



Surface Roughness Measuring Instruments Page 450



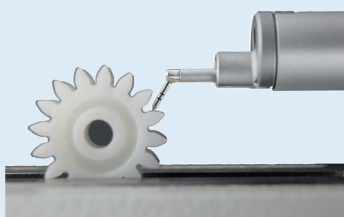
Contour Measuring Instruments Page 466



Surface Roughness and Contour Measuring Instruments Formtracer Page 471



Form Measuring Instruments Roundtest + Roundtracer Page 480



Styli & Arms Form Measurement Page 494

Surftest SJ-220

Series 178 SURFTEST SJ-220 - Portable Surface Roughness Measuring Instrument

This is a portable measuring instrument that allows you to easily and accurately measure surface roughness. The Surftest SJ-220 offers you the following benefits:

- Robust design, yet comfortable handling
- Skid system gives you user friendly and intuitive menu navigation via touchscreen.
- It works independently of mains power, allowing you to make on-site measurements.
- The 2.8" high resolution LCD touchscreen gives you excellent readability.
- It performs roughness analyses conform to various international standards (EN ISO 21920, EN ISO 4287, ISO 13565, ISO 12085, VDA, ASME, JIS).
- Different drive units expanding the range of applications.
- Calculation results, assessed profiles and curves can be displayed.
- Support of 25 languages.
- Optional Bluetooth connectivity to PC and Smartphone.
- Free software SJ Communication Tool per download.



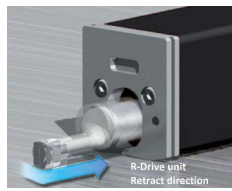
SJ-220

Metric Switchable between 25 languages: Japanese, English, German, French, Italian, Spanish, Portuguese, Czech, Polish, Hungarian, Turkish, Swedish, Dutch, Korean, Traditional Chinese, Simplified Chinese, Slovenian, Russian, Romanian, Bulgarian, Finnish, Thai, Vietnamese, Indonesian, Malaysian

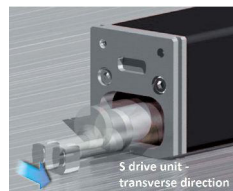
No.	Description	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]	Mass
178-741-11	SJ-220 model	0,75	60°	2	510 g
178-743-11	SJ-220R model	0,75	60°	2	510 g
178-745-11	SJ-220S model	0,75	60°	2	510 g



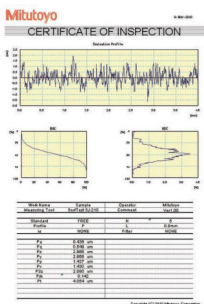
Standard



R-type



S-type



SJ-COMMUNICATION TOOL

free download on www.mitutoyo.eu registration required (Refer to page <https://mitutoyo.eu/downloads/free-software-and-updates-and-free-trials/free-software-form-measuring-instruments>)

Specifications

Drive unit	
Measuring range	16 mm; 4,8 mm (S-type)
Traverse	17,5 mm, 5,6 mm [S-type]
Measuring speed	
	0,25 mm/s; 0,5 mm/s; 0,75 mm/s; 1 mm/s
Detector	
Measuring method	Differential inductance
Range	360 μm
Stylus	Diamond Tip
Skid radius	40 mm
Display unit	
Profiles	Primary Profile (P), Roughness Profile (R), R-Motif, DF-Profile
Roughness standard	EN ISO, VDA, JIS, ANSI and customize settings
Digital filter	Gauss, 2CR75, PC75
Cut-off length	Standard and R type: λ _c : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm λ _s : 2,5 μm; 8 μm; 25 μm S type: λ _c : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm λ _s : 2,5 μm; 8 μm
Tolerance	Coloured upper / lower limit
Interface	USB, Digimatic, RS-232C, Foot switch, BLE
Power supply	AC adapter or rechargeable battery

Optional accessories

No.	Description
264-628	U-WAVE-TIB, Wireless Unit for Measuring Instrument
178-029	Granite stand, for Surftest SJ-220 / SJ-310 / SJ-210
12AAA221	Adapter for magnetic stand; ∅ 8 mm, for Surftest SJ-220 / SJ-310 / SJ-210
178-747	Standard drive unit, for SJ-220 / SJ-310 / SJ-210
178-748	R-type drive unit, for SJ-220 / SJ-310 / SJ-210
178-749	S-type drive unit, for SJ-220 / SJ-310 / SJ-210
178-750	S-type drive unit set, for SJ-220 / SJ-310 / SJ-210
178-182	Digital three-axis adjustment table
178-183	XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-185	Digimatic XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-195	Leveling Table, Leveling range +/- 1,5°



Refer to Surftest SJ-220 brochure

Surftest SJ-220

Series 178 SURFTTEST SJ-220 - Portable Surface Roughness Measuring Instrument

Optional accessories

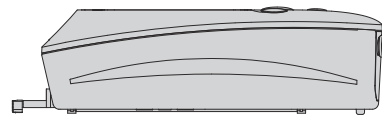
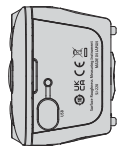
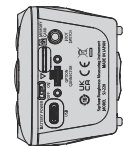
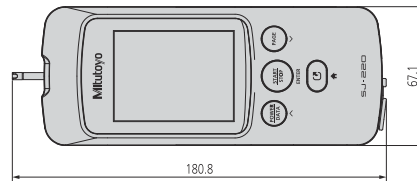
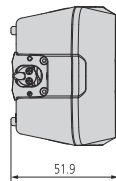
No.	Description
12AAA210	Extension rod length 50mm, for Surf-est SJ-220 / SJ-310 / SJ-210
178-296	Standard detector 2µm; 60°; 0,75mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-383	Detector for small holes D4,5; 2µm; 60°; 0,75mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-384	Detector for small holes D2,8; 2µm; 60°; 0,75mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-385	Deep groove detector 2µm; 60°; 0,75mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-388	Detector for gear tooth surface 2µm; 60°; 0,75mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-390	Standard detector 5µm; 90°; 4mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-392	Detector for small holes D4,5; 5µm; 90°; 4mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-393	Detector for small holes D2,8; 5µm; 90°; 4mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-394	Deep groove detector 5µm; 90°; 4mN, for Surf-est SJ-220 / SJ-310 / SJ-210
178-398	Detector for gear-tooth surface 5µm; 60°; 4mN, for Surf-est SJ-220 / SJ-310 / SJ-210
12BAA303	Connection cable for extension 1 m, for Surf-est SJ-220 / SJ-310 / SJ-210
12AAY688	RS-232C cable, for Surf-est SJ-220
12AAA216	Height adjustment feet, for Surf-est SJ-220 / SJ-310 / SJ-210
12AAA217	Nosepiece for flat surfaces, for Surf-est SJ-220 / SJ-310 / SJ-210
12AAA218	Nosepiece for cylinder, for Surf-est SJ-220 / SJ-310 / SJ-210
12AAA219	Adapter for vertical position, for Surf-est SJ-220 / SJ-310 / SJ-210
12AAA220	Magnetic Stand Adaptor, for Surf-est SJ-220 / SJ-310 / SJ-210
12AAA222	Height gauge adaptor [9x9mm shank], for Surf-est SJ-220 / SJ-310 / SJ-210
12AAA222B	Adapter for 178-029
12AAA233	Height gauge adaptor [1/4 x 1/2" shank], for Surf-est SJ-220 / SJ-310 / SJ-210
12AAJ088	Footswitch
12AAY917	Memory card, for Surf-est SJ-220
178-601	Roughness specimen Ra 3µm [mm], Ra 3µm
178-604	Roughness specimen Ra 0,4 / Ra 3µm [mm], Ra 3µm and 0.4µm
178-607	Roughness specimen Ra 0,4/ Ra3µm[inch/mm]
12BAS451	USB 2.0 cable, for Surf-est SJ-220
02AZD790D	Connection Cable D for U-WAVE, Flat 10-Pin Type
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
12BAS476	Tool for operating the battery switch, for Surf-est SJ-220
178-029	Granite stand, for Surf-est SJ-220 / SJ-310 / SJ-210
178-033	Device for cylindrical workpieces, for Surf-est SJ-220 / SJ-310 / SJ-210
178-034	Device as universal fixture, for Surf-est SJ-220 / SJ-310 / SJ-210
178-035	Device for measuring inside diameter, for Surf-est SJ-220 / SJ-310 / SJ-210



Back view



Opt. Bluetooth connectivity to PC or Smartphone.



Dimensions



Scan QR Codes with your mobile device and watch our product videos on YouTube

Surftest SJ-310

Series 178 - Portable Surface Roughness Measuring Instrument

This is a portable measuring instrument that allows you to easily and accurately measure surface roughness.

The Surftest SJ-310 offers you the following benefits:

- Skid system with touch-screen functionality and built-in printer.
- It works independently of mains power, allowing you to make on-site measurements.
- Easy and intuitive menu navigation.
- The large **14.5 cm [5.7"]** colour LCD gives you high visibility.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- You can store up to 10 different measuring conditions inside the SJ-310, and up to 500 with an optional SD card.
- Statistical analysis and coloured tolerance judgement.
- 2 different evaluation conditions within 1 measurement adjustable.
- You can separately password protect many functions.
- It comes with support for 16 languages.



Metric

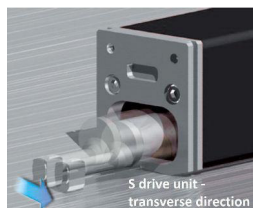
No.	Description	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Mass
178-570-21D	SJ-310 model	0,75	60°	2	1.7 kg
178-572-11D	SJ-310R model	0,75	60°	2	1.7 kg
178-574-21D	SJ-310S model	0,75	60°	2	1.7 kg



Standard



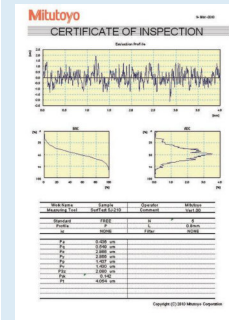
R-type



S-type

Specifications

Drive unit	
Measuring range	16 mm [S-type] 4,8
Traverse	17,5 mm [S-type] 5,6 mm
Measuring speed	0,25 mm/s; 0,5 mm/s; 0,75 mm/s
Detector	
Measuring method	Differential inductance
Range	360 µm
Stylus	Diamond Tip
Skid radius	40 mm
Display unit	
Profiles	Roughness Profile (R), R-Motif, DF-Profile and more
Roughness standard	EN ISO, VDA, JIS, ANSI and customize settings
Digital filter	Gauss, 2CR75, PC75
Cut-off length	λc : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm λs : 2,5 µm; 8 µm
Printer	Thermal Printer
Tolerance	Coloured upper / lower limit
Interface	USB, Digimatic, RS-232C, Foot switch
Mass	1,7 kg
Power supply	AC adapter or rechargeable battery



USB COMMUNICATION TOOL

free download on www.mitutoyo.eu registration required (refer to page <https://mitutoyo.eu/downloads/free-software-and-updates-and-free-trials/free-software-form-measuring-instruments>)



Refer to Surftest SJ-310 brochure



Scan QR Code with your mobile device and watch our product videos on YouTube

Surftest SJ-220 and SJ-310 - S-Type

Series 178 – Portable Transverse Measurement with S-Type Drive Unit

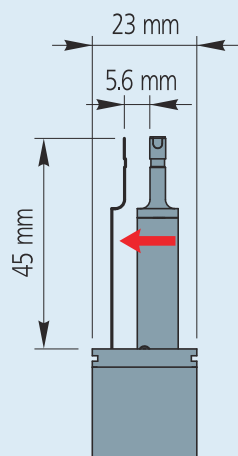
This is an S-Type drive unit for the Surftest SJ-220 and SJ-310 that provides portable transverse measurement.

It offers you the following benefits:

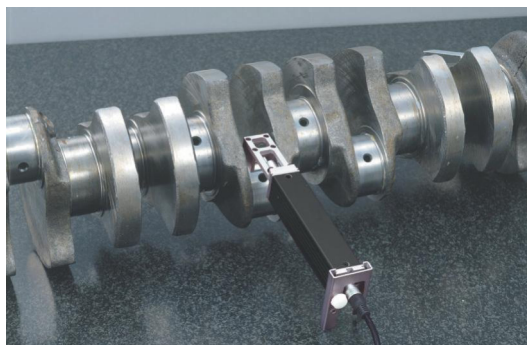
- It is compatible with the conventional drive units of the Surftest SJ-220 and SJ-310.
- You can simply connect it to the display unit.
- A typical application would be to position the S-Type unit on a crankshaft journal bearing, as shown in the photograph below. Once started the S-Type drive will track the stylus across the surface transversely to its own axis and reliably measure surface roughness in the direction of the crankshaft axis. Transverse tracking simplifies the measurement of surface roughness even in very confined situations, which has long been a problem with conventional instruments which allow only longitudinal measurement.

Specifications

Traverse	5,6 mm
Measuring speed	0,25 mm/s; 0,5 mm/s; 0,75 mm/s

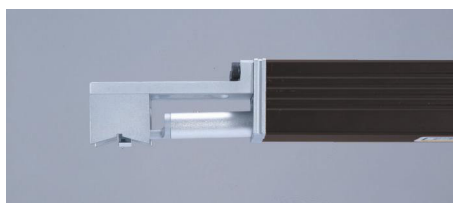


Linear movement of S-Type

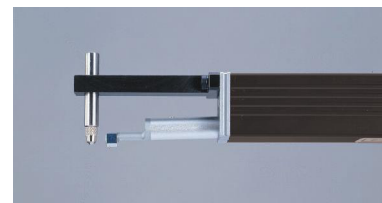


No.	Description	Traverse	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]
178-749	S-Type Drive Unit	5,6 mm	0,75	60°	2
178-750	S-Type Drive Unit Set*	5,6 mm	0,75	60°	2

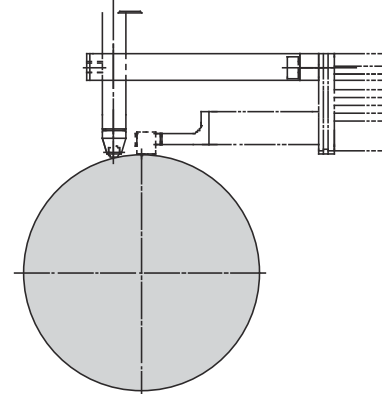
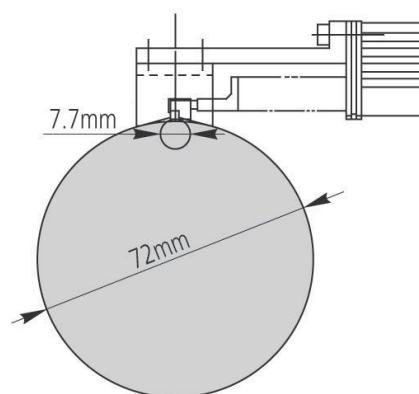
* 178-750 - S-Type Drive Unit Set incl. 178-749 – 12AAE644 – 12AAE643



12AAE644
V-type adapter



12AAE643
Point - contact adapter



Accessories for SJ-220 and SJ-310

Series 178 - Standard and Optional Accessories for Surftest SJ-220 / SJ-310

Model		Surftest SJ-220		Surftest SJ-220R		Surftest SJ-220S		Surftest SJ-310		Surftest SJ-310R		Surftest SJ-310S	
		Std	Opt	Std	Opt	Std	Opt	Std	Opt	Std	Opt	Std	Opt
No.	Description												
12AAA210	Extension rod length 50 mm		●		●				●		●		
12AAA216	Height adjustment feet		●		●			●					
12AAA217	Nosepiece (flat)		●		●			●		●			
12AAA218	Nosepiece (cylindrical)		●		●			●		●			
12AAA219	Adapter for vertical position		●		●			●			●		
12AAA221	Adapter for magnetic stand		●		●		●	●			●		●
12AAA222	Height gauge adapter		●		●		●	●			●		●
12AAA882D	RS-232C connection cable							●			●		●
12AAD510	USB cable for SJ-310 / SJ-410							●			●		●
12AAE643	Point - contact adapter					●						●	
12AAE644	V-type adapter					●						●	
12AAJ088	Footswitch		●		●		●		●		●		●
12AAN040	Protective film								●		●		●
12AAN046	Battery							●		●		●	
12AAW452	Memory card 2GB								●		●		●
12AAY688	RS-232C cable		●		●		●						
12AAY917	Memory card		●		●		●						
12AAZ222	Replacement Battery		●		●		●						
12BAA303	Connecting cable for extension 1 m	●		●		●			●		●		●
12BAG834	Touch pen								●		●		●
12BAK700	Calibration table	●		●		●			●		●		●
12BAL402	Touch Panel Protection								●		●		●
12BAS451	USB 2.0 cable	●		●		●							
12BAS476	Tool for operating the battery switch	●		●		●							
178-029*	Granite stand (*12AAA221 is needed)		●		●		●		●		●		●
178-296	Standard detector 2 µm; 60°; 0,75 mN	●		●				●		●			
178-383	Detector for small holes Ø4,5 mm; 2 µm; 60°; 0,75 mN		●		●		●		●		●		●
178-384	Detector for small holes Ø2,8 mm; 2 µm; 60°; 0,75 mN		●		●				●		●		●
178-385	Deep groove detector 2 µm; 60°; 0,75 mN		●		●				●		●		
178-386	Detector for S-drive 5 µm; 90°; 4 mN		●		●	●			●		●	●	
178-387	Detector for S-drive 2 µm; 60°; 0,75 mN		●		●	●			●		●	●	
178-388	Detector for gear tooth surface 2 µm; 60°; 0,75 mN		●		●		●		●		●		●
178-390	Detector 5 µm; 90°; 4 mN		●		●				●		●		
178-391	Detector for soft materials 10 µm; 90°; 4 mN		●		●				●		●		●
178-392	Detector for small holes Ø4,5 mm; 5 µm; 90°; 4 mN		●		●		●		●		●		●
178-393	Detector for small holes Ø2,8 mm; 5 µm; 90°; 4 mN		●		●		●		●		●		●
178-394	Deep groove detector 5 µm; 90°; 4 mN		●		●				●		●		
178-398	Detector for gear tooth surface 5 µm; 60°; 4 mN		●		●		●		●		●		●
178-601-1	Roughness specimen Ra 3 µm	●		●			●	●		●		●	
178-604	Roughness specimen Ra 0,4 µm /3 µm		●		●		●		●		●		●
178-605	Roughness specimen Ra 1 µm		●		●	●			●		●	●	
178-747	Standard drive unit 17,5 mm	●			●		●	●			●		●
178-748	R-type drive unit 17,5 mm		●	●			●		●	●			●
178-749.	S-type drive unit		●		●	●			●		●	●	
270732	Printer papers (5 rolls)								●		●		●
357651	AC Adapter 12V								●		●		●

Accessories for SJ-220 and SJ-310

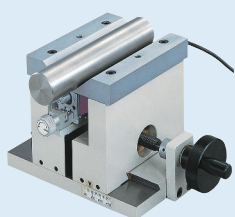
Optional accessories

No.	Description
178-033	Device for cylindrical workpieces, for Surftest SJ-220 / SJ-310 / SJ-210
178-034	Device as universal fixture, for Surftest SJ-220 / SJ-310 / SJ-210
178-035	Device for measuring inside diameter, for Surftest SJ-220 / SJ-310 / SJ-210

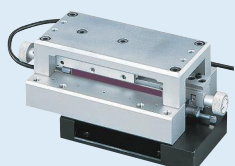
Series 178



178-029



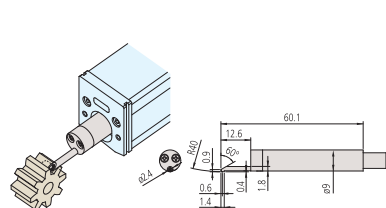
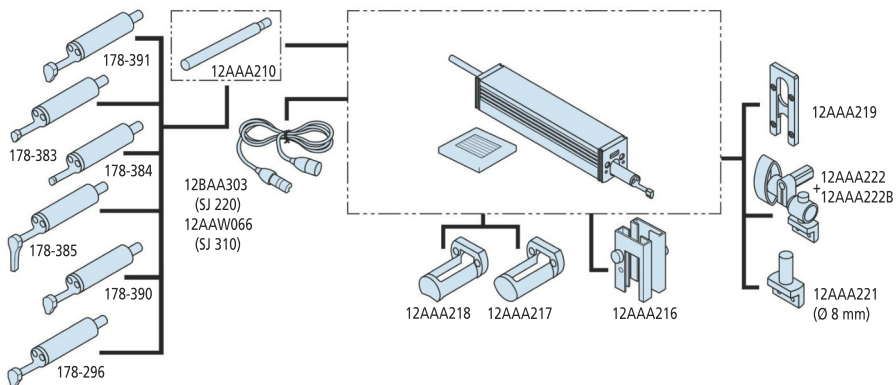
178-033



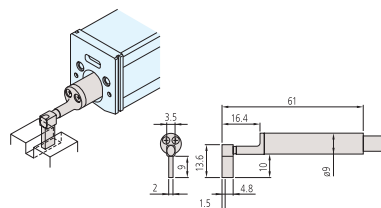
178-034



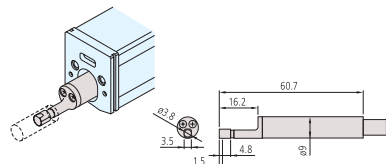
178-035



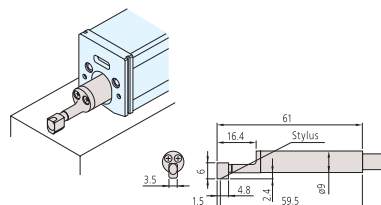
178-388/178-398



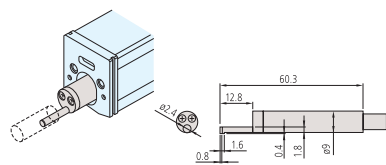
178-385/178-394



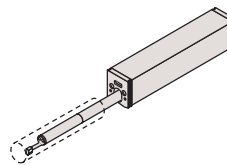
178-383/178-392



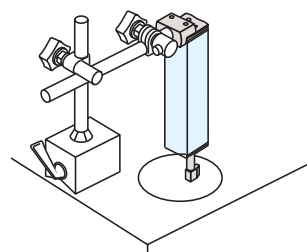
178-390/178-387
178-296/178-386



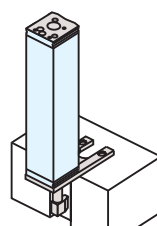
178-384/178-393



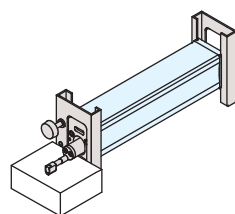
12AAA210



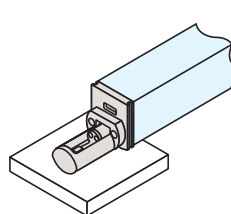
12AAA221



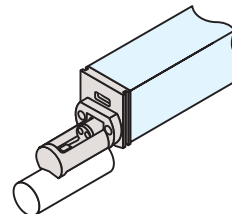
12AAA219



12AAA216



12AAA217



12AAA218

Surftest SJ-410

Series 178 - Portable Surface Roughness Measuring Instrument

This is a portable measuring instrument that allows you to easily and accurately measure surface roughness.

