Hand Measuring Instruments

Available from Stock

آزما صنعت گراد
Azma Sanat Grad
تست و اندازه گیری ، تجهیزات ، مشاوره
ASG

Mahr
EXACTLY

نماینده انحصاری کمپانی Mahr آلمان در ایران

Calipers, Depth & Height Gages

Item	Description	Picture
1	**Dial Caliper MarCal 16U** • Measuring range: 150 mm • Resolution: 0.01 mm • Shock Proof Order No. 4107005 Datasheet	
2	**Digital Caliper MarCal 16 EWRi** • Measuring range: 200 mm • Resolution: 0.01 mm • Wireless Data Transmission • Protection Class IP67 Order No. 4103404 Datasheet	
3	**Digital Caliper MarCal 16 ER** • Measuring range: 200 mm • Resolution: 0.01 mm Order No. 4103018 Datasheet	
4	**Digital Caliper MarCal 16 ER** • Measuring range: 300 mm • Resolution: 0.01 mm Order No. 4103020 Datasheet	

Unit 3 - 2ndfloor- No.24 West Shahid Ghandi St.
North Sohrevardi Ave. Tehran . Iran
Tel : +98 21 88745209 , 86030765
Fax: +98 21 88764890

تهران ـ خیابان سهروردی شمالی ـ خیابان شهید قندی غربی
پلاک ۲۴ ـ ورودی غربی ـ طبقه دوم ـ واحد ۳
تلفن : ۸۸۷۴۵۲۰۹ ، ۸۶۰۳۰۷۶۵
فاکس : ۸۸۷۶۴۸۹۰

www.asgradco.com info@asgradco.com

Item	Description	Picture
5	**Digital Caliper MarCal 18 ESA** • Measuring range: 500 mm • Resolution: 0.01 mm • Lightweight construction Order No. 4112621 Datasheet	
6	**Digital Caliper MarCal 18 ESA** • Measuring range: 1000 mm • Resolution: 0.01 mm • Lightweight construction Order No. 4112623 Datasheet	
7	**Digital Depth Gage MarCal 30 ER** • Measuring range: 150 mm • Resolution: 0.01 mm Order No. 4126514 Datasheet	
8	**Digital Depth Gage MarCal 30 ER** • Measuring range: 300 mm • Resolution: 0.01 mm Order No. 4126515 Datasheet	
9	**Height Measuring and Scribing Instrument Digimar 814 SR** • Measuring range: 350 mm • Resolution: 0.01 mm Order No. 4426100 Datasheet	

Unit 3 - 2ndfloor- No.24 West Shahid Ghandi St.
North Sohrevardi Ave. Tehran . Iran
Tel : +98 21 88745209 , 86030765
Fax: +98 21 88764890

تهران ـ خیابان سهروردی شمالی ـ خیابان شهید قندی غربی
پلاک ۲۴ ـ ورودی غربی ـ طبقه دوم ـ واحد ۳
تلفن : ۸۸۷۴۵۲۰۹ ، ۸۶۰۳۰۷۶۵
فاکس : ۸۸۷۶۴۸۹۰

www.asgradco.com info@asgradco.com

Inside & Outside Micrometers

Item	Description	Picture
1	**Digital Micrometer Micromar 40 ER** • Measuring range: 0 – 25 mm • Resolution: 0.001 mm • Protection class IP 40 Order No. 4151601 Datasheet	
2	**Digital Micrometer Micromar 40 EWR** • Measuring range: 25 – 50 mm • Resolution: 0.001 mm • Protection Class IP65 Order No. 4151706 Datasheet	
3	**Digital Micrometer Micromar 40 EWR** • Measuring range: 50 – 75 mm • Resolution: 0.001 mm • Protection Class IP65 Order No. 4151707 Datasheet	
4	**Digital Micrometer Micromar 40 EWR** • Measuring range: 75 – 100 mm • Resolution: 0.001 mm • Protection Class IP65 Order No. 4151708 Datasheet	

Unit 3 - 2ndfloor- No.24 West Shahid Ghandi St.
North Sohrevardi Ave. Tehran . Iran
Tel : +98 21 88745209 , 86030765
Fax: +98 21 88764890

تهران ـ خیابان سهروردی شمالی ـ خیابان شهید قندی غربی
پلاک ۲۴ ـ ورودی غربی ـ طبقه دوم ـ واحد ۳
تلفن : ۸۸۷۴۵۲۰۹ ، ۸۶۰۳۰۷۶۵
فاکس : ۸۸۷۶۴۸۹۰

www.asgradco.com info@asgradco.com

Item	Description	Picture
5	**Universal Digital Micrometer Micromar 40 EWV** • Measuring range: 0 – 25 mm • Resolution: 0.001 mm • With data output • With standard accessories • Protection class IP52 Order No. 4151723 Datasheet	
6	**Inside Micrometer Micromar 44 Cms Set** • Measuring range: 100 – 900 mm • Readings: 0.01 mm Order No. 4168023 Datasheet	

Test/ Dial/ Digital Indicators & Comparators

Item	Description	Picture
1	**Mechanical Test Indicator MarTest 800 S** • Measuring range: ±0.4 mm • Readings: 0.01 mm • Dial dia. 27.5 mm Order No. 4305200 Datasheet	
2	**Mechanical Test Indicator MarTest 800 SA** • Measuring range: ±0.25 mm • Readings: 0.01 mm • Dial dia. 27.5 mm Order No. 4301200 Datasheet	
3	**Mechanical Test Indicator MarTest 800 SGM** • Measuring range: ±0.1 mm • Readings: 0.002 mm • Dial dia. 38 mm Order No. 4308200 Datasheet	
4	**Mechanical Test Indicator MarTest 800 SGB** • Measuring range: ±0.5 mm • Readings: 0.01 mm • Dial dia. 38 mm Order No. 4301300 Datasheet	

Unit 3 - 2ndfloor- No.24 West Shahid Ghandi St.
North Sohrevardi Ave. Tehran . Iran
Tel : +98 21 88745209 , 86030765
Fax: +98 21 88764890

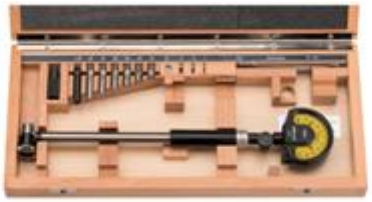
تهران ـ خیابان سهروردی شمالی ـ خیابان شهید قندی غربی
پلاک ۲۴ ـ ورودی غربی ـ طبقه دوم ـ واحد ۳
تلفن : ۸۸۷۴۵۲۰۹ ، ۸۶۰۳۰۷۶۵
فاکس : ۸۸۷۶۴۸۹۰

www.asgradco.com info@asgradco.com

Item	Description	Picture
5	**Precision Dial Indicator MarCator 810 A** • Measuring range: 10 mm • Readings: 0.01 mm • Dial face dia. 50 mm • Mounting shank dia. 8h6 Order No. 4311050 Datasheet	
6	**Precision Dial Indicator MarCator 810 SM** • Measuring range: 1 mm • Readings: 0.001 mm • Dial face dia. 50 mm • Mounting shank dia. 8h6 • Shock proof Order No. 4311070 Datasheet	
7	**Precision Dial Indicator MarCator 810 SV** • Measuring range: 40 mm • Readings: 0.01 mm • Dial face dia. 50 mm • Mounting shank dia. 8h6 Order No. 4321000 Datasheet	
8	**Digital Indicator MarCator 1086 Ri** • Measuring range: 12.5 mm • Resolution: 0.0005/0.001/0.002 mm (switchable) • Wireless data transmission Order No. 4337624 Datasheet	

Item	Description	Picture
9	**Digital Indicator MarCator 1075 R** • Measuring range: 12.5 mm • Resolution: 0.01 mm • Protection class IP52 Order No. 4336010 Datasheet	
10	**Digital Indicator MarCator 1075 R** • Measuring range: 12.5 mm • Resolution: 0.001 mm • Protection class IP52 Order No. 4336030 Datasheet	
11	**Mechanical Dial Comparator Millimess 1003** • Measuring range: ±50 µm • Readings: 1 µm • Shock Proof Order No. 4334000 Datasheet	
12	**Mechanical Dial Comparator Millimess 1010** • Measuring range: ±0.25 mm • Readings: 0.01 mm • Shock Proof Order No. 4332000 Datasheet	

Self Centering Dial Bore Gages

Item	Description	Picture
1	**Self-Centering Dial Bore Gages 844 N** • Measuring range: 18 – 50 mm • Error limit: 2 µm • Repeatability: 0.5 µm Order No. 4474000 Datasheet	
2	**Self-Centering Dial Bore Gages 844 N** • Measuring range: 35 – 100 mm • Error limit: 2 µm • Repeatability: 0.5 µm Order No. 4474001 Datasheet	
3	**Self-Centering Dial Bore Gages 844 N** • Measuring range: 100 – 250 mm • Error limit: 2 µm • Repeatability: 0.5 µm Order No. 4474002 Datasheet	

Unit 3 - 2ndfloor- No.24 West Shahid Ghandi St.
North Sohrevardi Ave. Tehran . Iran
Tel : +98 21 88745209 , 86030765
Fax: +98 21 88764890

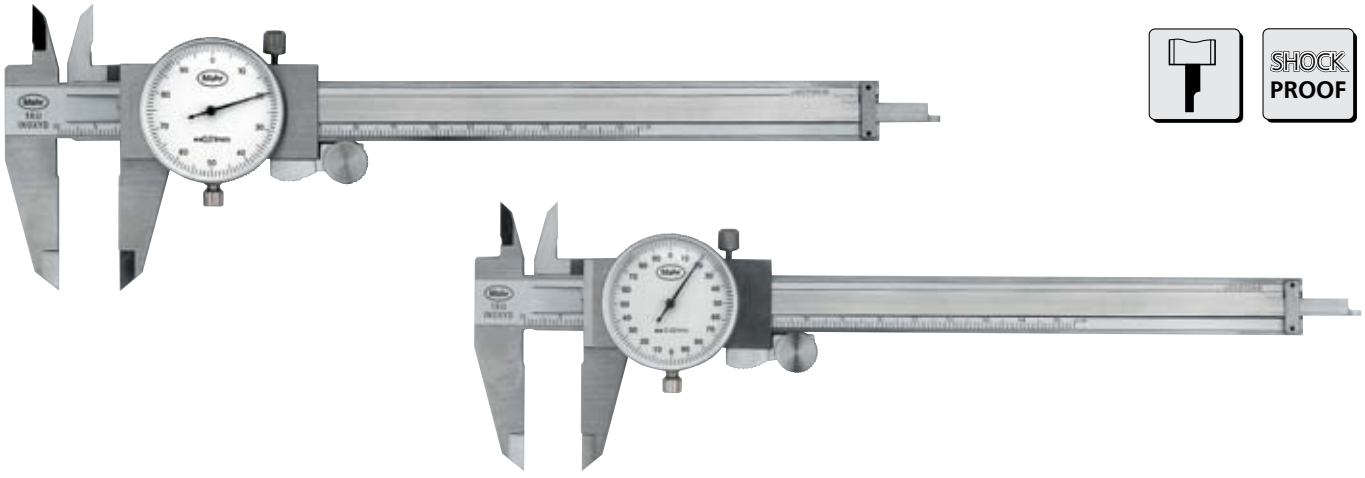
تهران ـ خیابان سهروردی شمالی ـ خیابان شهید قندی غربی
پلاک ۲۴ ـ ورودی غربی ـ طبقه دوم ـ واحد ۳
تلفن : ۸۸۷۴۵۲۰۹ ، ۸۶۰۳۰۷۶۵
فاکس : ۸۸۷۶۴۸۹۰

www.asgradco.com info@asgradco.com

Mobile Surface Roughness Measurement Instruments

Item	Description	Picture
1	**Mobile Surface Roughness Measurement instrument MarSurf PS 1** • Skid probe system • Measuring range:350 µm, 180 µm, 90 µm (changes automatically) • Profile resolution:32 nm, 16 nm, 8 nm (changes automatically) Order No. 6910210 Datasheet	
2	**Mobile Surface Roughness Measurement instrument MarSurf M 300** • Skid probe system • Measuring range:350 µm, 180 µm, 90 µm (changes automatically) • Profile resolution:32 nm, 16 nm, 8 nm (changes automatically) • Including built in printer • Bluetooth connection Order No. 6910401 Datasheet	
3	**Mobile Surface Roughness Measurement instrument MarSurf M 300 C** • Skid probe system • Measuring range:350 µm, 180 µm, 90 µm (changes automatically) • Profile resolution:32 nm, 16 nm, 8 nm (changes automatically) • Including built in printer Order No. 6910431 Datasheet	

Vernier Caliper MarCal 16 U with circular scale



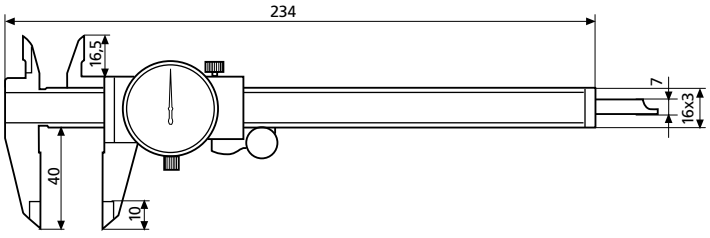
SHOCK PROOF

Features

- Large, high contrast dial face
- Satin chrome finished line scale
- Shockproof movement
- Zero setting through rotating the dial face and locking screw
- Covered rack
- Slide and beam made of hardened stainless steel
- Measuring blades for inside measurement
- Step measuring function
- Locking screw
- Depth bar
- Supplied with: Plastic case
- Inch model is supplied with a black dial face

Technical Data

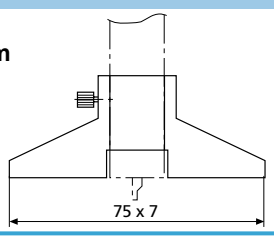
Measuring range	Readings	Diameter of circular scale	1 Pointer revolution	Dial face color	Error limit *G*	DIN 862	Order no.
150 mm	0.01 mm	34 mm	1 mm	white	0.03 mm	●	**4107005**
150 mm	0.02 mm	34 mm	2 mm	white	0.03 mm	●	**4107107**
6"	***.001"***	***1.3"***	***.100"***	black	***.0012"***		**4107900**



Accessories

		Order no.
Depth Measuring Bridge	**16 Em**	**4102020**
Leather case for meas. range 150 mm		**4100302**

16 Em



Digital Caliper MarCal 16 EWRi

Features

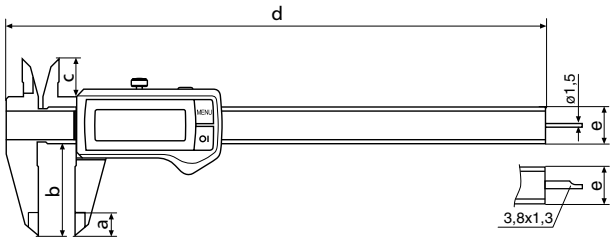
Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
PRESET (for entering a numerical value)
Reference-Lock/Unlock
Hold
DATA
Auto-ON/OFF

- Integrated Wireless data transmission
- Immediate measurement due to the Reference system
- Excellent resistance against dust, coolants and lubricants, protection class IP67
- Dirt wipers are integrated in the slide
- Life of the battery up to 3 years
- Max measuring speed 2,5 m/s (100"/s)
- High contrast LCD with 11 mm high digits
- Lapped guide way
- Slide and beam made of hardened stainless steel
- Measuring blades for inside measurement
- Step measuring function
- Locking screw
- Supplied with: Case, battery, operating instructions

