MarSurf XR 20. Technical Data

Measuring principle	Stylus method
Probes	R probes, MFW 250 Focodyn*, LS 1* and LS 10* optical probes (*only in conjunction with PGK 120 or GD 120 CNC drive unit)
Drive units	PZK, GD 25, PGK 20, PGK 120, GD 120 CNC
Measuring ranges MFW 250:	±25 µm, ±250 µm, (up to ±750 µm); ±1,000 µin, ±10,000 µin (up to ±30,000 µin)
Profile resolution / resolution	
Vertical	±25 µm / 0.7 nm (±1,000 µin / 0.02 µin) ±250 µm / 7 nm (±10,000 µin / 0.2 µin) ±2500 µm /50 nm (±100,000 µin / 2 µin) Approx. 100,000 steps per measuring range
Horizontal	Points spaced in accordance with DIN EN ISO 3274 (11,200 points over 5.6 mm measuring length; user-defined max. 240,000 points possible)
Profile types	D, P, W, R (profile inversion possible) Optional: Dominant waviness
Filter types	Profile filter in accordance with DIN EN ISO 11562 (digital, phase-correct) RC filter (digital) Special filter in accordance with DIN EN ISO 13565-1 K1 special filter
Form elimination	ARC filter
Cutoff wavelengths	0.08 mm; 0.25 mm; 0.8 mm; 2.5 mm; 8 mm/free input (.003 / .010 / .032 / .100 / .320 in)
Traversing lengths	Automatic; 0.56 mm; 1.75 mm; 5.6 mm; 17.5 mm, 56 mm, (.022 / .070 / .224 / .700 / 2.240 in), Measurement up to stop, variable
Number of sampling lengths	1 to 50 (default: 5)
Special traversing lengths	0.1 mm to feed length adjustable (0.008 in to 12 in)
Low-pass Ls	2.5 µm / 8 µm / 25 µm (100 µin/ 320 µin / 1,000 µin) in accordance with DIN EN ISO 3274, freely variable and can be switched off
Traversing speeds (Vt)	0.1 mm/s and 0.5 mm/s (0.004 in/s, 0.02 in/s)

Parameters

Roughness parameters:
Ra, Rq, Rz (Ry in acc. with JIS corr. to Rz), Rmax, RPc, Rz (JIS), Rt, Rp (Rpm in acc. with ASME corr. to Rp), Rv, R3z, RSm, RS (corr. to S in acc. with JIS), Rsk, Rku, Rdq, Rlq, Rdc, R HSC, RMr*, RMr*, RMr*

Core roughness parameters:
Rk, Rpk, Rvk, Rpkx, Rvkx, Mr1, Mr2, A1, A2, Vo

P profile parameters:
Pa, Pq, Pt, Pp, Pv, PSm, Psk, Pku, Pdq, Plq, Pdc, P HSC, PPc, PMr*, PMr*, PMr*

W profile parameters:
Wa, Wq, Wt, Wp, Wv, WSm, Wsk, Wku, Wdq, Wdc, WMr*, WMr*, WMr*

Motif parameters (ISO 12085):
R, AR, W, AW, Rx, Wx, Wte, Nr, Ncrx, Nw, Cpm, CR, CF, CL

ISO 5436 parameters:
Pt5436, D

Parameter lists:
Rz-L, Rp-L, R3z-L, Rdc-L, RMr-L
Pdc-L, PMr-L

"Dominant waviness" option:
WDSmMin, WDSmMax, WDSm, WDc, WDt

Characteristic curves	Profile, Material ratio (Abbott-Firestone curve) Amplitude density curve (ADC)
Calibration	Static and dynamic in acc. with Ra or Rz
Calibration interval	Yes, monitored
Tolerance display	Yes (for all individual values)
User administration	Yes (with assignable user rights)
Automatic function	Automatic selection of cutoff conforming to DIN EN ISO 3274
Statistics	X, S, max., min., not within tolerance, invalid measurements
Languages	English, French, German, others on request
Software can be run on	WINDOWS XP

MarSurf XR 20 **Order No. 6268350**
including PC and standard control unit

Subject to technical changes.

