

Surface measuring instruments "SURFTEST"

SJ-201 P
SJ-301
SJ-401 / SJ-402
SV-2000
SV-3000
SV-3000 3D



Pages 352–361

Contour measuring instruments "CONTRACER"

CV-1000 / 2000
CV-3000 / 4000



Pages 362–363

Form measuring instruments "ROUNDTTEST"

RA-114 / RA-116
RA-1500
RA-2100
RA-H 5100



Pages 364–366

CNC surface, form and contour measurers

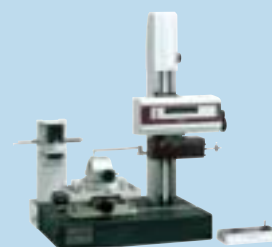
„Surftest SV-3000 CNC“
„Contracer CV-3000 CNC“
„Roundtest RA-2100 CNC“
„Roundtest RA-H 5100 CNC“
„Formtracer SV-C 3000 CNC“
„Formtracer CS-5000 CNC“



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Combined surface and contour measurer

"FORMTRACER"
SV-C 3000/4000
CS-3000
CS-5000



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Surface Roughness Tester "Surftest SJ-201 P"

- The portable surface roughness tester "Surftest SJ-201 P" has been designed for fast and easy testing of surface roughness parameters.
- In order to perform a multitude of different measuring tasks a large selection of probes and nosepieces are available.
- The drive unit can be separated from the main measuring unit allowing for measurements in hard to reach narrow spaces, too.
- The SJ-201 P may be operated on AC/DC as well as anywhere on the shop floor independent of stationary power supply on battery.
- The SJ-201 P features RS-232 C interface and DIGIMATIC port as standard equipment. The roughness data collected may therefore be processed immediately with or without external PC and other Mitutoyo hardware. Interfaces and operating panel can be safely locked away under protective coverings when the SJ-201 P is not in use.
- The Auto-Sleep function starts saving battery power after 30 seconds without panel activity.

Series 178



178-930-2 D



Optional accessory

No. 178-420 D External printer



| Model | No. | Type |
|----------|-------------|--|
| SJ-201 P | 178-930-2 D | Basic model |
| SJ-201 S | 178-899-2 D | Transversal scanning see page 356 |
| SJ-201 R | 178-995 D | Front lift model (motorised lifting and lowering of the detector) |

Note:

The feed units SJ-201 P and SJ-201 S are compatible with one another.



Keyboard (protective covering opened)



Rear view

Surface Roughness Tester

"Surftest SJ-201 P" "Surftest SJ-301"

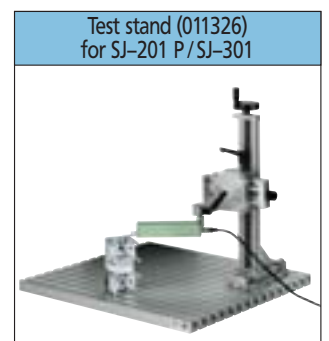
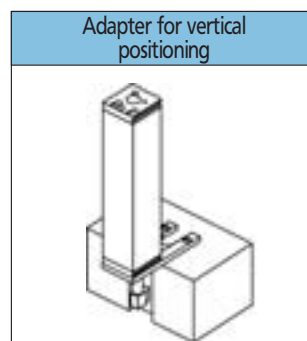
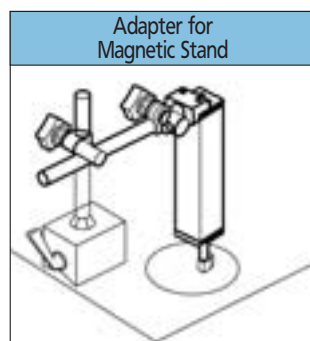
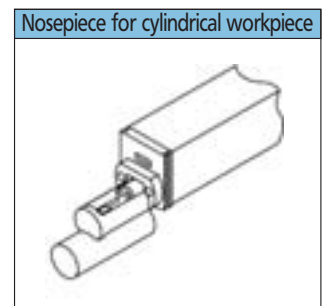
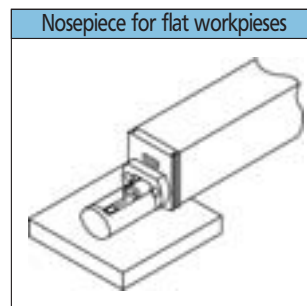
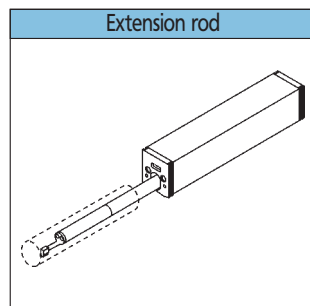
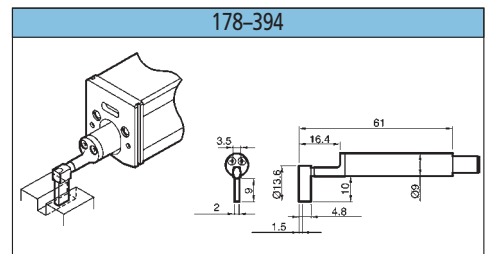
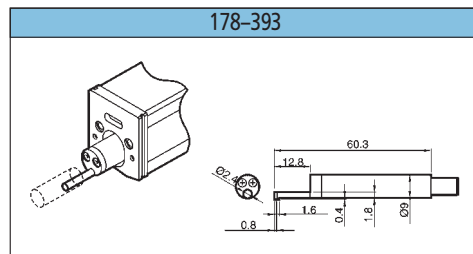
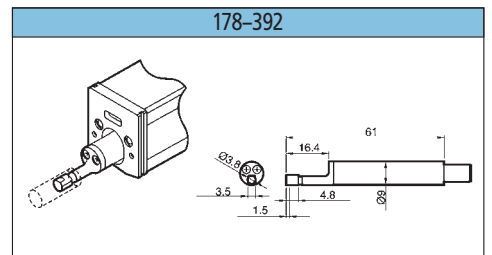
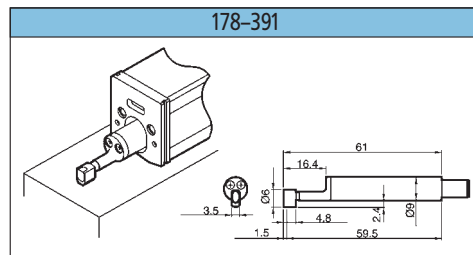
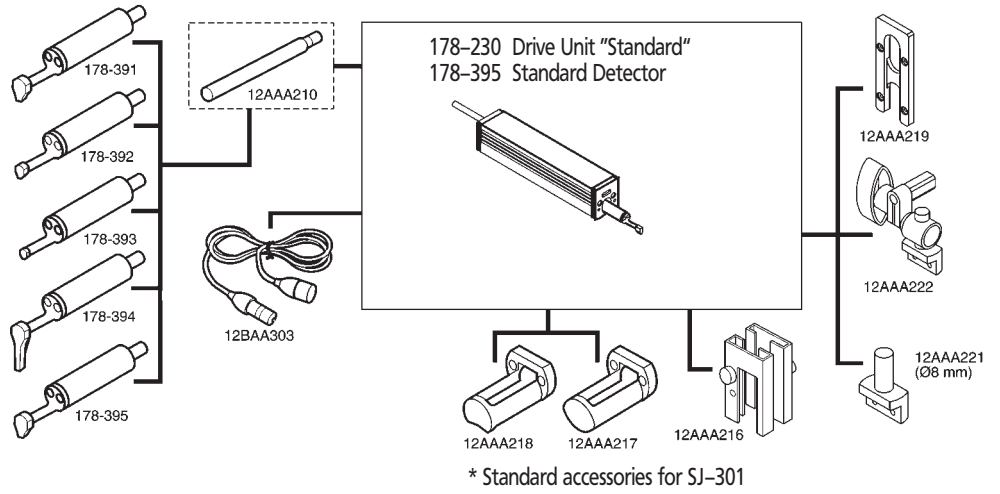
Series 178