The Surftest SJ-410 offers you the following benefits:

- Skidless system with touch-screen functionality and built-in printer.
- It works independently of mains power, allowing you to make on-site measurements.
- Easy and intuitive menu navigation.
- The large **14.5 cm** [5.7"] colour LCD gives you high visibility.
- The skidless detector allows you to measure the primary profile (P), roughness profile (R), waviness profile (W) and more.
- Surface compensation of curved, radial and tilted surfaces.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- You can store up to 10 different measuring conditions inside the SJ-410, and up to 500 with an optional SD card.
- It allows two different evaluation conditions within one measurement adjustable.
- You can separately password protect many functions.
- It comes with support for 16 languages.
- Available options include an auto-set unit, X-axis fine adjustment and digital levelling unit.



SJ-410

Metric Surftest SJ-411

Traverse : 25 mm

Traverse straightness : 0,3 µm / 25 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Mass [kg]
178-580-31D	0,75	60°	2	2,8
178-580-32D	4	90°	5	2,8

Metric Surftest SJ-412

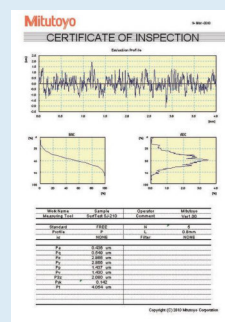
Traverse : 50 mm

Traverse straightness : 0,5 µm / 50 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Mass [kg]
178-582-31D	0,75	60°	2	2,9
178-582-32D	4	90°	5	2,9

Specifications

Drive unit	
Traverse	SJ-411: 25 mm SJ-412: 50 mm
Measuring speed	0,05 mm/s; 0,1 mm/s; 0,2 mm/s; 0,5 mm/s; 1 mm/s
Detector	
Measuring method	Skidless - Differential inductance
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Positioning	±1,5° (tilting), 10 mm (up/down)
Display unit	
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Standard	EN ISO, VDA, JIS, ANSI and customize settings
Analysis graphs	BAC, ADC
Digital filter	Gauss, 2CR75, PC75
Cut-off length	λc : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm λs : 2,5 µm; 8 µm; 25 µm
Printer	Thermal Printer
Tolerance	Coloured upper / lower limit
Interface	USB, Digimatic, RS-232C, Foot switch
Power supply	AC adapter or rechargeable battery



USB COMMUNICATION TOOL

free download on www.mitutoyo.eu registration required (refer to page <https://mitutoyo.eu/downloads/free-software-and-updates-and-free-trials/free-software-form-measuring-instruments>)



Refer to Surftest SJ-410 brochure



Scan QR Code with your mobile device and watch our product videos on YouTube

Surftest SJ-410

Series 178 - Portable Surface Roughness Measuring Instrument

Optional accessories

Other optional and standard accessories are listed later in different sections for accessories and styli.

Optional accessories

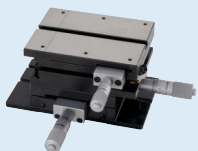
No.	Description
02AZD790D	Connection Cable D for U-WAVE, Flat 10-Pin Type
12AAB358	Cylinder attachment Ø 15-60 mm
12AAD510	USB cable for SJ-310 / SJ-410 series
178-019	Precision vise
178-182	Digital three-axis adjustment table
178-183	XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-185	Digimatic XY travel + leveling table[mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-195	Leveling Table, Leveling range +/- 1,5°
178-196	Digital leveling table [mm], Leveling range +/- 1,5°
178-198	Digital XY travel table [mm], Travel +/-12,5 mm
178-396-2	Detector 0,75mN, for Surftest; Formtracer SV-C
178-397-2	Detector, 4 mN
178-605	Roughness specimen Ra 1 µm [mm], Ra 1 µm
178-610	Reference step gauge (1, 2, 5, 10) µm, (1, 2, 5, 10) µm
178-611	Reference step specimen (2, 10) µm, [mm] - type
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
12AAW452	Memory card 2GB, for SJ-210 / SJ-310 / SJ-410 series

Consumable spares

No.	Description
12AAN046	Replacement battery, for Surftest SJ-310 / SJ-410
12BAL402	Touch Panel Protecting Sheet
270732	Printer paper, 5 rolls SJ series / SV-2100



178-182
Digital three-axis adjustment table



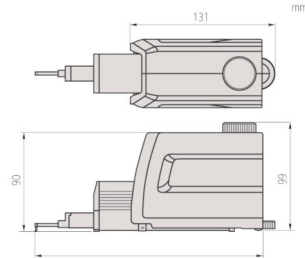
178-183
XY travel + leveling table [mm]



178-196
Digital leveling table



R-surface measurement



SJ-411: 207,5 mm / SJ-412: 234 mm
Drive unit



Optional:

- Autoset unit 178-010
- X-axis adjustment unit 178-020
- Digital leveling unit 178-030



Scope of delivery



178-039
(displayed with SJ-411)

Surftest SJ-500

Series 178 - Surface Roughness Measuring Instrument

This is a measuring instrument that allows you to easily and accurately measure surface roughness.

The Surftest SJ-500 offers you the following benefits:

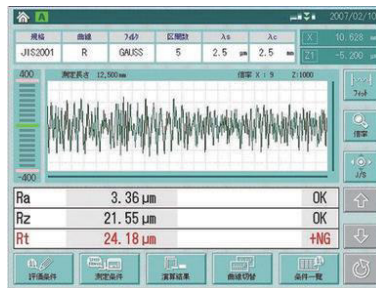
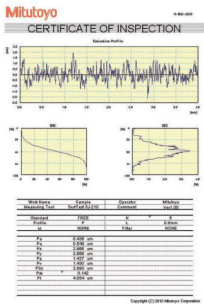
- The skidless detector allows you to measure the primary profile (P), roughness profile (R), waviness profile (W) and more.
- User friendly control unit for high precision surface roughness measurement.
- The large **19 cm** [7.5"] colour TFT LCD with touch-screen functionality gives you high visibility and ease of use.
- The display menu is easy to read and simple to operate.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- The built-in joystick on the control unit enables quick and easy positioning. The manual adjustment knob allows you to finely position a small stylus to measure the inside surface of small holes.
- The detector unit allows a 90° displacement of the stylus, which is ideal for crankshaft and narrow space measurement.
- You can use the instrument stand-alone or mounted on a stand.



SJ-500

Metric

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]
178-532-01D	0,75	60°	2

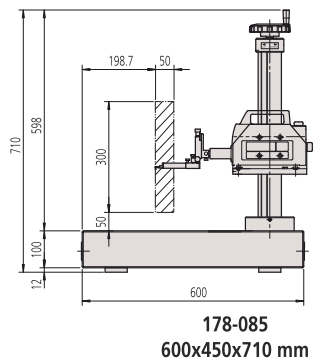


Preview

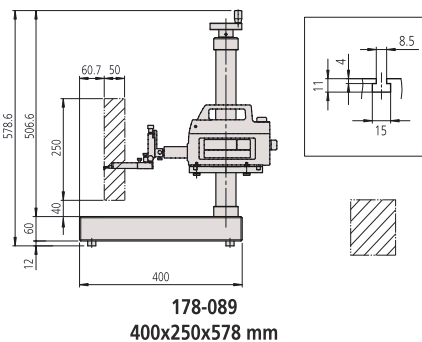
USB COMMUNICATION TOOL

free download on www.mitutoyo.eu

registration required (refer to page <https://mitutoyo.eu/downloads/free-software-and-updates-and-free-trials/free-software-form-measuring-instruments>)



178-085
600x450x710 mm



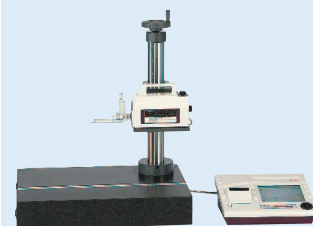
178-089
400x250x578 mm

Specifications

Drive unit	
Traverse	50 mm
Measuring speed	0,02 - 5 mm/s
Drive speed	0 - 20 mm/s or joystick operation
Traverse straightness	0,2 μm / 50 mm
Detector	
Range	800 μm; 80 μm; 8 μm (up to 2,4 mm with an optional stylus)
Positioning	±1,5° (tilting) 30 mm (up/down)
Measuring method	Skidless - Differential inductance
Display unit	
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Standard	EN ISO, VDA, JIS, ANSI and customize setting
Analysis graphs	BAC, ADC
Digital filter	Gauss, 2CR75, PC75, Robust Spline
Cut-off length	λc : 0,025 mm; 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; λs : 0,25 μm; 0,8 μm; 2,5 μm; 8 μm; 25 μm; 80 μm; 250 μm; None λf : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8mm; 25mm; None
Printer	Thermal printer

Optional accessories

No.	Description
12AAG202	Extension rod 50mm, for Surftest; Formtracer SV-C
12AAG203	Extension rod 100mm, for Surftest; Formtracer SV-C
178-085	Granite stand 600 x 450 x 710 mm
178-089	Granite stand 400 x 250 x 578 mm
178-093-1	Desktop vibration isolator pump type, with max loading mass 120 kg
178-182	Digital three-axis adjustment table
178-183	XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-185	Digimatic XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-196	Digital leveling table [mm], Leveling range +/- 1,5°
178-396-2	Detector 0,75mN, for Surftest; Formtracer SV-C
178-397-2	Detector, 4 mN



SJ-500 with optional manual granite stand

Surftest SV-2100

Series 178 - Surface Roughness Measuring Instrument

This is a stationary measuring instrument that allows you to easily and accurately measure surface roughness.

The Surftest SV-2100 offers you the following benefits:

- It is mounted on a granite base with a manual or power column.
- The large **19 cm [7.5"]** colour TFT LCD gives you high visibility and touch-screen functionality.
- It has a user friendly display unit for high precision surface roughness measurement.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- Designed for usage in workshop areas.



SV-2100S4



SV-2100M4

Metric SV-2100H4 model
Vertical travel : 550 mm power column
Granite base size (WxD) : 600 x 450 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]
178-682-01D	0,75	60°	2

Metric SV-2100M4 model
Vertical travel : 350 mm manual column
Granite base size (WxD) : 600 x 450 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]
178-636-11	0,75	60°	2

Metric SV-2100S4 model
Vertical travel : 350 mm power column
Granite base size (WxD) : 600 x 450 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]
178-680-01D	0,75	60°	2

Metric SV-2100W4 model
Vertical travel : 550 mm power column
Granite base size (WxD) : 1000 x 450 mm

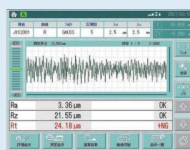
No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]
178-684-01D	0,75	60°	2

Specifications

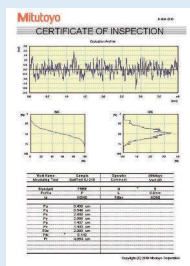
Drive unit	
Traverse	100 mm
Measuring speed	0,02 - 5 mm/s
Drive speed	X = 0-40 mm/s Z2 = 0-20 mm/s [S4, H4, W4] or joystick operation
Traverse straightness	0,15 μm / 100 mm
Detector	
Range	800 μm; 80 μm; 8 μm (up to 2,4 mm with an optional stylus)
Measuring method	Skidless - Differential inductance
Display unit	
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Standard	EN ISO, VDA, JIS, ANSI and customize settings
Analysis graphs	BAC, ADC
Digital filter	Gauss, 2CR75, PC75, Robust Spline
Cut-off length	λc : 0,025 mm; 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm; 25 mm; 80 mm λs : 0,25 μm; 0,8 μm; 2,5 μm; 8 μm; 25 μm; 80 μm; 250 μm; none λf : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm; 25 mm; 80 mm; none
Printer	Thermal printer

Optional accessories

No.	Description
12AAG202	Extension rod 50mm, for Surftest; Formtracer SV-C
12AAG203	Extension rod 100mm, for Surftest; Formtracer SV-C
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice



Preview



Software

USB COMMUNICATION TOOL

free download on www.mitutoyo.eu registration required (refer to page <https://mitutoyo.eu/downloads/free-software-and-updates-and-free-trials/free-software-form-measuring-instruments>)

Surftest SJ-500P

Series 178 - Surface Roughness Measuring Instruments with Software FORMTRACEPAK

This is a surface roughness measuring instrument with software FORMTRACEPAK.

Software FORMTRACEPAK offers you the following benefits:

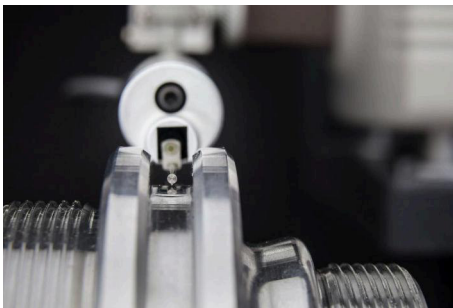
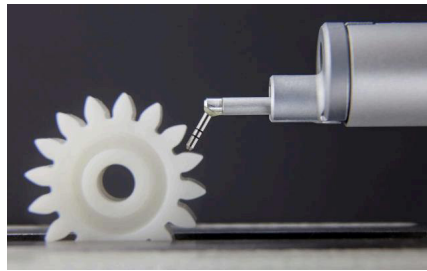
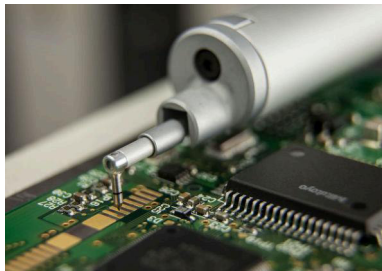
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- It can be used for several contour calculations within the measuring range.
- It offers total support for measurement system control, analysis and inspection report.
- All advantages of the SJ-500 also apply to the P Type.



SJ-500P

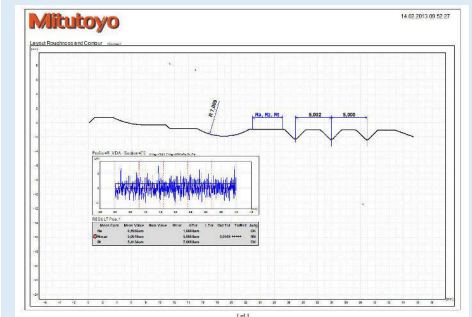
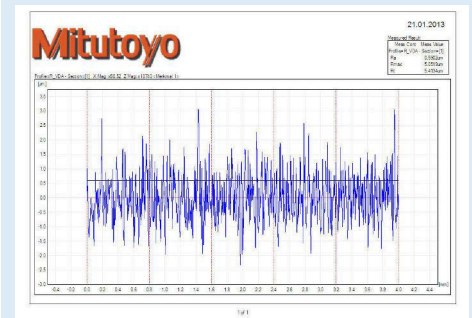
Metric

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]
178-534-21	0,75	60°	2



Specifications

Drive unit	
Traverse	50 mm
Drive speed	0-20 mm/s
Measuring speed	0,02 - 5 mm/s
Traverse straightness	0,2 μm / 50 mm
Detector	
Measuring method	Skidless - Differential inductance
Range	800 μm ; 80 μm ; 8 μm (up to 2,4 mm with an optional stylus)
Positioning	$\pm 1,5^\circ$ (tilting) 30 mm (up/down)
Software	
FORMTRACEPAK	



Formtracepak layout



Scan QR Code with your mobile device and watch our product videos on YouTube

Surftest SV-2100P

Series 178 - Surface Roughness Measuring Instruments with Software FORMTRACEPAK

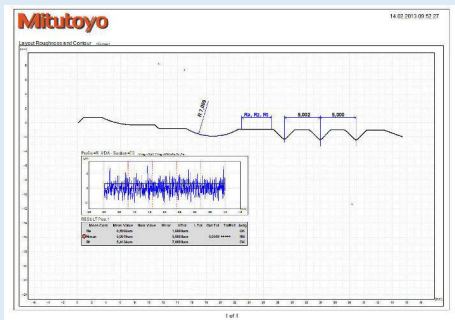
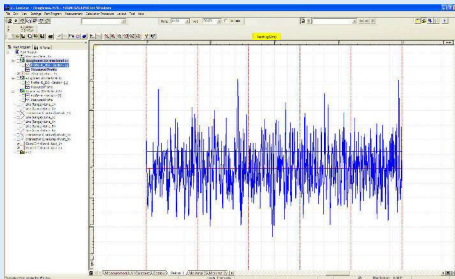
This is a surface roughness measuring instrument with software FORMTRACEPAK.

Software FORMTRACEPAK offers you the following benefits:

- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- It can be used for several contour calculations within the measuring range.
- It offers total support for measurement system control, analysis and inspection report.
- All advantages of the SV-2100 also apply to the P Type.

Specifications

Drive unit	
Traverse	100 mm
Drive speed	X = 0-40 mm/s
Measuring speed	0,02 - 5 mm/s
Traverse straightness	0,15 μm / 100 mm
Detector	
Measuring method	Skidless - Differential inductance
Range	800 μm ; 80 μm ; 8 μm (up to 2,4 mm with an optional stylus)
Software	FORMTRACEPAK



Formtracepak layout



SV-2100P

Metric

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [μm]
178-638-21	0,75	60°	2

Formtracer Avant FTA-S3000

Serie 178 - Surface Roughness Measuring Instrument with Software FORMTRACEPAK

The Formtracer Avant FTA-S3000 is a surface roughness measuring machine that boasts outstanding operability and a wide variety of measurement functions because of the further expansion of the optional equipment range.

The Formtracer Avant FTA-S3000 offers you the following benefits:

- Easy to operate
- High-accuracy surface roughness testers
- A large range of optional styli ensure access to restricted features
- Remote control box for quick and accurate machine positioning
- The detector holders (optional) enables both crank and /or upward measurement
- 3D/Y-axis table (optional) with a travel range of 100 mm enables 3D surface roughness measurement
- DAT unit (optional) can tilt the X-axis drive unit to allow a workpiece to be levelled easily
- Retrofit options for contour measurement
- X-axis tilting



FTA-S3000

Specifications

Traverse Range	100 mm / 200 mm
Measuring speed	0,02-30 mm/s
Drive speed	X = 0-80 mm/s Z2 = 0-40 mm/s
Inclining range	±45°
Vertical travel	Z2 = 300 / 500 / 700 mm
Standard	EN ISO, VDA, JIS, ANSI and customize setting
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Software	FORMTRACEPAK <ul style="list-style-type: none"> • Enables control of all axes and rotary table for realizing efficient measurement automation. • Perform surface roughness evaluation. • Able to create an original inspection certificate by setting the print format to suit particular requirements.



