT-121** Adaptor for AGD type Indicators with lug backs

## Contact Points

Used with ANSI/AGD Groups 1.2.3.4 Long Range Wetproof Perpendicular and *MaxumIII*® Indicators, Points for ANSI Group 0 Indicators - see page 5-8. For Special Points - call Mahr Federal. See pages 5-52 & 5-53 for additional Metric Contact Points.

### Regular



#### Hardened Steel (inch)

Dimension A	Order no.	Dimension A	Order no.
1/8"	PT-225	1-5/8"	PT-235
1/4"	PT-223*	1-3/4"	PT-241
3/8"	PT-563	1-7/8"	PT-100
1/2"	PT-14	2"	PT-51
5/8"	PT-564**	2-1/8"	PT-243
3/4"	PT-31	2-1/4"	PT-696
7/8"	PT-201	2-3/8"	PT-101
1"	PT-232	2-1/2"	PT-245
1-1/8"	PT-305	2-5/8"	PT-102
1-1/4"	PT-565	2-3/4"	PT-566
1-3/8"	PT-239	2-7/8"	PT-247
1-1/2"	PT-50	3"	PT-155

#### Hardened Steel (Metric\*\*\*)

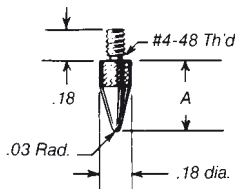
Dimension A	Order no.	Dimension A	Order no.
6 mm	EPT-1037-W1	15 mm	EPT-1037-W3
10 mm	EPT-1037-W2	20 mm	EPT-1037-W4
12 mm	EPT-1037-W6	25 mm	EPT-1037-W5

**Tungsten Carbide**  
 1/4" PT-35 **Set of 8 Steel**  
 1/8" to 1" PT-116

**Diamond**  
 1/4" PT-317 **Set of 24 Steel**  
 1/8" to 3" PT-115

\* PT-223 normally furnished with all Indicators  
 \*\* PT-564 normally furnished with all Wetproof Indicators  
 \*\*\* All Metric Points have M2.5 thread

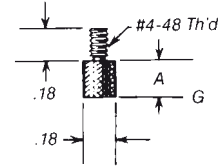
### Tapered



#### Hardened Steel (inch) Tungsten Carbide (inch)

Dimension A	Order no.	Dimension A	Order no.
3/16"	PT-233	7/16"	PT-181
7/16"	PT-229	3/4"	PT-182
1"	PT-253	1"	PT-183
1-7/16"	PT-230		
2"	PT-231		

### Flat End



#### Hardened Steel (inch)

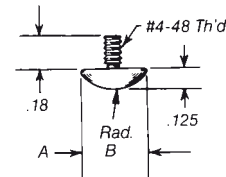
Dimension A	Order no.
1/8"	AL-19
1/4"	AL-673
3/8"	AL-20
1/2"	AL-21
5/8"	AL-22
3/4"	AL-23
7/8"	AL-24
1"	AL-25

#### Hardened Steel (Metric\*\*\*)

Dimension A	Order no.
6 mm	EAL-1016-W1
10 mm	EAL-1016-W2
15 mm	EAL-1016-W3
20 mm	EAL-1016-W4
25 mm	EAL-1016-W5

**Tungsten Carbide**  
 1/4" AL-51  
 Set of 8 Steel  
 1/8" to 1" AL-55

### Button



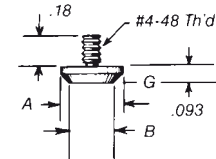
#### Hardened Steel (inch)

Dim. A	Dim. B	Order no.
.375"	.250"	PT-227
.500"	.375"	PT-619

#### Tungsten Carbide

Dim. A	Dim. B	Order no.
.375"	.250"	PT-120

### Wide Face



#### Hardened Steel (inch)

Dim. A	Dim. B	Order no.
.356"	.250"	AL-502
.500"	.375"	AL-1510
.615"	.500"	AL-520
.731"	.625"	AL-44

#### Hardened Steel (Metric\*\*\*)

Dim. A	Dim. B	Order no.
9.04	6.35	EAL-1020-W1
12.7	9.5	EAL-1020-W2
15.6	12.7	EAL-1020-W3
18.6	15.9	EAL-1020-W4

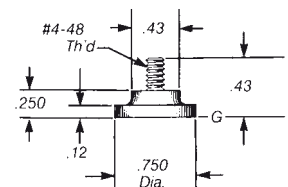
**Tungsten Carbide (inch)**  
 .356" .250" AL-1730

**Set of 8 Steel (Metric\*\*\*)**  
 9.04 6.35 EAL-1021

### Extra Wide Face






#### Hardened Steel






Order no. AL-291





# MarCator Dial Indicators (DIN Style)

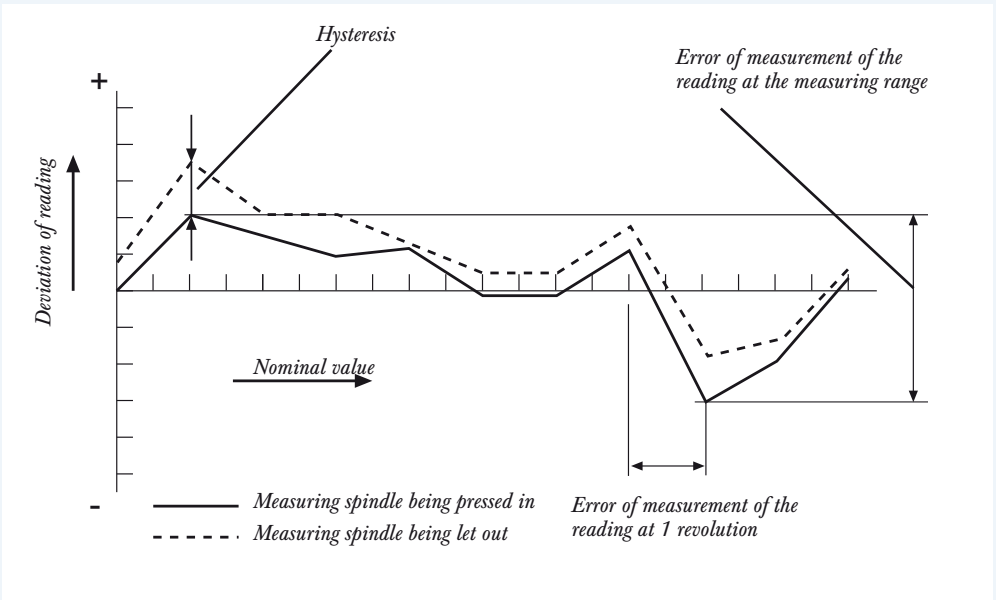
## OVERVIEW









Precision Small Dial Indicators					
Model	803 A	805 A	803 S	803 SW	
					
<b>Range</b>	3 mm	5 mm	3 mm	3 mm	
<b>Readings</b>	0.01 mm	0.01 mm	0.01 mm	0.01 mm	
<b>Dial style</b>	0-50	0-100	0-50	0-50	
<b>Standard for metrological characteristics</b>	DIN 878	DIN 878	DIN 878	DIN 878	
<i>DIN EN ISO 463</i>					
Limit value for measurement error at the reading	{ Meas. range 1 revolution 1/2 revolution 1/10 revolution	10 µm	12 µm	10 µm	10 µm
		9 µm	9 µm	9 µm	9 µm
		8 µm	8 µm	8 µm	8 µm
		5 µm	5 µm	5 µm	5 µm
Limit value for	Repeatability	3 µm	3 µm	3 µm	3 µm
Limit value for	Hysteresis	3 µm	3 µm	3 µm	3 µm
<b>Shockproof</b>			●	●	
<b>Measuring force</b>	0.7 - 1.1 N	0.7 - 1.1 N	0.7 - 1.1 N	0.7 - 1.7 N	
<b>Order no.</b>	<b>4324050</b>	<b>4324060</b>	<b>4324000</b>	<b>4326000</b>	

Precision Dial Indicators					
Model	810 A	810 AT	810 S	810 SW	
					
<b>Range</b>	10 mm	10 mm	10 mm	10 mm	
<b>Readings</b>	0.01	0.01	0.01	0.01	
<b>Dial style</b>	0-100	0-100	0-100	0-100	
<b>Standard for metrological characteristics</b>	DIN 878	DIN 878	DIN 878	DIN 878	
<i>DIN EN ISO 463</i>					
Limit value for measurement error at the reading	{ Meas. range 1 revolution 1/2 revolution 1/10 revolution	15 µm	15 µm	15 µm	15 µm
		10 µm	10 µm	10 µm	10 µm
		9 µm	9 µm	9 µm	9 µm
		5 µm	5 µm	5 µm	5 µm
Limit value for	Repeatability	3 µm	3 µm	3 µm	3 µm
Limit value for	Hysteresis	3 µm	3 µm	3 µm	3 µm
<b>Shockproof</b>			●	●	
<b>Measuring force</b>	0.7 - 1.3 N	0.7 - 1.3 N	0.7 - 1.3 N	0.7 - 1.6 N	
<b>Order no.</b>	<b>4311050</b>	<b>4311060</b>	<b>4311000</b>	<b>4315000</b>	

803 SB	803 AZ
	
0.4 mm ( $\pm 0.2$ )	<b>.120"</b>
0.01 mm	<b>.0005"</b>
0-20-0	0-20
DIN 878	Factory standard
9 $\mu\text{m}$	<b>.0004"</b>
8 $\mu\text{m}$	
5 $\mu\text{m}$	<b>.0002"</b>
3 $\mu\text{m}$	<b>.00012"</b>
3 $\mu\text{m}$	<b>.00012"</b>
●	
0.9 - 1.1 N	0.7 - 1.1 N
<b>4324250</b>	<b>4324900</b>