Specifications

| Model No. | SJ-201 P 178-930-2 D | SJ-301 178-952-3 D |
|--------------------------|--|--|
| Measuring Range | 350 μm | |
| Z-Axis | 12,5 mm | |
| X-Axis | | |
| Drive Unit | | |
| Speed | Measuring: 0,25 mm/s; 0,5 mm/s Returning: 0,8 mm/s | Measuring: 0,25 mm/s; 0,5 mm/s Returning: 1,0 mm/s |
| Cable Length | 1 m | |
| Mass | 190 g | |
| Standard Probe (178-395) | | |
| Measuring Method | Induction method | |
| Measuring Range | 350 μm | |
| Stylus | Diamond Tip | |
| Radius | 2 μm | |
| Radius Nosepiece | 40 mm | |
| Measuring Force | 0,75 mN | |
| Mass | 18 g | |
| Display Unit | | |
| Profiles | Primary Profile (P), Roughness Profile (R), DIN 4776 | Primary Profile (P), Roughness Profile (R), DIN 4776, MOTIF |
| Parameters | Ra, Ry, Rz, Rt, Rp, Sm, S, Pc, R3z, mr A1, A2, Rq, Rk, Rpk, Rvk, Mr 1, Mr 2, Vo | Ra, Ry, Rz, Rt, Rp, Rq, Rv, Sm, S, Pc, R3z, mr, Rpk, Rvk, δc , Rk, Mr 1, Mr 2, Lo, Ppi, R, AR, Rx, A1, A2 |
| Analysis Graphs | – | BAC 1, BAC 2, ADC |
| Roughness Standards | DIN, ISO, ANSI, ISO | DIN, ISO, ANSI, JIS |
| Measuring Length (L) | 0,25 mm, 0,8 mm, 2,5 mm | 0,08 mm, 0,25 mm, 0,8 mm, 2,5 mm, 8 mm oder Eingabe |
| Cut-off-Length | λc : 0,25 mm, 0,8 mm, 2,5 mm λs : 2,5 μm , 8 μm | λc : 0,08 mm, 0,25 mm, 0,8 mm, 2,5 mm, 8 mm λs : 2,5 μm , 8 μm , 25 μm |
| Sampling Length | x 1, x 3, x 5, x L | |
| Filter | 2CR-75%, 2CR-75% (phase corrected), Gauß | 2RC-75%, 2RC-75% (phase corrected), Gauß-50% |
| Display Range | Ra, Rq: 0,01 μm ~ 100 μm Ry, Rz, Rt, R3z, Rvk, Rpk, Rk, Rp: 0,02 μm ~ 350 μm Vo: 0,000 ~ 10,00 (mm^3/cm^2) S, Sm: 2 μm ~ 4000 μm Pc: 2,5/cm ~ 5000/cm Mr 1, Mr 2: 0 ~ 100% mr: 1 ~ 100% | Ra, Rq: 0,01 μm ~ 100 μm Ry, Rz, Rt, Rv, R3z, Rk, Rpk, Rvk, R, Rp, Rx, AR, W, Wx, Wte: 0,02 μm ~ 350 μm S, Sm: 2 μm ~ 4000 μm HSC, Pc: 2,5/cm ~ 5000/cm; Ppi: 6,35 ~ 12700/inch δc : - 350 μm ~ + 350 μm Lo: 0,1 mm ~ 99,999 mm mr, Mr 1, Mr 2: 0 ~ 100% A1, A2: 0 ~ 15000 |
| Display/Magnification | | |
| Vertical: | – | 10 x, 20 x, 50 x, 100 x, 200 x, 500 x, 1000 x, 2000 x, 5000 x, 10000 x, 20000 x, 50000 x, 100000 x, AUTO |
| Horizontal: | – | 1 x, 2 x, 5 x, 10 x, 20 x, 50 x, 100 x, 200 x, 500 x, 1000 x, AUTO |
| Printer | Optional | Thermal Printer (Printing width: 48 mm) |
| Statistics | – | Max/Min, Mean Value, Standard Deviation (σ), Pass Ratio, Frequency Distribution Table |
| Tolerance judgement | Upper/lower limit values | Upper/lower limit values for three parameters |
| Meas. Conditon Storage | – | 5 sets of measuring conditions |
| Auto-sleep (turing off) | Automatically after 30 seconds without operation | Automatically after 5 minutes without operation |
| Calibrator | Automatic calibration entering the values and measuring of roughness specimen | |
| Power Supply | Via AC adapter (DC 7,5 V 1,5 W) built-in or rechargeable battery | |
| Rechargeable Battery | Charging time: 12 hours (for 500 measurements) | Charging time: 15 hours (for 600 measurements without printing) |
| Data input/output | RS-232 C interface for input/output, DIGIMATIC output | RS-232 C interface for input/output, DIGIMATIC output, Compact flash card |
| Mass | approx. 290 g | approx. 1200 g |