Detector Holder S-3000C



Detector holder S-3000CR



Detector holder S-3000MR



Refer to FORMTRACER AVANT brochure

Formtracer Avant FTA-S3000

Serie 178 - Surface Roughness Measuring Instrument with Software FORMTRACEPAK

Optional accessories

No.	Description
12AAD975	Theta-1 axis, Rotary Axis
12AAG202	Extension rod 50mm, for Surfptest; Formtracer SV-C
12AAG203	Extension rod 100mm, for Surfptest; Formtracer SV-C
12AAV701	Detector stand for retrofit, for Formtracer Avant series
178-050	DAT unit, for Formtracer Avant FTA - S3000 series
178-077	3D leveling table, for CNC Surfptest and Formtracer
178-078	Theta-2 axis, Rotary Axis
178-096	3 D/Y-axis table
178-097	Y-axis table, for Surfptest SV, Contracer, Formtracer
178-141	Detector holder S3000C-D, for Formtracer Avant series
178-142	Detector holder S3000CR-D set, for Formtracer Avant series
178-143	Detector holder S3000MR-D set
178-181	Side table
178-182	Digital three-axis adjustment table
178-183	XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-188	Vibration isolator standard base
178-189	Vibration isolator wide base
178-195	Leveling Table, Leveling range +/- 1,5°
178-198	Digital XY travel table [mm], Travel +/-12,5 mm
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice
178-397-2	Detector, 4 mN
178-611	Reference step specimen (2, 10) µm, [mm] - type
218-261-11	C3200 retrofit kit [mm], for Formtracer Avant series

Metric Traverse: 100 mm

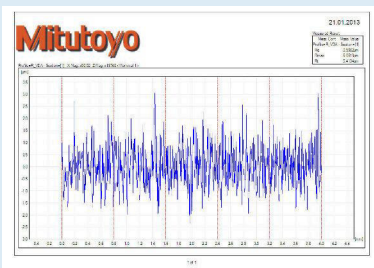
Model No.	FTA - S4 S3000 178-151-11	FTA - H4 S3000 178-152-11	FTA - W4 S3000 178-153-11	FTA - L4 S3000 178-154-11
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Range	800 µm; 80 µm; 8 µm (up to 2.4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2.4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2.4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2.4 mm with an optional stylus)
Detector measuring force mN	0,75	0,75	0,75	0,75
Mass kg	140	150	220	270

Metric Traverse: 200 mm

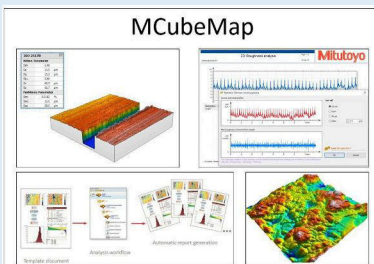
Model No.	FTA - S8 S3000 178-156-11	FTA - H8 S3000 178-157-11	FTA - W8 S3000 178-158-11	FTA - L8 S3000 178-159-11
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Range	800 µm; 80 µm; 8 µm (up to 2.4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2.4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2.4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2.4 mm with an optional stylus)
Detector measuring force mN	0,75	0,75	0,75	0,75
Mass kg	140	150	220	270



Formtracer Avant FTA-S3000 with vibration isolator and side table



Formtracepak Layout



Optional MCubeMap (in combination with 3D Y-axis 178-096)

Surftest Extreme SV-3000CNC

Series 178 – CNC Surface Roughness Measuring Instrument

These is a fully CNC surface roughness measuring instrument with powerful software FORMTRACEPAK.

The Surftest Extreme SV-3000CNC offers you the following benefits:

- It is perfectly made for increased throughput of multiple profile and workpiece measurement tasks.
- Each axis has a drive speed of up to 200 mm/s.
- You can take continuous measurement over horizontal and inclined surfaces by power-tilting the drive unit.
- Within the measuring range of the styli software FORMTRACEPAK supports contour calculation features.
- 3D topography measurement as option available.
- Inclined plane measurement is possible through 2-axis simultaneous control in the X and Y directions.
- The detector unit incorporates an anti-collision safety device, causing it to automatically stop if its main body collides with a workpiece or jig.
- All models equipped with Y-axis.
- Z-axis tracking measurement for models without α -axis.



SV-3000CNC

Metric

Model No.	SV-3000CNC-S	SV-3000CNC-H	SV-3000CNC-S.	SV-3000CNC-H.
ZZ-axis range [mm]	300	300	500	500
Y-axis table unit	Installed	Installed	Installed	Installed
α -axis unit	-	Installed	-	Installed

Specifications

Traverse	X = 200 mm Y = 200 mm
Measuring speed	0,02 - 2 mm/s
Drive speed	CNC mode: max. 200 mm/s Joystick mode: 0 - 50 mm/s
Traverse straightness	0,5 μ m / 200 mm
Inclining range	-45° (CCW) to +10° (CW)
Range	800 μ m; 80 μ m; 8 μ m (up to 2,4 mm with an optional stylus)
Standard	EN ISO, VDA, JIS, ANSI and customize setting
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Software	FORMTRACEPAK <ul style="list-style-type: none"> • Allows control of all axis, motor-driven Y-axis table and optional rotary table for efficient automated measurement. • Surface roughness analysis • An inspection certificate can be created by setting the print format as required.

Optional accessories	Other optional and standard accessories are listed later in different sections for accessories and styli.
----------------------	---

Optional accessories

No.	Description
12AAD975	Theta-1 axis, Rotary Axis
12AAE032	Special anti-vibration table
178-037	2D auto-leveling table, for CNC Surftest and Formtracer
178-077	3D leveling table, for CNC Surftest and Formtracer
178-078	Theta-2 axis, Rotary Axis



Automatic measurement

Surftest Extreme SV-M3000CNC

Series 178 - CNC Surface Roughness Measuring Instrument

This is a top performance CNC surface roughness measuring instrument with powerful software FORMTRACEPAK.

The Surftest Extreme SV-M3000CNC offers you the following benefits:

- You can measure large and heavy workpieces such as engine blocks and crankshafts.
- It has an 800 mm moving column configuration to largely eliminate workpiece size restrictions.
- Each axis has a drive speed of up to 200 mm/s.
- When combined with the optional detector swivelling unit, continuous measurement over the bottom, top and side surface of a workpiece is possible.
- The huge load table has a self-contained structure ensuring that you can easily accommodate various size workpieces, standard and custom jigs, and auto-feed devices.

Specifications

Traverse	X = 200 mm Y = 800 mm Z2 = 500 mm
Measuring speed	0,02 - 2 mm/s
Drive speed	CNC mode: max. 200 mm/s Joystick mode: 0 - 50 mm/s
Traverse straightness	X = 0,5 µm / 200 mm (standard) X = 0,7 µm / 200 mm (long-type detector) X = 0,5 µm / 200 mm (rotary-type detector) Y = 0,5 µm / 50 mm; 2 µm / 800 mm (standard) Y = 0,7 µm / 50 mm; 3 µm / 800 mm (long-type detector) Y = 0,7 µm / 50 mm; 3 µm / 800 mm (rotary-type detector)
Inclining range	-45° (CCW) to +10° (CW)
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Standard	EN ISO, VDA, JIS, ANSI and customize setting
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Loading weight	300 kg
Software	FORMTRACEPAK <ul style="list-style-type: none"> • Enables control of all axes for realizing efficient measurement automation. • Perform roughness evaluation. • Able to create an original inspection certificate by setting the print format to suit particular requirements.



Typical measurement task

Metric

No.	Model	Detector hold type (Essential option)
178-549-2	178-071	Standard
	178-072	Long type
	178-073	Rotary type

Contracer CV-2100

Series 218 - Contour Measuring Instruments

This contour measuring instrument is designed to support "easy to use" and "speedy" measurements.

The Contracer CV-2100N4 and CV-2100M4 offer you the following benefits:

- Extensive contour measurement quick and easy.
- Quick movement in Z2 because of an easy to use quick grip. [M4 type]
- Auto execution and multi point measurement with the new stylus up-and-down function.
- X-axis drive up to 20 mm/s by jog shuttle.
- Easy part programming as well as single measurement with software FORMTRACEPAK.
- Automatic evaluation, best fit of contours, CAD comparison and many more features as standard.
- CV-2100 M4 mounted with quick grip stand on a granite base.
- CV-2100 N4 can be mounted on an optional granite base with a manual column.
- Centralized front control panel.



CV-2100M4



CV-2100N4

Metric

Model	CV-2100N4	CV-2100M4
No.	218-613-11	218-633-11
Z2-axis range [mm]	-	350
Z1-axis range [mm]	50	50
Z2-axis column type	Optional: Manual	Manual: Quick up and down motion, fine feed
X1-axis range [mm]	100	100

Specifications

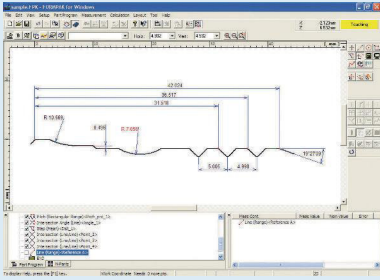
Measuring range	Z1 = 50 mm X = 100
Measuring speed	0,02 - 5 mm/s
Drive speed	X = 0 - 20 mm/s
Accuracy	X = (2,5 + 0,02L) μm [L: drive length (mm)] Z1 = (2,5 + 10,1H) μm [H: Measurement height from the horizontal position (mm)]
Traverse straightness	2,5 μm / 100 mm
Column type	M4: 350 mm
Software	FORMTRACEPAK <ul style="list-style-type: none"> • Allows control of measuring conditions for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as standard. • An inspection certificate can be created by setting the print format as required.

Optional accessories	Other optional and standard accessories are listed later in different sections for accessories and styli.
----------------------	---

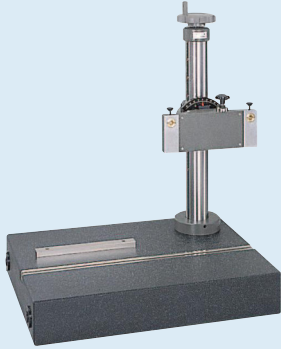
Optional accessories

No.	Description
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice

Contracer CV-2100



FORMTRACEPAK



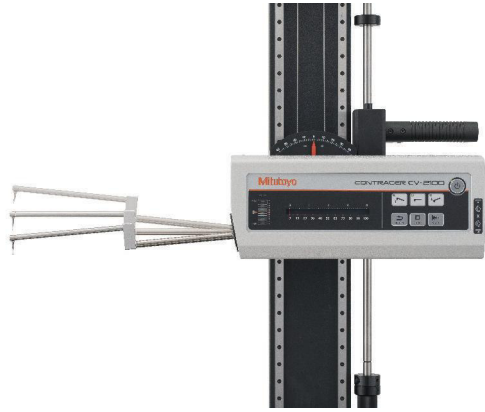
Optional column stand 218-042



Refer to CV-2100 brochure



Scan QR Code with your mobile device and watch our product videos on YouTube



CV-2100 stylus up-and-down function



CV-2100M4 with centralized front control panel

Formtracer Avant FTA-C3000 and FTA-C4000

Formtracer Avant FTA-C3000 and FTA-C4000

Serie 218 – Contour Measuring Instruments

These are high-accuracy 2D contour measuring instruments as single or dual stylus system. The Avant FTA-C3000 and FTA-C4000 series are benchtop machines and come with a motorised granite column and stand.

The Formtracer Avant FTA-C3000 and FTA-C4000 offers you the following benefits:

- Easy to operate
- Accurate measurement of small features
- Large vertical range and very high resolution
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Magnetic joint for a quick change of arms - quick and simple calibration
- Simplified CNC operation
- Optional motorised accessories
- Retrofit options for surface roughness measurement



Formtracer Avant FTA-C4000
with vibration isolator and side table

Specifications

Vertical travel	Z2 = 300 / 500 / 700 mm
Traverse	100 mm / 200 mm
Measuring range	Z1 = 60 mm
Measuring speed	0,02 - 30 mm/s
Drive speed	X = 0 - 80 mm/s Z2 = 0 - 30 mm/s
Inclining range	±45°
Accuracy	X = (0,8+0,01L) μm (S4, H4, W4, L4 model) X = (0,8+0,015L) μm (S8, H8, W8, L8 model) [L : Drive length (mm)] FTA-C3000 : Z1 = (1,2+2H/100) μm FTA-C4000 : Z1 = (0,8+2H/100) μm [H : Measurement height from the horizontal position (mm)]
Software	FORMTRACEPAK <ul style="list-style-type: none"> • Allows control of all axis, optional motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as standard. • An inspection certificate can be created by setting the print format as required.

Optional accessories

No.	Description
12AAD975	Theta-1 axis, Rotary Axis
178-077	3D leveling table, for CNC Surftest and Formtracer
178-078	Theta-2 axis, Rotary Axis
178-097	Y-axis table, for Surftest SV, Contracer, Formtracer
178-181	Side table
178-188	Vibration isolator standard base
178-189	Vibration isolator wide base
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice



Refer to FORMTRACER AVANT brochure

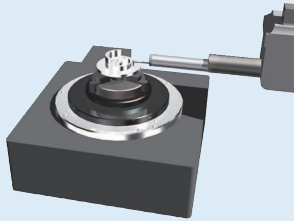
Formtracer Avant FTA-C3000 and FTA-C4000

Formtracer Avant FTA-C3000 series

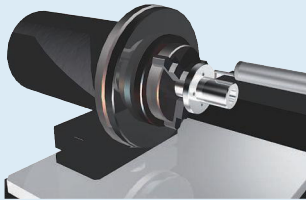
A high-accuracy 2D contour measuring instrument; the Avant C3000 is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer Avant FTA-C3000 offers you the following benefits:

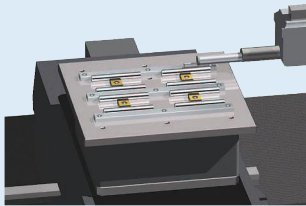
- Easy to operate
- Accurate measurement of small features
- Large vertical range and very high resolution
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Magnetic joint for a quick change of arms - quick and simple calibration
- Simplified CNC operation
- Optional motorised accessories
- Retrofit options for surface roughness measurement



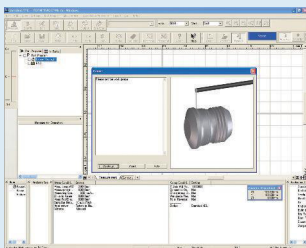
Optional Rotary table 01 - 12AAD975



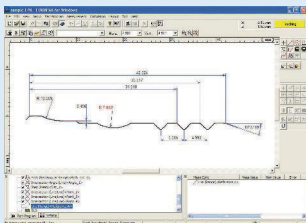
Optional Rotary table 02 - 178-078



Optional Y-axis - 178-097



Measurement control screen



Contour analysis screen



Contour comparison
FORMTRACEPAK

Metric

Traverse: 100 mm

Model No.	FTA-S4 C3000 218-361-11	FTA-H4 C3000 218-362-11	FTA-W4 C3000 218-363-11	FTA-L4 C3000 218-364-11
Z1-axis range [mm]	60	60	60	60
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700

Metric

Traverse: 200 mm

Model No.	FTA-S8 C3000 218-366-11	FTA-H8 C3000 218-367-11	FTA-W8 C3000 218-368-11	FTA-L8 C3000 218-369-11
Z1-axis range [mm]	60	60	60	60
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700



FTA-C3000

Formtracer Avant FTA-C3000 and FTA-C4000

Formtracer Avant FTA-C4000 series

A high-accuracy 2D contour measuring instrument with dual stylus system; the Avant FTA-C4000 is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer FTA-C4000 offers you the following benefits:

- Easy to operate upward/downward measurements at double sided contours
- Variable measuring force controlled by software FORMTRACEPAK
- Large vertical range and very high resolution
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Magnetic joint for a quick change of arms - quick and simple calibration
- Simplified CNC operation
- Optional motorised accessories
- Retrofit options for surface roughness measurement

Metric Traverse: 100 mm

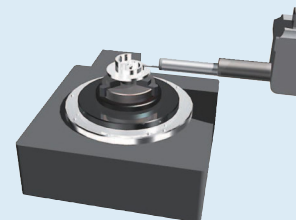
Model No.	FTA-S4 C4000 218-371-11	FTA-H4 C4000 218-372-11	FTA-W4 C4000 218-373-11	FTA-L4 C4000 218-374-11
Z1-axis range [mm]	60	60	60	60
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700

Metric Traverse: 200 mm

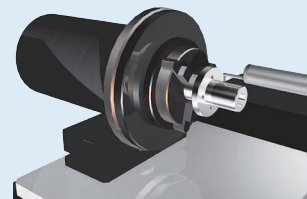
Model No.	FTA-S8 C4000 218-376-11	FTA-H8 C4000 218-377-11	FTA-W8 C4000 218-378-11	FTA-L8 C4000 218-379-11
Z1-axis range [mm]	60	60	60	60
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700



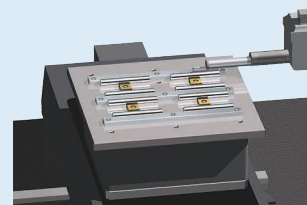
FTA-C4000



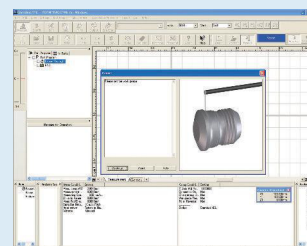
Optional Rotary table 01 - 12AAD975



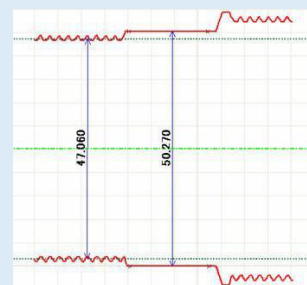
Optional Rotary table 02 - 178-078



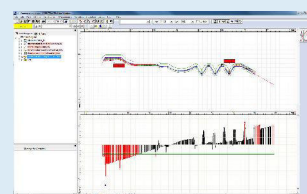
Optional Y-axis - 178-097



Measurement control screen



Double sided contour



Contour comparison
FORMTRACEPAK

Formtracer Avant

FTA-D3000 / FTA-D4000 Series

Formtracer Avant FTA-D3000 and FTA-D4000

A high-accuracy 2D surface roughness and contour measuring instrument; the Avant D type is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer Avant FTA-D3000 and FTA-D4000 offer you the following benefits:

- "Hot plug" exchange of drive units
- Easy to operate
- Dual stylus system for upward and downward contour measurements with D4000 type
- Variable contour measuring force set with Formtracepak software with D4000 type
- High accurate surface roughness and contour measurements
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Simplified CNC operation
- Optional motorised accessories

Specifications

Vertical travel	Z2 = 300 / 500 / 700 mm
Traverse	X = 100 mm / 200 mm
Measuring range	Contour Z1 = 60 mm Roughness Z1 = 800 µm / 80 µm / 8 µm
Measuring speed	0,02 - 30 mm/s
Drive speed	X = 0 - 80 mm/s Z2 = 0 - 30 mm/s
Software	FORMTRACEPAK <ul style="list-style-type: none"> • Allows control of all axis, optional motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as well as surface roughness evaluation as standard. • An inspection certificate can be created by setting the print format as required.

