TESA
TECHNOLOGY

Ra   0.674 µm
Rq   0.883 µm
Rt   5.19 µm
Rz   4.393 um

Surface Roughness Testing

THE ROUGHNESS PARAMETERS MOST COMMONLY USED ARE: RA, RZ AND RMAX

TESA RUGOSOFT and MEASUREMENT STUDIO Software

These software tools allow the storage of surface roughness measurements along with roughness parameters and roughness profile. A measuring programme created in the software can be transferred to the instrument together with measuring parameters. The results are available at all times, complete with statistcal analysis and can be exported for reports, for example.

Mean roughness Ra (ISO 4287, DIN 4768)

The mean roughness Ra matches the arithmetical mean of the absolute values related to the profile deviation y within the reference length l.

Max. profile valley depth Rmax (DIN 4768)

The max. profile valley depth Rmax is for the most significant single roughness depth Zi within the total length lm.
According to ISO 4288 and DIN 4287 - Part 1, this parameter is also specified as Ry max.

Mean roughness depth Rz DIN (DIN 4768)

The mean roughness depth Rz is the arithmetical mean of single roughness depths of successive sampling lengths le. According to ISO 4287 and DIN 4762, the parameter Rz DIN is also specified as Ry5.
Since Rz changes its name in both DIN 4768 and ISO 4287, this parameter is also specified as Rz DIN or Rz ISO. If the parameter Rz is measured according to DIN, it is generally admitted that the extreme value specified by ISO is matched providing that Rz ISO does not exceed Rz DIN.

Use of Roughness Comparison Specimens

These specimens are used for testing any surface finish quality and have long proven their value in practice.

They are used for touch and/or sight comparisons against the surface of work pieces that are produced using the same manufacturing process. The condition is that materials have to be comparable.

When comparing the workpiece surface against the specimen, roughness is not quantitatively expressed. The assessment of the extent to which the surface finish of both is alike can only be subjective.

Sight comparison requires optimum light source angle. For small surfaces, the use of a magnifying glass with up to 8x magnification is recommended.
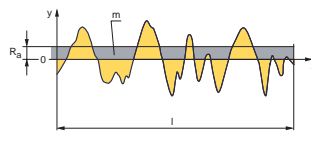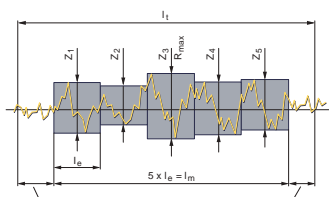
Touch comparison is made using the finger tip or a small copper piece such as a coin, for instance.
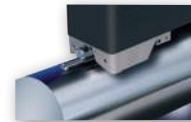
RUGOSURF 20

RUGOSURF 90G in profile measuring mode with PROFILE SET 2 mm

RUGOSURF 20 with dot matrix printer

RUGOSURF 90G

RUGOSURF 20, RUGOSURF 10G, RUGOSURF 90G ROUGHNESS GAUGES

TESA offers a range of 3 portable RUGOSURF roughness gauges adapted for different levels of precision from the production floor to the test laboratory.
These devices are particularly appreciated by operators for their ease of use, robustness and reliability.

The range includes data management software to process measured values for an optimal overview of roughness profiles, statistical data and customizable measurement reports.

RUGOSURF 20

RUGOSURF 10G

RUGOSURF 90G

TESA RUGOSURF 20

Portable roughness gauge, robust and versatile.

Well suited for production environments or inspection of inward goods.

Measures roughness parameters according to:
– ISO 4287
– JIS B0601
– DIN and ISO 12085 (MOTIF or CNOMO).

Measuring range in the Z-axis of 400 µm (6300 µin).

15 roughness parameters.

Each parameter can be activated individually or not.

Possible tolerancing of parameter values.

Scope of supply

Direct display:
– of all measured values, with tolerance levels diplay,
– of R roughness profile,
– the Bearing Area Curve (BAC),
– the Amplitude Distribution Curve (ADC).

With a measuring stand with suction base

2" Black&White LCD screen, high contrast for optimum visual representation.

Flexible autonomy through mains adapter or battery pack.

Storage of the measured parameters.

Multilingual menu options.

USB cable connection (optional).

Direct printing to a dot matrix printer (optional).

Measurement transfer, database creation and reporting available using TESA RUGOSOFT software tool (optional).

Access to narrow and hard to reach locations possible through 100 mm probe extension (optional).

Measurement of narrow hard to reach crevices thanks to the 100 mm probe extension

With vertical positioning support

Description:
1. Start / Measure
2. Probe protection
3. LCD 2" screen
4. Enter key
5. Defilement key
6. Return key / Measurement parameters
7. ON/OFF Switch
8. Batter charger connector
9. USB Connector for PC
10. Printer connector

ISO 3274 (Cl.1)

122 x 60 x 62 mm (without probe)