Surface Roughness Tester "Surftest SJ-201 P" "Surftest SJ-301"

Series 178 Special Probes



S drive unit for Surftest SJ-201 P / SJ-301 with transversal scanning

Series 178

Complete set including S drive



No. 178-899-2 D
SJ-201 S

Series 178

Complete set including S drive



No. 178-939-2 D
SJ-301 S

S drive unit for Surfptest SJ-201 P / SJ-301 with transversal scanning

Series 178

S drive with transversal scanning

- The new S drive unit with transversal scanning is compatible with the conventional drive units of the Surfptest SJ-201 S and SJ-301 and is simply connected to the display unit of these drives.

Specification

Measuring range: 5.6 mm
 Measuring rate: 0.25 mm/s, 0.5 mm/s,
 linear travel
 Roughness standard: Ra 1 μm (No. 178-605)



Just set the crankshaft onto the measuring point. The new S drive with transversal scanning will rapidly and reliably measure surface roughness in an axial direction.

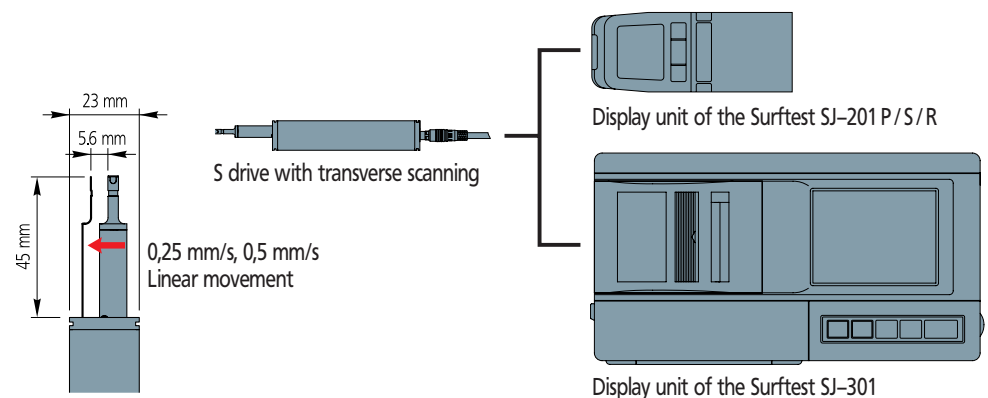
The transversal scanning function simplifies the measurement of surface roughness even in very narrow areas, which has been a problem with conventional measuring instruments with longitudinal scanning.

Combination with a digital height gauge and associated adapter offers the user increased flexibility when positioning the device.

Photo: measurement of a wire-eroded surface in the orthogonal direction.



No. 178-234

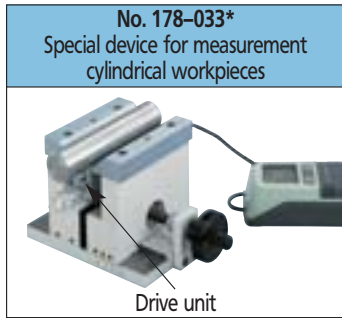


Surface Roughness Tester

"Surftest SJ-201 P" "Surftest SJ-301"

