

آزما صنعت گراد



نماینده انحصاری کمپانی **Mahr** آلمان

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- 0 +



EXACTLY

DOES EVERYTHING ROTATE AROUND PRECISION? NO PROBLEM WITH MICROMAR.



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

www.mahr.com, WebCode 205

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

► | Micromar. Micrometers

Overview

Micromar Micrometers

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Micrometers

Micromar 40 EWR / 40 ER / 40 EWS / 40 EWV

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With a Digital Display

Micromar 40 A / 40 AG / 40 W

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With Scales

Micromar 40 F / 40 T / 40 TS

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With a Line Scale (Vernier)

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Micromar 46 EWR / 46 / 46H

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With Digital Display or Scales (Vernier)

Micromar. Micrometer

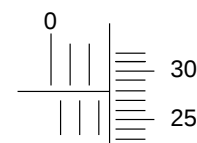
OVERVIEW

Micromar - Design Features



Reading example:

Micrometer with 0.01 mm-divisions



Sleeve	2.5
Thimble	0.28
Measuring result	2.78 mm

Micromar - Types of Micrometers

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

a) Digital Micrometer with digital display



b) Mechanical Micrometer with scale and dial



c) Mechanical Micrometer with scale



Error limits G according to DIN 863-1

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

Micromar - Variations

a) Micrometer



b) Micrometer for inside dimensions



c) Micrometer for depth measurement



d) Micrometer Head



Function keys of Digital Micrometers

Functions		Type
		40 EWR 40 EWS 40 E WV 40 ER 44 EWR 46 EWR
PR	Enter a numerical value (Reference Setting)	●
mm/in	Switch between mm/inch	●
0/ABS	Set display to either 0.000 mm or .0000" for relative measurement / set to a reference or preset value (PR)	●
DATA	Data transmission	●*
		●*
		●*



* For digital micrometers with a data output

Micromar. Digital Micrometer Micromar 40 EWR

WATERPROOF MICROMETERS

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

The high-contrast display with 8.5 mm high digits enables accurate, fatigue free reading of the measurement results.

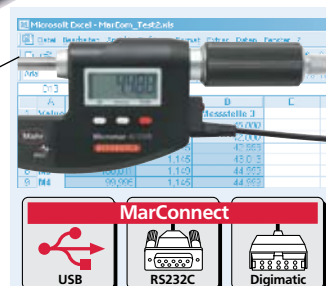
Absolute-Function:
Micrometer can be set in any position to 0.000 mm / .0000" without the reference to the Preset value being lost

ABS

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

Stainless steel, hardened spindle

Sturdy hard lacquered steel frame

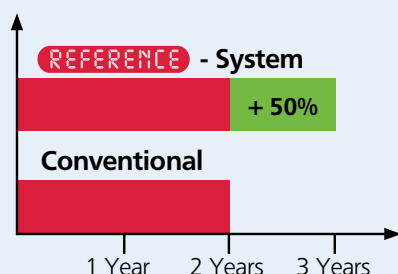


Universal SPC-interface (optional). You have a choice of **MarConnect** data outputs, select either **USB**, **Digimatic** or **Mahr Opto RS232**

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



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 to up to 50%.**

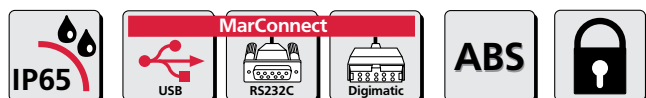


Code Initial	IP	International Protection
First Numeral	6	Dust-tight
Second Numeral	5	Protected against powerful water jets



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

Digital Micrometer Micromar 40 EWR with data output



Features

Functions:

RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

DATA (Data transmission via connection cable)

- Immediate measurement due to the Reference system
- MarConnect data output, choose alternatively USB
OPTO RS232C
Digimatic

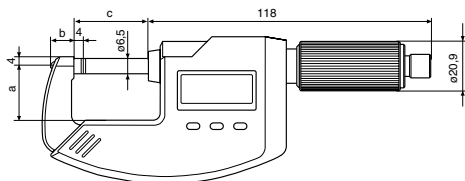
- High contrast Liquid Crystal Display with 8.5 mm high digits
- Hard lacquered steel frame, heat insulated
- Spindle and anvil are carbide tipped
- Spindle is made of stainless steel, hardened throughout and ground

- Ratchet is integrated in the thimble
- Rapid drive
- Supplied with:
Case, battery, operating instructions and setting standard (from measuring range 25-50 mm / 1-2")

Technical Data

	Measuring range		Resolution	Error limit G *	Spindle thread pitch	Data output	Order no.
	mm	(inch)	mm / inch	μm	mm	   	
40 EWR	0 - 25	(0 - 1")	0.001 / .00005"	2	0.635	●	4151705
40 EWR	25 - 50	(1 - 2")	0.001 / .00005"	2	0.635	●	4151706
40 EWR	50 - 75	(2 - 3")	0.001 / .00005"	3	0.635	●	4151707
40 EWR	75 - 100	(3 - 4")	0.001 / .00005"	3	0.635	●	4151708
40 EWR	100 - 125	(4 - 5")	0.001 / .00005"	5	0.635	●	4151740
40 EWR	125 - 150	(5 - 6")	0.001 / .00005"	5	0.635	●	4151741
40 EWR	150 - 175	(6 - 7")	0.001 / .00005"	6	0.635	●	4151742
40 EWR	175 - 200	(7 - 8")	0.001 / .00005"	6	0.635	●	4151743

* at fixed zero point (better than DIN 863-1)



Dimensions

mm	a	b	c
0 - 25 mm / 0-1"	23	9.5	31.5
25 - 50 mm / 1-2"	32	11.5	57
50 - 75 mm / 2-3"	44	13.5	82
75 - 100 mm / 3-4"	57	15.5	107
100 - 125 mm / 4-5"	73	17	132.5
125 - 150 mm / 5-6"	85	17	157.5
150 - 175 mm / 6-7"	97	17	182.5
175 - 200 mm / 7-8"	110	17	207.5

Accessories

	Order no.
Battery 3V , type CR 2032	4102520
Data Connection Cable USB (2 m)	16 EXu 4102357
Data Connection Cable Opto RS232C (2 m), with SUB-D jack 9-pin	16 EXr 4102410
Data Connection Cable Digimatic (2 m), Flat plug 10-pin	16 EWd 4102915

Accessories for Data Processing see Chapter 11

Digital Micrometer Micromar 40 EWR without data output



REFERENCE

Features

Functions:

RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

- Immediate measurement due to the Reference system
- High contrast Liquid Crystal Display with 8.5 mm high digits
- Hard lacquered steel frame, heat insulated

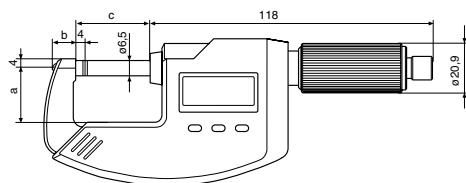
- Spindle and anvil are carbide tipped
- Spindle is made of stainless steel, hardened throughout and ground
- Ratchet is integrated in the thimble

- Rapid drive
- Supplied with: Case, battery, operating instructions

Technical Data

	Measuring range		Resolution	Error limit G *	Spindle thread pitch	Data output	Order no.
	mm	(inch)	mm / inch	μm	mm		
40 EWR	0 - 25	(0 - 1")	0.001 / .00005"	2	0.635	—	4151721

* at fixed zero point (better than DIN 863-1)



Dimensions

mm	a	b	c
0 - 25 mm / 0-1"	23	9.5	31.5

Accessories

	Order no.
Battery 3V, type CR 2032	4102520

Digital Micrometer Set Micromar 40 EWR



REFERENCE

Features

Functions:

RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement) mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

DATA (Data transmission via connection cable)

- Immediate measurement due to the Reference system
- MarConnect data output, choose alternatively
USB
OPTO RS232C
Digimatic

- High contrast Liquid Crystal Display with 8.5 mm high digits
- Hard lacquered steel frame, heat insulated
- Spindle and anvil are carbide tipped
- Spindle is made of stainless steel, hardened throughout and ground

- Ratchet is integrated in the thimble
- Rapid drive
- Supplied with:
Custom fitted plastic case, battery, operating instructions and standards 25 mm, 50 mm and 75 mm

Technical Data

	Measuring range		Resolution	Spindle thread pitch	Number of Micrometers	Order no.
	mm	(inch)				
40 EWR	0 - 100	(0 - 4")	0.001 / .00005"	0.635	4	4151709

Accessories

		Order no.
Battery 3V, type CR 2032		4102520
Data Connection Cable USB (2 m)	16 EXu	4102357
Data Connection Cable Opto RS232C (2 m), with SUB-D jack 9-pin	16 EXr	4102410
Data Connection Cable Digimatic (2 m), Flat plug 10-pin	16 EWd	4102915

Accessories for Data Processing see Chapter 11

Digital Micrometer Micromar 40 ER without data output



REFERENCE

Features

Functions:

RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

- Immediate measurement due to the Reference system
- High contrast Liquid Crystal Display with 8.5 mm high digits
- Hard lacquered steel frame, heat insulated
- Spindle and anvil are carbide tipped

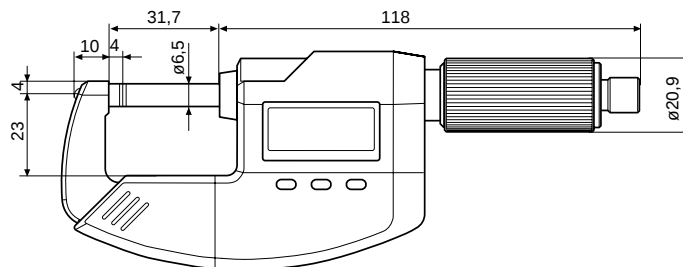
- Spindle is made of stainless steel, hardened throughout and ground
- Ratchet is integrated in the thimble
- Rapid drive

- Supplied with: Case, battery and operating instructions

Technical Data

	Measuring range		Resolution	Error limit G^*	Spindle thread pitch	Order no.
	mm	(inch)				
40 ER	0 - 25	(0-1")	0.001 / .00005"	2	0.635	4151601

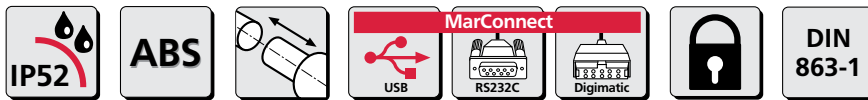
* at fixed zero point (better than DIN 863-1)