USB

10°C to 40°C

-10°C to +50°C

650 g

Plastic transport case

Declaration of conformity

		06930013
		TESA RUGOSURF 20 portable surface roughness tester for use in the workshop Z = ± 200 µm (± 0.0079 in) X = 16 mm (0.63 in)
	Measuring span, µm	400 µm (0.0157 in) on Z axis, 16 mm (0.63 in) on X axis
	Indication span, µm	Ra = 0 ÷ 100 µm; Rt = 0,05 ÷ 400 µm
	Accuracy class	in accordance with ISO 3274 Class 1
	Measuring force, N	0,75 mN in accordance with ISO 3274
	Resolution, µm	0,001 µm
	Display	LCD 2" black/white (160 x 100 pixels)
	Roughness parameters	Ra, Rq, Rt, Rz, Rc,Rsm, Rmr, Pt, Pmr; Rmax; RPc, PPc; R, Rx, AR
	Graphics	Bearing Area Curve (BAC), Amplitude Distribution Curve (ADC), Profile-R
	Cut-off lenght, mm	0,25 – 0,80 – 2,50 mm (0.010 – 0.030 – 0.100 in)
	Number of cut-off	1 to 5
	Stylus diamond tip (R = µm; angle °)	R = 2 µm, 90°
	Memory capacity	max 1000 measurements with parameters; max 20 mesurements with profile and graphics
	Dimensions, mm	122 x 60 x 62 mm
	Degree of protection for keyboard (IP XX)	IP67 (membrane keyboard)
	Digital data output (USB)	USB cable connector to PC
	Weight, g	650 g
	Included in delivery	RUGOSURF 20 SB10 standard skid probe Roughness standard Ra = 2,97 µm Positioning pin Ø 8 mm for use vertically Detachable probe protector Integral rechargeable battery Charger and adapter EU/US User manual Plastic carrying and storage case
	Measuring response time	1 to 10 s
	Probing speed, mm/s	1 mm/s (2 mm/s probe retract to measuring position)
	Units	mm or inch
	Power supply	100 ÷ 240 VAC; 50 ÷ 60 Hz; 12 V, 400 ÷ 650 mAh

OPTIONAL ACCESSORIES:

04760099	Cable RUGOSURF 20 to PC
06960033	Printer for RUGOSURF + cables
06960034	RUGOSOFT Software + Dongle
06960035	Granite 400 x 250 mm with vertical support H150 mm, 25 kg, Grade 0 for Rugosurf 20 and 10G
06960081	Probe SB10 2µm for RUGOSURF 20 and 10G as SB10 but R = 2 µm
06960037	SB20 probe for RUGOSURF 20 et 10G for grooves of depth < 5 mm
06960038	SB30 probe for RUGOSURF 20 and 10G for small bores of Ø > 4 mm
06960039	SB40 Probe for RUGOSURF 20 and 10G V-shape for cylinders of Ø > 1 mm
06960040	SB50 probe for RUGOSURF 20 and 10G for concave surfaces and for measuring at 90° with RUGOSURF 10G
06960057	SB110 probe for RUGOSURF 20 and 10G for concave or convex surfaces, R > 5 mm
06960056	100 mm extension for probe with skid for RUGOSURF 20, 10G, 90G
06960064	Roughness standard Ra = 0,1 µm (4 µin)
06960065	Roughness standard Ra = 0,5 µm (20 µin)
06960066	Roughness standard Ra = 1,0 µm (40 µin)

STANDARD ACCESSORIES:

06960036	SB10 standard probe for RUGOSURF 20 and 10G R = 5 µm, 90°
06960041	Roughness standard Ra = 2,97 µm (117 µin)
06960045	Battery NiMH 7,2 V, 300 mAh, format PP3 for RUGOSURF 20 et 10G
057655	Vertical and adjustable positioning supports (2 parts) V-form for cylinder Ø > 100 mm for RUGOSURF 20
057941	Transport case with internal protection foam for RUGOSURF 20

TESA
TECHNOLOGY

ISO 3274 (Cl.1)

122 x 53 x 75 mm (without probe)

USB

10°C to 40°C

-10°C to +50°C

CE

590 g

Plastic transport case

Declaration of conformity

TESA RUGOSURF 10G

Portable, versatile gauge unit with compact design, well suited for use in goods inwards inspection, production or the measurement laboratory.

3 horizontal measuring positions of probe 0°, -90° et +90°.

Measures roughness parameters according to standards:
– ISO 4287
– JIS B0601
– DIN and ISO 12085 (MOTIF or CNOMO).

TFT 2" graphic display for optimum visual representation of any measured parameters and workpiece profiles.

Direct displaying of all measured values and computed profiles.

31 roughness parameters available.

Flexible autonomy through mains adapter or battery pack.

Data storage, printing or transfer to a PC of a maximum of 999 measured results.

Possible tolerancing of all parameter values.

Multilingual menu options.

USB data output enabling a direct connection to a matrix printer unit or a PC equipped with RUGOSOFT 10 software (both are optional).
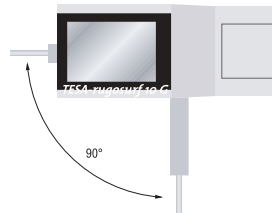
Probe measuring positions at -90°, 0°, +90°

Ra	0,088 µm
Rq	0,116 µm
Rt	0,889 µm
Rp	0,264 µm
05:08	Parameters

Measuring results
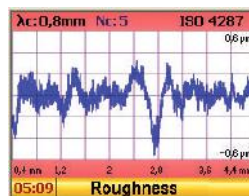
Profile measurement
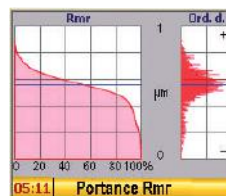
Bearing area cruve (BAC) and amplitude distribution curve (ADC)