Series 178

Standard- and optional accessory



* Price and delivery time on demand

| No. | Designation | Surftest SJ-201 P | | Surftest SJ-301 | |
|----------|---|--------------------|--------------------|--------------------|--------------------|
| | | Standard accessory | Optional accessory | Standard accessory | Optional accessory |
| 178-390 | Detector with tip radius 5 μm | | ● | | ● |
| 178-391 | Detector for soft materials (stylus tip radius 10 μm) | | ● | | ● |
| 178-392 | Small hole detector (∅ 4,5 mm) | | ● | | ● |
| 178-393 | Small hole detector (∅ 2,8 mm) | | ● | | ● |
| 178-394 | Deep groove detector | | ● | | ● |
| 178-395 | Detector with tip radius 2 μm | ● | | ● | |
| 178-601 | Roughness specimen Ra 3 μm | ● | | ● | |
| 12AAA210 | Extension rod (50 mm) | | ● | | ● |
| 12AAA216 | Height adjustment feet | | ● | ● | |
| 12AAA217 | Nosepiece for flat workpieces | | ● | ● | |
| 12AAA218 | Nosepiece for cylindrical workpieces | | ● | ● | |
| 12AAA219 | Adapter for vertical positioning | | ● | | ● |
| 12AAA221 | Adapter for magnetic stand | | ● | | ● |
| 12AAA222 | Height Gage adapter | | ● | | ● |
| 12AAA841 | Memory card | | | | ● |
| 12AAA882 | RS-232 C Connection cable | | | | ● |
| 12AAA896 | Protective film | | | | ● |
| 12AAA208 | RS-232 C Connection cable | | ● | | |
| 12BAA303 | Extension cable (1 m) | ● | | | ● |
| 12BAA304 | Carry case | ● | | | |
| 270732 | Printer papers (5 rolls) | | | ● | |
| 12BAA686 | Extension cable (1 m) | | | ● | |
| 12BAA688 | Battery | | | ● | |
| 12BAA689 | Touch Pen | | | ● | |
| 12BAA690 | Touch Panel Protection Sheet | | | ● | |
| 12BAA781 | Carry case | | | ● | |
| 178-033 | Measuring device for cylindrical workpieces | | ● | | ● |
| 178-034 | Measuring device as universal fixture | | ● | | ● |
| 178-035 | Measuring device for measuring in pipes | | ● | | ● |
| 178-420D | Printer (with connector cable) | | ● | | |
| 12AAC243 | Printer paper (20 rolls) | | ● | | |
| 011326 | Measuring stand for SJ-201 P/SJ-301 | | ● | | ● |
| 011327 | Setting slide for X direction | | ● | | ● |
| 011328 | Adjustment slide for Y direction | | ● | | ● |
| 011329 | 360 degree rotating unit | | ● | | ● |
| 011330 | V-block for cylindrical parts | | ● | | ● |
| 011331 | Back square | | ● | | ● |
| 011332 | Vice | | ● | | ● |
| 936937 | Signal cable 1 m | | ● | | ● |
| 965014 | Signal cable 2 m | | ● | | ● |

Surface Roughness Tester

"Surftest SJ-400"

Series 178

Specifications

| Model No. | Surftest SJ-401 178-956-3 D | Surftest SJ-402 178-958-3 D |
|---------------------------------|---|--------------------------------|
| Measuring method | Skid-free / with skid (switchable) | |
| Measuring range | 800 μm , 80 μm , 8 μm | |
| Z-Axis | | |
| X-Axis | 25 mm | 50 mm |
| Traversing system | | |
| Straightness | 0,3 μm / 25 mm | 0,5 μm / 50 mm |
| Response time | 0,05, 0,1, 0,5, 1,0 mm/s | |
| Return speed | 0,5, 1,0, 2,0 mm/s | |
| Height/inclination adjustment | | |
| Inclination adjustment range | $\pm 1,5^\circ$ | |
| Height adjustment | 10 mm | |
| Analysis Profile | P-Profile (P), R-Profile (R), filtered ripple profile (W), DIN 4776, MOTIF (R, W) | |
| Evaluation Parameters | Ra, Ry, Rz, Rq, Pc, R3z, mr, Rt, Rp, Rv, Sm, S, δ_c , Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Lo, Ppi, R, AR, Rx, Δa , Δq , Ku, HSC, mrd, Sk, AW, W, Wte | |
| Analysis Graph | (BAC), Amplitude distribution curve (ADC) | |
| Number of individual lengths | x 1, x 3, x 5, x L* (* = or any value) | |
| Adjustable measuring length | 0,1 – 25 mm (0,1 mm digits) | 0,1 – 50 mm (0,1 mm digits) |
| Measuring lengths (L) | 0,08, 0,25, 0,8, 2,5, 8 mm | |
| Print width | 48 mm / Paper width: 58 mm | |
| Recording | | |
| Vertical Magnification | 10 up to 100.000 x Magnification, Auto | |
| Horizontal Magnification | 1 up to 1000 x Magnification, Auto | |
| Probe | | |
| Measuring system | Inductive | |
| Resolution | 0,000125 μm depending on resolution | |
| Probe tip radius | Radius 2 μm , Diamond | |
| Measuring force | 0,75 mN | |
| Skid radius | 40 mm | |
| Skid measuring force | below 400 mN | |
| Function | | |
| User-defined | Display/roughness parameters selectable | |
| Data filter | Surface R, inclination compensation | |
| Linearity function | Display of coordinate difference between any two points | |
| D.A.T. function | For levelling during skid-free measurement | |
| Offset calculation method | Input of probe offset while the feed unit is stopped | |
| Statistical processing | Max. Min. standard deviation (σ), Histogram | |
| Tolerance evaluation | Top and bottom limits can be entered | |
| Storage of measuring conditions | Five data records/measuring conditions(feed unit) | |
| Printer | Thermal printer | |
| Cut-Off length | λ_c : 0,08; 0,25; 0,8; 2,5; 8 mm; λ_s : 0,25; 0,8; 2,5; 8; 25 μm | |
| Digital filter | 2CR, PC75 (phase-corrected), Gauss | |
| Calibration | Ra, step automatic calibration after inputting the standard value | |
| Power supply | AC power pack, integrated rechargeable battery | |
| Battery | | |
| Charge time | 15 hours | |
| No. of measurements | Max. 600 (no printout) | |
| Power consumption | 43 W (max.) | |
| Dimensions | | |
| Display (WxHxD) | 307 x 165 x 94 mm | |
| Levelling unit (WxHxD) | 131 x 63 x 99 mm | |
| Probe system (WxHxD) | 128 x 36 x 47 mm | |
| Standard roughness | JIS (JIS B0601-1994-1982), DIN, ISO, ANSI | |
| LCD | Touch-sensitive LCD-Monitor | |
| Data output | Connection to the data processing system (optional accessory) | |
| External control | RS-232C input/output, DIGIMATIC output | |
| Weight | | |
| Display | 1,2 kg | |
| Levelling unit | 0,4 kg | |
| Contact system | 0,6 kg | |

