

TESA RUGOSURF 10 Roughness Gauge

Robust, versatile and compact gauge unit designed for inspecting any work piece surface finish and capturing roughness parameter values – Wide variety of probes for the most varied applications – Possible tolerancing of each parameter available.

- Interchangeable probe, swivelling through to 90° to let you measure even in hard-to-reach recesses.
- Extended autonomy. Can equally be connected to the mains adapter or the battery pack for direct use on a machine-tool.
- Value storage, output or transfer to a PC of up to max. 100 measured values).
- USB data output for full use and further storage of the measurement results.
- Automatic idle mode if the gauge is left unused for 40 seconds. Preserve the battery pack.
- Fast and easy analysis of the results obtained from the measured parameters with assigned tolerances.



USB

ISO 3274 (Cl.1)

10°C to 40°C

-10°C to +50°C

122 x 53 x 81 mm
(gauge unit alone)

590 g



Suited
plastic case

Declaration
of conformity



06930010



TESA RUGOSURF roughness gauge 10

delivered with the following standard accessories:

Roughness standard, nominal value $R_a = 2,97 \mu\text{m} / 117 \mu\text{in}$

Rechargeable battery 8,4 V, 170 mAh, NiMH in PP3 format

Standard probe, type **SB10**

Battery charger

Adapter for universal stand, 8 mm diameter

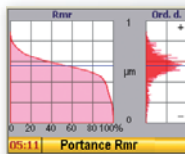
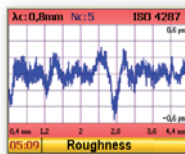
Positioning support



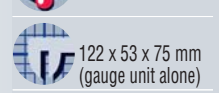
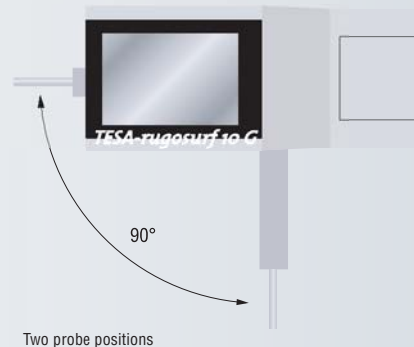
TESA RUGOSURF Roughness Gauge 10G

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

Measures roughness parameters according to ISO 4287:1997/ JIS B0601:2001, DIN and ISO 12085:1998 (MOTIF or CNOMO).



- TFT graphic display for optimum visual representation of any measured parameters and workpiece profiles, size to 2".
- Direct displaying of all measured values and computed profiles.
- 31 roughness parameters available.
- Wide autonomy through mains adapter or battery pack.
- Output, storage or transfer to a PC of the results obtained from a number of measurements as high as 999.
- Possible tolerancing of all parameter values.
- Multilingual menu options.
- USB data output enabling a direct connection to the printer unit or a conventional PC equipped with RUGOSOFT 10 (both are optional).



Nº

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06930011 TESA RUGOSURF roughness gauge 10G

Delivered with the following standard accessories:

Roughness standard, nominal value Ra = 2,97 µm / 117 µin

Rechargeable battery 7,2 V, 300 mAh, NiMH in PP3 format



Standard probe, type **SB10**

Battery charger

Adapter for universal stand, 8 mm diameter

Positioning support

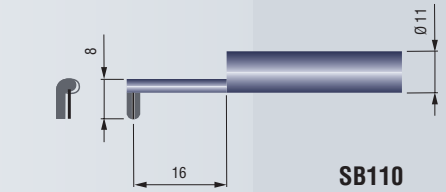
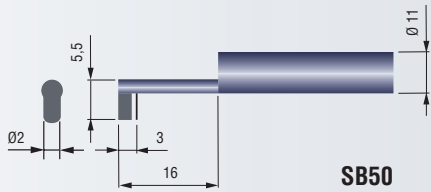
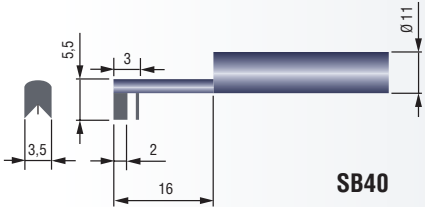
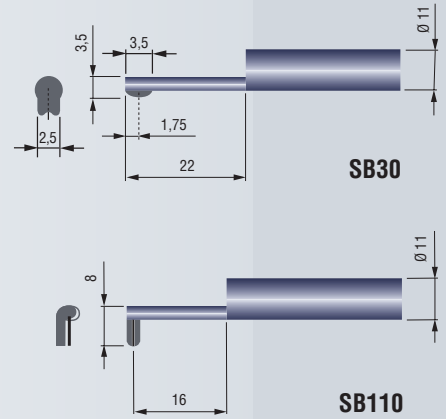
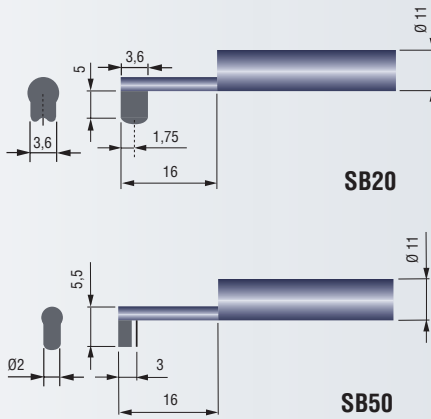
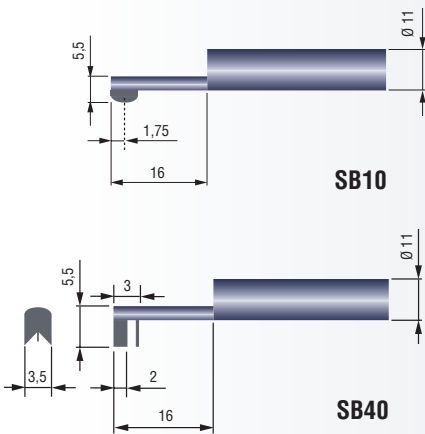
Technical Data

	 06930010	06930011
	 RUGOSURF 10	RUGOSURF 10G
Display	LCD, 2 lines of 16 characters	TFT colour display, 2" in size
Roughness parameters	according to ISO 4287-1997/JIS B0601 / ASME B46-2002 Ra - Rq (RMS) - Rt - Rz - Rc - Rsm according to ISO 12085 (CNOMO) Pt - R - Rx - AR	according to ISO 4287-1997/JIS B0601:2001 ASME B46-2002 Ra - Rq (RMS) - Rt - Rz - Rp - Rc - Rv - Rsm - Rδc - Pa - Pq - Pt - Pp - Pc - Pv - Psm - Pδc according to PrEN 10049 RPC - PPC according to ISO 13565 Rk - Rpk - Rvk - Mr1 - Mr2 according to DIN 4776 Rmax according to DB N31007 R3z - R3zm according to ISO 12085 (CNOMO) Pt - R - Rx - AR
Measuring span		
X-axis	16 mm (0.63 in)	16 mm (0.63 in)
Z-axis	160 µm (6300 µin)	300 µm (11810 µin)
Unit system	mm / in	mm / in
Range of indication	Ra 0 ÷ 40 µm (0 ÷ 1575 µin) Rt 0,05 ÷ 160 µm (0 ÷ 6300 µin)	Ra 0 ÷ 75 µm (0 ÷ 2952 µin) Rt 0,05 ÷ 300 µm (0 ÷ 11810 µin)
Resolution	0,01 µm (0.1 µin)	0,001 µm (0.01 µin)
Cut-off length	0,25-0,8-2,5 mm (0.01-0.03-0.1 inch)	0,25-0,8-2,5 mm (0.01-0.03-0.1 inch)
Numerical filter	Gaussian as per ISO 11562	Gauss as per ISO 11562
Traversing length l_t	(number of cut-offs + 1) x λ_c	(number of cut-offs + 1) x λ_c
Cut-off l_c	number of cut-offs x λ_c	number of cut-offs x λ_c
Number of selectable cut-offs	1 to 5	1 to 10 cut-offs of 0,25 and 0,8 mm 1 to 5 cut-offs of 2,5 mm
Probing speed	1 mm/s	1 mm/s
Reverse speed	2 mm/s	2 mm/s
Keypad	4-key, membrane type key pad, protected against dust particles and liquids	4-key, membrane type key pad protected against dust particles and liquids
Probe	Inductive probe	Inductive probe
Stylus	90° diamond tip	90° diamond tip
Tip radius	5 µm	5 µm
Measuring force	0,75 mN (ISO 3274)	0,75 mN (ISO 3274)
Languages	English, French, German, Spanish, Italian, Portuguese	English, French, German, Spanish, Italian, Portuguese
Memory capacity	max. 100 measured values	max. 999 measured values
Power supply	Battery pack, 8,4 V – 170 mAh	Battery pack, 7,2V – 300 mAh
Power consumption	max. 3 VA at 220 V	max. 6,5 VA at 220 V
Overall dimensions	122 x 53 x 81 mm (gauge unit alone)	122 x 53 x 75 mm (gauge unit alone)
Weight	590 g	590 g

