

TESA RUGO-SURFACE Portable Roughness Gauge

The RUGO-SURFACE roughness tester is an instrument for surface analysis in a class of its own, combining roughness and profile measurement in a single device, without the need for a desktop computer to analyze the results.

The high-contrast, 7-inch color touchscreen includes a modern interface with intuitive icons for effortless navigation. All new users will be fully operational from the start.

Thanks to its integrated rechargeable battery, the instrument combines maximum mobility and autonomy, making it easy to take measurements directly close to the parts, without the constraint of cabling.

The probe supplied with the instrument enables the measurement of profiles for a Z-measurement range of up to 3 mm. A special probe can extend the measuring range up to 20 mm, providing ground-breaking profile measurement performance for an instrument that combines roughness and profile measurement.

Key points:

- *Combination of roughness and profile measurement*
- *Creation of measurement reports and statistics files directly from the instrument*
- *Analysis of CAD profile integrated*
- *Probes without skids for measuring waviness*
- *Safety against impact with styluses mounted on magnetic supports*
- *Accessory for measuring profiles up to a measuring range of 20 mm*



Functions



The skidless probe supplied with the instrument allows you to measure the parameters of the primary profile, roughness profile, and waviness profile.

94 parameters are available according to ISO 3274, ISO 4287, ISO 12085 and ISO 21920.



The interchangeable probe with inductive technology can be rotated by 90° to enable transverse measurement.



A magnetic support allows the stylus to be fixed in place and guarantees its reliability and safety in case of accidental impact. The probe is automatically released from its support to prevent damage.



Storage of the calibration of 6 different probe head + stylus configurations for rapid measurement configuration changes that require no recalibration.



The wide 60 mm scanning range of the X-axis provides great flexibility in terms of measurement position.



Statistical roughness measurement on constant-speed rotating systems, for large or cylindrical parts.



Statistical roughness measurement on constant-speed rotating systems, for large or cylindrical parts.



Automatic detection of the roughness value of the part to determine the best measurement settings.



The USB interface can be used to save images of the content displayed on the screen or to save measurement reports in Excel or PDF format



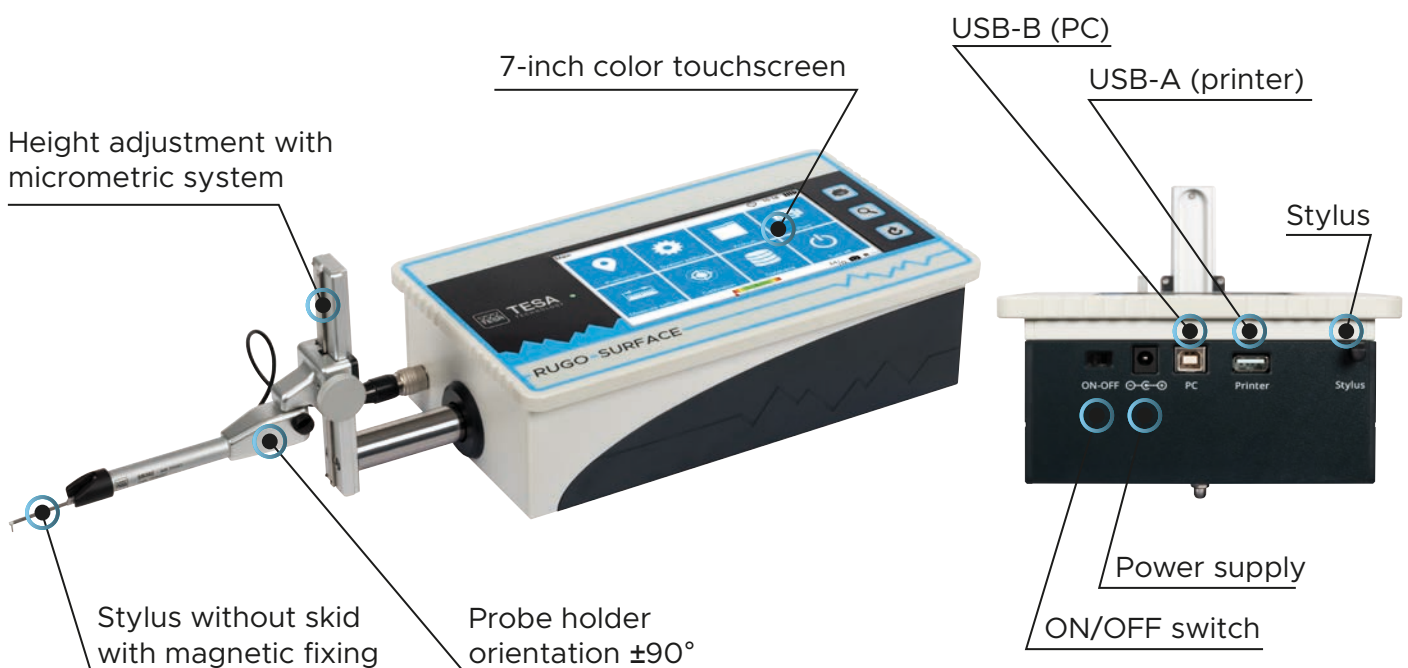
The instrument is compatible with industry-standard desktop printers for detailed printing on A4-size paper.