### Metrological characteristics



810 SB	810 SM	810 SRM	810 AZ	810 AU	810 AX	810 AG	810 SV
							
0.8 mm ( $\pm 0.4$ )	1 mm	5 mm	<b>.400"</b>	10 mm	10 mm	10 mm	40 mm
0.01	0.001	0.001	<b>.0005"</b>	0.01	0.1	0.01	0.01
0-40-0	0-100	0-100	<b>0-45</b>	100-0	0-10	0-100	0-100
DIN 878	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard	Factory standard
7 $\mu\text{m}$	4 $\mu\text{m}$	10 $\mu\text{m}$	<b>.0005"</b>	15 $\mu\text{m}$	50 $\mu\text{m}$	17 $\mu\text{m}$	25 $\mu\text{m}$
	3 $\mu\text{m}$	7 $\mu\text{m}$		10 $\mu\text{m}$	50 $\mu\text{m}$	15 $\mu\text{m}$	15 $\mu\text{m}$
6 $\mu\text{m}$	2 $\mu\text{m}$	3 $\mu\text{m}$		9 $\mu\text{m}$	30 $\mu\text{m}$	10 $\mu\text{m}$	10 $\mu\text{m}$
5 $\mu\text{m}$	1 $\mu\text{m}$	2 $\mu\text{m}$	<b>.0002"</b>	5 $\mu\text{m}$	15 $\mu\text{m}$	5 $\mu\text{m}$	5 $\mu\text{m}$
3 $\mu\text{m}$	1.5 $\mu\text{m}$	3 $\mu\text{m}$	<b>.00012"</b>	5 $\mu\text{m}$	15 $\mu\text{m}$	3 $\mu\text{m}$	3 $\mu\text{m}$
3 $\mu\text{m}$	1.5 $\mu\text{m}$	3 $\mu\text{m}$	<b>.00012"</b>	5 $\mu\text{m}$	15 $\mu\text{m}$	5 $\mu\text{m}$	6 $\mu\text{m}$
●	●	●					●
0.7 - 1.1 N	1.3 - 1.8 N	1.2 - 1.7 N	0.9 - 1.5 N	1.0 - 1.8 N	0.7 - 1.3 N	1.3 - 2.2 N	0.8 - 1.8 N
<b>4317000</b>	<b>4311070</b>	<b>4311080</b>	<b>4311900</b>	<b>4329050</b>	<b>4331000</b>	<b>4322000</b>	<b>4321000</b>

## Precision Small Dial Indicators 803 / 805 DIN style



803 A



805 A



SHOCK  
PROOF

803 S

### Features

#### Small Dial Indicator 803 A

Standard version

- High precision gears and pinions
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing

#### Small Dial Indicator 805 A

Standard version

- High precision gears and pinions
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing


#### Small Dial Indicator 803 S

Shockproof version

- High precision gears and pinions
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing

All indicators are delivered in plastic case

### Technical Data

	Range	Readings	Dial face dia. mm	Overtravel	Mounting shank dia. mm	Measuring force N	Accuracy	Order no.
	mm	mm	mm	mm	mm	N		
<b>803 A</b>	3	0.01	34	0.1	8h6	0.7 - 1.1	●	<b>4324050</b>
<b>805 A</b>	5	0.01	34	0.1	8h6	0.7 - 1.1	●	<b>4324060</b>
<b>803 S</b>	3	0.01	34	0.1	8h6	0.7 - 1.1	●	<b>4324000</b>
<b>803 SW</b>	3	0.01	34	0.1	8h6	0.7 - 1.7	●	<b>4326000</b>
<b>803 SB</b>	0.4 (±0.2)	0.01	34	4.5	8h6	0.9 - 1.1	●	<b>4324250</b>
<b>803 AZ</b>	.120"	.0005"	1.4"	.008"	8h6	0.7 - 1.1		<b>4324900</b>

## Precision Small Dial Indicators 803 / 805 DIN style



803 SW



803 SB



803 AZ

### Features

#### Small Dial Indicator 803 SW

Waterproof and oil proof

Design features identical to 803 S, with the following exceptions:

- Hermetically sealed upper protective measuring spindle cap as well as bezel and transparent dial cover; sealed with O-rings
- Measuring spindle sealed with rubber sleeve, thus preventing contamination by liquids and impurities

#### Small Dial Indicator 803 SB

with limited measuring range

Design features identical to 803 S, with the following exceptions:

- Limited measuring range (0.4 mm) for error-free readings
- Large overtravel (ca. 4.5 mm), for easier insertion of test items in measuring devices
- Hermetically sealed upper protective measuring spindle cap

#### Small Dial Indicator 803 AZ

Inch version

Design features identical to 803 A, with the following exception:

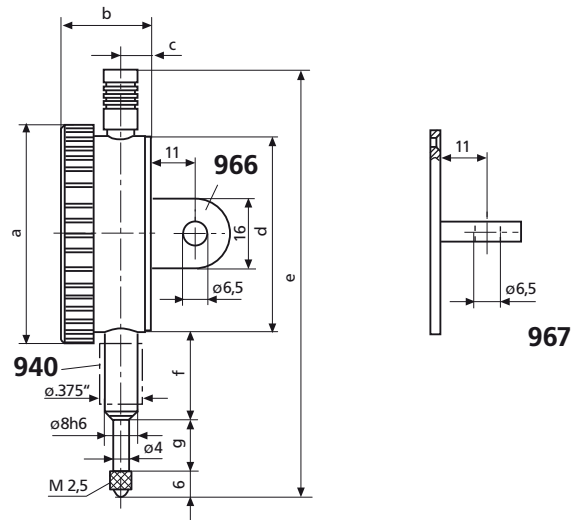
- The scope of supply includes an Adapter Bush 940 for adapting mounting shank 8h6 mm to inch bore .375"

### Dimensions according to DIN EN ISO 463

mm	a	b	c	d	e	f	g
<b>803 A</b>	ø 40	20.6	6.8	ø 37	83	15.5	8
<b>805 A</b>	ø 40	20.6	6.8	ø 37	83	15.5	8
<b>803 S</b>	ø 40	20.6	6.8	ø 37	80	15	5.5
<b>803 SW</b>	ø 44	21.6	7.1	ø 37	86	15	11
<b>803 SB</b>	ø 40	20.6	6.8	ø 37	83	15.5	8
<b>803 AZ</b>	ø 40	20.6	6.8	ø 37	83	15.5	8

### Accessories

	Order no.	
<b>Adapter Bush</b> for adapting mounting shank 8h6 mm to inch bore .375"	<b>940</b>	<b>4310103</b>
<b>Splash Guard Cover</b> for bezel dia. 40 mm	<b>956</b>	<b>4373021</b>
<b>Mounting Lugs</b> Bore perpendicular to mounting shank	<b>966</b>	<b>4375020</b>
Bore parallel to mounting shank	<b>967</b>	<b>4375021</b>





## Precision Dial Indicators 810 DIN style



810 A



810 AT



810 S



810 SW

### Features

#### Dial Indicator 810 A

Standard version

- High precision gears and pinions
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing

#### Dial Indicator 810 AT

for depth measurement

- Design features identical to 810 A, with the following exception:
- Scale of the dial face is counter-clockwise

#### Dial Indicator 810 S

Shockproof

- High precision gears and pinions
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing

#### Dial Indicator 810 SW

Waterproof and oil proof

- Design features identical to 810 S, with the following exceptions:
- Measuring spindle sealed with rubber sleeve, thus preventing contamination by liquids and impurities
  - Hermetically sealed protective measuring spindle cap

All indicators are delivered in plastic case

### Technical Data

	Range	Readings	Dial face dia.	Overtravel	Mounting shank dia.	Measuring force	Accuracy	Order no.
	mm	mm	mm	mm	mm	N	DIN 878	
<b>810 A</b>	10	0.01	50	0.1	8h6	0.7 - 1.3	●	<b>4311050</b>
<b>810 AT</b>	10	0.01	50	0.1	8h6	0.7 - 1.3	●	<b>4311060</b>
<b>810 S</b>	10	0.01	50	0.1	8h6	0.7 - 1.3	●	<b>4311000</b>
<b>810 SW</b>	10	0.01	50	0.1	8h6	0.7 - 1.6	●	<b>4315000</b>
<b>810 SB</b>	0.8 (±0.4)	0.01	50	9	8h6	0.7 - 1.1	●	<b>4317000</b>
<b>810 SM</b>	1	0.001	50	4	8h6	1.3 - 1.8		<b>4311070</b>
<b>810 SRM</b>	5	0.001	50	0.1	8h6	1.2 - 1.7		<b>4311080</b>
<b>810 AZ</b>	.400"	.0005"	2"	.004"	8h6	0.9 - 1.5		<b>4311900</b>

### Accessories

	Order no.		Order no.
<b>Adapter Bush</b> for adapting mounting shank 8h6 mm to inch bore .375"	<b>940</b>	<b>4310103</b>	
<b>Splash Guard Cover</b> for bezel dia. 58 mm	<b>955</b>	<b>4373020</b>	
<b>Mounting Lug</b>			
Bore perpendicular to mounting shank	<b>961</b>		<b>4375010</b>
Bore parallel to mounting shank	<b>962</b>		<b>4375011</b>

## Precision Dial Indicators 810 DIN style



810 SB



810 SM



810 SRM



810 AZ

### Features

#### Dial Indicator 810 SB with limited measuring range

Design features identical to 810 S, with the following exceptions:

- Limited measuring range (0.8 mm) for error-free readings
- Large overtravel (ca. 9 mm) for easier insertion of test items in measuring devices
- Hermetically sealed protective measuring spindle cap

#### Dial Indicator 810 SM

Shockproof  
with reading 0.001 mm

- Precise mechanism with a combined gear lever transmission
- High accuracy with a minimum span of error
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing

#### Dial Indicator 810 SRM

Shockproof  
with reading 0.001 mm

- High precision gears and pinions
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing

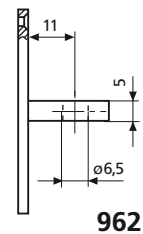
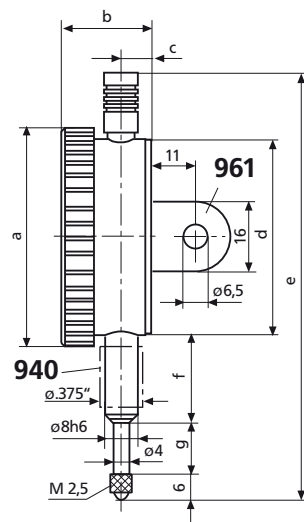
#### Dial Indicator 810 AZ Inch version

Design features are identical to 810 A, with the following exception:

- The scope of supply includes an Adapter Bush 940 for adapting mounting shank 8h6 mm to inch bore .375"