Measuring travel

№		**06930011**
		TESA RUGOSURF 10G portable surface roughness tester for use in the workshop Z = ± 200 µm (± 0.0079 in) X = 16 mm (0.63 in) 3 probe measuring positions
	Measuring span, µm	400 µm (6300 µin) on Z axis, 16 mm (0.63 in) on X axis
	Display span, µm	Ra = 0 ÷ 100 µm; Rt = 0,05 ÷ 400 µm
	Precision class	in accordance with ISO 3274 Class 1
	Measuring force, N	0,75 mN (in accordance with ISO 3274)
	Resolution, µm	0,001 µm (0.1 µin)
	Display	TFT 2" colour graphic screen
	Roughness parameters	31 parameters: Ra, Rq (Rms), Rt, Rz, Rp, Rc, Rv, Rsm, Rdc; Pa, Pq, Pt, Pp, Pc, Pv, Psm, Rdc; RPc, PPc; Rk, Rpk, Pvk, Mr1, Mr2; Pt, R, Rx, AR; R3, R3zm, Rmax;
	Graphics	Bearing area curve, profil-R, profil-P
	Cut-off length, mm	0,25 – 0,80 – 2,50 mm (0.01 – 0.03 – 0.10 inch)
	Number of cut-off	1 to 10 for a cut-off of 0,25 and 0,8 mm
	Diamond point of stylus (R = µm; angle °)	R = 5 µm, 90°
	Built-in memory	Max. 1000 parameters; max. 20 measurements with parameters, profiles and graphics
	Dimensions, mm	122 x 53 x 81 mm
	Degree of protection of keyboard (IP XX)	IP67
	Digital output (USB)	USB cable connector to PC
	Weight, g	590 g
	Included in delivery	Roughness standard Ra = 2,97 µm Built in rechargeable battery SB10 standard probe Battery charger EU and US Adaptor Positionng clamp for stand Ø 8 mm Vertical positoning stand User instructions
	Probing speed, mm/s	1 mm/s
	Units	mm or inch
	Power supply	100 ÷ 240 VAC; 50 ÷ 60 Hz, 12 V, 400 ÷ 650 mAH

OPTIONAL ACCESSORIES:

06960062	Cable RUGOSURF 10G and RUGOSURF 90G to PC (connector v3)
06960033	Printer for RUGOSURF + cables
06960034	RUGOSOFT Software + Dongle
06960035	Granite 400x250 mm with vertical support H 150 mm, 25 kg, Grade 0 for Rugosurf 20 and 10G
06960081	Probe SB10 2µm for RUGOSURF 20 and 10G as SB10 but R = 2 µm
06960037	SB20 probe for RUGOSURF 20 et 10G for grooves of depth ‹ 5 mm
06960038	SB30 probe for RUGOSURF 20 and 10G for small bores of Ø › 4 mm
06960039	SB40 Probe for RUGOSURF 20 and 10G V-shape for cylinders of Ø › 1 mm
06960040	SB50 probe for RUGOSURF 20 and 10G for concave surfaces and for measuring at 90° with RUGOSURF 10G
06960057	SB110 probe for RUGOSURF 20 and 10G for concave or convex surfaces, R › 5 mm
06960056	100 mm extension for probe with skid for RUGOSURF 20, 10G, 90G
06960064	Roughness standard Ra = 0,1 µm (4 µin)
06960065	Roughness standard Ra = 0,5 µm (20 µin)
06960066	Roughness standard Ra = 1,0 µm (40 µin)

STANDARD ACCESSORIES:

06960036	SB10 standard probe for RUGOSURF 20 and 10G R = 5 µm, 90°
06960041	Roughness standard Ra = 2,97 µm (117 µin)
06960045	Battery NiMH 7,2 V, 300 mAh, format PP3 for RUGOSURF 20 et 10G
056631	Adjustable vertical positioning suports (2 parts) V-form for cylinder Ø › 100 mm for RUGOSURF 10G
06960047	Transport case with internal protection foam for RUGOSURF10-10G

Probe measuring position at 90° and adjustable in height

TESA RUGOSURF 90G

Small-size, versatile roughness gauge with tactile colour screen providing maximum ease of use. Ideally suited for high-precision measurements on the shop floor or in the inspection laboratory.

Special features of RUGOSURF 90G:

– Supplied with SB60/10 probe with removable pad: one single probe can be used to measure roughness or undulation!
– RUGOSURF 90G can measure a components with a height of up to 90mm, thanks to a vertical positioning screw without any additional accessory!
– With the PROFILE SET 2 mm (06960100) RUGOSURF 90G becomes a profile measurement instrument with a width of 2000 µm measuring in the Z axis (optional)!

Tactile TFT 3.5" colour screen.

Direct display of all measured values and computed profiles.

Measuring span

Z = 1000 µm (0.039 in)

X = up to 50 mm

Special 2 in 1 probe can measure with contact skid (roughness measurement) or without contact skid (measure of undulation).

Vertical adjusting screw for probe positioning up to a height of 90 mm without the need of an accessory.

Tolerancing of all parameters possible.

USB ditial output for transfer of measured values to a PC with TESA MEASUREMENT STUDIO software (optional).

Unique in its category, this instrument can also do profile measurement (Z = 2 mm) if used with PROFILE SET 2 mm (optional).

Measures roughness parameters according to standards:

– ISO 4287
– 12085 (CNOMO)
– ISO 13565
– DIN 4776
– JIS B0601:2001
– ASME B46-2002

RUGOSURF 90G with tactile colour screen Measurement with or without skid

ISO 3274 (cl. 1)

270 x 140 x 90 mm (without probe)

USB

10°C to 40°C

-10°C to +50°C

3 kg

Plastic transport case

Declaration of conformity
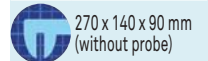
Roughness profile

Roughness parameters
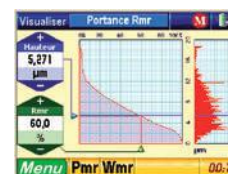
Bearing area curve (BAC) and amplitude distribution curve (ADC)
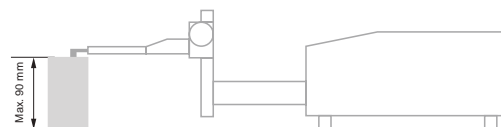
Fine adjustment of vertical position up to 90 mm

