DOES EVERYTHING ROTATE AROUND PRECISION?
NO PROBLEM WITH MICROMAR.

The latest information on MICROMAR products can be found on our website:
www.mahr.de, WebCode 205

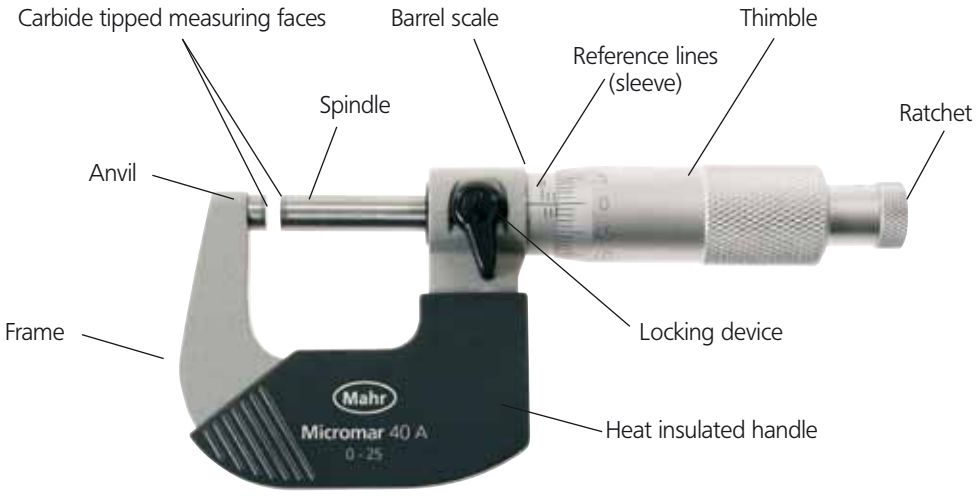
► | Micrometers belong alongside calipers to the most frequently used hand measuring instruments. With their precision ground spindle, their carbide tipped measuring faces and their robust frame construction the modern micrometer from the Micromar series ensures maximum precision and a long working life. 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 of the determined parameters to an external evaluation instrument. Micromar 40 EWR, the newest generation of waterproof digital micrometers ensures that even in the most difficult workshop conditions precise and reliable results are obtained. A speciality of Mahr is the micrometer with a dial comparator, with its built-in dial comparator, stationary anvil and constant measuring force they are particularly well suited for rapid measurements and highly precise serial measurements. | ◄

► | Micromar. Micrometers

Micromar. Micrometer

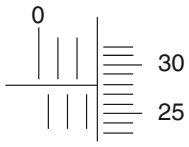
OVERVIEW

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 EWV 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 (USB)	●*
	(Digimatic)	●*
	(RS232C)	●*

* *For digital micrometers with a data output*

Micromar. Digital Micrometer Micromar 40 EWR

WATERPROOF MICROMETERS

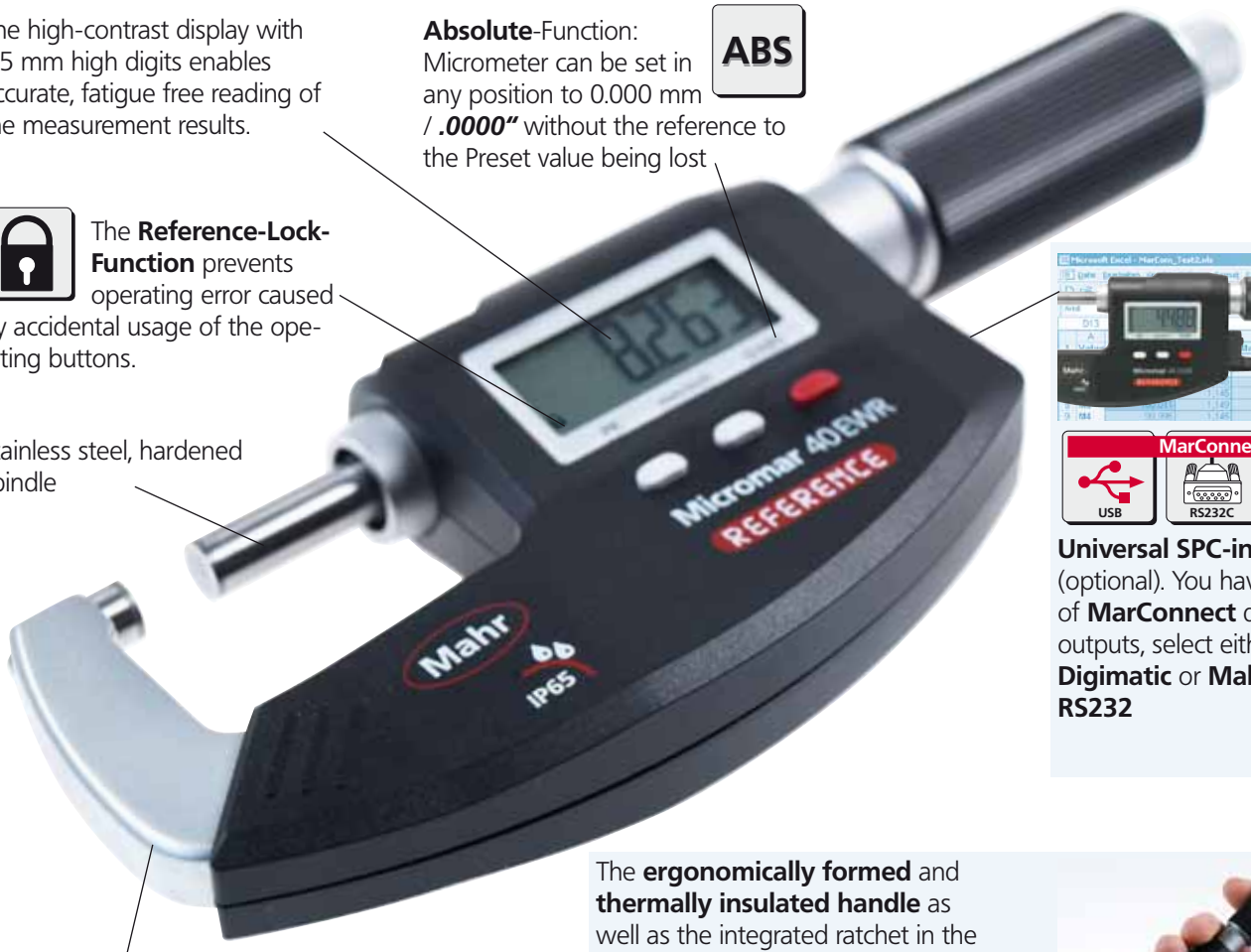
►| The digital waterproof Micrometer **Micromar** 40 EWR. Even in the most difficult conditions precise and reliable results are obtained. |◄

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

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

Stainless steel, hardened spindle

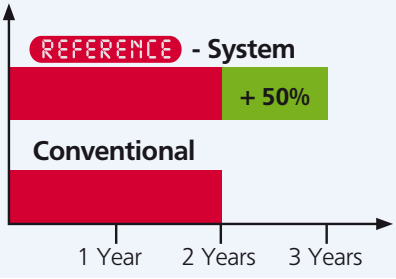


Sturdy hard lacquered steel frame

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%.**



IP65

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

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)

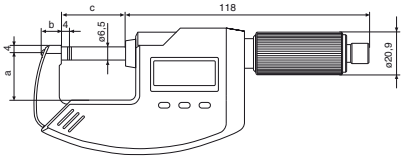
DATA (Data transmission via connection cable)

- 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)

Technical Data

	Measuring range mm	(inch)	Resolution mm / *inch*	Error limit *G* * µm	Spindle thread pitch mm	Data output MarConnect USB RS232C Digimatic	Order no.
40 EWR	0 - 25	***(0 - 1")***	0.001 ***/.00005"***	2	0.635	–	**4151721**
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**