### Dimensions according to DIN EN ISO 463

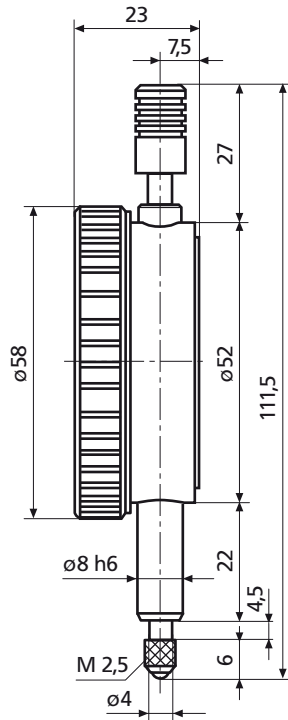
mm	a	b	c	d	e	f	g
<b>810 A/AT</b>	∅ 58	23	7.5	52	112	21	16
<b>810 S</b>	∅ 58	23	7.5	52	111.5	22	15
<b>810 SW</b>	∅ 61	24.15	7.9	52	127.6	22	22.1
<b>810 SB</b>	∅ 58	23	7.5	52	120	22	15
<b>810 SM</b>	∅ 58	25	8.5	52	111.5	22	15
<b>810 SRM</b>	∅ 58	23	7.5	52	111.5	22	15
<b>810 AZ</b>	∅ 58	23	7.5	52	111.5	22	15



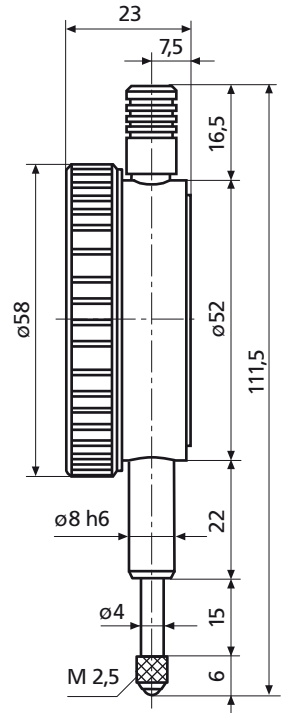
## Precision Dial Indicators 810



810 AU



810 AX



### Features

#### Dial Indicator 810 AU

with a reversed measuring force direction

- Chrome-plated housing
- Adjustable tolerance markers
- Scale on the dial increases counter clockwise (+ on left)
- Measuring force acting towards the top
- Delivered in plastic case

#### Dial Indicator 810 AX

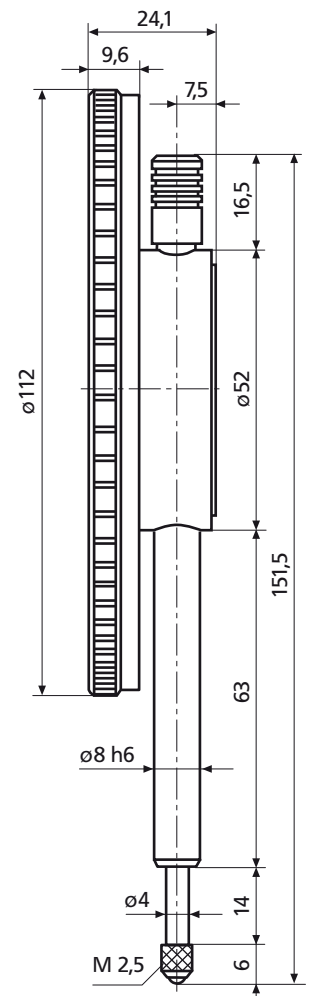
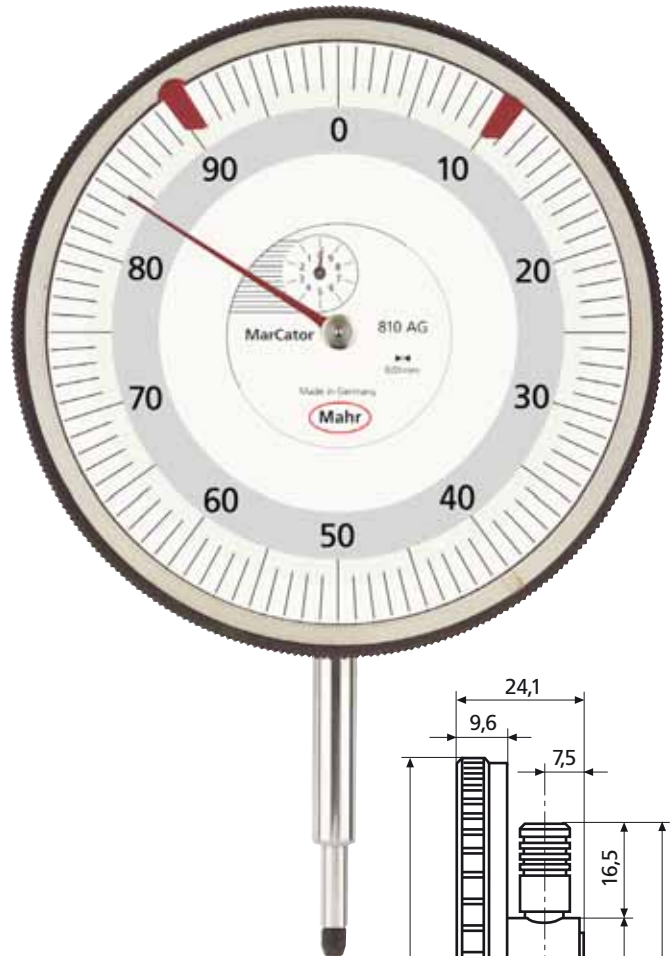
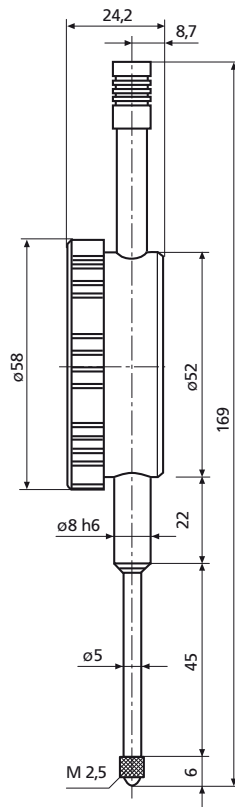
with reading 0.1 mm

- Constant measuring force
- Chrome-plated housing
- Adjustable tolerance markers
- 1 pointer movement on 10 mm
- Delivered in plastic case

### Technical Data

	Range	Readings	Dial face	Overtravel	Mounting	Measuring	Order no.
	mm	mm	dia.	mm	shank	force	
			mm		dia.	N	
<b>810 AU</b>	10	0.01	50	0.1	8h6	1 - 1.8	<b>4329050</b>
<b>810 AX</b>	10	0.1	50	0.5	8h6	0.7 - 1.3	<b>4331000</b>
<b>810 SV</b>	40	0.01	50	0.1	8h6	0.8 - 1.8	<b>4321000</b>
<b>810 AG</b>	10	0.01	108	0.1	8h6	1.3 - 2.2	<b>4322000</b>

## Precision Dial Indicators 810



### Features

#### Long Range Dial Indicator 810 SV

with larger measuring range

- Range 40 mm
- Strengthened measuring spindle (5 mm)
- Raising of measuring spindle via lifting cap
- Adjustable tolerance markers
- Shockproof movement
- Delivered in folded box

#### Extra large Dial Indicator 810 AG

with dial face dia. 108 mm

- Ideal for long reading distance and in bad light conditions
- Plastic outer ring
- Delivered in folded box

### Accessories

**Adapter Bush** for adapting mounting shank 8h6 mm to inch bore .375"

940 4310103

**Splash Guard Cover** for dia. 58 mm

955 4373020









**Mounting Lug** to mount on mounting shank of all versions

















963 4375002

#### Order no.

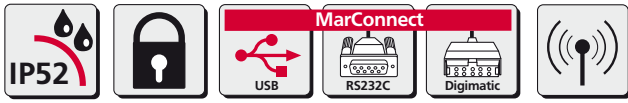
# MarCator. Digital Indicators (Long range)

## OVERVIEW

Functions of Digital Indicators		1075 R	1075 R	1075 R	μMaxμm II XL
					
<b>Catalog page</b>		5 - 38	5 - 38	5 - 38	5 - 40
<b>Measuring ranges</b>		12.5 mm / <i>.5"</i>	12.5 mm / <i>.5"</i>	12.5 mm / <i>.5"</i>	12.5 mm / <i>.5"</i> 25 mm / <i>1"</i> 50 mm / <i>2"</i> 100 mm / <i>4"</i>
<b>Resolution</b>	metric inch metric inch metric inch metric inch metric inch metric inch metric inch metric inch	0.01 mm <i>.0005"</i>	0.005 mm <i>.0001"</i>	0.001 mm <i>.00005"</i>	0.0002 mm <i>.00001"</i> 0.0005 mm <i>.00002"</i> 0.001 mm <i>.00005"</i> 0.002 mm <i>.0001"</i> 0.005 mm <i>.0002"</i> 0.01 mm <i>.0005"</i> 0.02 mm <i>.001"</i> 0.05 mm <i>.002"</i> 0.1 mm <i>.005"</i>
<b>Mounting shank</b>		8h6	8h6	8h6	8h6 / 3/8"
<b>Protection class</b>	IP class acc. to IEC 60529				
<b>Functions:</b>					
ON/OFF		●	●	●	●
Set display to zero		●	●	●	●
Switch between mm/inch		●	●	●	●
Reversal of counting direction		●	●	●	●
Enter numerical value	PRESET	●	●	●	●
Data		●	●	●	●
ABS/REL-switchable					●
Tolerance display					●
Dynamic measuring functions	MIN, MAX MAX-MIN (TIR)				●
2-point difference					●
Search for reversal point	START/STOP				●
Factor set / adjust					●
Analog display					●
Switch the analog value					●
Key lock function LOC		●	●	●	Optional
<b>Data output:</b>	USB	●	●	●	●
	Digimatic	●	●	●	●
	Opto RS232C	●	●	●	●
<b>Control output:</b>					

1086 R	1086 ZR	1086 WR	1087 R	1087 ZR	1087 BR	1088 W	1088
							
5 - 42	5 - 42	5 - 45	5 - 46	5 - 46	5 - 50	5 - 48	5 - 48
12.5 mm / .5" 25 mm / 1" 50 mm / 2" 100 mm / 4"	12.5 mm / .5" 25 mm / 1"	12.5 mm / .5" 25 mm / 1"	12.5 mm / .5" 25 mm / 1"	12.5 mm / .5" 25 mm / 1"	12.5 mm / .5"	12.5 mm / .5" 25 mm / 1"	50 mm / 2"
0.001 mm .00005" 0.01mm .0005"	0.001 mm .00005" 0.01mm .0005"	0.001 mm .00005" 0.01mm .0005"	0.001 mm .00005"	0.001 mm .00005"	0.001 mm .00005"	0.001 mm .00005"	0.001 mm .00005"
8h6	3/8"	8h6	8h6	3/8"	8h6	8h6	8h6
							