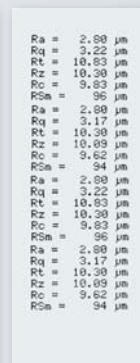


Optional Probes

N°	Icon	Probe Description
06960036	SB10	Standard probe for surfaces and bores, internal/external diameters of >10 mm.
06960037	SB20	Probe for grooves, max. depth 5 mm.
06960038	SB30	Probe for small bores from 4 mm dia.
06960039	SB40	Probe with V-skid for cables with external diameter of >1 mm.
06960040	SB50	Probe with front mounted contact skid for concave surfaces. Ideal for 90° measurement.
06960056		Probe extension, 100 mm long (1 single item).
06960057	SB110	Probe for concave or convex surfaces, smaller tip radius to 5 mm.

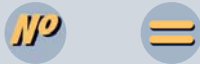


Matrix Printer



N°	Icon	Item Description
06960033	Matrix printer, 24 columns	
<i>Provided along with:</i>		
		Rechargeable battery pack
		Connecting cable to RUGOSURF 10/10G/90G
06960043		Inked ribbon fort printer (3 items)
06960044		Paper rolls, 57 mm wide (10 units)

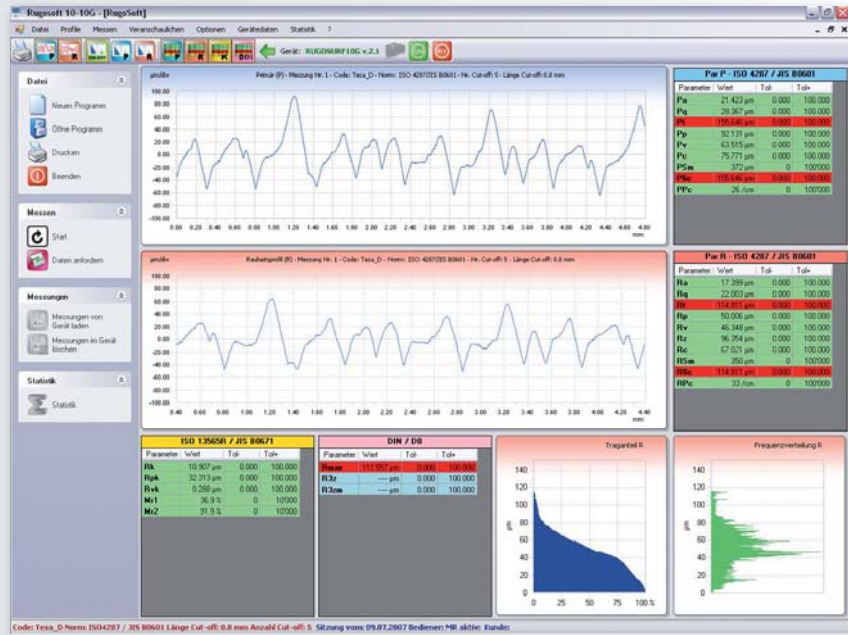
RUGOSOFT 10 Software



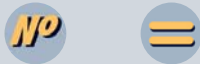
06960034 Rugosoft 10 software

Provided along with:

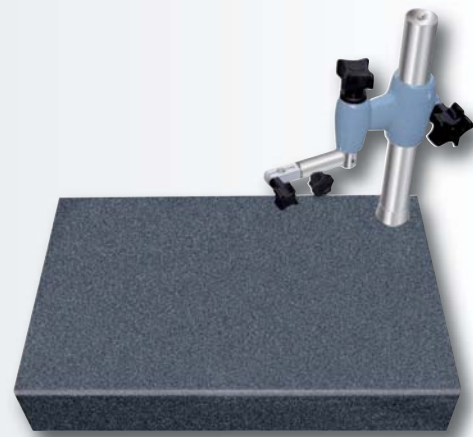
- CD with all instructions for installation, 6 languages available
- Instruction manual plus on-line help (included on the CD)
- USB cable, L = 1,80 m