* *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

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 EXd**	**4102411**

Accessories for Data Processing see Chapter 11

Digital Micrometer Set Micromar 40 EWR

Application range	Order no.	Remarks
0 - 100 mm	**4151709**	Includes: custom fitted plastic case, setting standards 25 mm, 50 mm and 75 mm

Digital Micrometer Micromar 40 ER

REFERENCE

Features

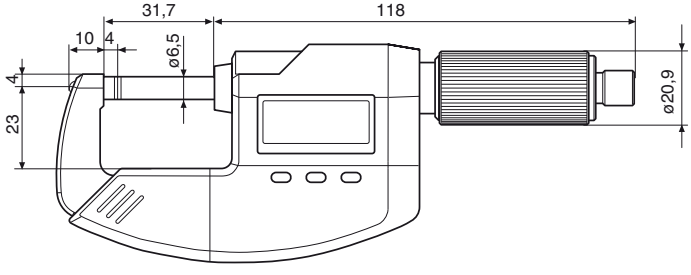
Functions:
RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

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

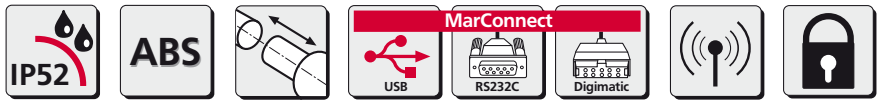
* *at fixed zero point (better than DIN 863-1)*



Accessories

	Order no.
Battery 3V, type CR 2032	**4102520**

Digital Micrometer Micromar 40 EWS with sliding spindle



Features

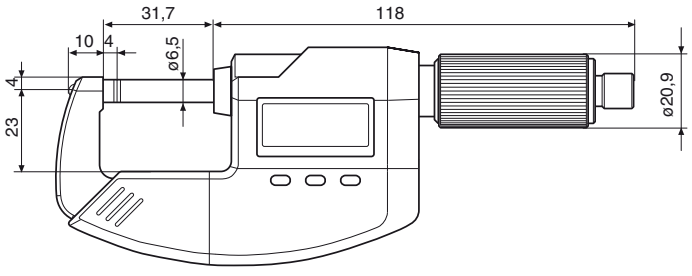
Functions:
RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

- 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 mm	Measuring range *(inch)*	Resolution mm / *inch*	Error limit *G* * µm	Spindle thread pitch mm	Order no.
40 EWS	0 - 25	***(0-1")***	0.001 /***.00005"***	2	0.635	**4151724**

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



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 EXd**	**4102411**

Accessories for Data Processing see Chapter 11

Universal Digital Micrometer Micromar 40 EWV with sliding spindle

Features

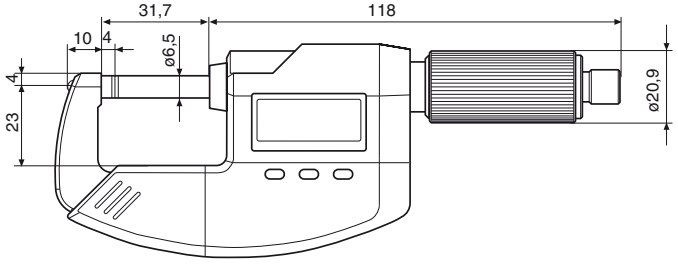
Functions:
RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

- 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 inter-changeable 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* mm	Resolution mm / *inch*	Error limit** *G* µm	Spindle thread pitch mm	Spindle dia. mm	Order no. without standard accessories	Order no. with standard accessories
0 - 25	0.001 /***.00005"***	2	0.635	6.5	**4151722**	
0 - 25	0.001 /***.00005"***	2	0.635	6.5		**4151723**

** with thread anvils the measuring range is reduced*
*** with flat anvils over the full length of the anvils and at fixed zero point (better than DIN 863-3)*



Special Accessories

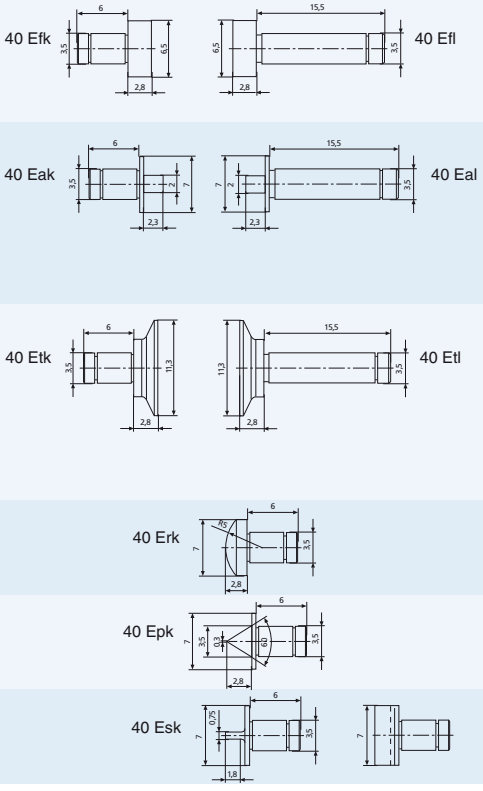
		Order no.
Battery 3V, type CR 2032		**4102520**
Data Connection Cable USB (2 m)	**16 EXu**	**4102357**
Data Connection Cable Opto RS232C (2 m), with SUB-D jack 9-pin	**16 EXr**	**4102410**
Data Connection Cable Digimatic (2 m), Flat plug 10-pin	**16 EXd**	**4102411**

Accessories for Data Processing see Chapter 11

Universal Digital Micrometer Micromar 40 EWV with sliding spindle

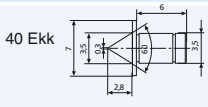
Standard Accessories are included in the set

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

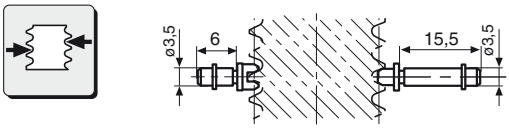
Catalog no.	Description	Order no.	Quantity required
40 Ekk	Wedge shaped anvil (blade) 60°	**4151776**	**2**



Thread anvils for pitch diameters*

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

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



Metric thread (60°) Pitch mm	V-anvil Order no.	Blade Order no.	**Whitworth thread** (55°) Pitch range TPI	V-anvil Order no.	Blade Order no.	**American UST thread** (60°) Pitch range TPI	V-anvil Order no.	Blade 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

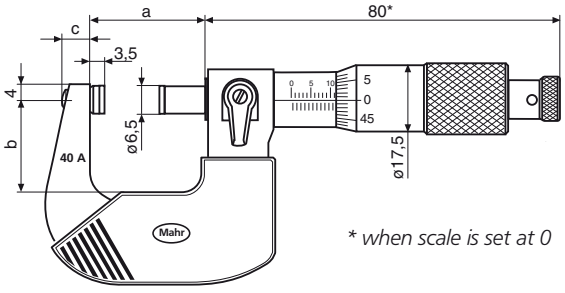
- Hard lacquered steel frame
- Spindle and anvil made of hardened steel, carbide tipped
- Scales with satin-chrome finish
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- Supplied with: Case, setting standard (from measuring range 25-50 mm / 1-2"), operating instructions

Technical Data

Measuring range	Readings	Error limit *G*	Spindle thread pitch	Order no.
0 - 25 mm	0.01 mm	4 µm	0.5 mm	**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**
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**

Accessories

Stand, setting standards, etc. please refer to page 3-22



** when scale is set at 0*

Dimensions

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

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 SH / 40 SD with extra large thimble

DIN 863-1

40 SH

40 SD

Features

- Chrome plated steel frame
- Maximum stability
- Spindle and anvil made of hardened steel, carbide tipped measuring faces
- Spindle is made of stainless steel, hardened throughout and ground
- Scales with satin-chrome finish
- Heat insulators
- Rapid drive with integrated ratchet
- Locking device
- Supplied with: Case (measuring range 0 - 100 mm)