The Bluetooth® version offers a wireless connection to the portable printer.



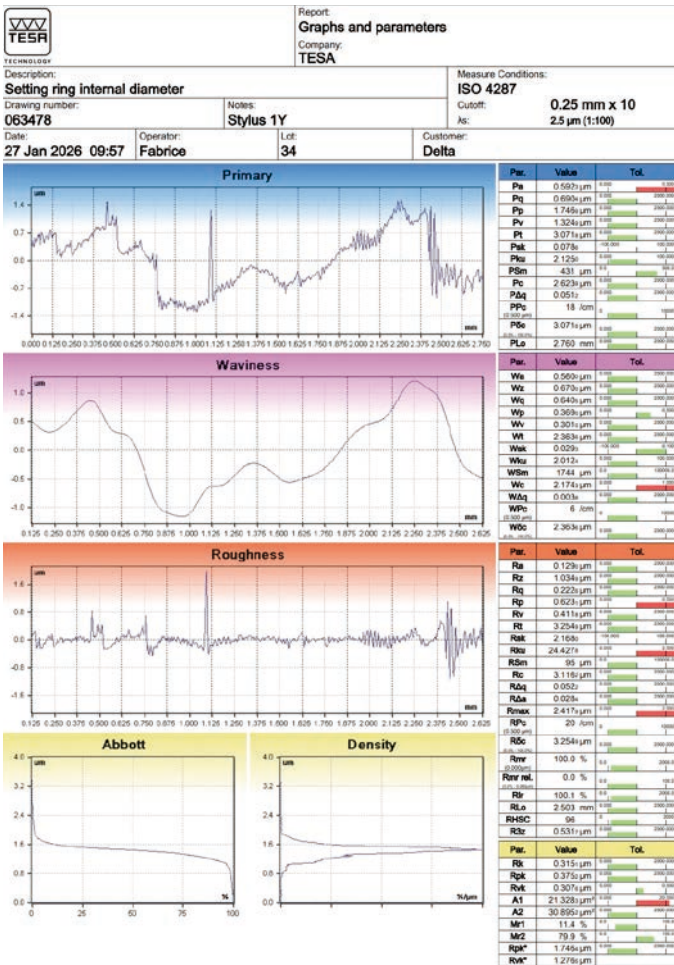
Complex profiles can be quickly processed due to the powerful 1 GHz internal microprocessor used for the WINDOWS CE operating system.