Technical Data

Measuring range mm	*(inch)*	Resolution mm/inch	Error limit *G* mm	/ *inch*	DIN 862	Depth rod		Friction wheel	Order no.
150	***(6")***	0.01/***.0005"***	0.03	/ ***.001"***	●	●			**4103400**
150	***(6")***	0.01/***.0005"***	0.03	/ ***.001"***	●	●		●	**4103401**
150	***(6")***	0.01/***.0005"***	0.03	/ ***.001"***	●		●		**4103402**
150	***(6")***	0.01/***.0005"***	0.03	/ ***.001"***	●		●	●	**4103403**
200	***(8")***	0.01/***.0005"***	0.03	/ ***.001"***	●		●		**4103404**
200	***(8")***	0.01/***.0005"***	0.03	/ ***.001"***	●		●	●	**4103405**
300	***(12")***	0.01/***.0005"***	0.04	/ ***.0015"***					**4103406**
300	***(12")***	0.01/***.0005"***	0.04	/ ***.0015"***				●	**4103407**

Technical Data



Dimensions

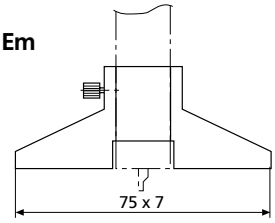
mm	a	b	c	d	e
150	10	40	16	235	16 x 3
200	10	50	19	285	16 x 3.5
300	14	64	19	388	16 x 4

Accessories

		Order no.
Depth Measuring Bridge	**16 Em**	**4102020**
Battery 3V, Type CR 2032		**4102520**
i-Stick wireless receiver incl. MarCom Standard		**4102220**
Software MarCom Professional 4.0		**4102552**
Software MarCom Standard 3.1		**4102551**

Accessories for Data Processing see Chapter 11

16 Em



Digital Caliper MarCal 16 ER with data output

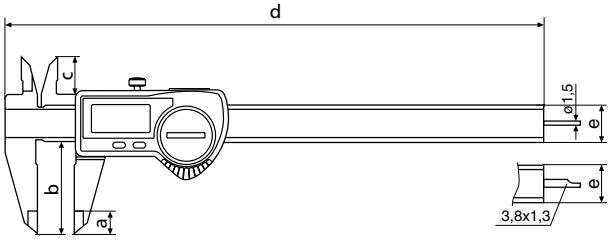
Features

Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
Reference-Lock/Unlock
DATA (Data transmission via connection cable)
Auto-ON/OFF

- Immediate measurement due to the Reference system
- MarConnect data output, choose alternatively: USB, OPTO RS232C or Digimatic
- Dirt wipers are integrated in the slide
- Life of the battery up to 3 years
- Max measuring speed 2.5 m/s (100"/s)
- High contrast LCD with 11 mm high digits
- Lapped guide way
- Slide and beam made of hardened stainless steel
- Measuring blades for inside measurement
- Step measuring function
- Locking screw
- Supplied with: Case, battery, operating instructions

Technical Data

Measuring range		Resolution			Error limit *G*			Depth rod			Friction wheel	Order no.
mm	*(inch)*	mm	/	*inch*	mm	/	*inch*	DIN 862	⌀1,5			
150	***(1")***	0.01	/	***.0005"***	0.03	/	***.001"***	●				**4103014**
150	***(1")***	0.01	/	***.0005"***	0.03	/	***.001"***	●			●	**4103015**
200	***(8")***	0.01	/	***.0005"***	0.03	/	***.001"***			●		**4103018**
300	***(12")***	0.01	/	***.0005"***	0.04	/	***.0015"***					**4103020**
150	***(1")***	0.01	/	***.0005"***	0.03	/	***.001"***			●		**4103016**
150	***(1")***	0.01	/	***.0005"***	0.03	/	***.001"***			●	●	**4103017**
200	***(8")***	0.01	/	***.0005"***	0.03	/	***.001"***			●	●	**4103019**
300	***(12")***	0.01	/	***.0005"***	0.04	/	***.0015"***				●	**4103021**



Dimensions

mm	a	b	c	d	e
150	10	40	16	235	16 x 3
200	10	50	19	285	16 x 3.5
300	14	64	19	388	16 x 4

Accessories

		Order no.
Depth Measuring Bridge	**16 Em**	**4102020**
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 Caliper MarCal 18 ESA lightweight construction

Features

Functions:
ON/OFF
RESET (Zero setting)
mm/inch
HOLD (storage of measured values)
DATA (Data transmission)

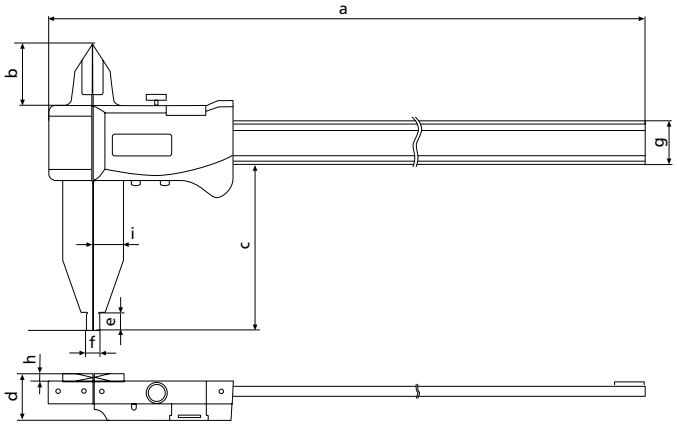
- Dirt wipers are integrated in the slide
- Max measuring speed 1.5 m/sec (60"/sec)
- Data output: Opto RS232C (only 300 mm version)
- High contrast Liquid Crystal Display with 6 mm or 10.5 mm high digits
- To reduce the overall weight the slide and beam are made from aluminum and are coated with a hard anodized surface coating (1100HV)
- Measuring faces are made of hardened stainless steel
- Prisma guide ways for a more smooth and even movement
- Measuring blades for outside measurement
- Rounded measuring faces for inside measurement
- Locking screw
- Supplied with: Case

Technical Data

Measuring range		Resolution			Error limit *G*				Weight	Order no.
mm	*(inch)*	mm	/	*inch*	mm	/	*inch*	RS232C	kg	
300	*(12")*	0.01	/	*.0005"*	0.03	/	*.001"*	●	0.50	**4112620**
500	*(20")*	0.01	/	*.0005"*	0.03	/	*.001"*	–	1.40	**4112621**
800	*(32")*	0.01	/	*.0005"*	0.07	/	*.0025"*	–	1.60	**4112622**
1000	*(40")*	0.01	/	*.0005"*	0.08	/	*.0032"*	–	1.80	**4112623**

Dimensions

mm	a	b	c	d	e	f	g	h	i
300	450	33	90	24.5	10	10	25	4.5	17
500	726	42	150	33.5	15	20	31.9	6	29
800	1026	42	150	33.5	15	20	31.9	6	29
1000	1226	42	150	33.5	15	20	31.9	6	29



Accessories

		Order no.
Battery 3V, Type CR 2032		**4102520**
Data Connection Cable Opto RS232C (2 m), with SUB-D jack 9-pin	**16 ESv**	**4102510**

Accessories for Data Processing see Chapter 11

Digital Depth Gage MarCal 30 ER

REFERENCE

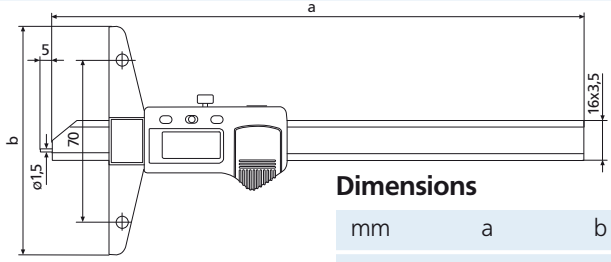
Features

Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
PRESET (enter a numerical value)
Reference-Lock/Unlock
DATA (Data transmission via connection cable)
Auto-ON/OFF

- Immediate measurement due to the Reference system
- MarConnect data output, choose alternatively: USB, OPTO RS232C or Digimatic
- Dirt wipers are integrated in the slide
- Life of the battery up to 3 years
- Max measuring speed 2.5 m/s (100"/s)
- High contrast LCD with 8.5 mm high digits
- Lapped guide way
- Beam and cross beam are made of hardened stainless steel
- Locking screw
- Supplied with: Case, battery, operating instructions

Technical Data

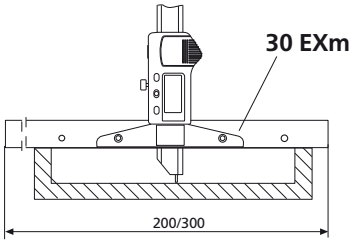
Measuring range mm	(inch)	Resolution mm / inch	Error limit *G* mm	Order no.
150	(6")	0.01 / .0005"	0.03	**4126514**
300	(12")	0.01 / .0005"	0.04	**4126515**
500	(20")	0.01 / .0005"	0.05	**4126516**



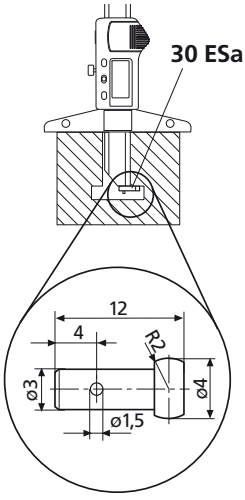
Dimensions

mm	a	b
150	234	100
300	384	150
500	584	150

Depth measurement



Distance measurement



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**
Cross Beam Extension 200 mm	**30 EXm**	**4126511**
300 mm	**30 EXm**	**4126510**
Anvil for distance measurement to be fixed to the measuring pin	**30 ESa**	**4125611**

Accessories for Data Processing see Chapter 11

Height Measuring and Scribing Instrument Digimar 814 SR

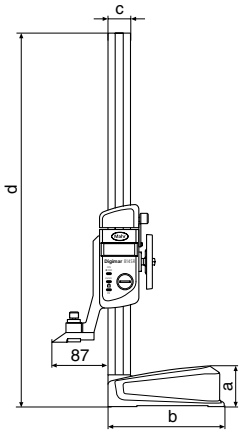
Application

- Scribing and marking of work pieces
- Measuring heights and distances

Features

Functions:
RESET (Set the display to zero for relative measurement)
ABS (Switch between relative and absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (To enter a numerical value)
DATA (Data transmission via connection cable)
Auto-ON/OFF

- Life of the battery up to 3 years
- Max. measuring speed 1.5 m/s (60"/s)
- MarConnect Data output: choose either
  USB
  OPTO RS232C
  Digimatic
- High contrast Liquid Crystal Display with 12 mm high digits
- Sturdy heavy-duty base, easy to handle
- Hardened and lapped contact surface which produce both a smooth and even movement
- Slide and beam made of hardened stainless steel
- Hand crank for positioning and measuring
- Fine adjustment
- Locking screw
- Interchangable scriber point, carbide tipped
- Scope of supply: Scriber point, cardboard box, battery and operating instructions



Dimensions

mm	a	b	c	d
350	62	180 x 98	35 x 15	580
600	62	180 x 98	35 x 15	835

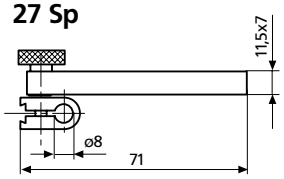
Technical Data

Measuring range mm	(inch)	Resolution mm / inch	Error limit mm / inch	Weight kg / lbs	Order no.
350	(14")	0.01 / .0005"	0.04 / .0016"	7 / 15.43	4426100
600	(24")	0.01 / .0005"	0.05 / .0020"	8 / 17.64	4426101

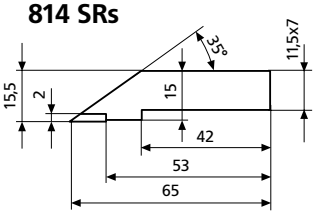
Accessories

		Order no.
Measuring / Scriber Point, carbide tipped	814 SRs	4123867
Holder for Test Indicators	27 Sp	4123041
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

27 Sp



814 SRs



Digital Micrometer Micromar 40 ER without data output

Features

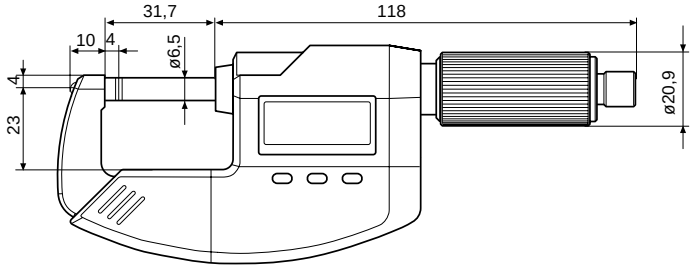
Functions:
RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

- 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			(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 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)

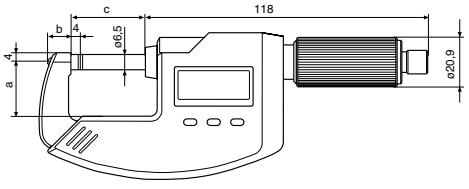
DATA (Data transmission via connection cable)

- 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 mm	Measuring range *(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	●	**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

Universal Digital Micrometer Micromar 40 EWV with sliding spindle

Features

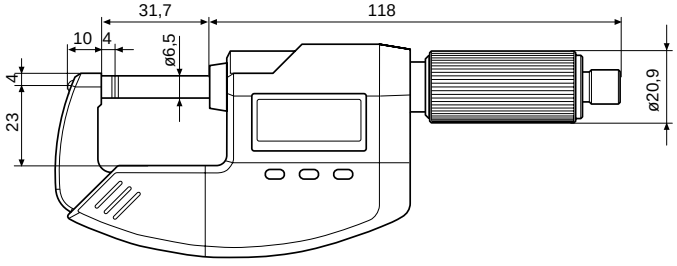
Functions:
RESET (Zero setting the display for Relative measurement)
ABS (Switch between Relative and Absolute measurement)
mm/inch
Reference-Lock/Unlock
PRESET (Reference setting)

- 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"*	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*



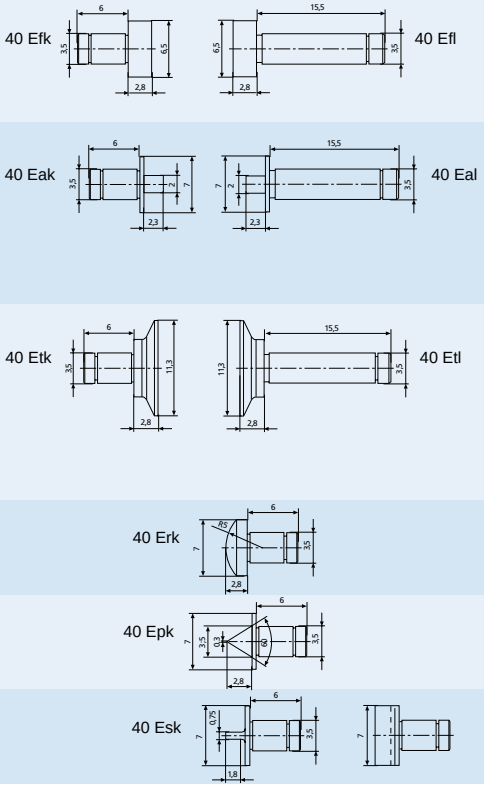
Special Accessories

		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

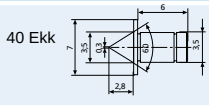
Standard Accessories are included in the set

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

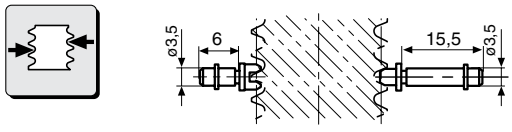
Catalog no.	Description	Order no.	Quantity required
40 Ekk	Wedge shaped anvil (blade) 60°	**4151776**	**2**