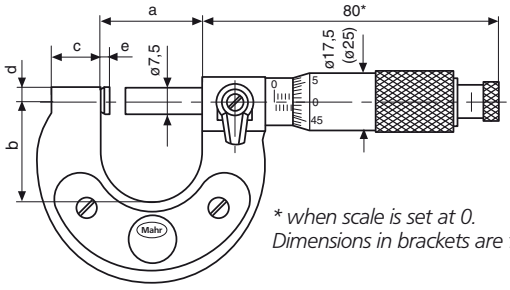
Only 40 SD:
- Reading error is reduced due to the 1 mm measuring span per rotation of the thimble

Technical Data

	Measuring range mm	Readings mm	Error limit *G* µm	Spindle thread pitch mm	Order no.
40 SH	0 - 25	0.01	4	0.5	**4131000**
	25 - 50	0.01	4	0.5	**4131001**
	50 - 75	0.01	5	0.5	**4131002**
	75 - 100	0.01	5	0.5	**4131003**
	100 - 125	0.01	6	0.5	**4131004**
	125 - 150	0.01	6	0.5	**4131005**
	150 - 175	0.01	7	0.5	**4131006**
	175 - 200	0.01	7	0.5	**4131007**
40 SD	0 - 25	0.01	4	1	**4135000**
	25 - 50	0.01	4	1	**4135001**
	50 - 75	0.01	5	1	**4135002**
	75 - 100	0.01	5	1	**4135003**

Accessories

Stand, setting standards, etc. please refer to page 3-22



** when scale is set at 0.*
Dimensions in brackets are for the 40 SD

Dimensions

Measuring range Dimensions in mm	a	b	c	d	e
0 - 25	31	28	13	3.25	3
25 - 50	56	40	13	3.25	3
50 - 75	81	53	13	3.25	3
75 - 100	106	65	13	3.25	3
100 - 125	130	75.5	15	4	3.5
125 - 150	155	88	15	4	3.5
150 - 175	180	100.5	15	4	3.5
175 - 200	205	113	15	4	3.5

Micrometer Sets Micromar 40 SSH

Application range	Order no.	Remarks
0-100 mm (4 Micrometers)	**4133001**	Incl. wooden case, setting standards 25 mm and 75 mm
100-200 mm (4 Micrometers)	**4133005**	Incl. wooden case, setting standards 125 mm and 175 mm

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

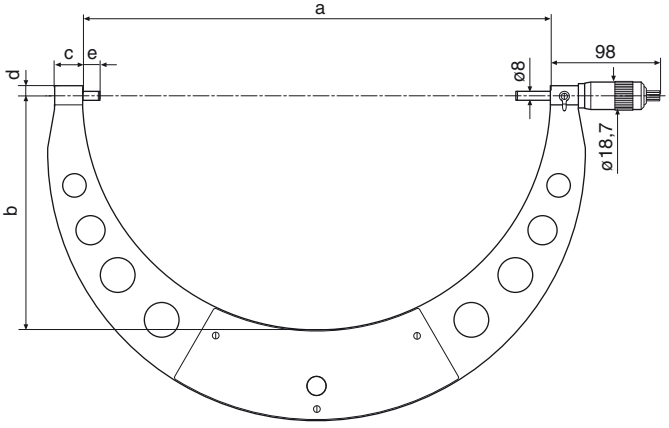
Note:
All Micrometers with measuring ranges between 400 mm to 500 mm, the frame is made from a steel tube

Technical Data

Measuring range mm	Readings mm	Error limit G µm	Spindle thread pitch mm	Weight kg	Order no.
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

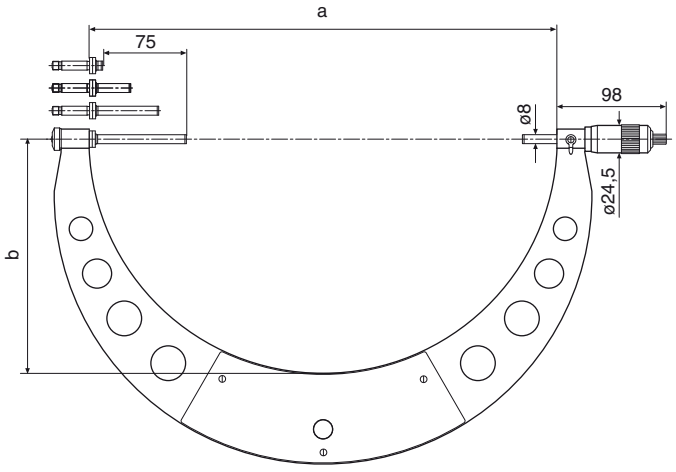
Note:
All Micrometers with measuring ranges from 400 mm up to 1000 mm, the frame is made from a steel tube

Technical Data

Measuring range mm	Readings mm	Error limit *G* µm	Spindle thread pitch mm	Weight kg	Order no.
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

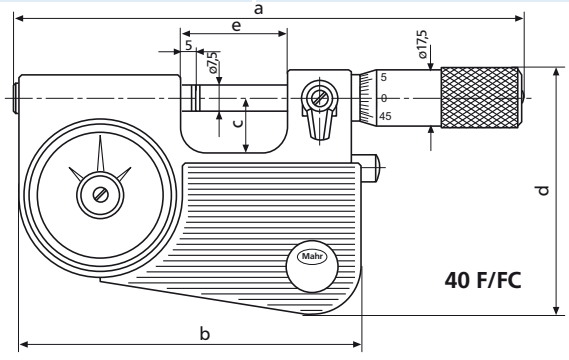
Features

- 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	Measuring faces Parallelism	Measuring force	Order no.	Remarks
40 F	0 - 25 mm	1 mm	≤0.2 µm	≤1 µm	9 N	**4150000**	
	25 - 50 mm	1 mm	≤0.2 µm	≤1 µm	9 N	**4150001**	
	0 - 1"	***.04"***	***≤.00001"***	***≤.00005"***	9 N	**4150900**	
	1 - 2"	***.04"***	***≤.00001"***	***≤.00005"***	9 N	**4150901**	
40 FC	0 - 25 mm	1 mm	≤0.2 µm	≤1 µm	9 N	**4150200**	Ceramic measuring faces
	25 - 50 mm	1 mm	≤ 0.2 µm	≤1 µm	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	≤2 µm	0,5 mm	1 µm	±65 µm	1 µm
.0001"	***≤.00008"***	***.025"***	***.00005"***	***±.0025"***	***.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 3-22

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

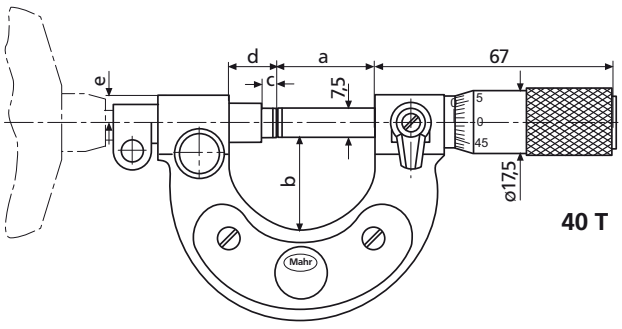
Measuring range	Retraction	Measuring faces		Measuring force	Order no.*
		Flatness	Parallelism		
0 - 25 mm	1.2 mm	≤0.2 µm	≤2 µm	6.5 N	**4154000**
25 - 50 mm	1.2 mm	≤0.2 µm	≤2 µm	6.5 N	**4154001**
50 - 100 mm	1.2 mm	≤0.2 µm	≤2 µm	6.5 N	**4154002**
100 - 150 mm	1.2 mm	≤0.2 µm	≤2 µm	7.5 N	**4154003**
150 - 200 mm	1.2 mm	≤0.2 µm	≤2 µm	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	≤2 µm	0.5 mm	1 µm	±50 µm	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*