• • • • • • • •	• • • • • • • •	• • • • • • •	• • • • • • • • • •	• • • • • • • •	• • • • • • • •	• • • • • • • •	• • • • • • • •
•	•	•	• • • • •	• • • • •	• • • • • • •	• • • • •	• • • • • • •
• • • •	• • • •	• • • •	• • • • • • •	• • • • • • •	• • • • • • •	• • • •	• • • • • • •

## Digital Indicators 1075 R



**REFERENCE**



### Features

#### Functions:

- ON/OFF
- RESET (Set display to zero)
- mm/inch
- Reversal of counting direction
- PRESET (for entering a numerical value)
- DATA (data transmission with a data connection cable)
- LOCK-Function: Individual buttons can be locked
- Auto-OFF (selectable)
- Immediate measurement due to the Reference system
- Max measuring speed 1.5 m/sec (60"/sec)
- MarConnect Data output: choose either USB, OPTO RS232C, Digimatic
- High contrast Liquid Crystal Display with 12 mm high digits
- Operating temperature 10-40°C
- Class of protection IP52 according to IEC 60529

Scope of supply:  
Battery,  
Operating instructions

### Reference System - Just set once to zero

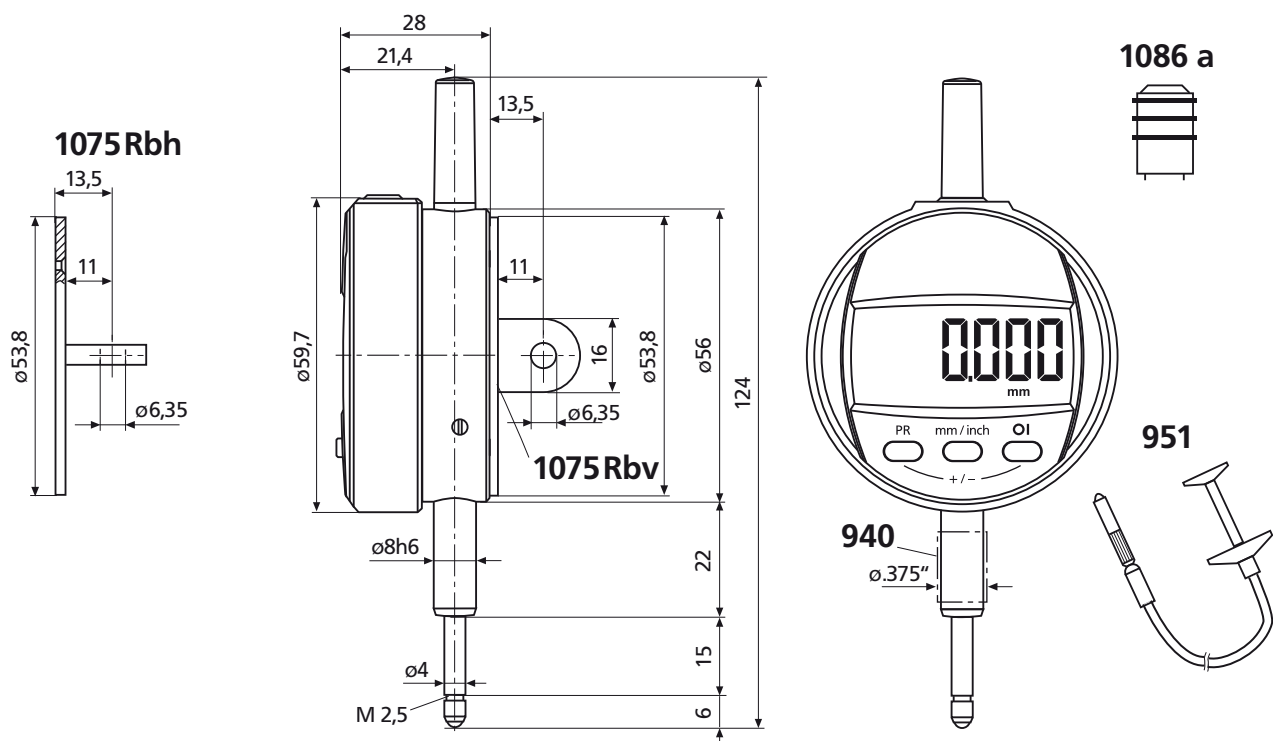
**REFERENCE** The new Digital Indicators 1075 R are equipped with the innovative Reference-System. The zero position only has to be set one time: once it is set, the zero remains stored for all further measurements. Therefore, when the indicator is switched ON or the measuring spindle is moved the indicator is immediately ready for measurement; thus the need to reset as with a conventional indicator is now obsolete.

### Technical Data

Measuring range		Resolution		Span of error G *	Measuring force			Weight	Order no.
mm	(inch)	mm	/ inch	mm	N			g	
12.5	(.5")	0.01	/ .0005"	0.020	0.5	-	1	180	4336010
12.5	(.5")	0.005	/ .0001"	0.015	0.5	-	1	180	4336020
12.5	(.5")	0.001	/ .00005"	0.005	0.5	-	1	180	4336030

\* in any zero point

## Technical Data



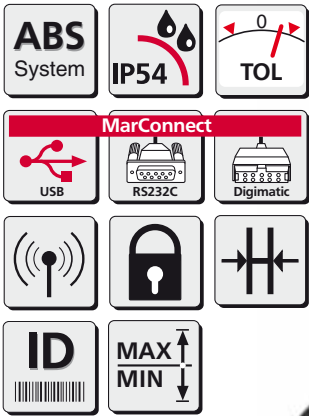
Shown with Mounting Lug, not included.

## Accessories

	Order no.	Additional Accessories	Page
<b>Battery 3V</b> , Type CR 2032	4102520	<b>Contact Points</b> 901-913	5-52
<b>Data Connection Cable</b> USB (2 m)	16 EXu 4102357	<b>Special Holder</b> 941	5-53
<b>Data Connection Cable</b> Opto RS232C (2 m), with SUB-D jack 9-pin	16 EXr 4102410	<b>Sensor Lever</b> 943	5-53
<b>Data Connection Cable</b> Digimatic (2 m). Flat plug 10-pin	16 EXd 4102411	Accessories for Data Processing see Chapter 11	
<b>Adapter Bush</b> for adapting mounting shank 8h6 mm to inch bore .375"	940 4310103		
<b>Cable Release</b> to raise the measuring spindle	951 4372000		
<b>Lifter Protection Cap</b>	1086 a 4337320		
<b>Lug Back</b> , horizontal	1075 Rbh 4336041		
<b>Lug Back</b> , vertical	1075 Rbv 4336042		



## μMaxμm® II XL Digital Indicators



### Features

#### Functions:

- All the benefits of the μMaxμm II series indicator series, but with long measuring ranges
- Inch/Metric – operator selectable with switchable resolution
- Normal / Reverse Sensing
- Preset capabilities to view actual size
- 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
- MarConnect data output: USB, OPTO RS232C, Digimatic
- Auto-power down – provides extremely low battery consumption, assuring long life from readily available commercial batteries
- Unilateral Tolerances
- Go/NoGo Display Feature (Preset)

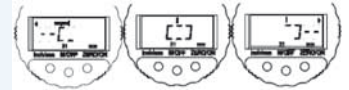
#### Mode A:

Actual value + bargraph  
Display of tolerance



#### Mode B:

GO/NOGO display



#### Advanced Functions:

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

#### 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
- Setup mode lockout with password entry

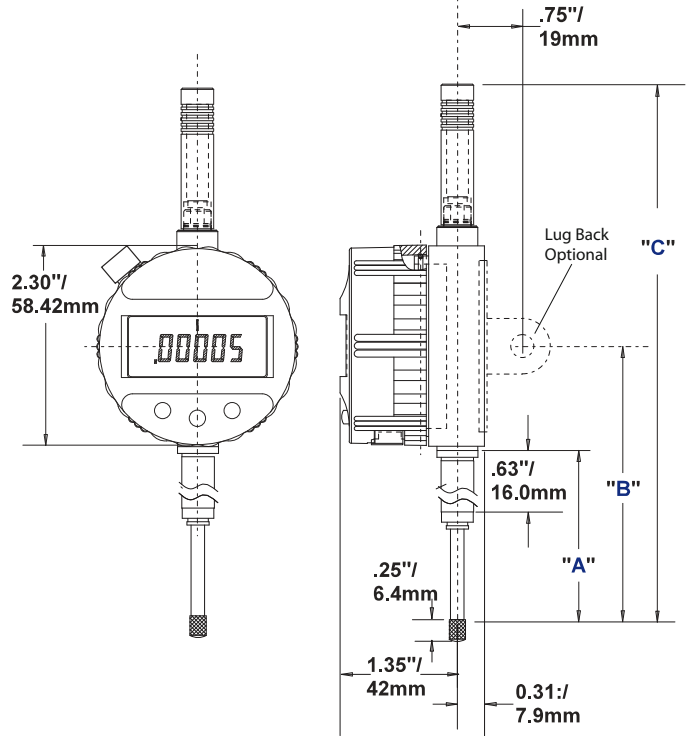
### Technical Data

Model	Range	Resolution mm / inch	Accuracy mm / inch	Stem diameter	Stem Length mm / inch	Order no
US Version	0.5"	multiple selections: Low: 0.1 / <b>0.005"</b> High: 0.0002 / <b>0.00001"</b>	0.0005 / <b>0.0002"</b>	0.375"	16 / <b>0.63"</b>	2034252
US Version	1.0"			0.375"	16 / <b>0.63"</b>	2034212
World Version	12.5 mm	0.1 / <b>0.005"</b>	0.0005 / <b>0.0002"</b>	8 mm	16 / <b>0.63"</b>	2034258
World Version	25 mm	0.1 / <b>0.005"</b>	0.0005 / <b>0.0002"</b>	8 mm	16 / <b>0.63"</b>	2034218
World Version*	25 mm	0.0002 / <b>0.00001"</b>	0.0005 / <b>0.0002"</b>	8 mm	16 / <b>0.63"</b>	2034410
World Version	50 mm	Low: 0.2 / <b>.01"</b>	0.008 / <b>0.00032"</b>	8 mm	16 / <b>0.63"</b>	2034229
World Version	100 mm	High: 0.0002 / <b>0.00001"</b>	0.009 / <b>0.00036"</b>	8 mm	16 / <b>0.63"</b>	2034249