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*

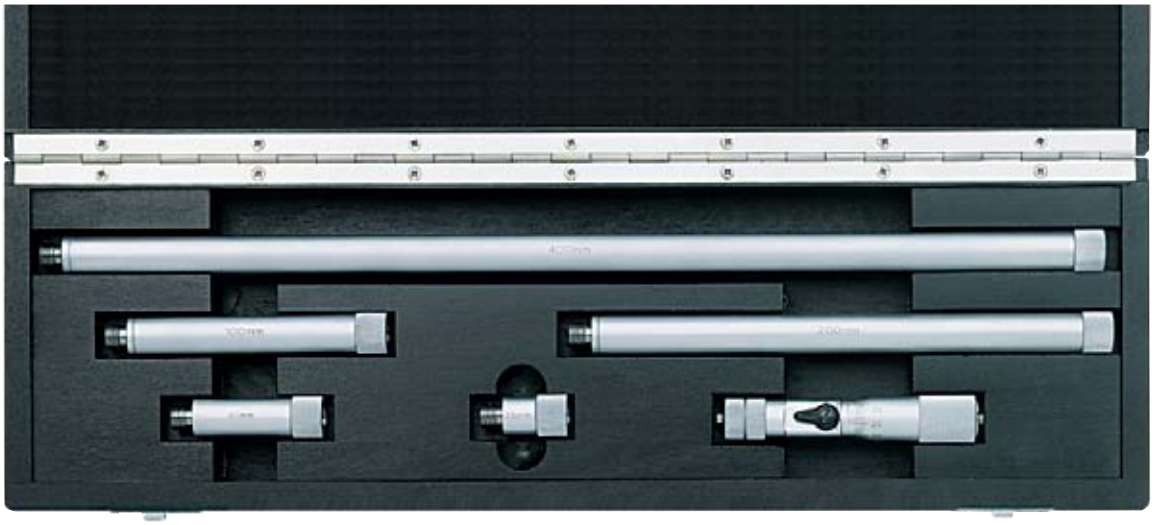


Metric thread (60°) Pitch mm	V-anvil Order no.	Blade Order no.
0.5 - 0.7	**4501000**	**4173700**
0.7 - 1	**4501001**	**4173701**
1.25 - 2	**4501002**	**4173702**
2 - 3.5	**4501003**	**4173703**

Whitworth thread (55°) Pitch range TPI	V-anvil Order no.	Blade Order no.
40 - 32	**4501007**	**4173743**
32 - 24	**4501008**	**4173744**
24 - 18	**4501009**	**4173745**
18 - 14	**4501010**	**4173746**
14 - 10	**4501011**	**4173747**
10 - 7	**4501012**	**4173748**

American UST thread (60°) Pitch range TPI	V-anvil Order no.	Blade Order no.
40 - 32	**4501018**	**4173815**
32 - 24	**4501019**	**4173816**
24 - 18	**4501020**	**4173817**
18 - 14	**4501021**	**4173818**
14 - 10	**4501022**	**4173819**
10 - 7	**4501023**	**4173820**

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

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

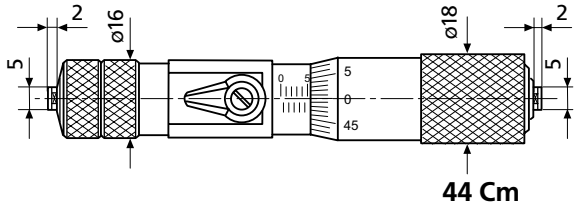
(l = length of the combination in mm)

- 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*

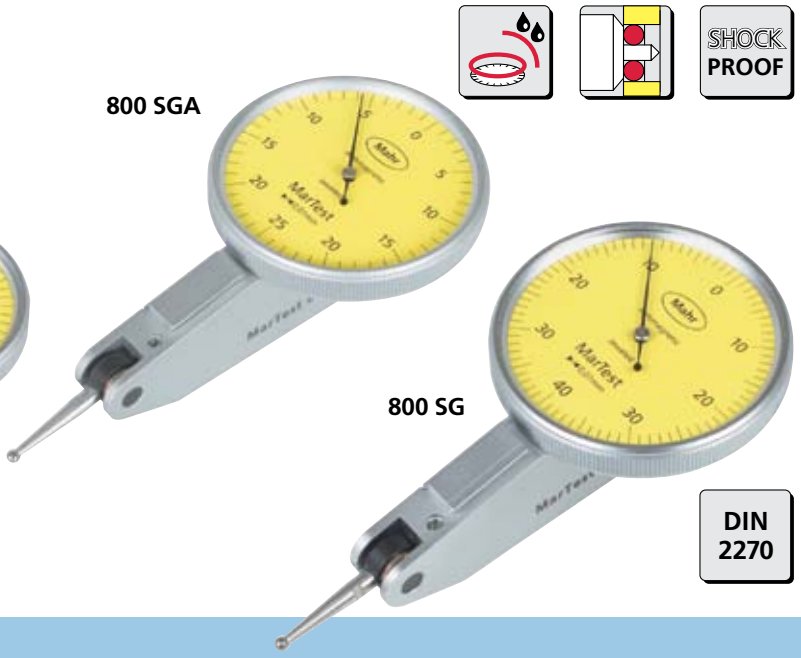


Accessories

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

MarTest standard versions

DIN 2270



SHOCK PROOF

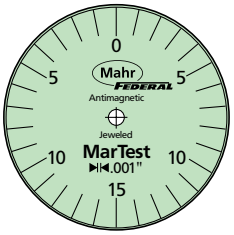
DIN 2270

Technical Data

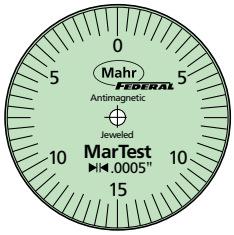
	Measuring range	Readings	Dial dia.	Measuring force	Length of styli	Order no.	Order no. with kit
800 S	± 0.4 mm	0.01 mm	27.5 mm	0.15 N	14.5 mm	**4305200**	**2015309**
800 SG	± 0.4 mm	0.01 mm	38 mm	0.15 N	14.5 mm	**4307200**	**2015310**
800 SA	± 0.25 mm	0.01 mm	27.5 mm	0.1 N	14.5 mm	**4301200**	**2015343**
800 SGA	± 0.25 mm	0.01 mm	38 mm	0.1 N	14.5 mm	**4301250**	**2015344**
801 S1	***± .015"***	***.001"***	***1.1"***	0.15 N	14.5 mm	**4305960**	**2015317**
801 S	***± .015"***	***.0005"***	***1.1"***	0.15 N	14.5 mm	**4305950**	**2015316**
801 SG	***± .015"***	***.0005"***	***1.5"***	0.15 N	14.5 mm	**4307950**	**2015318**
801 SGI	***± .015" (± 0.3 mm)***	***.0005" (0.01 mm)***	***1.5"***	0.15 N	14.5 mm	**4307970**	**2015311**

Supplied with:
Plastic storage case, spanner for changing the styli, styli dia. 2 mm, mounting shaft 800 a8 (for metric versions), mounting shaft 800 a6 (800 SA, 800 SGA), mounting shaft 800 a3/8 (for inch versions)

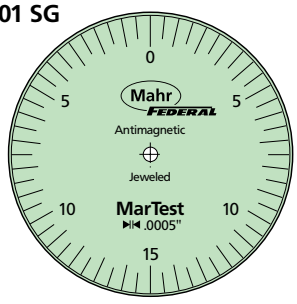
801 S1



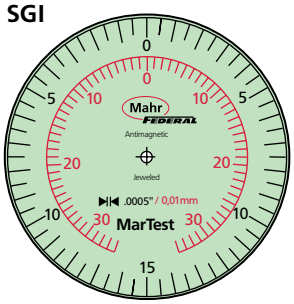
801 S

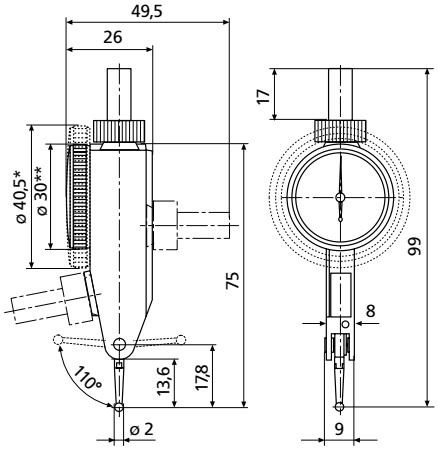


801 SG



801 SGI

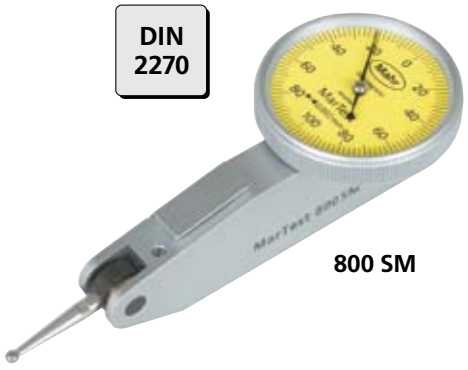




* *800 SG, 800 SGA, 801 SG, 801 SGI*
** *800 S, 800 SA, 801 S1, 801 S*

MarTest with resolution 0.002 mm/0.001 mm for higher accuracy

DIN 2270



800 SM

DIN 2270

800 SGM

SHOCK PROOF

800 SGE

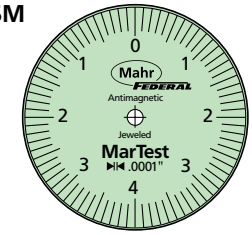
Inductive Probe Millimar 1318
see page 7-14

Technical Data

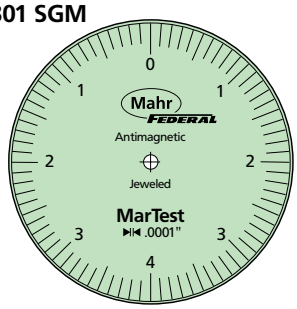
	Measuring range	Readings	Dial dia.	Measuring force	Length of styli	Order no.	Order no. with kit
800 SM	± 0.1 mm	0.002 mm	27.5 mm	0.15 N	14.5 mm	**4308150**	**2015315**
800 SGM	± 0.1 mm	0.002 mm	38 mm	0.15 N	14.5 mm	**4308200**	**2015314**
800 SGE	± 0.07 mm	0.001 mm	38 mm	0.2 N	9.1 mm	**4308220**	**2015345**
801 SM	***± .004"***	***.0001"***	***1.1"***	0.15 N	14.5 mm	**4308960**	**2015321**
801 SGM	***± .004"***	***.0001"***	***1.5"***	0.15 N	14.5 mm	**4308970**	**2015322**
801 SGE	***± .004"***	***.00005"***	***1.5"***	0.15 N	14.5 mm	**4308985**	**2015323**

Supplied with:
Plastic storage case, spanner for changing the styli, styli dia. 2 mm, mounting shaft 800 a8 (for metric versions)

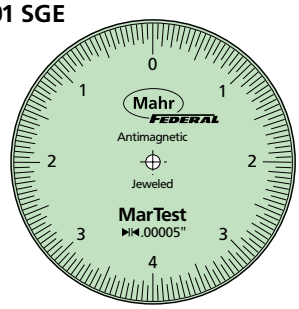
801 SM

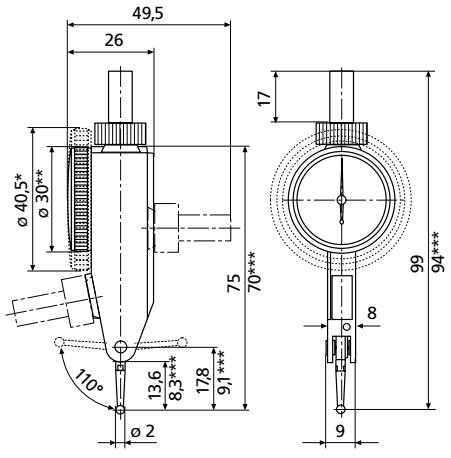


801 SGM



801 SGE





* *800 SGM, 800 SGE, 801 SGM, 801 SGE*
** *800 SM, 801 SM*
*** *800 SGE*

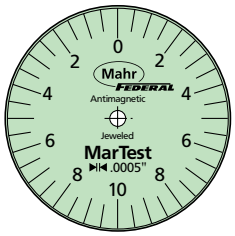
MarTest with extra long styli for measuring in even difficult to access positions

Technical Data

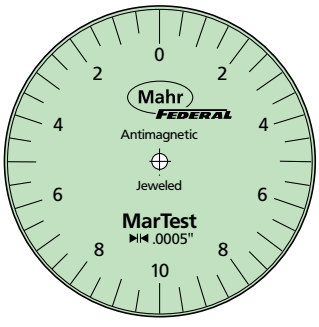
	Measuring range	Readings	Dial dia.	Measuring force	Length of styli	Order no.	Order no. with kit
800 SL	± 0.25 mm	0.01 mm	27.5 mm	0.07 N	41.24 mm	**4306200**	**2015312**
800 SGL	± 0.25 mm	0.01 mm	38 mm	0.07 N	41.24 mm	**4306250**	**2015313**
800 SGB	± 0.5 mm	0.01 mm	38 mm	0.1 N	32.3 mm	**4301300**	**2015346**
801 SL	***± .010"***	***.0005"***	***1.1"***	0.07 N	41.24 mm	**4306950**	**2015319**
801 SGL	***± .010"***	***.0005"***	***1.5"***	0.07 N	41.24 mm	**4306960**	**2015320**

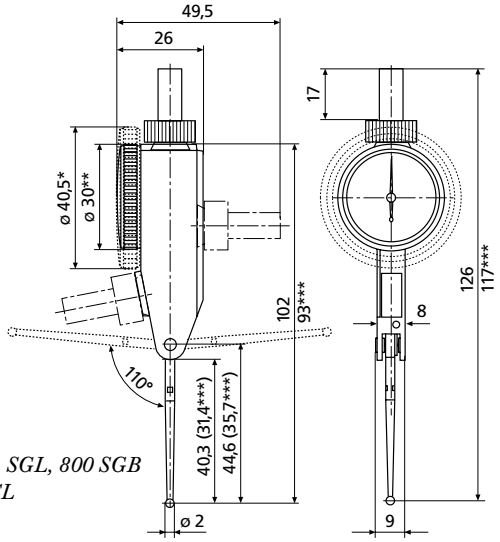
Supplied with:
Plastic storage case, spanner for changing the styli, styli dia. 2 mm, mounting shaft 800 a8 (for metric versions), mounting shaft 800 a3/8 (for inch versions), mounting shaft 800 a6 (800 SGB)

801 SL



801 SGL



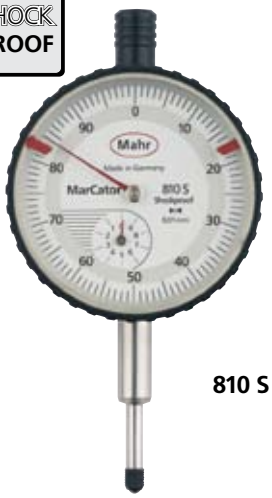


* *800 SGL, 801 SGL, 800 SGB*
** *800 SL, 801 SL*
*** *800 SGB*

Precision Dial Indicators 810 DIN style

810 A

810 AT



810 S

810 SW

Features

Dial Indicator 810 A
Standard version

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

Dial Indicator 810 AT
for depth measurement

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

- Scale of the dial face is counter-clockwise

Dial Indicator 810 S
Shockproof

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

Dial Indicator 810 SW
Waterproof and oil proof

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

- Measuring spindle sealed with rubber sleeve, thus preventing contamination by liquids and impurities
- Hermetically sealed protective measuring spindle cap

All indicators are delivered in plastic case

Technical Data

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

Accessories

		Order no.
Adapter Bush for adapting mounting shank 8h6 mm to inch bore .375"	**940**	**4310103**
Splash Guard Cover for bezel dia. 58 mm	**955**	**4373020**

		Order no.
Mounting Lug		
Bore perpendicular to mounting shank	**961**	**4375010**
Bore parallel to mounting shank	**962**	**4375011**

Precision Dial Indicators 810 DIN style

810 SB

810 SM

810 SRM

810 AZ

Features

Dial Indicator 810 SB
with limited measuring range

Design features identical to 810 S, with the following exceptions:
- Limited measuring range (0.8 mm) for error-free readings
- Large overtravel (ca. 9 mm) for easier insertion of test items in measuring devices
- Hermetically sealed protective measuring spindle cap