Optional accessories

No.	Description
12AAD975	Theta-1 axis, Rotary Axis
178-077	3D leveling table, for CNC Surftest and Formtracer
178-078	Theta-2 axis, Rotary Axis
178-096	3 D/Y-axis table
178-097	Y-axis table, for Surftest SV, Contracer, Formtracer
178-181	Side table
178-188	Vibration isolator standard base
178-189	Vibration isolator wide base
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice



Refer to FORMTRACER AVANT brochure



Formtracer Avant FTA-D4000
with monitor arm, vibration isolator and side table

Formtracer Avant

FTA-D3000 / FTA-D4000 Series

Formtracer Avant FTA-D3000 series

A high-accuracy 2D surface roughness and contour measuring instrument; the Avant FTA-D3000 is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer Avant FTA-D3000 offers you the following benefits:

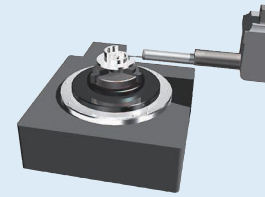
- "Hot plug" exchange of drive units
- Easy to operate
- High accurate surface roughness and contour measurements
- Large vertical range and very high resolution
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Simplified CNC operation
- Optional motorised accessories



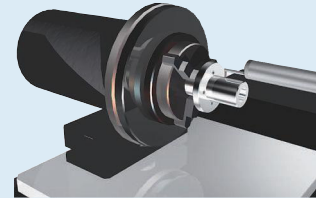
FTA-D3000

Metric

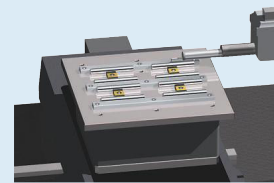
No.	Model	Detector 0,75 mN	X-axis 100 mm	X-axis 200 mm	Z2-axis 300 mm	Z2-axis 500 mm	Z2-axis 700 mm	Granite size (WxD) [mm]
525-311-11	FTA-S4 D3000	●	●		●			600 x 450
525-312-11	FTA-H4 D3000	●	●			●		600 x 450
525-313-11	FTA-W4 D3000	●	●			●		1000 x 450
525-314-11	FTA-L4 D3000	●	●				●	1000 x 450
525-316-11	FTA-S8 D3000	●		●	●			600 x 450
525-317-11	FTA-H8 D3000	●		●		●		600 x 450
525-318-11	FTA-W8 D3000	●		●		●		1000 x 450
525-319-11	FTA-L8 D3000	●		●			●	1000 x 450



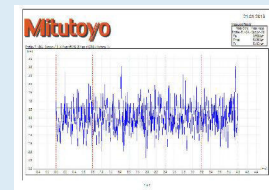
Optional Rotary table 01 - 12AAD975



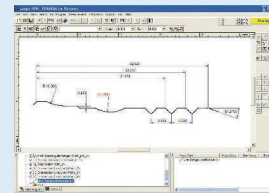
Optional Rotary table 02 - 178-078



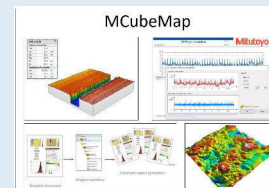
Optional Y-axis - 178-097



Formtracepak Layout



Contour analysis screen



Optional MCubeMap
(in combination with 3D Y-axis 178-096)

Formtracer Avant

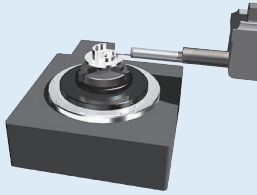
FTA-D3000 / FTA-D4000 Series

Formtracer Avant FTA-D4000 series

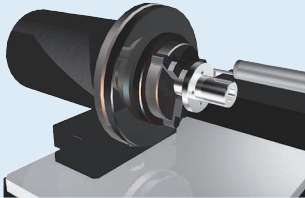
A high-accuracy 2D surface roughness and contour measuring instrument; the Avant FTA-D4000 is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer Avant FTA-D4000 offers you the following benefits:

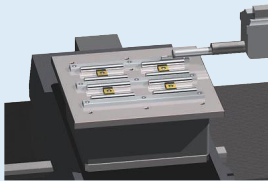
- "Hot plug" exchange of drive units
- Easy to operate
- Dual stylus system for upward and downward contour measurements
- Variable contour measuring force set with Formtracepak software
- High accurate surface roughness and contour measurements
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Simplified CNC operation
- Optional motorised accessories



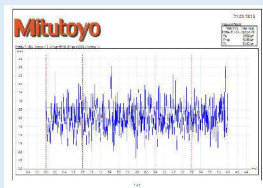
Optional Rotary table 01 - 12AAD975



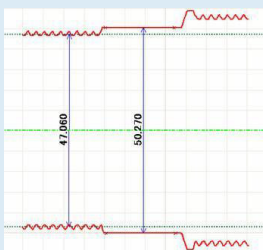
Optional Rotary table 02 - 178-078



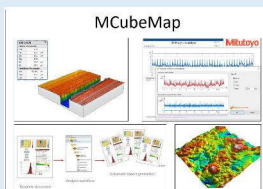
Optional Y-axis - 178-097



Formtracepak Layout



Double sided contour



Optional MCubeMap
(in combination with 3D Y-axis 178-096)



FTA-D4000

Metric

No.	Model	Detector 0,75 mN	X-axis 100 mm	X-axis 200 mm	Z2-axis 300 mm	Z2-axis 500 mm	Z2-axis 700 mm	Granite size (WxD) [mm]
525-321-11	FTA-S4 D4000	●	●		●			600 x 450
525-322-11	FTA-H4 D4000	●	●			●		600 x 450
525-323-11	FTA-W4 D4000	●	●			●		1000 x 450
525-324-11	FTA-L4 D4000	●	●				●	1000 x 450
525-326-11	FTA-S8 D4000	●		●	●			600 x 450
525-327-11	FTA-H8 D4000	●		●		●		600 x 450
525-328-11	FTA-W8 D4000	●		●		●		1000 x 450
525-329-11	FTA-L8 D4000	●		●			●	1000 x 450

Formtracer Avant FTA-H3000

Series 525 - Surface and Contour Measuring System

This provides all-in-one surface roughness and contour measurement within one drive unit.

The Formtracer Avant FTA-H3000 offers you the following benefits:

- You can carry out simultaneous analysis of roughness and contour with one measurement.
- The measuring range is enormous with Z1 = 16 mm
- High accurate measurement
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS and customized settings).
- The high drive speed reduces the total measurement time.
- Optional retrofit kits for pure surface roughness or dual contour measurement, detector change using the "hot swap method"



Metric Traverse: 100 mm

Model No.	FTA - S4 H3000	FTA - H4 H3000	FTA - W4 H3000	FTA - L4 H3000
No.	525-241-11	525-242-11	525-243-11	525-244-11
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700
Mass kg	140	150	220	270

Metric Traverse: 200 mm

Model No.	FTA - S8 H3000	FTA - H8 H3000	FTA - W8 H3000	FTA - L8 H3000
No.	525-246-11	525-247-11	525-248-11	525-249-11
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700
Mass kg	140	150	220	270

Specifications

Traverse	X = 100 mm / 200 mm
Measuring range	Z1 = 16 mm
Measuring speed	Roughness up to 0,5 mm/s, contour up to 30 mm/s
Drive speed	X = 0 - 80 mm/s Z2 = 0 - 30 mm/s
Traverse straightness	Pt: 0,2 µm /100 mm Pt: 0,6 µm /200 mm
Inclining range	±45°
Accuracy	X = (0,8+0,01L) µm (S4, H4, W4, L4 model) X = (0,8+0,015L) µm (S8, H8, W8, L8 model) [L: Drive length (mm)] Z1 = (0,5+2H/100) µm H: Measurement height from the horizontal position (mm)

Software	FORMTRACEPAK
	<ul style="list-style-type: none"> • Allows control of all axes, optional motor-driven Y-axis table and rotary table for efficient automated measurements. • Contour and roughness evaluation can be performed in one measurement. Software with very useful features such as real-time data, CAD comparison, contour connection, multi-language support, report generation and much more as standard.

Optional accessories

No.	Description
12AAD975	Theta-1 axis, Rotary Axis
178-077	3D leveling table, for CNC SurfTest and Formtracer
178-078	Theta-2 axis, Rotary Axis
178-097	Y-axis table, for SurfTest SV, Contracer, Formtracer
178-181	Side table
178-188	Vibration isolator standard base
178-189	Vibration isolator wide base
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice



Refer to CONTOUR AND SURFACE MEASUREMENT brochure

Formtracer Extreme SV-C4500CNC

Series 525 - Surface and Contour Measuring Instrument

High accurate fully CNC surface and contour measuring instrument.

The Formtracer Extreme SV-C4500CNC offers you the following benefits:

- Powerful as two separate, fully CNC instruments.
- Measurement of long distances in Z2-axis for models without α -axis.
- Each axis has a drive speed up to 200 mm/s.
- Dual stylus system for upward and downward contour measurement at doubled sided contours.
- It's variable contour measuring force is controlled by software FORMTRACEPAK.
- The contour drive unit is equipped with an arc encoder detector giving excellent accuracy and resolution in Z1-axis.
- Perfectly made for increased throughput of multiple profile and workpiece measurement tasks.
- The detector unit incorporates an anti-collision safety device, causing it to stop automatically if its main body collides with a workpiece or jig.

Specifications

Measuring range	Z2= [S] 300 mm / [H] 500
Measuring speed	0,02 - 2 mm/s
Drive speed	CNC mode: max. 200 mm/s Joystick mode: 0-50 mm/s
Accuracy	Contour detector: X= (0,8 + 4L/2000) μ m [L: Drive length (mm)] Contour Z1= (0,8 + 12H/1000) μ m [H: Measurement height from the horizontal position (mm)] Z2=(3,5 + 15H/1000) μ m
Inclining range	-45° (CCW) to +10° (CW) (for models equipped with with α -axis)
Measuring force	0,75 mN
Software	FORMTRACEPAK <ul style="list-style-type: none"> • Allows control of all axis, motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as standard. • An inspection certificate can be created by setting the print format as required.
Optional accessories	Other optional and standard accessories are listed later in different sections for accessories and styli.

Optional accessories

No.	Description
12AAD975	Theta-1 axis, Rotary Axis
178-037	2D auto-leveling table, for CNC Surftrac and Formtracer
178-077	3D leveling table, for CNC Surftrac and Formtracer
178-078	Theta-2 axis, Rotary Axis
178-397-2	Detector, 4 mN



SV-C4500CNC equipped with two powerful exchangeable drive units



Surface Roughness drive unit

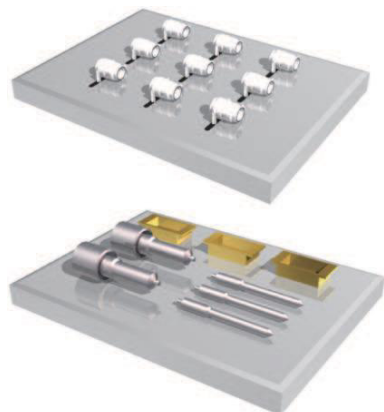


Contour drive unit

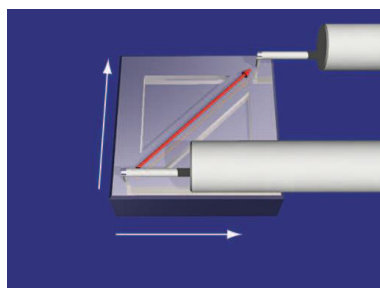
Formtracer Extreme SV-C4500CNC

Metric

No.	Z2-axis range [mm]	Y-axis table unit	α -axis unit
525-701-12	300	Installed	-
525-702-12	300	Installed	Installed
525-703-12	500	Installed	-
525-704-12	500	Installed	Installed



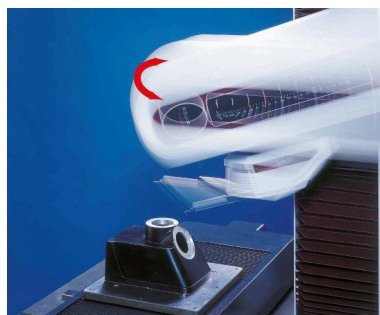
Multiple measurements



Through 2-axis simultaneous control in the X and Y directions



Y-axis



α -axis

Formtracer Extreme SV-C4500CNC HYBRID Type 1

Series 525 - Surface and Contour Measuring Instrument

This measuring system is equipped with a surface roughness detector, a contour detector and a confocal chromatic point sensor (CPS) employing axial chromatic aberration.

The Formtracer Extreme SV-C4500CNC Hybrid Type 1 offers you the following benefits:

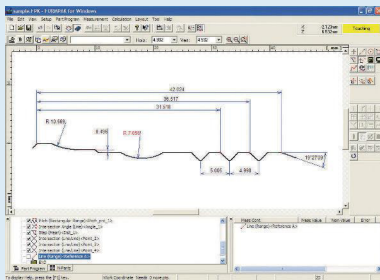
- Powerful as three separate fully CNC instruments.
- High accurate fully CNC surface and contour measuring instrument.
- Non-contact and contact measurement combined in one instrument.
- Two machine types with different CPS sensors available, depending on measuring range and resolution.
- Drive speed of up to 200 mm/s in all axes.
- Vibration isolator as standard.

Specifications

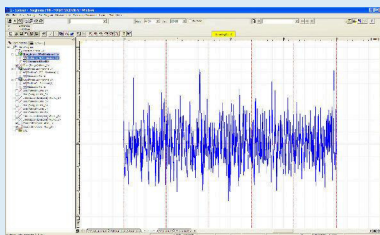
Vertical travel	Z2 = 500 mm
Measuring range	X= 200 mm Y= 200 mm Contour: Z1= 60 mm Roughness: Z1= 800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Measuring speed	0,02 - 2 mm/s
Accuracy	Contour detector: X= (0,8 + 4L/2000) µm [L: Drive length (mm)] Contour Z1= (0,8 + [2H]/1000) µm [H: Measurement height from the horizontal position (mm)] Z2=(3,5 + 15H/1000) µm FORMTRACEPAK
Software	<ul style="list-style-type: none"> • Allows control of all axis, motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as standard. • An inspection certificate can be created by setting the print format as required.
Non-contact detector	
Measuring range	CPS0517 = 100 µm CPS2525 = 1200 µm
Working distance	CPS0517 = 12 mm CPS2525 = 21 mm
Resolution	CPS0517 = 5 nm CPS2525 = 25 nm



SV-4500CNC Hybrid Type



Contour analysis



Multiple measurements



Surface roughness drive unit



Contour drive unit



CPS sensor drive unit

Metric

No.	Roughness	Contour	Non-contact
525-676-12	0,75 mN	Dual contour stylus	CPS2525
525-677-12	0,75 mN	Dual contour stylus	CPS0517

Formtracer Extreme CS-5000CNC and CS-H5000CNC

Series 525 - CNC Surface and Contour Measuring Instruments

This is the highest-accuracy stylus type CNC surface roughness and contour measuring instrument.

The Formtracer Extreme CS-5000CNC / CS-H5000CNC offers you the following benefits:

- It meets the highest demands of accuracy and repeatability.
- You can carry out simultaneous analysis of roughness and contour within one measurement.
- It includes a cabin and a vibration stand as standard to avoid external influences.
- High resolution in X1-axis: 5 nm and Z1-axis: 0.8 nm/1.6 nm.



CS-H5000CNC

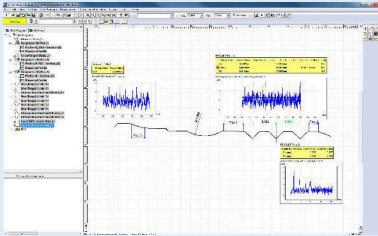


Metric	CS-5000CNC			
Model No.	CS-5000CNC S	CS-5000CNC S + Y-axis	CS-5000CNC H	CS-5000CNC H + Y-axis
Z2-axis range [mm]	300	300	500	500
Y-axis table unit	-	Installed	-	Installed
α-axis unit	Installed	Installed	Installed	Installed

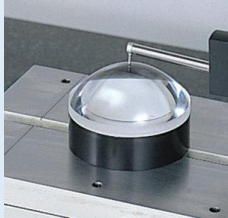
Specifications

Vertical travel	Z2 = 300 / 500 mm
Traverse	200 mm
Measuring range	Z1 = 12 mm
Measuring speed	Roughness measurement: 0,02 - 0,2 mm/s Contour measurement: 0,02 - 2 mm/s
Drive speed	CNC mode: max. 40 mm/s Joystick mode 0 - 40 mm/s
Accuracy	CS-5000CNC: X = (0.3+0.002L) μm Z1 = (0.3+[0.02H]) μm CS-H5000CNC: X = (0.16+0.001L) μm Z1 = (0.07+[0.02H]) μm [L : Drive length (mm)] [H : Measurement height from the horizontal position (mm)]
Traverse straightness	CS-5000CNC: X = (0.1+0.0015L) μm [standard stylus] X = (0.2+0.0015L) μm [double length stylus] CS-H5000CNC: X = (0.05+0.0003L) μm [standard stylus] X = (0.1+0.0015L) μm [double length stylus]
Resolution	X = 0.005 μm Z1 = 0.0008 μm [standard stylus] Z1 = 0.0016 μm [double length stylus]
Software	FORMTRACEPAK <ul style="list-style-type: none"> • Allows control of all axis, optional motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as well as surface roughness evaluation as standard. • An inspection certificate can be created by setting the print format as required.

Formtracer Extreme CS-5000CNC and CS-H5000CNC



Contour and roughness analysis



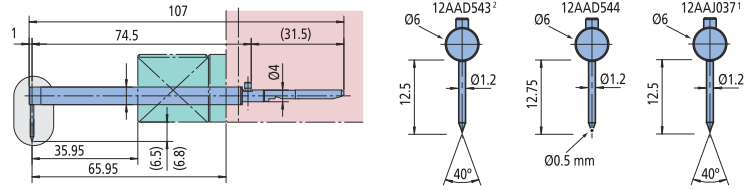
Optional:
Aspherical lens analysis program
ASLPAK

Metric

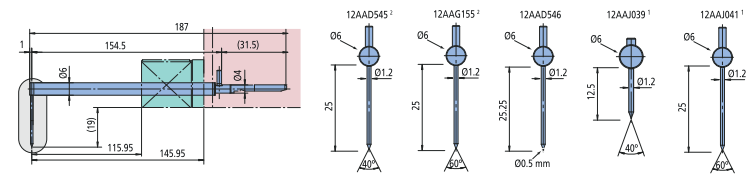
CS-H5000CNC

Model No.	CS-H5000CNC S 525-776-12	CS-H5000CNC S + Y-axis 525-777-12	CS-H5000CNC H 525-706-12	CS-H5000CNC H + Y-axis 525-707-12
Z2-axis range [mm]	300	300	500	500
Y-axis table unit	-	Installed	-	Installed
α-axis unit	-	-	-	-

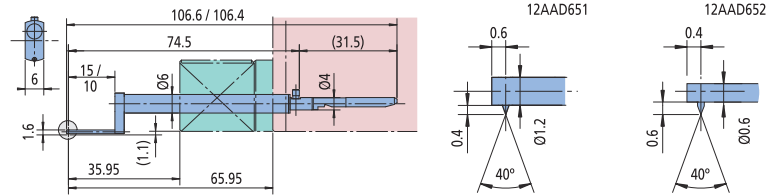
Standard



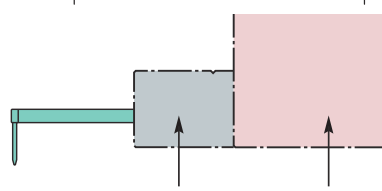
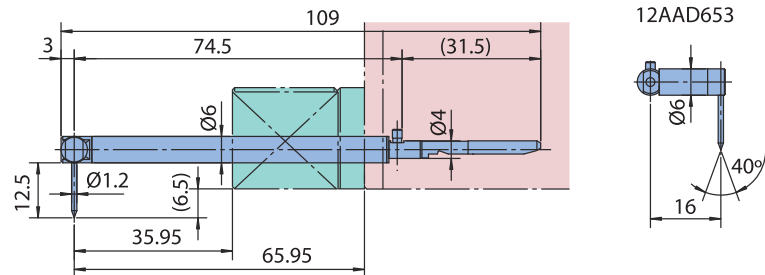
Double length



For small holes



Eccentric



Nosepiece Detector

1 = only for CS-H5000CNC
2 = only for CS-5000CNC

Roundtest RA-10

Series 211 - Form Measuring Instrument

This is a compact and affordable form measuring instrument.

The Roundtest RA-10 offers you the following benefits:

- It combines outstanding cost and performance with full measurement capabilities.
- The machine has a compact body with integrated electronics and printer, making it ideal for installation in space-restricted locations.
- You can easily view measurement results and recorded profiles on the large coloured LCD panel display.
- Despite being a low-priced model, the turntable with air bearings gives you rotational accuracy as high as $(0.04+0.0006H) \mu\text{m}$, assuring a precision that compares well with that of higher priced models.
- The control panel has large keys and an intuitive layout for easy operation.
- One-key calling function.
- One-key zero-set function.
- Support of 16 languages.
- It complies with EN ISO standard like 12181-1, 12181-2, 12781-1 and 12781-2.
- USB Communication Program – Microsoft® Excel® based – to import results and create, save and print out inspection certificates on PC.