Roughness measurement on a ground adjustment ring mounted on a rotating machine

PDF report sample



Excel report sample

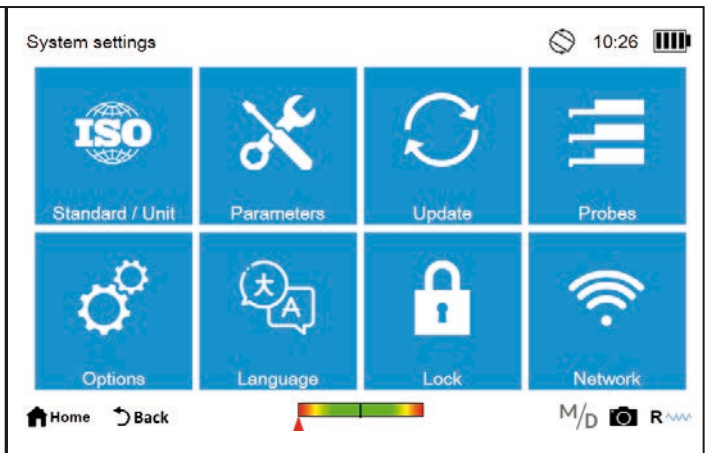
	A	B	C	D	E	F
1						
2		Measure Conditions				
3	Date:	27 Jan 2026				
4	Time:	10:01				
5	Standard:	ISO 4287				
6	Length:	2.75 mm				
7	L cutoff:	0.25 mm				
8	N. cutoff :	10				
9	λs	2.5 µm (1:100)				
10	Pre-post run:	Enabled				
11						
12	Parameter	Value	Unit	Tol -	Tol +	Status
13	Ra	0.129	µm	0	2000	Green
14	Rq	0.223	µm	0	2000	Green
15	Rp	0.623	µm	0	0.5	Red
16	Rv	0.412	µm	0	2000	Green
17	Rku	24.428		0	2	Red
18	RΔa	0.028		0	2000	Green
19	Rmax	2.418	µm	0	2	Red
20	Wku	2.012		0	100	Green
21	WSm	1743.8	µm	0	100000	Green
22	Wc	2.174	µm	0	1	Red
23	WΔq	0.004		0	2000	Green
24	WHSC	2		0	2000	Green
25	Pa	0.592	µm	0	0.5	Red
26	Pq	0.690	µm	0	2000	Green
27	Rpk	0.375	µm	0	2000	Green
28	Rvk	0.308	µm	0	0.5	Red
29	A1	21.328	µm ²	0	20	Red
30	A2	30.895	µm ²	0	2000	Green