Dial Indicator 810 SM
Shockproof
with reading 0.001 mm
- Precise mechanism with a combined gear lever transmission
- High accuracy with a minimum span of error
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing

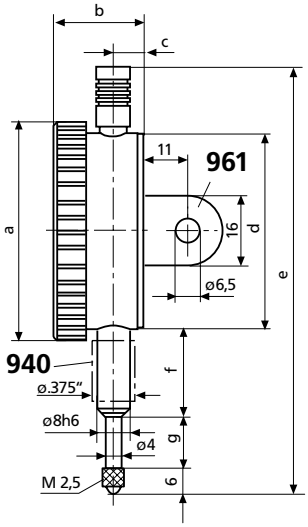
Dial Indicator 810 SRM
Shockproof
with reading 0.001 mm
- High precision gears and pinions
- Lifter protection cap on the upper end of the measuring spindle
- Adjustable tolerance markers
- Chrome-plated housing

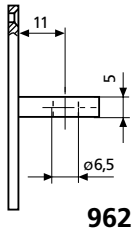
Dial Indicator 810 AZ
Inch version

Design features are identical to 810 A, with the following exception:
- The scope of supply includes an Adapter Bush 940 for adapting mounting shank 8h6 mm to inch bore .375"

Dimensions according to DIN EN ISO 463

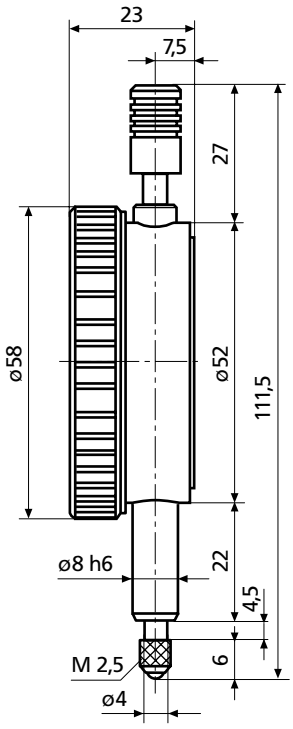
mm	a	b	c	d	e	f	g
810 A/AT	ø 58	23	7.5	52	112	21	16
810 S	ø 58	23	7.5	52	111.5	22	15
810 SW	ø 61	24.15	7.9	52	127.6	22	22.1
810 SB	ø 58	23	7.5	52	120	22	15
810 SM	ø 58	25	8.5	52	111.5	22	15
810 SRM	ø 58	23	7.5	52	111.5	22	15
810 AZ	ø 58	23	7.5	52	111.5	22	15

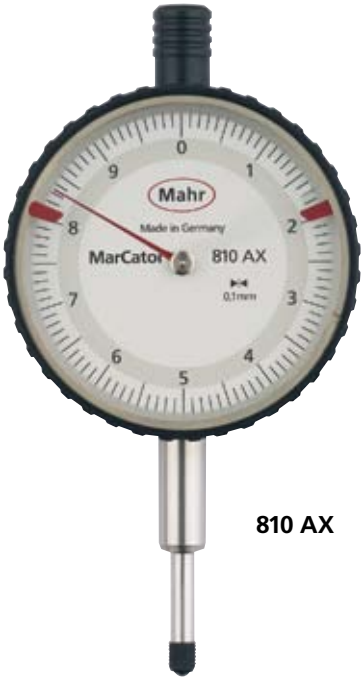




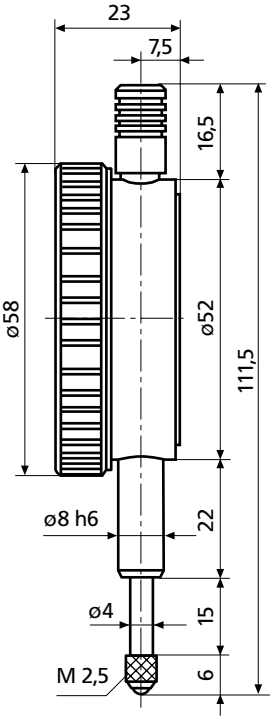
Precision Dial Indicators 810

810 AU





810 AX



Features

Dial Indicator 810 AU
with a reversed measuring force direction

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

Dial Indicator 810 AX
with reading 0.1 mm

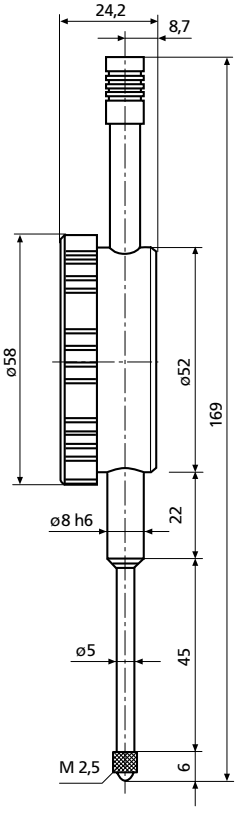
- Constant measuring force
- Chrome-plated housing
- Adjustable tolerance markers
- 1 pointer movement on 10 mm
- Delivered in plastic case

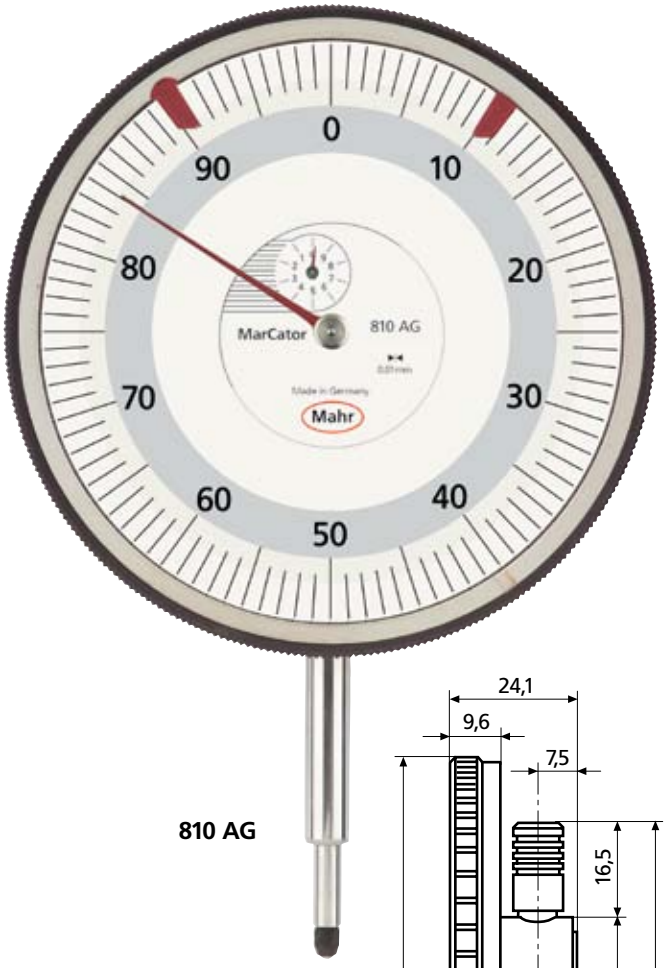
Technical Data

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

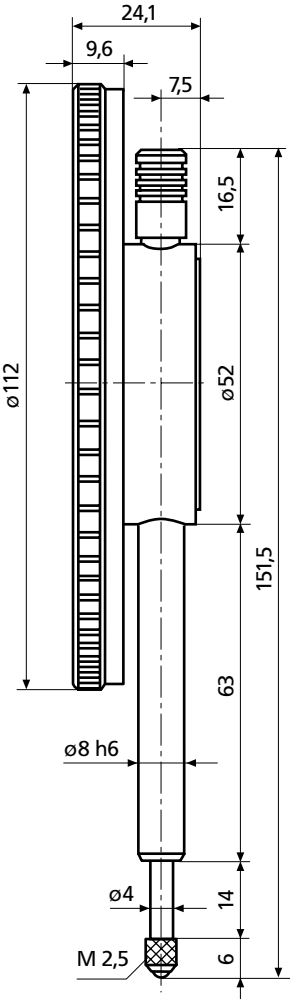
Precision Dial Indicators 810

810 SV





810 AG



Features

Long Range Dial Indicator 810 SV
with larger measuring range

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

Extra large Dial Indicator 810 AG
with dial face dia. 108 mm

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

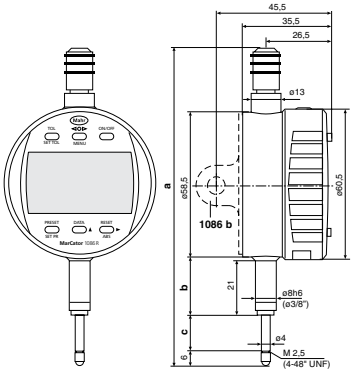
Accessories

		Order no.
Adapter Bush for adapting mounting shank 8h6 mm to inch bore .375"	**940**	**4310103**
Splash Guard Cover for dia. 58 mm	**955**	**4373020**
Mounting Lug to mount on mounting shank of all versions	**963**	**4375002**

Digital Indicators MarCator 1086 Ri

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

REFERENCE



Dimensions

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

Features

Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
Reversal of the counting direction
PRESET (Allows the entry of any value using set buttons)
TOL (Enter tolerance limit values)
ABS (Display can be set to zero, without losing the reference to the Preset value)
<0> (Tolerance GO / NO GO display mode)
DATA (when connected with a data connection cable)
Factor (adjustable)

- Integrated Wireless data transmission
- Immediate measurement due to the Reference system
- Individual buttons can be locked - Lock Function
- Operating and display unit (bezel) can be rotated 280°
- High contrast LCD with 11 mm high digits
- Operating time approx. 3 years (2000 work. hrs/year)
- Maximum measuring speed 1.5 m/s (60"/s)
- Lifter protection cap on the measuring spindle
- MarConnect data output: choose either: USB, OPTO RS232C, Digimatic or Integrated Wireless
- Operating temperature 10 - 40°C
- Class of protection IP42 in accordance to IEC 60529

Supplied with:
Battery, operating instructions

Technical Data

Measuring range mm	(inch)	Resolution switchable	Span of error* mm	MarConnect **	Measuring force N			Weight g	Mounting shank	Order no.
12.5	(.5")	0.0005 / 0.001 / 0.002 / 0.005 / 0.01 mm .00002" / .00005" / .00001" / .0002" / .0005"	0.005	●	0.65	-	0.90	130	8h6	**4337624**
25	(1")		0.005	●	0.65	-	1.15	140	8h6	**4337625**
50	(2")		0.005	●	1.25	-	2.70	190	8h6	**4337626**
100	(4")		0.005	●	1.60	-	3.50	235	8h6	**4337627**
25	(1")		0.005	●	—		—	140	8h6	**4337628**

* *in any zero point*

** *To use the integrated wireless function an i-Stick Wireless Receiver is required, see page 5-58*

Digital Indicators 1075 R

IP52 | MarConnect: USB, RS232C, Digimatic | REFERENCE

Features

Functions:
ON/OFF
RESET (Set display to zero)
mm/inch
Reversal of counting direction
PRESET (for entering a numerical value)
DATA (data transmission with a data connection cable)
LOCK-Function: Individual buttons can be locked
Auto-OFF (selectable)

- Immediate measurement due to the Reference system
- Max measuring speed 1.5 m/sec (60"/sec)
- MarConnect Data output: choose either
  USB
  OPTO RS232C
  Digimatic
- High contrast Liquid Crystal Display with12 mm high digits
- Operating temperature 10-40°C
- Class of protection IP52 according to IEC 60529

Scope of supply:
Battery,
Operating instructions

Reference System - Just set once to zero

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

Technical Data

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

** in any zero point*

Mechanical Dial Comparators

1002

1003

DIN 879-1

1004

1003 XL

DIN 879-1

1003T**

DIN 879-1

IP54

Technical Data

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

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

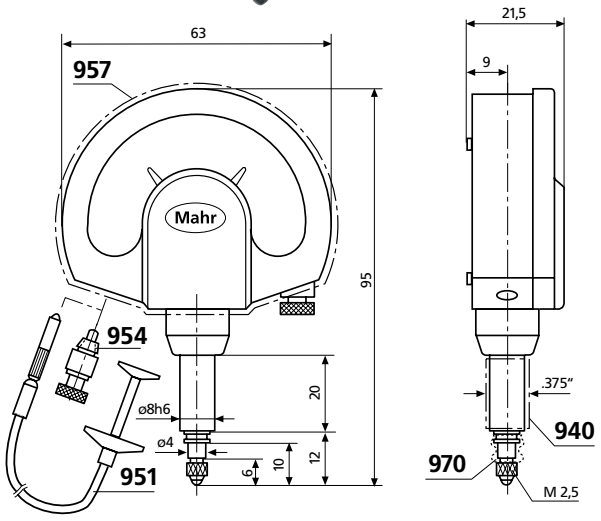
** *IP54, Incl. Plastic Case, Splash Guard Cover 957, Rubber Bellows (only for 1002/1003/1004); Adapter 940 (for inch instruments only)*