NO		**06930012**
		TESA RUGOSURF 90G portable table roughness tester Z = ± 500 µm (± 0.0197 in) X = 50 mm (1.968 in) probe with detachable skid
	Measuring span, µm	Z Axis = 1000 µm (39370 µin); X Axis = 50 mm (1.969 in)
	Indication span, µm	Ra = 0 ÷ 400 µm; Rt = 0 ÷ 1000 µm
	Precision class	In accordance with ISO 3274 Class 1
	Measuring force, N	0,75 mN according to ISO 3274
	Resolution, µm	0,001 µm (0.01 µin)
	Display	Tactile graphic colour screen TFT 3.5" (320 x 240 pixels)
	Roughness parameters	48 parameters: Ra, Rq, Rt, Rz, Rp, Rc, Rv, Rsm, Rdc, RPc, Pa, Pq, Pt, Pp, Pc, Pv, Psm, RPc, PPc, Wa, Wq, Wt, Wz, Wp, Wv, Wc, WSm, Wdc, WPc, Rk, Rpk, Pvk, Mr1, Mr2, Pt, R, Rx, AR, Wte, W, AW, Wx, Rke, Rpke, Rvke, Rmax, R3z, R3zm
	Graphics	Profil-W, Profil-R, Profil-P, Bearing area curve
	Cut-off length, mm	0,08 – 0,25 – 0,80 – 2,50 – 8,00 mm
	Number of cut-off	1 to 19 for cut off up to 2,5 mm; 1 to 5 for cut off of 8,00 mm
	Diamond or stylus tip (R = µm; angle °)	R = 5 µm, 90°
	Memory capacity	Max. 60'000 measurements with parameters
	Dimensions (mm)	270 x 140 x 90 mm
	Degree of protection of keyboard (IP XX)	IP67 (membrane keyboard)
	Digital output (USB)	USB cable connector to PC
	Weight, kg	3 kg
	Included in delivery	– RUGOSURF 90G – Roughnness standard Ra = 2,97 µm – Standard probe SB60/10 with or without skid – Probe holder – Guiding column, vertical setting range 90 mm – Integrated rechargeable battery, 12 V – Charger for battery
	Measuring response time	–
	Probing speed, mm/s	0,5 mm/s or 1,0 mm/s selection options
	Units	mm or inch
	Power supply	100 ÷ 240 VAC / 50 ÷ 60 Hz; 18 V, 2,2 Ah

OPTIONAL ACCESSORIES:

06960062	Cable RUGOSURF 10G and RUGOSURF 90G to PC (connector v3)
06960033	Printer for RUGOSURF + cables
06960048	MEASUREMENT STUDIO software + dongle for RUGOSURF 90G
06960055	Granite 630 x 400 mm with vertical support H250mm, 60 kg, Grade 0 for RUGOSURF 90G
06960064	Roughness standard Ra = 0,1 μm (4 μin)
06960065	Roughness standard Ra = 0,5 μm (20 μin)
06960066	Roughness standard Ra = 1,0 μm (40 μin)
06960100	PROFILE SET 2 mm for profile measurement with RUGUSURF 90G
06960056	100 mm extension for probe with skid for RUGOSURF 20, 10G, 90G
06960067	SB60/10 2μm probe for RUGOSURF 90G as SB60/10 but R = 2 μm
06960050	SB20P probe for RUGOSURF 90G for grooves of depth ‹ 5 mm
06960051	SB30P probe for RUGOSURF 90G for small bores with Ø › 4 mm
06960052	SB40P probe for RUGOSURF 90G V-shape for cylinders with Ø › 1 mm
06960053	SB50P probe for RUGOSURF 90G for concave surfaces and for measuring at 90° with RUGOSURF 90G
06960054	SB120P probe for RUGOSURF 90G for grooves of depth ‹ 20 mm
06960058	SB120S probe without skid for RUGOSURF 90G for grooves of depth ‹ 15 mm
06960061	SB60-D2-L30 probe, L = 30 mm for RUGOSURF 90G for small bores of Ø › 2 mm

STANDARD ACCESSORIES:

06960049	SB60/10 standard probe for RUGOSURF 90G R = 5 μm, 90° detachable skid
06960041	Roughness standard Ra = 2,97 μm (117 μin)
056645	Transport case with internal protective foam for RUGOSURF 90G

TESA PROFILE SET 2 mm

PROFILE SET 2 mm for profile measurement (compatible with RUGOSURF 90G).

When equipped with the SB2000 probe and used with the PROFILE STUDIO software dedicated for profile measurement STUDIO PROFILE, the RUGOSURF 90G roughness gauge converts into a profile-measuring tool.

A simple, ingenious and accurate solution, this optional accessory measures lengths, radiii and angles of parts which are sometimes impossible to verify by other means.

The setting up and the evaluation of measurements is simple and fast. Dimensions can be inserted into the measured profile after defining geometric elements (point, line, arc or intersection between two lines, for example). The tolerance values allow verification of the results at a glance. Rotation and symetry of the profile also allows its orientation.

A previous measurement can be used as model for the repeated measurement of a part of identical geometry. This saves valuable time and facilitates operations as important manual measurements can be replicated automatically.

A standard profile with a measurement report is included in the PROFILE SET 2 mm set.