User interface

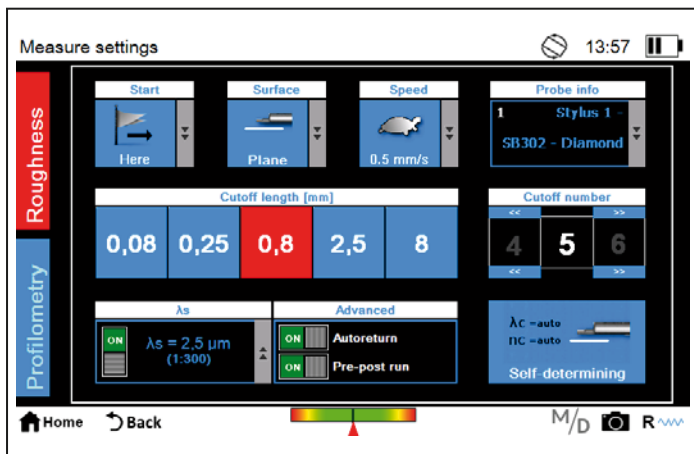
Main screen



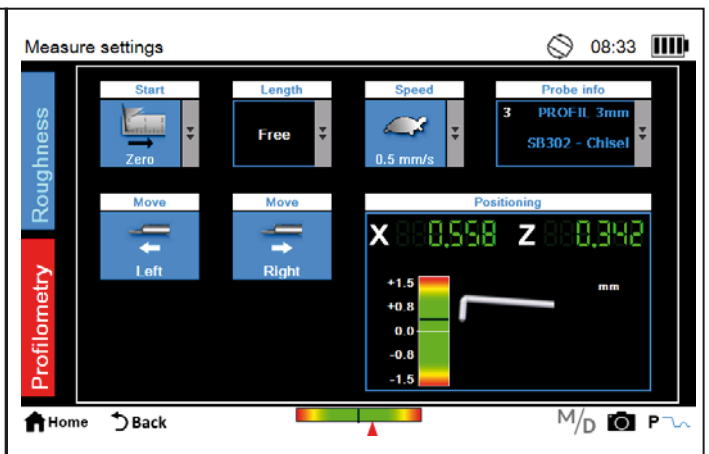
Settings screen



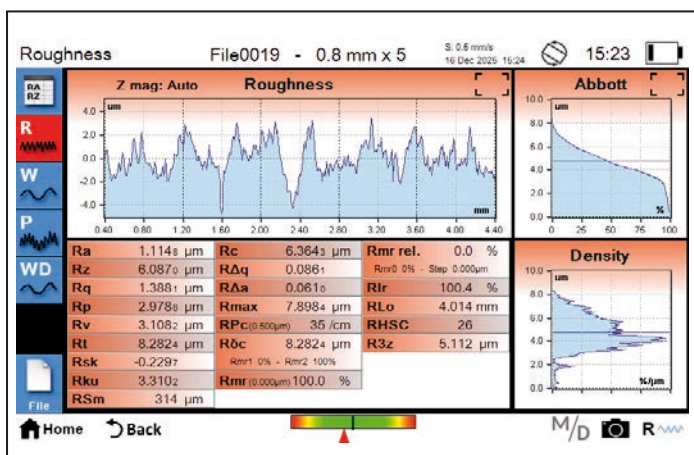
Settings for roughness measurement



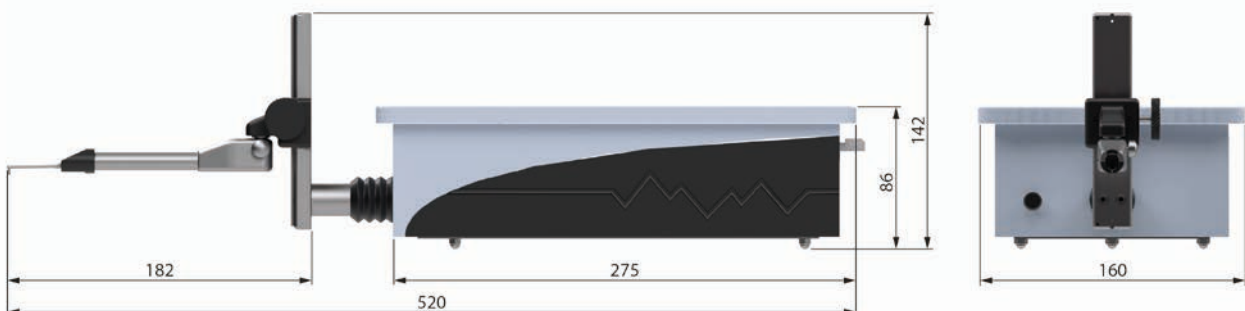
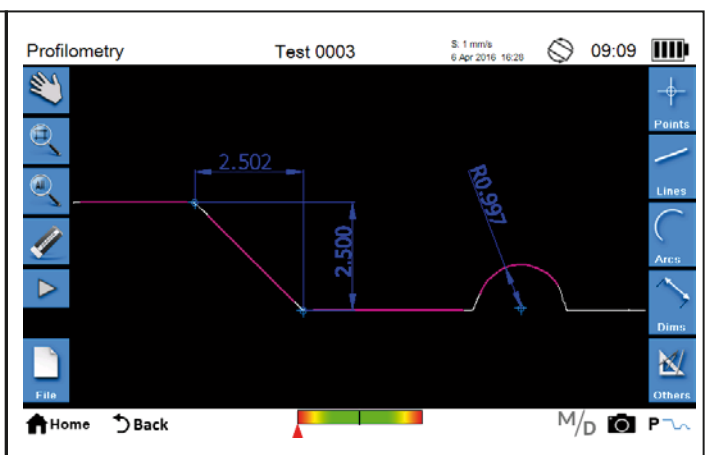
Settings for profile measurement