Mechanical Dial Comparators

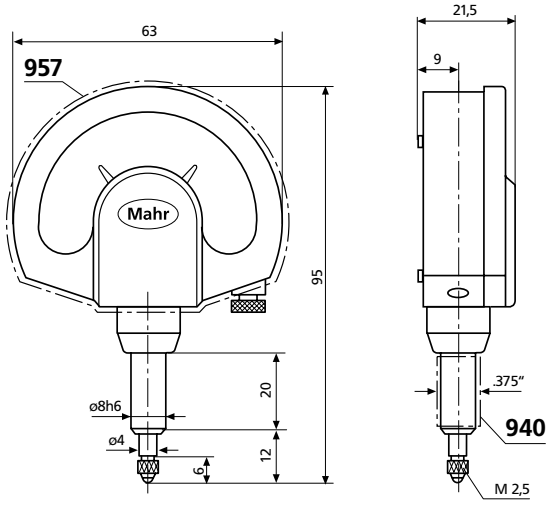
1010

1050

SHOCK PROOF



1002/1003/1004

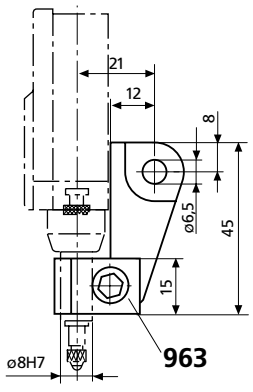


1010/1050

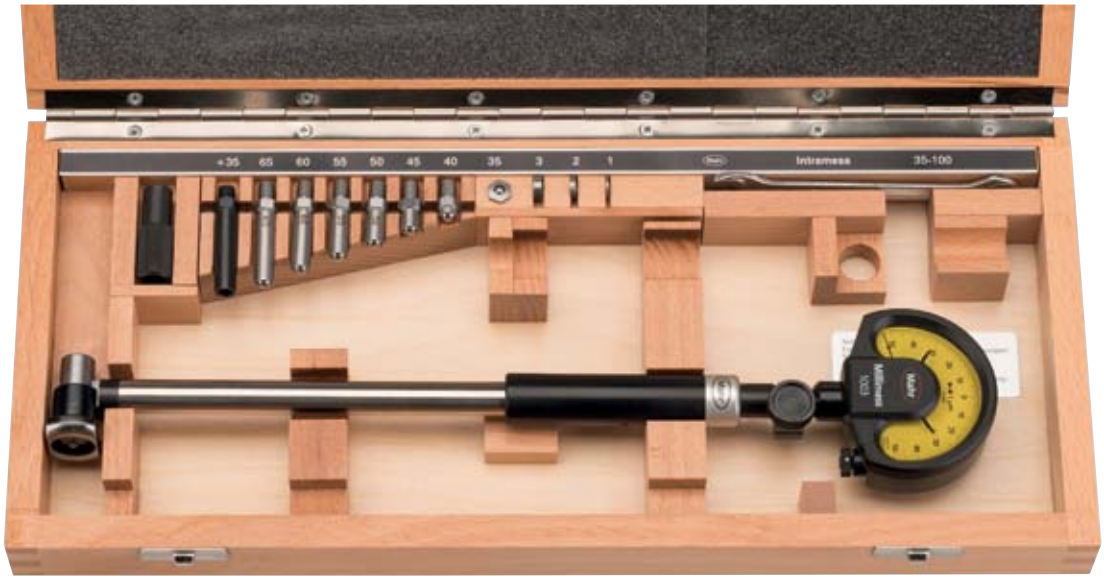
Accessories

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

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



Self-Centering Dial Bore Gages 844 N / 844 NH Intramess



Features

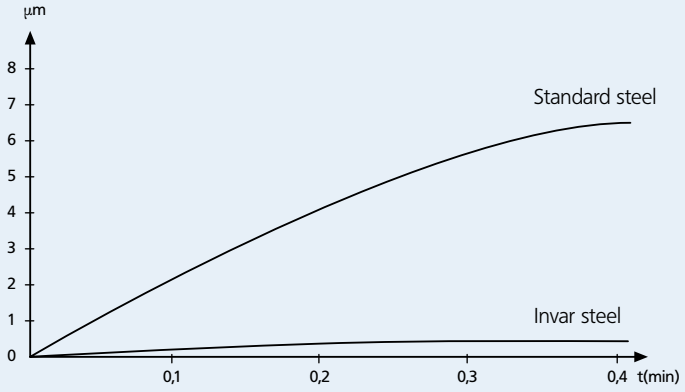
- Measuring the diameter, roundness and conical form of a bore as well as the distances of plane-parallel surfaces
- Measuring head consists of a carbide-tipped moving anvil and an interchangeable stationary anvil which has a hardened steel ball; alternatively a carbide ball is available
- Transmission lever system transfers movement of the movable anvil to indicating instrument
- The broad centering bridge ensures automatic centering in the bore
- Insensitive to temperature due to both the shank and transfer rod being made from heat resistant **Invar steel**
- Highly resistant to wear and tear due to the carbide tipped moving anvil
- Constant measuring force due to built-in spring thus eliminating user influence
- Universally applicable and extremely versatile as every instrument spans a broad measuring range, within this range it is quick and easy to adjust to any size
- Measuring head, holder, extensions, right-angle attachments and depth stops are all part of this extensive modular system
- Supplied with: Holder, measuring head, stationary anvil, wooden case, excludes an indicating instrument

The comparision between Invar and Standard steel

Invar steel has a particularly low expansion coefficient and thus makes the instrument totally insensitive to any kind of heat. Body heat from the user, increases in ambient temperature have no influence on the measuring results.

The graph on the right compares the Invar steel version to a standard type. Both gages were hand-held and thus influenced by body heat. The deviation when using Invar steel is negligible.

Change in length due to heat



Technical Data

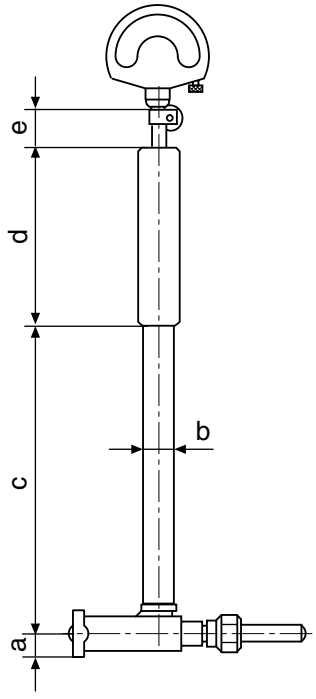
Measuring range mm			(inch)	Error limit G_e µm	Repeatability f_w µm	Hysteresis f_u µm	Order no* 844 N	Order no* 844 NH
18	-	50	*(.7 - 2")*	2	0.5	2.5	**4474000**	**4475000**
35	-	100	*(1.4 - 4")*	2	0.5	2.5	**4474001**	**4475001**
100	-	250	*(4 - 10")*	2	0.5	2.5	**4474002**	**4475002**
250	-	400	*(10 - 16")*	3	1.5	3.5	**4474003**	**4475003**
400	-	800	*(16 - 32")*	3	1.5	3.5	**4474004**	**4475004**
250	-	800	*(10 - 32")*	3	1.5	3.5	**4474005**	**4475005**

* *Excludes indicating instrument*

Complete Instrument

844 N Carbide-tipped moving anvil; stationary anvil with steel ball

844 NH Moving anvil **and** stationary anvil are carbide-tipped



Measuring range mm	(inch)	a	b	c	d	e
18 - 50	*(.7 - 2")*	5.35	8	115	63	22
35 - 100	*(1.4 - 4")*	8.5	12	148	80	22
100 - 250	*(4 - 10")*	11.5	18	230	100	25
250 - 400	*(10 - 16")*	16	24	366	110	28
400 - 800	*(16 - 32")*	17.5	24	366	110	28

Indicating Instruments

All indicating instruments that has a 8 mm mounting shank may be used. Recommended are:

Indicator		Readings mm / *inch*	Order no. mm / *inch*
Millimess	**1004/1004 Z**	5 µm /*.0001"*	**4333000/*4333900***
Millimess	**1003/1003 Z**	1 µm /*.00005"*	**4334000/*4334900***
Millimess	**1003 XL**	2 µm	**4334001**
Millimess	**1002/1002 Z**	0.5 µm /*.00002"*	**4335000/*4335900***
Extramess	**2001**	0.2 µm /*.00001"*	
		0.5 µm /*.00002"*	**4346100***
		1 µm /*.00005"*	
µMaxµm II		0.0005 mm /*.00002"*	**2034205****
		0.0005 mm /*.00002"*	
		0.001 mm /*.00005"*	
MarCator	**1087 BR**	0.002 mm /*.0001"*	**4337662**
		0.004 mm /*.0005"*	
		0.010 mm /*.001"*	
		0.0005 mm /*.00002"*	
		0.001 mm /*.00005"*	
MarCator	**1087 BRi**	0.002 mm /*.0001"*	**4337664**
		0.004 mm /*.0005"*	
		0.010 mm /*.001"*	

2001

1003

Digital Indicators see Chapter 5
Electrical Indicating Instruments see Chapter 7
** 230 V, for 115 V please refer to page 6-5 ** requires contact 4360043*

MARSURF PS1 I ABSOLUTE MOBILITY

FOR SURFACE ROUGHNESS MEASUREMENTS

- 0 +

Mahr

EXACTLY

ABSOLUTE MOBILITY WITH MARSURF PS1

Large display
All the information you need at a glance.
All functions displayed in plain text.
Functions called up using arrow keys.
Defaults/language simple to select and change.

With increasing manufacturing and machine quality, the quality of technical products' surface finishes is becoming ever more important.

This makes it all the more crucial to offer metrological solutions with instrument designs that provide quick and simple yet standards-compliant measuring options.
In some cases measurements are transferred from the inspection room to production to save time and money. Components may be too large or heavy to be transported, leaving no alternative but to carry out measurements directly on the component or machine.

Height adjustment accessory included in the scope of delivery. For many additional measuring tasks.
Simply clipped onto the bottom of the **PS1.**

The **MarSurf PS1** lives up to its claim of "**Absolute mobility**" in all manner of ways, providing:

- **Mains-independent operation**
  Over 500 measurements without having to recharge the instrument

- **An all-in-one solution** that is no larger than a digital camera. Small and lightweight (400 g / 0.88 lbs)

Integrated calibration standard
No external calibration standard required (patent pending). Gives greater reliability for standards-compliant measurements.

Drive unit
Can be rotated and moved longitudinally. Enables the pick-up to be moved into the calibrating position. The pick-up is also protected for transport in this position.

Pick-up with removable pick-up protection
Standards-compliant measurement.
2 µm (80 µin) diamond stylus tip.
Measuring force 0.7 mN.

Pick-ups are available for various measuring tasks.

- **Instrument flexibility**
  The standard range of functions is sufficient for this all-purpose smart little instrument to perform your measuring tasks.

- **All the measuring positions you need**
  Can be used horizontally, vertically, upside down or in any other position required by the component.

- **24 parameters**
  Offer the same range of functions as a laboratory instrument.

- **Error-free operation** thanks to an integrated roughness standard.

- **Automatic cutoff selection** (patented) so that even non-specialists are ensured correct measuring results.

- **Simple operation**
  The brief guide in pocket diary format reflects how simple the **PS1** is to use. You quickly get to grips with the essential features, enabling you to complete your measuring tasks with excellent results.

Directly selectable parameters
Ra, Rz

Freely programmable
F1 button for direct access to one of 24 parameters of your choice.

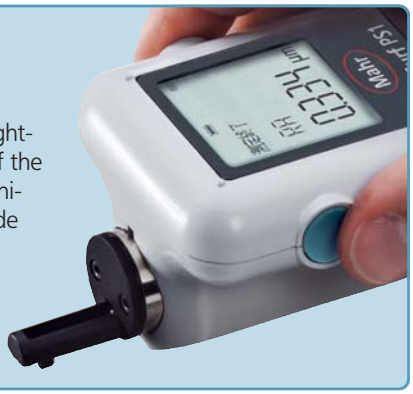
USB interface
PS1 is detected without a driver (such as a memory stick).

Evaluation possible using **MarSurf XR 20** evaluation software or **MarSurf XR 20** instrument.

MarConnect interface
(RS232), e.g. to connect a Mahr **MSP2** printer.

Flexibility thanks to 4 internally threaded bores
There are four tapped studs on the bottom of the **PS1** for attaching your own special accessories.

Start button on right and left
Not only easy to operate whether you are left- or right-handed but also practical if the instrument is used as a mini-measuring station for upside down measurements.



MARSURF PS1 I ON-SITE SURFACE ROUGHNESS MEASUREMENT

Images in cooperation with: MTU Aero Engines, Munich (Germany)

AIRCRAFT INDUSTRY I SHIPBUILDING I MECHANICAL ENGINEERING I AUTOMOTIVE I PRECISION ENGINEERING

MARSURF PS1 I MEASURING DURING THE PRODUCTION PROCESS

Images in cooperation with: KS Kolbenschmidt GmbH, Neckarsulm (Germany)

AIRCRAFT INDUSTRY I **SHIPBUILDING** I MECHANICAL ENGINEERING I AUTOMOTIVE I PRECISION ENGINEERING

MARSURF PS1 I UNIVERSAL USE ON PROCESSING MACHINERY ...

Images in cooperation with: Heidelberger, Wiesloch (Germany)

AIRCRAFT INDUSTRY I SHIPBUILDING I **MECHANICAL ENGINEERING** I AUTOMOTIVE I PRECISION ENGINEERING

OR FOR INCOMING GOODS INSPECTIONS

Images in cooperation with: Deutz Power Systems GmbH & Co. KG, Mannheim (Germany)

AIRCRAFT INDUSTRY I SHIPBUILDING I **MECHANICAL ENGINEERING** I AUTOMOTIVE I PRECISION ENGINEERING

MarSurf PS1. Wide Range of Applications

The **MarSurf PS1** comes with a simple mount for height adjustment.

This enables measurements to be performed on items such as cones.

Perfect upside down measurements are possible with the **MarSurf PS1**.
All you have to do is position the part and start measurement.

This means that small components can be measured without additional mounts.

Measurements on measuring stands.
The **MarSurf PS1** can easily be mounted on **ST-D** / **ST-F** or **ST-G** measuring stands.

The **MarSurf PS1** is the perfect entry-level measuring instrument for a very wide range of standards-compliant roughness measurements.

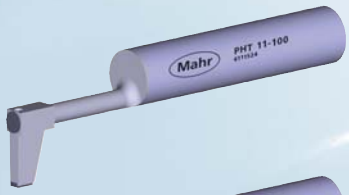
One possibility offered by an optional end **face vee-block** is to measure surfaces perpendicular to the contact face.

MarSurf PS1. Optional Accessories for Even Greater Flexibility ...

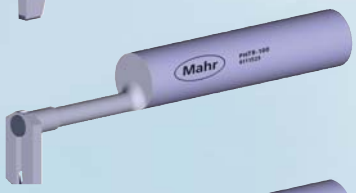
80 mm (3.15 in) pick-up extension
for example, for measuring points located deep within cylinders.
Order No. 6850540

PHT 3-350 pick-up
for measurements in bores from dia. 3 mm (0.12 in).
Order No. 6111521

PHT 11-100 pick-up
for measurements at recessed measuring points,
e.g. in grooves from 2.5 mm (0.10 in) wide and up to 7.5 mm (0.30 in) deep.
Order No. 6111524



PHTR 100 pick-up
for measurements on concave and convex surfaces.
Order No. 6111525



PHTF 0.5-100 pick-up
for measurements on tooth flanks.
Order No. 6111522

PT 150 pick-up
Dual-skid pick-up for measurements on metal sheets and roller surfaces
according to DIN EN 10049 (SEP).
Order No. 6111523

Pick-up set (not illustrated)
consisting of
- PHT 3-350 pick-up (6111521)
- PHT 11-100 pick-up (6111524)

Order No. 6910213

Accessory set (not illustrated)
consisting of
- Pick-up extension (6850540), length 80 mm (3.15 in)
- Adapter for transverse tracing (6850541)
- Measuring stand mount (6910201)
  Allows the MarSurf PS1 to be mounted on the Mahr ST-D / ST-F / ST-G family of measuring stands
- End face vee-block (6910203)
  Suitable for measurements on flat faces of cylindrical and planar components

Order No. 6910212

Printer set
consisting of **MSP2** printer with connection cable (**MarConnect**)
Order No. 6910211

MarSurf PS1. Technical Data

Unit of measurement	Metric, inch
Measuring principle	Stylus method
Pick-up	Inductive skidded pick-up, 2 µm (80 µin) stylus tip, measuring force approx. 0.7 mN
Parameters	Ra, Rq, Rz equiv. to Ry (JIS), Rz (JIS), Rmax, Rp, Rp (ASME), Rpm (ASME), Rpk, Rk, Rvk, Mr1, Mr2, A1,
(24, with tolerance limits)	A2, Vo, Rt, R3z, RPc, Rmr equiv. to tp (JIS, ASME), RSm, R, Ar, Rx
Languages	14 including 3 Asian languages
Measuring range	350 µm, 180 µm, 90 µm (changes automatically)
Profile resolution	32 nm, 16 nm, 8 nm (changes automatically)
Filter*	Phase-correct profile filter (Gaussian filter) acc. to DIN EN ISO 11562, special filter acc. to DIN EN ISO 13565-1, ls filter acc. to DIN EN ISO 3274 (can be disabled)
Cutoff lc*	0.25 mm, 0.8 mm, 2.5 mm; automatic (0.010 in, 0.030 in, 0.100 in)
Traversing length Lt*	1.75 mm, 5.6 mm, 17.5 mm; automatic (0.069 in, 0.22 in, 0.69 in)
Traversing length (acc. to MOTIF)	1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm (0.040 in, 0.080 in, 0.160 in, 0.320 in, 0.480 in, 0.640 in)
Short cutoff*	Selectable
Evaluation length ln*	1.25 mm, 4.0 mm, 12.50 mm (0.050 in, 0.15 in, 0.50 in)
Number n of sampling lengths*	Selectable: 1 to 5
Calibration function	Dynamic
Memory capacity	Max. 15 profiles, max. 20,000 results
Other functions	Blocking of settings (code-protected), date/time
Dimensions	140 mm × 50 mm × 70 mm (5.51 in × 1.97 in × 2.76 in)
Weight	400 g (0.88 lbs)
Battery	Li-ion battery
Interfaces	USB, MarConnect (RS232)
Long-range power supply	100 V to 264 V

*acc. to ISO/JIS

MarSurf PS1. The Set

The **MarSurf PS1** comes in a complete set. Thanks to the carrying case, you always have your surface roughness measuring instrument with you as you pass through the production floor. Quick and reliable on-the-spot measurements ensure your quality requirements are met during the production process or incoming goods inspection.