Additional Accessories



- 06960035** Support with granite base, 400 x 250 mm
- 06960041** Roughness standard, nominal value Ra = 2,97 µm / 117 µin
- 06960042** Remote control
- 06960045** Battery pack for powering Rugosurf 10G
- 06960046** Mains adapter, 100 to 240 Vac / 50 to 60 Hz
- 06960047** Suited plastic case for both Rugosurf 10 and 10G
- 06960059** Double connector for external power switch and printer
- 06960063** Battery pack for Rugosurf 10



06960035

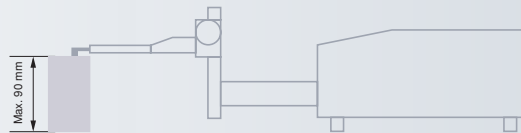




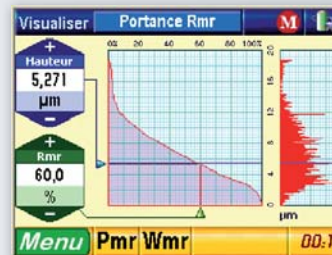
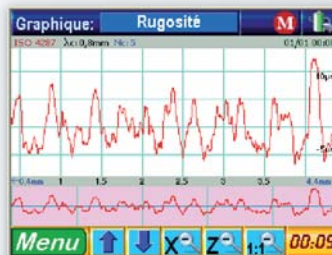
TESA RUGOSURF Roughness Tester 90G

Small-size, versatile roughness tester providing maximum ease of use – Ideally suited for high-precision measurements on the shop floor or in the inspection laboratory.

- Measures roughness parameters according to ISO 4287, 12085 (CNOMO), 13565, DIN 4776, JIS B0601:2001 and ASME B46-2002.
- Tactile TFT colour display with size to 3,5".
- Three function keys.
- Graphical interface.
- Direct displaying of all measured values and computed profiles.
- Measuring span to 50 mm/2 in (X-axis) or 1000 $\mu\text{m}/39370 \mu\text{in}$ (Z-axis).
- Interchangeable probe, with or without contact skid.
- Possible input of tolerances.
- USB digital output for data transfer to a PC running TESA Measurement Studio (this software is available as an option).
- Measures up to 90 mm vertically without the need for a special support.
- Profile measurement up to 2 mm (optional accessory).



Visualiser	Paramètres	M	
Ra	2,927 μm	Rdc	18,793 μm
Rq	3,529 μm	Rtr1 0,0%	Rtr2 100,0%
Rt	18,783 μm	RPC(μm)	36 /cm
Rz	13,182 μm	Pa	4,338 μm
Rp	7,681 μm	Pq	5,763 μm
Rv	5,501 μm	Pt	34,086 μm
Rc	9,627 μm	Pp	20,840 μm
RSm	249 μm	Pv	13,246 μm
		Pc	10,464 μm



06930012



TESA RUGOSURF roughness gauge 90G

Supplied with the following standard accessories:

Roughness standard, Ra = 2,97 μm / 117 μin

Rechargeable built-in battery, 12 V



SB60/10 standard probe, with or without contact skid

Two-position probe holder
 – Locked for probe without skid
 – Unlocked for probe with skid