\* No Spring Version

### Technical Data

<b>Display Range:</b>	12.5 mm <b>.5"</b>	25 mm <b>1.0"</b>	50 mm <b>2.0"</b>	100 mm <b>4.0"</b>
<b>Spindle Range:</b>	12.8 mm <b>.515"</b>	25.9 mm <b>1.020"</b>	51 mm <b>2.02</b>	102 mm <b>4.02"</b>
<b>Gaging Force:</b>	<b>3 to 4 oz</b>		<b>7 to 14 oz</b>	
	0 to 1.0 N at center of travel		2.0 to 3.4 N at center of travel	
<b>Weight:</b>	200 g ( <b>7 oz</b> )		283 / 340 g ( <b>10 / 12 oz</b> )	
<b>Spindle Velocity:</b>	6"/sec. (1.5m/s) max			
<b>Temperature</b>				
<b>Operating:</b>	5° to 54°C / <b>40° to 130°F</b>			
<b>Storage:</b>	-17° to 60°C / <b>0° to 140°F</b>			
<b>Repeatability:</b>	± 1 LSD (Least Significant Digit)			
<b>Battery Life:</b>	7000 hours ~ 12 months normal usage*			
	* normal usage = 12hr/day x 7day/wk			
<b>Power:</b>	3 Volt Lithium coin cell (2 per unit) Type CR2450, <b>Order no. EBY1018</b>			
<b>Display:</b>	Rotates through 270°			
<b>Contact Point:</b>	(PT-223 radiused tip, 4-48 thread, furnished on .375" dia. Stem model)			
	<b>EPT-1037-W1</b> radiused tip, M2.5 thread furnished on 8mm dia. stem model			



For contact points please refer to pages 5-22, 5-27, 5-52 & 5-53

Range	A		B		C			
	mm	inch	mm	inch	mm	inch		
12.5	12.5	.5"	35.1	1.38"	68.6	2.7"	128.27	5.05"
25	25	1.0"	47.5	1.87"	81.3	3.2"	153.7	6.05"
50	50	2.0"	72.6	2.86"	153	6.0"	275.6	10.85"
100	100	4.0"	123	4.88"	253	9.9"	427	16.80"

### Accessories

	Order no.		Order no.
<b>Backs:</b>		<b>Other Hardware:</b>	
<b>Flat Back</b> (Standard on all models)	<b>EBK-1018</b>	<b>Splash Cover</b>	<b>ECV-1307-W2</b>
<b>Lug Back</b> (Horizontal / Vertical) .5" & 1" models	<b>BK-183</b>	<b>Adaptor Bushing</b> (8 mm to 3/8")	<b>BU-197</b>
<b>Lug Back</b> (Horizontal / Vertical) 2" & 4" models	<b>BK-383</b>	<b>Thread Adaptor</b> (M2.5 to 4-48 thread)	<b>AD-185</b>
<b>Post Back</b> (0.5" dia. x 1" long)	<b>BK-2093</b>	<b>Lifting Lever</b> (.05" tp 1.0" models)	<b>SP-351</b>
<b>Screw Back</b> (11/16" dia x 0.5", 1/4-28 thread)	<b>BK-692</b>		
<b>Adj. Slide Back</b> (0.5" slot, 1/4-20 thread)	<b>BK-531</b>	<b>Right hand style</b>	<b>ELR-1092</b>
<b>Adj. Rack Back*</b>	<b>BK-93</b>	<b>Left hand style</b> (offset use only)	<b>ELR-1093</b>
<i>*used on AT-28 or AT-116 - Sold seperately</i>		<b>Ox-bow style</b> (page 6-13)	<b>LR-40</b>
<b>Data Interface:</b>		<b>Adaptor Back</b>	<b>EPL-1914</b>
<b>USB Cable</b> (for MarCom or PC, 2m length)	<b>4346023</b>		
<b>RS232 Cable</b> (10 pin plug, 2m length)	<b>4346020</b>		
<b>Digimatic Cable</b> (10 pin plug, 2m length)	<b>4346021</b>		
<b>Transmitter</b> (Mahr t, used w/ FM1 Receiver)	<b>2121369</b>		

For further mounting accessories refer to page 6-13

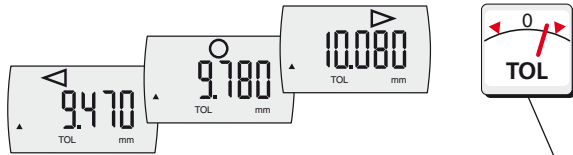
# MarCator 1086 R

► | The new Digital Indicator **MarCator** 1086 R. With the large display and the integrated tolerance function, your measurement results are clearly visual. | ◀

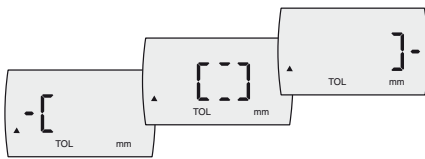
## Clear display

### Tolerance indication with the displayed 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.



### IP Protection class IP54 (optional)

- Protection cap is sealed
- Rubber bellows for the measuring spindle
- Sealed battery compartment

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



## Error free operation



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

## Universal Data-Interface



### • 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

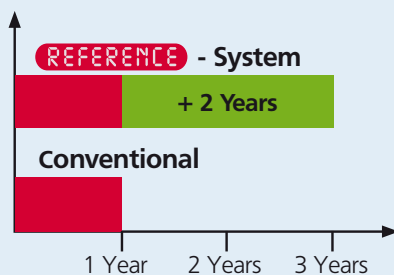


### Absolute function:

Digital Indicator can be set in any position to 0.000 without losing the reference to the preset value.

## Battery service life is 3 years

The new Reference system is extremely energy efficient as when the caliper is in standby mode; almost no power is required, thus **extending the life of the battery up to 3 years.**



## Just set once to zero

### REFERENCE

The new Digital Indicators 1086 R are equipped with the innovative Reference-System. The zero position only has to be set one time: once it is set, the zero remains stored for all further measurements. Therefore, when the indicator is switched ON or the measuring spindle is moved the indicator is immediately ready for measurement; thus the need to reset as with a conventional indicator is now obsolete.

**Digital Indicators MarCator 1086 R / 1086 ZR, Resolution 0.01 mm / .0005"**



**REFERENCE**

- ### Features
- Functions:**
- ON/OFF
  - RESET (Set display to zero)
  - mm/inch
  - Reversal of the counting direction
  - PRESET (Allows the entry of any value using set buttons)
  - TOL (Enter tolerance limit values)
  - ABS (Display can be set to zero, without losing the reference to the Preset value)
  - <0> (Tolerance GO / NO GO display mode)
  - DATA (when connected with a data connection cable)
  - Factor (adjustable)
  - Immediate measurement due to the Reference system
  - Individual buttons can be locked - Lock Function
  - Operating and display unit (bezel) can be rotated 280°
  - High contrast LCD with 11 mm high digits
  - Inductive measuring system, battery life ca. 2000 hrs.
  - Maximum measuring speed 1.5 m/s (60"/s)
  - Lifter protection cap on the measuring spindle
  - MarConnect data output: choose either USB, OPTO RS232C, Digimatic
  - Operating temperature 10 - 40°C
  - Class of protection IP42 in accordance to IEC 60529
- Supplied with:  
Battery, operating instructions



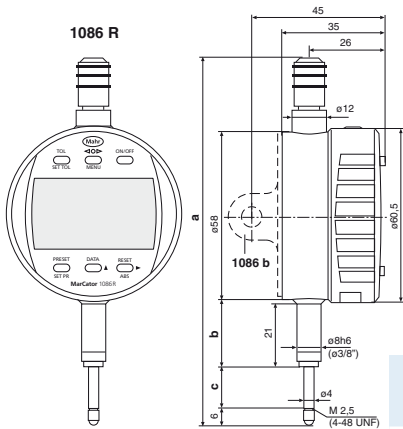
12.5 mm



25 mm



50 mm



**Dimensions**

Measuring range		a	b	c
mm	(inch)	mm	mm	mm
12.5	(.5")	126.3	23	13.5
25	(1")	153.4	26.8	26.5
50	(2")	267.3	40	52
100	(4")	420.3	91	103

**Technical Data**

Measuring range		Resolution	Span of error*	Repeatability	Measuring force	Weight	Mounting shank	Order no.
mm	(inch)	mm / inch	mm	mm	N	g	dia.	
12.5	(.5")	0.01 / .0005"	0.02	0.01	0.65 - 0.90	130	8h6	<b>4337130</b>
25	(1")	0.01 / .0005"	0.02	0.01	0.65 - 1.15	140	8h6	<b>4337131</b>
50	(2")	0.01 / .0005"	0.02	0.01	1.25 - 2.70	190	8h6	<b>4337132</b>
100	(4")	0.01 / .0005"	0.02	0.01	1.60 - 3.50	235	8h6	<b>4337133</b>
12.5	(.5")	0.01 / .0005"	0.02	0.01	0.65 - 0.90	150	3/8"	<b>4337155</b>
25	(1")	0.01 / .0005"	0.02	0.01	0.65 - 1.15	160	3/8"	<b>4337156</b>

\* in any zero point

## Digital Indicators MarCator 1086 R / 1086 ZR, Resolution 0.001 mm / .00005"



REFERENCE



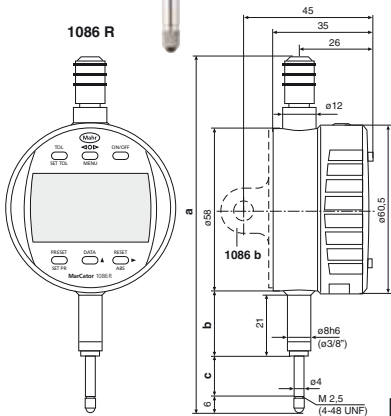
12.5 mm



25 mm



50 mm



Dimensions

Measuring range		a	b	c
mm	(inch)	mm	mm	mm
12.5	(.5")	126.3	23	13.5
25	(1")	153.4	26.8	26.5
50	(2")	267.3	40	52
100	(4")	420.3	91	103

### Features

#### Functions:

- ON/OFF
- RESET (Set display to zero)
- mm/inch
- Reversal of the counting direction
- PRESET (Allows the entry of any value using set buttons)
- TOL (Enter tolerance limit values)
- ABS (Display can be set to zero, without losing the reference to the Preset value)
- <0> (Tolerance GO / NO GO display mode)
- DATA (when connected with a data connection cable)
- Factor (adjustable)
- Immediate measurement due to the Reference system
- Individual buttons can be locked - Lock Function
- Operating and display unit (bezel) can be rotated 280°
- High contrast LCD with 11 mm high digits
- Inductive measuring system, battery life ca. 2000 hrs.
- Maximum measuring speed 1.5 m/s (60"/s)
- Lifter protection cap on the measuring spindle
- MarConnect data output: choose either USB, OPTO RS232C, Digimatic
- Operating temperature 10 - 40°C
- Class of protection IP42 in accordance to IEC 60529