40 T

Indicating Snap Gage 840 F
see page 9-2

Accessories

Stand, setting standards, etc. please refer to page 3-22

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

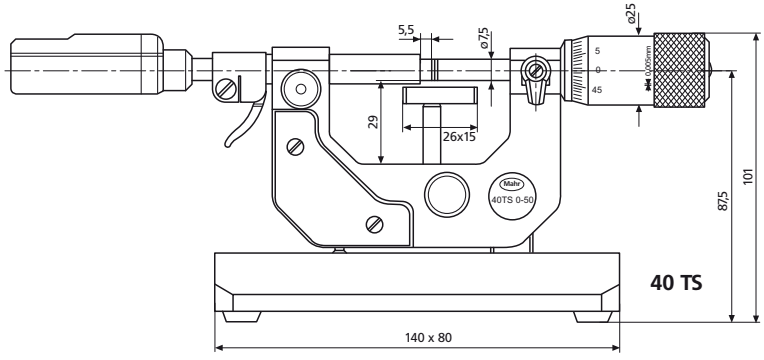
- Rugged steel frame, can be tilted up to 45° in relation to the sturdy base
- Retraction of the movable anvil and carbide-tipped measuring faces ensures maximum wear resistance
- Height-adjustable stop
- Constant measuring force
- Measuring spindle made of stainless steel, hardened throughout and ground,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

- Supplied with:
  Dial Comparator 1003

Technical Data

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

* *Alternative indicating instruments are available on request*



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

Indicating Thread Snap Gage 852 TS see page 9-17

Accessories

Stand, setting standards, etc. please refer to page 3-22

Micrometer Micromar 40 AB with reduced measuring faces

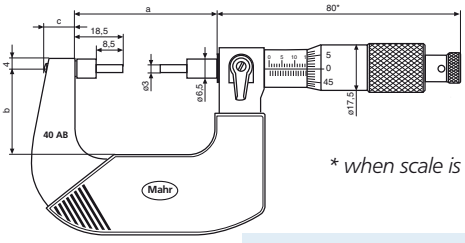
DIN 863-3

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 µm	0.5 mm	**4134100**
25 - 50 mm	0.01 mm	4 µm	0.5 mm	**4134101**
50 - 75 mm	0.01 mm	5 µm	0.5 mm	**4134102**
75 - 100 mm	0.01 mm	5 µm	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**



** when scale is set at 0*

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

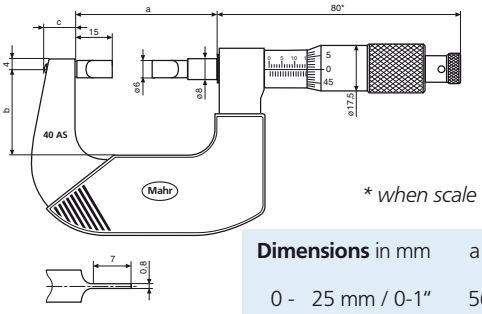
DIN 863-3

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 µm	0.5 mm	**4134200**
25 - 50 mm	0.01 mm	4 µm	0.5 mm	**4134201**
50 - 75 mm	0.01 mm	5 µm	0.5 mm	**4134202**
75 - 100 mm	0.01 mm	5 µm	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**



** when scale is set at 0*

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 anvils

DIN 863-3

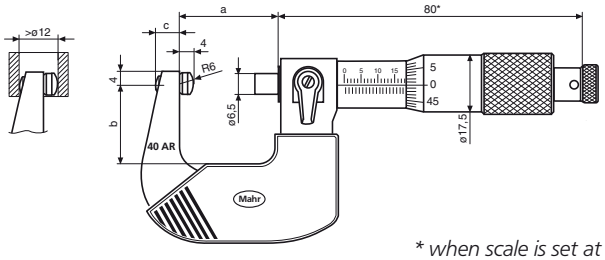
Features

- 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*

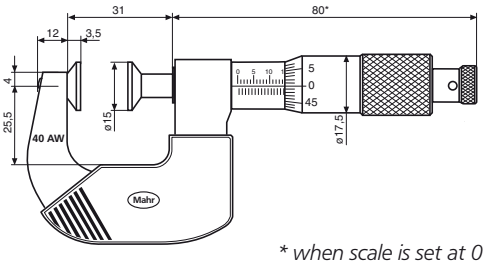
Micrometer Micromar 40 AW with sliding spindle and disc-type anvils

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

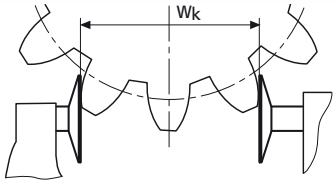
Measuring range	Readings	Error limit *G*	Parallelism	Flatness	Spindle thread pitch	Order no.
0 - 25 mm	0.01 mm	8 µm	5 µm	2 µm	0.5 mm	**4134300**
0 - 1"	***.0001"***	***.0003"***	***.0002"***	***.001"***	***.025"***	**4134950**



** when scale is set at 0*

Precision Micrometer Micromar 40 SM with disc-type anvils

DIN 863-3



Features

- Chrome plated 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 (measuring range 0 - 95 mm)

Applications

For measurements of

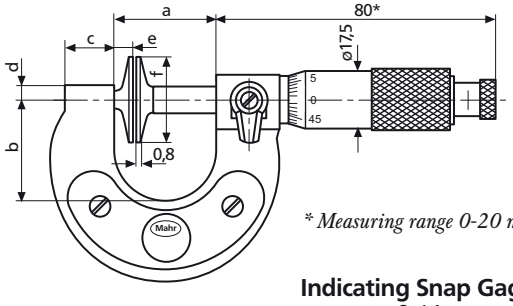
- Tooth spans W_k as of module 0.8 as indirect determination of tooth thickness on spur gears with straight and helical teeth
- Shoulders on shafts
- Undercut dimensions
- Registers
- Soft materials such as rubber, cardboard, felt, etc.

Technical Data

Measuring range mm	Readings mm	Error limit G µm	Spindle thread pitch mm	Measuring faces Flatness µm	Measuring faces Parallelism µm	Order no.
0 - 20	0.01	4	0.5	≤ 0.6	≤ 4	**4145000**
20 - 45	0.01	4	0.5	≤ 0.6	≤ 4	**4145001**
45 - 70	0.01	5	0.5	≤ 0.6	≤ 4	**4145002**
70 - 95	0.01	5	0.5	≤ 0.6	≤ 4	**4145003**
95 - 120	0.01	6	0.5	≤ 0.6	≤ 5	**4145004**
120 - 145	0.01	6	0.5	≤ 0.6	≤ 5	**4145005**
145 - 170	0.01	7	0.5	≤ 0.6	≤ 5	**4145006**
170 - 195	0.01	7	0.5	≤ 0.6	≤ 5	**4145007**

Dimensions

Dimensions in mm	a	b	c	d	e	f
0 - 20	31	28	13	3.25	4.5	25
20 - 45	56	40	13	3.25	4.5	25
45 - 70	81	53	13	3.25	4.5	25
70 - 95	106	65	13	3.25	4.5	25
95 - 120	130	75.5	15	4	4.5	30
120 - 145	155	88	15	4	4.5	30
145 - 170	180	100.5	15	4	4.5	30
170 - 195	205	113	15	4	4.5	30



** Measuring range 0-20 mm*

Indicating Snap Gage 840 FM
see page 9-14

Accessories

Stand, setting standards, etc. please refer to page 3-22

Thread Micrometer Micromar 40 Z

DIN 863-3

Features

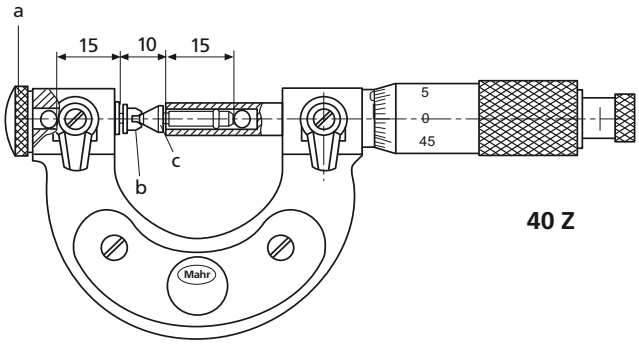
- For measuring pitch, root and outside diameters
- Rugged steel frame, heat insulated
- Spindle is hardened throughout, ground and is also provided which a locking device
- Adjustable anvil
- Spindle and anvil both have a mounting bore to accommodate inter-changeable anvils
- Flat end surface of the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