Guiding column, setting range up to 90 mm

Battery charger, 100 to 240V, 50/60 Hz

Technical data

	06930012
	RUGOSURF 90G
Display	Tactile TFT colour display, size 3,5" Resolution 320 x 240 pixels, 256 colours
Roughness parameters	according to ISO 4287:1997/JIS B0601:2001 / ASME B46-2002 Ra – Rq – Rt – Rz – Rp – Rv – Rc – RSm – Rδc Pa – Pq – Pt – Pp – Pv – Pc – PSm – Pδc Wa – Wq – Wt – Wz – Wp – Wv – Wc – WSm – Wδc according to ISO 13565 Rk – Rpk – Rvk – Mr1 – Mr2 according to PrEN 10049 PPc – RPC- WPC according to DIN 4776 Rmax according to DB N31007 R3z – R3zm according to ISO 12085 (CNOMO) Pt – R – AR – Rx – Wte – AW – Wx – Rke – Rpke – Rvke – W – Mrle – Mr2e
Measuring span	
X-axis	50 mm
Z-axis	1000 µm
System of units	mm / in
Resolution	0,001 µm (0.01 µin)
Cut-offs	0,08 - 0,25 - 0,8 - 2,5 - 8 mm
Numerical filter	Type Gaussian as per ISO 11562
Traversing length l _t	(number of cut-offs + 1) x λc
Cut-off l _c	number of cut-offs x λc
Probing speed	0,5 mm/s – 1 mm/s
Number of selectable cut-offs	1 up to 19 cut-offs of 0,08; 0,25; 0,8; 2,5 mm 1 up to 5 cut-offs of 8 mm
Keypad	Three-key, membrane-type keypad protected against dust particles and liquids
Probing system	inductive probe
Probe tip	90° diamond tip
Tip radius	5 µm
Measuring force	0,75 mN (ISO 3274)
Available languages	English, French, German, Spanish, Italian, Portuguese
Memory capacity	≈ 60 000 measurements
Autonomy	≈ 2 000 measurements / ≈ 10 hours
Power supply	12V integrated Battery pack – Battery charger 100 to 240 Vac, 50/60 Hz
Power consumption	max. 20 VA at 220 V
Overall dimensions	270 x 140 x 90 mm (gauge unit alone)
Weight	3 kg

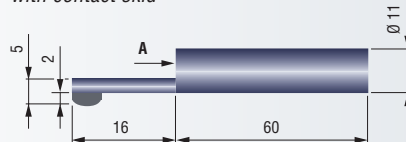


Optional probes (90° diamond tip with a tip radius to 5 µm, unless otherwise specified)

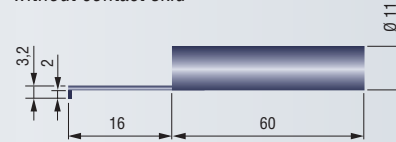
Part No.	Model	Description
06960049	SB60/10	Probe with contact skid For surfaces and bores with external diameter over 10 mm or internal diameter smaller than 6 mm.
		Probe without contact skid For surfaces and small bores with diameter from Ø 4 mm.
06960067	SB60/10	Same as 06960049, but with a diamond tip, R=2 µm.
06960050	SB20 P	Probe for grooves, max. depth 5 mm.
06960051	SB30 P	Probe for small bores from Ø 4 mm.
06960052	SB40 P	Probe with V-skid for cables with external diameter over 1 mm.
06960053	SB50 P	Probe with contact skid for concave surfaces. Ideal for 90° measurement.
06960054	SB120P	Probe for grooves, max. depth 20 mm.
06960058	SB120S	Probe without skid for grooves, max. depth 15 mm.
06960061	SB60-D2	Probe for small bores with diameter from 2 mm, L = 30 mm.

SB60/10 Probe

with contact skid



without contact skid

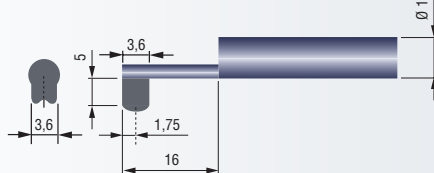


A Undo both screws on the front face to remove the skid. Once done, use the probe very carefully for any further measurement (see Fig. 1).