Supplied with:  
Battery, operating instructions

### Technical Data

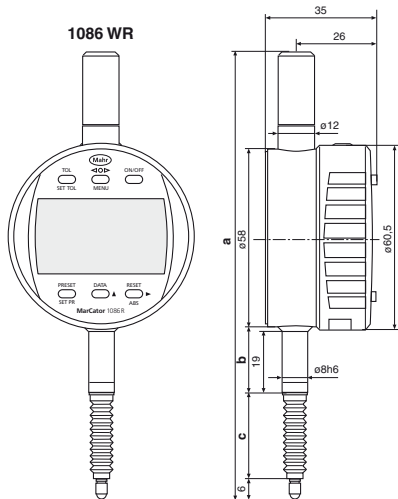
Measuring range		Resolution	Span of error*	Repeatability	Measuring force	Weight	Mounting shank	Order no.
mm	(inch)	mm / inch	mm	mm	N	g	dia.	
12.5	(.5")	0.001 / .00005"	0.005	0.002	0.65 - 0.90	130	8h6	4337120
25	(1")	0.001 / .00005"	0.005	0.002	0.65 - 1.15	140	8h6	4337121
50	(2")	0.001 / .00005"	0.008	0.002	1.25 - 2.70	190	8h6	4337122
100	(4")	0.001 / .00005"	0.009	0.002	1.60 - 3.50	235	8h6	4337123
12.5	(.5")	0.001 / .00005"	0.005	0.002	0.65 - 0.90	150	3/8"	4337150
25	(1")	0.001 / .00005"	0.005	0.002	0.65 - 1.15	160	3/8"	4337151

\* in any zero point

**Digital Indicators MarCator 1086 WR**, Waterproof version



**REFERENCE**



**Dimensions**

Measuring range		a	b	c
mm	(inch)	mm	mm	mm
12.5	(.5")	144.3	23	28.6
25	(1")	193.2	26.8	50

**Features**

**Functions:**

- ON/OFF
- RESET (Set display to zero)
- mm/inch
- Reversal of the counting direction
- PRESET (Allows the entry of any value using set buttons)
- TOL (Enter tolerance limit values)
- ABS (Display can be set to zero, without losing the reference to the Preset value)
- <0> (Tolerance GO / NO GO display mode)
- DATA (when connected with a data connection cable)
- Factor (adjustable)
- Immediate measurement due to the Reference system
- Individual buttons can be locked - Lock Function
- Operating and display unit (bezel) can be rotated 280°
- High contrast LCD with 11 mm high digits
- Inductive measuring system, battery life ca. 2000 hrs.
- Maximum measuring speed 1.5 m/s (60"/s)
- Sealed protection cap
- Measuring spindle is sealed with a rubber bellows, thus preventing contamination by liquids and impurities
- MarConnect data output: choose either  
USB  
OPTO RS232C  
Digimatic
- Operating temperature 10 - 40°C
- Class of protection IP54 in accordance to IEC 60529

Supplied with:  
Battery, operating instructions

**Technical Data**

Measuring range		Resolution		Span of error*		Repeatability		Measuring force		Weight	Order no.
mm	(inch)	mm	/ inch	mm		mm		N		g	
12.5	(.5")	0.001	/ .00005"	0.005		0.002		0.65 - 1.40		135	<b>4337140</b>
25	(1")	0.001	/ .00005"	0.005		0.002		1.00 - 2.25		145	<b>4337141</b>
12.5	(.5")	0.01	/ .0005"	0.02		0.01		0.65 - 1.40		135	<b>4337145</b>
25	(1")	0.01	/ .0005"	0.02		0.01		1.00 - 2.25		145	<b>4337146</b>

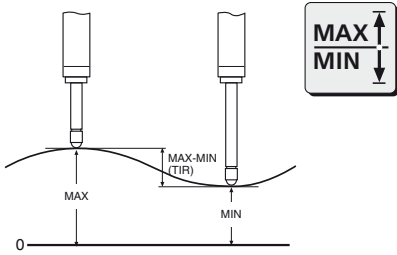
\* in any zero point

# MarCator 1087 R




► | The new Digital Indicator **MarCator** 1087 R. The multi-functional Digital Indicator with a combined analog and digital display as well as tolerance and dynamic measuring functions. | ◀

## Dynamic measuring functions

- **MAX-MIN**-Function ideal for testing flatness and concentricity
- **MAX** and / or **MIN** for searching the reversal point

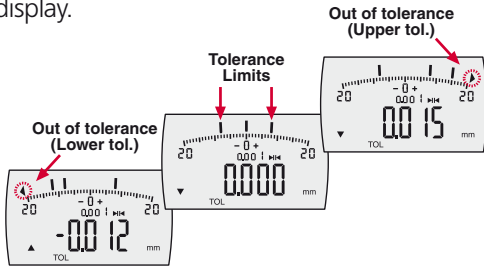



## Universal Data-Interface

- 
**• 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

## Clear display Tolerance indication

The integrated bar graph visualizes the tolerance deviation. The out of tolerance; whether above the upper or below the lower tolerance limit is represented by arrows shown in the display.



- 
**Absolute function:**  
 Digital Indicator can be set in any position to 0.000 without losing the reference to the preset value.

### Just set once to zero


**REFERENCE** The new Digital Indicators 1087 R are equipped with the innovative Reference-System. The zero position only has to be set one time: once it is set, the zero remains stored for all further measurements. Therefore, when the indicator is switched ON or the measuring spindle is moved the indicator is immediately ready for measurement; thus the need to reset as with a conventional indicator is now obsolete.

### Battery service life is 3 years

The new Reference system is extremely energy efficient as when the caliper is in standby mode; almost no power is required, thus **extending the life of the battery up to 3 years.**

System	Battery Life
REFERENCE - System	3 Years
Conventional	1 Year

### Error free operation

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

**Digital Indicators MarCator 1087 R / 1087 ZR, with analog display**



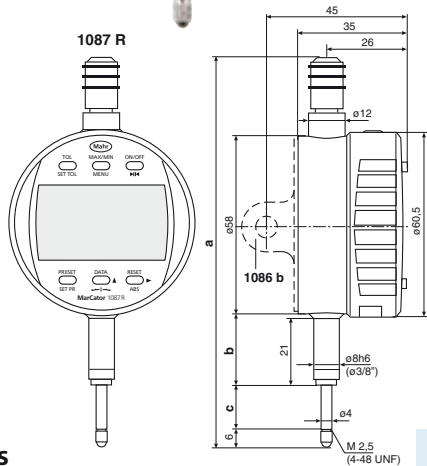
**REFERENCE**



12.5 mm



25 mm



**Dimensions**

Measuring range		a	b	c
mm (inch)		mm	mm	mm
12.5 (.5")		126.3	23	13.5
25 (1")		153.4	26.8	26.5

**Analog display**

Readings	Display range
mm / inch	mm / inch
0.001 / .00005	± 0.02 / ± .001
0.002 / .0001	± 0.04 / ± .002
0.004 / .0005	± 0.08 / ± .01
0.01 / .001	± 0.2 / ± .02

**Features**

- Functions:**
- ON/OFF
  - RESET (Set display to zero)
  - mm/inch
  - Reversal of the counting direction
  - PRESET (Allows the entry of any value using set buttons)
  - TOL (Enter tolerance limit values)
  - Tolerance band max, 1.6 mm
  - MAX/MIN memory, ideal for searching the reversal point
  - TIR (MAX-MIN) ideal for testing concentricity and flatness
  - ABS (Display can be set to zero, without losing the reference to the Preset value)
  - 0 (Set analog display to zero)
  - DATA (when connected with a data connection cable)
  - Factor (adjustable)
  - Immediate measurement due to the Reference system
  - Individual buttons can be locked - Lock Function
  - Operating and display unit (bezel) can be rotated 280°
  - High contrast LCD with 8.5 mm high digits
  - Inductive measuring system, battery life ca. 2000 hrs.
  - Maximum measuring speed 1.5 m/s (60"/s)
  - MarConnect data output: choose either
    - USB
    - OPTO RS232C
    - Digimatic
  - Operating temperature 10 - 40°C
  - Class of protection IP42 in accordance to IEC 60529

Supplied with:  
Battery, operating instructions

**Technical Data**

Measuring range	Resolution	Span of error*	Repeatability	Measuring force	Weight	Mounting shank	Order no.
mm (inch)	mm / inch	mm	mm	N	g	dia.	
12.5 (.5")	0.001 / .00005"	0.005	0.002	0.65 - 0.90	140	8h6	<b>4337160</b>
25 (1")	0.001 / .00005"	0.005	0.002	0.65 - 1.15	150	8h6	<b>4337161</b>
12.5 (.5")	0.001 / .00005"	0.005	0.002	0.65 - 0.90	150	3/8"	<b>4337170</b>
25 (1")	0.001 / .00005"	0.005	0.002	0.65 - 1.15	160	3/8"	<b>4337171</b>

\* in any zero point



# MarCator 1088

► | The new Digital Indicator **MarCator 1088**. Tolerance monitoring is simplified with the changing of the color in the background lit display. | ◀

## Dynamic measuring functions

- MAX-MIN memory: ideal for testing flatness and concentricity
- MAX-MIN memory: for searching the reversal point



**Tolerance function:**  
clearly visual tolerance excess due to the change of color in the background lit display.



## Universal Data-Interface



- **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



**Control output** can be connected to a SPS



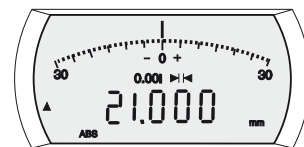
**Absolute function:**  
Digital Indicator can be set in any position to 0.000 without losing the reference to the preset value.