Technical Data

Readings	0.01 mm
Mounting bores for anvils	3.5 mm
Spindle thread pitch	0.5 mm
Thimble dia.	17.5 mm
Accuracy	DIN 863

Measuring range mm	Error limit G_{me}	Order no.	Order no. wooden case
0 - 25*	4 µm	**4170000**	**4170010**
25 - 50	4 µm	**4170001**	**4170011**
50 - 75	5 µm	**4170002**	**4170012**
75 - 100	5 µm	**4170003**	**4170013**
100 - 125	6 µm	**4170004**	**4170014**
125 - 150	6 µm	**4170005**	**4170015**
150 - 175	7 µm	**4170006**	**4170016**
175 - 200	7 µm	**4170007**	**4170017**

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



40 Z

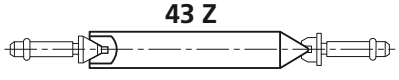
a = Regulating range ±0.5 mm
b = V-anvil
c = Tapered anvil

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.

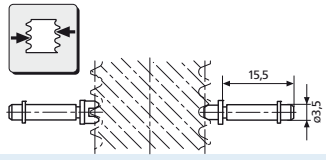
43 Z



Length mm	Accuracy ± µm	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, root 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°)		
Pitch mm	V-anvil **Order no.**	Tapered anvil **Order no.**
0.2	**4173007**	**4173407**
0.25	**4173008**	**4173408**
0.3	**4173009**	**4173409**
0.35	**4173010**	**4173410**
0.4	**4173011**	**4173411**
0.45	**4173012**	**4173412**
0.5 - 0.7	**4173000**	**4173400**
0.7 - 1	**4173001**	**4173401**
1.25 - 2	**4173002**	**4173402**
2 - 3.5	**4173003**	**4173403**
3.5 - 5	**4173004**	**4173404**
5 - 7	**4173005**	**4173405**
7 - 9	**4173006**	**4173406**

Whitworth thread (55°)		
Pitch range TPI	V-anvil **Order no.**	Tapered anvil **Order no.**
40 - 32	**4173043**	**4173443**
32 - 24	**4173044**	**4173444**
24 - 18	**4173045**	**4173445**
18 - 14	**4173046**	**4173446**
14 - 10	**4173047**	**4173447**
10 - 7	**4173048**	**4173448**
7 - 4.5	**4173049**	**4173449**
4.5 - 3	**4173050**	**4173450**
3 - 2.5	**4179408**	**4179409**

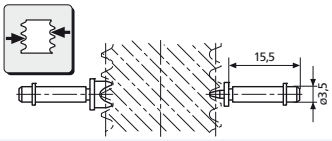
American UST thread (60°)		
Pitch range TPI	V-anvil **Order no.**	Tapered anvil **Order no.**
60 - 48	**4173113**	**4173513**
48 - 40	**4173114**	**4173514**
40 - 32	**4173115**	**4173515**
32 - 24	**4173116**	**4173516**
24 - 18	**4173117**	**4173517**
18 - 14	**4173118**	**4173518**
14 - 10	**4173119**	**4173519**
10 - 7	**4173120**	**4173520**
7 - 4.5	**4173121**	**4173521**
4.5 - 3	**4173122**	**4173522**

For pitch diameters

Pair consists of V-anvil and tapered anvil.
Shank length 15,5 mm

For root diameters

Pair consists of V-anvil and pointed anvil. Each pitch requires a seperate V-anvil.
The pointed anvil can be used for several pitches.



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**

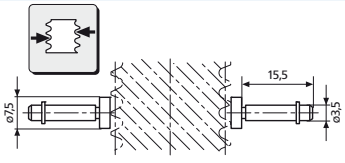
Metric thread (60°)		
Pitch mm	V-anvil **Order no.**	Pointed anvil **Order no.**
0.5	**4173213**	
0.6	**4173214**	
0.7	**4173215**	
0.75	**4173216**	**4173220**
0.8	**4173217**	
0.9	**4173218**	
1	**4173219**	
1.25	**4173221**	
1.5	**4173222**	**4173224**
1.75	**4173223**	
2	**4173225**	
2.5	**4173226**	**4173228**
3	**4173227**	
3.5	**4173229**	
4	**4173230**	**4173232**
4.5	**4173231**	
5	**4173233**	
5.5	**4173234**	**4173236**
6	**4173235**	
7	**4173237**	
8	**4173238**	**4173240**
9	**4173239**	

Whitworth thread (55°) American UST thread (60°)		
Pitch range TPI	V-anvil **Order no.**	Pointed anvil **Order no.**
40	**4173331**	
36	**4173321**	**4173334**
32	**4173332**	
28	**4173333**	
26	**4173335**	
24	**4173336**	
22	**4173337**	**4173341**
20	**4173338**	
19	**4173339**	
18	**4173340**	
16	**4173342**	**4173344**
14	**4173343**	
12	**4173345**	**4173348**
11	**4173346**	
10	**4173347**	
9	**4173349**	**4173452**
8	**4173350**	
7	**4173451**	
6	**4173453**	
5	**4173454**	**4173456**
4.5	**4173455**	
4	**4173457**	
3.5	**4173458**	**4173461**
3.25	**4173459**	
3	**4173460**	

For outside diameter

Pair of Flat Anvils 40 Za
with flat measuring faces

Made of hardened steel
Order no. **4173210**
Carbide tipped
Order no. **4511190**



Accessories for Micromar Micrometers

41 H

Stand 41 H

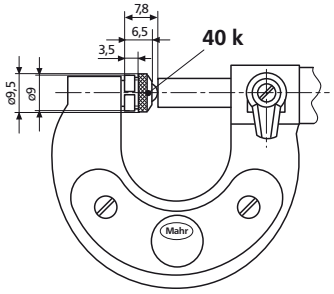
- For mounting a micrometer
- Enables the user to use both hands to operate the micrometer and / or to insert a work piece
- Sturdy, heavy-duty base, hammer-dimple enamel finish
- Jaw width 3.5 - 15 mm
- Clamping jaws are rubber lined to protect micrometer, the clamping jaws can be tilted
- Both the clamping jaws and hinge are fixed in place with one screw

Dimensions (D x W x H)	**Order no.**
130 x 100 x 90 mm	**4158000**

Ball shaped Anvil Attachment 40 k

- For measuring the thickness, for example: of pipe walls
- Slips over every anvil or the spindle with a dia. 7.5 mm
- Carbide ball, Ball dia. 5 ± 0.002 mm

Order no. **4130099**



Setting Standards 43 A

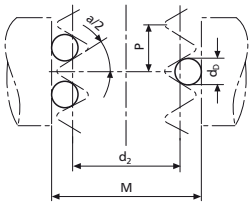
- For testing the basic setting of a micrometer
- Heat insulated handle
- Manufacturing tolerance js 2

Length mm	**Order no.**	**Length** ***inch***	**Order no.**
25	**4159400**	***1"***	**4159940**
50	**4159401**	***2"***	**4159941**
75	**4159402**	***3"***	**4159942**
100	**4159403**	***4"***	**4159943**
125	**4159404**	***5"***	**4159944**
150	**4159405**	***6"***	**4159945**
175	**4159406**	***7"***	**4159946**

Thread Pin Gage 426 M in holder

- For determining the pitch diameter of external threads according to the three wire method
- Slips over every anvil or the spindle
- Pin gages are hardened and lapped

426 M



Pin gage dia.	**Manufacturing tol.**	**Mounting hole**
0.17 - 5.05 mm	± 0.5 µm	dia. 6.5 mm / 7.5 mm

Order no. and further details see page 13-17

Wooden Cases for Micrometer

For measuring ranges over 100 mm the following wooden cases are available:

	40 SH	**40 SM**	**Order no.**
Meas. range mm	100-125	95-120	**4130064**
	125-150	120-145	**4130065**
	150-175	145-170	**4130066**
	175-200	170-195	**4130067**

Inside Micrometer Micromar 44 F

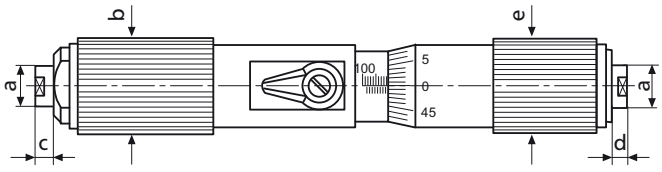
DIN 863-4

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

	Page
Ring Gage 355 E for testing the basic setting	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

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

$4\ \mu m + 10 \times 10^{-6} \times l$

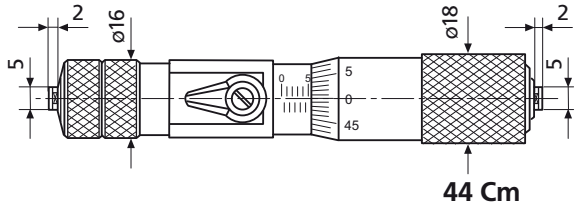
(l = length of the combination in mm)

- Supplied with:
  Case

Technical Data

Catalog no.	Measuring range mm			Measuring head 44 Cm Readings mm	Measuring head 44 Cm Spindle thread pitch mm	Extensions 44 Cv length in mm	Order no.
44 Cms1	100	-	150	0.01	0.5	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 3-28

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

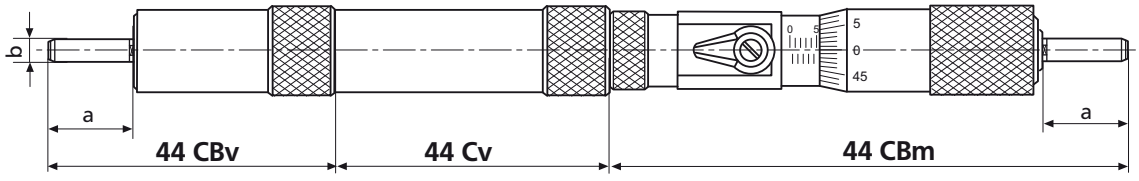
$4\ \mu m + 10 \times 10^{-6} \times l$

(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 Readings mm	Measuring head 44 CBm Spindle thread pitch mm	Order no.
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 3-28

Dimensions

Meas. range in mm			a	b
150	-	175	10	dia. 5
175	-	200	20	dia. 5
250	-	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

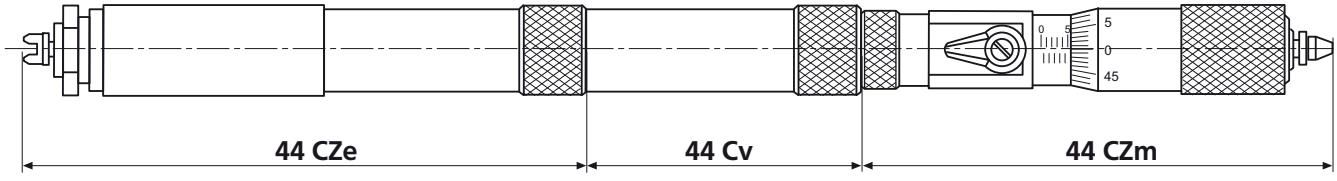
$4\ \mu m + 10 \times 10^{-6} \times l$

(l = length of the combination in mm)

- Supplied with: Case

Technical Data

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



Accessories

Individual Extensions 44 Cv

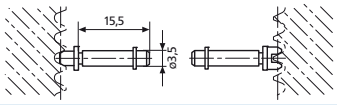
Length mm	Order no.	Length mm	Order no.
25	**4167030**	200	**4167033**
50	**4167031**	400	**4167034**
100	**4167032**	800	**4167035**

Case, wooden boxes, etc. please refer to page 3-28

Inchangeable Anvils for Inside Thread Micrometer Micromar 44 CZ

For pitch, root 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



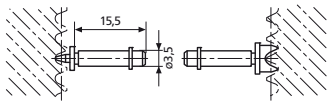
Metric thread (60°)					Whitworth thread (55°)					American UST thread (60°)				
Pitch mm			V-anvil Order no.	Tapered anvil Order no.	Pitch range TPI			V-anvil Order no.	Tapered anvil Order no.	Pitch range TPI			V-anvil Order no.	Tapered anvil Order no.
0.5	-	0.7	**4179400**	**4173400**	40	-	32	**4179043**	**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

For outside diameters

Pair consists of V-anvil and pointed anvil. Each pitch requires a seperate V-anvil.
The pointed anvil can be used for several pitches.

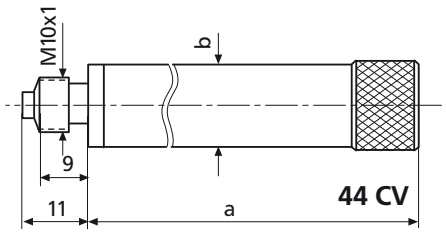


Trapezoid threads according to DIN 103			Metric thread (60°)			Whitworth thread (55°) American UST thread (60°)		
Pitch mm	V-anvil Order no.	Pointed anvil Order no.	Pitch mm	V-anvil Order no.	Pointed anvil Order no.	Pitch range TPI	V-anvil Order no.	Pointed anvil Order no.
1	**4179950**	**4173650**	0.5	**4179513**		40	**4179730**	
1.5	**4179951**	**4173651**	0.6	**4179514**		36	**4179731**	
2	**4179952**	**4173652**	0.7	**4179515**		32	**4179732**	**4173334**
3	**4179953**	**4173653**	0.75	**4179516**	**4173220**	28	**4179733**	
4	**4179954**	**4173654**	0.8	**4179517**		26	**4179735**	
5	**4179955**	**4173655**	0.9	**4179518**		24	**4179736**	
6	**4179956**	**4173656**	1	**4179519**		22	**4179737**	**4173341**
7	**4179957**	**4173657**	1.25	**4179521**		20	**4179738**	
8	**4179958**	**4173658**	1.5	**4179522**	**4173224**	19	**4179739**	
9	**4179959**	**4173659**	1.5	**4179523**		19	**4179740**	
10	**4179960**	**4173660**	2	**4179525**		16	**4179742**	**4173344**
12	**4179961**	**4173661**	2.5	**4179526**	**4173228**	14	**4179743**	
14	**4179962**	**4173662**	3	**4179527**		12	**4179745**	**4173348**
16	**4179963**	**4173663**	3.5	**4179529**		11	**4179746**	
18	**4179964**	**4173664**	4	**4179530**	**4173232**	10	**4179747**	
20	**4179965**	**4173665**	4.5	**4179531**		9	**4179749**	**4173452**
18	**4179964**	**4173664**	5	**4179533**		8	**4179750**	
20	**4179965**	**4173665**	5.5	**4179534**	**4173236**	7	**4179751**	
			6	**4179535**		6	**4179753**	
						5	**4179754**	**4173456**
						4.5	**4179755**	
						4	**4179757**	
						3.5	**4179758**	**4173461**
						3.25	**4179759**	
						3	**4179760**	

Accessories for Micromar 44 Cms / 44 CB / 44 CZ

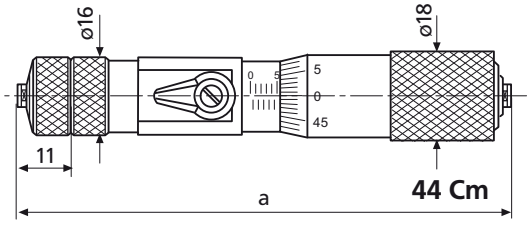
Individual Extensions 44 Cv

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 13-149
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