Results of the roughness measurement



Results of the profile measurement



Delivery program

	RUGO-SURFACE	RUGO-SURFACE BT
Article number	06930016	06930017
Bluetooth® integrated		•
RUGO-SURFACE portable roughness gauge	•	•
Probe head SB302 <i>Article number 06960207</i> (see information in 'Accessories' chapter)	•	•
Stylus 1-Y <i>Article number 06960200</i> (see information in 'Accessories' chapter)	•	•
Main charger <i>Article number 056639AFM</i>	•	•
Power cord with EU plug	•	•
Roughness standard Ra = 2.97 µm <i>Article number 06960041</i>	•	•
Micrometric support	•	•
Key for tightening the micrometric support	•	•
Stylus for touchscreen	•	•
Contents of the USB flash drive: <ul style="list-style-type: none"> • CE certificate • Product information • User manual • Test report 	•	•
Fastening for protection during transport	•	•
Carrying case	•	•



Technique specifications

Measured parameters (94 roughness parameters) <ul style="list-style-type: none"> • Roughness parameters • Waviness parameters • Primary profile parameters • Central profile parameters • Dominant waviness parameters 	<p style="text-align: center;">Parameters according to ISO 3274/ISO 4287/21920:</p> <p>Ra – Rz – Rq – Rp – Rv – Rt – Rsk – Rku – RSm – Rc – RΔq – Rdq – RΔa – Rda – Rmax – RPc – Rδc – Rdc – Rmr (c) – Rmc (c) – Rlr – Rlo – RHSC – R3z – Rmr Rel – Rcm (p) – Hp – Ep</p> <p>Wa – Wz – Wq – Wp – Wv – Wt – Wsk – Wku – WSm – Wc – WΔq – Wdq – Wpc – Wδc – Wdc – WLo – Wlr – WHSC</p> <p>Pa – Pq – Pp – Pv – Pt – Psk – Pku – PSm – Pc – PΔq – Pdq – PPC – Pδc – Pdc – Plc – Plr – PHSC</p> <p>Rk – Rpk – Rvk – A1 – Rak1 – A2 – Rak2 – Mr1 – Rmrk1 – Mr2 – Rmrk2 – Rpk* – Rvk* Wdt – Wdc – WDSm</p>		
	<p style="text-align: center;">Parameters acc. to ISO 12085:</p> <p>R – AR – Rx W – AW – Wx – Wte Pt Rke – Rpke – Rvke – A1e – A2e – Mr1e – Mr2e</p>		
Measuring range (µm)	Ra 0 à 200 µm Rt 0,05 à 600 µm		
Total length (X)	(Number of cut-offs + 1) x Lc (maximum 48 mm)		
Evaluation length (X)	Number of cut-offs x Lc		
Traversing length (X)	Up to 60 mm		
λs filter	Λc/ λs: 2,5 – 8 – 25 (acc. to ISO 3274)		
Resolution	0,0001 µm / 0,0001 µinch		
Cut-off length Lc	Cut-off length (mm): 0.08 – 0.25 – 0.8 – 2.5 – 8 mm (acc. to ISO 4287 and ISO 21920) Pattern A/B (mm): 0.02 – 0.1 / 0.1 – 0.5 / 0.5 – 2.5 / 2.5 – 12.5 mm (acc. to ISO 12085)		
Number of cut-offs	1 to 20 (for 8 mm cut-off from 1 to 6)		
Electronic filter	GAUSS in compliance with ISO 16610-21		
Max. permissible error, roughness	0.025 µm + (4 % R), R = roughness in µm		
Measuring range, Z-axis, profile	3 mm with probe head SB302 + stylus 1-Y (roughness and profilometry) 3 mm with probe head SB302 + stylus 4-S (roughness and profilometry) 20 mm with probe head SB402 + stylus 8-S (profilometry)		