**Protection class IP54** according to IEC 60529. Especially suited for use in a manufacturing environment (excludes measuring range 50 mm)



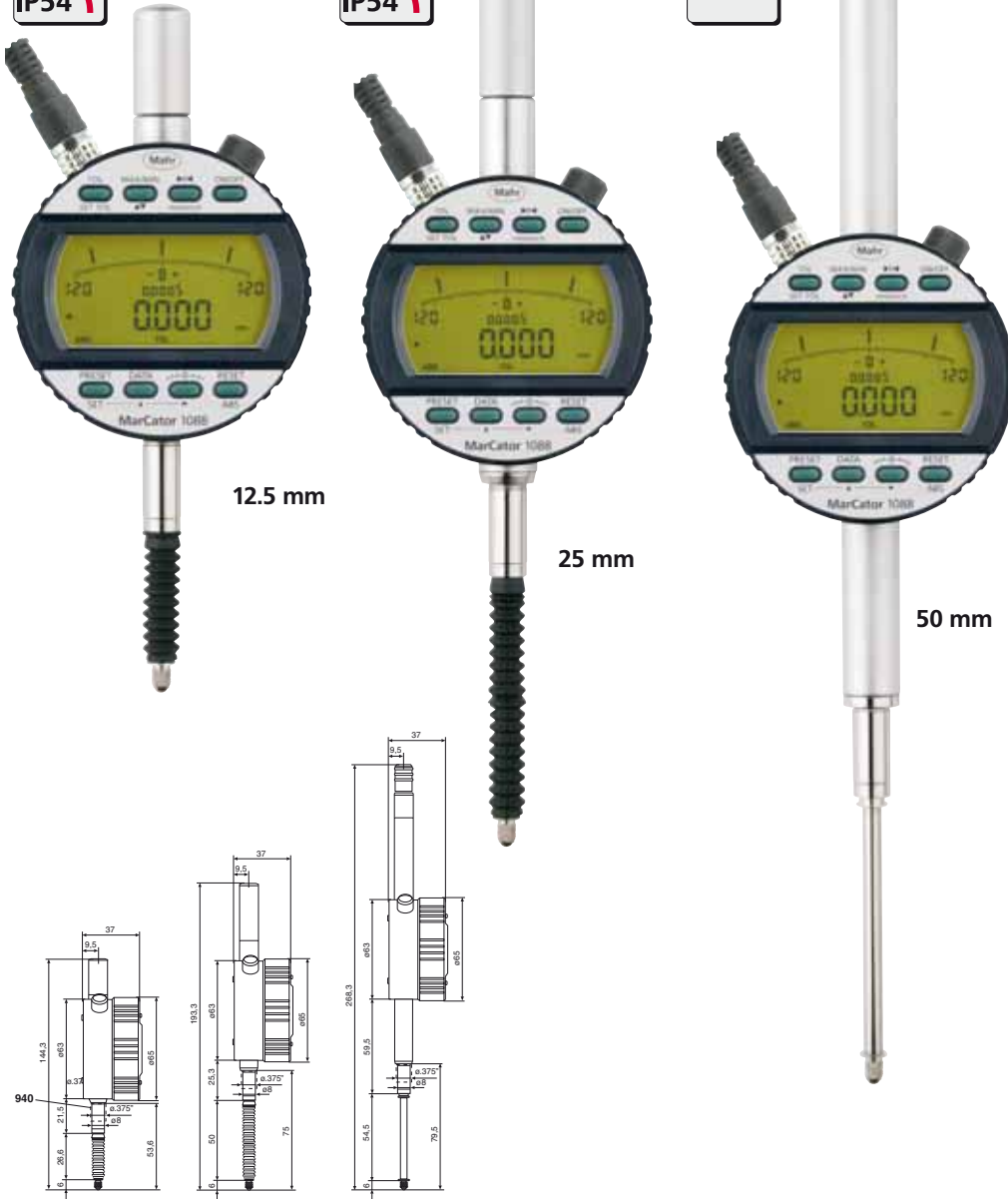
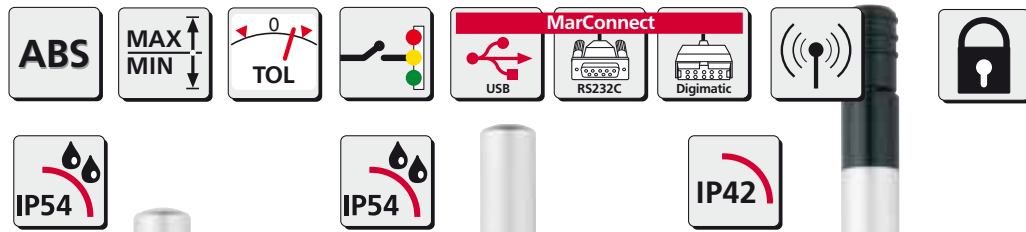
Code Initial	IP	International Protection
First Numeral	<b>5</b>	Dust protected
Second Numeral	<b>4</b>	Protection against splash water in all directions

## Analog display



Readings (switchable)		Display range	
mm	inch	mm	inch
0.001	.00005"	± 0.030	± .0015"
0.002	.0001"	± 0.060	± .0030"
0.005	.0005"	± 0.150	± .0150"
0.01	.001"	± 0.30	± .030"

## Digital Indicators MarCator 1088 / 1088 W, with analog display



### Features

- Functions:**
- ON/OFF
  - RESET (set digital and analog displays to zero)
  - 0 - (set analog display to zero)
  - PRESET (enter any numerical values)
  - DATA (data transmission)
  - mm/inch-switchable
  - Factor (adjustable)
  - Reversal of counting direction (switch value in digital display)
  - MAX-MIN memory, ideal for searching the reversal point
  - MAX-MIN memory, e.g. for testing flatness and concentricity
  - TOL (Enter tolerance limit values)
  - Tolerance band max, 1.6 mm
  - LOCK: operating functions can be blocked via PC-Software
  - Power supply via the main power adapter
  - MarConnect data output: USB, OPTO RS232C, or Digimatic
  - 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 280°
  - Class of protection IP54 in accordance to IEC 60529
  - Operating temperature 5 - 40°C
  - High contrast backlit LCD with 6.5 mm high digits
  - 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
  - Supplied with: Mains adapter, rubber bellows, operating instructions

### Technical Data

Measuring range mm	Resolution mm / inch	Measuring force N	Span of error* mm	Protection class	Order no. 230 V	Order no. 115 V
12.5 (.5")	0.001 / .00005"	0.65 - 1.40	0.005	IP54	4337000	4337010
25 (1")	0.001 / .00005"	1.00 - 2.25	0.005	IP54	4337001	4337011
50 (2")	0.001 / .00005"	1.25 - 2.7	0.008	IP42	4337002	4337012

\* in any zero point

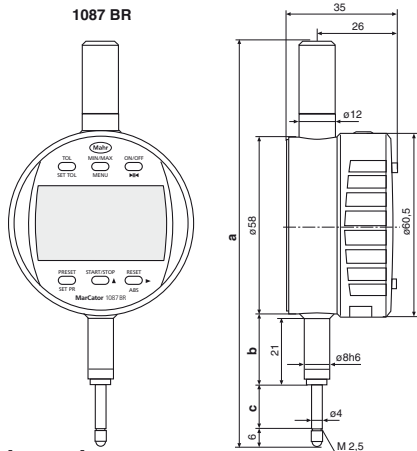
## Digital Indicator MarCator 1087 BR for 2 point inside measurement



### REFERENCE



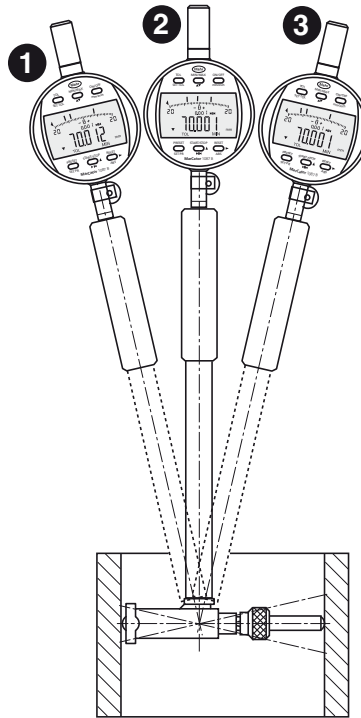
12.5 mm



### Dimensions

Measuring range	a	b	c
mm (inch)	mm	mm	mm
12.5 (.5")	131	23	13.5

### Example of application



With a 2 point inside measuring instrument the point of reversal is automatically determined through rocking back and forth. The actual value is detected and stored by the MIN function and indicated in the display (3).

### Features

#### Functions:

- ON/OFF
- RESET (Set the display to zero) mm/inch
- Reversal of the counting direction
- PRESET (Allows the entry of any value using set buttons)
- TOL (Enter tolerance limit values)
- Tolerance band max. 1.6 mm
- START/STOP for searching the reversal point
- MAX/MIN memory, ideal for searching the reversal point
- ABS (Display can be set to zero, without losing the reference to the Preset value)
- 0 (Set analog display to zero)
- DATA (when connected with a data connection cable)
- Factor (adjustable)
- Immediate measurement due to the Reference system
- Individual buttons can be locked - Lock Function
- Operating and display unit (bezel) can be rotated 280°
- High contrast LCD with 8.5 mm high digits
- Inductive measuring system, battery life ca. 2000 hrs.
- Maximum measuring speed 1.5 m/s (60"/s)
- Sealed protection cap
- MarConnect data output: choose USB, OPTO RS232C, Digimatic
- Operating temperature 10 - 40°C
- Class of protection IP42 in accordance to IEC 60529
- Supplied with: Battery, operating instructions

### Analog display

Readings		Display range	
mm	inch	mm	inch
0.001	.00005"	± 0.02	± .001"
0.002	.0001"	± 0.04	± .002"
0.004	.0005"	± 0.08	± .01"
0.01	.001"	± 0.2	± .02"

### Technical Data

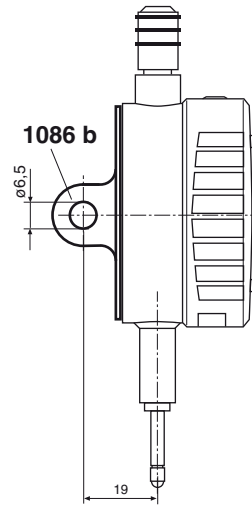
Measuring range	Resolution	Span of error*	Repeatability	Measuring force	Weight	Mounting shank	Order no.
mm (inch)	mm / inch	mm	mm	N	g	dia.	
12.5 (.5")	0.001 / .00005"	0.005	0.002	0.65 - 0.90	140	8h6	4337162