Accessories

	Order no.
Battery 3V, type CR 2032	4102520

Digital Micrometer Micromar 40 EWS with sliding spindle


REFERENCE

Features

Functions:

RESET (Zero setting the display for Relative measurement)
 ABS (Switch between Relative and Absolute measurement)
 mm/inch
 Reference-Lock/Unlock
 PRESET (Reference setting)

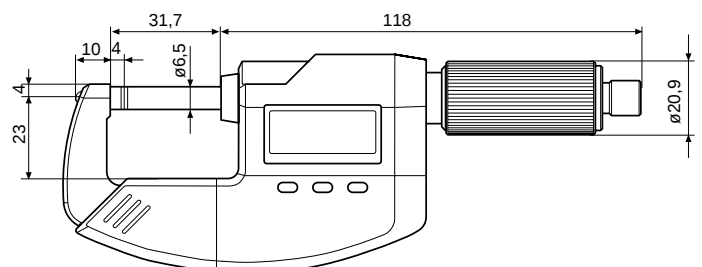
- Immediate measurement due to the Reference system
- MarConnect data output, choose alternatively
 USB
 OPTO RS232C
 Digimatic

- High contrast Liquid Crystal Display with 8.5 mm high digits
- Hard lacquered steel frame, heat insulated
- Spindle and anvil are carbide tipped
- Spindle is made of stainless steel, hardened throughout and ground

- Ratchet is integrated in the thimble
- Rapid drive
- Supplied with:
 Case, battery and operating instructions

Technical Data

	Measuring range		Resolution	Error limit G	Spindle thread pitch	Order no.
	mm	(inch)	mm / inch	μm	mm	
40 EWS	0 - 25	(0-1")	0.001 / .00005"	4	0.635	4151724



Accessories

	Order no.
Battery 3V , type CR 2032	4102520
Data Connection Cable USB (2 m)	16 EXu 4102357
Data Connection Cable Opto RS232C (2 m), with SUB-D jack 9-pin	16 EXr 4102410
Data Connection Cable Digimatic (2 m), Flat plug 10-pin	16 EWd 4102915

Accessories for Data Processing see Chapter 11

Universal Digital Micrometer Micromar 40 EWW with sliding spindle



REFERENCE

Features

Functions:

RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement) mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

- Immediate measurement due to the Reference system
- MarConnect data output, choose alternatively USB
OPTO RS232C
Digimatic

- High contrast Liquid Crystal Display with 8.5 mm high digits
- Hard lacquered steel frame, heat insulated
- Mounting bore for interchangeable anvils
- Spindle is made of stainless steel, hardened throughout and ground

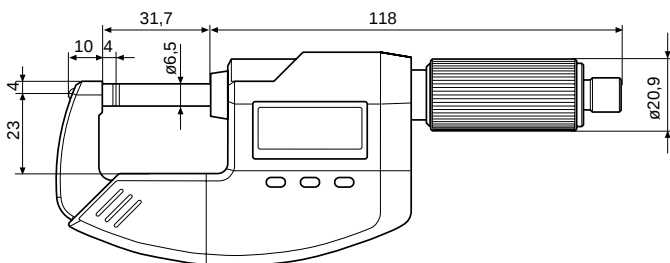
- Ratchet is integrated in the thimble
- Rapid drive
- Supplied with: Case, battery and operating instructions

Technical Data

Measuring range*	Resolution	Error limit**	Spindle thread pitch	Spindle dia.	Order no. without standard accessories	Order no. with standard accessories
mm	mm / inch	G μm	mm	mm		
0 - 25	0.001 / .00005"	4	0.635	6.5	4151722	
0 - 25	0.001 / .00005"	4	0.635	6.5		4151723

* with thread anvils the measuring range is reduced

** with flat anvils over the full length of the anvils



Special Accessories

	Order no.
Battery 3V , type CR 2032	4102520
Data Connection Cable USB (2 m)	16 EXu 4102357
Data Connection Cable Opto RS232C (2 m), with SUB-D jack 9-pin	16 EXr 4102410
Data Connection Cable Digimatic (2 m), Flat plug 10-pin	16 EWd 4102915

Accessories for Data Processing see Chapter 11

Standard Accessories are included in the set

Catalog no.	Description	Order no.	Quantity required	
40 EfK	Flat anvils (reference)	4151771	1	
40 Efl	Flat anvils (sensitive)	4151761	1	
40 Eak	Anvils with reduced measuring faces (reference)	4151777	1	
40 Eal	Anvils with reduced measuring faces (sensitive)	4151767	1	
40 EtK	Disc type anvils (reference) d = 11.3 mm	4151772	1	
40 Etl	Disc type anvils (sensitive) d = 11.3 mm	4151762	1	
40 Erk	Anvils with spherical measuring faces	4151774	2	
40 Epk	Conical shaped anvil	4151773	2	
40 Esk	Wedge shaped anvil (blade)	4151775	2	

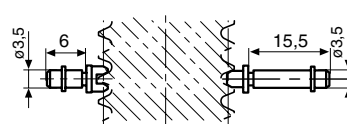
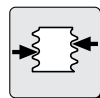
Special Accessories

Catalog no.	Description	Order no.	Quantity required	
40 Ekk	Wedge shaped anvil (blade) 60°	4151776	2	

Thread anvils for pitch diameters*

• Pair consists of 1 V-anvil and 1 blade anvil

* with thread anvils the measuring range is reduced to 20 mm



Metric thread (60°)					Whitworth thread (55°)					American UST thread (60°)				
Pitch		V-anvil	Blade		Pitch		V-anvil	Blade		Pitch		V-anvil	Blade	
mm		Order no.	Order no.		range		Order no.	Order no.		range		Order no.	Order no.	
0.5	-	0.7	4501000	4173700	40	-	32	4501007	4173743	40	-	32	4501018	4173815
0.7	-	1	4501001	4173701	32	-	24	4501008	4173744	32	-	24	4501019	4173816
1.25	-	2	4501002	4173702	24	-	18	4501009	4173745	24	-	18	4501020	4173817
2	-	3.5	4501003	4173703	18	-	14	4501010	4173746	18	-	14	4501021	4173818
					14	-	10	4501011	4173747	14	-	10	4501022	4173819
					10	-	7	4501012	4173748	10	-	7	4501023	4173820

Micrometer Micromar 40 A

DIN
863-1



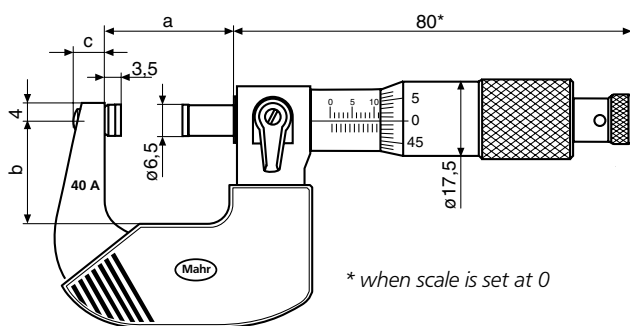
Features

- Hard lacquered steel frame
- Scales with satin-chrome finish
- Rapid drive with integrated ratchet
- Supplied with: Case, setting standard (from measuring range 25-50 mm / 1-2"), operating instructions
- Spindle and anvil made of hardened steel, carbide tipped
- Heat insulators
- Locking device

Technical Data

Measuring range	Readings	Error limit G	Spindle thread pitch	Order no.
Metric				
0 - 25 mm	0.01 mm	4 µm	0.5 mm	4134000
25 - 50 mm	0.01 mm	4 µm	0.5 mm	4134001
50 - 75 mm	0.01 mm	5 µm	0.5 mm	4134002
75 - 100 mm	0.01 mm	5 µm	0.5 mm	4134003
100 - 125 mm	0.01 mm	6 µm	0.5 mm	4134004
125 - 150 mm	0.01 mm	6 µm	0.5 mm	4134005
150 - 175 mm	0.01 mm	7 µm	0.5 mm	4134006
175 - 200 mm	0.01 mm	7 µm	0.5 mm	4134007
Inch				
0 - 1"	.0001"	.00016"	.025"	4134900
1 - 2"	.0001"	.00016"	.025"	4134901
2 - 3"	.0001"	.00020"	.025"	4134902
3 - 4"	.0001"	.00020"	.025"	4134903
4 - 5"	.0001"	.00024"	.025"	4134904
5 - 6"	.0001"	.00024"	.025"	4134905
6 - 7"	.0001"	.00028"	.025"	4134906
7 - 8"	.0001"	.00028"	.025"	4134907

Technical Data



Dimensions

Measuring range				a	b	c
mm		inch		mm	mm	mm
0	- 25	0	- 1"	31	25.5	7
25	- 50	1	- 2"	56	34.5	12
50	- 75	2	- 3"	81	47.5	12
75	- 100	3	- 4"	106	58.5	13
100	- 125	4	- 5"	131	71.5	13
125	- 150	5	- 6"	156	83.5	13
150	- 175	6	- 7"	182	95.5	13
175	- 200	7	- 8"	207	108.5	13

Accessories

Stand, setting standards, etc. please refer to page 3-24

Micrometer Sets Micromar 40 SA



Application range

Order no.