* Material ratio calculation with mean line or CREF reference

GD 25 Drive Unit

Description

With built-in datum plane. Quiet drive unit with low-vibration design. Compact, robust and rigid casing. The base of the unit takes the form of a V-block. Motorized vertical adjustment for lifting and lowering the probe and for automatic zero setting. All non-skidded probes and single/dual-skid probes of types "M" and "R" can be used.
Roughness, waviness and form deviations can be recorded in conjunction with the **MFW 250** and **RFHTB** non-skidded probes. The compact, universal casing design means that the instrument can be used as a hand-held, table-top or measuring stand unit. It can also be used horizontally, vertically or upside down.
The unit is designed to allow measurement in pipes and bores and, with diameters of 68 mm (2.68 in) and over, the entire drive unit can be inserted. With smaller diameters, it is only possible to insert part of the probe protection with its continuous V-block.

The datum plane is aligned relative to the workpiece using the inclination adjusting screw. The motorized vertical adjuster readjusts the overall probe position so that the stylus tip automatically remains in the center of the measuring range.
Thanks to its V-block, the **GD 25** drive unit is suitable for both flat and cylindrical workpieces. Centering takes place on the continuous V-block up to workpiece diameters of 72 mm (2.83 in).

For larger diameters and flat surfaces, the integrated support feet are used.

The V-block can accommodate cylindrical workpieces for upside-down measurements.

At the start of the measurement, the probe is lowered onto the workpiece using the motorized zero setting function. Once the measurement has been completed, the entire probe is returned to the probe protection and lifted. Return travel is protected in the upper position and ends in the front starting position.

Technical Data

GD 25 drive unit	**Order No. 6721006**
Traversing length	Up to 25.4 mm (1 in), adjustable on evaluation unit
Traversing speed	0.1 mm/s or 0.5 mm/s (0.004 in/s or 0.02 in/s), set automatically by evaluation unit
Rz residual value	< 30 nm (1.2 µin)
Guide deviation	0.2 µm/20 mm (7.87 in/0.787 in)
Vertical range	4 mm (0.16 in) (motorized)
Inclination range	± 10 µm/mm (± 1 mm/100 mm) manual
Probe mount	For MFW 250 and "R"-type probes
V-block	For positioning on cylindrical workpieces with diameters of 30 mm to 72 mm (1.81 in to 2.83 in), inside diameter from 68 mm (2.68 in)
Feet	For positioning on cylindrical workpieces with diameters of 72 mm (2.83 in) and over and flat workpieces
Dimensions (L x W x H)	148 mm x 36 mm x 60 mm (5.83 in x 1.42 in x 2.36 in)
Weight	Approx. 1.2 kg (2.65 lbs)

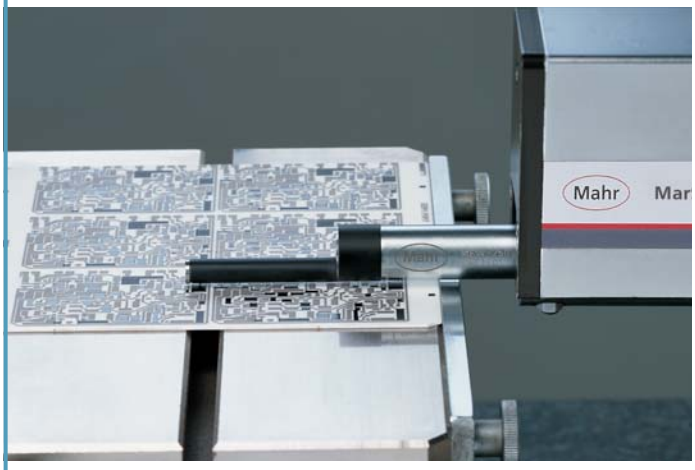
For high-precision measurement tasks we recommend the GD 25 plus (technical data available on request).