\* in any zero point

## Accessories for MarCator 1086 R, 1087 R and 1088

### Accessories for MarCator 1086 R and 1087 R

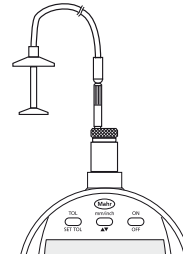
	Order no.
<b>Battery 3V</b> , Type CR 2450	<b>4884464</b>
<b>Data Connection Cable</b> USB (2 m)	<b>16 EXu 4102357</b>
<b>Data Connection Cable</b> Opto RS232C (2 m), with SUB-D jack 9-pin	<b>16 EXr 4102410</b>
<b>Data Connection Cable</b> Digimatic (2 m). Flat plug 10-pin	<b>16 EXd 4102411</b>
<b>Mounting Lug</b>	<b>1086 b 4337421</b>
<b>Rubber bellows</b> for 1086 W - 12.5 mm	<b>4337472</b>
<b>Rubber bellows</b> for 1086 W - 25 mm	<b>4337474</b>



### Accessories for MarCator 1088

	Order no.
<b>Data Connection Cable</b> USB (2 m)	<b>2000 usb 4346023</b>
<b>Data Connection Cable</b> Opto RS232C (2 m), with SUB-D jack 9-pin	<b>2000 r 4346020</b>
<b>Data Connection Cable</b> Digimatic (2 m). Flat plug 10-pin	<b>2000 d 4346021</b>
<b>Cable</b> to connect control output to an SPS	<b>2000 sps 4346031</b>
<b>Mounting Lug</b>	<b>1085 b 4336310</b>
<b>Rubber bellows</b> for 1088 W - 12.5 mm	<b>4337472</b>
<b>Rubber bellows</b> for 1088 W - 25 mm	<b>4337474</b>
<b>Control Instrument</b> for remote control operation	<b>2000 sg 4346035</b>

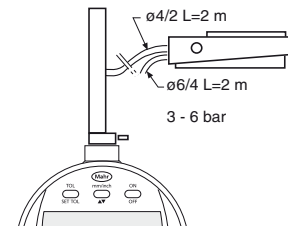
1085 a



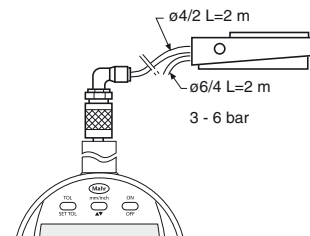
### Accessories for MarCator 1086 R, 1087 R and 1088

	Order no.
<b>Cable Release</b> for measuring ranges 12.5 and 25 mm	<b>1085 a 4336311</b>
<b>Pneumatic Lifter</b> for measuring ranges 12.5 and 25 mm	<b>1082 p 4336237</b>
<b>Pneumatic Lifter</b> for measuring ranges 50 and 100 mm	<b>1082 p 4336230</b>
<b>Additional Accessories</b>	<b>Page</b>
<b>Contact Points</b>	<b>901-913 5-52</b>
<b>Special Holder</b>	<b>941 5-53</b>
<b>Sensor Lever</b>	<b>943 5-53</b>

1082 p (12.5/25)



1082 p (50/100)



Accessories for Data Processing see Chapter 11

## Contact Points and Accessories for Dial Indicators, Dial Comparators and Probes

### Standard Contact Points 901

Ball dia. 3 mm

Catalog no.		Order no.
901	with steel ball	4360001
901 H	with carbide ball	4360002
901 R	with ruby ball	4360003

### Spherical Contact Points 902 Flat Contact Points 903

902	902 H	903	903 H
Steel	Carbide contact face	Steel	Carbide tipped
Length mm	Order no.	Order no.	Order no.
4	4360007	-	4360070
6	4360009	-	4360071
8	4360010	4360040	4360072
10	4360011	4360041	4360073
12	4360012	4360042	4360074
15	4360013	4360043	4360075
20	4360014	4360044	4360076
25	4360015	4360045	4360077
30	4360016	4360046	4360300
35	4360017	4360047	4360078
40	4360019	4360049	4360310
45	4360026	4360050	4360303
50	4360018	4360048	4360079
55	4360031		
65	4360035		
75	4360020		
85	4360036		
95	4360029		

### Ball Contact Point 906 H

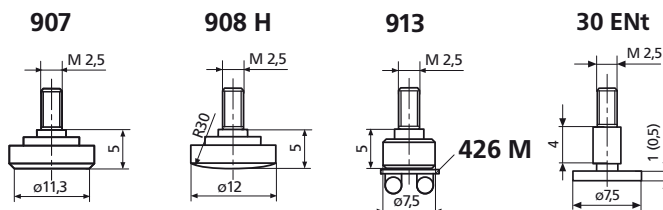
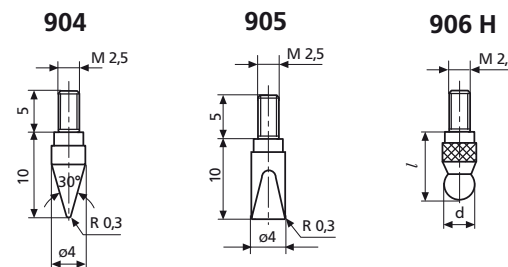
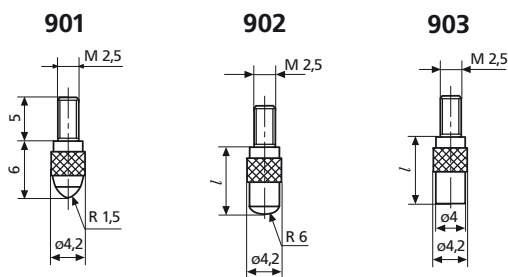
with carbide ball, accuracy ball dia. 0/-6µm

Ball dia. d mm	l mm	Order no.	Ball dia. d mm	l mm	Order no.
1	8.5	4360150	5.5	9	4360161
1.25	8.5	4360151	6	9	4360162
1.5	8.5	4360152	6.35 (1/4")	9	4360163
1.75	8.5	4360153	6.5	10	4360164
2	8.5	4360154	7	10	4360165
2.5	8.5	4360155	7.5	11	4360166
3	8.5	4360156	8	11	4360167
3.5	8.5	4360157	8.5	12	4360168
4	8.5	4360158	9	12	4360169
4.5	8.5	4360159	10	13	4360170
5	9	4360160			

### Contact Rollers 909

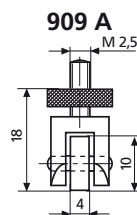
Concentricity error 3 µm

	Order no.
Cylindrical Roller	909 A 4360220
Radiused Roller, R = 5 mm	909 B 4360221



### Special Contact Points

	Order no.
<b>Conical Contact Points, Steel</b>	904 4360130
Carbide tipped	904 H 4360131
<b>Wedge Shaped Contact Points, Steel</b>	905 4360140
Carbide tipped	905 H 4360141
<b>Flat Contact Points, Steel, A = 1 cm<sup>2</sup></b>	907 4360200
Carbide tipped, dia. 7 mm	907 H 4360201
<b>Spherical Contact Points, Steel</b>	908 4360210
Carbide tipped	908 H 4360211
<b>Flat Contact Point, for mounting</b>	
Pin Gage Holder 426 M for measuring threads using three-wire method	913 4360400
<b>Disc Type anvil</b> thickness 0.5 mm, hardened	30 ENT 4126310
<b>Disc Type anvil</b> thickness 1 mm, hardened	30 ENT 4882022



## Contact Points and Accessories for Dial Indicators, Dial Comparators and Probes

### Measuring Attachment 910 H

	Order no.
with parallel adjustable carbide blades	<b>910 H 4360230</b>

### Pin Contact Point 911

dia. 1.5 mm, flat

Length <i>l</i> mm	Order no.	Length <i>l</i> mm	Order no.
15	<b>4360280</b>	35	<b>4360284</b>
20	<b>4360281</b>	40	<b>4360285</b>
25	<b>4360282</b>	50	<b>4360286</b>
30	<b>4360283</b>		

### Pin Contact Point 911 H

	Order no.
Carbide tipped, dia 1 mm, flat	<b>911 H1 4360240</b>
Carbide tipped, dia 1.5 mm, flat	<b>911 H2 4360241</b>

### Measuring Spindle Extensions 912

Length <i>l</i> mm	Order no.	Length <i>l</i> mm	Order no.
10	<b>4360250</b>	35	<b>4360254</b>
15	<b>4360251</b>	50	<b>4360255</b>
20	<b>4360252</b>	75	<b>4360256</b>
25	<b>4360253</b>	100	<b>4360257</b>

### Special Holder 941

For all types of measuring equipment  
 For placing a dial indicator at a certain distance or angle  
 Travel of the measuring spindle 3 mm  
 Contact Point 901 (interchangeable)

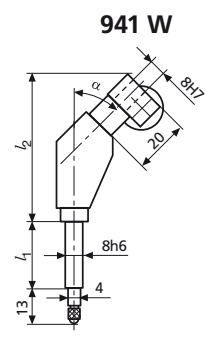
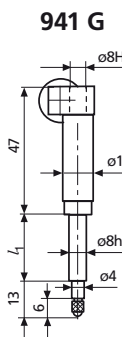
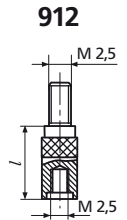
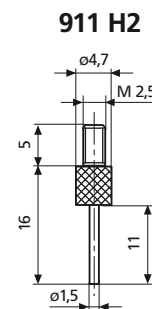
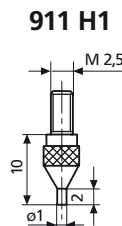
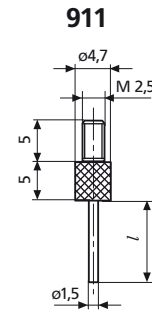
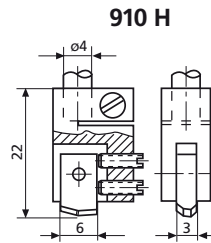
**Straight Holder 941 G**  
 Mounting shank length *l*<sub>1</sub>  
 mm

**Angular Holder 941 W**

Order no.	<i>l</i> <sub>2</sub> mm	Order no.	<i>l</i> <sub>2</sub> mm	Order no.	<i>l</i> <sub>2</sub> mm
Angle $\alpha=45^\circ$		Angle $\alpha=60^\circ$		Angle $\alpha=90^\circ$	
25	<b>4365000</b>	53.7	<b>4365020</b>	34.5	<b>4365030</b>
50	<b>4365001</b>		<b>4365021</b>		<b>4365031</b>
75	<b>4365002</b>		<b>4365022</b>		<b>4365032</b>

### Sensor Level 943

	Order no.
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 Contact Point 901 interchangeable Travel $\pm 1$ mm	<b>4367000</b>



Transmission error with the 941 W  
 max. 1%;  
 for travel 3 mm = 0.03 mm