Remarks

0 - 100 mm (4 Micrometers)	4134050	Incl. wooden case, setting standards 25 mm and 75 mm
100 - 200 mm (4 Micrometers)	4134051	Incl. wooden case, setting standards 125 mm and 175 mm
0 - 4" (4 Micrometers)	4134960	Incl. wooden case, setting standards 1" and 3"
4 - 8" (4 Micrometers)	4134961	Incl. wooden case, setting standards 5" and 7"

Micrometer Micromar 40 AG

DIN
863-1



Features

- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide tipped
- Scales with satin-chrome finish
- Heat insulators
- Ratchet is integrated in the thimble
- Locking device

- Supplied with:
Case, setting standard

Note:

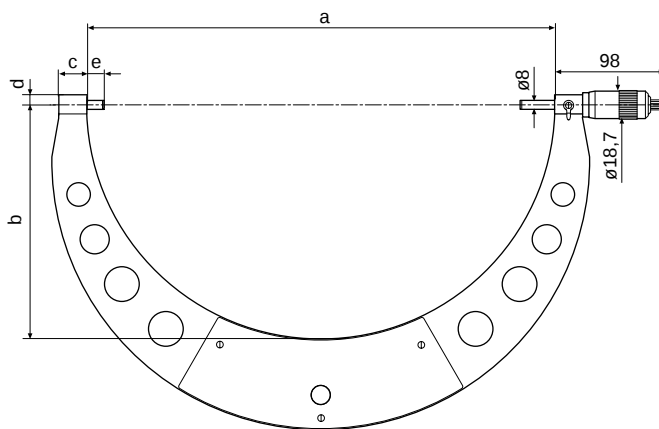
All Micrometers with measuring ranges between 400 mm to 500 mm, the frame is made from a steel tube

Technical Data

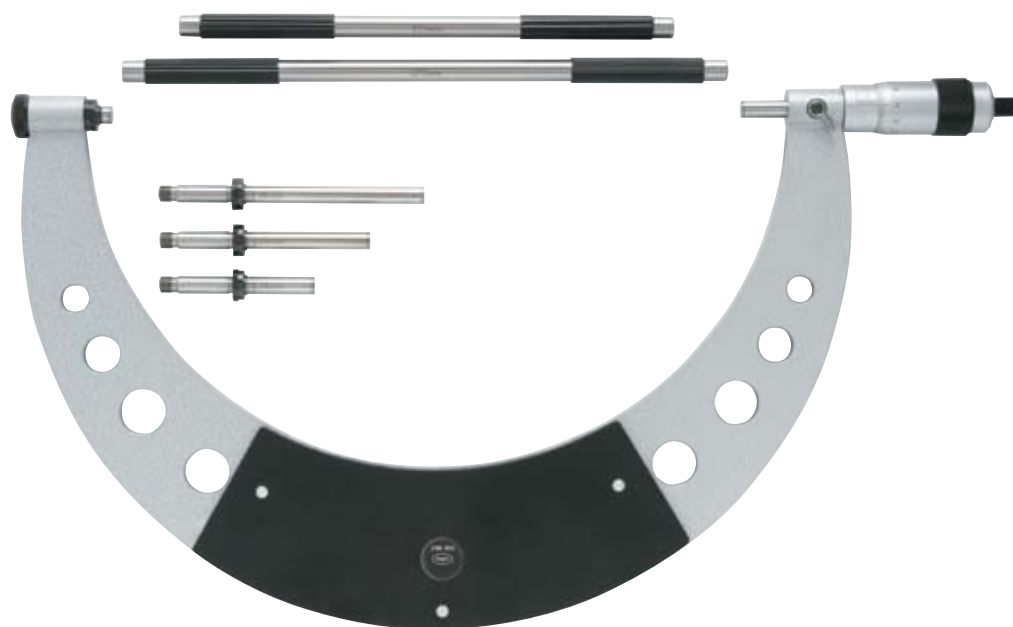
Measuring range		Readings	Error limit	Spindle thread pitch	Weight	Order no.
mm		mm	G μm	mm	kg	
200	- 225	0.01	8	0.5	2	4134500
225	- 250	0.01	8	0.5	2.2	4134501
250	- 275	0.01	9	0.5	2.3	4134502
275	- 300	0.01	9	0.5	2.7	4134503
300	- 325	0.01	10	0.5	3.2	4134504
325	- 350	0.01	10	0.5	3.4	4134505
350	- 375	0.01	11	0.5	3.6	4134506
375	- 400	0.01	11	0.5	4	4134507
400	- 425	0.01	12	0.5	4.2	4134508
425	- 450	0.01	12	0.5	4.5	4134509
450	- 475	0.01	13	0.5	4.9	4134510
475	- 500	0.01	13	0.5	5	4134511

Dimensions

Dimensions in mm		a	b	c	d	e
200	- 225	242.5	121.5	25	5	12
225	- 250	267.5	134	25	5	12
250	- 275	292.5	146.5	25	5	12
275	- 300	317.5	159	25	5	12
300	- 325	342.5	171.5	25	5	12
325	- 350	367.5	184	25	5	12
350	- 375	392.5	196.5	25	5	12
375	- 400	417.5	209	25	5	12
400	- 425	442	223	25	5	12
425	- 450	467	236	25	5	12
450	- 475	492	248	25	5	12
475	- 500	517	259	25	5	12



Micrometer Micromar 40 W



Features

- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide tipped
- Scales with satin-chrome finish
- Heat insulators
- Ratchet is integrated in the thimble
- Exchangeable anvils
- Locking device
- Supplied with:
Case, setting standards

Note:

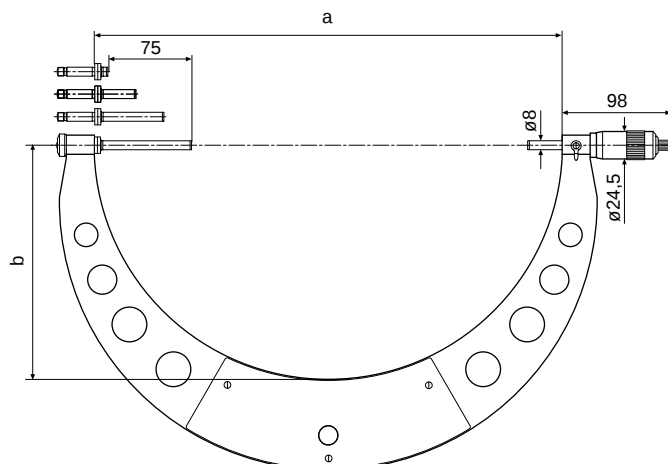
All Micrometers with measuring ranges from 400 mm up to 1000 mm, the frame is made from a steel tube

Technical Data

Measuring range			Readings	Error limit	Spindle thread pitch	Weight	Order no.
mm			mm	μm	mm	kg	
0	-	100	0.01	5	1	1.1	4137500
100	-	200	0.01	7	1	2.1	4137501
200	-	300	0.01	9	1	3.4	4137502
300	-	400	0.01	11	1	5.7	4137503
400	-	500	0.01	13	1	2.6	4137504
500	-	600	0.01	21	1	3.3	4137505
600	-	700	0.01	23	1	4.0	4137506
700	-	800	0.01	26	1	4.4	4137507
800	-	900	0.01	28	1	5.3	4137508
900	-	1000	0.01	30	1	6.5	4137509

Dimensions

Dimensions in mm			a	b
0	-	100	117.5	59
100	-	200	217.5	109
200	-	300	317.5	159
300	-	400	417.5	209
400	-	500	517.5	259
500	-	600	617.5	309
600	-	700	717.5	360
700	-	800	817.5	410
800	-	900	917.5	460
900	-	1000	1017.5	510



Micrometer with integrated Dial Comparator Micromar 40 F / FC

DIN
863-3



Applications

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

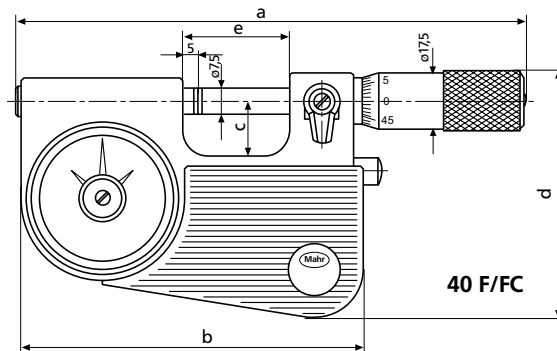
Features

- Chrome plated steel frame with heat insulators
- Maximum stability
- Retraction of the movable anvil and carbide-tipped measuring faces ensures maximum wear resistance
- Longer service life due to the ceramic measuring faces (40 FC)
- Measuring spindle made of stainless steel, hardened throughout and ground, lockable
- Scales with satin-chrome finish
- Constant measuring force
- Dial Comparator is integrated in frame
- Adjustable tolerance markers
- Supplied with: Case

Technical Data

	Measuring range	Retraction	Measuring faces Flatness Parallelism	Measuring force	Order no.	Remarks
40 F	0 - 25 mm	1 mm	$\leq 0.2 \mu\text{m}$	9 N	4150000	
	25 - 50 mm	1 mm	$\leq 0.2 \mu\text{m}$	9 N	4150001	
	0 - 1"	.04"	$\leq .00001"$	9 N	4150900	
	1 - 2"	.04"	$\leq .00001"$	9 N	4150901	
40 FC	0 - 25 mm	1 mm	$\leq 0.2 \mu\text{m}$	9 N	4150200	Ceramic measuring faces
	25 - 50 mm	1 mm	$\leq 0.2 \mu\text{m}$	9 N	4150201	Ceramic measuring faces

Micrometer			Dial Comparator		
Readings	Error limit G_{me}	Spindle thread pitch	Error limit G_e (DIN 879)	Meas. range	Readings
0,01 mm .0001"	$\leq 2 \mu\text{m}$ $\leq .00008"$	0,5 mm .025"	1 μm .00005"	$\pm 65 \mu\text{m}$ $\pm .0025"$	1 μm .00005"



Dimensions

Dimensions in mm		a*	b	c	d	e
40 F/FC	0-25 mm (0-1")	149	100	16	71	32
	25-50 mm (1-2")	174	125	30	85	56

* in zero position

Accessories

Stand, setting standards, etc. please refer to page 3-24

Micrometer with Dial Comparator Micromar 40 T

DIN
863-3



Applications

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

Features

- Rugged steel frame, heat insulated and chrome plated (up to measuring range 100 - 150 mm)
- Maximum stability
- Retraction of the movable anvil and carbide-tipped measuring faces ensures maximum wear resistance
- Measuring spindle made of stainless steel, hardened throughout and ground, lockable
- Scales with satin-chrome finish
- Constant measuring force
- Heat insulators
- Supplied with: Dial Comparator 1003, wooden case

Technical Data

Measuring range	Retraction	Measuring faces		Measuring force	Order no.*
		Flatness	Parallelism		
0 - 25 mm	1.2 mm	$\leq 0.2 \mu\text{m}$	$\leq 2 \mu\text{m}$	6.5 N	4154000
25 - 50 mm	1.2 mm	$\leq 0.2 \mu\text{m}$	$\leq 2 \mu\text{m}$	6.5 N	4154001
50 - 100 mm	1.2 mm	$\leq 0.2 \mu\text{m}$	$\leq 2 \mu\text{m}$	6.5 N	4154002
100 - 150 mm	1.2 mm	$\leq 0.2 \mu\text{m}$	$\leq 2 \mu\text{m}$	7.5 N	4154003
150 - 200 mm	1.2 mm	$\leq 0.2 \mu\text{m}$	$\leq 2 \mu\text{m}$	7.5 N	4154004