A detailed measurement report with customizable header can be generated from the PROFILE STUDIO software.
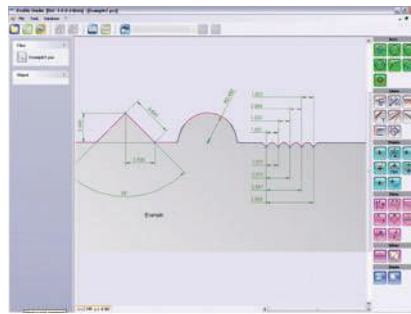
PROFILE STUDIO software

SB2000 probe

Roughness parameters according to: ISO 4287, ISO 13565-1, ISO 13565-2, ISO 12085, VDA 2007

Z = 2 mm
X = 50 mm

Z = 0,1 µm
X= 0,4 to 4,0 µm according to the length being measured

Z = 3,5 + 0,75*H microns, (H in the Z axis, in mm) X = 3,5 + L /10 microns (L in the X axis, in mm)

0,3 mg (0,003 mN) with the SB2000 probe

1 mm/s

Maximum angle of 70° (upward position); maximum angle of 85° (downward position)
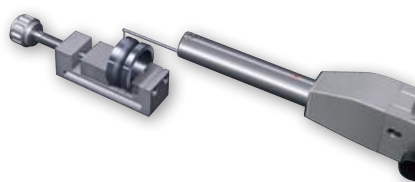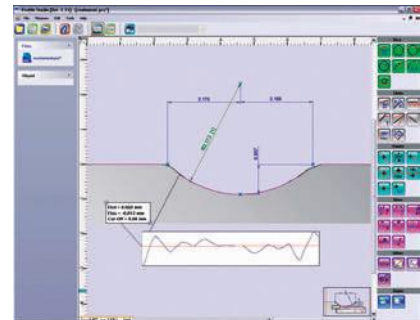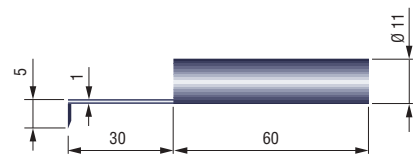
NO	=	
06960100	PROFILE SET 2 mm for profile measurement with RUGUSURF 90G	
DELIVERED WITH THE FOLLOWING ACCESSORIES:		
06960101	PROFILE STUDIO Software	
06960102	SB2000 probe for PROFILE SET 2 mm, R= 15 µm, 20°	
06960103	Setting master for PROFILE SET 2 mm	
06960062	Cable RUGOSURF 10G and RUGOSURF 90G to PC (connector v3)	

RUGOSOFT Software

Software for RUGOSURF 20 and RUGOSURF 10G.

Enables the user to import stored measurement values from the device to the computer for the management of a database.

Optimal and detailed visualization of the results: parameters, profiles (R roughness and P primary profile) or a combination of both.

Calculation of roughness parameters.

Statistical analysis of a set of measurements.

Creation and storage of measuring programs (instrument parameters and parameters to be measured) in the software, which can then be loaded onto the instrument.

Customizable measurement report.

Output from the PC
– measuring results with measuring parameters
– profiles as coordinates
– measuring report in format: .xls .pdf .doc .rpt (Crystal Report) or also .rtf (Rich Text Format)
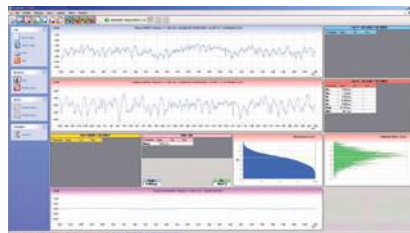
RUGOSOFT
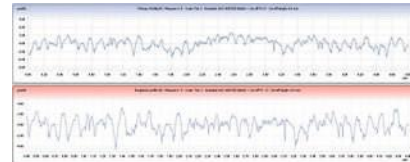
Roughness profile and primary profile

Statistics

Parameters and bearing area curve
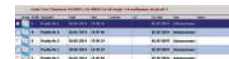
List of measurements

			Included in delivery
06960034	RUGOSOFT Software + Dongle		– USB protection key (dongle) – Installation CD – User instructions plus online support (included in the installation CD)

OPTIONAL ACCESSORIES:
04760099	Cable RUGOSURF 20 to PC
06960062	Cable RUGOSURF 10G and RUGOSURF 90G to PC (connector v3)

MEASUREMENT STUDIO *Software*

Software for RUGOSURF 90G.

Enables the import of stored measurement data from the device to the computer, for processing in a database.

Optimal and detailed visualization of the results: parameters, profiles (W undulation, P primary profile and R roughness) or the three.

Calculation of roughness parameters including VDA parameters.

Statistical analysis of a set of measurements.

Creation and storage of measuring programs in the software, which can then be loaded onto the instrument.

Customizable measurement report.

Output from the computer
– measuring results with measuring parameters
– profiles as coordinates
– measuring report in format .xls .pdf .doc .rpt (Crystal Report) or .rft (Rich Text Format)

MEASUREMENT STUDIO

Bearing area curve

Statistics

VDA parameters

Measuring report with customisable header and logo

		Included in delivery
06960048	MEASUREMENT STUDIO software + dongle for RUGOSURF 90G	– USB protection key (dongle) – Installation CD, 6 languages – User instructions (included on the installation CD) – USB connection cable to the PC for RUGOSURF 10G and RUGOSURF 90G, length 1,80 m

PROFILE STUDIO Software

For profile measurement using the RUGOSURF 90G.

Allows evaluation of micro and macro geometric characteristics of a surface.

Measurement programme creation that can be saved for the same measurements on a batch of identical parts from the same set or for subsequent batch measurements: it is possible to use all the dimensions and tolerances of a reference profile for a measurement of a batch of the same part.

Measurement instructions and help assistance for calibration controlled from the PC.

Import and export of measurement parameters from and to the device.

Storage of measurement results and of the measured parameters as database.

Database search with filters (date, operator, batch, etc.).

Detailed visualization of the measured profile and geometric construction tools (arc, line, point, intersection, angle, etc.).

Measurements reports with customizable header.