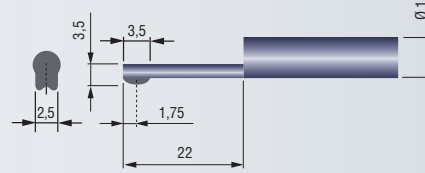


Fig. 1

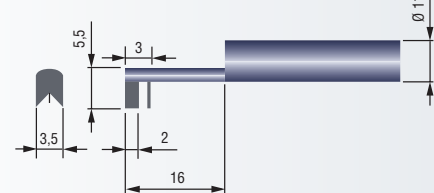
SB20P Probe



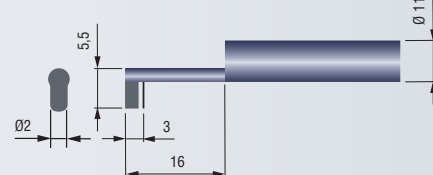
SB30P Probe



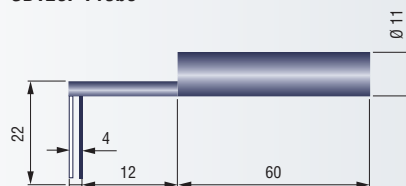
SB40P Probe



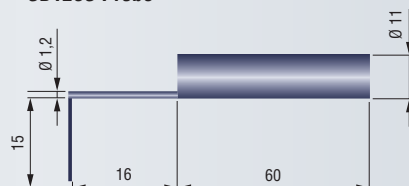
SB50P Probe



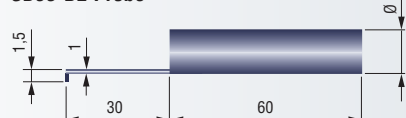
SB120P Probe



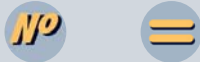
SB120S Probe



SB60-D2 Probe



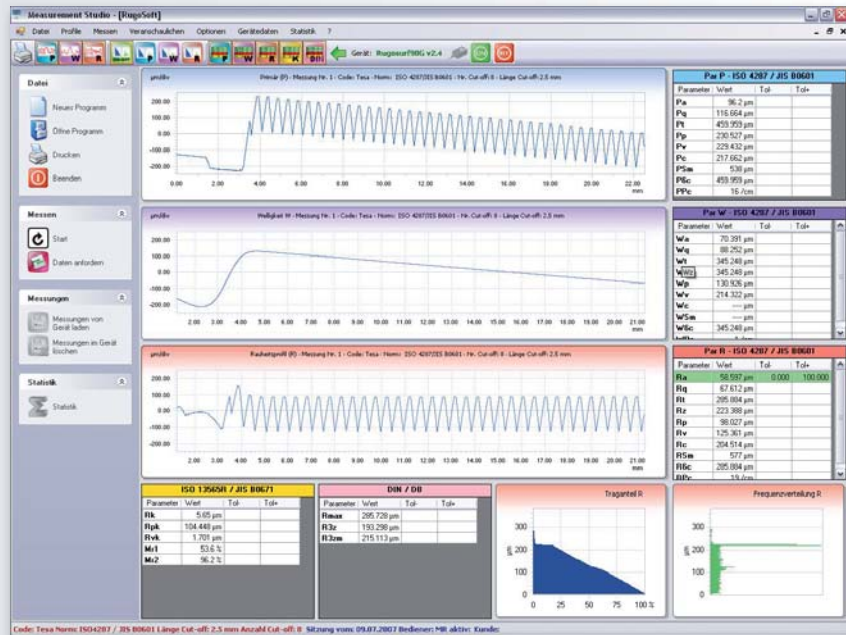
Measurement Studio Software



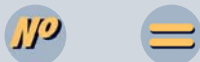
06960048 TESA Measurement Studio Software

provided with:

- Instructions for installation, 6 languages available on the CD
- Instruction manual plus Online Help (also available on the CD)
- USB connecting cable, L = 1,80 m



Additional Accessories



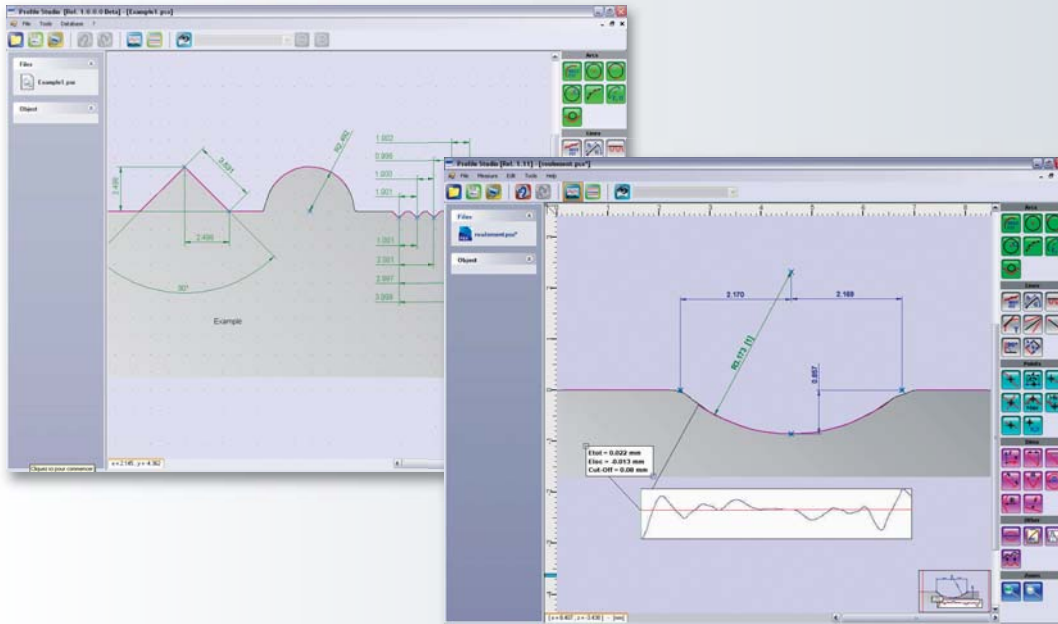
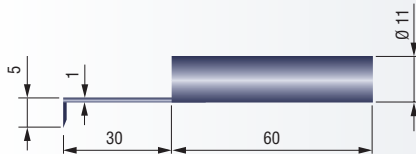
- 06960041** Roughness standard, Ra = 2,97 µm / 117 µin
- 06960064** Roughness standard, Ra = 0,1 µm
- 06960065** Roughness standard, Ra = 0,5 µm
- 06960066** Roughness standard, Ra = 1 µm
- 06960055** Support with granite base, 630 x 400 mm. Height adjustment over 200 mm