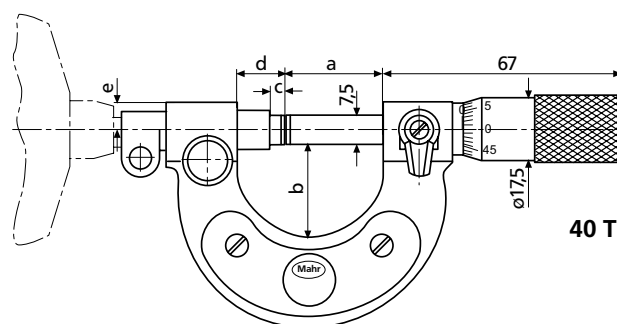
Micrometer			Dial Comparator*		
Readings	Error limit G_{me}	Spindle thread pitch	Error limit G_e (DIN 879)	Meas. range	Readings
0.01 mm	$\leq 2 \mu\text{m}$	0.5 mm	1 μm	$\pm 50 \mu\text{m}$	1 μm

Dimensions

Dimensions in mm	a**	b	c	d**	e
0 - 25	27	28	4	11	8
25 - 50	52	40	4	11	8
50 - 100	76	65	5.5	30	8
100 - 150	127	87	5.5	30	8
150 - 200	177	112	5.5	30	8

* Alternative indicating instruments are available on request

** in zero position



Indicating Snap Gage 840 F
see page 9-8



Accessories

Stand, setting standards, etc. please refer to page 3-24

Precision Bench Micrometer Micromar 40 TS

DIN
863-3



Applications

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

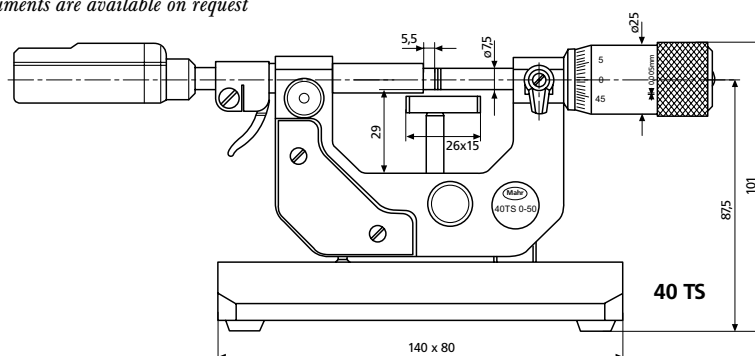
Features

- Rugged steel frame, can be tilted up to 45° in relation to the sturdy base
- Retraction of the movable anvil and carbide-tipped measuring faces ensures maximum wear resistance
- Height-adjustable stop
- Constant measuring force
- Measuring spindle made of stainless steel, hardened throughout and ground, lockable
- Scales with satin-chrome finish
- Supplied with:
Dial Comparator 1003

Technical Data

Measuring range	Retraction	Measuring faces	Measuring force	Order no.*	Order no. wooden case
0 - 50 mm	1.2 mm	Flatness	6.5 N	4154030	4154035
0 - 2"	.045"	Parallelism	6.5 N	4154930	4154035
		≤0.2 μm			
		≤.00001"			
		≤2 μm			
		≤.00008"			

* Alternative indicating instruments are available on request



Indicating Thread Snap Gage
852 TS see page 9-19



Micrometer			Dial Comparator 1003/1003Z		
Readings	Error limit G_{me}	Spindle thread pitch	Error limit G_e (DIN 879)	Meas. range	Readings
0.01 mm	≤2 μm	0.5 mm	1 μm	±50 μm	1 μm
.0001"	≤.00008"	.025"	.00005"	±.002"	.00005"

Accessories

Stand, setting standards, etc. please refer to page 3-24

Micrometer Micromar 40 AB with reduced measuring faces



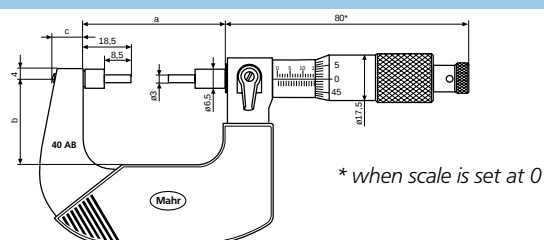
DIN
863-3

Features

- For measuring recesses, grooves, etc.
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide tipped
- Scales with satin-chrome finish
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- Supplied with: Case, setting standard (from measuring range 25 - 50 mm / 1 - 2"), operating instruction

Technical Data

Measuring range	Readings	Error limit G	Spindle thread pitch	Order no.
0 - 25 mm	0.01 mm	4 μ m	0.5 mm	4134100
25 - 50 mm	0.01 mm	4 μ m	0.5 mm	4134101
50 - 75 mm	0.01 mm	5 μ m	0.5 mm	4134102
75 - 100 mm	0.01 mm	5 μ m	0.5 mm	4134103
0 - 1"	.0001"	.00016"	.025"	4134920
1 - 2"	.0001"	.00016"	.025"	4134921
2 - 3"	.0001"	.00020"	.025"	4134922
3 - 4"	.0001"	.00020"	.025"	4134923



Dimensions in mm	a	b	c
0 - 25 mm / 0-1"	56	34.5	12
25 - 50 mm / 1-2"	81	47.5	12
50 - 75 mm / 2-3"	106	58.5	13
75 - 100 mm / 3-4"	131	71.5	13

Micrometer Micromar 40 AS with sliding spindle and measuring spades



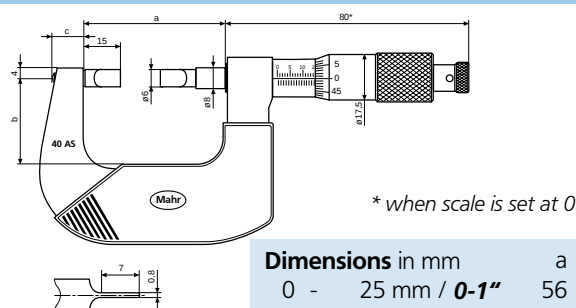
DIN
863-3

Features

- For measuring narrow recesses, grooves, etc.
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel
- Scales with satin-chrome finish
- Heat insulators
- Rapid drive with integrated ratchet
- Supplied with: Case, setting standard (from measuring range 25 - 50 mm / 1 - 2"), operating instructions

Technical Data

Measuring range	Readings	Error limit G	Spindle thread pitch	Order no.
0 - 25 mm	0.01 mm	4 μ m	0.5 mm	4134200
25 - 50 mm	0.01 mm	4 μ m	0.5 mm	4134201
50 - 75 mm	0.01 mm	5 μ m	0.5 mm	4134202
75 - 100 mm	0.01 mm	5 μ m	0.5 mm	4134203
0 - 1"	.0001"	.00016"	.025"	4134930
1 - 2"	.0001"	.00016"	.025"	4134931
2 - 3"	.0001"	.00020"	.025"	4134932
3 - 4"	.0001"	.00020"	.025"	4134933



Dimensions in mm	a	b	c
0 - 25 mm / 0-1"	56	34.5	12
25 - 50 mm / 1-2"	81	47.5	12
50 - 75 mm / 2-3"	106	58.5	13
75 - 100 mm / 3-4"	131	71.5	13

Micrometer Micromar 40 AR with spherical anvil



DIN
863-3

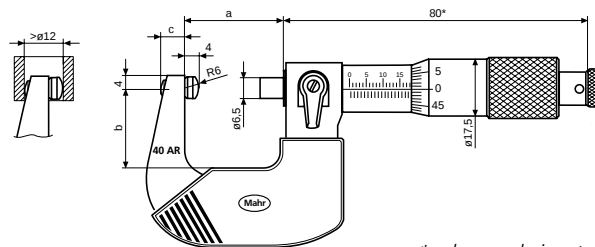
Features

- For measuring the wall thickness of a pipe, etc.
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide tipped
- Scales with satin-chrome finish
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- Supplied with: Case, setting standard (measuring range for 25 - 50 mm / 1 - 2"), operating instructions

Technical Data

Measuring range	Readings	Error limit G	Spindle thread pitch	Order no.
0 - 25 mm	0.01 mm	4 µm	0.5 mm	4134250
25 - 50 mm	0.01 mm	4 µm	0.5 mm	4134251
0 - 1"	.0001"	.00016"	.025"	4134940
1 - 2"	.0001"	.00016"	.025"	4134941

Dimensions in mm	a	b	c
0 - 25 mm / 0-1"	31	25.5	7
25 - 50 mm / 1-2"	56	34.5	12



* when scale is set at 0

Micrometer Micromar 40 AW with sliding spindle and disc-type anvils

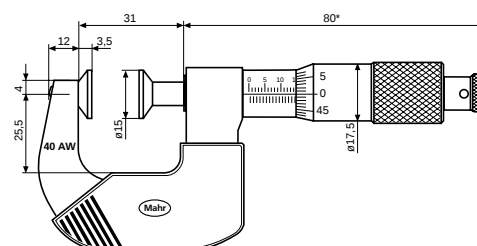


Features

- For measuring soft materials such as felt, rubber, cardboard, etc.
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel
- Scales with satin-chrome finish
- Heat insulators
- Rapid drive with integrated ratchet
- Supplied with: Case, operating instructions

Technical Data

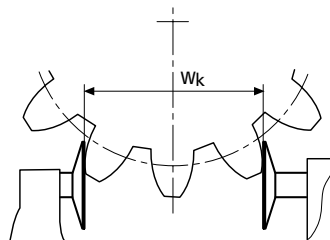
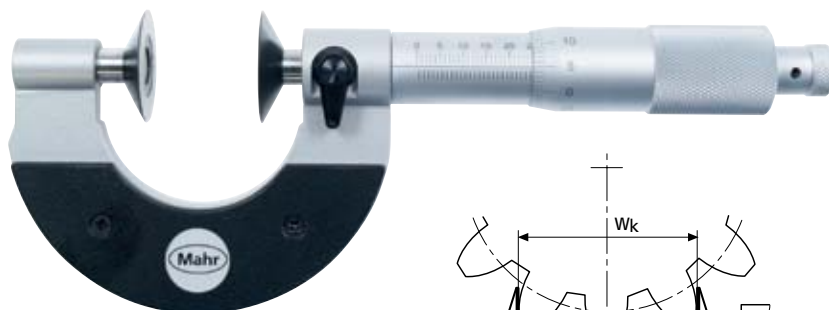
Measuring range	Readings	Error limit G	Parallelism	Flatness	Spindle thread pitch	Order no.
0 - 25 mm	0.01 mm	8 µm	5 µm	2 µm	0.5 mm	4134300
0 - 1"	.0001"	.0003"	.0002"	.001"	.025"	4134950