The set contains

- **MarSurf PS1 base unit**
- **Drive unit**
- **1 standard pick-up conforming to standards**
- **Built-in battery**
- **Roughness standard integrated into casing**
- **Height adjustment accessory**
- **Pick-up protection**
- **Charger / mains adapter**
- **Operating instructions**
- **Carrying case with shoulder strap and belt loop**
- **USB cable**

Order No. 6910210

MarSurf PS1. Available Parameters

Parameter	Output	Meaning	Standards
Ra	RA	Arithmetic mean roughness Ra	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
Rq	RQ	Root mean square roughness Rq	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
Rz **Ry** (JIS) equiv. to **Rz**	RZ	Mean peak-to-valley height Rz (acc. to ISO) or Ry (acc. to JIS)	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
Rz (JIS)	RZJ	Mean height Rz of profile elements	JIS B 0601 : 2001 (was: ISO 4287/1 : 1984)
Rmax	RMAX	Maximum roughness depth Rmax	DIN 4768 : 1990
Rp	RP	Mean profile peak height Rp	DIN EN ISO 4287 : 1998; ISO 4287 : 1997
Rp (ASME)	RP	Maximum profile peak height Rp	ASME B46
Rpm (ASME)	RPM	Mean profile peak height Rp	ASME B46
Rpk	RPK	Reduced peak height Rpk	DIN EN ISO 13565-2 : 1998
Rk	RK	Core roughness depth Rk	DIN EN ISO 13565-2 : 1998
Rvk	RVK	Reduced valley depth Rvk	DIN EN ISO 13565-2 : 1998
Mr1	MR1	Smallest material ratio Mr1 of roughness core profile	DIN EN ISO 13565-2 : 1998
Mr2	MR2	Largest material ratio Mr2 of roughness core profile	DIN EN ISO 13565-2 : 1998
A1	A1	Material-filled profile peak area A1	DIN EN ISO 13565-2 : 1998
A2	A2	Lubricant-filled profile valley area A2	DIN EN ISO 13565-2 : 1998
Vo	VO	Oil-retaining volume Vo	
Rt	RT	Total height Rt of R-profile	DIN EN ISO 4287:1998
R3z	R3Z	Arithmetic mean third peak-to-valley height R3z	DB N 31007 : 1983
RPc	RPC	Peak count RPc is the number of profile elements (see Rsm) per cm that exceed the set upper profile section level c1 and then fall short of the lower c2.	EN 10049 : 2005; ASME B46
Rmr **tp** (JIS, ASME) equiv. to **Rmr**	RMR	Material ratio Rmr	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
RSm	RSM	Mean width RSm of profile elements (was: groove spacing)	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
R	R	Mean depth R of roughness motifs	ISO 12085 : 1996
Ar	AR	Mean width Ar of roughness motifs	ISO 12085 : 1996
Rx	RX	Maximum depth Rx of profile irregularity	ISO 12085 : 1996

MARSURF I MOBILE SURFACE ROUGHNESS MEASUREMENT

PS1 / M 300 / M 300 C

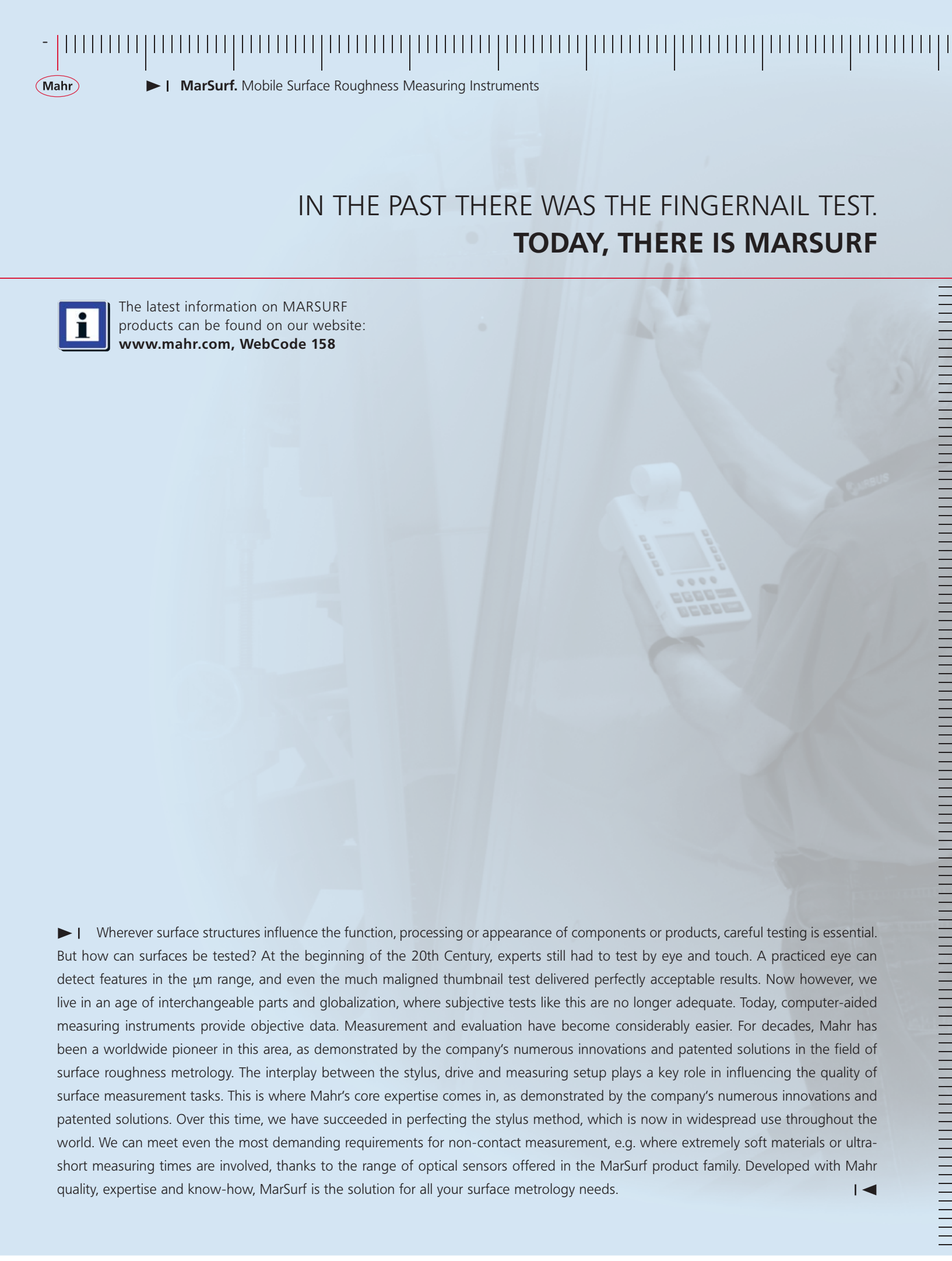
- 0 +

Mahr

EXACTLY

IN THE PAST THERE WAS THE FINGERNAIL TEST.
TODAY, THERE IS MARSURF

The latest information on MARSURF products can be found on our website:
www.mahr.com, WebCode 158



► | Wherever surface structures influence the function, processing or appearance of components or products, careful testing is essential. But how can surfaces be tested? At the beginning of the 20th Century, experts still had to test by eye and touch. A practiced eye can detect features in the µm range, and even the much maligned thumbnail test delivered perfectly acceptable results. Now however, we live in an age of interchangeable parts and globalization, where subjective tests like this are no longer adequate. Today, computer-aided measuring instruments provide objective data. Measurement and evaluation have become considerably easier. For decades, Mahr has been a worldwide pioneer in this area, as demonstrated by the company's numerous innovations and patented solutions in the field of surface roughness metrology. The interplay between the stylus, drive and measuring setup plays a key role in influencing the quality of surface measurement tasks. This is where Mahr's core expertise comes in, as demonstrated by the company's numerous innovations and patented solutions. Over this time, we have succeeded in perfecting the stylus method, which is now in widespread use throughout the world. We can meet even the most demanding requirements for non-contact measurement, e.g. where extremely soft materials or ultra-short measuring times are involved, thanks to the range of optical sensors offered in the MarSurf product family. Developed with Mahr quality, expertise and know-how, MarSurf is the solution for all your surface metrology needs. | ◄

► | MarSurf. Mobile Surface Roughness Measuring Instruments

Mobile Surface Roughness Measuring Instuments

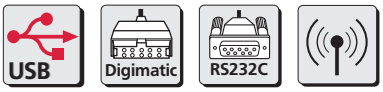
MarSurf. Mobile Surface Roughness Measuring Instruments

OVERVIEW

		MarSurf PS 1
		
Page		6
Measuring principle		Skid probe system
Probe system		PHT probe range
Probe		Inductive skidded probe, 2 µm stylus tip, measuring force ca. 0.7 mN
Traversing length		ISO/JIS: 1.75 mm, 5.6 mm, 17.5 mm; automatic MOTIF: 1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm
Measuring range		350 µm, 180 µm, 90 µm (changes automatically)
Profile resolution		32 nm, 16 nm, 8 nm (changes automatically)
Evaluation lengths		1.25 mm, 4.0 mm, 12.5 mm
Number of parameters available		31
Parameters	DIN / ISO	Ra, Rq, Rz, Rmax, Rp, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr, RSm, Rsk, CR, CF, CL, R, AR, Rx
	JIS	Ra, Rq, Ry (equiv. to Rz), RzJIS, tp (equiv. to Rmr), RSm, S
	ASME	Rp, Rpm, RPc, Rsk
	MOTIF	R, AR, Rx, CR, CF, CL
Bluetooth		–
Large color display		–
Built-in printer		–
Integrated roughness standard for Standard probe PHT 6-350		Yes
Cylindrical drive unit with hand-held Vee-block		–
Drive unit with transverse tracing (optional)		–
Internal memory		max. 15 Profiles max. 20000 Results
Software (optional)		MarCom, Explorer, MarSurf XR 20
Order no.		**6910210**

	MarSurf M 300	MarSurf M 300 C
		
	8	9
	Skid probe system	Skid probe system
	PHT probe range	PHT probe range
	Inductive skidded probe, 2 µm stylus tip, measuring force ca. 0.7 mN	Inductive skidded probe, 2 µm stylus tip, measuring force ca. 0.7 mN
	ISO/JIS: 1.75 mm, 5.6 mm, 17.5 mm; automatic MOTIF: 1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm	ISO/JIS: 1.75 mm, 5.6 mm, 17.5 mm; automatic MOTIF: 1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm
	350 µm, 180 µm, 90 µm (changes automatically)	350 µm, 180 µm, 90 µm (changes automatically)
	32 nm, 16 nm, 8 nm (changes automatically)	32 nm, 16 nm, 8 nm (changes automatically)
	1.25 mm, 4.0 mm, 12.5 mm	1.25 mm, 4.0 mm, 12.5 mm
	33	33
	DIN / ISO: Ra, Rq, Rz, Rmax, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr, RSm, Rsk, R, AR, Rx, W, CR, CF, CL JIS: Ra, Rq, Ry (equiv. to Rz), RzJIS, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Rt, tp (equiv. to Rmr), RSm, Rsk, S, R, AR, Rx, W, CR, CF, CL ASME: RpA, Rpm, Rmr, RSm, Rsk MOTIF: R, AR, Rx, W, CR, CF, CL	DIN / ISO: Ra, Rq, Rz, Rmax, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr, RSm, Rsk, R, AR, Rx, W, CR, CF, CL JIS: Ra, Rq, Ry (equiv. to Rz) RzJIS, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Rt, tp (equiv. to Rmr), RSm, Rsk, S, R, AR, Rx, W, CR, CF, CL ASME: RpA, Rpm, Rmr, RSm, Rsk MOTIF: R, AR, Rx, W, CR, CF, CL
	Yes	–
	Yes	Yes
	Yes	Yes
	Yes	– (External roughness standard is included in the scope of supply)
	–	Yes
	–	RD 18 C2
	max. 30 Profiles max. 40000 Results	max. 30 Profiles max. 40000 Results
	Explorer, MarSurf XR 20	Explorer, MarSurf XR 20
	6910401	**6910431**

Mobile Surface Roughness Measuring Instrument MarSurf PS1 Absolute mobility



Applications

- On-site surface roughness measurement
- Measuring during the production process
- Universal use on processing machinery
- For incoming goods inspection

Features

- Small and lightweight; ideal as mobile surface roughness measuring instruments
- Large display
- Very simple to operate
- Start button is positioned on both the right and left side of the PS1; easy to operate regardless of whether you are left or right-handed but also practical for conducting upside down measurements
- Can be used horizontally, vertically, upside down etc.
- 31 parameters: offer the same range of functions as a laboratory instrument
- Parameters can be selected directly Ra, Rz
- Freely programmable, use the F1 button for direct access to any of your chosen parameters
- Evaluation of most common parameters conforming to standards and in accordance to ISO/JIS as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Integrated roughness standard for the standard pick-up PHT 6-350
- Dynamic calibration function
- Select standards (DIN-ISO/JIS/ ASME/MOTIF)
- Automatic cutoff selection (patented) to ensure correct measuring results
- Individual sampling lengths and shortened cutoff can be selected
- Setting of unsymmetric intersection lines for peak count calculation
- Tolerance monitoring
- Lock settings and/or password protection
- Date and/or time of measurement
- Integrated memory to store ca. 20000 reults and 15 profiles
- Data transmission via the USB interface to a PC
- Evaluation with PS1/M 300 Explorer Software, MarSurf XR 20 Evaluation Software or with a MarSurf XR 20
- MarConnect interface, to connect e.g. a PC via the MarCom Software
- Main free operation: the built-in rechargeable battery can used for up to 500 measurements before being recharged

- Supplied with: MarSurf PS1 base unit, drive unit, standard pick-up PHT 6-350/2µm (conforming to standards), built-in battery, roughness standard integrated into base unit, height adjustment accessory, pick-up protection, charger / mains adapter with 3 mains power adapters, carrying case with shoulder strap and belt loop, USB cable, Mahr calibration certificate, operating instructions

Technical Data

Unit of measurement		Metric / inch
Measuring principle		Stylus method
Pick-up		Inductive skidded pick-up, 2 µm (80 µin) stylus tip, measuring force ca. 0.7 mN
Parameters	DIN / ISO	Ra, Rq, Rz, Rmax, Rp, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr, RSm, Rsk, CR, CF, CL, R, AR, Rx
	JIS	Ra, Rq, Ry (equiv. to Rz), RzJIS, tp (equiv. to Rmr), RSm, S
	ASME	Rp, Rpm, RPc, Rsk
	MOTIF	R, AR, Rx, CR, CF, CL
Languages		English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Czech, Polish, Russian, Japanese, Chinese, Korean, Turkish
Measuring range		350 µm, 180 µm, 90 µm (automatic switching)
Profile resolution		32 nm, 16 nm, 8 nm (automatic switching)
Filter*		Phase-correct profile filter (Gaussian filter) according to DIN EN ISO 11562, Special filter according to DIN EN ISO 13565-1, ls filter according to DIN EN ISO 3274 (can be disabled)
Cutoff lc*	mm (inch)	0.25 / 0.8 / 2.5 (0.010" / 0.030" /0.100"); automatic
Traversing length Lt*	mm (inch)	1.75/ 5.6 /17.5 (0.069" / 0.22" / 0.69"); automatic
Traversing length (according to MOTIF)	mm (inch)	1 / 2 / 4 / 8 / 12 / 16 (0.040" / 0.080" / 0.160" / 0.320" / 0.480" / 0.640")
Short cutoff*		Selectable: 1 to 5
Evaluation length ln*	mm (inch)	1.25 / 4.0 / 12.5 (0.050", 0.15", 0.50")
Number n of sampling lengths*		Selectable: 1 to 5
Calibration function		Dynamic
Memory		max. 15 profiles, max. 20000 results
Additional functions		Lock settings / password potection, Date/Time
Dimensions	mm (inch)	140 × 50 × 70 (5.51" × 1.97" × 2.76")
Weight		400 g (0.88 lbs)
Rechargeable battery		Li-ion battery
Interfaces		USB, MarConnect (RS232/USB/Digimatic)
Long-range power supply		100 V to 264 V
Order no.		**6910210**