Software SURFPAK-SJ

With the SURFPAK-SJ version there is also a solution for hand-held devices in the SJ-200, SJ-300 and SJ-400 series that lend you the same excellent qualities as stationary test equipment. With the intelligent software, the mobile Mitutoyo form tester itself becomes a part of a high-end desktop evaluation system.

Specification

Sensor stroke: 800 μm
 Resolution: 0,0001 μm
 Feed (X-axis): 50 mm
 Minimum Cut-Off: 0,025 mm
 Straightness deviation: 0,3 $\mu\text{m}/50$ mm

55 Parameters

Ra, Rq, Ry, Rz, R3z, Rt, Rp, Rk, Rpk, Rvk, Mr1, Mr2, S, Sm, Pc, mr, A1, A2, Rv, R, Rx, W, Wx, Wte, mrd, HSC, AW, AR, Vo, Δa , Δq , Ku, δc , Lo, Sk, Rti, R3zi, R3y, Rc, Rpmax, Rpi, Rvmax, plateau ratio, λa , λq , Lr, SR, SAR, NR, NCRX, CPM, SW, SAW, NW, Vo

Surface Roughness Tester "Surftest SV-2000"

Penetrating and sophisticated technology – for high-performance surface testing in the test room and laboratory.

- Perfect reference plane measurement in mobile and stationary use.



Surftest SV-2000

| Model | Feed | Height adjustment | Baseplate dimension |
|------------|-------|-------------------|---------------------|
| SV-2000 N2 | 50 mm | optional | optional |
| SV-2000 S2 | 50 mm | 300 mm motorised | 610 x 450 mm |

Specification

Sensor stroke: 800 μm
 Resolution: 0,0001 μm
 Feed (X-axis): 100 or 200 mm
 Minimum Cut-Off: 0,025 mm
 Straightness deviation: (0,05 + 1,5L/1000) μm

55 Parameters

Ra, Rq, Ry, Rz, R3z, Rt, Rp, Rk, Rpk, Rvk, Mr1, Mr2, S, Sm, Pc, mr, A1, A2, Rv, R, Rx, W, Wx, Wte, mrd, HSC, AW, AR, Vo, Δa , Δq , Ku, δc , Lo, Sk, Rti, R3zi, R3y, Rc, Rpmax, Rpi, Rvmax, plateau ratio, λa , λq , Lr, SR, SAR, NR, NCRX, CPM, SW, SAW, NW, Vo

Surface Roughness Tester "Surftest SV-3000" and "Surftest SV-3000 3D"

"Surftest SV-3000":

Top performance that leaves others standing: stationary reference plane system that sets the standard for test room and laboratory analysis.

- The high-end solution for top-performance surface testing.

"Surftest SV-3000 3D":

The specialist in precision three-dimensional topographical evaluations.



Surftest SV-3000 / Surftest SV-3000 3D

| Model | Feed | Height adjustment | Baseplate dimension |
|------------|--------|-------------------|---------------------|
| SV-3000 M4 | 100 mm | 300 mm manual | 610 x 450 mm |
| SV-3000 S4 | 100 mm | 300 mm motorised | 610 x 450 mm |
| SV-3000 H4 | 100 mm | 500 mm motorised | 610 x 450 mm |
| SV-3000 W4 | 100 mm | 500 mm motorised | 1010 x 450 mm |
| SV-3000 S8 | 200 mm | 300 mm motorised | 610 x 450 mm |
| SV-3000 H8 | 200 mm | 500 mm motorised | 610 x 450 mm |
| SV-3000 W8 | 200 mm | 500 mm motorised | 1010 x 450 mm |



Request our detailed brochure!

SURFPAK-SV and SURFPAK-PRO software

SURFPAK-SV evaluates the workpiece surface as a two-dimensional cross-section while SURFPAK-PRO is used in topographical evaluation.

Contour measurer "Contracer CV-1000"

Mobile contour measurement with "stationary" performance profile.

- Sophisticated digital technology for site-independent identification and evaluation of profiles – with the precision and performance of stationary systems.



Contracer CV-1000

| Model | Measuring range X- / Z-axis | Height adjustment | Baseplate dimension |
|-----------|--------------------------------|----------------------|------------------------|
| CV-1000N2 | 50 / 25 mm | optional | optional |

Specification

| | |
|---|---|
| Measuring range: | horizontal 50 mm vertical 25 mm |
| Resolution: | X-axis 0,2 μm Z-axis 0,4 μm |
| Length measurement deviation: | X-axis (3,5 + 0,02 L) μm Z-axis $\pm (3,5 + l4HI/25)$ μm |
| Straightness deviation on the X-axis | 3,5 μm / 50 mm |

Contour measurer "Contracer CV-2000"

The state of the art in economic measurement.