* when scale is set at 0

Precision Micrometer Micromar 40 SM with disc-type anvils

DIN
863-3



Applications

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

Features

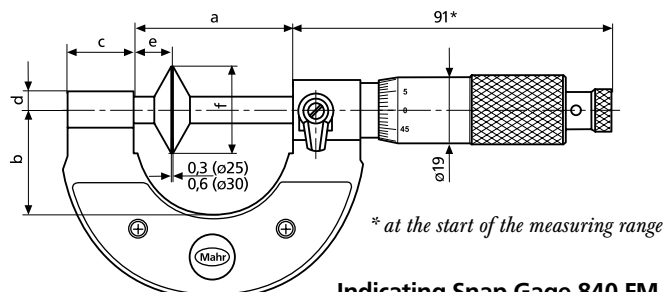
- Hard lacquered steel frame
- Maximum stability
- Spindle is hardened throughout and ground
- Disc-type anvils are hardened and lapped
- Scale have a satin chrome finish
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- Supplied with: Case

Technical Data

Measuring range mm	Readings mm	Error limit G μm	Spindle thread pitch mm	Measuring faces		Order no.
				Flatness μm	Parallelism μm	
0 - 25	0.01	4	0.5	≤ 0.6	≤ 4	4134600
25 - 50	0.01	4	0.5	≤ 0.6	≤ 4	4134601
50 - 75	0.01	5	0.5	≤ 0.6	≤ 4	4134602
75 - 100	0.01	5	0.5	≤ 0.6	≤ 4	4134603
100 - 125	0.01	6	0.5	≤ 0.6	≤ 5	4134604
125 - 150	0.01	6	0.5	≤ 0.6	≤ 5	4134605
150 - 175	0.01	7	0.5	≤ 0.6	≤ 5	4134606
175 - 200	0.01	7	0.5	≤ 0.6	≤ 5	4134607

Dimensions

Dimensions in mm	a	b	c	d	e	f
0 - 25	45	30.5	18.1	6	11	25
25 - 50	70	35	18.1	6	11	25
50 - 75	95	48	18.1	6	11	25
75 - 100	120	59.5	18.1	6	11	25
100 - 125	145	71	18.1	6	11	30
125 - 150	170	83	18.1	6	11	30
150 - 175	195	96	18.1	6	11	30
175 - 200	220	108	18.1	6	11	30



Indicating Snap Gage 840 FM
see page 9-14



Accessories

Stand, setting standards, etc. please refer to page 3-24

Thread Micrometer Micromar 40 Z

DIN
863-3



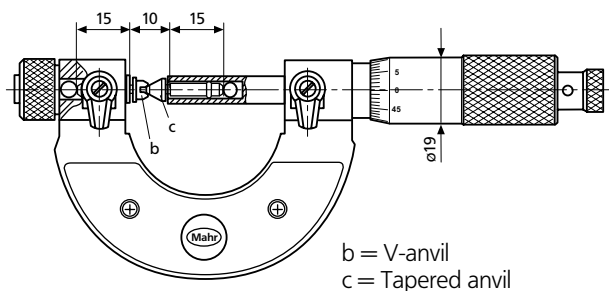
Features

- For measuring pitch, root and outside diameters
- Hard lacquered steel frame, heat insulated
- Spindle is hardened throughout, ground and is also provided with a locking device
- Adjustable anvil
- Spindle and anvil both have a mounting bore to accommodate interchangeable anvils
- Flat end surface of the anvil shank rests on a hardened steel ball which is at the bottom of the mounting bore
- Scales have a satin-chrome finish
- Supplied with: Case

Technical Data

Measuring range mm	Readings mm	Error limit G_{me} μm	Spindle thread pitch mm	Mounting bores for anvils mm	Order no.
0 - 25*	0.01	4	0.5	3.5	4170030
25 - 50	0.01	4	0.5	3.5	4170031
50 - 75	0.01	5	0.5	3.5	4170032
75 - 100	0.01	5	0.5	3.5	4170033
100 - 125	0.01	6	0.5	3.5	4170034
125 - 150	0.01	6	0.5	3.5	4170035
150 - 175	0.01	7	0.5	3.5	4170036
175 - 200	0.01	7	0.5	3.5	4170037

* Setting only with Thread Setting Plug Gages 715 E, when the interchangeable anvils span over several leads.



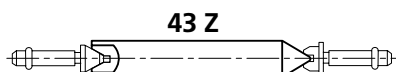
Indicating Thread Snap
Gage 852 see page 9-20



Accessories

Setting Standards 43 Z

For setting Thread Micrometers 40 Z.
With point on one side and a V-groove on the other, both match the pitch angle of thread to be inspected.
One setting standard is sufficient for two adjacent frame sizes.



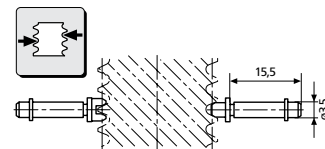
Length mm	Accuracy $\pm \mu m$	Thread angle 60° Order no.	Thread angle 55° Order no.
25	4	4175000	4175100
50	4.5	4175001	4175101
75	4.5	4175002	4175102
100	4.5	4175003	4175103
125	5	4175004	4175104
150	5	4175005	4175105
175	5	4175006	4175106
200	5.5	4175630	4175636

Interchangeable Anvils for Thread Micrometer Micromar 40 Z

For pitch and outside diameters. Hardened, wear-resistant special steel. With cylindrical mounting shank and retainer ring which ensures locking while permitting rotation in bore of spindle and anvil.

For pitch diameters

Pair consists of V-anvil and tapered anvil. For pitch range 0.2 - 0.45 mm V-anvil covers 3 thread leads, set with a Thread Setting Plug Gage 715 E, as opposed to Setting Standards 43 Z for other applications.



Metric thread (60°)			Whitworth thread (55°)			American UST thread (60°)		
Pitch mm	V-anvil Order no.	Tapered anvil Order no.	Pitch range TPI	V-anvil Order no.	Tapered anvil Order no.	Pitch range TPI	V-anvil Order no.	Tapered anvil Order no.
0.2	4173007	4173407	40 - 32	4173043	4173443	60 - 48	4173113	4173513
0.25	4173008	4173408	32 - 24	4173044	4173444	48 - 40	4173114	4173514
0.3	4173009	4173409	24 - 18	4173045	4173445	40 - 32	4173115	4173515
0.35	4173010	4173410	18 - 14	4173046	4173446	32 - 24	4173116	4173516
0.4	4173011	4173411	14 - 10	4173047	4173447	24 - 18	4173117	4173517
0.45	4173012	4173412	10 - 7	4173048	4173448	18 - 14	4173118	4173518
0.5 - 0.7	4173000	4173400	7 - 4.5	4173049	4173449	14 - 10	4173119	4173519
0.7 - 1	4173001	4173401	4.5 - 3	4173050	4173450	10 - 7	4173120	4173520
1.25 - 2	4173002	4173402	3 - 2.5	4179408	4179409	7 - 4.5	4173121	4173521
2 - 3.5	4173003	4173403				4.5 - 3	4173122	4173522
3.5 - 5	4173004	4173404						
5 - 7	4173005	4173405						
7 - 9	4173006	4173406						

For pitch diameters

Pair consists of V-anvil and tapered anvil.
Shank length 15.5 mm

Trapezoid threads according to DIN 103

Pitch mm	V-anvil Order no.	Tapered anvil Order no.
1	4173250	4173650
1.5	4173251	4173651
2	4173252	4173652
3	4173253	4173653
4	4173254	4173654
5	4173255	4173655
6	4173256	4173656
7	4173257	4173657
8	4173258	4173658
9	4173259	4173659
10	4173260	4173660
12	4173261	4173661
14	4173262	4173662
16	4173263	4173663
18	4173264	4173664
20	4173265	4173665

For outside diameter

Anvils 40 Za

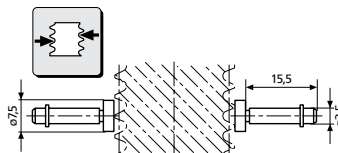
with flat measuring faces

Made of hardened steel

Order no. 4173210

Carbide tipped

Order no. 4511190



Inside Micrometer Micromar 44 F

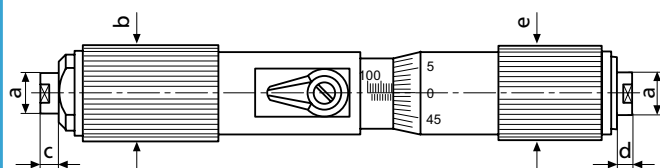
DIN
863-4

Features

- Rigid, lightweight tubular construction
- Spindle is hardened throughout and ground
- Measuring faces spherically lapped, one measuring face adjustable
- Scales with satin-chrome finish
- From measuring range 100-125 mm with heat insulators and a locking device
- Supplied with: Case

Technical Data

Measuring range mm	Readings mm	Error limit G μm	Spindle thread pitch mm	Order no.
30 - 40	0.01	4	0.5	4163000
40 - 50	0.01	4	0.5	4163001
50 - 70	0.01	5	0.5	4163002
70 - 100	0.01	5	0.5	4163003
100 - 125	0.01	6	0.5	4163004
125 - 150	0.01	6	0.5	4163005
150 - 175	0.01	7	0.5	4163006
175 - 200	0.01	7	0.5	4163007



Dimensions

Meas. range in mm	a	b	c	d	e
30 - 40	ø7	ø12.5	2	4	ø12.6
40 - 50	ø7	ø12.5	2.5	4.5	ø12.6
50 - 70	ø7	ø13.5	2.5	4.5	ø13.6
70 - 100	ø7	ø13.5	4.5	4.5	ø14.0
100 - 125	ø8	ø20	4.5	4.5	ø20
125 - 150	ø8	ø20	8	8	ø20
150 - 175	ø8	ø20	8	8	ø20
175 - 200	ø8	ø20	8	8	ø20

Accessories

Ring Gage 355 E for testing the basic setting

Special wear resistant steel, hardened and lapped
 Dimensions according to DIN 2250 C
 Manufacturing tolerance in accordance to DIN 2250
 Uncertainty of the engraved actual dimension 1/2 IT1