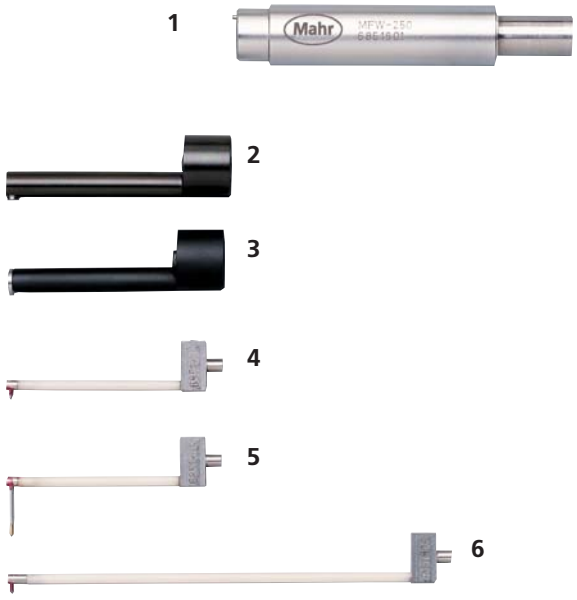
Accessories

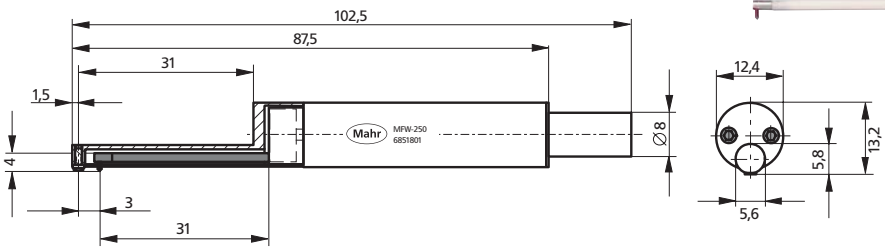
PGK/GD 25 mount for measuring stand

ST-D, ST-F and ST-G measuring stands	**Order No. 6851325**
ST 500 measuring stand (standard)	**Order No. 6851363**
Special tube mount for ST 500 measuring stand see below	**Order No. 6851364**

MFW 250 Surface Probe







Description

The **MFW probe** which can be changed over for roughness and waviness measurements features high linearity (deviation < 1%), high resolution (100,000/200,000-fold) and a large measuring range (±250 µm / ±0.01 in). When using double-length probe arms, the measuring range increases to ±500 µm (±0.02 in). The fact that it is easy to change the probe arms enables versatile use. The robust, rigid design means that there is no natural vibration or resonance.

When combined with the **GD 25** and **PGK 120** drive units, the **MFW probe** can be used as a skidless or skidded probe. With the PGK 120 drive unit, the traversing directions can be varied in different ways (see MarSurf PGK 120 description).

Using the **MFW 250** on the **GD 25** drive unit and the **Perthometer S2** or **MarSurf XR 20 / XCR 20** enables the best possible application of benefits such as motorized zero setting with automatic lifting of the probe.

The special probe arms described below are to be used as required by the relevant application. We recommend our applications engineering department for advice and any test measurements required.

Other probe arms and stylus tip geometries are available on request.

Technical Data

MFW standard set **Order No. 6111404**
consisting of:

1 Probe head **Order No. 6851801**
with inductive probe, measuring range ±250 µm (±0.01 in), tracing force approx. 0.7 mN, stylus tip geometry in accordance with DIN ISO, ASME, linearity deviation ≤ 1%

2 Probe arm protection with skid **Order No. 6851802**
skid radius 25 mm (0.98 in), for skidded measurements

3 Probe arm protection without skid **Order No. 6851803**

4 Probe arm **Order No. 6851804**
for bores with diameters of 4.5 mm (0.18 in) and over, stylus tip geometry in accordance with DIN ISO

5 Probe arm **Order No. 6851805**
for sunken surfaces, recesses or grooves, crank 10 mm (0.4 in) long, diameter 1 mm (0.04 in), stylus tip geometry in accordance with DIN ISO

6 Probe arm **Order No. 6851806**
with double probe arm length, measuring range extended to ±500 µm (±0.02 in); other data as for probe arm 4.

See page 25 for other probe arms.