- Stationary contour measurer with convincing price-performance ratio. For efficient use in production or in the laboratory in every respect.



Contracer CV-2000

| Model | Measuring range X- / Z-axis | Height adjustment | Baseplate dimension |
|------------|--------------------------------|----------------------|------------------------|
| CV-2000 M4 | 100 / 40 mm | 320 mm manual | 600 x 450 mm |
| CV-2000 S4 | 100 / 40 mm | 320 mm motorised | 600 x 450 mm |

Specification

| | |
|---|---|
| Measuring range: | horizontal 100 mm vertical 40 mm |
| Resolution: | X-axis 0,2 μm Z-axis 0,5 μm |
| Length measurement deviation: | X-axis (3,5 + 0,02 L) μm Z-axis $\pm (3,5 + l4HI/25)$ μm |
| Straightness deviation on the X-axis | 3,5 μm / 100 mm |
| Feed inclination: | $\pm 45^\circ$ |



Request our detailed brochure!

Contour measurer "Contracer CV-3000"

Top-notch technology for automatic contour measurement.

- High-performance stationary system for automatic series measurement in test room and laboratory. With motorised Z-column, ceramic straightness guide on X-axis and automatic raising and lowering of the probe tip.



Contracer CV-3000

| Model | Measuring range X- / Z-axis | Height adjustment | Baseplate dimension |
|------------|--------------------------------|----------------------|------------------------|
| CV-3000 S4 | 100 / 50 mm | 250 mm motorised | 610 x 450 mm |
| CV-3000 H4 | 100 / 50 mm | 450 mm motorised | 610 x 450 mm |
| CV-3000 W4 | 100 / 50 mm | 450 mm motorised | 1000 x 450 mm |
| CV-3000 S8 | 200 / 50 mm | 250 mm motorised | 610 x 450 mm |
| CV-3000 H8 | 200 / 50 mm | 450 mm motorised | 610 x 450 mm |
| CV-3000 W8 | 200 / 50 mm | 450 mm motorised | 1000 x 450 mm |

Specification

| | |
|--------------------------------------|--|
| Measuring range: | X-axis 100 / 200 mm Z-axis 50 mm |
| Resolution: | X-axis 0,05 μm Z-axis 0,2 μm |
| Length measurement deviation: | X-axis (1,0 + 2,0 L/100) μm Z-axis $\pm (3,0 + 12HI/25)$ μm |
| Straightness deviation on the X-axis | (1,0 + 2,0 L/100) μm |
| Feed inclination: | $\pm 45^\circ$ |

Contour measurer "Contracer CV-4000"

No compromise: straightness deviation 0.8 μm .

- The stationary high-end system with laser holoscale technology and sensational straightness deviation on the X-axis from just (0,8 + 2,0 L/100) μm . The no-compromise, perfect solution for maximum precision automatic series measurement.



Contracer CV-4000

| Model | Measuring range X- / Z-axis | Height adjustment | Baseplate dimension |
|------------|--------------------------------|----------------------|------------------------|
| CV-4000 S4 | 100 / 50 mm | 250 mm motorised | 610 x 450 mm |
| CV-4000 H4 | 100 / 50 mm | 450 mm motorised | 610 x 450 mm |
| CV-4000 W4 | 100 / 50 mm | 450 mm motorised | 1000 x 450 mm |
| CV-4000 S8 | 200 / 50 mm | 250 mm motorised | 610 x 450 mm |
| CV-4000 H8 | 200 / 50 mm | 450 mm motorised | 610 x 450 mm |
| CV-4000 W8 | 200 / 50 mm | 450 mm motorised | 1000 x 450 mm |

Specification

| | |
|--------------------------------------|--|
| Measuring range: | X-axis 100 / 200 mm Z-axis 50 mm |
| Resolution: | X-axis 0,05 μm Z-axis 0,05 μm |
| Length measurement deviation: | X-axis (0,8 + 2,0 L/100) μm Z-axis $\pm (0,8 + 10,5HI/25)$ μm |
| Straightness deviation on the X-axis | (0,8 + 2,0 L/100) μm |
| Feed inclination: | $\pm 45^\circ$ |



Request our detailed brochure!

FORMPAK software

Measuring, evaluation and full documentation; with **FORMPAK**, the top-performance software from MITUTOYO. An added bonus with all CONTRACER systems. No extra cost and impressively versatile. For professional contour measurement with optimum results.

"Roundtest RA-114" form measuring instrument

Compact table-top unit for measurement in workshop or production line. With large display and integrated printer.

- Suitable for workshop and ready to use.
- Convenient and cost-conscious.



Roundtest RA-114

"Roundtest RA-116" form measuring instrument

Compact table-top unit for measurement in workshop or production line with PC connection.

- PC connection for versatility.
- Uncomplicated with top-of-the range software.



Roundtest RA-116



Specification

Measurable diameter: 280 mm
Measuring range: $\pm 1000 \mu\text{m}$
Measuring height
outside/inside: 280 mm
Range of travel
of the R-axis: 165 mm
Max. Measuring depth: 100 mm
Rotational accuracy: $(0,07 + 6H/10\,000) \mu\text{m}$

10 analytical features available:

Roundness, coaxiality, concentricity, circular runout, axial runout; perpendicularity, thickness deviation, flatness, parallelism, interrupted workpieces

Specification

Measurable diameter: 280 mm
Measuring range: $\pm 1000 \mu\text{m}$
Measuring height
outside/inside: 280 mm
Range of travel
of the R-axis: 165 mm
Max. Measuring depth: 100 mm
Rotational accuracy: $(0,07 + 6H/10\,000) \mu\text{m}$

12 analytical features available:

Roundness, coaxiality, concentricity, circular runout, axial runout; perpendicularity, thickness deviation, flatness, parallelism, interrupted workpieces, power spectrum, harmonic analysis



Request our detailed brochure!