Technical Data

Measuring range mm	Measuring depth mm	Readings mm	Error limit *G** µm	Order no.
6 - 8	64 / (139**)	0.005	4	**4190000**
8 - 10	64 / (139**)	0.005	4	**4190001**
10 - 12.5	64 / (139**)	0.005	4	**4190002**
12.5 - 16	65 / (140**)	0.005	4	**4190003**
16 - 20	65 / (140**)	0.005	4	**4190004**
20 - 25	70 / (220**)	0.005	4	**4190005**
25 - 30	70 / (220**)	0.005	4	**4190006**
30 - 35	71 / (221**)	0.005	4	**4190007**
35 - 40	71 / (221**)	0.005	4	**4190008**
40 - 50	79 / (229**)	0.005	4	**4190009**
50 - 60	79 / (229**)	0.005	5	**4190010**
60 - 70	79 / (229**)	0.005	5	**4190011**
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 Av*

Features

- Scales with satin-chrome finish
- Spindle is hardened through-out 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 12.5 mm are carbide tipped
- From 12.5 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

Accessories

Measuring heads, ring gages, etc. please refer to page 3-32

Self-Centering Inside Micrometer Sets 44 AS

Measuring range mm	Number of Micrometers	Ring gages ø mm	Order no.
6 - 12.5	3	8 / 10	**4190050**
12.5 - 25	3	16 / 20	**4190051**
25 - 50	4	30 / 40	**4190052**
50 - 100	4	60 / 85	**4190053**

- Supplied with: Case and ring gage

Digital Self-Centering Inside Micrometer Micromar 44 EWR

IP52 · ABS · MarConnect (USB, RS232C, Digimatic) · DIN 863-4 · REFERENCE

Applications

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

Features

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

- 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 12.5 mm are carbide tipped
- From 12.5 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

Technical Data

Measuring range mm	Measuring range *(inch)*	Measuring depth mm	Readings mm / *inch*	Error limit G* µm	Order no.
6 - 8	***(25 - .3125")***	64 / (139**)	0.001 /***.00005"***	4	**4191020**
8 - 10	***(.3125 - .4")***	64 / (139**)	0.001 /***.00005"***	4	**4191021**
10 - 12.5	***(.4 - .5")***	64 / (139**)	0.001 /***.00005"***	4	**4191022**
12.5 - 16	***(.5 - .625")***	65 / (140**)	0.001 /***.00005"***	4	**4191023**
16 - 20	***(.625 - .775")***	65 / (140**)	0.001 /***.00005"***	4	**4191024**
20 - 25	***(.775 - 1")***	70 / (220**)	0.001 /***.00005"***	4	**4191025**
25 - 30	***(.1" - 1.2")***	70 / (220**)	0.001 /***.00005"***	4	**4191026**
30 - 35	***(1.2 - 1.4")***	71 / (221**)	0.001 /***.00005"***	4	**4191027**
35 - 40	***(1.4 - 1.6")***	71 / (221**)	0.001 /***.00005"***	4	**4191028**
40 - 50	***(1.6" - 2")***	79 / (229**)	0.001 /***.00005"***	4	**4191029**
50 - 60	***(2" - 2.35")***	79 / (229**)	0.001 /***.00005"***	5	**4191030**
60 - 70	***(2.35 - 2.75")***	79 / (229**)	0.001 /***.00005"***	5	**4191031**
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*

Accessories

Measuring heads, ring gages, etc. please refer to page 3-32

Digital Self-Centering Inside Micrometer Sets Micromar 44 EWR

Measuring range mm	(inch)	Number of measuring heads 44 Ak	Ring gages ø mm	Order no.
6 - 12.5	(25 - 5")	3	8 / 10	**4191060**
12.5 - 25	(.5 - .4")	3	16 / 20	**4191061**
25 - 50	(.5 - .2"	4	30 / 40	**4191062**
50 - 100	(2" - .4")	4	60 / 85	**4191063**

- Supplied with:
  1 Basic Unit 44 EXg, 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 12.5 mm are carbide tipped
- From 12.5 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 R	**4337121**
MarCator 1087 R	**4337161**

Technical Data

Measuring range mm			Measuring range *(inch)*	Measuring depth mm	Error limit *G** µm / *inch*	Order no.***
6	-	8	***(25 - .3125")***	64 / (139**)	3 / ***.00015***	**4487600**
8	-	10	***(.3125 - .4")***	64 / (139**)	3 / ***.00015***	**4487601**
10	-	12.5	***(.4 - .5")***	64 / (139**)	3 / ***.00015***	**4487602**
12.5	-	16	***(.5 - .625")***	65 / (140**)	3 / ***.00015***	**4487603**
16	-	20	***(.625 - .775")***	65 / (140**)	3 / ***.00015***	**4487604**
20	-	25	***(.775 - 1")***	70 / (220**)	3 / ***.00015***	**4487605**
25	-	30	***(.1" - 1.2")***	70 / (220**)	3 / ***.00015***	**4487606**
30	-	35	***(1.2 - 1.4")***	71 / (221**)	3 / ***.00015***	**4487607**
35	-	40	***(1.4 - 1.6")***	71 / (221**)	3 / ***.00015***	**4487608**
40	-	50	***(1.6" - 2")***	79 / (229**)	3 / ***.00015***	**4487609**
50	-	60	***(2" - 2.35")***	79 / (229**)	4 / ***.00016***	**4487610**
60	-	70	***(2.35 - 2.75")***	79 / (229**)	4 / ***.00016***	**4487611**
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**

Accessories

Measuring heads, ring gages, etc. please refer to page 3-32

Self-Centering Measuring Pistol Set Micromar 844 AS

Measuring range mm			Measuring range (inch)	Number of measuring heads	Ring Gages dia. mm	Order no. with Digital Indicator 1086 R	Order no.***
6	-	12.5	(.25 - .5")	3	8 / 10	**4487660**	**4487650**
12.5	-	25	(.5 - 1")	3	16 / 20	**4487661**	**4487651**
25	-	50	(1 - 2")	4	30 / 40	**4487662**	**4487652**
50	-	100	(2 - 4")	4	60 / 85	**4487663**	**4487653**

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

* *Indicator is not taken into consideration, over the full length of the anvils*
** *With the extension 44 Av*
*** *Excludes indicator*

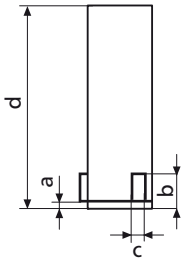
Accessories for Micromar 44 A, 44 EWR, 844 A

Measuring Heads 44 Ak for 44 EWR

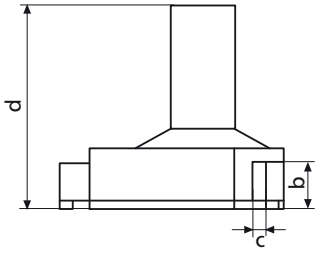
- Self-centering measuring head consists of 3 laterally positioned anvils, each are offset at intervals of 120°
- Anvils from 12.5 mm are carbide tipped
- From 12.5 mm, anvils can be used to measure to the base of a bore
- From 40 mm all measuring heads are made from aluminum to reduce weight

Measuring range mm			Measuring range *(inch)*	Order no.
6	-	8	*(25 - .3125")*	**4190030**
8	-	10	*(.3125 - .4")*	**4190031**
10	-	12.5	*(.4 - .5")*	**4190032**
12.5	-	16	*(.5 - .625")*	**4190033**
16	-	20	*(.625 - .775")*	**4190034**
20	-	25	*(.775 - 1")*	**4190035**
25	-	30	*(.1" - 1.2")*	**4190036**
30	-	35	*(1.2 - 1.4")*	**4190037**
35	-	40	*(1.4 - 1.6")*	**4190038**
40	-	50	*(1.6" - 2")*	**4190039**
50	-	60	*(2" - 2.35")*	**4190040**
60	-	70	*(2.35 - 2.75")*	**4190041**
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 - 12.5 mm