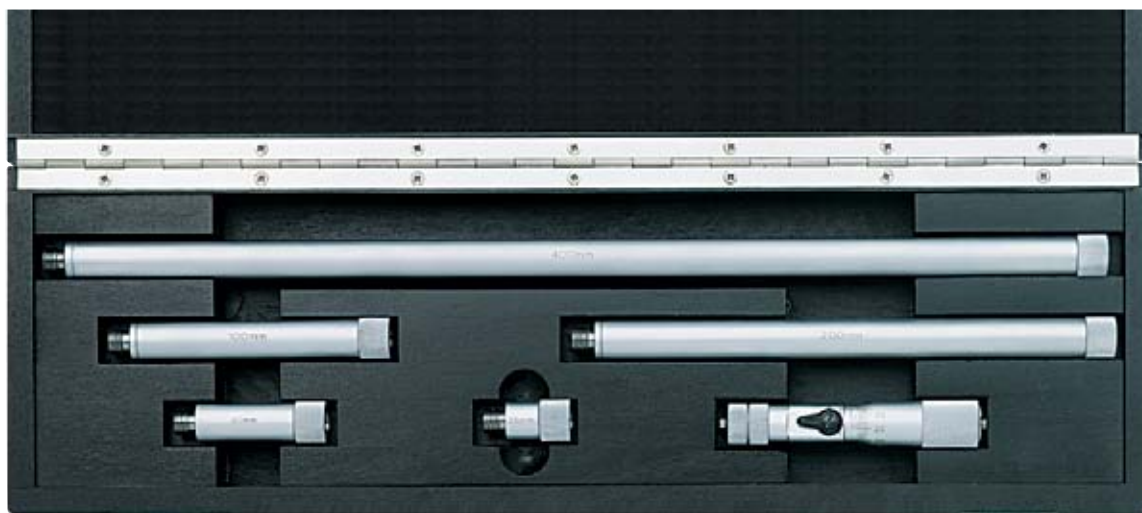
Page

13-19

355 E



Inside Micrometer Micromar 44 Cms Set



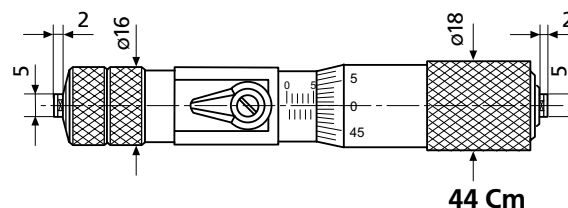
Features

- Rigid, lightweight tubular construction
 - Spindle is hardened throughout and ground
 - Locking lever
 - Scales with satin-chrome finish
 - Carbide tipped spherical measuring faces
 - Interchangeable extensions 44 Cv with cylindrical gage rods that are spring-mounted in protective sleeves; for the extension of the measuring range
 - Protection sleeves have a satin chrome finish
- Span of error**
Basic unit 5 μm
- Basic unit in combination with any of the extensions
 $4 \mu\text{m} + 10 \times 10^{-6} \times l$
(l = length of the combination in mm)
- Supplied with: Case

Technical Data

Catalog no.	Measuring range	Measuring head 44 Cm	Extensions 44 Cv	Order no.
	mm	Readings mm	length in mm	
44 Cms1	100 - 150	0.01	25	4168020
44 Cms2	100 - 300		25 / 50 / 100	4168021
44 Cms3	100 - 500		25 / 50 / 100 / 200	4168022
44 Cms4	100 - 900*		25 / 50 / 100 / 200 / 400	4168023

* up to 2500 mm can be achieved with 2 extensions: 44 Cv 800 mm



Accessories

Inside Micrometers, ring gages, etc. please refer to page 3-30

Inside Micrometer Micromar 44 CB with reduced measuring faces

DIN
863-4

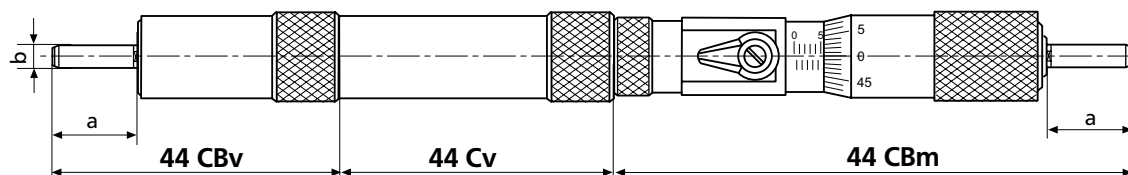


Features

- Basic Instrument consists of: Measuring head 44 CBm and End piece CBv
 - Measuring faces have a smaller diameter for measuring grooves
 - Rigid, lightweight tubular construction
 - Spindle is hardened throughout and ground
 - Locking lever
 - Carbide tipped spherical measuring faces
 - Interchangeable extensions 44 Cv with cylindrical gage rods that are spring-mounted in protective sleeves; for the extension of the measuring range (Accessories)
 - Protection sleeves have a satin chrome finish
- Span of error**
Basic unit 6 μm
- Basic unit in combination with any of the extensions
- $$4 \mu\text{m} + 10 \times 10^{-6} \times l$$
- (l = length of the combination in mm)
- Supplied with: Case

Technical Data

Measuring range (Measuring head 44 CBm and End piece CBv) mm	Measuring head 44 CBm		Order no.
	Readings	Spindle thread pitch mm	
150 - 175	0.01	0.5	4167922
175 - 200			4167906
250 - 275			4167912
275 - 300			4167921



Accessories

Individual Extensions 44 Cv

Length mm	Order no.	Length mm	Order no.
25	4167030	200	4167033
50	4167031	400	4167034
100	4167032	800	4167035

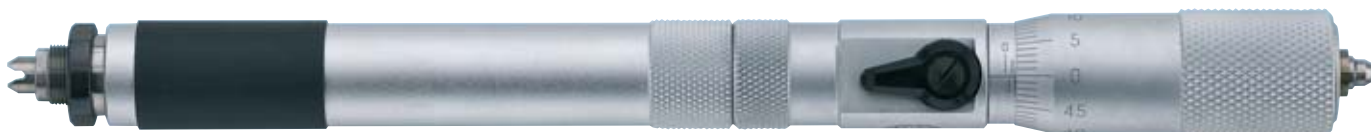
Case, wooden boxes, etc. please refer to page 3-30

Dimensions

Meas. range in mm	a	b
150 - 175	10	dia. 5
175 - 200	20	dia. 5
200 - 275	40	dia. 5
275 - 300	50	dia. 5

Inside Thread Micrometer Micromar 44 CZ

DIN
863-4

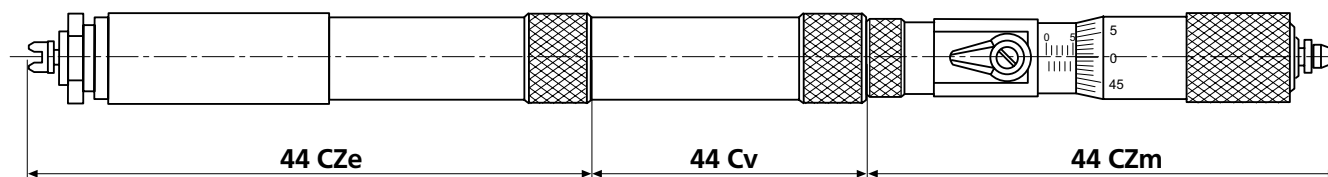


Features

- Basic Instrument consists of: Measuring head and End piece
 - Measuring head and End piece with mounting bore for interchangeable anvils
 - Rigid, lightweight tubular construction
 - Spindle is hardened throughout and ground
 - Locking lever
 - Scales with satin-chrome finish
 - Carbide tipped spherical measuring faces
 - Interchangeable extensions 44 Cv with cylindrical gage rods that are spring-mounted in protective sleeves; for the extension of the measuring range (Accessories)
 - Protection sleeves have a satin chrome finish
- Span of error**
Basic unit 6 μm
- Basic unit in combination with any of the extensions
 $4 \mu\text{m} + 10 \times 10^{-6} \times l$
(l = length of the combination in mm)
- Supplied with: Case

Technical Data

Measuring range (Measuring head 44 CZm and End piece CZe) mm	Measuring head 44 CZm		Order no.
	Readings	Spindle thread pitch mm	
200 - 225	0.01	0.5	4168030



Accessories

Individual Extensions 44 Cv

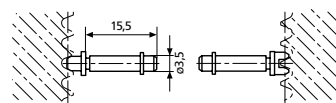
Length mm	Order no.	Length mm	Order no.
25	4167030	200	4167033
50	4167031	400	4167034
100	4167032	800	4167035

Case, wooden boxes, etc. please refer to page 3-30

Inchangeable Anvils for Inside Thread Micrometer Micromar 44 CZ

For pitch diameters. Hardened, wear-resistant special steel. With cylindrical mounting shank and retainer ring which ensures locking while permitting rotation in bore of spindle and anvil.