Max. permissible error, profile	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p style="text-align: center;">3 mm range: (SB302 + stylus 4-S) X-axis: ±(3.5+L/10), L in mm Z-axis: ±(4+H), H in mm Angle of traceability: 80° upward position 70° downward position</p> </td> <td style="width: 50%; vertical-align: top;"> <p style="text-align: center;">20 mm range: SB402 + stylus 8-S) X-axis: ±(3.5+L/10), L in mm Z-axis: ±(4+0.2·H), H in mm Angle of traceability: 80° upward position 70° downward position</p> </td> </tr> </table>	<p style="text-align: center;">3 mm range: (SB302 + stylus 4-S) X-axis: ±(3.5+L/10), L in mm Z-axis: ±(4+H), H in mm Angle of traceability: 80° upward position 70° downward position</p>	<p style="text-align: center;">20 mm range: SB402 + stylus 8-S) X-axis: ±(3.5+L/10), L in mm Z-axis: ±(4+0.2·H), H in mm Angle of traceability: 80° upward position 70° downward position</p>
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Probe system	Inductive Height adjustment up to 110 mm Can be rotated 90° for lateral measurements Stylus with interchangeable magnetic system
Diamond shape	90° diamond – 2 µm radius – Y style 60° diamond – 2 µm radius – R style 12° chisel – 20 µm radius – S style
Measuring force	0.75 mN (acc. to ISO 3274)
Displacement speed	0.0 – 0.25 - 0.5 – 1 mm/s (in measuring and positioning mode) (0.0 mm/s for static measurement)
Keyboard	Three-button touchscreen keyboard with IP67-rated protection against dust particles and oil splashes
Languages available	English, French, German, Italian, Spanish, Portuguese, Russian, Czech, Japanese, Korean, Chinese
Graphics displayed	Roughness, waviness, dominant primary waviness, pattern, Abbott curve and coordinated distribution
Integrated functions for the CAD processing of profiles	<ul style="list-style-type: none"> - Coordinates: Cartesian – On the profile – At an intersection – End point – Maximum – Minimum - Lines: Best fit – Polar – Discontinuous – Between two or more points – Parallel - Arcs: Best-fit – Discontinuous – For three or more points – Center and radius – Tangent - Dimensions: Aligned dimensions – Vertical – Horizontal – Radius – Angle – Straight line distance - Advanced: Horizontal or vertical reference, scale factor of Z-axis.
Power supply, battery	12 V battery, 3000 mAh NiMh type Main power supply 100-240 V, 50/60 Hz Battery charger 18 V/3.3 A
Time to fully recharge battery	2 hours
Battery life	Approximately 1000 measurements (0.8x5)
Internal memory	<4000 roughness measurements <1000 profile measurements
Connector	USB Type B (PC) USB Type A (printer)
Printer	Integrated PDF printer External printer, e.g. type HP or EPSON Portable USB or wireless printer (06960090)
Dimensions	275 x 160 x 86 mm (roughness gage only)
Weight	3300 g
Countries including wireless transmitter certification (For RUGO-SURFACE BT 06930017)	EU, USA, Canada, Japan, Taiwan (China), South Korea, Brazil, Australia and New Zealand For other countries, please contact us