For printer and remote control, see both pages M-6 and M-7.



OPTIONAL PROFILE MEASUREMENT

Fitted with a probe with special design, your Rugosurf 90G changes into a profile gauge. Simple and accurate, this tool used in connection with its proper software can measure any length, radius or arc of circle on any parts. Sometimes, checking these features is just impossible.



Z = 2 mm
X = 50 mm

Z = 0,1 µm
X = 0,4 ÷ 4 µm
depending on measured length

Z = 3,5 + 0,75 * H µm,
*H in mm
X = 3,5 + L/10 µm,
L = distance in mm

1 mm/s

70°
(upward probe)
85°
(downward probe)

Fast, easy setting and evaluation of achieved results. Each relevant dimension can be input upon recognition of the part geometry feature (a point, straight line or arc of circle). Both the rotation and symmetry of the profile being checked let it be conveniently aligned.

The use of a measured profile for the evaluation of a new measurement makes all operations easier. Each needed handling is automatically reproduced.

All measurement results, including detailed user-defined reports, are checked at a glance based on specified tolerances.



06960100 Profile Set 2 mm

Supplied with:

06960102 SB 2000 probe

06960103 Setting standard (along with inspection report)

06960101 Profile Studio multilingual software (EN/FR/DE/EN/IT/ES/PT)

USB connecting cable, L = 1,80 m



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.

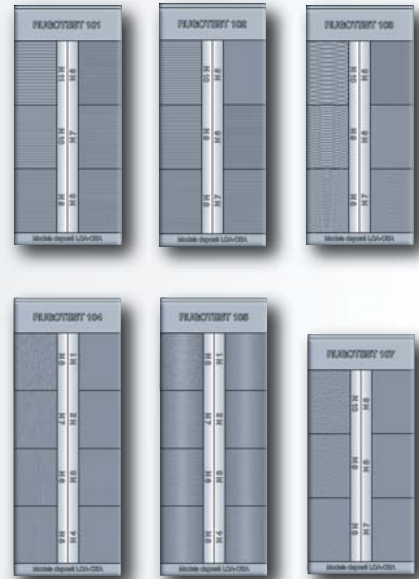
Leather case

RUGOTEST Roughness Comparison Specimens

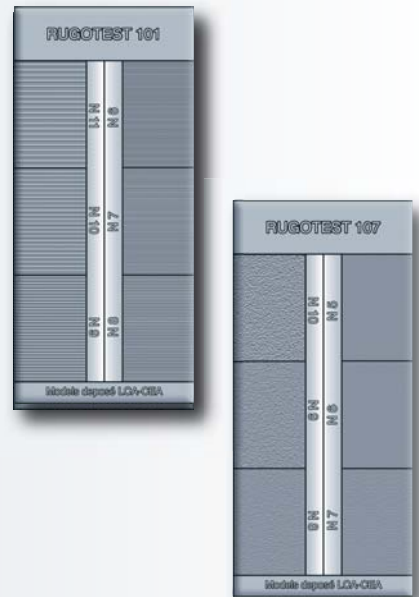
For touch and/or sight comparisons of the workpiece surface finish.