** In accordance to ISO/JIS*

MarSurf PS1 with height adjustment

Underside of the **MarSurf PS1**

Mobile Surface Roughness Measuring Instrument MarSurf M 300 A step ahead

Applications

- On shafts, housing parts
- On large scale machines
- For large workpieces
- On milling and turning parts
- For use on grinding and honing components
- On the production line, or directly upon a machine. Ideal for rapid testing of the surface roughness of a workpiece in or on a machine
- A simple universal measuring station for checking surface roughness

Features

- Bluetooth wireless connection between the evaluation unit and drive unit (up to 4 m)
- Bright, illuminated color display
- Automatic selection of filter and traversing length conforming to standards
- Integrated thermal graphics printer of high print quality
- Print the R-profile via the thermal graphics printer
- Printed log either by pressing a button or automatically
- Data transfer of results and profiles via USB-interface to your PC
- Evaluation of most common parameters conforming to standards and in accordance to ISO/JIS as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Printing of R-profile (ISO/ASME/JIS), P-profile (MOTIF), material ratio curve, measuring record
- Measuring units (µm/µinch) and standards (ISO/JIS/ASME/MOTIF) are selectable
- Tolerance monitoring
- Integrated memory for the results of up to 40000 measurements and 30 profiles
- Setting of unsymmetric intersection lines for peak count calculation
- Individual sampling lengths and short cutoff can be selected
- Key pad lock and/or password protection for instrument settings
- Built-in rechargeable battery with power management
- Integrated roughness standard for the standard pick-up PHT 6-350
- Dynamic calibration function
- Date and/or time of measurement
- Software MarSurf PS1/M 300 Explorer for recording measurements (option)
- Supplied with: Evaluation unit M 300, drive unit RD 18 with integrated roughness standard, standard pick-up PHT 6-350/2µm (conforming to standards), charger / mains adapter with 3 mains power adapters, height adjustment accessory, pick-up protection, pick-up protection with prismatic underside, end face vee-block, 2 x USB cables, 1 roll of thermal paper, shoulder strap, carrying case, Mahr calibration certificate, operating instructions

Mobile Surface Roughness Measuring Instrument MarSurf M 300 C A step ahead

M 300 C

RD 18 C + Handheld Vee block
(detachable)

Applications

- On shafts, housing parts
- On large scale machines
- For large workpieces
- On milling and turning parts
- For use on grinding and honing components
- On the production line, or directly upon a machine. Ideal for rapid testing of the surface roughness of a workpiece in or on a machine
- A simple universal measuring station for checking surface roughness

Upside down measurement

Measurement on an end face vee

Features

- Bright, illuminated color display
- Automatic selection of filter and traversing length conforming to standards
- Integrated thermal graphics printer of high print quality
- Easy to use due to the large color display and the operator guidance
- Printing of R-profiles with the thermo printer
- Printed log either by pressing a button or automatically
- Data transfer of results and profiles via USB-interface to your PC
- Evaluation of most common parameters conforming to standards and in accordance to ISO/JIS as well as characteristic curves, parameter lists (e.g. material ratio curve)
- Printing of R-profile (ISO/ASME/JIS), P-profile (MOTIF), material ratio curve, measuring record
- Measuring units (µm/µinch) and standards (ISO/JIS/ASME/MOTIF) are selectable
- Integrated memory for the results of up to 40000 measurements and 30 profiles
- Tolerance monitoring
- Setting of unsymmetric intersection lines for peak count calculation
- Cylindrical drive unit with handheld vee block and PHT pick-up protection
- Individual sampling lengths and short cutoff can be selected
- Lock instrument settings
- Date and/or time of measurement
- Can be expanded to be an stationary measuring station
- Software MarSurf PS1/M 300 Explorer for recording measurements (option)
- Supplied with:
  Evaluation unit M 300 C, cylindrical drive unit RD 18 C incl. 1.8 m data connection cable, handheld vee block with height adjustable feet, standard pick-up PHT 6-350/2µm (conforming to standards), roughness standard PRN 10 with Mahr calibration certificate, 1 roll of thermal paper, pick-up protection with prismatic underside, dia. 8 mm mounting clamp for drive unit, charger / mains adapter with 3 mains power adapters, 1 x USB cable (for connection to a PC), shoulder strap, carrying case, operating instructions

Mobile Surface Roughness Measuring Instrument MarSurf M 300 / M 300 C

Technical Data

Measuring principle		Stylus method
Traversing speed	mm (inch)	0.5 mm/s (0.02"/s)
Measuring range		350 µm (0.014")
Profile resolution		90 µm, 180 µm, 350 µm (automatic switching) 8 nm, 16 nm, 32 nm (automatic switching)
Filter		Gaussian filter, Ls-Filter (switchable)
Cutoff	mm (inch)	0,25, 0,8, 2,5 (0.010", 0.032", 0.100")
Short Cutoff		wählbar
Traversing lengths as per DIN / ISO / ASME / JIS	mm (inch)	1,75, 5,6, 17,5 (0.070", 0.2242, 0.700")
Traversing lengths as per EN ISO 12085 (MOTIF)	mm	1, 2, 4, 8, 12, 16
Evaluation lengths	mm (inch)	1,25, 4, 12,5 (0.05", 0.16", 0.5")
Number of sampling lengths selectable:		1-5
Parameters	DIN / ISO:	Ra, Rq, Rz, Rmax, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Vo, Rt, R3z, RPc, Rmr, RSm, Rsk, R, AR, Rx, W, CR, CF, CL
	JIS:	Ra, Rq, Ry (equiv. to Rz), RzJIS, Rp, Rv, Rpk, Rk, Rvk, Mr1, Mr2, A1, A2, Rt, tp (equiv. to Rmr), RSm, Rsk, S, R, AR, Rx, W, CR, CF, CL
	ASME:	RpA, Rpm, Rmr, RSm, Rsk
	MOTIF:	R, AR, Rx, W, CR, CF, CL
Vertical scale		Automatic/selectable
Horizontal scale		Depending on the cutoff
Record contents		R -profile, MRK, P-profile (MOTIF), results
Printing		Automatic/manual Record with time
Surface hardness		Ideal for surface hardness >50 Shore
Calibration function		Dynamic
Memory		Integrated memory For the storage up to 40000 measurements and up to 30 profiles
Measuring units		µm/µinch selectable
Languages selectable:		English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Czech, Polish, Russian, Japanese, Chinese, Korean, Turkish
Blocking instrument settings		Yes
Password protection		Yes
LCD		High resolution color display, 3.5", 320 x 240 pixel
Printer		Thermal printer, 384 points/horizontal line, 20 characters/line
Printing speed		ca. 6 lines/second corresponds to approx. 25 mm/s (1"/s)
Thermal paper		Dia. 40.0 mm-1.0 mm, width 57.5 mm-0.5 mm, coated
Interface		USB, MarConnect
Power supply		NiMH battery, capacity: approx. 500 measurements (depending on the number and length of record printouts), plug-in power pack with three mains plugs, for input voltages from 90 V to 264 V
Power management		Yes
Connections		Drive unit, power pack, USB, MarConnect
Protection class	M 300 / M 300 C	IP 42
	RD 18 / RD 18 C	IP 40
Temperature range for storage		-15°C to +55°C (5°F to 131°F)
Temperature range for operation		+5°C to +40°C (41°F to 104°F)
Relative humidity		30 % to 85 %
Dimensions (L x W x H)	M 300 / M 300 C	190 x 140 x 75 mm (7.5" x 5.5" x 3")
Dimensions (L x W x H)	RD 18	130 x 70 x 50 mm (5.1" x 2.7"x 2")
Dimensions (L x dia.)	RD 18 C	139 x 26 mm (5.5" x 1")
Dimensions (L x W x H)	RD 18 C*	82 x 34 x 59 mm (3.2" x 1.3" x 2.3")
Weight	M 300 / M 300 C	ca. 1 kg
	RD 18	ca. 300 g
	RD 18 C	ca. 165 g
	RD 18 C*	ca. 55 g
Order no.	**M 300 Set**	**6910401**
Order no.	**M 300 C Set**	**6910431**

* Handheld Vee block

Mobile Surface Roughness Measuring Instrument MarSurf M 300

Drive Unit MarSurf RD 18

Bluetooth Technology

Unique: Cable-free connection between evaluation unit and drive unit!

A further advantage is the connection of several drive units to only one evaluation unit.

Features

- The well-proven PHT-skid probes are implemented in the drive unit.
- Can be connected via a cable
- Supplied with: Drive unit RD 18 with integrated roughness standard

Technical Data

Tracing direction	Longitudinal
Traversing length	adjustable on M 300
as per DIN/ISO	1.75 mm, 5.6 mm, 17.5 mm (0.07 ", 0.22", 0.7")
as per EN ISO 12085	1 mm, 2 mm, 4 mm, 8 mm, 12 mm, 16 mm
Traverse speed	0.5 mm/s
Dimensions (w/o pick-up protection)	dia. 24 mm, L = 112 mm
Bluetooth range	up to 4 m
Order no.	**6910403**

Drive Unit MarSurf RD 18 C2 for tranverse tracing

Features

- During the manufacturing process, surface measurements of work pieces usually require special tools to find the right solution for a particular task; e.g. transverse scanning on a crank or camshafts, or measuring bearings. For such tasks the drive unit RD 18 C2 is available for transverse scanning.
- The well-proven PHT-skid probes are implemented in the drive unit.
- The drive unit RD 18 C2 is attached in the same way as the RD 18. By being able to use both types of drive units the range of application offered by the mobile MarSurf M 300 C is broadened.
- Supplied with: Drive unit RD 18 C2, pick-up protection with prismatic underside, pick-up protection and a screwdriver

Technical Data

Tracing direction	Transverse
Traversing length	adjustable on M 300
as per DIN/ISO	1.75 mm, 5.6 mm (0.07 ", 0.22")
as per EN ISO 12085	1 mm, 2 mm, 4 mm
Traverse speed	0.1 mm/s and 0.5 mm/s
Dimensions (w/o pick-up protection)	dia. 24 mm, L = 142 mm
Order no. RD 18 C2	**6910426**
Order no. chuck RD 18 C2 for Ø 5 mm to Ø 80 mm	**6850738**

Optional probes for MarSurf PS1 / M 300 / M 300 C

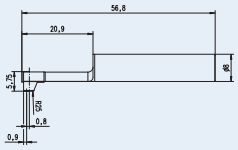
Probes for various measuring tasks

The P-probes are characterized by special construction features:

- Stylus tip geometry as per EN ISO 3274, standard 2 µm/90°
- Measuring force of approx. 0.7 mN (as per EN ISO 3274)
- Reliable inductive converter
- Robust, rigid housing
- Self-aligning, elastic bearings
- Reliable plug and socket connections

Pick-up PHT 6-350 (standard probe)

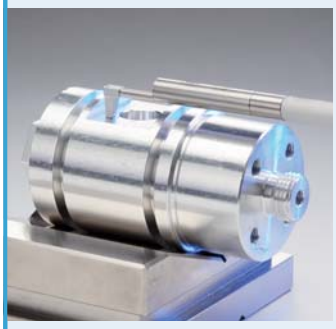
System	Single-skid pick-up with spherical skid
Skid radius	in traversing direction 25 mm (.984"), at right angles 2.9 mm (.114")
Contact point	0.8 mm (.0315") in front of the stylus
Meas. range	350 µm (0.014")
Specification	for plane surfaces, bores with a dia. larger than 6 mm (.236") and a max. depth of 17 mm (.669"), grooves with a width larger than 3 mm (.118"); min. workpiece length = traversing length + 1 mm (.0394")



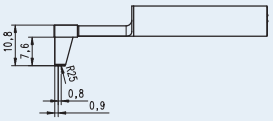
Order no. **6111520***

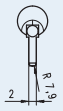
* *Included in the scope of supply*

Pick-up PHT 11-100



System	Single-skid pick-up with spherical skid
Skid radius	in traversing direction 25 mm (.984"), at right angles 2.9 mm (.114")
Contact point	0.8 mm (.0315") in front of the stylus
Meas. range	100 µm (.00394")
Specification	for plane surfaces, bores with a dia. larger than 11 mm (.433") and a max. depth of 14 mm (.551"), grooves with a width larger than 2.5 mm (.098")

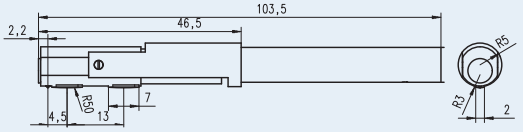




Order no. **6111524**

Pick-up PT 150

System	Dual-skid pick-up with spherical skid
Skid radius	in traversing direction 50 mm (1.969"), at right angles 3 mm (.118")
Contact point	4.5 mm (.177") in front of the stylus
Meas. range	150 µm (.006")
Specification	for measurements on metal sheets and roller surfaces according to DIN EN 10049 (SEP). min. workpiece length = tracing length + 5 mm (.197")

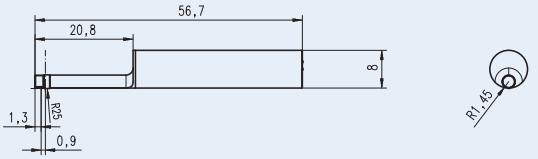


Order no. **6111523**

Pick-up PHT 3-350

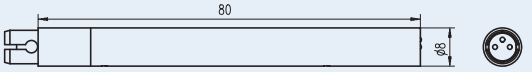
System	Single-skid pick-up with spherical skid
Skid radius	in traversing direction 25 mm (.984"), at right angles 1.45 mm (.0571")
Contact point	0.9 mm (.0354") in front of the stylus
Meas. range	350 µm (0.014")
Specification	for bores with a dia. larger than 3 mm (.118") and a max. depth of 17 mm (.669 ") min. workpiece length = traversing length + 1 mm (.0394")

Order no. **6111521**



Pick-up extension PHT (80 mm) for P probes

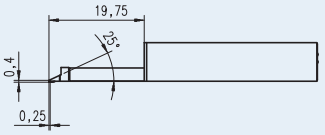
Order no. **6850540**

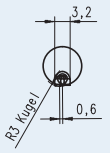


Pick-up PHTF 0.5-100

System	Single-skid pick-up with spherical skid
Skid radius	in traversing direction 25 mm (.984"), at right angles 1.45 mm (.0571")
Contact point	0.6 mm (.0236") at the side the stylus
Meas. range	100 µm (.00394")
Specification	e.g. for gear tooth flanks with a modulus larger than 0.8
Calibration	via Geometric standard PGN

Order no. **6111522**

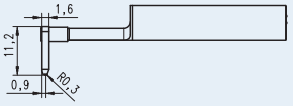


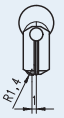


Pick-up PHTR-100

System	Single-skid pick-up with lateral, spherical skid
Skid radius	in traversing direction 0.3 mm (.012")
stylus radius	2 µm (.0008"), 90°
Specification	for measurements on concave and convex surfaces
Calibration	via Geometric standard PGN

Order no. **6111525**





MarSurf PS 1 / M 300 Accessories

Transverse tracing adapter with vee-block holder for PS1 / RD 18

For hand-held transverse tracing of cylindrical measuring objects, a pick-up adapter and a vee-block can be mounted to the MarSurf PS1 / RD 18 unit. According to the diameter of the measuring object, two different vee-blocks are available:

- Vee-block with 120° angle of Vee, for diameters from 5 up to 50 mm (0.2" to 2")
- Vee-block with 150° angle of Vee, for diameters from 50 up to 130 mm (2" to 5.1").

	Order no.
Adapter for transverse tracing	**6850541**
Vee-block holder	**6850542**

End face vee-block for PS1 / RD 18*

Suitable for measurements on flat end face of cylindrical and planar components.