Specification

| | |
|-----------------------------------|----------------------------------|
| Large centring range: | ± 3 mm |
| Large levelling range: | $\pm 1^\circ$ |
| Measurable diameter: | 100 mm |
| Measuring range: | ± 400 μ m |
| Measuring height outside/inside: | 150 mm |
| Range of travel of the R-axis: | 75 mm |
| Max. Measuring depth: | 90 mm |
| Rotational accuracy: | (0,02 + 6H/10 000) μ m |
| Straightness of precision column: | (Z-axis) 0,3 μ m / 150 mm |

Analytical options:

Cylindricity, roundness, concentricity, coaxiality, circular runout, axial runout; perpendicularity, thickness deviation, flatness, parallelism, interrupted workpieces, helix measurement; total circular runout, straightness, inclination, diameter, radial deviation, taper, power spectrum, harmonic analysis

"Roundtest RA-1500" form measuring instrument

Compact table-top model for stringent accuracy requirements in cylindricity testing.

- Uncomplicated manual centring and levelling of the workpiece. High accuracy, wear-free rotation with air-bearing rotary table. For perfect results when the demands are high.



Roundtest RA-1500

Specification

| | |
|-----------------------------------|-------------------------------------|
| Large centring range: | ± 3 mm |
| Large levelling range: | $\pm 1^\circ$ |
| Measurable diameter: | 300 mm |
| Measuring range: | ± 300 μ m |
| Measuring height outside/inside: | 300 mm (DS/AS) or 500 mm (DH/AH) |
| Range of travel of the R-axis: | 175 mm |
| Max. Measuring depth: | 100 mm |
| Rotational accuracy Radial: | (0,02 + 5H/10 000) μ m |
| Straightness of precision column: | (Z-axis) 0,25 μ m / 300 mm |

Analytical options:

Cylindricity, roundness, concentricity, coaxiality, circular runout, axial runout; perpendicularity, thickness deviation, flatness, parallelism, interrupted workpieces, helix measurement; total circular runout, total axial runout, horizontal and vertical straightness, inclination, diameter, radial deviation, taper, power spectrum, harmonic analysis

"Roundtest RA-2000" form measuring instrument

The stable table-top model with convincing versatility. With manual or automatic centring and levelling of the workpiece.

RA-2000 DS and RA-2000 DH:

- Rapid, simple and precise manual workpiece alignment with digitally adjustable table (Digital Adjustment Table, DAT). The most sophisticated technology for the most discerning users.

RA-2000 AS and RA-2000 AH:

- Convincingly fast rapid, precise, automatic centring and levelling of the workpiece.



Roundtest RA-2100



Request our detailed brochure!

"Roundtest RA-H 5100" form measuring instrument

Top of the range with high accuracy for overall perfection in the measurement of rotationally symmetrical workpieces.

RA-H 5100 AS und RA-H 5100 AH:

- Top technology for 20 possible analyses in form measurement. Absolute precision with maximum measuring speed and infinitely versatile with perfectly matched accessories. For perfect results without the least compromise.



Roundtest RA-H 5100

CNC-Surface Roughness Tester "Surftest SV-3000 CNC"

CNC-controlled reference plane measurement of surface roughness and ripple in test room and laboratory.

- With a travel speed of 200 mm/s and a straightness deviation of $(0.05 + 1.5 L/1000) \mu\text{m}$ and top-quality software as standard.



Surftest SV-3000 CNC

Specification

| | |
|--------------------------------------|---|
| Large centring range: | $\pm 5 \text{ mm}$ |
| Large levelling range: | $\pm 1^\circ$ |
| Measurable diameter: | 400 mm |
| Measuring range: | $\pm 300 \mu\text{m}$ |
| Measuring height: | 350 mm (AS) or 550 mm (AH) |
| Range of travel of the R-axis: | 225 mm |
| Rotational accuracy: | $(0,02 + 6H/10\,000) \mu\text{m}$ |
| Straightness of precision column: | (Z-axis) $0,14 \mu\text{m} / 350 \text{ mm}$ |

Analytical options:

Cylindricity, roundness, concentricity, coaxiality, circular runout, axial runout; perpendicularity, thickness deviation, flatness, parallelism, interrupted workpieces, helix measurement; total circular runout, total axial runout, horizontal and vertical straightness, inclination, diameter, radial deviation, taper, power spectrum, harmonic analysis

ROUNDPAK high-end software

ROUNDPAK enables effortless setting of specific measurement programs, displays the entire test sequence and documents the results in impressive, clear diagrams and 3-D graphs.

Specification

Column

| | |
|------------------|--|
| Range of travel: | 300 mm (Model S8) 500 mm (Model H8) |
|------------------|--|

Rate of travel: 200 mm/s

| | |
|-----------------|-----------------------------------|
| X-axis: | 200 mm |
| Resolution: | 0,05 μm |
| Straightness: | $(0,05 + 1,5 L/1000) \mu\text{m}$ |
| Rate of travel: | 200 mm/s |

Detector

| | |
|------------------|---------------------------|
| Measuring range: | 800 μm |
| Resolution: | max. 0,0001 μm |



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Specification

Column

Range of travel: 300 mm (Model S8)
500 mm (Model H8)

Rate of travel: 200 mm/s

Feed: 200 mm

Resolution: 0,05 μm

Straightness: 2 μm / 200 mm

Rate of travel: 200 mm/s

Detector

Measuring range: 50 mm

Resolution: 0,2 μm

CNC contour measurer "Contracer CV-3000 CNC"

CNC-controlled high-performance system for contour measurement in production and laboratory.