Sets of roughness specimens for single machining methods according to ISO roughness parameters

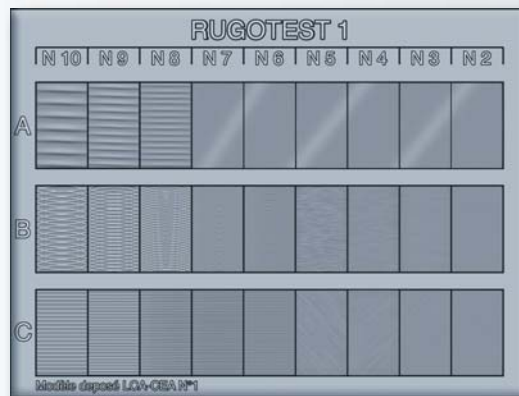
No	RUGOTEST	RUGO-TEST	Number of single specimens	ISO roughness parameters
081112346 RUGOTEST A4				
<i>Consisting of the following single specimens:</i>				
081112053	Metal working	1	27	N2 ÷ N10
081112054	Hand grinding	2	6	N6 ÷ N11
081112055	Shot blasting	3	18	N6 ÷ N11
081112056	Hand filing	4	6	N6 ÷ N8
081112345 RUGOTEST A6				
<i>Consisting of the following single specimens:</i>				
081112058	Planing	101	6	N6 ÷ N11
081112059	Turning	102	6	N5 ÷ N10
081112060	Face milling	103	6	N5 ÷ N10
081112061	Surface grinding	104	8	N1 ÷ N8
081112062	Circular grinding	105	8	N1 ÷ N8
081112063	Spark erosion	107	6	N5 ÷ N10



No	RUGOTEST	mm	g
081112053	1	135 x 105	160
081112054	2	120 x 90	160
081112055	3	120 x 90	190
081112056	4	120 x 90	160
081112057	5	120 x 90	200
081112058	101	110 x 50	110
081112059	102	110 x 50	105
081112060	103	110 x 50	110
081112061	104	130 x 50	125
081112062	105	130 x 50	130
081112063	107	110 x 50	110
081112344	12	127 x 27	60
081112346	A4	330 x 250	710
081112345	A6	330 x 250	780



Specimens for individual machining methods according to ISO roughness parameters



ISO roughness parameters				N0	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11
Mean roughness value Ra	μm			0,0125	0,025	0,05	0,1	0,2	0,4	0,8	1,6	3,2	6,3	12,5	25
	μin			0.5	1	2	4	8	16	32	63	125	250	500	1000
Mean roughness value Rz iso	$\mu\text{m} / \mu\text{in}$			These values are changing depending on the machining method used.											
Nº	=	RUGO-TEST No.	Number of single-specimens												
081112053	Metal working	1	27												
	Side milling		3									•	•	•	
	Face milling		5							•	•	•	•	•	
	Turning/Planing		5							•	•	•	•	•	
	Grinding		6			•	•	•	•						
	Lapping		4			•	•	•	•						
	Finish grinding/Honing		4		•	•	•	•							
081112054	Hand grinding	2	6							•	•	•	•	•	•
081112055	Shot blasting	3	18												
	Blasting grains														
	– spherical	coarse	3										•	•	•
		fine	6							•	•	•	•	•	•
	– angular	coarse	3										•	•	•
		fine	6							•	•	•	•	•	•
081112056	Hand filing	4	6												
	– straight		3							•	•	•			
	– intersected		3							•	•	•			
081112057	Hand polishing	5	10												
	Surface shape														
	– cylindrical		5		•	•	•	•	•						
	– plane		5		•	•	•	•	•						
081112058	Planing	101	6							•	•	•	•	•	•
081112059	Turning	102	6						•	•	•	•	•	•	
081112060	Face milling	103	6						•	•	•	•	•	•	
081112061	Plane grinding	104	8		•	•	•	•	•	•	•	•			
081112062	Circular grinding	105	8		•	•	•	•	•	•	•	•			
081112063	Spark erosion	107	6						•	•	•	•	•	•	

Specimens according to Charmille roughness parameters (VDI 3400)

Charmille roughness parameters				12	15	18	21	24	27	30	33	36	39	42	45
Mean roughness Ra	μm			0,40	0,56	0,80	1,12	1,60	2,24	3,15	4,5	6,3	9,0	12,5	18,0
Nº	=		Number of single-specimens												
081112344	Spark erosion		12	•	•	•	•	•	•	•	•	•	•	•	•