Applications



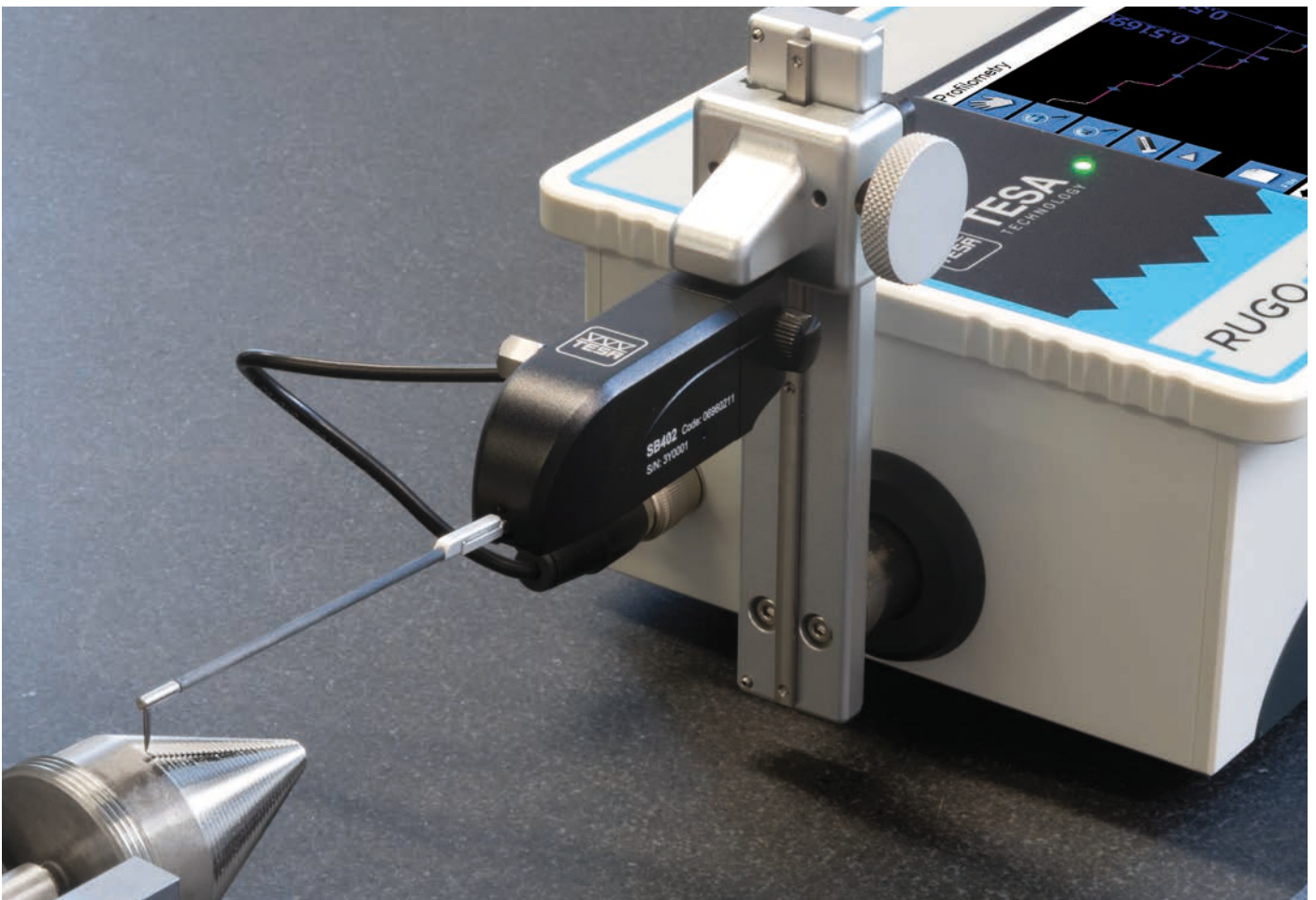
Surface inspection of ground parts

Stylus 1-R (06960201) for measuring Ra less than 0.1 microns



Measuring profiles for quality control of gear teeth

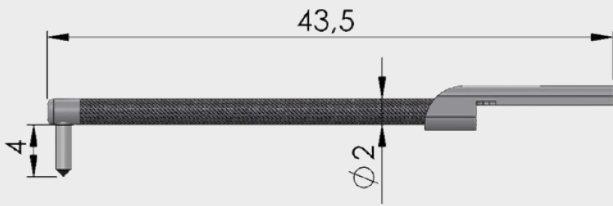
Profile set for measuring up to 20 mm on the Z-axis (06960210)



Accessories

Stylus 1-Y

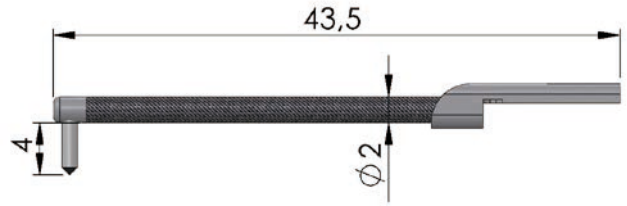
For groove depth <4 mm



06960200

Stylus 1-R

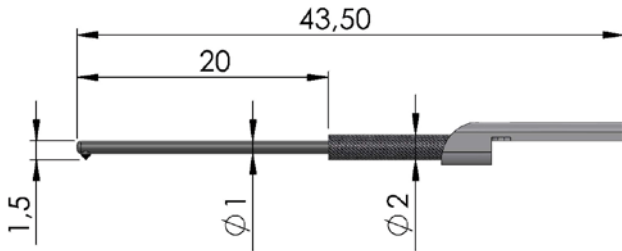
Stylus for measuring $R_a < 0.1 \mu\text{m}$