For pitch diameters



Metric thread (60°)			Whitworth thread (55°)			American UST thread (60°)		
Pitch	V-anvil	Tapered anvil	Pitch range	V-anvil	Tapered anvil	Pitch range	V-anvil	Tapered anvil
mm	Order no.	Order no.	TPI	Order no.	Order no.	TPI	Order no.	Order no.
0.5 - 0.7	4179400	4173400	40 - 32	4179043	4173443	40 - 32	4179115	4173515
0.7 - 1	4179401	4173401	32 - 24	4179044	4173444	32 - 24	4179116	4173516
1.25 - 2	4179402	4173402	24 - 18	4179045	4173445	24 - 18	4179117	4173517
2 - 3.5	4179403	4173403	18 - 14	4179046	4173446	18 - 14	4179118	4173518
3.5 - 5	4179404	4173404	14 - 10	4179047	4173447	14 - 10	4179119	4173519
5 - 7	4179405	4173405	10 - 7	4179048	4173448	10 - 7	4179120	4173520
7 - 9	4179406	4173406	7 - 4.5	4179049	4173449	7 - 4.5	4179121	4173521
			4.5 - 3	4179050	4173450	4.5 - 3	4179122	4173522
			3 - 2.5	4179407	4179409			

For pitch diameters

Pair consists of V-anvil and tapered anvil.
Shank length 15.5 mm

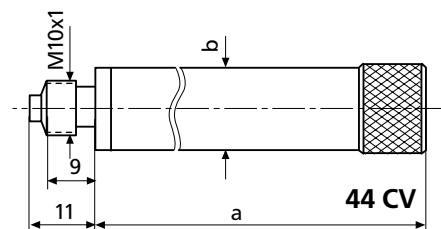
Trapezoid threads according to DIN 103

Pitch	V-anvil	Pointed anvil
mm	Order no.	Order no.
1	4179950	4173650
1.5	4179951	4173651
2	4179952	4173652
3	4179953	4173653
4	4179954	4173654
5	4179955	4173655
6	4179956	4173656
7	4179957	4173657
8	4179958	4173658
9	4179959	4173659
10	4179960	4173660
12	4179961	4173661
14	4179962	4173662
16	4179963	4173663
18	4179964	4173664
20	4179965	4173665

Accessories for Micromar 44 Cms / 44 CB / 44 CZ

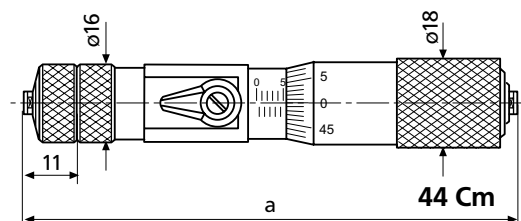
Individual Extensions 44 Cv

Length a mm	dia. b mm	Order no.
25	15	4167030
50	15	4167031
100	15	4167032
200	15	4167033
400	15	4167034
800	22	4167035



Inside Micrometer 44 Cm

Measuring range mm	Reading mm	Spindle thread pitch mm	Order no.
100 - 125	0.01	0.5	4168001



Ring Gage 355 E

Ring Gage 355 E for testing the basic setting see page 13-19.
Special wear resistant steel, hardened and lapped
Dimensions according to DIN 2250 C
Manufacturing tolerance in accordance to DIN 2250
Uncertainty of the engraved actual dimension 1/2 IT1



	Order no.
Case for Inside Micrometer 44 Cm and extension sets Cvs1 or Cvs2	4168015
Wooden case for 2 extensions 44Cv 800 mm	4168016

Self-Centering Inside Micrometer Micromar 44 A

DIN
863-4



Applications

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

Features

- Scales with satin-chrome finish
- Spindle is hardened throughout and ground
- Rapid drive with integrated ratchet
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide tipped
- From 12 mm the anvils can be used to measure to the bottom of a bore
- From 40 mm all measuring heads are made from aluminum to reduce weight
- Supplied with:
Case and operating instructions

Technical Data

Measuring range mm	Measuring depth mm	Readings mm	Error limit G* μm	Order no.
6 - 8	58 / (133**)	0.001	4	4190310
8 - 10	58 / (133**)	0.001	4	4190311
10 - 12	58 / (133**)	0.001	4	4190312
12 - 16	64 / (139**)	0.001	4	4190313
16 - 20	64 / (139**)	0.001	4	4190314
20 - 25	68 / (218**)	0.005	4	4190315
25 - 30	68 / (218**)	0.005	4	4190316
30 - 40	76 / (226**)	0.005	4	4190317
40 - 50	76 / (226**)	0.005	4	4190319
50 - 60	79 / (229**)	0.005	5	4190320
60 - 70	79 / (229**)	0.005	5	4190321
70 - 85	97 / (247**)	0.005	5	4190012
85 - 100	97 / (247**)	0.005	5	4190013
100 - 125	132 / (282**)	0.005	6	4190014
125 - 150	132 / (282**)	0.005	6	4190015
150 - 175	132 / (282**)	0.005	7	4190016
175 - 200	132 / (282**)	0.005	7	4190017

* Over the full length of the anvils

** With the extension 44 A

Accessories

Measuring heads, ring gages, etc. please refer to page 3-34

Self-Centering Inside Micrometer Sets 44 AS

Measuring range mm	Number of Micrometers	Ring gages dia. mm	Order no.
6 - 12	3	8 / 10	4190350
12 - 20	2	16	4190351
20 - 50	4	25 / 40	4190352
50 - 100	4	60 / 85	4190353

- Supplied with:
Case and ring gage



Digital Self-Centering Inside Micrometer Micromar 44 EWR



REFERENCE



Applications

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

Technical Data

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

* Over the full length of the anvils

** With the extension 44 Av

Features

Functions:

- 0 (Setting the display to zero for Relative measurement)
- ABS (Switching between Relative and Absolute measurement)
- mm/inch
- PR (Reference setting)

- Immediate measurement due to the Reference system
- Basic Instrument consists of: Basic Unit 44 EXg and Measuring Head 44 Ak
- Threaded connection for changing the measuring heads
- Self-Centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide tipped
- From 12 mm the anvils can be used to measure to the bottom of a bore
- From 40 mm all measuring heads are made from aluminum to reduce weight
- Supplied with: Case, battery and operating instructions

Accessories

Measuring heads, ring gages, etc. please refer to page 3-34

Digital Self-Centering Inside Micrometer Sets Micromar 44 EWR

Measuring range		Number of measuring heads 44 Ak	Ring gages	Order no.
mm	(inch)			
6 - 12	(.25 - .4725")	3	8 / 10	4191160
12 - 20	(.4725 - .775")	2	16	4191161
20 - 50	(.775" - 2")	4	25 / 40	4191162
50 - 100	(2 - 4")	4	60 / 85	4191163

- Supplied with:
1 Basic Unit 44 EWg, Measuring Heads 44 Ak, case and ring gages



Self-Centering Measuring Pistol Micromar 844 A



Applications

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

Features

- Basic Instrument consists of: 844 Ag and Measuring Head 44 Ak
- Threaded connection for changing the measuring heads
- Self-Centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide tipped
- From 12 mm the anvils can be used to measure to the bottom of a bore
- From 40 mm all measuring heads are made from aluminum to reduce weight
- Supplied with: Case and operating instructions

The following indicating instruments are recommended:

Indicating instr. Order no.

MarCator 1086 Ri	4337625
MarCator 1086 R	4337621
MarCator 1087 Ri	4337665
MarCator 1087 R	4337661

Accessories

Measuring heads, ring gages, etc. please refer to page 3-34

Technical Data

Measuring range		Measuring depth	Error limit G*	Order no. excludes Indicator
mm	(inch)			
6 - 8	(.25 - .3125")	58 / (133**)	3 / .00015	4487700
8 - 10	(.3125 - .4")	58 / (133**)	3 / .00015	4487701
10 - 12	(.4 - .4725")	58 / (133**)	3 / .00015	4487702
12 - 16	(.4725 - .625")	64 / (139**)	3 / .00015	4487703
16 - 20	(.625 - .775")	64 / (139**)	3 / .00015	4487704
20 - 25	(.775 - 1")	68 / (218**)	3 / .00015	4487705
25 - 30	(1 - 1.2")	68 / (218**)	3 / .00015	4487706
30 - 40	(1.2 - 1.6")	76 / (226**)	3 / .00015	4487707
40 - 50	(1.6 - 2")	76 / (226**)	3 / .00015	4487709
50 - 60	(2 - 2.35")	79 / (229**)	4 / .00016	4487710
60 - 70	(2.35 - 2.75")	79 / (229**)	4 / .00016	4487711
70 - 85	(2.75 - 3.35")	97 / (247**)	4 / .00016	4487612
85 - 100	(3.35 - 4")	97 / (247**)	4 / .00016	4487613
100 - 125	(4 - 4.9")	132 / (282**)	5 / .0002	4487614
125 - 150	(4.9 - 5.9")	132 / (282**)	5 / .0002	4487615
150 - 175	(5.9 - 6.9")	132 / (282**)	6 / .00025	4487616
175 - 200	(6.9 - 7.9")	132 / (282**)	6 / .00025	4487617

* Indicator is not taken into consideration, over the full length of the anvils

** With the extension 44 Av

Self-Centering Measuring Pistol Set Micromar 844 AS

Measuring range		Number of measuring heads	Ring gages	Order no. with Digital Indicator 1086 R	Order no. excludes Indicator
mm	(inch)				
6 - 12	(.25 - .4725")	3	8 / 10	4487760	4487750
12 - 20	(.4725 - .775")	2	16	4487761	4487751
20 - 50	(.775" - 2")	4	25 / 40	4487762	4487752
50 - 100	(2 - 4")	4	60 / 85	4487763	4487753

- Supplied with:
1 Basic Instrument 844 Ag, Measuring Heads 44 Ak, case and ring gages



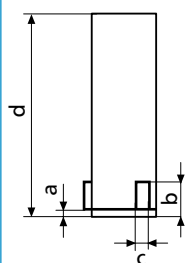
Accessories for Micromar 44 A, 44 EWR, 844 A

Measuring Heads 44 Ak for 44 EWR

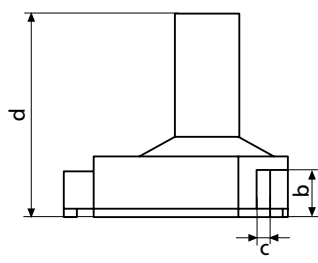
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12 mm are carbide tipped
- From 12 mm, anvils can be used to measure to the base of a bore
- From 40 mm all measuring heads are made from aluminum to reduce weight

Measuring range				Order no.
mm	(inch)			
6	-	8	(.25 - .3125")	4190330
8	-	10	(.3125 - .4725")	4190331
10	-	12	(.4725 - .5")	4190332
12	-	16	(.5 - .625")	4190333
16	-	20	(.625 - .775")	4190334
20	-	25	(.775 - 1")	4190335
25	-	30	(1 - 1.2")	4190336
30	-	40	(1.2 - 1.6")	4190337
40	-	50	(1.6 - 2")	4190339
50	-	60	(2 - 2.35")	4190340
60	-	70	(2.35 - 2.75")	4190341
70	-	85	(2.75 - 3.35")	4190042
85	-	100	(3.35 - 4")	4190043
100	-	125	(4 - 4.9")	4190044
125	-	150	(4.9 - 5.9")	4190045
150	-	175	(5.9 - 6.9")	4190046
175	-	200	(6.9 - 7.9")	4190047