Languages: English, German, French, Spanish, Italian, Portuguese, Slovenian.
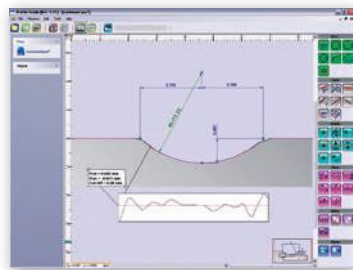
PROFILE STUDIO software
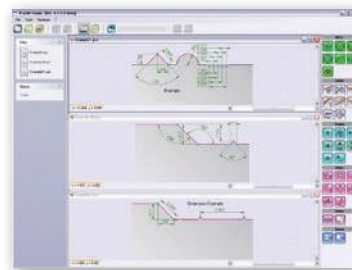
Measurement of geometric elements

NO	=	Included in delivery
06960101	PROFILE STUDIO Software	CD with PROFILE STUDIO software

OPTIONAL ACCESSORIES:

06960102	SB2000 probe for PROFILE SET 2 mm, R = 15 µm, 20°
06960103	Setting master for PROFILE SET 2 mm
06960062	Cable RUGOSURF 10G and RUGOSURF 90G to PC (connector v3)

PROBES FOR TESA RUGOSURF

Standard probes for TESA RUGOSURF roughness gauges, available with different geometries and sizes according to the nature and type of surface being measured.
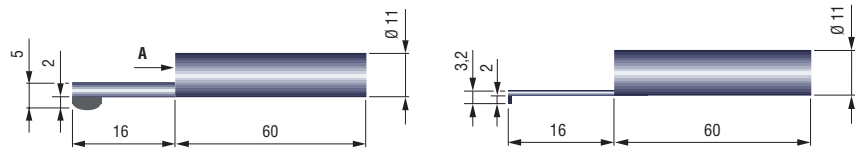
Standard Probes

Standard probes supplied with TESA surface roughness gauges and SB2000 probes for profile measurement
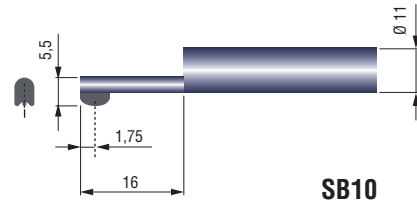
SB10

SB10 probe
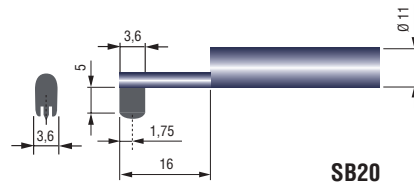

SB60/10 probe with removable skid for RUGOSURF 90G

SB2000 probe without skid

No	=
06960036	SB10 standard probe for RUGOSURF 20 and 10G R = 5 µm, 90°
06960049	SB60/10 standard probe fur RUGOSURF 90G R = 5 µm, 90° detachable skid

Unless otherwise stated, 90° diamond tip, radius R = 5 µm

Optional Probes for RUGOSURF 20 and 10G
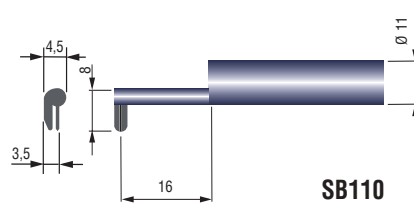

SB20

06960037
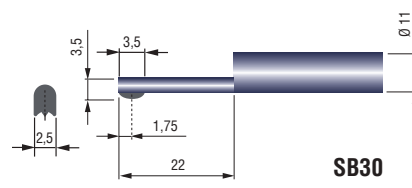
SB30

06960038
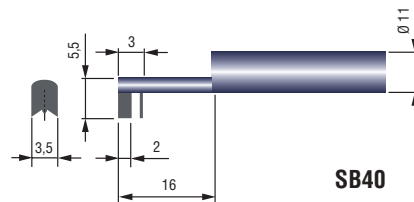
SB40

06960039
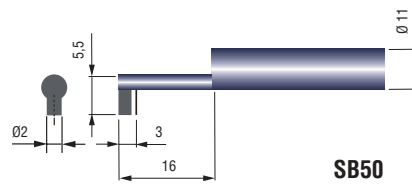
SB50

06960040

SB110

06960057
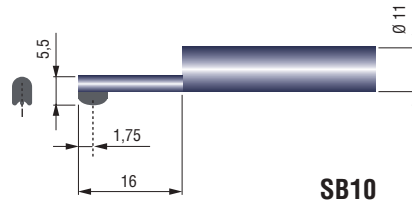
SB10

06960081 SB10 but R = 2 µm
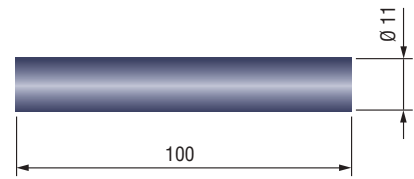
06960056

NO	**=**
06960037	SB20 probe for RUGOSURF 20 et 10G for grooves of depth < 5 mm
06960038	SB30 probe for RUGOSURF 20 and 10G for small bores of Ø > 4 mm
06960039	SB40 Probe for RUGOSURF 20 and 10G V-shape for cylinders of Ø > 1 mm
06960040	SB50 probe for RUGOSURF 20 and 10G for concave surfaces and for measuring at 90° with RUGOSURF 10G
06960057	SB110 probe for RUGOSURF 20 and 10G for concave or convex surfaces, R > 5 mm
06960081	Probe SB10 2µm for RUGOSURF 20 and 10G as SB10 but R = 2 µm
06960056	100 mm extension for probe with skid for RUGOSURF 20, 10G, 90G