Meas. range 12.5 - 200 mm



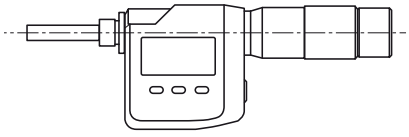
Measuring range mm			a	b	c	d
6	-	8	1.3	4.3	2	64
8	-	10	1.8	4.8	2	64
10	-	12.5	2	6	2.5	64
12.5	-	16	–	7	3	65
16	-	20	–	8.5	4	65
20	-	25	–	11	4	70
25	-	30	–	11	4	70
30	-	35	–	12	5	71
35	-	40	–	12	5	71
40	-	50	–	18	5	79
50	-	60	–	18	7	79
60	-	70	–	18	7	79
70	-	85	–	23	7	97
85	-	100	–	23	7	97
100	-	125	–	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
- Includes a traceable calibration certificate

dia. mm	Order no.	dia. mm	Order no.
8	**4710026**	40	**4710060**
10	**4710030**	60	**4710080**
16	**4710036**	85	**4710105**
20	**4710040**	125	**4710121**
30	**4710050**	175	**4710122**

Basic Unit 44 EWg

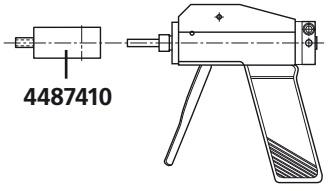


Threaded connection for changing the measuring heads

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

Basic Unit Measuring Pistol 844 Ag

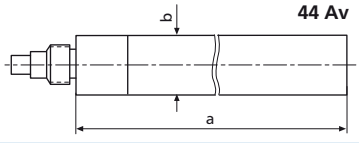
Threaded connection for changing the measuring heads. Any indicating instrument with an 8 mm mounting shank can be used.



Measuring range mm			*(inch)*	Order no.
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 mm			*(inch)*	Length a mm	dia. b mm	Order no.
6	-	10	*(.25 - .4")*	75	5.8	**4190090**
10	-	20	*(.4 - .775")*	75	9.5	**4190091**
20	-	25	*(.775 - 1")*	150	19.0	**4190092**
25	-	200	*(1 - 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

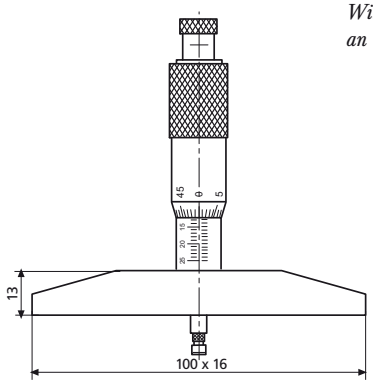
- Measuring spindle is hardened throughout and ground
- Hardened chrome plated cross beam, the contact surface is lapped
- Hardened anvil
- When using interchangeable extensions recalibrating the depth micrometer is not necessary
- Scales with satin-chrome finish
- Supplied with: Extensions 25 mm and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

Technical Data

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

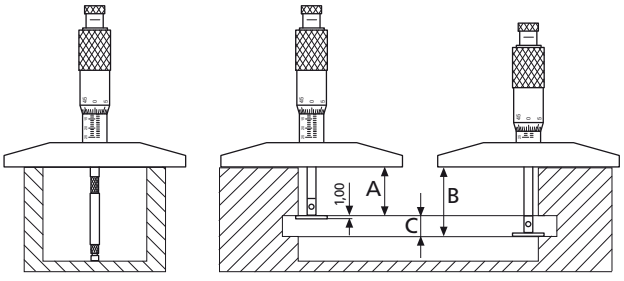
Standard depth measurements

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



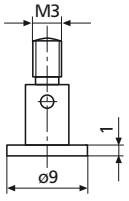
Dimension A: Can be direct read of the thimble

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

Dimension C: Dimension B minus Dimension A

Accessories

	Order no.
Disc anvil 45 Tm for groove spacing and groove widths	**4180011**
Extensions 45 Tv	
Length L — Length tolerance	
25 mm — ± 1.5 µm	**4180001**
50 mm — ± 1.5 µm	**4180002**
100 mm — ± 1.5 µm	**4180003**



45 Tm

Digital Micrometer Head Micromar 46 EWR

REFERENCE

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)

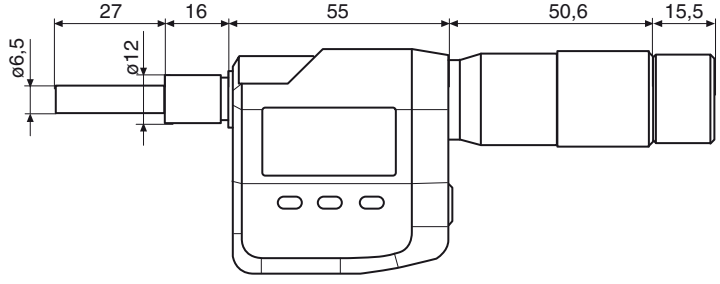
- Patented capacitive measuring system with an energy saving function, life of the battery approx. 2 years
- Ratchet with integrated coupler

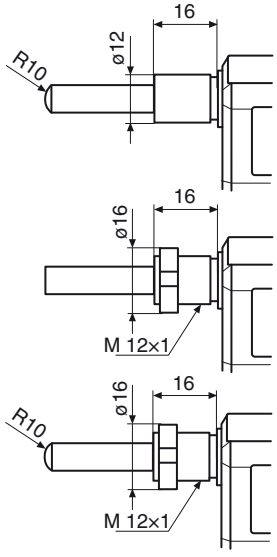
- Supplied with:
Case, end cap (in case the rapid drive is not required) and operating instructions

Technical Data

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

* *with locking nut*





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 plug10-pin	**16 EXd**	**4102411**

Accessories for Data Processing see Chapter 11

Micrometer Head Micromar 46

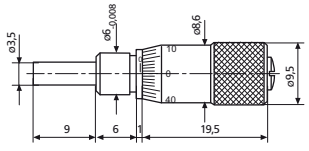
Features

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

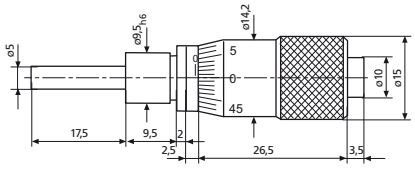
Technical Data

	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**

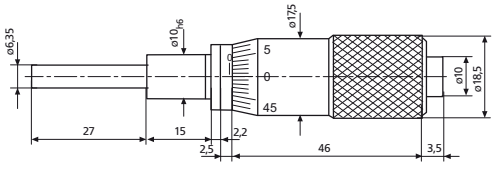
* *with locking nut*
** *with ratchet, carbide tipped*



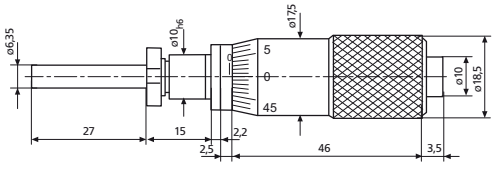
4183021
Measuring range 0-6.5 mm



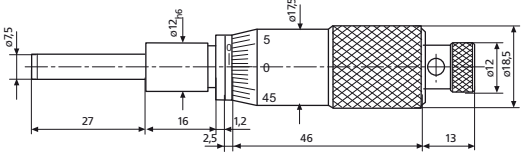
4183025
Measuring range 0-13 mm



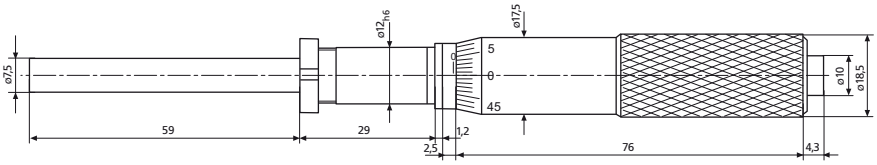
4183030
Measuring range 0-25 mm



4183024
Measuring range 0-25 mm
with locking nut



4184000
Measuring range 0-25 mm
carbide tipped



4183023
Measuring range 0-50 mm