06960201

Stylus 2-Y

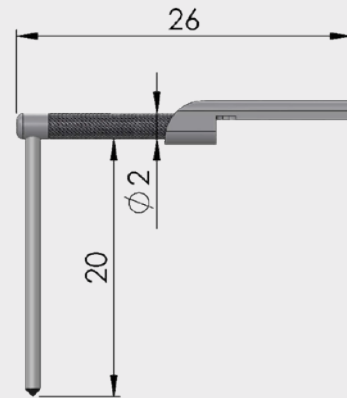
For bore $\varnothing > 2$ mm, depth <20 mm



06960202

Stylus 3-Y

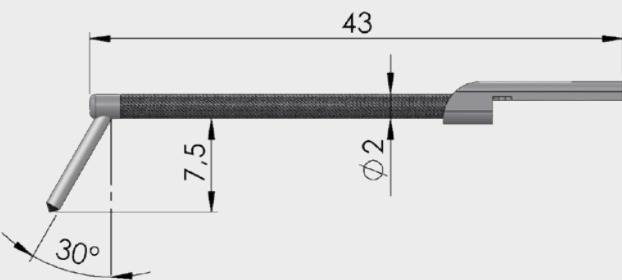
For groove depth <20 mm



06960203

Stylus 5-Y

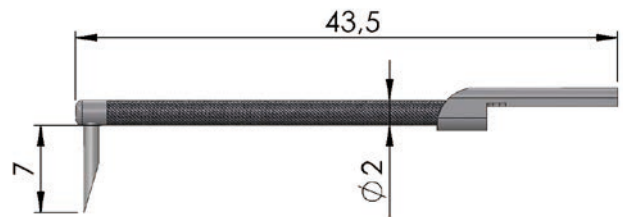
For blind bores



06960204

Stylus 4-S

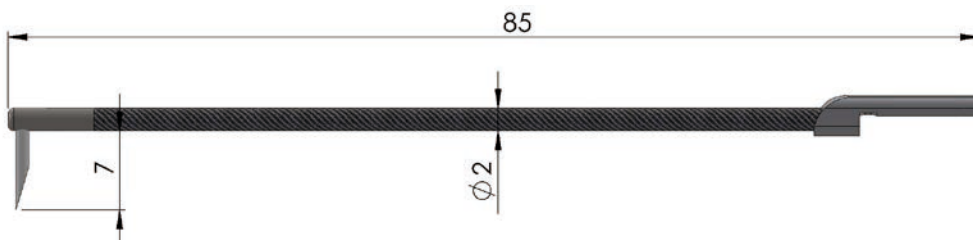
For profilometry <3 mm
(for probe holder SB 302)



06960205

Stylus 8-S

For profilometry <20 mm
(for probe holder SB 402)



06960205

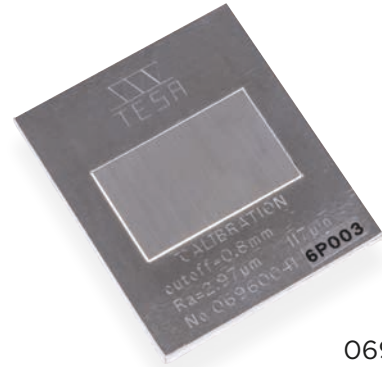
Accessories

Probe holder SB302



0696207

Ra standard = 2.97 µm



06960041

Profile standard 2.5 mm



0696208

Profile standard 15 mm



0696209

Profile set 20 mm

Probe holder SB402, stylus 8-S and 15 mm profile standard included



0696210

Main power supply



056639AFM

Portable wireless printer



06960090