** Included in the M 300 Set*

	Order no.
End face vee-block	**6910203**

Pick-up protection for PS1 / RD 18 / RD 18 C

	Order no.
Pick-up protection, steel	**6850716**
Pick-up protection with header vee-block, steel	**6850715**
Pick-up protection, plastic*	**7028532**
Pick-up protection header vee-block, plastic**	**7028530**

** With PS 1 and M 300 Set included in the scope of supply*
*** With M 300 and M 300 C Set included in the scope of supply*

Illustration: 7028532

MarSurf PS1 / M 300 / M 300 C Accessories

Mount for measuring stand ST

Accessories for measuring stands (these are not included in the measuring stands scope of supply):

Mount for MarSurf PS1 / RD 18
The drive unit RD 18 can in the mount be pivoted and locked in any position (±15°)

Order no. **6910201**

Mount for MarSurf RD 18 C
The drive unit RD 18C can in the mount be pivoted and locked in any position (±15°)

Order no. **6851304**

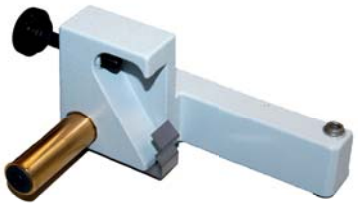


Illustration: 6910201

Measuring stand ST

Measuring stand ST-D

Height adjustment	0 to 300 mm, with a hand wheel
Dimensions (L x W x H)	175 x 190 x 385 mm
Weight	ca. 3 kg

Order no. **6710803**

Measuring stand ST-F
Grantie plate. The required measuring height can be adjusted with a hand wheel for convenient and accurate positioning of the drive unit.

Height adjustment	0 to 300 mm, with a hand wheel
Dimensions (L x W x H)	500 x 300 x 415 mm
Weight	ca. 35 kg

Order no. **6710806**

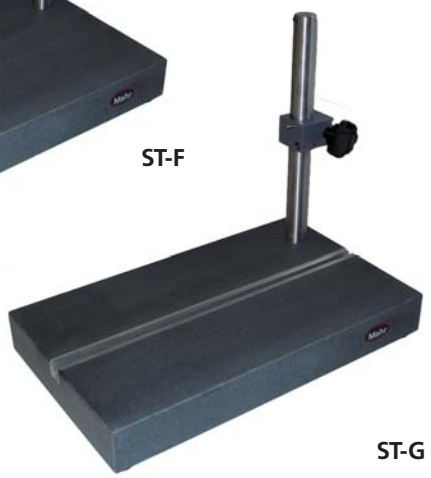
Measuring stand ST-G
Grantie plate with a 10 mm (.39 in) T-slot for mounting work pieces. The required measuring height can be adjusted with a hand wheel for convenient and accurate positioning of the drive unit.

Height adjustment	0 to 300 mm, with a hand wheel
Dimensions (L x W x H)	500 x 300 x 415 mm
Weight	ca. 35 kg

Order no. **6710807**

ST-D

ST-F



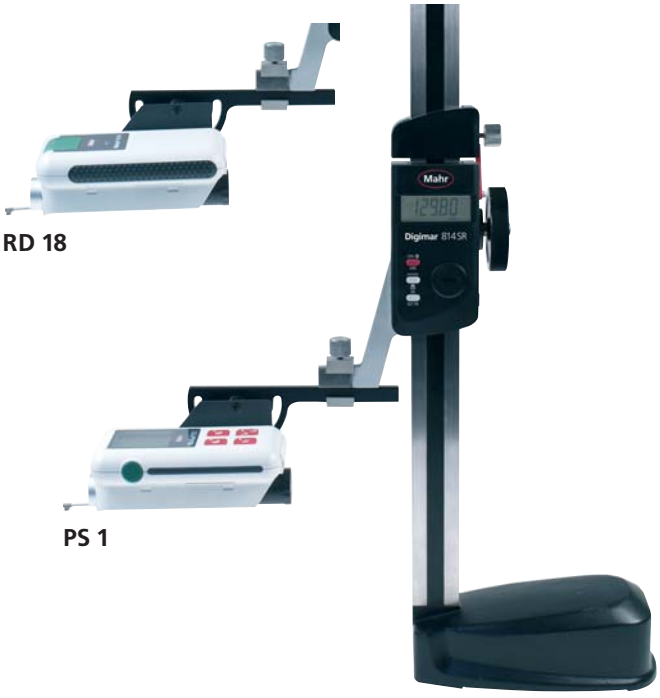
ST-G

MarSurf PS1 / M 300 Accessories

Mounting bracket for Digimar 814 SR

		Order no.
814 Sh	Adjustable mounting bracket to connect the PS 1 / RD 18 to a 814 SR	**2247086**

814 Sh



RD 18

PS 1

Tilt adjustment

Height Measuring and Scribing Instrument Digimar 814 SR for MarSurf PS 1 / RD 18

Functions:
RESET (Set the display to zero for relative measurement), ABS (Switch between relative and absolute measurement), mm/inch, Reference-Lock/Unlock, PRESET (To enter a numerical value), DATA (Data transmission via connection cable), Auto-ON/OFF

- Max. measuring speed 1.5 m/s (60"/s)
- High contrast Liquid Crystal Display with 12 mm high digits
- Sturdy heavy-duty base, easy to handle
- Hardened and lapped contact surface which produce both a smooth and even movement
- Slide and beam made of hardened stainless steel
- Hand crank for positioning and measuring
- Fine adjustment
- Locking screw
- Interchangable scriber point, carbide tipped
- Supplied with:
  Scriber point, cardboard box, battery and operating instructions

		Order no.
814 SR	Measuring range 350 mm	**4426100**
814 SR	Measuring range 600 mm	**4426101**

MarSurf PS 1 / M 300 / M 300 C Accessories

Vee-block PP

With four different prisms for mounting axis-symmetrical workpieces with diameters from 1 mm to 160 mm (.0394" to 6.30").

Dimensions (L x W x H)
80 x 100 x 40 mm
3.91" x 3.15" x 1.58"
Weight 1.5 kg / 3.31 lb

Including clamping springs for holding light workpieces in the prism.

Order no. **6710401**

XY table CT

For mounting and aligning workpieces. Can be adjusted in two coordinates by 15 mm (.591").

Table surface 120 x 120 mm
Table surface 4.728" x 4.728" with two brackets.

Order no. **6710529**

Parallel vice PPS

For mounting rectangular and cylindrical workpieces

Jaw width	70 mm / 2.76"
Jaw height	25 mm / .984"
Span	40 mm / 1.58"
Total height	58 mm / 2.28"
Weight	2 kg / 4.41 lb

Order no. **6710604**

Mini Precision Vise 109 PS as set

With mini precision vises. Depending on the version with prism jaws, carrier plates, stands and mini dividing attachment. Included in a plastic case

Width of jaws 15 / 25 / 35 mm

Order no. **4246819**

Roughness standard PRN 10

With Mahr calibration certificate. Roughness standard with turned profile, chromed. Profile depth ca. 10 µm (.394 µinch), for checking the roughness measuring station.

Order no. **6820420***

** With the M 300 C Set this is included in the scope of supply.*

Geometric Standard PGN

Surface standard with sinusoidal groove profile for dynamic monitoring of the roughness measuring station. Ra, Rz, Rmax. Optical flat. The following versions are available:

		Order no.
PGN 1	Profile depth ca. 1.5 µm (60 µinch), groove distance ca. 0.10 mm (0.0039")	**6820602**
PGN 3	Profile depth ca. 3 µm (120 µinch), groove distance ca. 0.12 mm (0.0047")	**6820601**
PGN 10	Profile depth ca. 10 µm (394 µinch), groove distance ca.0.20 mm (0.0079")	**6820605**
Mahr-calibration certificate for PGN		**9027715**
DKD (German Calibration Service) calibration certificate for PGN		**6980102**

MarSurf PS 1 / M 300 / M 300 C Accessories

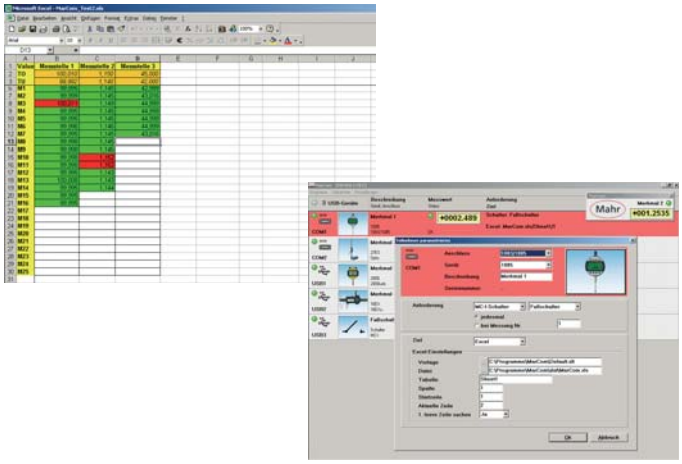
MarCom Software for PS 1 / M 300 / M 300 C

Software MarCom Professional

- Measured values can be directly transferred into MS Excel (from version 97) or into a text file or key code
- The measured values from each instrument can be sent to a different column, table or folder in Excel
- Data transmission via. USB and/or 2 serial COM interfaces
- Flexible and comfortable data transmission: you can either press the "Data" button on the measuring instrument or on the data cable; via a computer keyboard, timer; or by activating a foot switch connected to an USB interface

Software MarCom Standard
(included with the USB Data Cable)

Features and system requirements are identical to MarCom Professional, except that it only has one USB and one serial COM interface.

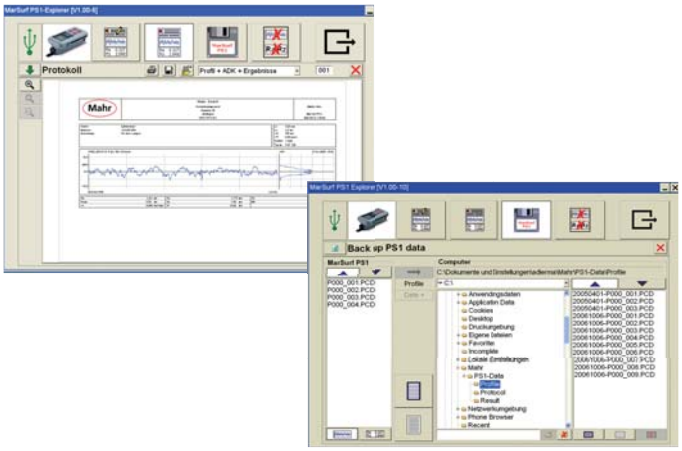


	Order no.
Software MarCom Professional	**4102552**
Software MarCom Standard	**4102551**
Data Cable 16 EXu incl. MarCom Standard	**4102357**

Software MarSurf PS 1 / M 300 Explorer

- The Software can be used to secure and document your measuring results and profiles (simply use Drag & Drop)
- The stored data can for example, be printed out on a A4 sheet or in any other format
- The measuring data can be displayed in different forms: profile and results, results, profile + MRC + results, statistics, and much more

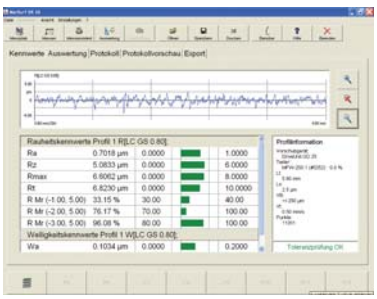
Order no. **6910205**



Evaluation Software MarSurf XR 20

- An easy way to evaluate and document data based on MarWin
- Evaluation and documentation of the results can be conducted independently and away form the measuring station
- Filing including documentation is made simple
- Workstation version avaliable

Order no. **6299054**



MarSurf Available Parameters

Parameters for MarSurf PS 1 / M 300 / M 300 C

Parameter	Output	Meaning	Standards
Ra	RA	Arithmetic mean roughness Ra	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
Rq	RQ	Root mean square roughness Rq	
Rz Ry (JIS) equiv. to **Rz**	RZ	Mean peak-to-valley height Rz (acc. to ISO) or Ry (acc. to JIS)	
Rz (JIS)	RZJ	Mean height Rz of profile elements	JIS B 0601 : 2001 (früher: ISO 4287/1 : 1984)
Rmax	RMAX	Maximum roughness depth Rmax	DIN 4768 : 1990
Rp	RP	Mean profile peak height Rp	DIN EN ISO 4287 : 1998; ISO 4287 : 1997
RpA (ASME)	RP	Maximum profile peak height Rp	ASME B46
Rpm (ASME)	RPM	Mean profile peak height Rp	
Rpk	RPK	Reduced peak height Rpk	DIN EN ISO 13565-2 : 1998
Rk	RK	Core roughness depth Rk	
Rvk	RVK	Reduced valley depth Rvk	
Mr1	MR1	Smallest material ratio Mr1 of roughness core profile	
Mr2	MR2	Largest material ratio Mr2 of roughness core profile	
A1	A1	Material-filled profile peak area A1	
A2	A2	Lubricant-filled profile valley area A2	
Vo	VO	Oil-retaining volume Vo	
Rt	RT	Total height Rt of R-profile	DIN EN ISO 4287 : 1998
R3z	R3Z	Arithmetic mean third peak-to-valley R3z	DB N 31007 : 1983
RPc	RPC	Peak count RPc is the number of profile elements (see Rsm) per cm that exceed the set upper profile section level c1 and then fall short of the lower c2.	EN 10049 : 2005; ASME B46
Rmr tp (JIS, ASME) equiv. to **Rmr**	RMR	Material ratio Rmr	DIN EN ISO 4287 : 1998; ISO 4287 : 1997; JIS B 0601 : 2001
RSm	RSM	Mean width RSm of profile elements (previously: groove spacing)	
Rsk	RSK	Skewness Rsk of the profile	DIN EN ISO 4287. ASME B46.1
S	S	Mean spacing S of local profile peaks	JIS B 0601 : 1994
CR	CR	Zone width CR of the profile peak zone (French „critère de rodage“) (dependent on intersection lines Scr1 and Scr2)	cf. Pδc (Pdc) in: DIN EN ISO 4287 : 1998 ISO 4287 : 1997 JIS B 0601 : 2001
CF	CF	Zone width CF of the profile core zone (French „critère de fonctionnement“) (dependent on intersection lines Scf1 and Scf2)	
CL	CL	Zone width CL of the profile valley zone (French „critère de lubrification“) (dependent on intersection lines Scl1 and Scl2)	
R	R	Mean depth R of roughness motifs	ISO 12085 : 1996
Ar	AR	Mean width Ar of roughness motifs	
Rx	RX	Maximum depth Rx of profile irregularity	

Additional parameters for MarSurf M 300 / M 300 C

Rv	Rv	Mean profile valley depth Rv	DIN EN ISO 4287 : 1998 ISO 4287 : 1997 JIS B 0601 : 2001
W	W	Mean depth W of waviness motifs (dependent on operators A and B)	DIN EN ISO 12085 : 1998 ISO 12085 : 1996 JIS B 0631 : 2000

WWW.MAHR.COM

- 0 +

Mahr

EXACTLY

Unit 3 - 2ndfloor- No.24 West Shahid Ghandi St.
North Sohrevardi Ave. Tehran . Iran
Tel : +98 21 88745209 , 86030765
Fax: +98 21 88764890

تهران ـ خیابان سهروردی شمالی ـ خیابان شهید قندی غربی
پلاک ۲۴ ـ ورودی غربی ـ طبقه دوم ـ واحد ۳
تلفن : ۸۸۷۴۵۲۰۹ ، ۸۶۰۳۰۷۶۵
فاکس : ۸۸۷۶۴۸۹۰

www.asgradco.com info@asgradco.com

Mahr GmbH Esslingen

Reutlinger Straße 48, 73728 Esslingen
Tel. +49 (7 11) 93 12-6 00, Fax +49 (7 11) 93 12-7 25
mahr.es@mahr.de, www.mahr.com

3755704-02.2012