Unless otherwise stated, 90° diamond tip, radius R = 5 µm

Optional Probes for RUGOSURF 90

06960067

06960050   **SB20P**

06960051   **SB30F**

06960052   **SB40P**

06960053   **SB50P**

06960054

06960058

06960061

06960056

N°	**=**
06960067	SB60/10 2µm probe for RUGOSURF 90G as SB60/10 but R = 2 µm
06960050	SB20P probe for RUGOSURF 90G for grooves of depth < 5 mm
06960051	SB30P probe for RUGOSURF 90G for small bores with Ø > 4 mm
06960052	SB40P probe for RUGOSURF 90G V-shape for cylinders with Ø > 1 mm
06960053	SB50P probe for RUGOSURF 90G for concave surfaces and for measuring at 90° with RUGOSURF 90G
06960054	SB120P probe for RUGOSURF 90G for grooves of depth < 20 mm
06960058	SB120S probe without skid for RUGOSURF 90G for grooves of depth < 15 mm
06960061	SB60-D2-L30 probe, L = 30 mm for RUGOSURF 90G for small bores of Ø > 2 mm
06960056	100 mm extension for probe with skid for RUGOSURF 20, 10G, 90G

Unless otherwise stated, 90° diamond tip, R = 5 µm

DOT MATRIX PRINTER FOR RUGOSURF

Dot matrix printer for TESA RUGOSURF portable roughness gauges and with built-in batteries, which enable the printing of measured parameters and roughness profiles regardless of the environment and the conditions.

It is also possible to print stored measurements data from the instrument memory.
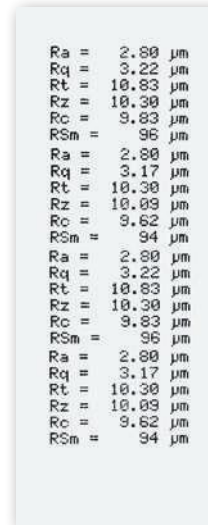
PR Dot Matrix Printer

Dot matrix printer for TESA RUGOSOFT roughness gauges.
For printing measured parameters, and roughness profiles.
Also for printing measurement data saved in the instrument memory.

PR dot matrix portable printer for RUGOSURF

Roughness parameters measured

Measuring results and graphics with header

Roughness profile
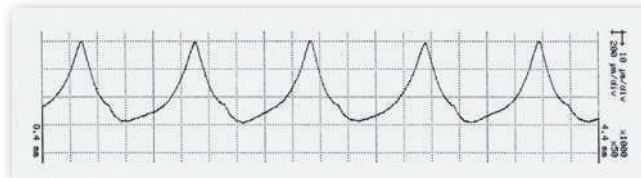
No	=	Characteristics	Dimensions L x W x H, mm	Weight, g	Included in delivery
06960033	Printer for RUGOSURF + cables	Print-out of measured parameters	165 x 120 x H100 mm (6.50 x 4.72 x H3.94 in)	760 g (only printer)	– Printer – Cables for connection to the RUGOSURF – Ink ribbon – Roll of paper – Rechargeable battery – User instructions – Transport case

DELIVERED WITH THE FOLLOWING ACCESSORIES:

056109	Connecting cable RUGOSURF 10G and RUGOSURF 90G to dot matrix printer
058213	Connecting cable RUGOSURF 20 to dot matrix printer

Accessories for PR Dot Matrix Printer

Ink ribbon for printer
Paper roll
Battery
Transport case

06960044

NO	=
06960043	Set of 3x ink ribbons for dot matrix printer
06960044	Set of 10 paper rolls size 57 mm for dot matrix printer
056133	Power supply 100 ÷ 240 V, 50 ÷ 60 Hz, 0,5 Ah, Output 9 V DC, max. 18 W, 5,5 mm connector with EU and US adapter, for PR dot matrix printer
056223	Transport case with foam for internal protection of PR dot matrix printer

ACCESSORIES FOR TESA RUGOSURF, PROFILE SET 2 MM

Accessories for TESA RUGOSURF surface rougness testers, including Ra roughness specimens, granite bases with measuring supports, vertical supports for positioning, etc.

Other Accessories for RUGOSURF

External control for RUGOSURF 10G or 90G

Fixing pin Ø 8mm for universal support for RUGOSURF 20 ou 10G

Vertical positioning supports for RUGOSURF 20 or 10G

Probe holder for RUGOSURF 90G

06960042

| №	≡
056631	Adjustable vertical positioning suports (2 parts) V-form for cylinder Ø › 100 mm for RUGOSURF 10G
057655	Vertical and adjustable positioning supports (2 parts) V-form for cylinder Ø › 100 mm for RUGOSURF 20
056633	Fixing pin Ø 8 mm for universal support for RUGOSURF 20 and 10G
056641	Probe holder with two positions – blocked position for measuring with a probe without skid – free position for measuring with a probe with skid for RUGOSURF 90G
06960042	External control for RUGOSURF 10G and 90G
06960059	External control with PR dot matrix printer cable for RUGOSURF 10G and 90G

Chargers and Rechargeable Batteries

06960045

№	≡
06960045	Battery NiMH 7,2 V, 300 mAh, format PP3, for RUGOSURF 20 et 10G
056224	Battery NiMH 12 V, 1800 mAh, for RUGOSURF 90G
06960046	Charger and power supply 100 ÷ 240 VAC, 50 ÷ 60 Hz, 12 V, 400 ÷ 600 mAh with EU and US adapter for RUGOSURF 20 and 10G
056639	Charger and power supply 100 ÷ 240 VAC, 50 ÷ 60 Hz, 18 V, 2,2 Ah with EU and US adapter for RUGOSURF 90G

Granite Bases with Measuring Support for RUGOSURF
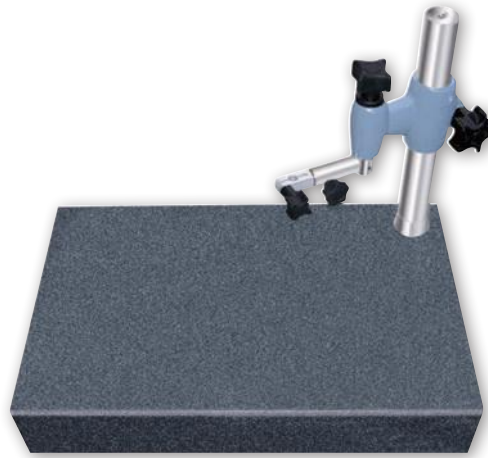
Granite base with measuring support for RUGOSURF 20 or 10G