RA-10



Z-axis scale unit

Inch/Metric

No.	Model	Max. probing \varnothing [mm]	Max. turntable loading [kg]
211-541-13	RA-10	100	10

Specifications

Range	$\pm 1000 \mu\text{m}$
Turntable	
Rotational accuracy	Radial: $(0.04+0.0006H) \mu\text{m}$ H: Measuring height from turntable surface (mm) Axial: $(0.04+0.0006X) \mu\text{m}$ X: Radial distance from center (mm)
Max. probing \varnothing	100 mm
Max. turntable loading	10 kg
Vertical column	
Vertical travel [mm]	117 mm
Max. probing height	152 mm
Display unit	
Data analysis items	Roundness, Coaxiality, Concentricity, Flatness, Runout radial
Printer	Built-in thermal line printer

Optional accessories

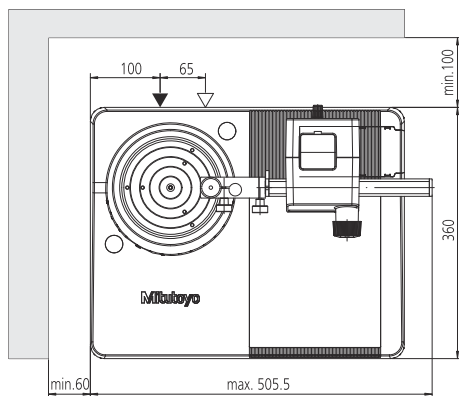
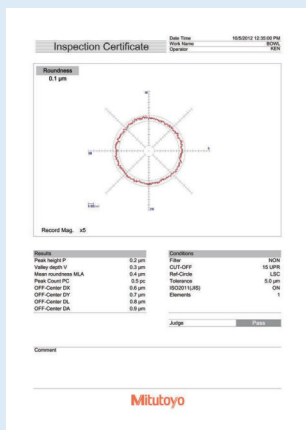
No.	Description
12AAH318	Z-axis scale unit
12AAH320	X-axis stopper
12AAH402	Collet (\varnothing 0.5-1 mm)*
12AAH403	Collet (\varnothing 1-1.5 mm)*
12AAH404	Collet (\varnothing 1.5-2 mm)*
12AAH405	Collet (\varnothing 2-2.5 mm)*
12AAH406	Collet (\varnothing 2.5-3 mm)*
12AAH407	Collet (\varnothing 3,0-3,5 mm)*
12AAH408	Collet (\varnothing 3.5-4 mm)*
12AAH409	Collet (\varnothing 4.5-5 mm)*
12AAH410	Collet (\varnothing 5,0-6,0 mm)*
12AAH411	Collet (\varnothing 6-7 mm)*
12AAH412	Collet (\varnothing 7-8 mm)*
12AAH413	Collet (\varnothing 8-9 mm)*
12AAH414	Collet (\varnothing 9-10 mm)*
12AAH420	Spacer for reference hemisphere
12AAX616	Alignment table with D.A.T [mm], for Roundtest RA-10
12AAX617	Alignment table with D.A.T [mm/inch], for Roundtest RA-10
211-013	Micro vibration isolator
211-016	Reference hemisphere
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
211-051	Collet chuck holder (OD: 0,5-10 mm)*
211-052	Quick chuck
211-053	V-block A (Screw clamp)
211-054	V-block B (spring clamp)
211-055	Spigot / Socket fixture
356038	Auxiliary stage for low height work-piece, for Roundtest
997090	Gauge block set for calibration, for Roundtest
K551133	eco-fix kit Form S, 53 pcs., CMM fixtures, eco-fix series

*Individual collet for collet chuck holder should be ordered separately.

Roundtest RA-10

Consumable spares

No.	Description
12AAH181	Printer paper (10 rolls)



211-031



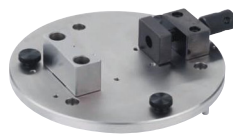
211-032



211-051



211-052



211-053



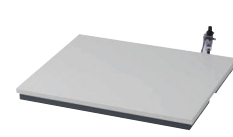
211-054



211-055



12AAH425



211-013

Software USB Communication Program as a free download on <https://mitutoyo.eu/downloads/free-software-and-updates-and-free-trials/free-software-form-measuring-instruments> (registration required)



Refer to ROUNDTEST RA-10 brochure

Roundtest RA-120 and RA-120P

Series 211 - Form Measuring Instrument

These are compact, affordable and simple-to-use instruments for measuring roundform geometry.

The Roundtest RA-120 and RA-120P offer you the following benefits:

- The turntable accuracy of $(0.04+0.0006H) \mu\text{m}$ provides high level form analysis.

RA-120

- The RA-120 has a compact body with integrated electronics and printer, making it ideal for installation in space-restricted locations.
- You can easily view measurement results and recorded profiles on the large coloured LCD panel display.
- One-key operations.
- Support of 16 languages.
- It complies with EN ISO standard like 12181-1, 12181-2, 12781-1 and 12781-2
- USB Communication Program – Microsoft® Excel® based – to import results and create, save and print out inspection certificates on PC.

RA-120P

- The RA-120P is a PC based model with all operations controlled via powerful ROUNDPAK software.
- Software ROUNDPAK gives you excellent possibilities for single measurement and part programming.



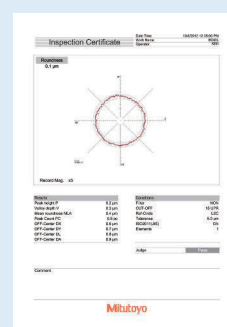
RA-120



RA-120P

Specifications

Turntable	
Rotational accuracy	Radial: $(0,04+0,0006H) \mu\text{m}$ H: Measuring height from turntable surface (mm) Axial: $(0,04+0,0006X) \mu\text{m}$ X: Radial distance from center (mm)
Max. probing \varnothing	280 mm 380 mm in reverse position mm
Max. workpiece \varnothing	440 mm
Max. turntable loading	25 kg
Centering range	$\pm 3 \text{ mm}$
Leveling range	$\pm 1^\circ$
Vertical column	
Vertical travel	280 mm
Max. probing height	280 mm above turntable surface 480 mm in reverse position
Max. probing depth	100 mm (minimum ID: 30 mm)
Display unit	
Data analysis items	Roundness, Coaxiality, Flatness, Runout (radial), Runout (axial), Thickness deviation, Parallelism, Perpendicularity
Printer	Built-in thermal line printer (RA-120) ROUNDPAK (only RA-120P)
Software	ROUNDPAK (only RA-120P)



Software USB Communication Program as a free download on <https://mitutoyo.eu/downloads/free-software-and-updates-and-free-trials/free-software-form-measuring-instruments> (registration required) (only RA-120)



Refer to ROUNDTEST RA-120 brochure



Scan QR Code with your mobile device and watch our product videos on YouTube

Roundtest RA-120 and RA-120P

Series 211 - Form Measuring Instrument

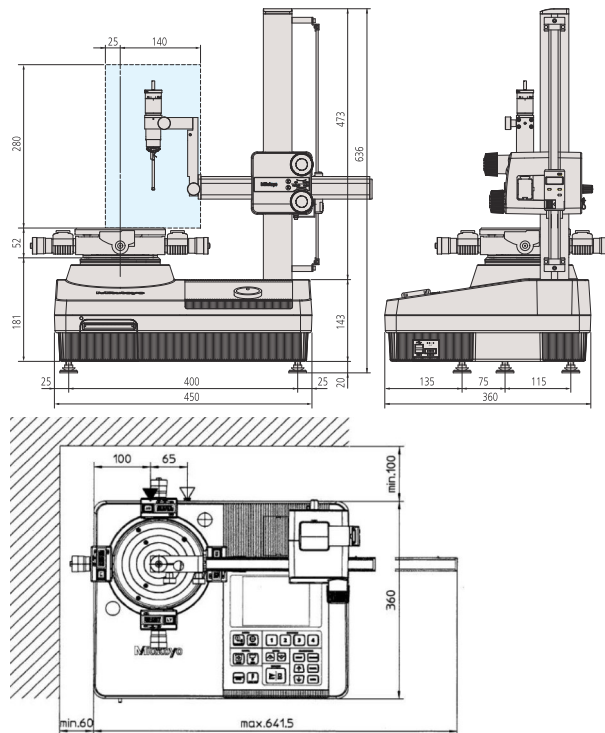
This is a compact roundness tester with mechanical table or D.A.T. (Digital Adjustment Table).

The D.A.T. gives you the following benefits:

- The turntable displays centering and leveling adjustments digitally, making this challenging task easy enough for even an untrained operator to perform, through these four simple steps:

1. Preliminary measurement of two cross sections on the workpiece.
2. The centering and leveling adjustment values are displayed.
3. The digital micrometer heads on the rotary table are adjusted to match the values displayed.
4. Centering and leveling is complete.

[Centering range : ± 3 mm - Leveling range : $\pm 1^\circ$]



Inch/Metric

No.	Model	Max. probing diameter [mm]	Max. workpiece ϕ [mm]	Max. turntable loading [kg]
211-543-13	RA-120 with D.A.T. function	280	440	25
211-544-13	RA-120 with mechanical turntable	280	440	25
211-546-13	RA-120P with D.A.T. function	280	440	25
211-547-11	RA-120P with mechanical turntable	280	440	25

Optional accessories

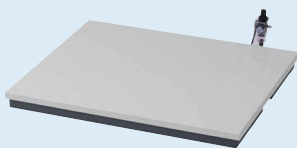
Other optional and standard accessories are listed later in this section for accessories and styli.

Optional accessories

No.	Description
12AAH320	X-axis stopper
12AAH402	Collet (ϕ 0.5-1 mm)*
12AAH403	Collet (ϕ 1-1.5 mm)*
12AAH404	Collet (ϕ 1.5-2 mm)*
12AAH405	Collet (ϕ 2-2.5 mm)*
12AAH406	Collet (ϕ 2.5-3 mm)*
12AAH407	Collet (ϕ 3,0-3,5 mm)*
12AAH408	Collet (ϕ 3.5-4 mm)*
12AAH409	Collet (ϕ 4.5-5 mm)*
12AAH410	Collet (ϕ 5,0-6,0 mm)*
12AAH411	Collet (ϕ 6-7 mm)*
12AAH412	Collet (ϕ 7-8 mm)*
12AAH413	Collet (ϕ 8-9 mm)*
12AAH414	Collet (ϕ 9-10 mm)*
211-013	Micro vibration isolator
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-016	Reference hemisphere
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
211-061	Collect chuck holder
356038	Auxiliary stage for low height workpiece, for Roundtest
997090	Gauge block set for calibration, for Roundtest
K551133	eco-fix kit Form S, 53 pcs., CMM fixtures, eco-fix series



211-016



211-013



Z-axis scale unit (optional)



X-axis stop

<https://www.youtube.com/watch?v=V8c7QDPrIGU>

Roundtest RA-1600

Series 211 - Form Measuring System

This is a PC-compliant form measuring system which allows you to measure roundform geometry like cylindricity.

The Roundtest RA-1600 offers the following benefits:

- It is equipped with a high accurate turntable accuracy of $(0.02+0.0006H) \mu\text{m}$.
- You can carry out simple & accurate centering and leveling of the workpiece with D.A.T. (Digital Adjustment Table).
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- A remote control box is including allowing you easy operation.
- There is also an auto follow function for easy and quick pre-centering of the workpiece.



RA-1600

Inch/Metric

No.	Model	Max. probing \varnothing [mm]	Max. turntable loading [kg]
211-733-13	RA-1600	280	25

Specifications

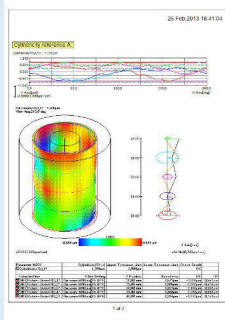
Rotational accuracy	Radial: ($0.02+0.0006H$) μm H: Measuring height from turntable surface (mm) Axial: ($0.02+0.0006X$) μm X: Radial distance from center (mm)
Rotational speed	4, 6, 10 rpm
Max. probing \varnothing	280 mm
Centering range	± 3 mm
Leveling range	$\pm 1^\circ$
Max. probing height	300 mm above turntable surface
Max. probing depth	91 mm (minimum ID : $\varnothing 32$ mm) 50 mm (minimum ID : $\varnothing 7$ mm)
Straightness	0,2 μm / 100 mm 0,3 μm / 300 mm
Parallelism with turntable axis	1,5 μm / 300 mm
Software	ROUNDPAK
Optional accessories	Other optional and standard accessories are listed later in this section for accessories and styli.

Optional accessories

No.	Description
178-188	Vibration isolator standard base
178-181	Side table
12AAK120	Monitor arm, for 12AAK110 /178-188 / 178-189
12AAF203	Double length detector holder
12AAF204	Large diameter detector holder
12AAH402	Collet ($\varnothing 0.5-1$ mm)*
12AAH403	Collet ($\varnothing 1-1.5$ mm)*
12AAH404	Collet ($\varnothing 1.5-2$ mm)*
12AAH405	Collet ($\varnothing 2-2.5$ mm)*
12AAH406	Collet ($\varnothing 2.5-3$ mm)*
12AAH407	Collet ($\varnothing 3,0-3,5$ mm)*
12AAH408	Collet ($\varnothing 3.5-4$ mm)*
12AAH409	Collet ($\varnothing 4.5-5$ mm)*
12AAH410	Collet ($\varnothing 5,0-6,0$ mm)*
12AAH411	Collet ($\varnothing 6-7$ mm)*
12AAH412	Collet ($\varnothing 7-8$ mm)*
12AAH413	Collet ($\varnothing 8-9$ mm)*
12AAH414	Collet ($\varnothing 9-10$ mm)*
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
211-061	Collect chuck holder
356038	Auxiliary stage for low height workpiece, for Roundtest
997090	Gauge block set for calibration, for Roundtest
K551133	eco-fix kit Form S, 53 pcs., CMM fixtures, eco-fix series

*Individual collet for collet chuck holder should be ordered separately.

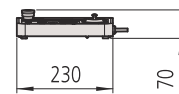
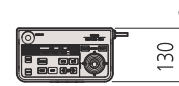
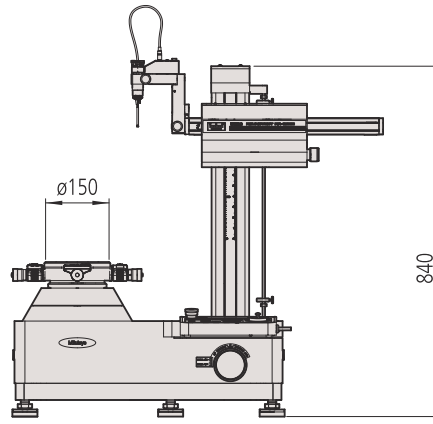
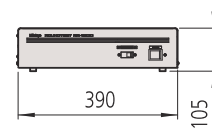
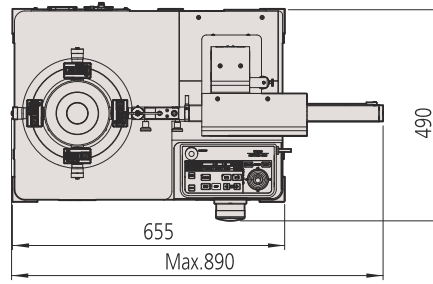
Roundtest RA-1600



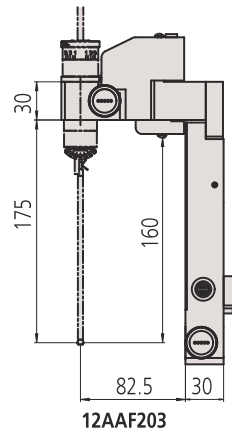
ROUNDPAK
Simple to operate even with a full set of parameters and analysis functions.



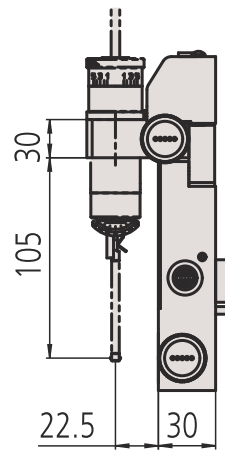
Refer to ROUNDTTEST RA-1600 brochure



12AAF204



12AAF203



12AAF204

Roundtest RA-2200

Series 211 - Form Measuring Instrument

This is a highly accurate form measuring system which allows you to measure roundform geometry like cylindricity.

The Roundtest RA-2200 offers the following benefits:

- It has fully motorised axes movement.
- Its extremely high turntable accuracy of $(0.02+0.00035H) \mu\text{m}$ gives you excellent form analysis.
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage and a wide range of parameters.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- A huge number of styli provides you with maximum flexibility.
- There is an auto follow function for easy and quick pre-centering of the workpiece.

There is a wide variety of models available to suit any application.

RA-2200DS/DH: These models have a navigation function supplied as standard, to quickly and simply guides you through the centering and leveling task. The models are equipped with the D.A.T. (Digital Adjustment Table).

RA-2200AS/AH: The models have an automatic centering and leveling turntable supplied as standard, freeing you from the centering and leveling task. The models are equipped with the A.A.T. (Automatic Adjustment Table).



RA-2200AS

Metric

No.	Model	Centering/leveling adjustment	Vertical travel	Max. probing \varnothing [mm]	Max. workpiece \varnothing [mm]	Max. turntable loading [kg]
211-511-11	RA-2200AS	AAT	300 mm	300	580	30
211-512-11	RA-2200AH	AAT	500 mm	300	580	30
211-514-13	RA-2200DS	DAT	300 mm	300	580	30
211-516-13	RA-2200DH	DAT	500 mm	300	580	30

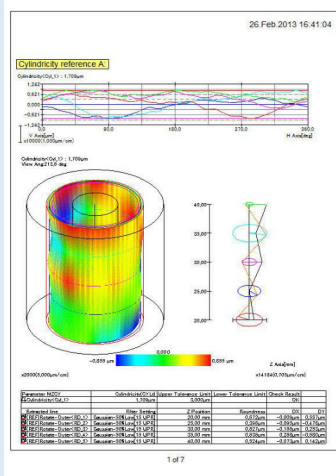
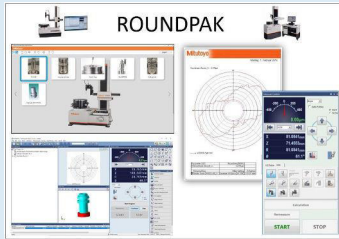
Specifications

Turntable	
Rotational accuracy	Radial: $(0,02+0,00035H) \mu\text{m}$ H: Measuring height from turntable surface (mm) Axial: $(0,02+0,00035X) \mu\text{m}$ X: Radial distance from center (mm)
Rotational speed	2, 4, 6, 10 rpm
Max. probing \varnothing	300 mm
Max. workpiece \varnothing	580 mm
Centering range	DS / DH: ± 5 mm AS / AH: ± 3 mm
Leveling range	$\pm 1^\circ$
Vertical column	
Max. probing height	AS / DS : 300 mm AH / DH: 500 mm above turntable surface
Max. probing depth	85 mm (minimum ID : $\varnothing 32$ mm) 50 mm (minimum ID : $\varnothing 7$ mm)
Straightness	0,1 μm / 100 mm AS / DS : 0,15 μm / 300 mm AH / DH: 0,25 μm / 500 mm
Parallelism with rotation center	AS / DS : 0,7 μm / 300 mm AH / DH: 1,2 μm / 500 mm
Horizontal axis	
Straightness	0,7 μm / 150 mm
Perpendicularity to rotation center	1 μm / 150 mm
Software	ROUNDPAK FORMTRACEPAK-AP (optional for roughness detection unit)

Optional accessories

No.	Description
12AAF203	Double length detector holder
12AAF204	Large diameter detector holder
12AAK120	Monitor arm, for 12AAK110 /178-188 / 178-189
12AAL019	Side table
12AAY644	Roughness detection unit, for Roundtest RA-2200/H5200 AS/AH/DS/DH
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
356038	Auxiliary stage for low height workpiece, for Roundtest
K551134	eco-fix kit Form L, 82 pcs., CMM fixtures, eco-fix series

Roundtest RA-2200



ROUNDPAK

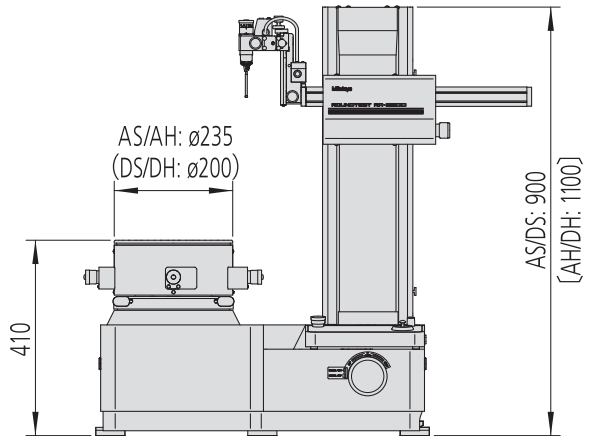
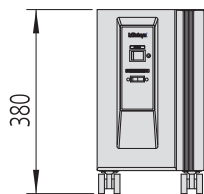
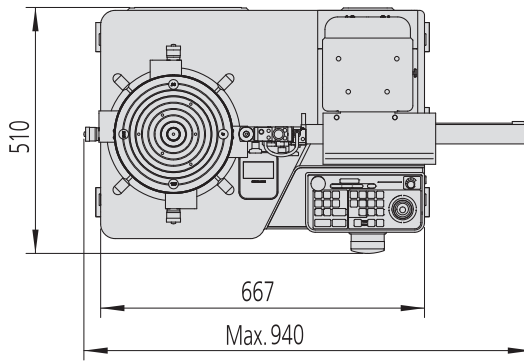
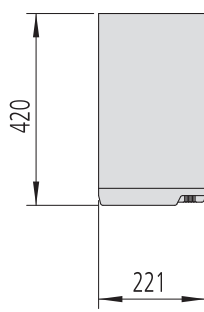
Simple to operate even with a full set of parameters and analysis functions.



Refer to ROUNDTTEST RA-2200 brochure



Scan QR Code with your mobile device and watch our product videos on YouTube



Roundtest RA-H5200

Series 211 - High-precision Form Measuring Instrument

This is a highly accurate, precision form measuring system developed to give you the highest accuracy as well as high flexibility and analytical capability.