- With ceramic X-axis straightness guide, digital glass scale in the X- and Z-axis and Windows®-based FORMPAK measuring and analysis software.



Contracer CV-3000 CNC

Specification

Column

Range of travel: 300 mm (Model S8)
500 mm (Model H8)

Rate of travel: 200 mm/s

Feed: 200 mm

Resolution: 0,05 μm

Straightness: (0,05 + 1,5 L/1000) μm

Rate of travel: 200 mm/s

Detector

Measuring range: 800 μm

Resolution: max. 0,0001 μm

CNC surface and contour measurer "Formtracer SV-C 3000 CNC"

CNC-controlled reference-plane measurement of surface roughness and ripple in test room and laboratory.

- With a rate of travel of 200 mm/s and a straightness deviation of (0.05 + 1.5L/1000) μm and high-end software as standard.



Contracer SV-C 3000 CNC



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CNC surface and contour measurer "Formtracer CS-L 5000 CNC"

CNC-controlled reference-plane measurement of surface roughness and ripple in test room and laboratory.

- With a rate of travel of 200 mm/s and a straightness deviation of $(0.05 + 1.5L/1000)$ μm and high-end software as standard.
- Laser-Holoscale in X- and Z-axis.



Formtracer CS-5000 CNC

CNC Roundness tester "Roundtest RA-2000 CNC"

CNC-capable series system with automatic turning and swivelling arm.

- Top technology for up to 20 possible analyses in form measurement.
- With absolutely convincing performance profile, with PC connection including Windows-based measurement and analysis software ROUNDPAK 5.0.
- High rate of travel.
- Detector positionable in 1° increments.



Roundtest RA-2100 CNC

Specification

Column

Range of travel: 300 mm (Model S8)
500 mm (Model H8)

Rate of travel: 200 mm/s

Feed: 200 mm

Resolution: 0,00625 μm

Straightness: $(0,3 + 2 L/1000)$ μm

Detector

Measuring range: 12 mm / 24 mm

Resolution: 0,004 μm / 0,008 μm

Specification

Column

Range of travel: 300 mm (Model AS)
500 mm (Model AH)

Straightness: 0,25 μm / 300 mm

Parallelism: 1,0 μm / 300 mm

Radial axis

Range of travel: 175 mm

Straightness: 1,0 μm / 150 mm

Circular table

Measurable diameter: 235 mm

Centring range: ± 3 mm

Levelling range: $\pm 1^\circ$

Rotational deviation

Radial: $(0,02 + 5H/10\,000)$ μm

Axial: $(0,02 + 6R/10\,000)$ μm



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CNC Roundness tester "Roundtest RA H-5000 CNC"

Specification

Column

Range of travel: 350 mm (Model AS)
550 mm (Model AH)

Straightness: 0,14 μm / 350 mm

Parallelism: 0,2 μm / 350 mm

Radial axis

Range of travel: 225 mm

Straightness: 0,4 μm / 200 mm

Perpendicularity: 0,5 μm / 200 mm

Circular table

Measurable diameter: 356 mm

Centring range: ± 5 mm

Levelling range: $\pm 1^\circ$

Rotational accuracy

Radial: (0,02 + 4H/10 000) μm

Axial: (0,02 + 6R/10 000) μm

- High rate of travel.
- Detector positionable in 1° increments.



Roundtest RA H-5100 CNC

Combined surface and contour measurer "Formtracer"

Dual-use, half the cost: contour and surface testing in a single test sequence.

- The instruments in Mitutoyo's Formtracer series combine surface and contour measurement technologies in one space-saving system. This ensures that both processes can be carried out even where space is limited.



Formtracer SV-C 3000 S4

| Model | Feed | Height adjustment | Accuracy | Baseplate dimension | Resolution |
|-------------------|--------|-------------------|--------------------------------------|---------------------|-----------------------|
| SV-C 3000 S4 / S8 | 100 mm | 250 mm motorised | $\pm (1 + 2L/100)$ μm | 610x450 mm | 0,05 μm |
| SV-C 3000 H4 / H8 | 100 mm | 450 mm motorised | $\pm (1 + 2L/100)$ μm | 610x450 mm | 0,05 μm |
| SV-C 3000 W4 / W8 | 100 mm | 450 mm motorised | $\pm (1 + 2L/100)$ μm | 1000x450 mm | 0,05 μm |
| SV-C 4000 S4 / S8 | 100 mm | 250 mm motorised | $\pm (0,8 + 2L/100)$ μm | 610x450 mm | 0,05 μm |
| SV-C 4000 H4 / H8 | 100 mm | 450 mm motorised | $\pm (0,8 + 2L/100)$ μm | 610x450 mm | 0,05 μm |
| SV-C 4000 W4 / W8 | 100 mm | 450 mm motorised | $\pm (0,8 + 2L/100)$ μm | 1000x450 mm | 0,05 μm |
| CS-3000 | 100 mm | 300 mm motorised | $\pm (1 + 2L/100)$ μm | 610x450 mm | 0,05 μm |
| CS-5000 | 200 mm | 450 mm motorised | $\pm (0,3 + 0,2L/100)$ μm | 1000x450 mm | 0,00625 μm |

Specification

Formtracer

Column

Range of travel: 250 mm
300 mm
450 mm

Feed: 100 mm / 200 mm

Straightness: 0,8/100 mm
0,2/100 mm



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