Granite base with measuring support for RUGOSURF 90G with manual vertical positioning device

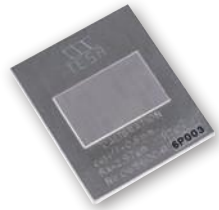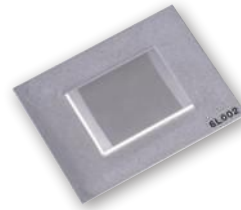| NO	=
06960035	Granite 400 x 250 mm with vertical support H 150 mm, 25 kg, Grade 0 f or Rugosurf 20 and 10G
06960055	Granite 630 x 400 mm with measuring support and manual vertical positioning device H250mm, 60 kg, Grade 0 for RUGOSURF 90G

Ra Roughess Standards
As per EN ISO 5436-1 standard

Standard Ra = 2,97 µm

Standard Ra = 1,00 µm

Standard Ra = 0,50 µm

Standard Ra = 0,10 µm

NO	=
06960041	Roughness standard Ra = 2,97 µm (117 µin)
06960066	Roughness standard Ra = 1,0 µm (40 µin)
06960065	Roughness standard Ra = 0,5 µm (20 µin)
06960064	Roughness standard Ra = 0,1 µm (4 µin)

Setting Standard for PROFILE SET
For profile measurement

NO	=
06960103	Setting master for PROFILE SET 2 mm

ISO 2632
Parts 1 and 2

Rust-resistant nickel

Specimens for roughness comparison cannot be used as reference ones. Therefore, they are not suitable for calibrating surface roughness testers.

Leather case
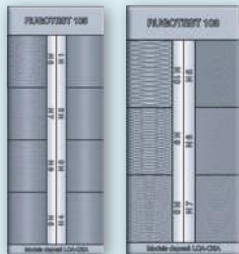
RUGOTEST Roughness Comparison Specimens

For tactile and visual comparison of the workpiece surface finish according to various machining processes.

The specimen sets are according to individual machining processes.

ISO 2632-1 and 2632-2

№	=	RUGOTEST N°	Number of samples	ISO roughness parameters	Dimensions, mm	g	Included in delivery
081112053	RUGOTEST 1	1	27	M1 - N10	135 x 105	160	Side milling (3 specimens), N8-N9-N10; Face milling (5 specimens), N6-N7-N8-N9-N10; Turning/Planing (5 specimens), N6-N7-N8-N9-N10; Grinding (6 specimens), N2-N3-N4-N5-N6-N7; Lapping (4 specimens), N2-N3-N4-N5; Finish grinding / honing (4 specimens), N1-N2-N3-N4
081112054	RUGOTEST 2	2	16	N6 - N11	120 x 90	160	
081112055	RUGOTEST 3	3	18	N6 - N11	120 x 90	190	With samples for shot blasting, spherical coarse grains (3 specimens), N9-N10-N11; With samples for shot blasting, spherical fine grains (6 specimens), N6-N7-N8-N9-N10-N11; With samples for shot blasting, angular coarse grains (3 specimens), N9-N10-N11; With samples for shot blasting, angular fine grains (6 specimens), N6-N7-N8-N9-N10-N11
081112056	RUGOTEST 4	4	6	N6 - N8	120 x 90	160	Straight filing (3 specimens), N6-N7-N8; Cross filing (3 specimens), N6-N7-N8
081112057	RUGOTEST 5	5	10	N0 - N4	120 x 90	200	Surface cylindrical form (5 specimens), N0-N1-N2-N3-N4; Surface flat form (5 specimens), N0-N1-N2-N3-N4;
081112058	RUGOTEST 101 Sanding	101	6	N6 - N11	110 x 50	110	
081112059	RUGOTEST 102 Turning	102	6	N5 - N10	110 x 50	105	
081112060	RUGOTEST 103 Face milling	103	6	N5 - N10	110 x 50	110	
081112061	RUGOTEST 104	104	8	N1 - N8	130 x 50	125	
081112062	RUGOTEST 105 Circular grinding	105	8	N1 - N8	130 x 50	130	
081112063	RUGOTEST 107 Spark erosion	107	6	N5 - N10	110 x 50	110	
081112344	RUGOTEST Spark erosion	12	12	Charmilles 12 to 45	127 x 27	60	
081112346	RUGOTEST A4 Set of 4 sets of surface specimens with RUGOTEST 1, 2, 3 and 4				330 x 250	710	
081112345	RUGOTEST A6 Set of 6 sets of surface specimens with RUGOTEST 101, 102, 103, 104, 105, 107				330 x 250	780	

ISO Roughness Parameters	Roughness Ra µm (µin)	Charmilles Roughness Parameters (VDI 3400)	Roughness Ra µm
N0	0,0125 (0.5)	12	0,40
N1	0,025 (1)	15	0,56
N2	0,05 (2)	18	0,80
N3	0,1 (4)	21	1,12
N4	0,2 (8)	24	1,60
N5	0,4 (16)	27	2,24
N6	0,8 (32)	30	3,15
N7	1,6 (63)	33	4,5
N8	3,2 (125)	36	6,3
N9	6,3 (250)	39	9,0
N10	12,5 (500)	42	12,5
N11	25,0 (1000)	45	18,0

ISO 2632
Parts 1 and 2

Rust-resistant nickel

The comparison specimens are not roughness standards. They should not be used for the calibration of surface roughness instruments

Leather case