The Roundtest RA-H5200 offers the following benefits:

- Its integrated vibration isolator helps you to measure within the best conditions.
- It has a high measuring range and loading mass.
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage and a wide range of parameters.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- A.A.T. (Automatic Adjustment Table) gives you fully automatic centering and leveling.
- There is an auto follow function for easy and quick pre-centering of the workpiece.



RA-H5200



Highly accurate, automatic centering/leveling turntable

The performance of this turntable has been achieved through exceptional manufacturing accuracy of the critical components, in addition to a high-accuracy air-bearing that provides superior rigidity. The resulting rotational accuracy, the heart of a Roundtest measuring system, is at $0.02+0.00035H \mu\text{m}$.

No.	Model	Centering/leveling adjustment	Max. workpiece \varnothing [mm]
211-531-11	RA-H5200AS	AAT	680
211-532-11	RA-H5200AH	AAT	680

AAT: Automatic adjustment table

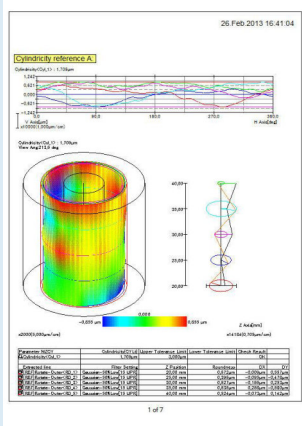
Specifications

Turntable	
Rotational accuracy	Radial: (0,02+0,00035H) μm H: Measuring height from turntable surface (mm) Axial: (0,02+0,00035X) μm X: Radial distance from center (mm)
Rotational speed	2, 4, 6, 10 rpm Auto centering: 20 rpm
Max. probing \varnothing	400 mm
Max. workpiece \varnothing	680 mm
Max. turntable loading	80 kg w/o auto centering 65 kg
Centering range	± 5 mm
Leveling range	$\pm 1^\circ$
Vertical column	
Max. probing height	AS : 350 mm AH: 550 mm above turntable surface
Max. probing depth	85 mm (minimum ID : $\varnothing 32$ mm) 50 mm (minimum ID : $\varnothing 7$ mm)
Straightness	AS / AH : 0,05 μm / 100 mm AS : 0,14 μm / 350 mm AH : 0,2 μm / 550 mm
Parallelism with rotation center	AS : 0,2 μm / 350 mm AH : 0,32 μm / 550 mm
Horizontal axis	
Straightness	0,4 μm / 200 mm
Perpendicularity to rotation center	0,5 μm / 200 mm
Software	ROUNDPAK FORMTRACEPAK-AP (optional for roughness detection unit)
Optional accessories	Other optional and standard accessories are listed later in this section for accessories and styli.

Optional accessories

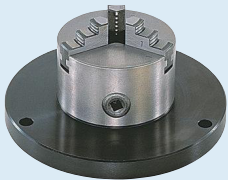
No.	Description
12AAF203	Double length detector holder
12AAF204	Large diameter detector holder
12AAF205	Triple length holder for extra-deep holes
12AAL019	Side table
12AAY644	Roughness detection unit, for Roundtest RA-2200/H5200 AS/AH/DS/DH
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
K551134	eco-fix kit Form L, 82 pcs., CMM fixtures, eco-fix series

Roundtest RA-H5200

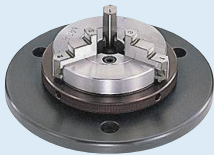


ROUNDPAK

Simple to operate even with a full set of parameters and analysis functions.



211-014



211-032



211-031

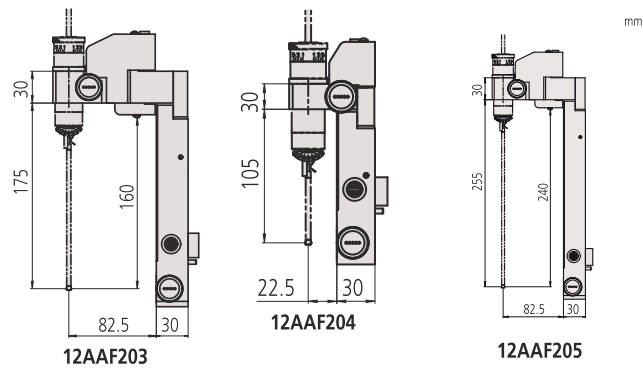
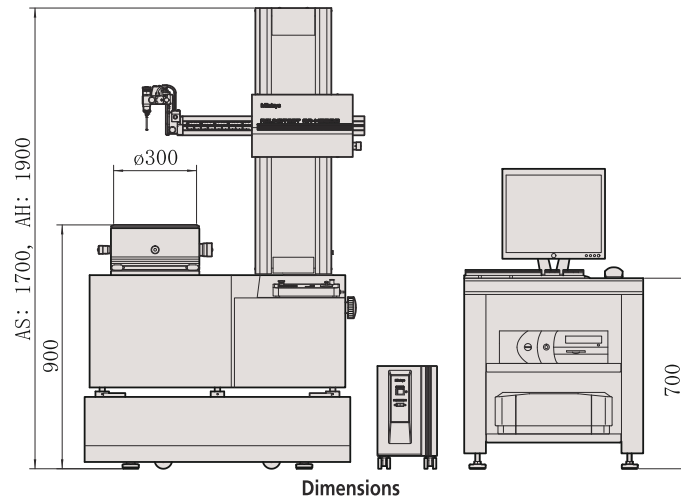
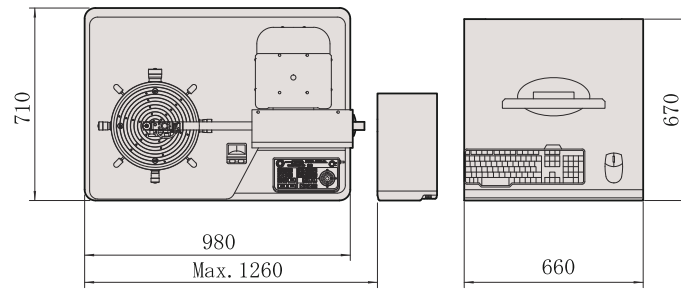


211-045



Sliding detector-unit holder provided as a standard feature

The detector-unit holder is equipped with a sliding mechanism, enabling one-touch measurement of a workpiece with a deep hole having a thick wall, which has been difficult with the conventional standard arm. Sliding distance : 112 mm.



Roundtest Extreme RA-2200 PLUS

Series 211 - High-precision Form Measuring Instrument

This is a fully automatic CNC form measuring instrument that gives highly accurate results.

The Roundtest Extreme RA-2200 PLUS offers you the following benefits:

- It has a CNC controlled measuring system with orientation steps of 1°.
- The extremely high turntable accuracy of $(0.02+0.00035H) \mu\text{m}$ gives you highly accurate form analysis.
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage and a wide range of parameters.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- An automatic centering and leveling turntable A.A.T. (Automatic Adjustment Table) is supplied as standard, freeing you from the centering and leveling task.



RA-2200 PLUS

Metric

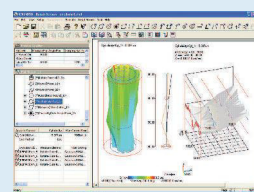
No.	Model	Centering/leveling adjustment	Vertical travel	Max. probing \varnothing [mm]	Max. workpiece \varnothing [mm]
211-517-11	RA-2200AS PLUS	AAT	300 mm	256	580
211-518-11	RA-2200AH PLUS	AAT	500 mm	256	580

Specifications

Turntable	
Rotational accuracy	Radial: $(0,02+0,00035H) \mu\text{m}$ H: Measuring height from turntable surface (mm) Axial: $(0,02+0,00035X) \mu\text{m}$ X: Radial distance from center (mm)
Rotational speed	2, 4, 6, 10 rpm
Max. probing \varnothing	256 mm
Max. workpiece \varnothing	580 mm
Max. turntable loading	30 kg
Centering range	± 3 mm
Leveling range	$\pm 1^\circ$
Vertical column	
Max. probing height	AS : 300 mm AH: 500 mm above turntable surface
Max. probing depth	104 mm (minimum ID : $\varnothing 32$ mm) 26 mm (minimum ID : $\varnothing 12,7$ mm)
Straightness	AS / AH : $0,1 \mu\text{m} / 100$ mm AS : $0,15 \mu\text{m} / 300$ mm AH : $0,25 \mu\text{m} / 500$ mm
Parallelism with rotation center	AS : $0,7 \mu\text{m} / 300$ mm AH : $1,2 \mu\text{m} / 500$ mm
Horizontal axis	
Straightness	$0,7 \mu\text{m} / 150$ mm
Perpendicularity to rotation center	$1 \mu\text{m} / 150$ mm
Software	ROUNDPAK FORMTRACEPAK-AP (optional for roughness detection unit)

Optional accessories

No.	Description
178-188	Vibration isolator standard base
12AAK120	Monitor arm, for 12AAK110 /178-188 / 178-189
178-181	Side table
12AAX859	Roughness detection unit; 0,75 mN, for Roundtest RA PLUS series
12AAX861	Roughness detector 4 mN, for Roundtest RA PLUS series
K551134	eco-fix kit Form L, 82 pcs., CMM fixtures, eco-fix series



ROUNDPAK

Simple to operate even with a full set of parameters and analysis functions.



Refer to ROUNDTEST RA-2200 brochure

Roundtest Extreme RA-H5200 PLUS

Series 211 - High-precision Roundness/Cylindricity Measuring System

This is a CNC form measuring instrument that combines high accuracy with automatic CNC measurements.

The Roundtest Extreme RA-H5200 PLUS offers you the following benefits:

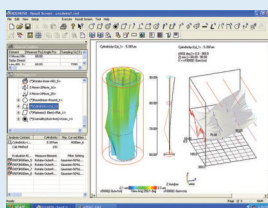
- An integrated vibration isolator helps you to measure within best conditions.
- It will greatly improve your productivity and efficiency.
- You can take highly accurate, fast and operator-free measurements.
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage and a wide range of parameters.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- An automatic centering and leveling turntable A.A.T. (Automatic Adjustment Table) is supplied as standard, freeing you from the centering and leveling task.

Specifications

Turntable	
Rotational accuracy	Radial: (0,02+0,00035H) μm H: Measuring height from turntable surface (mm) Axial: (0,02+0,00035X) μm X: Radial distance from center (mm)
Rotational speed	2, 4, 6, 10 rpm Auto centering: 20 rpm
Max. probing \varnothing	356 mm
Max. workpiece \varnothing	680 mm
Max. turntable loading	80 kg w/o auto centering 65 kg
Centering range	± 5 mm
Leveling range	$\pm 1^\circ$
Vertical column	
Max. probing height	AS : 350 mm AH: 550 mm above turntable surface
Max. probing depth	104 mm (minimum ID : $\varnothing 32$ mm) 26 mm (minimum ID : $\varnothing 12,7$ mm)
Parallelism with rotation center	AS : 0,2 μm / 350 mm AH : 0,32 μm / 550 mm
Horizontal axis	
Straightness	0,4 μm / 200 mm
Perpendicularity to rotation center	0,5 μm / 200 mm
Software	ROUNDPAK FORMTRACEPAK-AP (optional for roughness detection unit)
Optional accessories	Other optional and standard accessories are listed later in this section for accessories and styli.

Optional accessories

No.	Description
178-181	Side table
12AAX859	Roughness detection unit; 0,75 mN, for Roundtest RA PLUS series
12AAX861	Roughness detector 4 mN, for Roundtest RA PLUS series
K551134	eco-fix kit Form L, 82 pcs., CMM fixtures, eco-fix series
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest



ROUNDPAK

Simple to operate even with a full set of parameters



RA-H5200 PLUS

Metric

No.	Model	Centering/leveling adjustment	Vertical travel	Max. probing \varnothing [mm]	Max. workpiece \varnothing [mm]
211-533-11	RA-H5200AS PLUS	AAT	350 mm	356	680
211-534-11	RA-H5200AH PLUS	AAT	550 mm	356	680

Roundtracer Flash

Serie 211 - Form Measuring Instrument

The Roundtracer Flash is a flexible optical measuring system, fast and precise. The instrument is a good solution for accurate quality control in a laboratory as well as in the production environment.

The Roundtracer Flash offers you following benefits:

- Dimensional, position, form analysis in static or dynamic mode.
- Image sensors integrated in a fixed position across the product structure to cover the entire measurement range.
- Less mechanical stress
- Side-by-side 2D image architecture
- Short cycle time
- One-click measuring cycle activation
- Graphical user interface via touchscreen monitor
- Easy part loading
- IO Communication via Profinet, Profibus, Ethernet IP
- Machine tool feedback compensation

Extensive toolkits to measure:

- Thread for fastener and medical industry
- Camshafts
- Impellers including blade-by-blade analysis



Roundtracer Flash with optional pivot arm

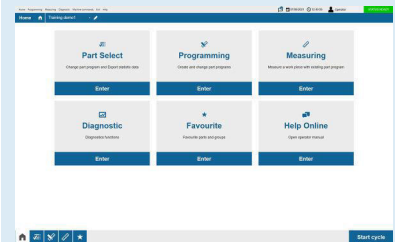
No.	Model	Range Z-axis [mm]	Measuring range Ø [mm]
211-581-01MEU	Roundtracer Flash S100	100	60
211-583-01MEU	Roundtracer Flash S300	300	60

Specifications

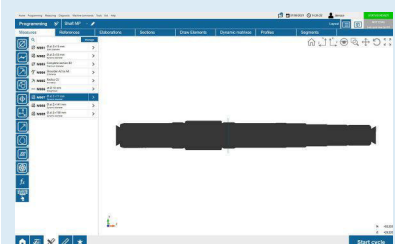
Range Z-axis	100 / 300 mm
Measuring range Ø [mm]	60
Max. turntable loading	6 kg

Optional accessories

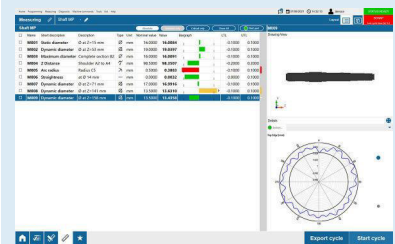
No.	Description
12AAX422MEU	3-jaw chuck incl. shank set
12AAX423MEU	Face plate incl. shank set
12AAX424MEU	6-jaw chuck incl. shank set, for Roundtracer Flash
12AAX425MEU	Pivoting Arm for the Display, for Roundtracer Flash
12AAX426MEU	Industrial Keyboard, for Roundtracer Flash
12AAX427MEU	Verification Master for S100, for Roundtracer Flash
12AAX429MEU	Verification Master for S300, for Roundtracer Flash
63AAA984	Fastener measurement kit for Roundtracer Flash, for Roundtracer Flash
63AAA988	Easybox 8/I/O Kit for Roundtracer Flash, for Roundtracer Flash
63AAA989	Gagepod Profinet/Profibus Kit for Roundtracer Flash, for Roundtracer Flash
63AAA991	Instant manual thermal probe kit for Roundtracer Flash, for Roundtracer Flash
63AAA990	Kit Datamatrix reader, for Roundtracer Flash



Home screen



Programming screen



Result screen

Roundtracer Extreme RTX-0605-A

Serie 211 - Form Measuring Instrument

Full-fledged CNC roundness measuring system with dramatically-enhanced measurement flexibility, measurement throughput, and measurement result reproducibility.

A complete new system which can combine form, contour and surface roughness measurement into one device.

The Roundtracer Extreme offers you following benefits:

- 3 in 1
- Motorized detector slider
- Stylus positioning
- High measurement throughput
- High reproducibility & repeatability
- Enhanced optional measurement functions like contour & surface roughness and twist measurement

Specifications

Turntable	
Rotational accuracy	Radial: (0,02+0,00035H) μm H: Measuring height (mm) Axial: (0,02+0,00035R) μm R: Measuring radius (mm)
Vertical column	
Max. measurement height	500 mm



Form measurement



Contour measurement



Surface roughness measurement



Refer to ROUNDTRACER RTX brochure



Scan QR Code with your mobile device and watch our product videos on YouTube



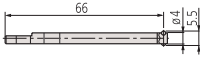
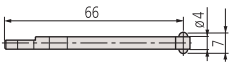
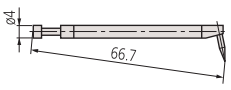
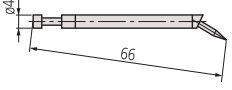
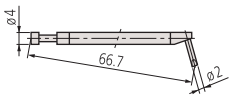
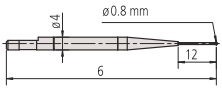
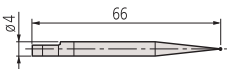
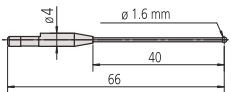
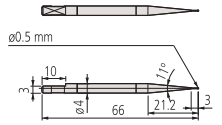
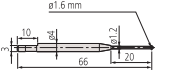
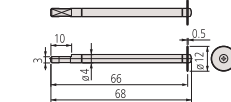
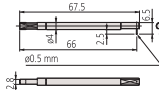
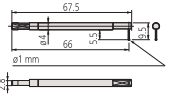
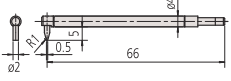
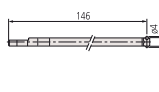
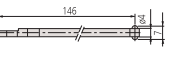
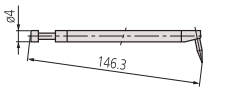
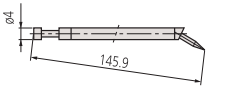
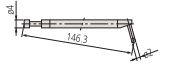
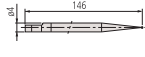
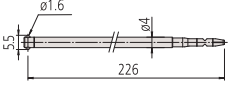
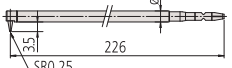
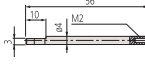
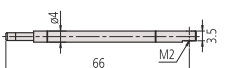

Metric

No.	Model	Centering/leveling adjustment	Vertical travel	Max. workpiece \varnothing [mm]	Max. probing \varnothing [mm]	Max. turntable loading [kg]
211-552-12	RTX-605-A	AAT	550 mm	680	328	60

AAT Automatic adjustment table

Optional Styli for Roundtest

Interchangeable styli for RA-10, RA-120, RA-120P, RA-1600, RA-2200, RA-H5200

 12AAL021 - Standard ø 1,6 mm tungsten carbide	 12AAL022 - Notch ø 3 mm tungsten carbide	 12AAL023 - Deep groove R 0,25 mm sapphire
 12AAL024 - Corner R 0,25 mm sapphire	 12AAL025 - Cutter mark R 15 mm tungsten carbide	 12AAL026 - Small hole ø 0,8 mm tungsten carbide
 12AAL027 - Small hole ø 1 mm tungsten carbide	 12AAL028 - Small hole ø 1,6 mm tungsten carbide	 12AAL029 - Extra small hole ø 0,5 mm tungsten carbide
 12AAL030 - ø 1,6 mm ball ø 1,6 mm tungsten carbide	 12AAL031 - Disc ø 12 mm	 12AAL032 - Crank ø 0,5 mm tungsten carbide
 12AAL033 - Crank ø 1 mm tungsten carbide	 12AAL034 - Flat surface Tungsten carbide	 12AAL035 - 2X-long standard ø 1,6 mm tungsten carbide
 12AAL036 - 2X-long notch ø 3 mm tungsten carbide	 12AAL037 - 2X-long deep groove R 0,25 mm sapphire	 12AAL038 - 2X-long corner R 0,25 mm sapphire
 12AAL039 - 2X-long type cutter mark R 15 mm tungsten carbide	 12AAL040 - 2X-long small hole ø 1 mm tungsten carbide	 12AAL041 - 3X-long standard ø 1,6 mm tungsten carbide
 12AAL042 - 3X-long deep groove R 0,25 mm sapphire	 12AAL043 - Stylus shank for mounting M2 - CMM stylus	 12AAL044 - Stylus shank groove for mounting M2 - CMM stylus
 12AAL045 - Stylus shank 2X groove for mounting M2 - CMM stylus		

Standard accessories

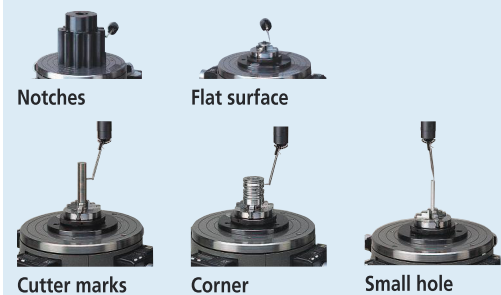
No.	Description
12AAL021	Standard stylus