Meas. range 6 - 12 mm



Meas. range 12 - 200 mm



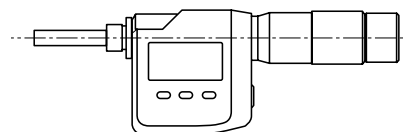
Measuring range			a	b	c	d
mm						
6	-	8	1.5	4	1.5	58
8	-	10	1.8	4.3	1.5	58
10	-	12	1.8	4.3	1.5	58
12	-	16	—	6.5	4	64
16	-	20	—	6.5	4	64
20	-	25	—	9	4	68
25	-	30	—	9	4	68
30	-	40	—	15	5	76
40	-	50	—	15	5	76
50	-	60	—	18	5	79
60	-	70	—	18	5	79
70	-	85	—	23	7	97
85	-	100	—	23	7	97
100	-	125	—	27	7	132
125	-	150	—	27	7	132
150	-	175	—	27	7	132
175	-	200	—	27	7	132

Ring Gages 355 E

- Can be used for 2 consecutive measuring ranges
- Manufacturing tolerance in accordance to DIN 2250C

dia. mm	Order no.	dia. mm	Order no.
8	4710026	60	4710080
10	4710030	85	4710105
16	4710036	125	4710121
25	4710045	175	4710122
40	4710060		

Basic Unit 44 EWg

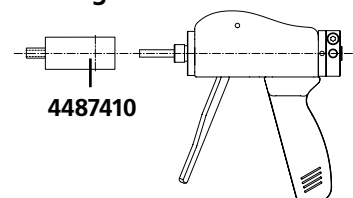


Threaded connection for changing the measuring heads

Measuring range			Order no.
mm			
6	-	20	4190106
20	-	100	4190107
100	-	200	4190108

Basic Unit Measuring Pistol 844 Ag

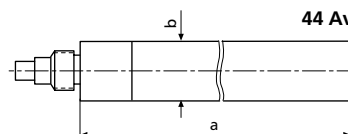
Threaded connection for changing the measuring heads. Any indicating instrument with an 8 mm mounting shank can be used.



Measuring range		Order no.
mm	(inch)	
6 - 100*	(.25 - 4.0")	4487630
20 - 100	(.775 - 4.0")	4487631
100 - 200	(4.0 - 7.9")	4487632

* Includes adapter 4487410

Depth Extension Rod 44 Av



Measuring range			Length a	dia. b	Order no.
mm (inch)			mm	mm	
6 - 12	(.25 - .5")		75	5.8	4190090
12 - 20	(.5 - .775")		75	8.5	4190091
20 - 30	(.775 - 1.2")		150	19.0	4190092
30 - 200	(1.2 - 7.9")		150	22.0	4190093

Depth Micrometer Micromar 45 T



Applications

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

Features

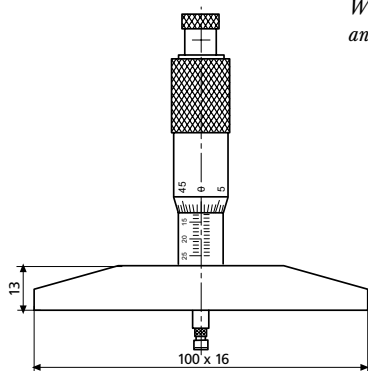
- Measuring spindle is hardened throughout and ground
- Hardened chrome plated cross beam, the contact surface is lapped
- Hardened anvil
- When using interchangeable extensions recalibrating the depth micrometer is not necessary
- Scales with satin-chrome finish
- Supplied with:
Extensions 25 mm and 50 mm, case

Technical Data

Total measuring range mm	Range of micrometer mm	Readings mm	Spindle thread pitch mm	Error limit with a standard anvil μm	Measuring force N	Length tolerance of extensions μm	Order no.
0-100	25	0.01	0.5	≤ 5	5 - 10	± 1.5	4180000

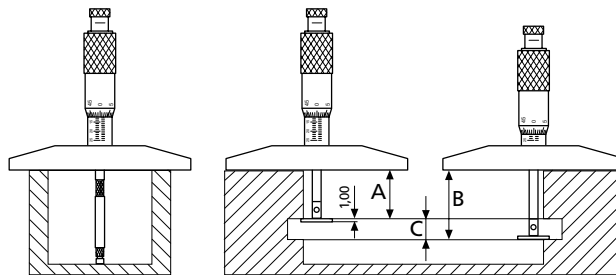
Standard depth measurements

With a standard anvil, if necessary with an extension



Measuring the space between grooves and the widths of a groove

With disc anvil 45 Tm, if necessary with an extension



Dimension A: Can be direct read of the thimble

Dimension B: The reading plus 1.00 mm (thickness of the disc anvil)

*Dimension C:
Dimension B minus Dimension A*

Accessories

Disc anvil 45 Tm
for groove spacing and groove widths

Order no.

4180011

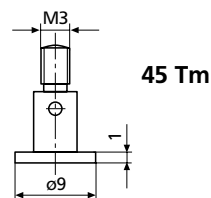
Extensions 45 Tv

Length L	Length tolerance
25 mm	$\pm 1.5 \mu\text{m}$
50 mm	$\pm 1.5 \mu\text{m}$
100 mm	$\pm 1.5 \mu\text{m}$

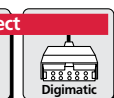
4180001

4180002

4180003



Digital Micrometer Head Micromar 46 EWR



Features

Functions:

0 (Zero setting)
ABS (Switch between Relative and Absolute measurement)
mm/inch
PRESET (enter a numerical value)
DATA (Data transmission via connection cable)

- Patented capacitive measuring system with an energy saving function, life of the battery approx. 2 years
- Ratchet with integrated coupler

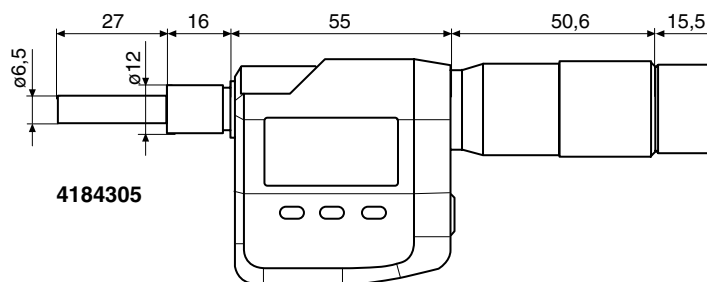
- Supplied with:
Case, end cap (in case the rapid drive is not required) and operating instructions

REFERENCE

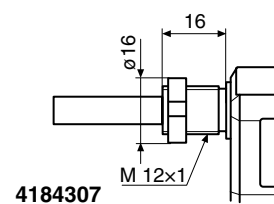
Technical Data

Measuring range	Readings	Error limit	Measuring face	Mounting shaft	Order no.
mm (inch)	mm / inch	G_{me} μm		mm	
0-25 (0-1")	0.001 / .00005"	4	flat	12	4184305
0-25 (0-1")	0.001 / .00005"	4	flat	M12x1*	4184307
0-25 (0-1")	0.001 / .00005"	4	spherical	12	4184306
0-25 (0-1")	0.001 / .00005"	4	spherical	M12x1*	4184308

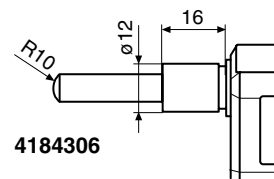
* with locking nut



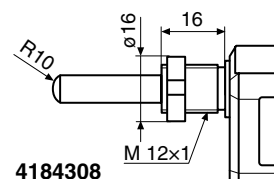
4184305



4184307



4184306



4184308

Accessories

	Order no.
Battery 3V, type CR 2032	4102520
Data Connection Cable USB (2 m)	16 EXu 4102357
Data Connection Cable Opto RS232C (2 m), with SUB-D jack 9-pin	16 EXr 4102410
Data Connection Cable Digimatic (2 m), Flat plug 10-pin	16 EWd 4102915
Accessories for Data Processing see Chapter 11	

Micrometer Head Micromar 46



Features

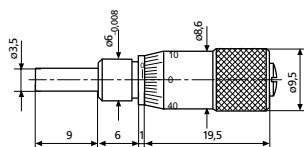
- Spindle is made of stainless steel, hardened throughout and ground
- Scales with satin-chrome finish

Technical Data

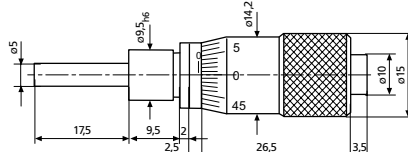
	Measuring range mm	Readings mm	Error limit G_{me} μm	DIN 863	Spindle thread pitch mm	Spindle dia. mm	Order no.
46	0 - 6.5	0.01	3	●	0.5	3.5	4183021
	0 - 13	0.01	3	●	0.5	5	4183025
	0 - 25	0.01	3	●	0.5	6.35	4183030
	0 - 25*	0.01	3	●	0.5	6.35	4183024
	0 - 50	0.01	5	●	0.5	7.5	4183023
46 H	0 - 25**	0.01	3	●	0.5	7.5	4184000

* with locking nut

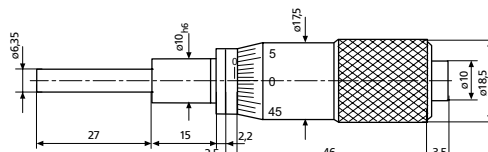
** with ratchet, carbide tipped



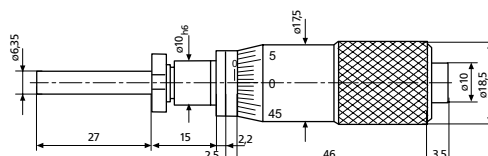
4183021
Measuring range 0-6.5 mm



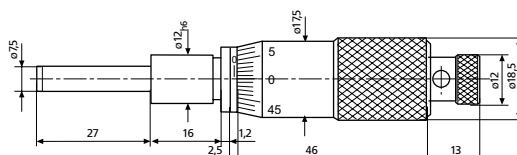
4183025
Measuring range 0-13 mm



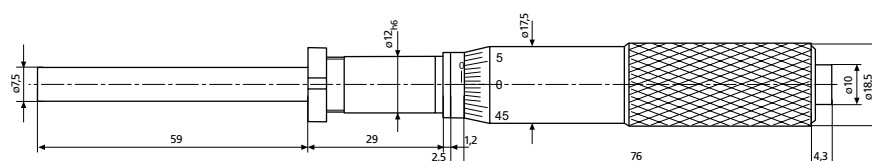
4183030
Measuring range 0-25 mm



4183024
Measuring range 0-25 mm
with locking nut



4184000
Measuring range 0-25 mm
carbide tipped



4183023
Measuring range 0-50 mm

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فاکس : ۸۸۷۶۴۸۹۰

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