Optional accessories

No.	Description
12AAL022	Stylus for notches, ø3 mm, tungsten carbide
12AAL023	Stylus for deep groove, R 0,25 mm, Sapphire
12AAL024	Stylus for corner, R 0,25 mm, Sapphire
12AAL025	Stylus for cutter marks, R 15 mm, tungsten carbide
12AAL026	Stylus for small holes, ø0,8 mm, tungsten carbide
12AAL027	Stylus for small holes, ø1 mm, tungsten carbide
12AAL028	Stylus for small holes, ø1,6 mm, tungsten carbide
12AAL029	Stylus for extra small hole, ø0,5 mm, tungsten carbide
12AAL030	Stylus ball type, ø1,6 mm, tungsten carbide
12AAL031	Stylus disc type, ø12 mm
12AAL032	Stylus for cranks, ø0,5 mm, tungsten carbide
12AAL033	Stylus for cranks, ø1 mm, tungsten carbide
12AAL034	Stylus for flat surface, tungsten carbide
12AAL035	Stylus 2X-long standard type, ø1,6 mm, tungsten carbide*1
12AAL036	Stylus 2X-long type for notches, ø3 mm, tungsten carbide*1
12AAL037	Stylus 2X-long type for deep grooves, R 0,25 mm, Sapphire*1
12AAL038	Stylus 2X-long type for corners, R 0,25 mm, Sapphire*1
12AAL039	Stylus 2X-long type for cutter marks, R 15 mm, tungsten carbide*1
12AAL040	Stylus 2X-long type for small hole, ø1 mm, tungsten carbide*1
12AAL041	Stylus 3X-long standard type, ø1,6 mm, tungsten carbide*1
12AAL042	Stylus 3X-long type for deep grooves, R 0,25 mm, Sapphire*1
12AAL043	Stylus shank, for mounting M2-CMM stylus
12AAL044	Stylus shank for grooves, for mounting M2-CMM stylus
12AAL045	Stylus shank 2X-long type for grooves, for mounting M2-CMM stylus*1

*1 Not available for RA-10, RA-120, RA-120P

*2 Measuring is only possible in the vertical direction



Optional Styli for Roundtest

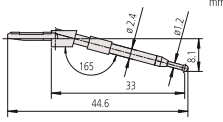
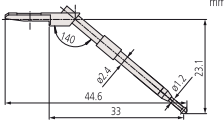
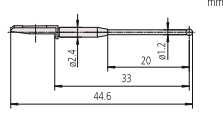
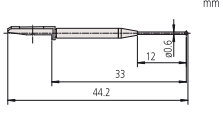
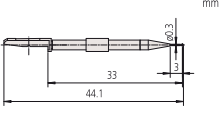
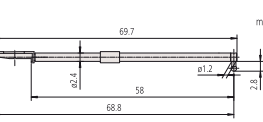
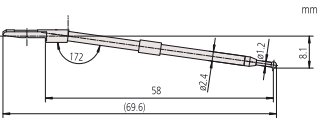
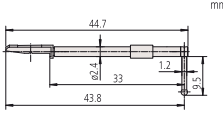
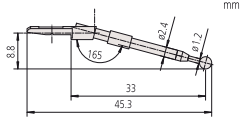
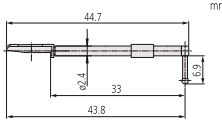
Interchangeable styli for RA-2200 PLUS, RA-H5200 PLUS

Standard accessories

No.	Description
12AAE301	Stylus standard type for CNC, Ø1,6 mm, tungsten carbide
12AAE302	Stylus for flat surfaces for CNC, Ø1,6 mm, tungsten carbide

Optional accessories

No.	Description
12AAE303	Ball stylus for CNC, Ø1,6 mm, tungsten carbide
12AAE304	Ball stylus for CNC, Ø0,8 mm, tungsten carbide
12AAE305	Ball stylus for CNC, Ø0,5 mm, tungsten carbide
12AAE306	Stylus for deep holes, Ø1,6 mm, tungsten carbide
12AAE307	Stylus for deep holes, Ø1,6 mm, tungsten carbide
12AAE308	Stylus for deep grooves, Ø1,6 mm, tungsten carbide
12AAE309	Stylus for notches, Ø3 mm, tungsten carbide
12AAE310	Stylus for grooves, Ø1,6 mm, tungsten carbide

 <p>12AAE301 - Standard Ø 1,6 mm tungsten carbide</p>	 <p>12AAE302 - Flat surface Ø 1,6 mm tungsten carbide</p>	 <p>12AAE303 - Ø 1,6 mm ball Ø 1,6 mm tungsten carbide</p>
 <p>12AAE304 - Ø 0,8 mm ball Ø 0,8 mm tungsten carbide</p>	 <p>12AAE305 - Ø 0,5 mm ball Ø 0,5 mm tungsten carbide</p>	 <p>12AAE306 - Deep hole Ø 1,6 mm tungsten carbide</p>
 <p>12AAE307 - Deep hole Ø 1,6 mm tungsten carbide</p>	 <p>12AAE308 - Deep groove Ø 1,6 mm tungsten carbide</p>	 <p>12AAE309 - Notch Ø 3 mm tungsten carbide</p>
 <p>12AAE310 - Groove Ø 1,6 mm tungsten carbide</p>		

Optional Accessories for Roundtest

Optional accessories for Roundtest and Roundtest Extreme

No.	Description
211-061	Available collets see RA-10

Auxiliary stage for a low-height workpiece

No.	Description
356038	Used for measuring a workpiece whose diameter is 40 mm or less and whose height is 20 mm or less

Chuck - Quick chuck

This chuck is useful when measuring small workpieces. You can easily clamp them with its knurled ring.

No.	Holding capacity [mm]	External dimensions [mm]
211-032	Internal jaw: ID = \varnothing 16 - 69 External jaw: OD = \varnothing 1 - 79	\varnothing 118 x 41
211-031	Internal jaw: \varnothing 0,1 - 1,5	\varnothing 118 x 48,5

Chuck - Three jaw chuck (key operated)

No.	Holding capacity [mm]	External dimensions [mm]
211-014	Internal jaw: ID = \varnothing 25 - 68 Internal jaw: OD = \varnothing 2 - 35 External jaw: OD = \varnothing 35 - 78	\varnothing 157 x 70,6

Cylindric square

No.	Cylindricity [μ m]	Perpendicularity [μ m]	Straightness [μ m]
350850	2	3	1

Gauge block set for calibration

No.	Description
997090	Standard accessory for RA-2200, RA-2200 PLUS Standard accessory for RA-H5200 and RA-H5200 PLUS

Magnification checking gauge

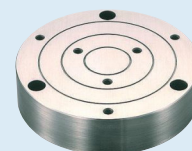
No.	Graduation [μ m]
211-045	0,2

Origin point gauge

No.	Description
998382	Standard accessory for RA-1600, RA-2200 and RA-H5200

Vibrator isolator and accessories (WxDxH)

No.	External dimensions [mm]	Description
12AAL019	660 x 670 x 700	Side table
178-023-1	765 x 565 x 48	Manually charged vibration isolator
178-025	750 x 550 x 59	Automatically charged vibration isolator



356038



211-032



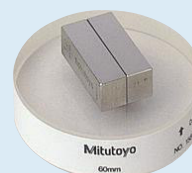
211-031



211-014



350850



997090



211-045



998382



178-025

Optional Software

USB & SJ Communication Tool & SJ-220 APP

Optional accessories

No.	Description
12AAD510	USB cable for SJ-310 / SJ-410 series
12AAH490	USB Cable for SJ-500 / SV-2100
63AAA211	USB communication cable for SJ-210, Length 1,8 m
264-628	U-WAVE-TIB, Wireless Unit for Measuring Instrument
12BAS451	USB 2.0 cable, for Surfptest SJ-220

Series 178 - Control Software for SJ series, SV-2100

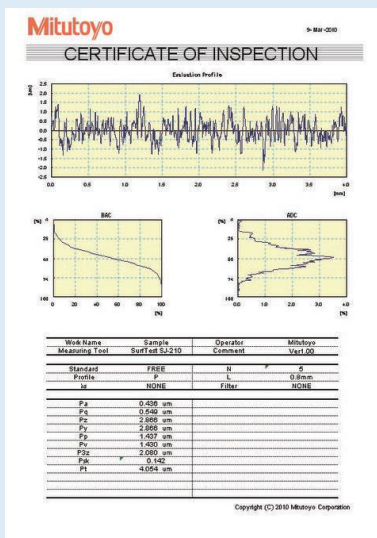
USB Communication Tool is a control software for Surfptest SJ-210 / SJ-310 / SJ-410 / SJ-500 and SV-2100.

SJ Communication Tool is a control software for Surfptest SJ-220.

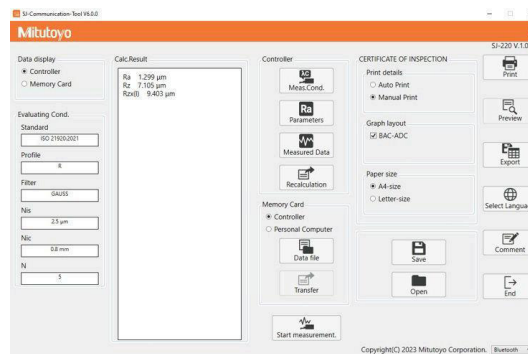
The SJ-220 APP communicates with the Surfptest SJ-220 via Bluetooth and U-WAVE TIB .

The tools offer you the following benefits:

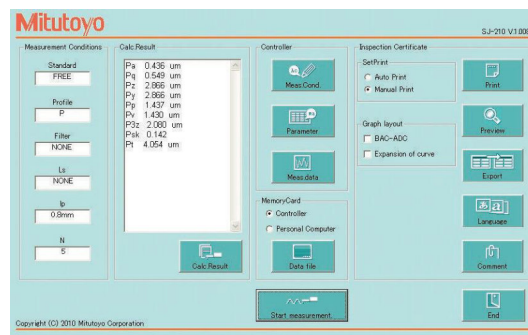
- It is available for free download at www.mitutoyo.eu (registration is required).
- Output software is based on Microsoft® Excel® and is used for device control and the creation of measurement data reports
- All offer the definition of measurement variables and graphical display of the measurement profile.
- A USB cable is required for connection to the USB Communication Tool.
- The SJ-220 connection to the SJ Communication Tool can be established via Bluetooth adapter U-Wave TIB or a USB cable.



Output record from Microsoft® Excel®



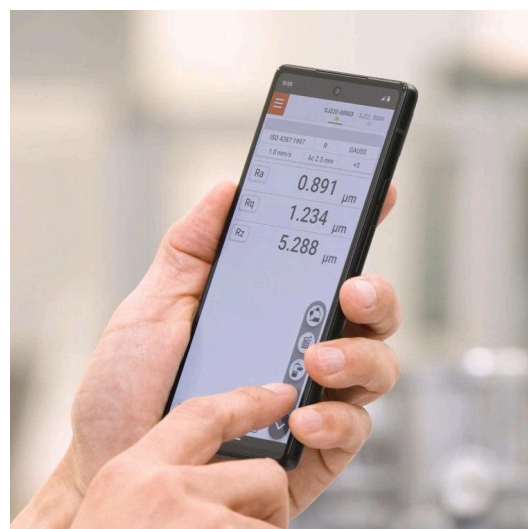
Input mask SJ-Communication Tool for Surfptest SJ-220



Input mask USB Communication Tool



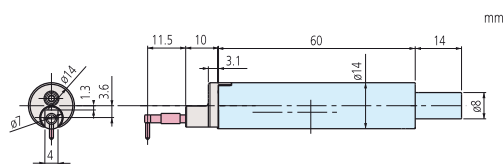
Scan QR Code with your mobile device and watch our product videos on YouTube



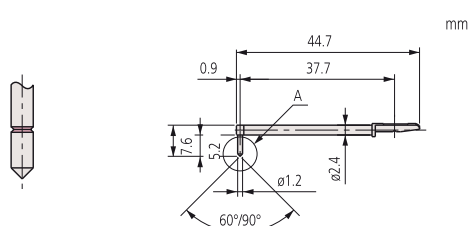
Surfptest SJ-220 APP

Optional Styli for Surfptest, Formtracer Avant and SV-C series

Detectors

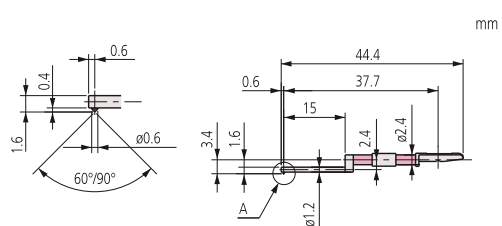


Order No	Measuring Force	Angle/Radius	Inclusive Stylus
178-396-2	0,75 mN	R2 μm , 60°	12AAC731
178-397-2	4 mN	R5 μm , 90°	12AAB403



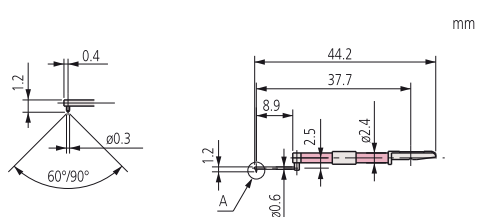
Standard

No.	Angle	Radius
12AAE882	60°	1 μm
12AAE924	90°	1 μm
12AAC731	60°	2 μm
12AAB403	90°	5 μm
12AAB415	90°	10 μm
12AAE883	60°	250 μm



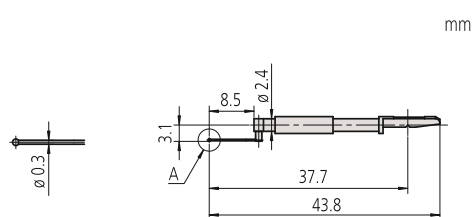
For small hole

No.	Angle	Radius
12AAC732	60°	2 μm
12AAB404	90°	5 μm
12AAB416	90°	10 μm



For extra-small hole

No.	Angle	Radius
12AAC733	60°	2 μm
12AAB405	90°	5 μm
12AAB417	90°	10 μm



For ultra-small hole

No.	Angle	Radius
12AAJ662	-	250 μm



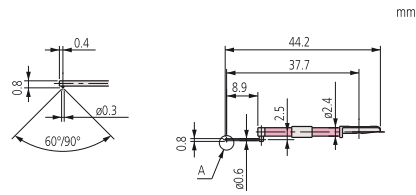
12AAG202 Extension rod 50 mm
(*not suitable for SJ-220/SJ-310/SJ-410)



12AAG203 Extension rod 100 mm
(*not suitable for SJ-220/SJ-310/SJ-410)

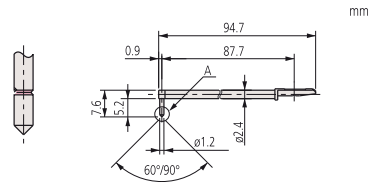
Optional Styli for Surftrac, Formtracer Avant and SV-C series

No.	Angle	Radius
12AAC734	60°	2 μm
12AAB406	90°	5 μm
12AAB418	90°	10 μm



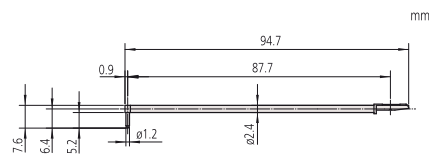
For ultra-small hole

No.	Angle	Radius
12AAC740	60°	2 μm
12AAB413	90°	5 μm
12AAB425	90°	10 μm



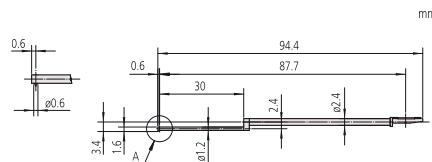
For deep hole [double-length]

No.	Angle	Radius
12AAE886	60°	250 μm



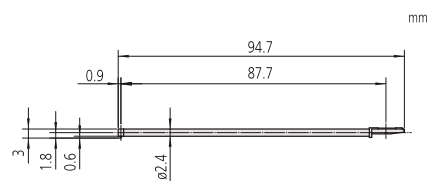
For rolling circle waviness [double-length]

No.	Angle	Radius
12AAE892	60°	2 μm
12AAE908	90°	5 μm



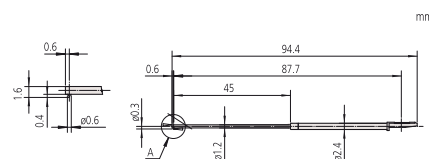
For small deep hole [double-length]

No.	Angle	Radius
12AAE898	60°	2 μm
12AAE914	90°	5 μm



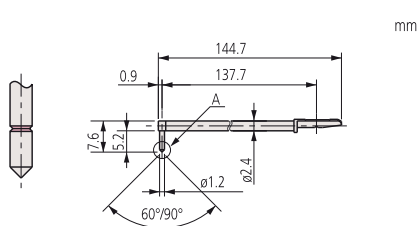
For deep hole [double-length]

No.	Angle	Radius
12AAE938	60°	2 μm
12AAE940	90°	5 μm



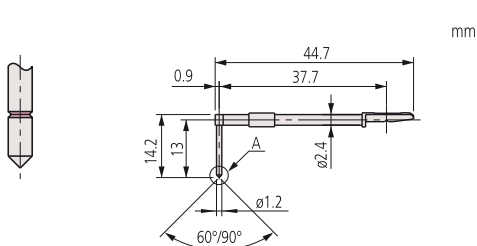
For small slotted hole [double-length]

Optional Styli for Surftrac, Formtracer Avant and SV-C series



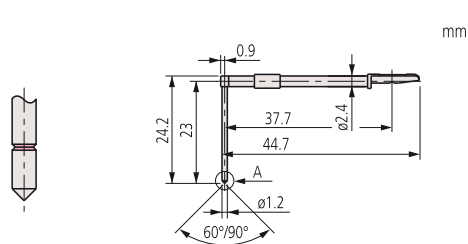
No.	Angle	Radius
12AAC741	60°	2 μm
12AAB414	90°	5 μm
12AAB426	90°	10 μm

For deep hole [triple-length]



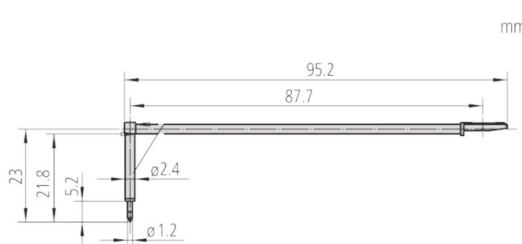
No.	Angle	Radius
12AAC735	60°	2 μm
12AAB409	90°	5 μm
12AAB421	90°	10 μm

For deep groove 10 mm



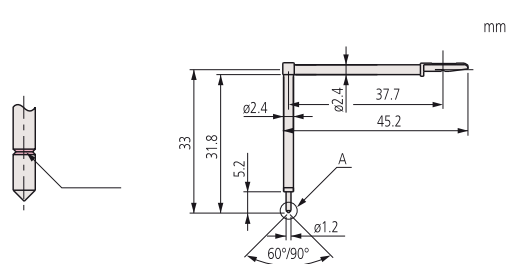
No.	Angle	Radius
12AAC736	60°	2 μm
12AAB408	90°	5 μm
12AAB420	90°	10 μm

For deep groove 20 mm



No.	Angle	Radius
12AAE893	60°	2 μm
12AAE909	90°	5 μm

For deep groove 20 mm [double-length]

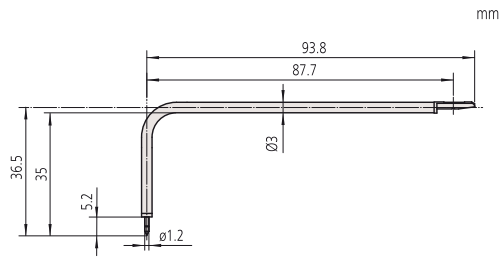


No.	Angle	Radius
12AAC737	60°	2 μm
12AAB407	90°	5 μm
12AAB419	90°	10 μm

For deep groove 30 mm

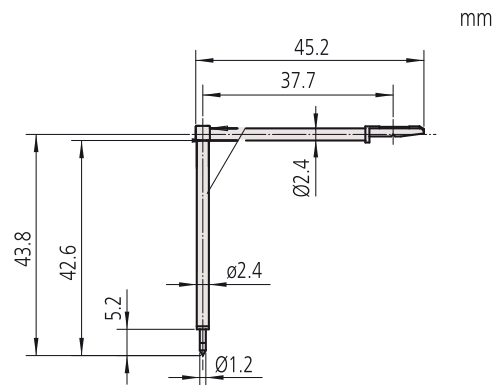
Optional Styli for Surfptest, Formtracer Avant and SV-C series

No.	Angle	Radius
12AAE894	60°	2 μm
12AAE910	90°	5 μm



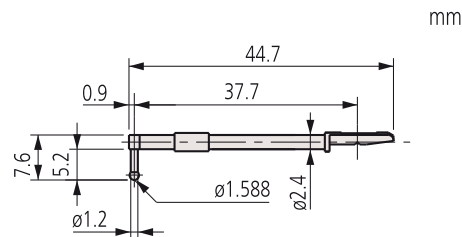
For deep groove 30 mm [double-length]

No.	Angle	Radius
12AAE895	60°	2 μm
12AAE911	90°	5 μm



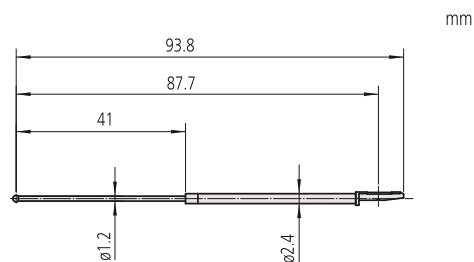
For deep groove 40 mm

No.	Radius
12AAB338	0,8 mm



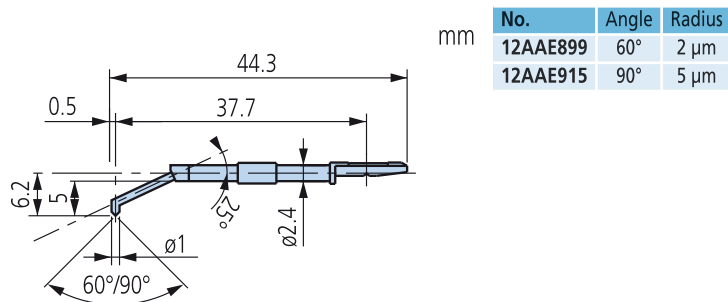
For rolling circle waviness surface roughness
(Roughness specimen 178-611 required)

No.	Radius
12AAE884	0,8 mm



For rolling circle waviness surface roughness
[double-length] (178-611 required)

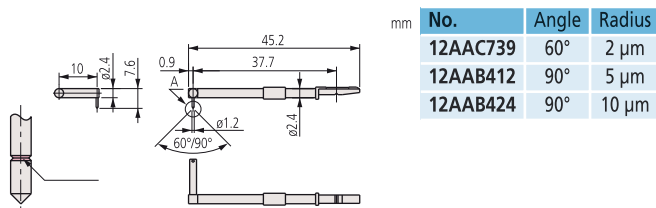
Optional Styli for Surftracer, Formtracer Avant and SV-C series



mm

No.	Angle	Radius
12AAE899	60°	2 μm
12AAE915	90°	5 μm

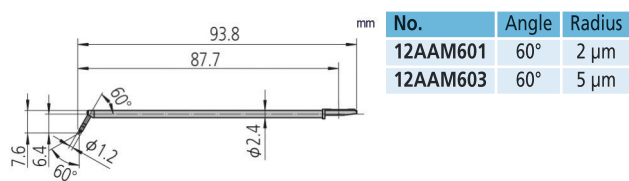
For hole bottom



mm

No.	Angle	Radius
12AAC739	60°	2 μm
12AAB412	90°	5 μm
12AAB424	90°	10 μm

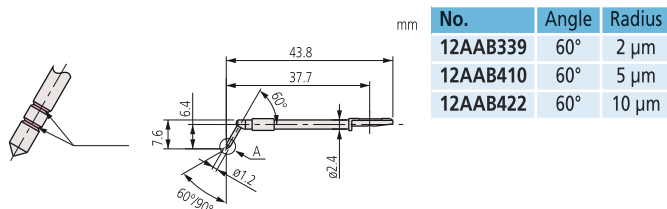
For eccentric arm



mm

No.	Angle	Radius
12AAM601	60°	2 μm
12AAM603	60°	5 μm

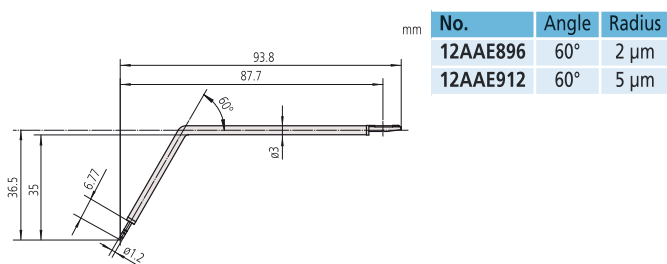
For corner



mm

No.	Angle	Radius
12AAB339	60°	2 μm
12AAB410	60°	5 μm
12AAB422	60°	10 μm

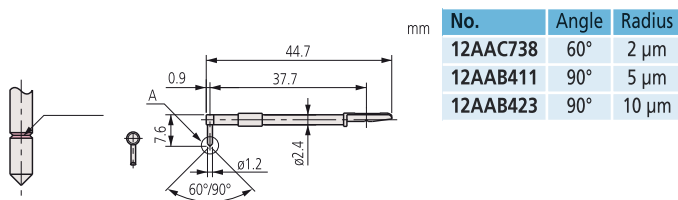
For gear tooth



mm

No.	Angle	Radius
12AAE896	60°	2 μm
12AAE912	60°	5 μm

For gear tooth [double-length]

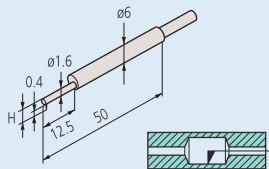


mm

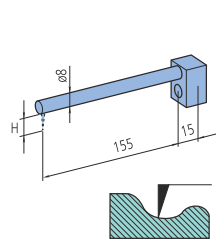
No.	Angle	Radius
12AAC738	60°	2 μm
12AAB411	90°	5 μm
12AAB423	90°	10 μm

For knife-edge

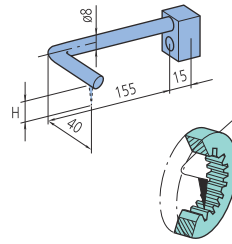
Optional Styli and Arms for Contracer, Formtracer Avant and SV-C Series



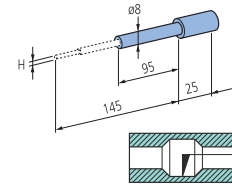
Small hole: 932693 / 12AAE873
Tip shape: Single bevel / Cone
Tip angle: 20° / 30°
Tip radius: 25 µm / 25 µm
Tip material: Carbide / Carbide



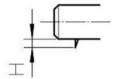
Arm straight type
CV-2100



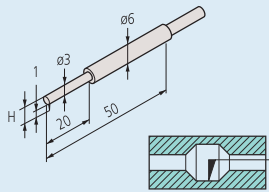
Arm eccentric type
CV-2100



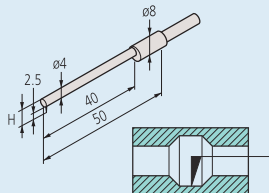
Arm for small-hole stylus
CV-2100



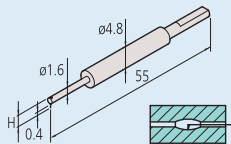
Arm for small-hole stylus
CV-2100



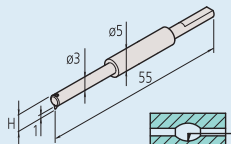
Small hole: 932694 / 12AAE874
Tip shape: Single bevel / Cone
Tip angle: 20° / 30°
Tip radius: 25 µm / 25 µm
Tip material: Carbide / Carbide



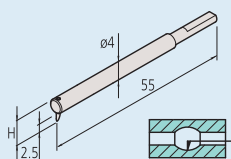
Small hole: 932695 / 12AAE875
Tip shape: Single bevel / Cone
Tip angle: 20° / 30°
Tip radius: 25 µm / 25 µm
Tip material: Carbide / Carbide



Small hole: 12AAM104
Tip shape: One-sided cut
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide



Small hole: 12AAM105
Tip shape: One-sided cut
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide



Small hole: 12AAM106
Tip shape: One-sided cut
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide

Applicable arms for CV-2100

No.	Arm	Arm No.	Compatible stylus height (H) [mm]
935110	Small hole	AB-11	0,4 / 1 / 2,5
935111	Straight type	AB-51	6
935112	Straight type	AB-61	12
935113	Straight type	AB-71	20
935114	Straight type	AB-81	30
935115	Straight type	AB-91	42
935116	Eccentric type	AB-52	6
935117	Eccentric type	AB-62	12
935118	Eccentric type	AB-72	20
935119	Eccentric type	AB-82	30
935120	Eccentric type	AB-92	42

Applicable arms for FTA-C3000 / FTA-C4000 / FTA-D3000 / FTA-D4000 / SV-C4500CNC

No.	Arm	Arm No.	Compatible stylus height (H) [mm]
12AAQ762	Eccentric arm	AB-37	SPH-5*, 6*, 7*, 8*, 9*
12AAM101	Straight type	AB-31	SPH-5*, 6*, 7*, 8*, 9*, SPHW-56, 66, 76
12AAM103	Small hole	AB-33	SPH-41, SPH-42, SPH-43

Applicable styli for CV-2100

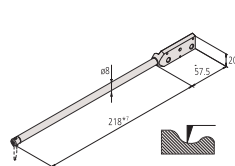
No.	Stylus	Stylus No.	Stylus height (H) [mm]
932693	Small hole, carbide-tipped one-sided cut	SP-11	2
932694	Small hole, carbide-tipped one-sided cut	SP-12	4
932695	Small hole, carbide-tipped one-sided cut	SP-13	6,5
12AAE873	Small hole, carbide-tipped cone	SP-31	2
12AAE874	Small hole, carbide-tipped cone	SP-32	4
12AAE875	Small hole, carbide-tipped cone	SP-33	6,5

Applicable styli for FTA-C3000 / FTA-C4000 / FTA-D3000 / FTA-D4000 / SV-C4500CNC

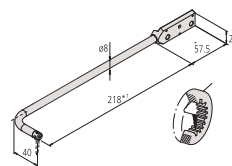
No.	Stylus	Stylus No.	Stylus height (H) [mm]
12AAM104	Small hole, carbide tipped one sided cut	SPH-41	2
12AAM105	Small hole, carbide tipped one sided cut	SPH-42	4
12AAM106	Small hole, carbide tipped one sided cut	SPH-43	6,5

Arm and stylus set

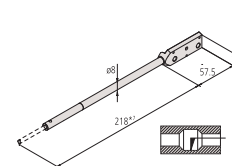
No.	Included arms	Included styli	Included arm stylus	Applicable models
12AAR587	AB-33, AB-37	SPH-41, -43, -51, -72, -76		FTA-C3000, FTA-C4000, FTA-D3000, FTA-D4000, SV-C4500CNC
12AAR588	AB-33, AB-37	SPH-41, -43, -51, -72, -76, SPHW-66, -76	SPHW-32	FTA-C4000, FTA-D4000, SV-C4500CNC



Arm straight type
FTA-C3000 / FTA-C4000
FTA-D3000 / FTA-D4000
SV-C4500CNC



Arm eccentric type
FTA-C3000 / FTA-C4000
FTA-D3000 / FTA-D4000
SV-C4500CNC



Arm for small-hole stylus
CV-2100 / FTA-C3000
FTA-C4000 / FTA-D3000
FTA-D4000 / SV-C4500CNC

Optional Styli and Arms for Contracer, Formtracer Avant and SV-C Series

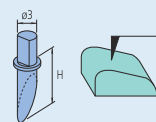
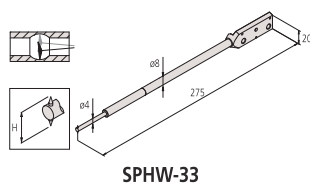
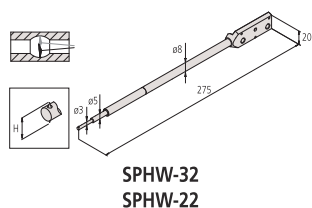
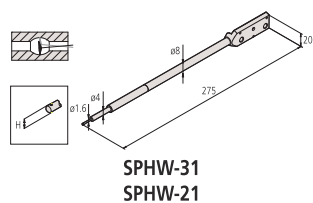
Styli

Applicable styli for
CV-2100 / FTA-C3000 / FTA-C4000 / FTA-D3000 / FTA-D4000 / SV-C4500CNC

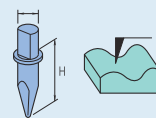
No.	Stylus	Stylus No.	Stylus height (H) [mm]
354882	Single bevel, carbide tipped	SPH-51	6
354883	Single bevel, carbide tipped	SPH-61	12
354884	Single bevel, carbide tipped	SPH-71	20
354885	Single bevel, carbide tipped	SPH-81	30
354886	Single bevel, carbide tipped	SPH-91	42
354887	Cross ground, carbide tipped	SPH-52	6
354888	Cross ground, carbide tipped	SPH-62	12
354889	Cross ground, carbide tipped	SPH-72	20
354890	Cross ground, carbide tipped	SPH-82	30
354891	Cross ground, carbide tipped	SPH-92	42
12AAE865	Cone, carbide-tipped angle 20°	SPH-57	6
12AAE866	Cone, carbide-tipped angle 20°	SPH-67	12
12AAE867	Cone, carbide-tipped angle 20°	SPH-77	20
12AAE868	Cone, carbide-tipped angle 20°	SPH-87	30
12AAE869	Cone, carbide-tipped angle 20°	SPH-97	42
354892	Cone, sapphire-tipped angle 30°	SPH-53	6
354893	Cone, sapphire-tipped angle 30°	SPH-63	12
354894	Cone, sapphire-tipped angle 30°	SPH-73	20
355129	Cone, diamond-tipped angle 50°	SPH-79	20
354895	Cone, sapphire-tipped angle 30°	SPH-83	30
354896	Cone, sapphire-tipped angle 30°	SPH-93	42
12AAA566	Cone, carbide-tipped angle 30°	SPH-56	6
12AAA567	Cone, carbide-tipped angle 30°	SPH-66	12
12AAA568	Cone, carbide-tipped angle 30°	SPH-76	20
12AAA569	Cone, carbide-tipped angle 30°	SPH-86	30
12AAA570	Cone, carbide-tipped angle 30°	SPH-96	42
354897	Knife edge, carbide tipped	SPH-54	6
354898	Knife edge, carbide tipped	SPH-64	12
354899	Knife edge, carbide tipped	SPH-74	20
354900	Knife edge, carbide tipped	SPH-84	30
354901	Knife edge, carbide tipped	SPH-94	42
354902	Ball, carbide tipped	SPH-55	6
354903	Ball, carbide tipped	SPH-65	12
354904	Ball, carbide tipped	SPH-75	20
354905	Ball, carbide tipped	SPH-85	30
354906	Ball, carbide tipped	SPH-95	42

Applicable styli for only FTA-C4000 / FTA-D4000 / SV-C4500CNC

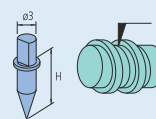
No.	Stylus	Stylus No.	Stylus height (H) [mm]
12AAT469	Both sides small hole arm stylus 20°	SPHW-21	2,4
12AAT470	Both sides small hole arm stylus 20°	SPHW-22	5
12AAM095	Both sides conical stylus	SPHW-56	20
12AAM096	Both sides conical stylus	SPHW-66	32
12AAM097	Both sides conical stylus	SPHW-76	48
12AAM108	Both sides small hole arm stylus	SPHW-31	2,4
12AAM109	Both sides small hole arm stylus	SPHW-32	5
12AAM110	Both sides small hole arm stylus	SPHW-33	9



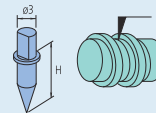
Single bevel
Tip angle: 12°
Tip radius: 25 µm
Tip material: Carbide



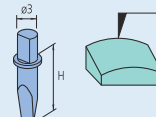
Cross ground
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide



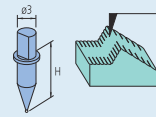
Cone
Tip angle: 30°/50°
Tip radius: 25 µm
Tip material: Carbide / Sapphire / Diamond
(355129: 50°, Diamond)



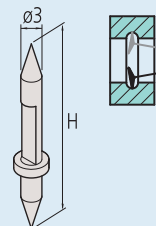
Cone
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide



Knife edge
Tip angle: 20°
Edge width: 3 mm
Tip radius: 25 µm
Tip material: Carbide



Ball
Ball: ø1 mm
Tip material: Carbide



Both sides conical stylus
Tip angle: 30°
Tip radius: 25 µm
Tip material: Carbide

Optional Accessories for Surftest, Contracer and Formtracer

For SV series, Avant series, SV-C series, CS series and CNC models



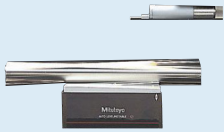
178-037

Automatic-leveling table : 178-037 (for CNC models)

Automatic-leveling table : 178-087 (for SV, Avant, SV-C, CS)

This is a stage that performs fully automatic leveling as measurement starts, freeing the user from this troublesome operation. Fully automatic leveling can be done quickly by anyone. In addition, the operation is easy and reliable.

No.	Inclination adjustment angle	Maximum load [kg]	Effective table dimensions [mm]	Mass [kg]
178-037	± 2°	7	130 x 112	4
178-087	± 2°	7	130 x 112	3,5



Using 178-087

Micro-chuck

This chuck is suitable for clamping extra-small diameter workpieces (ø1.5 mm or less), which cannot be retained with the centering chuck.

No.	Dimensions [mm]	Retention range [mm]	Mass [kg]
211-031	ø118 x 48,5	OD: Ø 0,1 - Ø 1,5	0,62



211-031

Quick chuck

This chuck is useful when measuring small workpieces. You can easily clamp them with its knurled ring.

No.	Dimensions [mm]	Retention range [mm]	Mass [kg]
211-032	ø118 x 41	Inner latch : OD ø1 - ø36 Inner latch : ID ø16 - ø69 Outer latch : OD ø25 - ø79	1,1

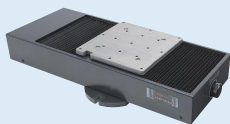


211-032

Y-axis table for Avant (not CNC models)

Enables efficient, automatic measurement of multiple aligned workpieces and multiple points on a single measurement surface. It allows semi-automatic measurement with non CNC models by using these items.

No.	Resolution	Travel range [mm]	Positioning accuracy [µm]	Maximum load [kg]	Drive speed	Mass [kg]
178-097	0,05	200	±3	50	Max. 80 mm/s	28



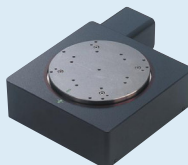
178-097

θ1-axis:*1

For efficient measurement in the axial / transverse directions. When measuring a cylindrical workpiece, automatic alignment can be performed in combination with the Y-axis table.

*1 = 12AAE630 mounting plate is required when directly installing on the base of the machine.

No.	Resolution	Rotational speed	Displacement	Maximum load [kg]	Mass [kg]
12AAD975	0,004°	Max. 10°/s	360°	12	7



12AAD975

θ2-axis:*1

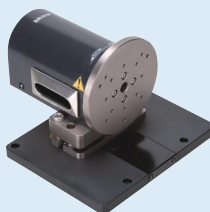
For efficient measurement of multiple points on a cylindrical workpiece and automate front/rear-side measurement.

*1 = 12AAE718 mounting plate is required when directly installing on the base of the machine.

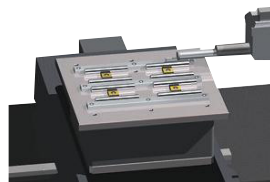
*1 = 12AAE705 attachment plate is required when installing on θ1-axis table.

*1 = 12AAE707 mounting plate is required when directly installing on Y-axis table with automatic leveling table.

No.	Resolution	Rotational speed	Displacement	Maximum load [kg]	Mass [kg]
178-078	0,0072°	Max. 18°/s	360°	4	5



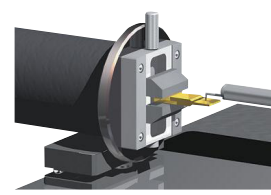
178-078



178-097
using Y-axis



12AAD975
using θ1-axis



178-078
using θ2-axis

Optional Accessories for Surftest, Contracer and Formtracer

Calibration stage

No.	Description	Mass [kg]
12AAG175	For mounting a roughness specimen or step gauge during calibration	1,6

Cross-travel table

No.	Description	XY travel [mm]
218-171	The cross-travel table [mm] enables the fine adjustment (X and Y direction) of measurement positions.	100 x 50

Digimatic XY leveling table

No.	Leveling range	Table top [mm]	XY travel [mm]	Mass [kg]
178-185	±1,5°	130 x 100	±12,5	6,3

Digital three-axis adjustment table

No.	Description
178-182	The digital three-axis adjustment table helps to make the alignment adjustments required when measuring cylindrical surfaces. The corrections for the pitch angle and the swivel angle are determined from a preliminary measurement and the Digimatic micrometers are adjusted accordingly. A flat-surfaced workpiece can also be leveled with this table.

Precision V-Block

No.	Description	Mass [kg]
998291	Workpiece diameter : 1 mm to 160 mm Can be mounted on a leveling table	1,2

Precision vise

No.	Description	Mass [kg]
178-019	Max. workpiece size : 36 mm Can be mounted on a leveling table	1,2

Rotary vise

No.	Description	Mass [kg]
218-173	Two-slide jaw type Max. workpiece size : ø60 mm Minimum reading : 1°	9

Vibration isolator

No.	Description	Mass [kg]
178-188	Standard base	155
178-189	Large type base	239

XY leveling table

No.	Leveling range	Table top [mm]	XY travel [mm]
178-195	±1,5°	130 x 100	
178-183	±1,5°	130 x 100	± 12,5



12AAG175



218-171



178-185



178-182



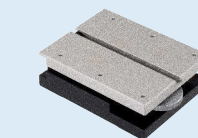
998291



178-019



218-173



178-195



178-183